APPENDIX D

BORING LOGS AND TRENCH LOGS
APPENDIX D – Boring Logs and Trench Logs

Table of Contents

Boring Logs - Data Gap Samples

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## Trench Logs

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<td>LFTS0199</td>
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### LOG OF BORING OUTFALL 009-2010.GPJ  BOEING.GDT  2/27/10

#### Sample Interval Retained

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, dark brown (7.5YR 3/2), loose, moist, contains organics [Native]</td>
<td></td>
<td>5 10 20 55 10</td>
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<tr>
<td>0.1</td>
<td></td>
<td>becomes brown (7.5YR 4/4), sand grades finer</td>
<td></td>
<td>5 10 10 65 10</td>
</tr>
<tr>
<td>3</td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, moist [Native]</td>
<td></td>
<td>75 25</td>
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<tr>
<td>4</td>
<td></td>
<td>Sandstone, yellowish brown (10YR 5/4), hard [Chatsworth Formation]</td>
<td>Total Depth = 4.0 ft; terminated due to refusal on bedrock.</td>
<td></td>
</tr>
</tbody>
</table>

Collected soil sample S001 at 13:08.

Backfilled with soil cuttings.

---

**Comments:**

- Samplers: 6-inch stainless steel sleeve

**Field Instrumentation:**

- PID

**Drill Rig Type/Method:**

- Hand Auger

**Well Completion Date:** N/A

**Completion Time:** N/A

**Soil Backfill Date:** 01-25-2010

**Backfill Time:** 13:22
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<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Depth (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
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<tbody>
<tr>
<td>3</td>
<td>S</td>
<td>1.2</td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), medium dense, moist, contains concrete debris, roots and rootlets, no odor or staining [Fill]</td>
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<tr>
<td>3</td>
<td>S</td>
<td>1.8</td>
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<td>2</td>
<td>SM</td>
<td>Silty Sand, brownish yellow (10YR 6/6), dense, moist, no odor or staining [Alluvium]</td>
</tr>
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<td></td>
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<td></td>
<td></td>
<td>4</td>
<td></td>
<td>becomes very pale brown (10YR 7/4), less silty, slightly friable</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td>6</td>
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<td>becomes very friable</td>
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<tr>
<td>3</td>
<td>S</td>
<td>0.6</td>
<td></td>
<td>6</td>
<td>SC</td>
<td>Clayey Sand, brown (10YR 4/3), dense, moist, no odor or staining [Alluvium]</td>
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<td></td>
<td>8</td>
<td></td>
<td>becomes mottled brown (10YR 4/3), brownish yellow (10YR 6/6), and dark brown (7.5YR 3/4)</td>
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<tr>
<td>3</td>
<td>S</td>
<td>1.2</td>
<td></td>
<td>12</td>
<td></td>
<td>Sandstone, mottled brown (10YR 4/3) to strong brown (7.5YR 4/6), very dense, very moist, slightly weathered [Chatsworth Formation]</td>
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<tr>
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<td>14</td>
<td></td>
<td>Total Depth = 24.0 ft; refusal on bedrock.</td>
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<td>16</td>
<td></td>
<td>Collected soil samples S001 at 09:00, S002 at 09:15, S003 at 09:35, S004 at 09:46, S005 at 10:10, and S006 at 10:26.</td>
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<td>Backfilled with soil cuttings.</td>
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**Boring ID: B1BS0075**

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.2  
**Easting (ft):** 1796757.62  
**Depth 1st H2O (ft):** N/A  
**Easting (ft):** 1796757.62  
**Date / Time:** N/A  
**Job Number:** 1891614  
**Logged By:** B. Martasin, P.G. #8356  
**Date / Time:** N/A  
**PID:** 0.0  
**Drill Rig Type/Method:** Hand Auger  
**Date / Time:** N/A  
**Date / Time:** N/A  

**Comments:**  
- Bare soil at surface  
- Slide hammer with stainless steel sleeve  
- Well Comp. Date: N/A  
- Soil Backfill Date: 06-05-2009  
- Backfill Time: 12:50  
- B. Cisneros  
- B. Martasin, P.G. #8356  

**Elevation (feet):**

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<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
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<td>0</td>
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<td>0.0</td>
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<td></td>
<td>SM</td>
<td>Silty Sand with Gravel, dark brown (10YR 3/3), medium dense, moist, granitic gravel up to 1 inch diameter [Fill]</td>
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<td>2</td>
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<td></td>
<td>Total Depth = 1.2 ft (14 in.); refusal on weathered Chatsworth Formation Sandstone.</td>
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<tr>
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<td>Collected soil sample S001 at 12:45.</td>
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**Est. % of Soil:**

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<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Sil/Clay</th>
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<td>15</td>
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### MWH

**Boring ID: B1BS0076**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 4.3
- **Project:** SSFL ISRA Sampling - Outfall 009 Area

**Drill Start Date:** 06-05-2009
**Drill Finish Date:** 06-05-2009

- **Logged By:** B. Martasin, P.G. #8356
- **Reviewed By:** B. Martasin, P.G. #8356

**Samplers:** Slide hammer with stainless steel sleeve
**Comments:** In drainage, vegetation at surface

**Well Comp. Date:** N/A
**Completion Time:** N/A

**N/A**
**PID (ppm)**
**Field Instrumentation:** PID
**Retained**
**Sample Type**
**Sample Interval**
**Sample Retained**
**Sample Recovery (%)**
**Blow Count/6”**
**PID (ppm)**
**Water Level**
**Depth (feet)**
**Graphic Log**
**USCS Soil Classification**

<table>
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<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), medium dense, moist, rootlets [Aluvium]</td>
<td></td>
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<td>4</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/4), hard, moist [Weathered Chatsworth Formation Sandstone]</td>
<td></td>
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<tr>
<td>4.3</td>
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<td>Total Depth = 4.3 ft; refusal on Chatsworth Formation Sandstone.</td>
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<td>Collected soil sample S001 at 13:10.</td>
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- **B. Cisneros**
- **N/A**
- **N/A**
- **B. Martasin, P.G. #8356**
- **B. Martasin, P.G. #8356**

**Driller’s Name:** B. Cisneros
**Drill Rig Type/Method:** Hand Auger

**Well Comp. Date:** 06-05-2009
**Soil Backfill Date:** 06-05-2009
**Backfill Time:** 13:20
**LOG OF BORING**

**Boring ID:** B1BS0077

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<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
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<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), dense, moist [Fill]</td>
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<tr>
<td>0.0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Becomes dark greenish gray (GLEY2 10G 4/1), no gravel, sand grades finer, decrease in fines</td>
</tr>
</tbody>
</table>

**Drill Rig Type/Method:** Geoprobe 5400/Direct Push

**Site:** B-1 Area

**Drill Start Date:** 06-03-2009
**Start Time:** 09:55

**Drill Finish Date:** 06-03-2009
**Finish Time:** 10:10

**Logged By:** B. Martasin, P.G. #8356

**Reviewed By:** B. Martasin, P.G. #8356

**Job Number:** 1891614

**Depth 1st H2O (ft):** N/A
**Date / Time:** N/A

**Depth H2O After Drilling (ft):** N/A
**Date / Time:** N/A

**Driller’s Name:** K. Rigney

**Comments:** Bare soil at surface

**Well Comp. Date:** N/A
**Completion Time:** N/A

**Soil Backfill Date:** 06-03-2009
**Backfill Time:** 10:20

**Samplers:** Geoprobe macrocore with acetate sleeve

**Borehole Diam. (in.):** 2
**Total Depth (ft):** 5.0

**Northing (ft):** 269316.20
**Easting (ft):** 1796896.47

**Drill Type:** Strongarm

**Field Instrumentation:** PID

**Borehole Diam. (in.):** 2

**Total Depth (ft):** 5.0; terminated prior to refusal.

**Collected soil samples S001 at 10:00 and S002 at 10:15.**

**Backfilled with geoprobe cuttings.**
**Boring ID: B1BS0077A**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 5.0
- **Project:** ISRA Data Gap Sampling 2010, Outfall 009, Boeing Property
- **Job Number:** 1008208
- **Site:** B1-2
- **Logged By:** A. Goldenberg
- **Reviewed By:** M. Milman-Barris, P.G.
- **Drill Rig Type/Method:** Hand Auger
- **Depth H₂O After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Driller’s Name:** M. Hoehn

**Comments:**
- **Soil and gravel at surface**

**Samplers:** Samples retained in 6-inch stainless steel sleeve

**Soil Backfill Date:** 05-25-2010

**Backfill Time:** 09:07

**Depth 1st H₂O (ft):** N/A

**Date / Time:** N/A

**Sample Interval**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>S</td>
<td>Silty Sand with Gravel, yellowish brown (10YR 5/6), dense, dry to moist, subangular gravel, contains rootlets, no odor or staining [Fill]</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>S</td>
<td>becomes mottled brownish yellow (10YR 6/6) and dark yellowish brown (10YR 4/4), moist</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>S</td>
<td>Total Depth = 5.0 ft; terminated prior to refusal on bedrock. Collected soil samples S001 at 08:25 and S002 at 08:50. Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>5</td>
<td>25</td>
<td>25</td>
<td>30</td>
</tr>
</tbody>
</table>

**Depth 2nd H₂O After Drilling (ft):** N/A

**Date / Time:** N/A

**Well Comp. Date:** N/A

**Completion Time:** N/A

**Sample Type**

- S

**Sample Retained**

- 6-inch stainless steel sleeve

**Easting (ft):** 1796897.26

**North (ft):** 269323.33

**Start Time:** 08:20

**Finish Time:** 09:01

**Logged By:** A. Goldenberg

**Reviewed By:** M. Milman-Barris, P.G.

**Logged By:** A. Goldenberg

**Reviewed By:** M. Milman-Barris, P.G.

**Logged By:** A. Goldenberg

**Reviewed By:** M. Milman-Barris, P.G.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>S</td>
<td>0.0</td>
<td>N/A</td>
<td>N/A</td>
<td>0.0</td>
<td>SM</td>
<td>Silty Sand with Gravel, yellowish brown (10YR 5/4), dense, moist, gravel and gravel-size chunks of concrete [Fill]</td>
<td>15 15 15 30 25</td>
</tr>
<tr>
<td>N/A</td>
<td>S</td>
<td>0.0</td>
<td>N/A</td>
<td>N/A</td>
<td>0.0</td>
<td>SM</td>
<td>Silty Sand, brownish yellow (10YR 6/6), hard, moist, some iron oxide staining [Weathered Chatsworth Formation Sandstone]</td>
<td>70 30</td>
</tr>
</tbody>
</table>

Total Depth = 5.0 ft; terminated prior to refusal.

Collected soil samples S001 at 09:35 and S002 at 09:40.

Backfilled with geoprobe cuttings.
Borehole Diam. (in.): 3
Northing (ft): 269280.17
Easting (ft): 1796942.73
Drill Start Date: 05-25-2010
Start Time: 13:40
Drill Finish Date: 05-25-2010
Finish Time: 14:10
Boring ID: B1BS0078A
Logged By: A. Goldenberg
Reviewed By: M. Milman-Barris, P.G.
Boring ID: B1BS0078A
Logged By: A. Goldenberg
Reviewed By: M. Milman-Barris, P.G.

Comments: Brush-covered soil at surface
Samples: Samples retained in 6-inch stainless steel sleeve

Silty Sand with Gravel, dark brown (10YR 3/3) to yellowish brown (10YR 5/4), dense, dry to moist, subangular gravel, contains few rootlets, no odor or staining [Fill]

Clayey Sandstone, yellowish brown (10YR 5/4) with minor light yellowish brown (10YR 6/4) mottling, very dense, moist, weathered, fractured, no odor or staining [Chatsworth Formation]

Total Depth = 5.0 ft; terminated prior to refusal on bedrock.
Collected soil samples S001 at 13:45 and S002 at 13:55. One step-out 1 ft to northwest required for sample volume.
Backfilled with soil cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>PID (ppm)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, light brown (7.5YR 6/4), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**
- On steep hillside, soil and vegetation at surface
- Total Depth = 1.3 ft (16 in.), refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 at 13:30.
- Backfilled with auger cuttings.
Asphalt 3 inches thick

Silty Sand, light brown (7.5YR 6/3), loose, dry, angular gravel [Fill]

Total Depth = 5.0 ft; terminated prior to refusal.
Collected soil samples S001 and D001 at 07:43 and S002 at 07:50.
Backfilled with geoprobe cuttings.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand (10YR 3/3), dense, moist [Alluvium]</td>
<td>60</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 09:20.

Backfilled with bentonite.
<table>
<thead>
<tr>
<th>Sample Interval (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CL</td>
<td>Sandy Lean Clay, yellowish brown (10YR 5/4), stiff, dry, medium plasticity fines, high dry strength, strong cementation [Alluvium]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

Comments: Exposed soil with sparse vegetation at surface; resample location
Exposed soil with sparse vegetation at surface; resample location
Grab sample collected in 6-inch stainless steel sleeve

Well Comp. Date: N/A
Completion Time: N/A

Soil Backfill Date: 07-14-2009
Backfill Time: 12:30
**Log of Boring Outfall 009 ISRA-2010.GPJ BOEING.GDT 3/25/11**

**MWH**

**Boring ID: B1BS0081B**

---

**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 3.5  
**Project:** ISRA Data Gap Sampling 2010, Outfall 009, Boeing Property

**Northing (ft):** 269143.53  
**Easting (ft):** 1796817.51  
**Job Number:** 1008208  
**Site:** B1-2

**Drill Start Date:** 10-13-2010  
**Start Time:** 10:40  
**Logged By:** S. Aichner  
**Reviewed By:** M. Milman-Barris, P.G.

**Drill Finish Date:** 10-13-2010  
**Finish Time:** 11:00  
**Drilling Contractor:** MP Environmental Svcs.  
**Field Instrumentation:** PID

**Depth 1st H2O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Grab (hand sampling)

**Depth H2O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller’s Name:** R. Luna

**Comments:** Trench ISRA-B1-2 sidewall location

**Well Comp. Date:** N/A  
**Completion Time:** N/A

**Samples:** Samples retained in 6-inch stainless steel sleeve

**Soil Backfill Date:** 10-13-2010  
**Backfill Time:** 11:05

---

**Sample Interval Retained** | **Sample Type** | **Sample Recovery (%)** | **Blow Count/6”** | **Depth (feet)** | **Graphic Log** | **USCS Soil Classification** | **Description** | **Est. % of Soil** |
---|---|---|---|---|---|---|---|---|
0 | S | 0.0 | | | | SM | Silty Sand, yellowish brown (10YR 5/4), loose, dry, micaeous | 10 10 60 20 |
1 | S | 0.2 | | | | | becomes dark yellowish brown (10YR 3/4) |

**Total Depth = 3.5 ft; terminated prior to refusal on bedrock.**

Collected soil samples S001 at 10:50 and S002 at 11:00.

Backfilled with auger cuttings.
Boring ID: **B1BS0082**

- **Borehole Diam. (in.):** 2
- **Total Depth (ft):** 5.0
- **Project:** SSFL ISRA Sampling - Outfall 009 Area
- **Nothing (ft):** 269082.59
- **Easting (ft):** 1796834.70
- **Job Number:** 1891614
- **Site:** B-1 Area
- **Drill Start Date:** 06-03-2009
- **Start Time:** 08:25
- **Logged By:** B. Martasin, P.G. #8356
- **Drill Finish Date:** 06-03-2009
- **Finish Time:** 08:40
- **Reviewed By:** B. Martasin, P.G. #8356
- **Drilling Contractor:** Strongarm
- **Field Instrumentation:** PID
- **Depth 1st H₂O (ft):** N/A
- **Date / Time:** N/A
- **Drill Rig Type/Method:** Geoprobe 5400/Direct Push
- **Depth H₂O After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Driller’s Name:** K. Rigney
- **Comments:** Soil with some road base and vegetation at surface
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Samplers:** Geoprobe macrocore with acetate sleeve
- **Soil Backfill Date:** 06-03-2009
- **Backfill Time:** 08:45

### Sample Interval

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/3), moist [Fill]</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, brown (10YR 5/3), moist, rootlets [Alluvium]</td>
<td></td>
</tr>
<tr>
<td>Sample Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 5.0 ft; terminated prior to refusal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil samples S001 at 08:30 and S002 at 08:40.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with geoprobe cuttings.</td>
</tr>
</tbody>
</table>

- **Gravel**
- **Coarse Sand**
- **Med. Sand**
- **Fine Sand**
- **Silt/Clay**

- **Est. % of Soil:**
  - Gravel: 60%
  - Coarse Sand: 40%
  - Med. Sand: 10%
  - Fine Sand: 60%
  - Silt/Clay: 30%
**Borehole Diam. (in.):** 2

**Total Depth (ft):** 1.5

**Project:** SSFL ISRA Sampling - Outfall 009 Area

**Logged By:** B. Martasin, P.G. #8356

**Logged Date:** 06-03-2009

**Logged Time:** 08:52

**Logged By:** B. Martasin, P.G. #8356

**Reviewed By:** B. Martasin, P.G. #8356

**Drill Rig Type/Method:** Geoprobe 5400/Direct Push

**Date / Time:** N/A

**Date / Time:** N/A

**Depth 1st H2O (ft):** N/A

**Date / Time:** N/A

**Depth H2O After Drilling (ft):** N/A

**Date / Time:** N/A

**Boring ID:** B1BS0083

**Northing (ft):** 269056.23

**Easting (ft):** 1796871.56

**Job Number:** 1891614

**Site:** B-1 Area

**Drill Start Date:** 06-03-2009

**Drill Finish Date:** 06-03-2009

**Start Time:** 08:52

**Finish Time:** 08:55

**Drilling Contractor:** Strongarm

**Field Instrumentation:** N/A

**Comments:** Soil with sparse vegetation at surface

**Well Comp. Date:** N/A

**Completion Time:** N/A

**Drill Start Date:** 06-03-2009

**Drill Finish Date:** 06-03-2009

**Start Time:** 08:52

**Finish Time:** 08:55

**Driller’s Name:** K. Rigney

**Soil Backfill Date:** 06-03-2009

**Backfill Time:** 09:00

**Soil with sparse vegetation at surface**

**Soil Backfill Date:** 06-03-2009

**Backfill Time:** 09:00

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, brownish yellow (10YR 6/6), dense, moist [Alluvium]</td>
<td>10 60 30</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 1.5 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 08:55.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with geoprobe cuttings.</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>60</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Soil with sparse vegetation at surface**

**Soil Backfill Date:** 06-03-2009

**Backfill Time:** 09:00
Boring ID: B1BS0084

<table>
<thead>
<tr>
<th>Sample Interval (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>PID (ppm)</th>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>s</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>SM (Silt/Mud)</td>
<td>Silty Sand with Gravel, brown (10YR 5/3), loose, dry [Alluvium]</td>
<td>15</td>
<td>10</td>
<td>20</td>
<td>35</td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 1.3 ft (16 in.); refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 at 10:20.

Backfilled with auger cuttings.
### Boring ID: B1BS0085

**Project:** SSFL ISRA Sampling - Outfall 009 Area

**Site:** B-1 Area

**Logged By:** B. Martasin, P.G. #8356

**Reviewed By:** B. Martasin, P.G. #8356

**Drilling Contractor:** B.L. Hall

**Field Instrumentation:** PID

**Drill Rig Type/Method:** Hand Auger

#### Site: B-1 Area

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>SM</th>
<th>USCS Soil Classification</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand with Gravel, brown (10YR 5/3), loose, dry [Alluvium]</td>
<td>15 10 20 35 20</td>
</tr>
</tbody>
</table>

**Notes:**
- Total Depth = 1.0 ft (12 in.); refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 at 10:50.
- Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID(ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 1.8 ft (22 in.); refusal on weathered Chatsworth Formation Sandstone.</td>
<td>5 10 45 40</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/3), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Collected soil sample S001 at 10:10.
Backfilled with auger cuttings.

Vegetation at surface: Slide hammer with stainless steel sleeve

Boring ID: B1BS0086

Total Depth (ft): 1.8

SSFL ISRA Sampling - Outfall 009 Area

Job Number: 1891614

Site: B-1 Area

Drill Rig Type/Method: Hand Auger

B. Cisneros

Borehole Diam. (in.): 3

Easting (ft): 269005.74

Northing (ft): 269005.74

Start Time: 10:08

Finish Time: 10:17

Date / Time: 06-05-2009

Logged By: B. Martasin, P.G. #8356

Drill Start Date: 06-05-2009

Finish Date: 06-05-2009

Drilling Contractor: B.L. Hall

Field Instrumentation: PID

Depth 1st H2O (ft): N/A

Date / Time: N/A

Depth H2O After Drilling (ft): N/A

Date / Time: N/A

Driller's Name: B. Cisneros

Comments: Vegetation at surface

Well Comp. Date: N/A

Completion Time: N/A

Samplers: Slide hammer with stainless steel sleeve

Soil Backfill Date: 06-05-2009

Backfill Time: 10:20

Sample Interval Retained | Sample Type | Recovery (%) | Blow Count/6" | PID(ppm) | Water Level | USCS Soil Classification | Description                                                                 | Est. % of Soil |
<table>
<thead>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/3), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Collected soil sample S001 at 10:10.
Backfilled with auger cuttings.
Borehole Diam. (in.): 3  Total Depth (ft): 1.0  Project: SSFL ISRA Sampling - Outfall 009 Area
Northing (ft): 268928.42  Easting (ft): 1796961.83  Job Number: 1891614  Site: B-1 Area
Drill Start Date: 06-05-2009  Start Time: 12:20  Logged By: B. Martasin, P.G. #8356  Reviewed By: B. Martasin, P.G. #8356
Drill Finish Date: 06-05-2009  Finish Time: 12:25  Drilling Contractor: B.L. Hall  Field Instrumentation: N/A
Depth 1st H2O (ft): N/A  Date / Time: N/A  Drill Rig Type/Method: Hand Auger
Depth H2O After Drilling (ft): N/A  Date / Time: N/A  Driller’s Name: B. Cisneros
Comments: Vegetation at surface

Sample Interval  Retained  Sample Type  Recovery (%)  Blow Count/6"  PID (ppm)  Water Level  Depth (feet)  Graphic Log  USCS Soil Classification  Description  Gravel  Coarse Sand  Med. Sand  Fine Sand  Silt/Clay

0

1.0

SM
Silty Sand, dark brown (10YR 3/3), loose, dry, rootlets [Alluvium]

10 15 15 25 35

Total Depth = 1.0 ft (12 in.); refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 at 12:22.

Backfilled with auger cuttings.
**Boring ID: B1BS0088**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, brownish yellow (10YR 6/6), medium dense, dry [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth:** 0.7 ft (8 in.); refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 at 11:45.

Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, brownish yellow (10YR 6/6), dense, dry, angular sandstone gravel [Alluvium]</td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 at 11:10. Backfilled with native soil.</td>
</tr>
</tbody>
</table>

Log of Boring: OUTFALL009.GPJ  BOEING.GDT  6/16/09
**Boring ID: B1BS0090**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 1.0
- **Project:** SSFL ISRA Sampling - Outfall 009 Area
- **Job Number:** 1891614
- **Site:** B-1 Area
- **Drill Start Date:** 06-05-2009
  - **Start Time:** 11:52
- **Logged By:** B. Martasin, P.G. #8356
- **Reviewed By:** B. Martasin, P.G. #8356
- **Drill Finish Date:** 06-05-2009
  - **Finish Time:** 11:57
- **Drilling Contractor:** B.L. Hall
- **Field Instrumentation:** N/A
- **Drill Rig Type/Method:** Hand Auger
- **Boring ID:** B1BS0090
- **Date / Time:** N/A
- **Date / Time:** N/A

**Description**

- Total Depth = 1.0 ft (12 in.); refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 at 11:55.
- Backfilled with auger cuttings.

**Sample Types**

<table>
<thead>
<tr>
<th>Sample Interval (Sample Type)</th>
<th>Sample Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>s</td>
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<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), loose, dry, rootlets [Alluvium]</td>
</tr>
</tbody>
</table>

**Graphic Log**

- **Depth (feet):** 0
- **Graphic Log:** SM

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>20</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

**Comments:** Bare soil at surface

**Well Comp. Date:** N/A
**Completion Time:** N/A
**Soil Backfill Date:** 06-05-2009
**Backfill Time:** 12:00

**Samplers:** Slide hammer with stainless steel sleeve

**Reviewed By:** B. Martasin, P.G. #8356
**Boring ID: B1BS0091**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** B-1 Area

<table>
<thead>
<tr>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silty Sand, brown (10YR 5/3), very loose, dry, chipped pieces of sandstone, no cementation, mica present [Native]</td>
<td>5 25 25 15 30</td>
</tr>
<tr>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
<td></td>
</tr>
<tr>
<td>Collected soil sample S001.</td>
<td></td>
</tr>
<tr>
<td>Backfilled with auger cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** About 4 ft N of drainage, loose sandstone pieces on soil surface

**Well Comp. Date:** N/A  
**Completion Time:** N/A

**Samples:** Grab sample collected in 6-inch stainless steel sleeve

**Soil Backfill Date:** 06-30-2009  
**Backfill Time:** 12:28

**Job Number:** 1891614

**Logged By:** A. Ruotolo  
**Reviewed By:** M. Milman-Barris, P.G.

**Easting (ft):** 1797089.44  
**Start Time:** 12:12

**Northing (ft):** 269184.26  
**Start Date:** 06-30-2009

**Drill Start Date:** 06-30-2009  
**Finish Time:** 12:16

**Drill Finish Date:** 06-30-2009  
**Drilling Contractor:** B.L. Hall

**Drill Rig Type/Method:** Hand Auger

**Driller’s Name:** Paul Iler

**Logged By:** A. Ruotolo

**Reviewed By:** M. Milman-Barris, P.G.

**Total Depth (ft):** N/A

**Date / Time:** N/A

**Date / Time:** N/A

**Sample Interval:**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blown Count/6”</th>
<th>PID (ppm)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>0</td>
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<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, brown (10YR 5/3), very loose, dry, chipped pieces of sandstone, no cementation, mica present [Native]</td>
<td>5 25 25 15 30</td>
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</tbody>
</table>

**Project:** SSFL ISRA Sampling - Outfall 008 Area

**Site:** B-1 Area
Silty Sand, grayish brown (10YR 5/2), very loose, dry, fine gravel, no cementation [Native]

- Total Depth = 0.5 ft; terminated prior to refusal on bedrock.
- Collected soil sample S001 after removing 1 inch of surficial soil.
- Backfilled with auger cuttings.

Comments: On slight slope, exposed soil with sparse vegetation at surface, no debris

Well Comp. Date: N/A  Completion Time: N/A

Samplers: Grab sample collected in 6-inch stainless steel sleeve

Soil Backfill Date: 06-30-2009  Backfill Time: 10:52
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  12/16/09**

**Boring ID:** B1BS0093

**Project:** SSFL ISRA Sampling - Outfall 008 Area

**Site:** B-1 Area

**Job Number:** 1891614

**Logged By:** A. Ruotolo

**Reviewed By:** M. Milman-Barris, P.G.

**Driller's Name:** Paul Iler

**Drill Rig Type/Method:** Hand Auger

**Drill Start Date:** 06-30-2009

**Drill Finish Date:** 06-30-2009

**Start Time:** 11:21

**Finish Time:** 11:24

**Date / Time:** 06-30-2009

**Date / Time:** 06-30-2009

**Logged By:** A. Ruotolo

**Reviewed By:** M. Milman-Barris, P.G.

**Driller's Name:** Paul Iler

**Depth H2O After Drilling:** N/A

**Depth 1st H2O (ft):** N/A

**Date / Time:** N/A

**Date / Time:** N/A

**Comments:** Near rock outcrop, loose soil with low, dry vegetation at surface, no debris

**Well Comp. Date:** N/A

**Completion Time:** N/A

**Drill Rig Type/Method:** Hand Auger

**Field Instrumentation:** N/A

**Sample Retained:** Grab sample collected in 6-inch stainless steel sleeve

**Sample Type:** Grab sample collected in 6-inch stainless steel sleeve

**Sample Interval:** 0 - 10

**Sample Name:** N/A

**Sample Type:** N/A

**Sample Interval:** N/A

**Sample Name:** N/A

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Silty Sand, dark grayish brown (10YR 4/2), very loose, dry, no to weak cementation, contains hardened pea-size soil nodules, mica present [Native]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock. Collected soil sample S001. Backfilled with auger cuttings.</td>
</tr>
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<td>1</td>
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</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>tr</td>
<td>20</td>
<td>30</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>Sample Interval Retained</td>
<td>Sample Type</td>
<td>Recovery (%)</td>
<td>Blow Count (ppm)</td>
<td>Water Level</td>
</tr>
<tr>
<td>-------------------------</td>
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</tr>
<tr>
<td>0</td>
<td>S</td>
<td></td>
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</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal on bedrock.

Collected soil sample S001.

Backfilled with auger cuttings.

Comments: On slight slope, loose soil with sparse vegetation at surface, no debris

Well Comp. Date: N/A Completion Time: N/A

Samplers: Grab sample collected in 6-inch stainless steel sleeve

Soil Backfill Date: 06-30-2009 Backfill Time: 11:15

Boring ID: B1BS0094

Project: SSFL ISRA Sampling - Outfall 008 Area

Site: B-1 Area

Drilling Contractor: B.L. Hall

Field Instrumentation: N/A

Driller's Name: Paul Iler

On slight slope, loose soil with sparse vegetation at surface, no debris
**Boring ID: B1BS0096**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.5
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Northing (ft):** 269154.31
- **Easting (ft):** 1797084.22
- **Job Number:** 1891614
- **Site:** B-1 Area
- **Drill Start Date:** 06-30-2009
- **Start Time:** 11:46
- **Logged By:** A. Ruotolo
- **Drill Finish Date:** 06-30-2009
- **Finish Time:** 11:51
- **Driling Contractor:** B.L. Hall
- **Field Instrumentation:** N/A
- **Depth 1st H₂O (ft):** N/A
- **Date / Time:** N/A
- **Drill Rig Type/Method:** Hand Auger
- **Depth H₂O After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Driller's Name:** Paul Iler
- **Comments:** On slope, lose soil with vegetation and loose twigs at surface, no debris
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Sample:** Grab sample collected in 6-inch stainless steel sleeve
- **Soil Backfill Date:** 06-30-2009
- **Backfill Time:** 11:56

### Sample Interval

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Silt/Clay</td>
<td>Silty Sand, light yellowish brown (2.5Y 6/3), very loose, dry, trace sandstone fragments, no cementation, mica present [Native]</td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

### Est. % of Soil

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>tr</td>
<td>20</td>
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<td>25</td>
<td>30</td>
</tr>
</tbody>
</table>
Boring ID: B1BS0098

Borehole Diam. (in.): 3
Total Depth (ft): 5.0
Northing (ft): 1796841.91
Easting (ft): 269337.50
Drill Start Date: 01-27-2010
Start Time: 11:21
Logged By: C. Nevison
Reviewed By: B. Martasin, P.G. #8356
Drill Finish Date: 01-27-2010
Finish Time: 12:29
Drilling Contractor: Jacob & Hefner Assoc.
Field Instrumentation: PID
Depth 1st H₂O (ft): 4.5
Date / Time: N/A
Drill Rig Type/Method: Hand Auger
Depth H₂O After Drilling (ft): N/A
Date / Time: N/A
Driller's Name: H. Hunley

Comments: Dead leaves at bottom of drainage next to 3-ft-wide concrete swale

Sample Interval Retained Sample Type Recovery (%) Blow Count/6" PID (ppm) Water Level Depth (feet) Graphic Log

USCS Soil Classification

Description

<table>
<thead>
<tr>
<th>PID</th>
<th>Sample Type</th>
<th>Blown</th>
</tr>
</thead>
<tbody>
<tr>
<td>SM</td>
<td>S</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Silty Sand, dark brown (7.5YR 3/2), loose, moist [Native]
becomes dark yellowish brown (10YR 4/4), decrease in silt content
becomes wet

Total Depth = 5.0 ft; terminated due to water infiltration and saturated soil.
Collected soil samples S001 at 11:29 and S002 (from second boring) at 11:55.
Backfilled with soil cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.1</td>
<td>SM</td>
<td>0</td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, moist [Native]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>S</td>
<td>0.1</td>
<td></td>
<td>1</td>
<td>becomes dark yellowish brown (10YR 4/4), decrease in silt content</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>S</td>
<td>0.1</td>
<td></td>
<td>4</td>
<td>Total Depth = 4.3 ft; terminated due to water infiltration and saturated soil. Collected soil samples S001 at 13:09 and S002 at 13:35. Backfilled with soil cuttings.</td>
<td></td>
</tr>
<tr>
<td>Sample Interval Retained</td>
<td>Sample Type</td>
<td>Recovery (%)</td>
<td>Blow Count/6&quot;</td>
<td>Water Level</td>
<td>Depth (feet)</td>
<td>Graphic Log</td>
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</tbody>
</table>

Collected soil samples S001 at 08:38 and S002 at 09:12.
Backfilled with soil cuttings.
**Silty Sand, brown (7.5YR 4/4), loose, moist [Native] becomes dark yellowish brown (10YR 4/4), sand grades coarser, decrease in silt content, trace gravel-size sandstone fragments**

-Groundwater encountered at 3.3 ft. Water table elevation is 3.3 ft.

**Sandstone, weathered [Chatsworth Formation]**

-Total Depth = 3.5 ft; terminated due to refusal on bedrock.
-Collect soil samples S001 at 10:01 and S002 at 10:33.
-Backfilled with soil cuttings.
Silty Sand, dark brown (7.5YR 3/2), loose, moist, contains organics [Native]  
Sandstone, yellowish brown (10YR 5/4), hard, massive [Chatsworth Formation]  
Total Depth = 1.5 ft; terminated due to refusal on bedrock. Attempted step-out 3 ft to southwest and encountered bedrock at same depth.

Collected soil sample S001 at 07:55.

Backfilled with soil cuttings.
Boring ID: B1BS0102A

Borehole Diam. (in.): 3
Total Depth (ft): 3.8

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

Northing (ft): 1796810.84
Easting (ft): 269316.44

Job Number: 1008208
Site: B1-1 (North)

Drill Start Date: 03-02-2010
Start Time: 08:31
Logged By: C. Nevison

Drill Finish Date: 03-02-2010
Finish Time: 09:12
Reviewed By: C. Carter, P.G.

Drilling Contractor: Jacob & Hefner Assoc.

Depth 1st H₂O (ft): 3.8
Date / Time: 03-02-2010 09:12
Drill Rig Type/Method: Hand Auger

Depth H₂O After Drilling (ft): N/A
Date / Time: N/A

Driller's Name: K. Dubberke

Comments: Near bottom of drainage, leaves and heavy brush at surface

Easting (ft):
Start Time:
Finish Time:
Date / Time:
Date / Time:

Job Number:
Logged By:
Date:
Time:

 PID

Well Comp. Date: N/A
Completion Time: N/A

Sample Type: 6-inch stainless steel sleeve

Comments: Near bottom of drainage, leaves and heavy brush at surface

Total Depth = 3.8 ft; terminated due to water in borehole. Attempted step-out 4 ft to southeast; met refusal on bedrock at 1.5 ft, as at B1BS0102.

Collected soil sample S002 at 09:05.

Backfilled both locations with soil cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>100</td>
<td>N/A</td>
<td>110</td>
<td>1</td>
<td>1.00</td>
<td>Medium Sand</td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, moist, gravel consists of sandstone fragments [Stream Deposits]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>100</td>
<td>2</td>
<td>2.00</td>
<td>Medium Sand</td>
<td>Sandstone [Chatsworth Formation]</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>200</td>
<td>3</td>
<td>3.00</td>
<td>Medium Sand</td>
<td>Total Depth = 2.0 ft; terminated due to refusal on bedrock. Attempted step-out 3 ft to northeast and encountered water at 2.0 ft.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>300</td>
<td>4</td>
<td>4.00</td>
<td>Medium Sand</td>
<td>Collected soil sample S001 at 08:41.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>400</td>
<td>5</td>
<td>5.00</td>
<td>Medium Sand</td>
<td>Backfilled both borings with soil cuttings.</td>
</tr>
</tbody>
</table>

**Comments:** Bare soil at bottom of drainage

**Sampleers:** 6-inch stainless steel sleeve

**Boring ID:** B1BS0103

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Job Number:** 1008208

**Site:** B1-1 (North)
**Boring ID: B1BS0103A**

Borehole Diam. (in.): 3  Total Depth (ft): 5.0  Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
Northing (ft): 1796796.71  Easting (ft): 269313.61  Job Number: 1008208  Site: B1-1 (North)
Drill Start Date: 03-02-2010  Start Time: 09:40  Logged By: C. Nevison  Reviewed By: C. Carter, P.G.
Drill Finish Date: 03-02-2010  Finish Time: 10:25  Drilling Contractor: Jacob & Hefner Assoc.  Field Instrumentation: PID
Depth 1st H2O (ft): N/A  Date / Time: N/A  Drill Rig Type/Method: Hand Auger
Depth H2O After Drilling (ft): N/A  Date / Time: N/A  Driller’s Name: K. Dubberke

Comments: Bare soil on bank 3 ft northwest of B1BS0103

---

**Sample Interval** | **Retained** | **Sample Type** | **Sample Recovery (%)** | **Blow Count/6”** | **PID (ppm)** | **Water Level** | **USCS Soil Classification** | **Description** |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), loose, moist, contains fragments of sandstone and asphalt pavement [Fill]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, possibly weathered bedrock [Native]</td>
</tr>
</tbody>
</table>

Total Depth = 5.0 ft (second attempt); terminated prior to refusal on bedrock. First attempt, next to B1BS0103, encountered water at 2 ft. Stepped out 3 ft to northwest (2 ft higher up bank).

Collected soil sample S002 at 10:20.

Backfilled both locations with soil cuttings.
**LOG OF BORING OUTFALL009-2010.GPJ  BOEING.GDT  2/27/10**

**Boring ID: B1BS0104**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.5
- **Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
- **Notthing (ft):** 1796820.71
- **Easting (ft):** 269329.60
- **Job Number:** 1008208
- **Site:** B1-1 (North)
- **Drill Start Date:** 01-25-2010
- **Start Time:** 12:22
- **Logged By:** C. Nevison
- **Drill Finish Date:** 01-25-2010
- **Finish Time:** 12:38
- **Drilling Contractor:** B.L. Hall
- **Depth 1st H2O (ft):** N/A
- **Date / Time:** N/A
- **Flow:** N/A
- **Driller’s Name:** M. Hoehn
- **Depth H2O After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Drill Rig Type/Method:** Hand Auger
- **Comments:** Brush and leaves at bottom of drainage
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 01-25-2010
- **Backfill Time:** 12:41
- **Samplers:** 6-inch stainless steel sleeve
- **Sample Type:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
- **Blow Count/6”:** 0.1

### Sample Interval

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>0.1</td>
<td></td>
<td>SM</td>
<td></td>
<td></td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, wet, contains organics [Native]</td>
<td>10 70 20</td>
</tr>
</tbody>
</table>

**Total Depth = 0.5 ft; terminated due to refusal on asphalt/gunite swale. Stepped out 3 ft to north to lower point in drainage; encountered water at 0.5 ft.**

**Collected soil sample S001 at 12:28 at first location.**

**Backfilled both borings with soil cuttings.**
**Boring ID: B1BS0105**

**Borehole Diam. (in.):** 3
**Total Depth (ft):** 0.5
**Project:** SSFL ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1796810.84
**Easting (ft):** 269338.92
**Job Number:** 1008208
**Site:** B1-1 (North)

**Drill Start Date:** 01-25-2010
**Start Time:** 12:05
**Logged By:** C. Nevison
**Drilled By:** B. Martasin, P.G. #8356

**Drill Finish Date:** 01-25-2010
**Finish Time:** 12:09
**Reviewed By:** M. Hoehn

**Depth 1st H₂O (ft):** N/A
**Date / Time:** N/A
**Drill Rig Type/Method:** Hand Auger

**Depth H₂O After Drilling (ft):** N/A
**Date / Time:** N/A

**Date / Time:** 01-25-2010
**Comments:** Top slope of drainage, surface covered with weeds

**Sample Interval Retained**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.2</td>
<td></td>
</tr>
</tbody>
</table>

**PID**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Silty Sand, very dark brown (7.5YR 2.5/2), loose, moist [Native]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth = 0.5 ft; terminated prior to refusal on bedrock.**

**Collected soil sample S001 (hold) at 12:07.**

**Backfilled with soil cuttings.**

**Comments:** Top slope of drainage, surface covered with weeds
**Boring ID: B1BS0106**

**Borehole Diam. (in.):** 2-1/4  
**Easting (ft):** 289066.00  
**Drill Start Date:** 01-25-2010  
**Logged By:** S. Aichner  
**Job Number:** 1008208  
**Drill Rig Type/Method:** Geoprobe/Direct Push  
**Site:** B1-1 (South - Metals)  
**Northing (ft):** 1796860.37  
**Depth 1st H_2O (ft):** N/A  
**Finish Time:** 11:50  
**Date / Time:** N/A  
**Depth H_2O After Drilling (ft):** N/A  
**Sample Interval:** N/A  
**Easting:** N/A  
**Logged By:** B. Martasin, P.G. #8356  
**Date / Time:** 01-25-2010  
**Logged By:** S. Aichner  
**Task:** N/A  
**Date / Time:** N/A  

**Comments:** Hydroseeded native soil  
**Comments:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Comments:** Collected soil sample S001 at 11:40.  
**Comments:** Backfilled with soil cuttings topped off with hydrated bentonite.  

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), medium dense, moist, trace clay, micaceous [Native]</td>
<td>80 20</td>
</tr>
<tr>
<td></td>
<td>SP-SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, very pale brown (10YR 7/3), loose, moist, micaceous, possibly weathered sandstone [Native]</td>
<td>50 40 10</td>
</tr>
</tbody>
</table>

**Depth:** 2.0 ft; terminated due to refusal on bedrock.  
**Soil Backfill Date:** 01-25-2010  
**Backfill Time:** 12:00  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)  
**Offset:** 20  
**Job Number:** 1008208  
**Logged By:** B. Martasin, P.G. #8356  
**Reviewed By:** B. Martasin, P.G. #8356  
**Date / Time:** 01-25-2010  
**Logged By:** S. Aichner  
**Task:** N/A  
**Date / Time:** N/A  

**Graph Log:** LOG OF BORING OUTFALL009-2010.GPJ  
**Geoprobe/Direct Push:** BOEING.GDT  
**2/27/10**  
**Field Instrumentation:** PID  
**Sample Type:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Sample Interval:** N/A  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  

**Depth (feet):** 2.0  
**Sample Type:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Sample Interval:** N/A  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Depth:** 2.0 ft; terminated due to refusal on bedrock.  
**Soil Backfill Date:** 01-25-2010  
**Backfill Time:** 12:00  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  

**Comments:** Hydroseeded native soil  
**Comments:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Comments:** Collected soil sample S001 at 11:40.  
**Comments:** Backfilled with soil cuttings topped off with hydrated bentonite.  

**Comments:** Hydroseeded native soil  
**Comments:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Comments:** Collected soil sample S001 at 11:40.  
**Comments:** Backfilled with soil cuttings topped off with hydrated bentonite.  

**Comments:** Hydroseeded native soil  
**Comments:** Macrocore, discrete sample retained in 6-inch stainless steel sleeve  
**Comments:** Collected soil sample S001 at 11:40.  
**Comments:** Backfilled with soil cuttings topped off with hydrated bentonite.
## Boring ID: B1BS0107

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>USC Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.2</td>
<td></td>
<td></td>
<td>Silty Sand, brown (7.5YR 4/4), medium dense, moist trace clay, micaceous [Native]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S</td>
<td>0.3</td>
<td></td>
<td>80</td>
<td>Sandstone [Chatsworth Formation]</td>
<td></td>
</tr>
</tbody>
</table>

- **Total Depth (ft):** 4.0 ft; terminated due to refusal on bedrock.
- **Collected soil samples S001 at 12:20 and S002 at 12:30.**
- **Backfilled with soil cuttings topped off with hydrated bentonite.**
<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blowing Count (ppm)</th>
<th>Water Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>S</td>
<td>0.0</td>
<td>0.0</td>
<td>SM</td>
</tr>
<tr>
<td>0.1</td>
<td>S</td>
<td>0.1</td>
<td>0.1</td>
<td>SM</td>
</tr>
</tbody>
</table>

**Description**

- Silty Sand, brown (10YR 4/3), medium dense, moist, trace clay, micaceous [Native]
- Becomes brown (7.5YR 4/4), no clay

**Sandy Sand, brown (10YR 4/3), medium dense, moist, trace clay, micaceous [Native]**

**Sandstone [Chatsworth Formation]**

Total Depth = 13.5 ft; terminated due to refusal on bedrock.

Collected soil samples S001 at 12:50 and S002 at 13:00.

Backfilled with soil cuttings topped off with hydrated bentonite.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (feet)</td>
<td>Graphic Log</td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark brown (10YR 3/3), medium dense, moist, trace clay, micaceous [Native]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 6.0 ft; terminated prior to refusal on bedrock.

Collected soil samples S001 at 13:45 and S002 at 13:55.

Backfilled with soil cuttings topped off with hydrated bentonite.
Boring ID: B1BS0110

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
Job Number: 1008208
Site: B1-1 (South - Metals)
Logged By: C. Nevison
Reviewed By: B. Martasin, P.G. #8356

Well Comp. Date: N/A
Completion Time: N/A

Log of Boring: OUTFALL009-2010.GPJ BOEING.GDT 2/27/10

Comments: Relatively flat area covered with brush and weeds

Driller's Name: H. Hunley

Start Time: 08:30
Finish Time: 08:48
Drilling Contractor: Jacob & Hefner Assoc.
Field Instrumentation: PID

Sample Interval: 6-inch stainless steel sleeve

Summary:

**Depth (feet)**

<table>
<thead>
<tr>
<th>Water Level</th>
<th>Graphic Log</th>
<th>Depth (feet)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3.0</td>
<td>SM</td>
<td>0.2</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), loose, moist [Native]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>becomes brown (10YR 4/3), increase in silt content</td>
</tr>
<tr>
<td>-2.2</td>
<td>SM</td>
<td>0.0</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, decrease in silt content</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>becomes dark yellowish brown (10YR 4/4), medium dense, decrease in silt content</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5.0</td>
<td>Total Depth = 5.0 ft; terminated prior to refusal on bedrock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collected soil samples S001 at 08:33 and S002 at 08:48.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>tr</td>
<td>tr</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Boring ID:** B1BS0111

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Site:** B1-1 (South - Dioxins)

**Logged By:** A. Ruotolo

**Reviewed By:** B. Martasin, P.G. #8356

**Comments:** Burnt vegetation, rocks, and metal debris at surface; removed 1 in. of topsoil.

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>SW-SM</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6-inch stainless steel sleeve</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

**Depth:** 0.5 ft

**Graphic Log:**

- Total Depth = 0.5 ft; terminated prior to refusal on bedrock.
- Collected soil sample S001 at 08:49.
- Backfilled with soil cuttings.
**Boring ID: B1BS0112**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td>SW</td>
<td>Well Graded Sand, very dark grayish brown (10YR 3/2), loose, moist, contains rootlets, mica [Native]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 08:33.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

**Comments:** In drainage filled with dead vegetation debris

Well Comp. Date: N/A  Completion Time: N/A

samplers: 6-inch stainless steel sleeve

Soil Backfill Date: 01-28-2010  Backfill Time: 08:37
<table>
<thead>
<tr>
<th>Sample</th>
<th>Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>S</td>
<td>0.0</td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, very dark grayish brown (10YR 3/2), loose, moist, contains rootlets, mica [Native]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, yellowish brown (10YR 5/6), weathered, contains quartz, feldspar, and biotite [Chatsworth Formation]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil samples S001 at 08:53 and duplicate D001 at 08:56.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Boring ID: B1BS0114

Borehole Diam. (in.): 3
Total Depth (ft): 4.5
Northing (ft): 1797022.13
Easting (ft): 269114.17
Drill Start Date: 02-09-2010
Start Time: 08:55
Logged By: C. Nevison
Drill Finish Date: 02-09-2010
Finish Time: 09:05
Logged By: C. Nevison

Drill Rig Type/Method: Hand Auger
Field Instrumentation: PID

Easting (ft): 269114.17
Start Time: 08:55
Date / Time: N/A
Depth 1st H₂O (ft): 3 ½
Date / Time: N/A
Depth H₂O After Drilling (ft): N/A
Date / Time: N/A

Job Number: 1008208
Site: B1-1 (South - Dioxins)
Logged By: C. Nevison
Reviewed By: B. Martasin, P.G. #8356

Comments: Grass and vegetation at surface

Well Comp. Date: N/A
Completion Time: N/A
Sampled: 6-inch stainless steel sleeve

Soil Backfill Date: 02-09-2010
Backfill Time: 09:05

B1-1 (South - Dioxins)

Depth (feet)
Sample Interval
Retained
Sample Type
Recovery (%)
Blow Count/6"
PID (ppm)
Water Level
Depth (feet)

SM
Silty Sand, dark grayish brown (10YR 4/2), moist [Native]

becomes wet

Est. % of Soil

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>65</td>
<td>30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

Sandstone [Chatsworth Formation]

Total Depth = 4.5 ft; terminated due to refusal on bedrock.

Collected soil sample S001 at 08:56.

Backfilled with soil cuttings.
**Boring ID: B1BS0115**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SW</td>
<td>0.0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Well Graded Sand, yellowish brown (10YR 5/8), medium dense, moist, mica present [Native]</td>
<td></td>
<td>30 40 25 5</td>
</tr>
</tbody>
</table>

- Sandstone, brownish yellow (10YR 6/8), highly weathered, contains quartz, feldspar, and biotite grains [Chatsworth Formation]
- Total Depth = 0.5 ft; terminated due to refusal on bedrock.
- Collected soil sample S001 at 14:07.
- Backfilled with soil cuttings.

**Comments:** Loose vegetation debris at surface
Boring ID: B1BS0116

Borehole Diam. (in.): 3
Total Depth (ft): 0.5

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
Job Number: 1008208
Site: B1-1 (South - Dioxins)
Logged By: A. Ruotolo
Reviewed By: B. Martasin, P.G. #8356

Northing (ft): 1797095.61
Easting (ft): 269155.07
Start Time: 09:39
Finish Time: 09:45

Drill Start Date: 01-28-2010
Drill Finish Date: 01-28-2010
Drilling Contractor: B.L. Hall
Field Instrumentation: PID

Depth 1st H₂O (ft): N/A
Date / Time: N/A
Drill Rig Type/Method: Hand Auger and Slam Bar

Depth H₂O After Drilling (ft): N/A
Date / Time: N/A
Driller’s Name: M. Hoehn / R. Cano

Date / Time: 01-28-2010

Comments: In drainage, surface covered with dry, loose vegetation, partially charred

Sample Interval Retained
Sample Type Recovery (%) Blow Count/6” PID (ppm) Water Level Depth (feet) Graphic Log USCS Soil Classification

0 1 2 3 4 5 6 7 8 9 10

1

SM

Silty Sand, very dark brown (10YR 2/2) mottled with light yellowish brown (10YR 6/4), medium dense, moist, trace clay, trace rootlets [Native]

Total Depth = 0.5 ft; terminated prior to refusal on bedrock.
Collected soil sample S001 at 09:41.
Backfilled with soil cuttings.

Est. % of Soil
Gravel Coarse Sand Med. Sand Fine Sand Sil/Clay

5 20 30 30 15

Soil Backfill Date: 01-28-2010
Backfill Time: 09:45

Well Comp. Date: N/A
Completion Time: N/A

Samplers: 6-inch stainless steel sleeve

In drainage, surface covered with dry, loose vegetation, partially charred
### MWH

**Boring ID:** B1BS0117

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blown Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td>SW</td>
<td>Med. Sand</td>
<td>Well Graded Sand, yellowish brown (10YR 5/6), medium dense, moist, mica present [Native]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1.0</td>
<td>SW</td>
<td>Coarse Sand</td>
<td>Sandstone, brownish yellow (10YR 6/6), highly weathered, contains quartz, feldspar, and biotite grains [Chatsworth Formation]</td>
</tr>
</tbody>
</table>

**Comments:** Sparsely vegetated surface

**Sampleers:** 6-inch stainless steel sleeve

**Well Comp. Date:** N/A

**Completion Time:** N/A

**Soil Backfill Date:** 01-27-2010

**Backfill Time:** 14:33

- **Total Depth (ft):** 0.5
- **Terminated due to refusal on bedrock.**
- **Collected soil sample S001 at 14:28.**
- **Backfilled with soil cuttings.**
**Boring ID: B1BS0118**

**Borehole Diam. (in.): 3**

**Northing (ft):** 1797088.43  **Easting (ft):** 269098.70  **Total Depth (ft):** 0.5

**Job Number:** 1008208  **Logged By:** A. Ruotolo  **Reviewed By:** B. Martasin, P.G. #8356

**Site:** B1-1 (South - Dioxins)  **Drill Rig Type/Method:** Hand Auger

**Drill Start Date:** 01-27-2010  **Start Time:** 09:26  **Drill Finish Date:** 01-27-2010  **Finish Time:** 09:33

**Logged By:** A. Ruotolo  **Field Instrumentation:** N/A

**Site:** N/A  **Logged By:** A. Ruotolo  **Field Instrumentation:** N/A

**Depth H₂O (ft):** N/A  **Date / Time:** N/A  **Driller's Name:** M. Hoehn / R. Cano

**Drill Rig Type/Method:** Hand Auger  **Reviewed By:** B. Martasin, P.G. #8356

**Comments:** Fresh vegetation partially covering surface

**Sample Type:** 6-inch stainless steel sleeve  **Well Comp. Date:** N/A  **Completion Time:** N/A

**Soil Backfill Date:** 01-27-2010  **Backfill Time:** 09:33

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Drilling Contractor:** B.L. Hall

**Sample Interval:**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td>S</td>
<td></td>
<td></td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, brown (10YR 5/3) mottled with light yellowish brown (10YR 6/4), medium dense, moist, contains vegetation debris [Native]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, pale yellow (2.5Y 7/4), weathered, contains quartz, feldspar, and mica [Chatsworth Formation]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 09:27.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Level</th>
<th>PID (ppm)</th>
<th>Blow Count/6”</th>
<th>Recovery (%)</th>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 10</td>
<td></td>
<td></td>
<td></td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, brown (10YR 5/3) mottled with light yellowish brown (10YR 6/4), medium dense, moist, contains vegetation debris [Native]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10</td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, pale yellow (2.5Y 7/4), weathered, contains quartz, feldspar, and mica [Chatsworth Formation]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10</td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10</td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 09:27.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 10</td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>tr</td>
<td>20</td>
<td>40</td>
<td>30</td>
<td>10</td>
</tr>
</tbody>
</table>
Boring ID: B1BS0119

Borehole Diam. (in.): 3
Total Depth (ft): 0.5

Easting (ft): 269078.95

Nortthing (ft): 1797076.58

Drill Start Date: 01-27-2010
Start Time: 09:52

Finish Time: 09:58

Date / Time: 01-27-2010

Logged By: A. Ruotolo

Drilling Contractor: B.L. Hall

Depth 1st H₂O (ft): N/A

Date / Time: N/A

Logged By: A. Ruotolo

Drill Rig Type/Method: Hand Auger

Date / Time: N/A

Logged By: A. Ruotolo

Driller's Name: M. Hoehn / R. Cano

Date / Time: N/A

Logged By: A. Ruotolo

Driller's Name: M. Hoehn / R. Cano

Comments: Grass surface

Well Comp. Date: N/A

Completion Time: N/A

Samplers: 6-inch stainless steel sleeve

Soil Backfill Date: 01-27-2010

Backfill Time: 09:58

Water Level Retained

Sample Interval Sample Type Recovery (%) Blow Count/6” PID (ppm) Water Level Depth (feet) Graphic Log

SM Silty Sand, very dark grayish brown (10YR 3/2), medium dense, moist, contains vegetation debris, mica [Native]

Est. % of Soil

Gravel Coarse Sand Med. Sand Fine Sand Silt/Clay

Grassy surface

Sheet 1 of 1

LOG OF BORING OUTFALL009-2010.GPJ  BOEING.GDT  2/27/10

SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

0.53

B1BS0119

Total Depth = 0.5 ft; terminated prior to refusal on bedrock.

Collected soil sample S001 at 09:53.

Backfilled with soil cuttings.
**LOG OF BORING OUTFALL009-2010.GPJ  BOEING.GDT  2/27/10**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SP</td>
<td>3.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand, very dark gray (10YR 3/1) mottled with yellowish brown (10YR 5/4), medium dense, moist to locally wet, contains roots and rootlets [Native]</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** On steep, moderately vegetated slope across from small pile of dead twigs

**Well Comp. Date:** N/A  **Completion Time:** N/A

**Borehole Diam. (in.):** 3  **Total Depth (ft):** 0.5

**North (ft):** 1797064.01  **Easting (ft):** 269107.31

**Drill Start Date:** 01-27-2010  **Start Time:** 12:54

**Drill Finish Date:** 01-27-2010  **Finish Time:** 13:00

**Logged By:** A. Ruotolo  **Drill Rig Type/Method:** Hand Auger

**Job Number:** 1008208  **Driller's Name:** M. Hoehn / R. Cano

**Job Number:** 01-27-2010  **Backfill Time:** 13:02

**Site:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)  **Reviewed By:** B. Martasin, P.G. #8356

**Water Level:** Retained

**Sample Type:** Blow Count/6"  **Recovery (%):** 30  **Gravel:** 50  **Coarse Sand:** 15  **Med. Sand:** 5  **Fine Sand:** 5  **Silt/Clay:**

**Total Depth (ft):** 0.5 ft; terminated prior to refusal on bedrock.

Collected soil sample S001 at 12:57.

Backfilled with soil cuttings.
**Boring ID: B1BS0121**

<table>
<thead>
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<th>Borehole Diam. (in.):</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Depth (ft):</td>
<td>0.5</td>
</tr>
<tr>
<td>Project:</td>
<td>SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)</td>
</tr>
<tr>
<td>Northing (ft):</td>
<td>1796955.94</td>
</tr>
<tr>
<td>Easting (ft):</td>
<td>269092.59</td>
</tr>
<tr>
<td>Job Number:</td>
<td>1008208</td>
</tr>
<tr>
<td>Site:</td>
<td>B1-1 (South - Dioxins)</td>
</tr>
<tr>
<td>Drill Start Date:</td>
<td>01-27-2010</td>
</tr>
<tr>
<td>Start Time:</td>
<td>13:17</td>
</tr>
<tr>
<td>Logged By:</td>
<td>A. Ruotolo</td>
</tr>
<tr>
<td>Reviewee By:</td>
<td>B. Martasin, P.G. #8356</td>
</tr>
<tr>
<td>Drill Finish Date:</td>
<td>01-27-2010</td>
</tr>
<tr>
<td>Finish Time:</td>
<td>13:24</td>
</tr>
<tr>
<td>Drilling Contractor:</td>
<td>B.L. Hall</td>
</tr>
<tr>
<td>Field Instrumentation:</td>
<td>PID</td>
</tr>
<tr>
<td>Depth 1st H₂O (ft):</td>
<td>N/A</td>
</tr>
<tr>
<td>Date / Time:</td>
<td>N/A</td>
</tr>
<tr>
<td>Drill Rig Type/Method:</td>
<td>Hand Auger</td>
</tr>
<tr>
<td>Depth H₂O After Drilling (ft):</td>
<td>N/A</td>
</tr>
<tr>
<td>Date / Time:</td>
<td>N/A</td>
</tr>
<tr>
<td>Driller's Name:</td>
<td>M. Hoehn / R. Cano</td>
</tr>
<tr>
<td>Comments:</td>
<td>Heavily vegetated area, water at surface about 5 ft down gradient</td>
</tr>
<tr>
<td>Well Comp. Date:</td>
<td>N/A</td>
</tr>
<tr>
<td>Completion Time:</td>
<td>N/A</td>
</tr>
<tr>
<td>Sampled:</td>
<td>6-inch stainless steel sleeve</td>
</tr>
<tr>
<td>Soil Backfill Date:</td>
<td>01-27-2010</td>
</tr>
<tr>
<td>Backfill Time:</td>
<td>13:24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand, brown (10YR 4/3), medium dense, wet, mica present [Native]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 13:19.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
</tr>
<tr>
<td>40</td>
</tr>
</tbody>
</table>
**Boring ID: B1BS0122**

**Borehole Diam. (in.):** 3
**Total Depth (ft):** 0.5

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Job Number:** 1008208
**Site:** B1-1 (South - Dioxins)

**Logged By:** A. Ruotolo
**Reviewed By:** B. Martasin, P.G. #8356

**Drill Start Date:** 01-28-2010
**Start Time:** 08:01

**Drill Finish Date:** 01-28-2010
**Finish Time:** 08:09

**Drilling Contractor:** B.L. Hall
**Field Instrumentation:** PID

**Depth H₂O After Drilling (ft):** N/A
**Date / Time:** N/A

**Drill Rig Type/Method:** Hand Auger and Slam Bar

**Comments:** Charred vegetation at surface, top 1 in. scraped away prior to sampling

**Sample Interval**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>PID (ppm)</th>
<th>Graphic Log</th>
<th>SW-SM</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Well Graded Sand with Silt, dark brown (10YR 3/3), loose, moist, contains roots and rootlets [Native]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, yellowish brown (10YR 5/8), highly weathered, contains quartz, feldspar, and biotite grains [Chatsworth Formation]</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 08:01.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

**Well Comp. Date:** N/A
**Completion Time:** N/A

**Soil Backfill Date:** 01-28-2010
**Backfill Time:** 08:09

**Sample Type:** 6-inch stainless steel sleeve

**Charred vegetation at surface, top 1 in. scraped away prior to sampling**
**LOG OF BORING OUTFALL009-2010**

**Boring ID:** B1BS0123

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, brown (10YR 4/3), medium dense, moist, mica present [Native]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock. Collected soil sample S001 at 08:15. Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

**Borehole Diam. (in.):** 3

**Total Depth (ft):** 0.5

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Job Number:** 1008208

**Site:** B1-1 (South - Dioxins)

**Logged By:** A. Ruotolo

**Reviewed By:** B. Martasin, P.G. #8356

**Drill Rig Type/Method:** Hand Auger

**Comments:** Hydromulched surface, top 1 in. scraped away prior to sampling

**Well Comp. Date:** N/A

**Completion Time:** N/A

**Recorded By:** M. Hoehn / R. Cano

**Dates:**
- **Drill Start Date:** 01-27-2010
- **Drill Finish Date:** 08:23
- ** completion time:** N/A
- **Backfill Time:** 08:24

**Log Included:**
- **Sheet 1 of 1**
### LOG OF BORING OUTFALL009-2010.GPJ  BOEING.GDT  2/27/10

**Boring ID: B1BS0124**

<table>
<thead>
<tr>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandstone, weathered [Chatsworth Formation]</td>
<td>gravel</td>
</tr>
<tr>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
<td>coarse sand</td>
</tr>
<tr>
<td>Collected soil sample S001 at 08:36.</td>
<td>med. sand</td>
</tr>
<tr>
<td>Backfilled with soil cuttings.</td>
<td>fine sand</td>
</tr>
<tr>
<td>Well Graded Sand with Silt, dark yellowish brown (10YR 4/4), medium dense, moist, trace vegetation debris [Native]</td>
<td>silt/clay</td>
</tr>
</tbody>
</table>

- **Total Depth (ft):** 0.5
- **Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
- **Site:** B1-1 (South - Dioxins)
- **Job Number:** 1008208
- **Logged By:** A. Ruotolo
- ** Reviewed By:** B. Martasin, P.G. #8356

**Sample Interval**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Sample Interval</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW-SM</td>
<td>0.0</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Well Graded Sand with Silt, dark yellowish brown (10YR 4/4), medium dense, moist, trace vegetation debris [Native]</td>
</tr>
</tbody>
</table>

**Comments:** Burnt vegetation and rocks nearby, top 1-2 in. removed prior to sampling

- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Backfill Time:** 08:41

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Drill Start Date:** 01-27-2010

**Drill Finish Date:** 01-27-2010

**Depth 1st H₂O (ft):** N/A

**Depth H₂O After Drilling (ft):** N/A

**Easting (ft):** 269227.59

**Start Time:** 08:35

**Finish Time:** 08:41

**Logged By:** A. Ruotolo

**Drilling Contractor:** B.L. Hall

**Field Instrumentation:** PID

**Well Comp. Date:** N/A

**Soil Backfill Date:** 01-27-2010

**Backfill Time:** 08:41

**Driller's Name:** M. Hoehn / R. Cano

**Borehole Diam. (in.):** 3

**Total Depth (ft):** 0.5

**Easting (ft):** 269227.59

**Logged By:** A. Ruotolo

**Reviewed By:** B. Martasin, P.G. #8356

**Date / Time:** 01-27-2010

**Date / Time:** 01-27-2010

**Date / Time:** N/A

**Date / Time:** N/A

**Comments:** Burnt vegetation and rocks nearby, top 1-2 in. removed prior to sampling
**Boring ID: B1BS0125**

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 0.5  
**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1797111.41  
**Easting (ft):** 269015.04  
**Job Number:** 1008208  
**Site:** B1-1 (South - Dioxins)

**Drill Start Date:** 01-27-2010  
**Start Time:** 13:41  
**Logged By:** A. Ruotolo  
**Reviewed By:** B. Martasin, P.G. #8356

**Drill Finish Date:** 01-27-2010  
**Finish Time:** 13:48  
**Drilling Contractor:** B.L. Hall  
**Field Instrumentation:** PID

**Depth 1st H₂O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Auger

**Depth H₂O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller's Name:** M. Hoehn / R. Cano

**Comments:** Within small grassy drainage, water ponding at surface 2 ft down gradient  
**Well Comp. Date:** N/A  
**Completion Time:** N/A

**Sample Interval Retained**  
**Sample Type**  
**Recovery (%)**  
**Blow Count/6”**  
**PID (ppm)**  
**Water Level**  
**Depth (feet)**  
**Graphic Log**  
**USCS Soil Classification**  
**Description**  
**Est. % of Soil**  

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td>Poorly Graded Sand, very dark brown (10YR 2/2), medium dense, moist, contains rootlets, mica [Native]</td>
<td>20</td>
<td>40</td>
<td>35</td>
<td>5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sandstone, yellowish brown (10YR 5/8), weathered, contains quartz, feldspar, and abundant biotite grains [Chatsworth Formation]

Total Depth = 0.5 ft; terminated due to refusal on bedrock.

Collected soil sample S001 at 13:43.

Backfilled with soil cuttings.
**Boring ID: B1BS0126**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td>N/A</td>
<td>SW</td>
<td></td>
<td>Well Graded Sand, brown (10YR 4/3), medium dense, moist, mica present [Native]</td>
<td></td>
<td>30 30 35 5</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal on bedrock.</td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td></td>
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<td></td>
<td></td>
<td>Collected soil sample S001 at 10:18.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MWH

**Boring ID: B1BS0127**

<table>
<thead>
<tr>
<th>Borehole Diam. (in):</th>
<th>3</th>
<th>Total Depth (ft):</th>
<th>3.0</th>
</tr>
</thead>
</table>

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1797051.92  
**Easting (ft):** 269156.58  
**Job Number:** 1008208  
**Site:** B1-1 (South - Dioxins)

**Drill Start Date:** 02-09-2010  
**Start Time:** 09:10  
**Logged By:** C. Nevison

**Drill Finish Date:** 02-09-2010  
**Finish Time:** 09:19  
**Drilling Contractor:** Jacob & Hefner Assoc.

**Depth 1st H₂O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Auger

**Depth H₂O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller's Name:** H. Hunley

**Comments:** On steep slope devoid of vegetation

---

**Water Level**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID Count (ppm)</th>
<th>Water Level (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.1</td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand with Gravel, dark yellowish brown (10YR 4/4), loose, moist, possibly reworked soil</td>
</tr>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>5</td>
<td>20</td>
<td>30</td>
<td>25</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

Total Depth = 3.0 ft; terminated due to refusal on gravel or cobbles, not bedrock. Attempted two step-outs and met similar refusal at 2 to 3 ft.

Collected soil sample S001 at 09:11.

Backfilled with soil cuttings.
Boring ID: B1BS0128

Borehole Diam. (in.): 3
Total Depth (ft): 1.0

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

Northing (ft): 1797088.69
Easting (ft): 269222.63

Job Number: 1008208
Site: B1-1 (South - Dioxins)

Drill Start Date: 02-09-2010
Start Time: 09:26
Logged By: C. Nevison
Reviewed By: B. Martasin, P.G. #8356

Drill Finish Date: 02-09-2010
Finish Time: 09:51
Drilling Contractor: Jacob & Hefner Assoc.
Field Instrumentation: PID

Depth 1st H₂O (ft): N/A
Date / Time: N/A
Drill Rig Type/Method: Hand Auger

Depth H₂O After Drilling (ft): N/A
Date / Time: N/A
Driller’s Name: H. Hunley

Comments: Bare soil with sparse grass at surface

Well Comp. Date: N/A
Completion Time: N/A

Samplers: 6-inch stainless steel sleeve

Soil Backfill Date: 02-09-2010
Backfill Time: 09:51

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist [Native]</td>
<td>10 15 20 30 25</td>
</tr>
<tr>
<td>1</td>
<td>Sandstone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Sandstone [Chatsworth Formation]</td>
<td>Total Depth = 1.0 ft; terminated due to refusal on bedrock. Attempted two step-outs, to west and to north of first boring; both met shallow refusal. Collected soil sample S001 at 09:27. Backfilled all borings with soil cuttings.</td>
</tr>
<tr>
<td>2</td>
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</table>

LOG OF BORING OUTFALL009-2010.GPJ BOEING.GDT 2/27/10
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SP</td>
<td>Poorly Graded Sand, very dark brown (10YR 2/2) mottled with light yellowish brown (10YR 6/4), medium dense, moist, contains rootlets, mica [Native]</td>
<td></td>
</tr>
</tbody>
</table>

- Sandstone, pale brown (10YR 6/3), weathered, contains quartz, feldspar, and mica [Chatsworth Formation]  
- Total Depth = 0.5 ft; terminated due to refusal on bedrock.  
- Collected soil sample S001 at 10:45.  
- Backfilled with soil cuttings.
**Boring ID: B1BS0130**

### Borehole Details
- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.5
- **Northing (ft):** 1797205.86
- **Easting (ft):** 269006.76
- **Drill Finish Date:** 01-27-2010
- **Drop Finish Date:** 01-27-2010
- **Date / Time:** 11:11
- **Date / Time:** 11:17
- **Logged By:** A. Ruotolo
- **Drilling Contractor:** B.L. Hall

### Soil Type and Description
- **Sample Interval:** 0.0
- **Sample Type:** S
- **Recovery (%):** 0.0
- **Description:** Poorly Graded Sand with Silt, very dark grayish brown (10YR 3/2), medium dense, moist, contains rootlets, mica [Native]

### Soil Classification
<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>SP-SM</td>
<td>N/A</td>
<td>N/A</td>
<td>Med. Sand</td>
<td>Poorly Graded Sand with Silt, very dark grayish brown (10YR 3/2), medium dense, moist, contains rootlets, mica [Native]</td>
</tr>
</tbody>
</table>

- **Water Level:** N/A
- **PID (ppm):** N/A
- **Blow Count/6":** N/A
- **Recovery (%)**

- **Collected soil sample S001 at 11:12.**
- **Backfilled with soil cuttings.**

### Additional Details
- **B1-1 (South - Dioxins)**
- **Job Number:** 1008208
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 01-27-2010
- **Backfill Time:** 11:17
- **Comments:** In grassy area

---

**SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)**

**Log of Boring Outfall 009 2010 GP**

**MWH**

**Sheets 1 of 1**
Boring ID: B1BS0147

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Blown Count/6&quot;</th>
<th>PID</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, very dark grayish brown (10YR 3/2)</td>
</tr>
</tbody>
</table>

**Comments:** Gravel and sand in bottom of drainage

**Total Depth (ft):** 1.0

**Comments:**
- Total Depth = 1.0 ft (fourth attempt); terminated due to refusal on bedrock.
- First attempt met refusal on concrete swale. Second attempt, 4 ft to north, encountered concrete swale on side of embankment. Third attempt, 4 ft to south, met shallow refusal on sandstone.
- Collected soil sample S001 at 11:05.
- Backfilled all locations with soil cuttings.
**Boring ID: B1BS0148**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Interval</th>
<th>USCS Soil Classification</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>Water Level</th>
<th>PID (ppm)</th>
<th>Graphic Log</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>SM</td>
<td>0.0</td>
<td></td>
<td>Retained</td>
<td></td>
<td></td>
<td>Silty Sand, very dark grayish brown (10YR 3/2), loose, moist [Sediment]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated due to refusal on rip-rap in culvert.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected sediment sample S001 at 11:40.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No backfill required.</td>
</tr>
</tbody>
</table>

Comments: Asphalt and concrete rip-rap on steep bank under 12-in. culvert pipe

No backfill required.
**Boring ID: B1BS0149**

Borehole Diam. (in.): 3
Total Depth (ft): 0.8

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

Northing (ft): 1797216.87
Easting (ft): 269048.12

Job Number: 1008208
Site: B1-1 (South - Dioxins)

Drill Start Date: 03-02-2010
Start Time: 13:40
Logged By: J. Wokurka

Drill Finish Date: 03-02-2010
Finish Time: 13:50
Drilling Contractor: B.L. Hall

Depth 1st H2O (ft): N/A
Date / Time: N/A
Drill Rig Type/Method: Hand Auger

Depth H2O After Drilling (ft): N/A
Date / Time: N/A
Driller's Name: M. Hoehn

Comments: On slope above former building pad, bare soil surface

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>SM</th>
<th>USCS Soil Classification</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, very dark gray (10YR 3/1), loose, moist, no staining or odor [Alluvium/Colluvium]</td>
<td>60 40</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sandstone, brown (10YR 5/3), moist, weathered, moderately hard, friable [Chatsworth Formation]</td>
<td>5 65 30</td>
</tr>
<tr>
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<td></td>
<td>Total Depth = 0.8 ft; terminated due to refusal on bedrock.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Collected soil sample S001.</td>
<td></td>
</tr>
<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

Well Comp. Date: N/A
Completion Time: N/A

Samplers: 6-inch stainless steel sleeve

Soil Backfill Date: 03-02-2010
Backfill Time: 13:50

Driller's Name: M. Hoehn

Drill Rig Type/Method: Hand Auger
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SP-SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand with Silt, very dark gray (10YR 3/1), loose, wet, no staining or odor [Alluvium/Colluvium]</td>
<td>10 80 10</td>
<td></td>
</tr>
</tbody>
</table>

- **Total Depth:** 0.5 ft; terminated due to standing water in boring.
- Collected soil sample S001.
- Backfilled with soil cuttings.

**Comments:** On slope above former building pad, bare soil surface.
**Boring ID: B1BS0151**

**Site:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Job Number:** 1008208

**Logged By:** J. Wokurka

**Reviewed By:** C. Carter, P.G.

**Drill Rig Type/Method:** Hand Auger

**Driller's Name:** M. Hoehn

**Sample Interval Retained:** 6-inch stainless steel sleeve

**Comments:** On slope above former building pad, bare soil surface

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>USCS Soil Classification</th>
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<tbody>
<tr>
<td>0</td>
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<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, very dark gray (10YR 3/1), loose to wet, no staining or odor [Alluvium/Colluvium]</td>
</tr>
<tr>
<td>1</td>
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<td>10</td>
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<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Total Depth (ft):** 2.5

**Depth 1st H2O:** 2.5

**Date / Time:** 03-02-2010 13:40

**Drill Start Date:** 03-02-2010

**Start Time:** 13:15

**Finish Time:** 13:40

**Depth H2O After Drilling (ft):** N/A

**Date / Time:** N/A

**Start Time:** 13:15

**Finish Time:** 13:40

**Field Instrumentation:** N/A

**Drilling Contractor:** B.L. Hall

**Comments:** Water seepage into boring

**Total Depth = 2.5 ft; terminated due to standing water in boring.**

**Collected soil sample S001.**

**Backfilled with soil cuttings.**
### Boring ID: B1BS0152

**Borehole Diam. (in.):** 3

**Total Depth (ft):** 2.5

**Northing (ft):** 1797083.42

**Easting (ft):** 269045.64

**Drill Start Date:** 03-02-2010

**Drill Finish Date:** 03-02-2010

**Job Number:** 1008208

**Logged By:** J. Wokurka

**Drilling Contractor:** B.L. Hall

**Driller's Name:** M. Hoehn

**Site:** B1-1 (South - Dioxins)

**Field Instrumentation:** PID

**Comments:** On slope above former building pad, bare soil surface

**Soil Backfill Date:** 03-02-2010

**Backfill Time:** NR

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
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<tbody>
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<td>0</td>
<td>S</td>
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<td>SM</td>
<td>Silty Sand, very dark gray (10YR 3/1), medium dense, moist, no staining or odor [Alluvium/Colluvium]</td>
</tr>
<tr>
<td>1</td>
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</tr>
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<td>2</td>
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<td></td>
<td></td>
<td></td>
<td>Silty Sandstone, pale brown (10YR 6/3), moist, weathered, moderately hard, friable [Chatsworth Formation]</td>
</tr>
<tr>
<td>2.5</td>
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<td></td>
<td></td>
<td></td>
<td>Total Depth = 2.5 ft; terminated due to refusal on bedrock.</td>
</tr>
<tr>
<td>3</td>
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<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td>4</td>
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<td></td>
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<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

**PID (ppm):** 5

**SSFL - ISRA Gap Sampling 2010 (Outfall 009 Area)**

**Sample Type:** 6-inch stainless steel sleeve

**Job Number:** S001

**Boring Outfall 009-2010.GPJ  BOEING.GDT  3/28/10**
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, dark grayish brown (10YR 4/2), loose, moist, no staining or odor</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>Silt/Clay</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sandstone, brown (10YR 5/3), moist, weathered, hard, friable</td>
<td>Total Depth = 0.5 ft; terminated due to refusal on bedrock.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>
Boring ID: B1BS0154

Borehole Diam. (in.): 3
Total Depth (ft): 3.0

Northing (ft): 1796977.83
Easting (ft): 269125.92

Drill Start Date: 03-02-2010
Start Time: 10:00

Logged By: J. Wokurka
Reviewed By: C. Carter, P.G.

Drill Finish Date: 03-02-2010
Finish Time: 10:20

Drilling Contractor: B.L. Hall
Field Instrumentation: PID

Depth 1st H₂O (ft): 3
Date / Time: 03-02-2010 10:20
Drill Rig Type/Method: Hand Auger

Hand Auger
Description

Job Number: 1008208
Site: B1-1 (South - Dioxins)

Date / Time:

Date / Time:

Well Comp. Date:
Completion Time:

Comments: On slope above former building pad, bare soil surface

Water Level
Retained

Sample Interval
Retained
Sample Type
Recovery (%)
Blow Count/6"
PID (ppm)
Water Level

Depth (feet)

USCS Soil Classification

Gravel
Coarse Sand
Med. Sand
Fine Sand
Silt/Clay

Est. % of Soil

Clayey Sand, dark brown (7.5YR 3/2), medium dense, moist, no staining or odor
[Native?]

<water seepage into boring>

Total Depth = 3.0 ft; terminated due to standing water in boring.
Collected soil sample S001.
Backfilled with soil cuttings.

Collected soil sample S001.
On slope above former building pad, bare soil surface

Boring ID: B1BS0155

Total Depth (ft): 0.5

Description:
- Silty Sand, dark grayish brown (10YR 4/2), loose, moist, no staining or odor
[Alluvium/Colluvium]
- Silty Sandstone, brown (10YR 4/3), moist, weathered, moderately hard, friable
[Chatsworth Formation]

1. Total Depth = 0.5 ft; terminated due to refusal on bedrock.
2. Collected soil sample S001.
3. Backfilled with soil cuttings.
**LOG OF BORING OUTFALL009-2010.GPJ  BOEING.GDT  3/28/10**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>PID</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td>SM</td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, brown (7.5YR 4/3), dense, moist to wet, no staining or odor [Fill]</td>
<td></td>
</tr>
<tr>
<td>5.0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td>SM</td>
<td></td>
<td>5</td>
<td></td>
<td>Silty Sand, brown (7.5YR 4/4), moist, increase in sand content</td>
<td></td>
</tr>
</tbody>
</table>

- **Comments:** Within former building pad, bare soil surface
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 03-02-2010
- **Backfill Time:** 10:00

- **Depths:**
  - Total Depth = 5.0 ft
  - Terminated prior to refusal on bedrock.
  - Collected soil samples S001 and S002.
  - Backfilled with soil cuttings.

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 5.0
- **Easting (ft):** 269135.15
- **Date / Time:** 03-02-2010 09:40
- **Logged By:** J. Wokurka
- **Drilling Contractor:** B.L. Hall
- **Driller's Name:** M. Hoehn
- **Comments:**

**SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)**

**Boring ID:** B1BS0156

**Site:** B1-1 (South - Dioxins)

**Job Number:** 1008208

**Date / Time:** 03-02-2010 10:00

**Logged By:** J. Wokurka

**Drilling Contractor:** B.L. Hall

**Reviewed By:** C. Carter, P.G.
**Boring ID: B1BS0156A**

<table>
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<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
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<th>Depth (feet)</th>
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<th>Description</th>
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<td>4.0</td>
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<td>Silty Sand, dark yellowish brown (10YR 4/4), moist</td>
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<tr>
<td>3</td>
<td>SP-SM</td>
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<td></td>
<td></td>
<td>6.0</td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, yellowish brown (10YR 5/4), moist</td>
</tr>
</tbody>
</table>

- **Total Depth = 4.0 ft; terminated prior to refusal on bedrock.**
- **Collected soil samples S001 at 08:25 and S002 at 08:35.**
- **Backfilled with auger cuttings.**

**Comments:** Trench ISRA-B1-2 sidewall location

**Samples:** Samples retained in 6-inch stainless steel sleeve

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 10-13-2010  
**Backfill Time:** 08:40
Silty Sand, yellowish brown (10YR 5/6), loose to medium dense, dry, micaceous

Total Depth = 0.5 ft; terminated prior to refusal on bedrock.

Collected soil sample S001 at 09:23.

Backfilled with soil cuttings.
**Boring ID: B1BS0157**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>PID</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
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<tbody>
<tr>
<td>0</td>
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<td>N/A</td>
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<td></td>
<td>Silty Sand, brown (7.5YR 4/3), dense, moist to wet, no staining or odor [Fill]</td>
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<tr>
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<td>SM</td>
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<td>N/A</td>
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<td></td>
<td>becomes brown (7.5YR 4/4), moist, increase in sand content</td>
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</table>

Total Depth = 5.0 ft; terminated prior to refusal on bedrock.

Collected soil samples S001 and S002.

Backfilled with soil cuttings.
<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
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<tr>
<td>5</td>
<td>S</td>
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<td>5</td>
<td></td>
<td></td>
<td>becomes brown (7.5YR 4/4), slight increase in sand content</td>
</tr>
</tbody>
</table>

Total Depth = 5.0 ft; terminated prior to refusal on bedrock.
Collected soil samples S001 and S002.
Backfilled with soil cuttings.
**MWH**

**Boring ID: B1BS0159**

<table>
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<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>0.0</td>
<td>SM</td>
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<td></td>
<td></td>
<td></td>
<td>Silty Sand, brown (10YR 4/3), dense, moist, no staining or odor [Fill]</td>
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</tr>
<tr>
<td>5.0</td>
<td>SM</td>
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<td></td>
<td></td>
<td></td>
<td>becomes brown (7.5YR 4/3), sand grades slightly finer</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 5.0 ft; terminated prior to refusal on bedrock.
Collected soil samples S001 and S002.
Backfilled with soil cuttings.

**Branching Diam. (in.):** 3
**Total Depth (ft):** 5.0
**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1796900.50
**Easting (ft):** 269089.23
**Job Number:** 1008208
**Site:** B1-1 (South - Dioxins)

**Drill Start Date:** 03-02-2010
**Start Time:** 08:50
**Logged By:** J. Wokurka

**Drill Finish Date:** 03-02-2010
**Finish Time:** 09:10
**Drilling Contractor:** B.L. Hall
**Field Instrumentation:** PID

**Depth 1st H$_2$O (ft):** N/A
**Date / Time:** N/A
**Drill Rig Type/Method:** Hand Auger

**Depth H$_2$O After Drilling (ft):** N/A
**Date / Time:** N/A
**Driller’s Name:** M. Hoehn

**Comments:** Within former building pad, bare soil surface

**Well Comp. Date:** N/A
**Completion Time:** N/A

**Samplers:** 6-inch stainless steel sleeve
**Soil Backfill Date:** 03-02-2010
**Backfill Time:** 09:10

**Gravel** | **Coarse Sand** | **Med. Sand** | **Fine Sand** | **Silt/Clay**
---|---|---|---|---
5 | 60 | 35 | |
### Boring ID: B1BS0160

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 4.0  
**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)  
**Northing (ft):** 1796871.65  
**Easting (ft):** 269291.62  
**Job Number:** 1008208  
**Site:** B1-1 (North)  
**Drill Start Date:** 03-03-2010  
**Start Time:** 12:15  
**Logged By:** B. Martasin, P.G.  
**Drill Finish Date:** 03-03-2010  
**Finish Time:** 12:25  
**Drilling Contractor:** B.L. Hall  
**Reviewed By:** C. Carter, P.G.  
**Depth 1st H₂O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Auger  
**Depth H₂O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller’s Name:** M. Hoehn  
**Comments:** Bare soil at surface  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Sample Count/6”:** 0  
**Sample Type:** 6-inch stainless steel sleeve  
**Soil Backfill Date:** 03-03-2010  
**Backfill Time:** 12:28  

#### Sample Interval Retained

<table>
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<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>S</td>
<td>1.3</td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, moist, gravel-size sandstone fragments, contains rootlets [Native]</td>
</tr>
<tr>
<td>1-2</td>
<td>S</td>
<td>3.3</td>
<td></td>
<td></td>
<td></td>
<td>S</td>
<td>decrease in sandstone fragments, increase in fines content</td>
</tr>
<tr>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, weathered, slightly friable [Chatsworth Formation]</td>
</tr>
</tbody>
</table>

**Total Depth = 4.0 ft; terminated due to refusal on bedrock.**

Collected soil samples S001 at 12:18 and S002 at 12:25.

Backfilled with soil cuttings.

![Graphic Log](image-url)
**Boring ID: B1BS0161**

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 5.0  
**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)  
**Northing (ft):** 1796818.02  
**Easting (ft):** 269351.54  
**Job Number:** 1008208  
**Site:** B1-1 (North)  
**Drill Start Date:** 03-03-2010  
**Start Time:** 12:42  
**Logged By:** B. Martasin, P.G.  
**Reviewed By:** C. Carter, P.G.  
**Drill Finish Date:** 03-03-2010  
**Finish Time:** 12:55  
**Drilling Contractor:** B.L. Hall  
**Field Instrumentation:** PID  
**Depth 1st H2O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Auger  
**Depth H2O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller’s Name:** M. Hoehn  
**Comments:** Vegetation at surface  
**Samplers:** 6-inch stainless steel sleeve  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 03-03-2010  
**Backfill Time:** 12:58  

<table>
<thead>
<tr>
<th>Depth Interval</th>
<th>Sample Type</th>
<th>Water Level</th>
<th>Blow Count/6&quot;</th>
<th>Recovery (%)</th>
<th>PID (ppm)</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1 ft</td>
<td>S</td>
<td>SM</td>
<td>1.7</td>
<td>1.7</td>
<td>1.7</td>
<td>0</td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark brown (7.5YR 3/2), loose, moist, micaceous, contains rootlets [Native]</td>
</tr>
<tr>
<td>1-5 ft</td>
<td>S</td>
<td>N/A</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
<td>1.4</td>
<td></td>
<td>N/A</td>
<td>becomes yellowish brown (10YR 5/4), sand grades finer, micaceous, no rootlets</td>
</tr>
</tbody>
</table>

- Total Depth = 5.0 ft; terminated prior to refusal on bedrock.  
- Collected soil samples S001 at 12:45 and S002 at 12:55.  
- Backfilled with soil cuttings.
Borehole Diam. (in.): 3
Easting (ft): 269331.31
Drill Start Date: 03-09-2010
Drill Finish Date: 03-09-2010
Date / Time: N/A
N/A
N/A
N/A

Easting (ft): 1796869.86
Start Time: 08:45
Job Number: 1008208
Logged By: V. Vathanasin, P.G.
Reviewed By: C. Carter, P.G.

Easting (ft): 1796869.86
Drill Rig Type/Method: Hand Auger

Comments: Leaves and organic debris at surface

Logged By: V. Vathanasin, P.G.
Reviewed By: C. Carter, P.G.

Well Comp. Date: N/A
Completion Time: N/A

Drill Rig Type/Method: Hand Auger

Silty Sand, brown (10YR 4/3), loose, moist, contains roots, no visible staining or odor [Native]

Driller's Name: K. Dubberke

Sample Interval
Retained
Sample Type
Recovery (%)
Blow Count/6"
PID
Water Level
Depth (feet)
USCS Soil Classification
Depth 1st H 2
O (ft):
Depth H 2
O After Drilling (ft): N/A
Driller's Name: B. L. Hall

Blow Count/6" Water Level

Depth (feet)

Water Level

SM Silty Sand, brown (10YR 4/3), loose, moist, contains roots, no visible staining or odor [Native]

Sandstone, weathered [Chatsworth Formation]

Total Depth = 2.5 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 2.5 ft at both locations.

Collected soil sample S001 at 08:49.

Backfilled all locations with soil cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>PID</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.1</td>
<td>0</td>
<td>SM</td>
<td></td>
<td>Silty Sand, brown (10YR 4/3), loose, moist, contains roots, no staining or odor [Native]</td>
<td></td>
</tr>
<tr>
<td>Sandstone, weathered [Chatsworth Formation]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Depth = 1.5 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 1.5 ft at both locations.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collected soil sample S001 at 09:11.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backfilled all locations with soil cuttings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Water Level</th>
<th>PID</th>
<th>USCS Soil Classification</th>
<th>Retained</th>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td>Silty Sand, brown (10YR 4/3), loose, moist, contains roots, no staining or odor [Native]</td>
<td>5</td>
<td>60</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Comments: Leaves on surface of steep northwest-facing slope
**Boring ID: B1BS0164**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</th>
<th>USCS Soil Classification</th>
<th>Depth (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, brown (10YR 5/3), loose, moist, contains roots, no staining or odor [Native]</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, weathered [Chatsworth Formation]</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 2.0 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 2 ft at both locations.</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 09:28.</td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled all locations with soil cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

- **Comments:** Leaves and roots on surface of steep northwest-facing slope
- **Sampleers:** 6-inch stainless steel sleeve
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 03-09-2010
- **Backfill Time:** 09:46

---

**Borehole Diam. (in.):** 3
**Total Depth (ft):** 2.0
**Easting (ft):** 269310.22
**Northing (ft):** 1796864.84

**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
**Job Number:** 1008208
**Site:** B1-1 (North)

**Logged By:** V. Vathanasin, P.G.
**Reviewed By:** C. Carter, P.G.

**Drill Rig Type/Method:** Hand Auger

**Depth H₂O After Drilling (ft):** N/A
**Date / Time:** N/A

**Depth 1st H₂O (ft):** N/A
**Date / Time:** N/A

**Drill Start Date:** 03-09-2010
**Finish Time:** 09:28

**Drill Finish Date:** 03-09-2010
**Start Time:** 09:28

**Driller's Name:** K. Dubberke

---

**Water Level**

**Blow Count/6"**

**Recovery (%)**

**PID**

**Coarse Sand**

**Fine Sand**

**Silt/Clay**

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>tr</td>
<td>5</td>
<td>65</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Sample Interval Retained</td>
<td>Sample Type</td>
<td>Recovery (%)</td>
<td>Blow Count/6”</td>
<td>PID (ppm)</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------</td>
</tr>
<tr>
<td>0</td>
<td>SM</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Sample: 6-inch stainless steel sleeve

Heavily vegetated surface under oak tree on steep northwest-facing slope.

Boring ID: B1BS0166

W. Vathanasin, P.G.

Description:

- Silty Sand, yellowish brown (10YR 5/4), loose, moist, no staining or odor [Native]
- Sandstone, weathered [Chatsworth Formation]

- Total Depth = 3.0 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 3 ft at both locations.

- Collected soil sample S001 at 09:59.

- Backfilled all locations with soil cuttings.

Easting (ft): 269290.43

Reviewed By: C. Carter, P.G.

Drill Rig Type/Method: Hand Auger

Well Comp. Date: N/A

Job Number: 1008208

PID (ppm): N/A

Soil Backfill Date: 03-09-2010

Depth 1st H2O (ft): N/A

Backfill Time: 10:07

Date / Time: N/A

Driller's Name: K. Dubberke

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Review Date: N/A

Finish Time: 10:06

Drill Rig Type/Method: Hand Auger

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.

Depth H2O After Drilling (ft): N/A

Driller's Name: K. Dubberke

Comments: Heavily vegetated surface under oak tree on steep northwest-facing slope

Samplers: 6-inch stainless steel sleeve

Drilling Contractor: B.L. Hall

Well Comp. Date: N/A

Start Time: 09:50

Logged By: V. Vathanasin, P.G.
Boring ID: B1BS0167

Sample Type | Water Level | Depth (feet) | USCS Soil Classification | Description
--- | --- | --- | --- | ---
SP-SM | N/A | 0 | | Poorly Graded Sand with Silt, dark yellowish brown (10YR 4/4), loose, moist, contains roots, no staining or odor [Native]

Comments: On area of steep northwest-facing slope overgrown with brush

Total Depth = 1.5 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 1.5 ft at both locations.

Collected soil sample S001 at 10:16.

Backfilled all locations with soil cuttings.
Borehole Diam. (in.): 3
Total Depth (ft): 2.0
Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)
Easting (ft): 269278.76
Log: 1008208
Site: B1-1 (North)
Northing (ft): 1796848.19
Job Finish Date: 03-09-2010
Logged By: J. Wokurka
Drill Start Date: 03-09-2010
Drilling Contractor: B.L. Hall
Depth 1st H₂O (ft): N/A
Drill Rig Type/Method: Hand Auger
Date / Time: N/A
Driller's Name: M. Hoehn
Depth H₂O After Drilling (ft): N/A
Comments: Within former building pad, bare soil surface
Well Comp. Date: N/A
Completion Time: N/A
Samplers: 6-inch stainless steel sleeve
Soil Backfill Date: 03-09-2010
Backfill Time: 10:05

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.4</td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, very dark gray (10YR 3/1), medium dense, moist, no staining or odor [Fill]</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>SM</td>
<td>Silty Sandstone, brown (10YR 4/3), moist, moderately weathered, moderately hard, friable [Chatsworth Formation]</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Total Depth = 2.0 ft; terminated due to refusal on bedrock.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td>5</td>
<td></td>
<td>Backfilled with soil cuttings.</td>
</tr>
</tbody>
</table>

Est. % of Soil:
- Gravel: 65%
- Coarse Sand: 35%
- Med. Sand: 80%
- Fine Sand: 20%
- Clay: 20%

LOG OF BORING OUTFALL 009-2010.GPJ BOEING.GDT 3/28/10
Sheet 1 of 1
**Boring ID: B1BS0169**

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 5.0  
**Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1796811.06  
**Easting (ft):** 269256.13  
**Job Number:** 1008208  
**Site:** B1-1 (North)

**Drill Start Date:** 03-09-2010  
**Start Time:** 10:15  
**Logged By:** J. Wokurka  
**Reviewed By:** C. Carter, P.G.

**Drill Finish Date:** 03-09-2010  
**Finish Time:** 10:25  
**Drilling Contractor:** B.L. Hall  
**Field Instrumentation:** PID

**Depth 1st H₂O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Auger

**Depth H₂O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller's Name:** M. Hoehn

**Comments:** Within former building pad, bare soil surface

**Sample Interval Retained**

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>0.5</td>
<td></td>
<td>SM</td>
<td></td>
<td>Silty Sand, brown (10YR 4/3), medium dense, moist, subrounded grains, no staining or odor [Fill]</td>
</tr>
<tr>
<td>S</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td>becomes brown (10YR 5/3), dense, increase in sand content</td>
</tr>
</tbody>
</table>

**Total Depth = 5.0 ft; terminated prior to refusal on bedrock.**

Collected soil samples S001 and S002.

Backfilled with soil cuttings.

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 03-09-2010  
**Backfill Time:** 10:25
**Boring ID: B1BS0170**

**Borehole Diam. (in.):** 3  **Total Depth (ft):** 5.0  **Project:** SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

**Northing (ft):** 1796794.45  **Easting (ft):** 269254.72  **Job Number:** 1008208  **Site:** B1-1 (North)

**Drill Finish Date:** 03-09-2010  **Drill Rig Type/Method:** Hand Auger  **Field Instrumentation:** PID

**Depth 1st H₂O (ft):** N/A  **Date / Time:** N/A  **Drilling Contractor:** B.L. Hall

**Depth H₂O After Drilling (ft):** N/A  **Date / Time:** N/A  **Driller's Name:** K. Dubberke

**Comments:** On completely overgrown area of steep northwest-facing slope  **Well Comp. Date:** N/A  **Completion Time:** N/A

**Samplers:** 6-inch stainless steel sleeve  **Soil Backfill Date:** 03-09-2010  **Backfill Time:** 11:00

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Water Level</th>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), loose, moist, no staining or odor [Native]</td>
</tr>
<tr>
<td>0.1</td>
<td>S</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>SP-SM</td>
<td>Poorly Graded Sand with Silt, yellowish brown (10YR 5/4), loose, moist, no staining or odor [Native]</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silt/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>75</td>
<td>15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth = 5.0 ft; terminated prior to refusal on bedrock.**

Collected soil samples S001 at 10:45 and S002 at 10:50.

Backfilled with soil cuttings.
**Boring ID: B1BS0171**

Borehole Diam. (in.): 3

Total Depth (ft): 1.5

Project: SSFL - ISRA Data Gap Sampling 2010 (Outfall 009 Area)

Northing (ft): 1796773.82

Easting (ft): 269246.13

Job Number: 1008208

Drill Start Date: 03-09-2010

Start Time: 11:25

Logged By: V. Vathanasin, P.G.

Drill Finish Date: 03-09-2010

Finish Time: 11:40

Reviewed By: C. Carter, P.G.

Depth 1st H₂O (ft): N/A

Date / Time: N/A

Drilling Contractor: B.L. Hall

Field Instrumentation: PID

Depth H₂O After Drilling (ft): N/A

Date / Time: N/A

Driller's Name: K. Dubberke

Comments: Thick brush at surface

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>Pit Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.1</td>
<td>N/A</td>
<td>SM</td>
<td></td>
<td></td>
<td>Silty Sand, brown (10YR 4/3), loose, moist, contains roots and few burnt twigs, no staining or odor [Native]</td>
</tr>
</tbody>
</table>

Sandstone, weathered [Chatsworth Formation]

Total Depth = 1.5 ft; terminated due to refusal on bedrock. Stepped out twice and met refusal at 1.5 ft at both locations.

Collected soil sample S001 at 11:35.

Backfilled all locations with soil cuttings.