Appendix D

Boring and Trench Logs
Boring Logs
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<td>Interval (ft)</td>
<td>Sample Recovery (%)</td>
<td>Soil Name (USCS Group Symbol)</td>
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<td>0.0</td>
<td></td>
<td>Silt Sand (SM)</td>
<td>0-1.5' brown, (10YR 4/8), dry, very loose, 20% fines, 80% fine sand, some sandstone gravel</td>
<td>PID = 1.6 ppm at 0.5' bgs</td>
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<tr>
<td>1.5</td>
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<td>Bottom of Boring at 1.5 ft bgs on 4/2/2009</td>
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**SOIL BORING LOG**

**PROJECT NUMBER:** 384727  **BORING NUMBER:** A2BS1074  **LOCATION:**

**START:** 4/2/2009  **END:** 4/2/2009  **LOGGER:** M. Oviedo

**PROJECT:** ISRA Soil Sampling, SSFL  **ELEVATION:**

**DRILLING EQUIPMENT AND METHOD:**

**WATER LEVELS:** ---

**DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION**

**SOIL  DESCRIPTION**

**DEPTH** | **INTERVAL** | **RECOVERY** | **DESCRIPTION** | **TEST RESULTS** | **COMMENTS**
----------|-------------|--------------|-----------------|------------------|-----------------|
0.0       |             |              | Silt Sand (SM)  | PID = 1.6 ppm at 0.5' bgs | A2BS1074S001 (2) collected at 0.5' bgs |
1.5       |             |              | Bottom of Boring at 1.5 ft bgs on 4/2/2009 | refusal at 1.5' bgs | refusal at 0.25' bgs | refusal at 1.5' bgs on sandstone, no groundwater, staining, or odors observed |
<table>
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<tr>
<th>ELEVATION :</th>
<th>LOCATION :</th>
<th>DRILLING CONTRACTOR : CH2M HILL</th>
<th>ORIENTATION :</th>
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**DRILLING EQUIPMENT AND METHOD :** Hand Auger

**WATER LEVELS :** ---

**START :** 4/2/2009  **END :** 4/2/2009  **LOGGER :** M. Oviedo

**SHEET 1 OF 1**

<table>
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<tr>
<th>DEPTH BELOW EXISTING GRADE (ft)</th>
<th>INTERVAL (ft)</th>
<th>SAMPLE RECOVERY (%)</th>
<th>TYPE</th>
<th>STANDARD PENETRATION TEST RESULTS</th>
<th>SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY</th>
<th>COMMENTS</th>
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</table>
| 0.0                             |               |                     | Silty Sand (SM) | 0-0.5' - dark brown, (10YR 3/3), moist, loose, 20% fines, 80% fine sand | PID = 1.1 ppm at 0.5' bgs  
A2BS1075S001 collected at 0.5' bgs  
refusal at 0.5' bgs due to tree roots twice  
refusal at 0.5' bgs on roots and sandstone, no groundwater, staining or odors observed |         |
**Soil Boring Log**

<table>
<thead>
<tr>
<th>Depth Below Existing Grade (ft)</th>
<th>Sample Recovery (%)</th>
<th>Soil Name, USCS Group Symbol, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy</th>
<th>Comments</th>
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<tbody>
<tr>
<td>0.0</td>
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<td>Poorly Graded Sand With Silt (SP-SM) 0-1.3'- dark brown, (10YR 3/3), moist, loose, 10% fines, 90% fine sand, rootlets present</td>
<td>PID = 1.1 ppm at 0.5' bgs A2BS1076S001 collected at 0.5' bgs</td>
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<td>Bottom of Boring at 1.3 ft bgs on 4/2/2009</td>
<td>refusal at 1.3' bgs, no where else to hand auger due to surrounding sandstone refusal on sandstone at 1.3' bgs, no groundwater, staining or odors observed</td>
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<tr>
<td>DEPTH BELOW EXISTING GRADE (ft)</td>
<td>INTERVAL (ft)</td>
<td>SAMPLE RECOVERY (%)</td>
<td>TYPE</td>
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### Soil Boring Log

**Project:** ISRA Soil Sampling, SSFL  
**Location:**  
**Elevation:** N/A  
**Drilling Contractor:** CH2M HILL  
**Drilling Equipment and Method:** Hand Auger

#### Standard Penetration Test Results

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<th>Interval (ft)</th>
<th>Sample Recovery (%)</th>
<th>Soil Description</th>
<th>Comments</th>
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</thead>
</table>
| 0.0           |                    | Poorly Graded Sand (SP) | PID = 0.4 ppm  
| 3.5           |                    | Bottom of Boring at 3.5 ft bgs on 4/3/2009 | A2BS1088S001 1230 Pb  
| 5.0           |                    |                   | 1st attempt - refusal at 2.0', step over 2.0' south  
| 10.0          |                    |                   | 2nd attempt - refusal at 3.5'  
| 15.0          |                    |                   | TD = 3.5' bgs  
| 20.0          |                    |                   |  
| 25.0          |                    |                   |  

**Sample Recovery:** 6", 6", 6"  
**Depth Below Existing Grade:** 5"  
**Soil Name, USCS Group Symbol, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy:** Poorly Graded Sand (SP)  
**Water Levels:** ---  
**Depth of Casings, Drilling Rate, Drilling Fluid Loss, Tests, and Instrumentation:**  
**Comments:**  

---

**Elevations:** 384727  
**Logging:** C. Smiga  
**Start:** 4/3/2009  
**End:** 4/3/2009  
**Project Number:** A2BS1088  
**Boring Number:** A2BS1088

---

**Sheet 1 of 1**
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<th>Sample Recovery (%)</th>
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<td>Poorly Graded Gravel (GP) 0-1.0'- dark olive brown, (2.5Y 3/3), moist, medium to coarse grained, fine gravel, 60% sand, 40% gravel</td>
<td>PID = 6.0 ppm</td>
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<td>A2BS1089S001 1340 Pb refusal at 1.0' bgs</td>
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1st attempt - refusal at 1.0' bgs, move over 2.0' east
2nd attempt - refusal at 1.0' bgs
Target TD = 5.0'
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<td>Silty Sand (SM) 0-1' dark olive brown, (2.5Y 3/3), moist, dense, fine grained, 60% sand, 60% silt, trace clay</td>
<td>PID = 7.0 ppm A2BS1090S001 1200 Pb</td>
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<td>Clayey Sand (SC) 1-3.8' dark yellowish brown, (10YR 3/6), moist, dense, fine grained, 80% sand, 20% clay, trace silt</td>
<td>A2BS1090S002 1210 Pb</td>
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<td>Silty Sand (SM) 0-4.8'- brown, (10YR 4/3), moist, medium dense to dense, fine grained, some fine to coarse gravel, trace clay, 70% sand, 30% silt</td>
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<td>4.8</td>
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<td>4.8-5'- olive brown, (2.5Y 4/4), dense, 60% sand, 40% silt</td>
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**SOIL BORING LOG**

**PROJECT NUMBER:** 384727  
**BORING NUMBER:** A2BS1091  
**ELEVATION:** N/A  
**LOCATION:** Landfill  
**DRILLING CONTRACTOR:** CH2M HILL

**SOIL DESCRIPTION**

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<td>1.5</td>
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<td>Clayey Sand (SC)</td>
<td>1.5-3.8' dark olive brown, (2.5Y 3/3), moist to wet, dense, fine grained, 60% sand, 40% clay, trace silt</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Silty Sand (SM)**

0-0.3'- dark olive brown, (2.5Y 3/3), dry, dense, fine to medium grained, 60% sand, 40% silt, trace clay, trace fine gravel

Bottom of Boring at 0.3 ft bgs on 6/16/2009

Sample A2BS1093S001 at 15:45 - Dioxins
PID = 2.5 ppm
No refusal
<table>
<thead>
<tr>
<th>INTERVAL (ft)</th>
<th>SAMPLE RECOVERY (%)</th>
<th>SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>12.0</td>
<td>Silt (ML) 0-1' brown, (10YR 4/3), dry, hard, 70% fines, 30% fine sand with occasional gravel up to 30 mm</td>
<td>Sample A2BS1095S001 at 15:00 - Pb PID = 0.2 ppm</td>
</tr>
<tr>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.5</td>
<td>18.0</td>
<td>Silty Sand (SM) 1-2.5' dark yellowish brown, (10YR 4/4), moist, 70% fine to medium sand, 30% fines</td>
<td></td>
</tr>
<tr>
<td>4.5</td>
<td>24.0</td>
<td>Poorly Graded Sand (SP) 2.5-4.5' brown, (7.5YR 4/6), moist, medium dense, 100% medium grained sand</td>
<td>Bottom of Boring at 4.5 ft bgs on 6/16/2009</td>
</tr>
<tr>
<td>5.0</td>
<td></td>
<td></td>
<td>Sample A2BS1095S002 at 15:15 - Pb PID = 0.2 ppm No refusal</td>
</tr>
</tbody>
</table>
### Soil Boring Log

**Project Number:** 372353.RA.FS  
**Boring Number:** A2BS1096

**Location:** Landfill  
**Elevation:** N/A  
**Drilling Contractor:** CH2M HILL  
**Drilling Equipment and Method:** Hand Auger  
**Orientation:** Vertical

**Water Levels:** ---

**Start:** 6/16/2009  
**End:** 6/16/2009  
**Logger:** C. Smiga

<table>
<thead>
<tr>
<th>Depth Below Existing Grade (ft)</th>
<th>Interval (ft)</th>
<th>Sample Recovery (%)</th>
<th>Soil Name, USCS Group Symbol, Color, Moisture Content, Relative Density or Consistency, Soil Structure, Mineralogy</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>3.6</td>
<td></td>
<td>Silt (ML) 0.0-0.3' dark olive brown, (2.5Y 3/3), moist, soft, fine grained sand, 60% silt, 40% sand, trace clay</td>
<td>Sample A2BS1096S001 at 15:05 - Pb PID = 0.0 ppm No refusal</td>
</tr>
</tbody>
</table>

Bottom of Boring at 0.3 ft bgs on 6/16/2009
**Boring ID: A2ET0100**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** A2LF-1 Area

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</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>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4 to 3/6), loose to medium dense, moist, many roots and rootlets, bioturbation observed, no odor, no staining [Colluvium]</td>
</tr>
</tbody>
</table>

**Total Depth = 1.5 ft; terminated prior to refusal on bedrock.**

Collected soil samples S001 and S001-RWQCB at 14:33 from excavation sidewall.

Excavation not backfilled.
SSFL ISRA Sampling - Outfall 008 Area

Borehole Diam. (in.): 2
Total Depth (ft): 3.0

Northing (ft): 269477.56
Easting (ft): 1790329.69

Drill Start Date: 11-10-2009
Start Time: NR

Drill Finish Date: 11-10-2009
Finish Time: NR

Logged By: A. Goldenberg
Reviewed By: B. Martasin, P.G.

Logged By: A2ET0101

Boring ID: A2ET0101

Project: SSFL ISRA Sampling - Outfall 008 Area
Site: A2LF-1 Area

Job Number: 1891614

Drilling Contractor: Envirosolve

Field Instrumentation: PID

[See Trench Log ISRA-A2LF-1 for lithology]

Silty Sand, yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/6), medium dense with pockets of loose soil, moist, subangular gravel, subangular to subrounded grains, many roots and rootlets, no odor, no staining [Colluvium]

Total Depth = 3.0 ft; terminated due to refusal, possibly on bedrock.

Collected soil samples S001, S001SP, and S001-RWQCB at 14:29 from excavation floor.

Excavation not backfilled.

Collected soil samples S001, S001SP, and S001-RWQCB at 14:29 from excavation floor.
Boring ID: A2ET0102

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Soil 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>0.0</td>
<td>SM</td>
<td>SM</td>
<td>[See Trench Log ISRA-A2LF-1 for lithology]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td>SM</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6) to dark yellowish brown (10YR 4/6), medium dense, moist, subangular to subrounded grains, roots and rootlets, no odor, no staining [Colluvium]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.5</td>
<td>SM</td>
<td>SM</td>
<td>Total Depth = 2.5 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 samples S001 and S001-RWQCB at 14:38 from excavation floor.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Excavation not backfilled.</td>
</tr>
</tbody>
</table>

Site: A2LF-1 Area

Comments: Soil with brush at surface

Soil Backfill Date: N/A
Backfill Time: N/A
**LOG OF BORING**

**OUTFALL 008**

---

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

**Total Depth (ft):** 5.0

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

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

**Completion Time:** N/A

**Drill Start Date:** 11-16-2009

**Start Time:** NR

**Logged By:** A. Goldenberg

**Drilling Contractor:** Envirosolve

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

**Drill Finish Date:** 11-16-2009

**Finish Time:** NR

**Drill Rig Type/Method:** Grab (hand sampling)

**Comments:** Soil with brush at surface

**Soil Backfill Date:** N/A

**Backfill Time:** 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>0.0</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>SM</td>
<td>Silty Sand. very dark grayish brown (10YR 3/2), medium dense, moist, organic-rich, no odor, no staining [Alluvium]</td>
</tr>
<tr>
<td>5.0</td>
<td></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 on bedrock. Collected soil samples S001 and S001-RWQCB at 10:50 from excavation floor. Excavation not backfilled.</td>
</tr>
</tbody>
</table>

---

**Sheet 1 of 1**
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  12/22/09**

<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></td>
<td>[See Trench Log ISRA-A2LF-3 for lithology]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, mottled very dark grayish brown (10YR 3/2) to dark yellowish brown (10YR 3/4), medium dense to dense, moist, subangular to subrounded gravel, organic-rich (roots and rootlets), no odor, no staining [Fill]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[See Trench Log ISRA-A2LF-3 for lithology]</td>
</tr>
</tbody>
</table>

Total Depth = 2.5 ft; terminated prior to refusal on bedrock.

Collected soil samples S001 and S001-RWQCB at 10:44 from excavation sidewall.

Excavation not backfilled.

| Est. % of Soil |
|               |
| Gravel        | 10          |
| Coarse Sand   | 5           |
| Med. Sand     | 20          |
| Fine Sand     | 25          |
| Silt/Clay     | 40          |

**Boring ID: A2ET0201**

- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Job Number:** 1891614
- **Site:** A2LF-3 Area

**Borehole Diam. (in.):** 2
**Total Depth (ft):** 2.5

**Northing (ft):** 268787.01  
**Easting (ft):** 1790331.79

**Drill Start Date:** 11-16-2009  
**Start Time:** NR

**Drill Finish Date:** 11-16-2009  
**Finish Time:** NR

**Drilling Contractor:** Envirosolve
**Field Instrumentation:** PID

**Comments:** Soil with brush at surface
**Well Comp. Date:** N/A  
**Completion Time:** N/A

**Sampleers:** Grab sample collected in 6-inch stainless steel sleeve
**Soil Backfill Date:** N/A  
**Backfill Time:** N/A

**Logged By:** A. Goldenberg  
**Reviewed By:** B. Martasin, P.G.
**Boring ID: A2ET0202**

<table>
<thead>
<tr>
<th>Sample Interval &amp; 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>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td></td>
<td>Fill [See Trench Log ISRA-A2LF-3 for lithology]</td>
</tr>
</tbody>
</table>

- **Fill** [See Trench Log ISRA-A2LF-3 for lithology]

- **Silty Sand, brown (10YR 4/3) mottled with dark brown (10YR 3/3) organics, medium dense to dense, moist, rootlets, no odor, no staining [Alluvium]**

- **Total Depth = 2.5 ft; terminated prior to refusal on bedrock.**

- **Collected soil samples S001 and S001-RWQCB at 10:38 from excavation floor.**

- **Excavation not backfilled.**

---

**Comments:** Soil with brush at surface

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

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

**Soil Backfill Date:** N/A  
**Backfill Time:** N/A
Boring ID: **A2ET0203**

**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 4.0  
**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Job Number:** 1891614  
**Site:** A2LF-3 Area  
**Logged By:** A. Goldenberg  
**Reviewed By:** B. Martasin, P.G.

**Drill Start Date:** 11-16-2009  
**Start Time:** NR  
**Finish Time:** NR  
**Drilling Contractor:** Envirosolve  
**Field Instrumentation:** PID

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

**Depths H2O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller’s Name:** Not applicable

**Easting (ft):** 1790274.44  
**Noring (ft):** 268794.64

**Drill Rig Type/Method:** Grab (hand sampling)

**Date / Time:** 11-16-2009  
**Start Time:** NR  
**Finish Time:** NR

**Comments:** Soil and asphalt at surface  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Samplers:** Grab sample collected in 6-inch stainless steel sleeve  
**Soil Backfill Date:** N/A  
**Backfill Time:** N/A

**Soil and asphalt at surface**

**Excavation not backfilled.**

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

**Collected soil samples S001 and S001-RWQCB at 10:30 from excavation sidewall.**

**Excavation not backfilled.**

[See Trench Log ISRA-A2LF-3 for lithology]

**Description**

Sandstone, light yellowish brown (10YR 6/4), weathered, hard, poorly indurated, friable when disturbed, moist, no odor, no staining [Chatsworth Formation]

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

Collected soil samples S001 and S001-RWQCB at 10:30 from excavation sidewall.

Excavation not backfilled.
**Boring ID: CNBS0128**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Canyon  
**Job Number:** 1891614  
**Logged By:** A. Leavitt  
**Reviewed By:** B. Martasin, P.G.  
**Drill Rig Type/Method:** Hand Auger  
**Driller’s Name:** Ben Cisneros

**Comments:** Vegetation at surface: Hand trowel (soil placed in stainless steel sleeves)  
**Soil Backfill Date:** 02-25-2009  
**Backfill Time:** 14:04

<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>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td>SM</td>
<td></td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 3/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.
Collected soil sample S001 (2 sleeves) at 14:00.
Backfilled with auger cuttings.

**Graphics Log**

- USCS Soil Classification: Silt/Clay
- **Est. % of Soil**:
  - Gravel: 5
  - Coarse Sand: 30
  - Med. Sand: 35
  - Fine Sand: 30
  - Silt/Clay: N/A
**MWH**

**Boring ID: CNBS0129**

<table>
<thead>
<tr>
<th>Borehole Diam. (in.)</th>
<th>Total Depth (ft)</th>
<th>Project: SSFL ISRA Sampling - Outfall 008 Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0.7</td>
<td>Site: Canyon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Northing (ft)</th>
<th>266225.56</th>
<th>Easting (ft)</th>
<th>1795009.79</th>
<th>Job Number: 1891614</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill Start Date</td>
<td>02-25-2009</td>
<td>Start Time:</td>
<td>14:06</td>
<td>Logged By: A. Leavitt</td>
</tr>
<tr>
<td>Drill Finish Date</td>
<td>02-25-2009</td>
<td>Finish Time:</td>
<td>14:11</td>
<td>Drilling Contractor: B.L. Hall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth 1st H₂O (ft):</th>
<th>N/A</th>
<th>Date / Time:</th>
<th>N/A</th>
<th>Drill Rig Type/Method: Hand Auger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth H₂O After Drilling (ft):</td>
<td>N/A</td>
<td>Date / Time:</td>
<td>N/A</td>
<td>Driller's Name: Ben Cisneros</td>
</tr>
</tbody>
</table>

**Comments:** Vegetation at surface: Hand trowel (soil placed in stainless steel sleeves)

<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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 0.7 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (2 sleeves) at 14:10.

Backfilled with auger cuttings.
SSFL ISRA Sampling - Outfall 008 Area

Boring ID: CNBS0130

- Borehole Diam. (in.): 3
- Total Depth (ft): 0.5
- Project:
- Northing (ft): 266160.17
- Easting (ft): 1795033.05
- Job Number: 1891614
- Site: Canyon
- Drill Start Date: 02-25-2009
- Start Time: 14:15
- Drill Finish Date: 02-25-2009
- Finish Time: 14:17
- Logged By: A. Leavitt
- Drilling Contractor: B.L. Hall
- Reviewed By: B. Martasin, 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: Ben Cisneros

Comments: Vegetation at surface

- Well Comp. Date: N/A
- Completion Time: N/A
- Samplers: Hand trowel (soil placed in stainless steel sleeves)
- Soil Backfill Date: 02-25-2009
- Backfill Time: 14:19

<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>
<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>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

- Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 (2 sleeves) at 14:17.
- Backfilled with auger cuttings.
Borehole Diam. (in.): 2  Total Depth (ft): 0.5  Project: SSFL ISRA Sampling - Outfall 008 Area
Northing (ft): 266411.02  Easting (ft): 1794976.34  Job Number: 1891614  Site: Canyon
Drill Start Date: 04-09-2009  Start Time: 14:30  Logged By: B. Martasin, P.G.  Reviewed By: B. Martasin, P.G.
Drill Finish Date: 04-09-2009  Finish Time: 14:35  Drilling Contractor: MWH  Field Instrumentation: N/A
Depth 1st H₂O (ft): N/A  Date / Time: N/A  Drill Rig Type/Method: Hand Trowel
Depth H₂O After Drilling (ft): N/A  Date / Time: N/A  Driller’s Name: B. Martasin, P.G.

Comments:
- Soil with sparse vegetation at surface
- Hand trowel (soil placed in stainless steel sleeve)

Total Depth = 0.5 ft; terminated prior to refusal.
Collected soil sample S001 at 14:35.
Backfilled with native soil.
**LOG OF BORING  OUTFALL008.GPJ  BOEING.GDT  12/16/09**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count (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>SW</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SW</td>
<td>Well Graded Sand with Gravel, olive gray (5Y 5/2), medium dense, moist [Road Base Fill]</td>
</tr>
</tbody>
</table>

Total Depth = 0.3 ft (3 in.); refusal on Chatsworth Formation Sandstone.

Collected soil sample S001 (1 sleeve) at 14:35.

Backfilled with auger cuttings.
**Boring ID:** CNBS0133

**Easting (ft):** 266441.76

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

**Northing (ft):** 1795049.01

**Job Number:** 1891614

**Drill Start Date:** 02-25-2009

**Logged By:** A. Leavitt

**Drill Finish Date:** 02-25-2009

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

**Driller's Name:** Ben Cisneros

**Site:** Canyon

**Depth H₂O (ft):** N/A

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

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

**Sample Retained:**

<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>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>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SW</td>
<td>Well Graded Sand with Gravel, olive gray (5Y 5/2), medium dense, moist [Road Base Fill]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.3 ft (3 in.); refusal on Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 (1 sleeve) at 14:38.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Depth:** 0.3 ft (3 in.)

**Comments:** Road gravel on surface

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

**Soil Backfill Date:** 02-25-2009

**Completion Time:** N/A

**Backfill Time:** 14:46

**Sample Type:** Blow Count/6"
**Boring ID: CNBS0134**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.3
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Start Date:** 02-25-2009
- **Start Time:** 14:39
- **Logged By:** A. Leavitt
- **Comments:** Road gravel on surface
- **Sample Type:** Hand trowel (soil placed in stainless steel sleeve)
- **Backfill Date:** 02-25-2009
- **Backfill Time:** 14:47

### Soil Composition

<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>SW</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>SW</td>
<td></td>
<td>Well Graded Sand with Gravel, olive gray (5Y 5/2), medium dense, moist Road Base Fill</td>
</tr>
<tr>
<td>0.3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.3 ft (3 in); refusal on Chatsworth Formation Sandstone.</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 (1 sleeve) at 14:44.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

- **PID (ppm):** 25
- **Coarse Sand:** 25
- **Med. Sand:** 25
- **Fine Sand:** 25
- **Silt/Clay:** 25

**Reviewed By:** B. Martasin, P.G.
**Boring ID: CNBS0135**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.5
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Northing (ft):** 266425.43
- **Easting (ft):** 1795016.13
- **Job Number:** 1891614
- **Logged By:** S. Valenzuela
- **Site:** Canyon
- **Logged By:** S. Valenzuela
- **Drill Start Date:** 07-01-2009
- **Start Time:** 11:30
- **Logged By:** S. Valenzuela
- **Drill Finish Date:** 07-01-2009
- **Finish Time:** 11:35
- **Drilling Contractor:** B.L. Hall
- **Drill Rig Type/Method:** Hand Auger
- **Logged By:** S. Valenzuela
- **Depth 1st H2O (ft):** N/A
- **Date / Time:** N/A
- **Field Instrumentation:** N/A
- **Depth H2O After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Driller’s Name:** Paul Iler
- **Comments:** Exposed soil and 1- to 2-inch gravel at surface
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Sampled:** Grab sample collected in 6-inch stainless steel sleeve
- **Soil Backfill Date:** 07-01-2009
- **Backfill Time:** 11:35

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</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>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand, yellow (10YR 7/6), medium dense, dry</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone (yellow, hard, moist).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 11:34.</td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

- **Est. % of Soil:**
  - Gravel: tr
  - Coarse Sand: 95
  - Med. Sand: 5
  - Fine Sand: Silt/Clay
**Boring ID: CNBS0136**

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

**Logged By:** S. Valenzuela

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

**Sheet 1 of 1**

<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>0-10</td>
<td>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand, brownish yellow (10YR 6/6), medium dense, dry</td>
<td>tr 95 5</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone (yellow, hard, moist).

Collected soil sample S001 at 11:43.

Backfilled with auger cuttings.
Job Number: 1891614
Logged By: M. Milman-Barris
Boring ID: N/A
Easting (ft): 266437.55
Start Time: 13:01
Logged By: M. Milman-Barris
Drill Start Date: 08-24-2009
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: Ben Cisneros
Comments: About 2 ft up hillside, dry soil and shrubs 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: 08-24-2009
Backfill Time: 13:04

Borehole Diam. (in.): 3
Total Depth (ft): 1.5
Project: SSFL ISRA Sampling - Outfall 008 Area
Job Number: 1891614
Site: Canyon
Logged By: M. Milman-Barris
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: Ben Cisneros
Comments: About 2 ft up hillside, dry soil and shrubs 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: 08-24-2009
Backfill Time: 13:04

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
ML
Sandy Silt, yellowish brown (10YR 5/4), soft, dry, medium plasticity fines, moderate cementation

1

Total Depth = 1.5 ft; refusal on Chatsworth Formation.

2

Collected soil sample S001 (2 sleeves) at 13:01.

3

Backfilled with auger cuttings.
**Boring ID: CNBS0138**

- **Job Number:** 1891614
- **Easting (ft):** 266405.49
- **Drill Start Date:** 08-24-2009
- **Depth 1st H2O (ft):** N/A
- **Drill Finish Date:** 08-24-2009
- **Easting (ft):** 1795015.63
- **Start Time:** 13:12
- **Logged By:** M. Milman-Barris
- **Finish Time:** 13:13
- **Drilling Contractor:** B.L. Hall
- **Driller’s Name:** Ben Cisneros
- **Northing (ft):** 226405.49
- **Date / Time:** N/A
- **Date / Time:** N/A
- **Borehole Diam. (in.):** 3
- **Date / Time:** N/A
- **Date / Time:** N/A
- **Est. % of Soil**
- **Description**
- **Comments:** Flat area next to shrubs, bare soil with metal and asphalt debris at surface

### Sample Table

<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>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
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<td></td>
<td>0</td>
<td>ML</td>
<td>Sandy Silt, yellowish brown (10YR 5/4), soft, dry, medium plasticity fines, moderate cementation [Fill]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
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<td>1</td>
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<td>Total Depth = 0.8 ft; refusal on Chatsworth Formation.</td>
<td></td>
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<tr>
<td>2</td>
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<td></td>
<td>2</td>
<td></td>
<td>Collected soil sample S001 (2 sleeves) at 13:14.</td>
<td></td>
</tr>
<tr>
<td>3</td>
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<td></td>
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<td>3</td>
<td></td>
<td>Backfilled with auger cuttings.</td>
<td></td>
</tr>
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<td></td>
<td></td>
<td>10</td>
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</tbody>
</table>

- **Total Depth (ft):** 0.8
- **Well Comp. Date:** N/A
- **Drill Rig Type/Method:** Hand Auger
- **Reviewed By:** S. Valenzuela, P.G.
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Date:** 12/16/09
- **Site:** Canyon
- **Soil Backfill Date:** 08-24-2009
- **Backfill Time:** 13:15

**Log of Boring: Outfall 008 GP / Boeing GDT - 12/16/09**
Borehole Diam. (in.): 2  
Noting (ft): 266428.39  
Easting (ft): 1795047.89  
Total Depth (ft): 3.2  
Project: SSFL ISRA Sampling - Outfall 008 Area  
Job Number: 1891614  
Site: Canyon  
Drill Start Date: 09-23-2009  
Start Time: NR  
Logged By: A. Goldenberg  
Reviewed By: V. Vathanasin, P.G.  
Drill Finish Date: 09-23-2009  
Finish Time: NR  
Drilling Contractor: Envirosolve  
Field Instrumentation: N/A  
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: Not applicable  
Comments: Soil and rocks with minor brush at surface  
Well Comp. Date: N/A  
Completion Time: N/A  
Sampler: Grab sample collected in 6-inch stainless steel sleeve  
Soil Backfill Date: N/A  
Backfill Time: N/A  

<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>
</table>
|                          |             |              |               |           |             | 0            | SM          | Silty Sand with Gravel, brownish yellow (10YR 6/6), dense to very dense, dry, gravel and cobbles, no odor, no staining [Fill] | (25 45 30)  
|                          |             |              |               |           |             | 1            |             | Sandstone [Chatsworth Formation] |             |
|                          |             |              |               |           |             | 2            |             | Total Excavation Depth = 3.2 ft.  
Collected soil samples S001 and S001-RWQCB at 09:33 from excavation sidewall. Excavation backfilled 11-24-2009. |             |
**HVBF33**

**Project:** SSEL Group 1A

**Job #:** 1881565

**Logged By:** J. PACKES

**Reviewed By:** AS

**Drilling Contractor:** JH

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

**Drillers Name:** Alex F

**Borehole Diam./Drill Bit Type:** 3.5"  
**Total Depth:** 3.5'  
**Ref. Elev.:** -  
**Sampler Type:** N/A

**Depth to 1st Water (x):** -  
**Time/Date:** -

**Depth to Water After Drilling (x):** -  
**Time/Date:** -

**Depth to other Water Bearing Zones:** -  
**Time/Date:** -  
**Soil Boring Backfill Time/Date:** 10/4/01

---

**SOIL VEGETATION**

**ROOT MATERIAL**

**LIGTH BROWN**

**SOIL DESCRIPTION**

<table>
<thead>
<tr>
<th>Depth (Feet)</th>
<th>USCS Soil Type</th>
<th>Estimated % Of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SILT: SAND (SM)</td>
<td>Coarse</td>
</tr>
<tr>
<td></td>
<td>DARK YELLOW BROWN</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>DRY, V. LOOSE</td>
<td>Fine</td>
</tr>
<tr>
<td></td>
<td>FINES</td>
<td></td>
</tr>
</tbody>
</table>

**BEDROCK REFUSE**

**SAMPLES 0.5" & 3.0"**

---

**Site Sketch Map**

**PDCDA:**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Recovered (in.)</th>
<th>Blown Counts / 8 in.</th>
<th>Retained for Analysis</th>
<th>casing Type &amp; Size</th>
<th>Annular Filler</th>
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<tr>
<td>15:40</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>15:50</td>
<td></td>
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</table>

---

**Drill Start Time/Date:** 14/1/01  
**Drill Finish Time/Date:** 10/4/01  
**Well Completion Time/Date:** 10/4/01
### LOG OF BORING OUTFALL 008.GPJ  BOEING.GDT  12/16/09

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Water Level</th>
<th>Blow Count/6&quot;</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>PID (ppm)</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, dry, no odor, no staining [Fill]</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, roots and rootlets, no odor, no staining [Colluvium]</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, very pale brown (10YR 7/4), weathered, hard, moist [Chatsworth Formation]</td>
<td>5</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 5.0 ft; refusal on Chatsworth Formation Sandstone.</td>
<td>5</td>
<td>40</td>
</tr>
</tbody>
</table>

Collected soil samples S001 at 10:18 (extra volume collected at 12:56 on 11-2-2009) and S002 at 10:40.

Backfilled with auger cuttings.
### LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/19/09

**Boring ID:** HZBS0062

<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>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>0</td>
<td>SM</td>
<td>Silty Sand with Gravel, dark yellowish brown (10YR 4/4), medium dense, moist, subangular to rounded gravel, weak cementation, plant debris [Fill]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, subangular to rounded gravel, weak cementation [Possible Alluvium]</td>
</tr>
</tbody>
</table>

- **Total Depth:** 2.3 ft; refusal on weathered Chatsworth Formation Sandstone.
- **Collected soil sample S001 (1 sleeve) at 11:01.**
- **Backfilled with auger cuttings.**

---

**Vegetation and road gravel at surface**

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 02-24-2009  
**Backfill Time:** 11:05

**Comments:** Hand trowel (soil placed in stainless steel sleeve)

---

**Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, subangular to rounded gravel, weak cementation, plant debris [Fill]**

- **Depth:** 0.0 ft
- **Est. % of Soil:** 20% Gravel, 25% Coarse Sand, 25% Med. Sand, 25% Fine Sand, 0% Sil/Cay

---

**SSFL ISRA Sampling - Outfall 008 Area**

**Site:** Happy Valley South  
**Project:** A. Leavitt  
**Reviewed By:** B. Martasin, P.G.  
**Logged By:** A. Leavitt  
**Drill Rig Type/Method:** Hand Auger  
**Field Instrumentation:** PID  
**Driller’s Name:** Ben Cisneros  
**Date of Job:** 02-24-2009  
**Logged By:** B. Martasin, P.G.  
**Notes:**

- **Hand auger (soil placed in stainless steel sleeve)**

---

**Total Depth (ft): 2.3**

**Easting (ft): 266768.67**  
**Northing (ft): 1795863.89**  
**Drill Start Date:** 02-24-2009  
**Drill Finish Date:** 02-24-2009  
**Start Time:** 10:57  
**Finish Time:** 11:03  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 02-24-2009  
**Backfill Time:** 11:05

---

**Borehole Diam. (in.): 3**  
**Total Depth (ft): 2.3**  
**Job Number:** 1891614  
**Date / Time:** 02-24-2009  
**Date / Time:** 02-24-2009  
**Sample Interval:** 0  
**Sample Type:** S  
**Sample Retained:** N/A  
**Recovery (%):** N/A  
**Soil Type:** S  
**PID:** N/A  
**Logging Instrumentation:** N/A  
**Log Sheet:** 1 of 1
LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/19/09

<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>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, abundant plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 1.0 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (1 sleeve) at 11:48. Backfilled with auger cuttings.

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>30</td>
<td>35</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments: Surface covered with heavy vegetation
**LOG OF BORING OUTFALL 008.GPJ  BOEING.GDT  3/19/09**

**Boring ID:** HZBS0064  
**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South

<table>
<thead>
<tr>
<th>Borehole Diam. (in.):</th>
<th>Total Depth (ft):</th>
<th>Job Number:</th>
<th>Easting (ft):</th>
<th>Northing (ft):</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2.6</td>
<td>1891614</td>
<td>1795850.90</td>
<td>266712.61</td>
</tr>
</tbody>
</table>

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martasin, P.G.

**Drill Start Date:** 02-24-2009  
**Drill Finish Date:** 02-24-2009

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

**Depth 1st H2O (ft):** N/A  
**Finish Time:** 10:31

**Driller’s Name:** Ben Cisneros

**Comments:** Vegetation at surface

**Sample Type:** Hand trowel (soil placed in stainless steel sleeves)

**Grain Size:** Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, fine subangular to subrounded gravel, weak cementation, plant debris [Fill]

<table>
<thead>
<tr>
<th>Sample Interval Retained (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>1</td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, fine subangular to subrounded gravel, weak cementation, plant debris [Fill]</td>
</tr>
</tbody>
</table>

**Total Depth = 2.6 ft; refusal on weathered Chatsworth Formation Sandstone.**

**Collected soil sample S001 (2 sleeves) at 10:28.**

**Backfilled with auger cuttings.**

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

**Soil Backfill Date:** 02-24-2009  
**Backfill Time:** 10:33

**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>5</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>
**Boring ID:** HZBS0065

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

**Site:** Happy Valley South

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

**Total Depth (ft):** 1.5

**Easting (ft):** 266723.70

**Nortthing (ft):** 1795950.30

**Drill Start Date:** 02-24-2009

**Start Time:** 11:35

**Logged By:** A. Leavitt

**Reviewd By:** B. Martasin, P.G.

**Drill Finish Date:** 02-24-2009

**Finish Time:** 11:41

**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:** Ben Cisneros

**Comments:** Vegetation at surface:

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

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>SM</td>
<td>Silty Sand, strong brown (7.5YR 4/6), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
<tr>
<td>0.1</td>
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<td></td>
<td>Total Depth = 1.5 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 (1 sleeve) at 11:39.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Soil Backfill Date:** 02-24-2009

**Backfill Time:** 11:43

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

**Completion Time:** N/A
Total Depth = 1.5 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil samples S001 (1 sleeve) and duplicate D001 (1 sleeve) at 08:20.

Backfilled with auger cuttings.
### LOG OF BORING OUTFALL 008.GPJ  BOEING.GDT  3/19/09

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID</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>
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<td>0</td>
<td>SM</td>
<td>0.0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td>10</td>
<td>5</td>
<td>30</td>
<td>30</td>
<td>25</td>
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</table>
### Boring ID: HZBS0069

<table>
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<tr>
<th>Borehole Diam. (in.): 3</th>
<th>Total Depth (ft): 0.2</th>
<th>Project: SSFL ISRA Sampling - Outfall 008 Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing (ft): 267005.59</td>
<td>Easting (ft): 1796019.07</td>
<td>Job Number: 1891614</td>
</tr>
<tr>
<td>Drill Start Date: 02-25-2009</td>
<td>Start Time: 12:49</td>
<td>Logged By: A. Leavitt</td>
</tr>
<tr>
<td>Drill Finish Date: 02-25-2009</td>
<td>Finish Time: 12:51</td>
<td>Drilling Contractor: B.L. Hall</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depth 1st H2O (ft): N/A</th>
<th>Date / Time: N/A</th>
<th>Drill Rig Type/Method: Hand Trowel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth H2O After Drilling (ft): N/A</td>
<td>Date / Time: N/A</td>
<td>Driller's Name: Ben Cisneros</td>
</tr>
</tbody>
</table>

**Comments:** Road gravel on surface

**Sample:** Hand trowel (soil placed in stainless steel sleeve)

**Soil Backfill Date:** 02-25-2009

**Backfill Time:** 12:52

<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>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>0.0</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 0.2 ft (2 in.); refusal on weathered Chatsworth Formation Sandstone.

Due to shallow bedrock, a surface sample was collected by filling a stainless steel sleeve with soil from 0-0.2 ft bgs. Collected soil sample S001 (1 sleeve) at 12:51.

<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>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>0.0</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 0.2 ft (2 in.); refusal on weathered Chatsworth Formation Sandstone.

Due to shallow bedrock, a surface sample was collected by filling a stainless steel sleeve with soil from 0-0.2 ft bgs. Collected soil sample S001 (1 sleeve) at 12:51.
Boring ID: HZBS0070

<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>SM</td>
<td>0.0</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td>5 5 30 30</td>
</tr>
</tbody>
</table>

Total Depth = 1.2 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (2 sleeves) on 02-24-2009 at 14:45. Boring was advanced to total depth on 02-25-2009. Backfilled with auger cuttings.
**LOG OF BORING**

<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>0.0</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td>Total Depth = 1.9 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (2 sleeves) at 13:06. Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South  
**Boring ID:** HZBS0071  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Samplers:** Hand trowel (soil placed in stainless steel sleeves)  
**Soil Backfill Date:** 02-25-2009  
**Backfill Time:** 13:11
**Borehole Diam. (in.): 3**

**Total Depth (ft): 1.3**

**Easting (ft): 267047.57**

**Northing (ft): 1790682.67**

**Job Number: 1891614**

**Site: Happy Valley South**

**Drill Start Date: 02-25-2009**

**Start Time: 12:40**

**Logged By: A. Leavitt**

**Drill Finish Date: 02-25-2009**

**Finish Time: 12:44**

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

**Field Instrumentation: PID**

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

**Comments: Vegetation and road gravel at surface**

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

**Completion Time: N/A**

**Sampler: Hand trowel (soil placed in stainless steel sleeve)**

**Soil Backfill Date: 02-25-2009**

**Backfill Time: 12:46**

**Depth H₂O (ft): N/A**

**Date / Time: N/A**

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

**Date / Time: N/A**

**Driller’s Name: Ben Cisneros**

### USCS Soil Classification

<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>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 1.3 ft; refusal on weathered Chatsworth Formation Sandstone. Collect soil sample S001 (1 sleeve) at 12:42. Backfilled with auger cuttings.</td>
<td>10 5 30 30 25</td>
</tr>
</tbody>
</table>
Boring ID: HZBS0073

Borehole Diam. (in.): 3
Total Depth (ft): 2.4

Project: SSFL ISRA Sampling - Outfall 008 Area

Northing (ft): 267052.67
Easting (ft): 1796130.97

Job Number: 1891614
Site: Happy Valley South

Drill Start Date: 02-24-2009
Start Time: 08:40
Logged By: A. Leavitt

Drill Finish Date: 02-24-2009
Finish Time: 08:58
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: Ben Cisneros

Comments: Road gravel on surface

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

USCS Soil Classification

Description

Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, plant debris [Fill]

decrease in gravel, sand grades slightly finer

Total Depth = 2.4 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (2 sleeves) at 08:47.

Backfilled with auger cuttings.

PID

SM

Gravel
Coarse Sand
Med. Sand
Fine Sand
Silt/Clay

Road gravel on surface

Hand trowel (soil placed in stainless steel sleeves)

Soil Backfill Date: 02-24-2009
Backfill Time: 09:00

Backfilled with auger cuttings.
**Boring ID:** HZBS0073a  

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 2.4  
**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Northing:** 267052.67  
**Easting:** 1796130.97  
**Job Number:** 1891614  
**Site:** Happy Valley South  
**Drill Start Date:** 03-20-2009  
**Start Time:** 14:20  
**Logged By:** B. Martasin, P.G.  
**Reviewed By:** B. Martasin, P.G.  
**Drill Finish Date:** 03-20-2009  
**Finish Time:** 14:25  
**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. Martasin  

**Comments:** Vegetation and road gravel at surface  

**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>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>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
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<th>Silt/Clay</th>
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<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, rootlets [Alluvium]</td>
<td>10 10 20 30 30</td>
<td></td>
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<tr>
<td>1</td>
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<td></td>
<td>1</td>
<td>s</td>
<td>decrease in gravel, sand grades slightly finer</td>
<td>5 5 25 35 30</td>
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<td>2</td>
<td></td>
<td>Total Depth = 2.4 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S002 at 14:25. Backfilled with auger cuttings.</td>
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</tbody>
</table>

**Driller’s Name:** B. Martasin  

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

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

**Samplers:** Grab from auger head  

**Soil Backfill Date:** 03-20-2009  
**Backfill Time:** 14:30
**Boring ID: HZBS0074**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South  
**Job Number:** 1891614  
**Drilling Contractor:** B.L. Hall  
**Reviewed By:** B. Martasin, P.G.

**Start Time:** 02-25-2009  
**Finish Time:** 11:55  
**Logged By:** A. Leavitt  
**Field Instrumentation:** PID

**Comments:**  
Samplers: Hand trowel (soil placed in stainless steel sleeve)  
Vegetation at surface:  
Water Level: Retained

**Gravel** | **Coarse Sand** | **Med. Sand** | **Fine Sand** | **Silt/Clay**
---|---|---|---|---
5 | 30 | 35 | 30 |  

<table>
<thead>
<tr>
<th>Sample Interval (ft)</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>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Total Depth = 2.2 ft; refusal on weathered Chatsworth Formation Sandstone.  
- Collected soil sample S001 (1 sleeve) at 11:52.  
- Backfilled with auger cuttings.
### LOG OF BORING OUTFALL 008

**Sample Interval** | **Retained Sample Type** | **Recovered (%)** | **Blow Count/6” (ppm)** | **PID** | **Water Level** | **USCS Soil Classification** | **Description** | **Est. % of Soil** |
---|---|---|---|---|---|---|---|---|
0 | S | 0.0 | | | | SM | Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium] | 5 5 30 30 |
1 | | | | | | | | |
2 | | | | | | | | |
3 | | | | | | | | |
4 | | | | | | | | |
5 | | | | | | | | |
6 | | | | | | | | |
7 | | | | | | | | |
8 | | | | | | | | |
9 | | | | | | | | |
10 | | | | | | | | |

**Total Depth** = 1.5 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (1 sleeve) at 13:40.

Backfilled with auger cuttings.
## LOG OF BORING  OUTFALL008.GPJ  BOEING.GDT  3/19/09

<table>
<thead>
<tr>
<th>Sample Interval 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>S</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 3/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td>5</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (1 sleeve) at 10:39.

Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count 6&quot;</th>
<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>0.0</td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, very dark brown (10YR 2/2), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 1.0 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (2 sleeves) at 10:16.

Backfilled with auger cuttings.
**Boring ID:** HZBS0078  
**Project:** SSFL ISRA Sampling - Outfall 008 Area

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 2.8

**Drill Start Date:** 02-25-2009  
**Start Time:** 10:25  
**Logged By:** A. Leavitt  
**Reviewed By:** B. Martasin, P.G.

**Easting (ft):** 267199.41  
**Northing (ft):** 1796292.00  
**Job Number:** 1891614  
**Site:** Happy Valley South

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

**Date / Time:** 02-25-2009  
**Finish Time:** 10:33  
**Drilling Contractor:** B.L. Hall  
**Field Instrumentation:** PID

**Depth H₂O After Drilling (ft):** N/A  
**Date / Time:** N/A  
**Driller’s Name:** Ben Cisneros

**Comments:** Vegetation at surface

**Sample Interval** | **Sample Type** | **Retained** | **Sample Recovery (%)** | **Blow Count / 6”** | **Depth (feet)** | **USCS Soil Classification** | **Description** | **Gravel** | **Coarse Sand** | **Med. Sand** | **Fine Sand** | **Silt/Clay** |
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
0 | S | 0.1 | SM | Silty Sand, dark yellowish brown (10YR 3/4), medium dense, moist, weak cementation, plant debris [Possible Fill/Alluvium] | 5 | 5 | 30 | 30 | 30 |
1 | SM | Silty Sand, strong brown (7.5YR 4/6), medium dense, moist, weak cementation, plant debris [Alluvium] | 35 | 35 | 30 |
2 | 3 | Total Depth = 2.8 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (1 sleeve) at 10:28. Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count (ppm)</th>
<th>Water Level (feet)</th>
<th>PID</th>
<th>SM</th>
<th>Description</th>
<th>USCS Soil Classification</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></td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td>SM</td>
<td>5</td>
<td>5</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 1.8 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (2 sleeves) at 09:21.

Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Retained Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6”</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>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>2.0</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), loose, moist, rootlets [Alluvium]</td>
<td>5 5 30 30 30</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2.0</td>
<td>Total Depth = 2.0 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S002 at 14:15.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Comments: Vegetation at surface*

*Project: SSFL ISRA Sampling - Outfall 008 Area*

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

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

*Soil Backfill Date: 03-20-2009*
**LOG OF BORING OUTFALL 008.GPJ  BOEING.GDT  3/19/09**

<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>Depth (feet)</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>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>SM</td>
<td>Total Depth = 0.9 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>SM</td>
<td>Collected soil sample S001 (1 sleeve) at 10:02.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>SM</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>5</td>
<td>5</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
</tbody>
</table>

**Comments:** Vegetation at surface

**Samplers:** Hand trowel (soil placed in stainless steel sleeve)

**Soil Backfill Date:** 02-25-2009

**Backfill Time:** 10:06

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

**Completion Time:** N/A
<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>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, brown (10YR 4/3) to dark yellowish brown (10YR 4/4), medium dense, dry to moist, roots and rootlets, no odor, no staining [Fill]</td>
<td>SM: 10 25 20 45</td>
</tr>
<tr>
<td>1</td>
<td>SM</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), dense, moist, rootlets, no odor, no staining [Colluvium]</td>
<td>SM: 10 30 25 35</td>
</tr>
<tr>
<td>2</td>
<td>SM</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Total Depth = 2.0 ft; refusal on Chatsworth Formation Sandstone. Collected soil samples S001 at 14:35 and S002 at 14:45. Backfilled with auger 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>PID (ppm)</td>
<td>Water Level</td>
<td>Depth (feet)</td>
<td>Graphic Log</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------</td>
<td>--------------</td>
<td>---------------</td>
<td>-----------</td>
<td>-------------</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>SM</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>SM</td>
</tr>
</tbody>
</table>
**Boring ID: HZBS0081A**

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

**Site:** Happy Valley South

**Job Number:** 1891614

**Logged By:** A. Goldenberg

**Reviewed By:** V. Vathanasin, P.G.

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

### Sample Interval & Soil Classification

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense to dense, dry, no odor, no staining [Fill]</td>
</tr>
<tr>
<td>10</td>
<td>SM</td>
<td>Silty Sand, strong brown (7.5YR 4/6), dense, moist, no odor, no staining [Colluvium]</td>
</tr>
<tr>
<td>10.9</td>
<td></td>
<td>Sandstone, very pale brown (10YR 7/4), weathered (unweathered at total depth), hard, moist [Chatsworth Formation]</td>
</tr>
</tbody>
</table>

**Total Depth** = 10.9 ft; refusal on competent Chatsworth Formation Sandstone.

Collected soil samples S001 at 09:35 and S002 at 10:12.

Backfilled with auger cuttings.
**Boring ID: HZBS0082**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South

**Job Number:** 1891614  
**Driller's Name:** Ben Cisneros

<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>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>SM</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Possible Fill]</td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>SM</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, trace to no plant debris (decreases with depth) [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth = 3.7 ft; refusal on weathered Chatsworth Formation Sandstone.**

Collected soil samples S001 (1 sleeve taken from hand trowel) at 09:00 and S002 (1 sleeve taken from auger head) at 09:08.

Backfilled with auger cuttings.
- **Total Depth (ft):** 19.0
- **Easting (ft):** 1796317.21
- **Nativity (ft):** 267003.47
- **Job Number:** 1891614
- **Site:** Happy Valley South
- **Logged By:** A. Goldenberg
- **Reviewed By:** V. Vathanas, P.G.
- **Drill Rig Type/Method:** Hand Auger
- **Drill Start Date:** 10-01-2009
- **Start Time:** NR
- **Drill Finish Date:** 10-06-2009
- **Finish Time:** NR
- **Drilling Contractor:** Envirosolve
- **Field Instrumentation:** N/A
- **Borehole Diam. (in.):** 3
- **Depth 1st H,0 (ft):** N/A
- **Date / Time:** N/A
- **Depth H,0 After Drilling (ft):** N/A
- **Date / Time:** N/A
- **Comments:** Bare soil at surface
- **Sample Interval Retained:** S
- **Sample Type:** S
- **Recovery (%):**
- **Blow Count /6":**
- **PID (ppm):**
- **Blow Count /6":**
- **PID (ppm):**
- **Depth (feet):**
- **Graphic Log:**
- **USCS Soil Classification:** SM
- **Description:** Silty Sand, dark yellowish brown (10YR 4/4), dense, dry to moist, no odor, no staining [Fill]
- **Est. % of Soil:**
  - Gravel
  - Coarse Sand
  - Med. Sand
  - Fine Sand
  - SiltyClay
- **Total Depth = 19.0 ft; terminated prior to refusal per Ben Stewart.**
- **Collected soil samples S001 at 08:30 and S002 at 09:05.**
- **Backfilled with auger cuttings.**

**Field Instrumentation:**

<table>
<thead>
<tr>
<th>Depth 1st H,0 (ft)</th>
<th>Date / Time</th>
<th>Site</th>
<th>Driller's Name</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td></td>
<td></td>
<td>A. Goldenberg</td>
<td>Bare soil at surface</td>
</tr>
<tr>
<td>2.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.0</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>14.0</td>
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<td></td>
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</tr>
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<td>16.0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18.0</td>
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<td></td>
</tr>
<tr>
<td>20.0</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Boring ID:** HZBS0082A

**Soil Backfill Date:** 10-06-2009

**Backfill Time:** 10:00

**Sample Collectors:**

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

**Soil Backfill:**

- **Comments:**
  - Sampled soil samples S001 at 08:30 and S002 at 09:05.
  - Backfilled with auger cuttings.

**Soil Backfill Date:** 10-06-2009

**Completion Time:** N/A

**Drill Start Date:**

**Drill Finish Date:**

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

**Drill Raw:**

- **Northing (ft):**
- **Easting (ft):**
- **Logged By:** A. Goldenberg
- **Reviewed By:** V. Vathanas, P.G.
- **Start Time:** NR
- **Finish Time:** NR
- **Drilling Contractor:** Envirosolve
- **Field Instrumentation:** N/A

**Comments:**

- **Total Depth = 19.0 ft; terminated prior to refusal per Ben Stewart.**
- **Collected soil samples S001 at 08:30 and S002 at 09:05.**
- **Backfilled with auger cuttings.**
**MWH**

**Boring ID: HZBS0083**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.6
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Northing (ft):** 266887.95
- **Easting (ft):** 1796392.72
- **Job Number:** 1891614
- **Site:** Happy Valley South
- **Drill Start Date:** 02-25-2009
- **Start Time:** 08:48
- **Logged By:** A. Leavitt
- **Reviewed By:** B. Martasin, P.G.
- **Drill Finish Date:** 02-25-2009
- **Finish Time:** 08:53
- **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:** Ben Cisneros

**Comments:** Vegetation at surface

**Sample Interval Retained**

- **Sample Type:**
- **Recovery (%):**
- **Blow Count/6”:**
- **PID (ppm):**
- **Water Level**
- **Depth (feet)**
- **USCS Soil Classification**
- **Description**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>SM</th>
<th>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, plant debris [Alluvium]</th>
</tr>
</thead>
</table>

**Est. % of Soil**

- **Coarse Sand:** 35
- **Med. Sand:** 35
- **Fine Sand:** 30
- **Silt/Clay:**

**Comments:**

- Total Depth = 0.6 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 (1 sleeve) at 08:51.
- Backfilled with auger cuttings.
**Boring ID:** HZBS0084

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Northing (ft):** 266937.80  
**Easting (ft):** 1796333.70

**Drill Start Date:** 02-25-2009  
**Start Time:** 08:37

**Drill Finish Date:** 02-25-2009  
**Finish Time:** 08:42

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

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

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

**Job Number:** 1891614  
**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 1.5

**Date / Time:** 02-25-2009

**Logged By:** A. Leavitt  
**Reviewed By:** B. Martas, P.G.
**Boring ID: HZBS0084A**

<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>SM</td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense to dense, dry to moist, roots and rootlets, no odor, no staining [Fill]</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td>Sandstone [Chatsworth Formation]</td>
<td></td>
</tr>
<tr>
<td>Total Depth = 3.0 ft; refusal on Chatsworth Formation Sandstone.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collected soil samples S001 at 07:50 and S002 at 08:15.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backfilled with auger cuttings.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Silty Sand**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Sil/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>25</td>
<td>35</td>
<td>30</td>
<td>0</td>
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<tr>
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<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>8</td>
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<td></td>
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<tr>
<td>9</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Job Number:** 1891614

**Site:** Happy Valley South

**Logged By:** A. Goldenberg

**Reviewed By:** V. Vathanasin, P.G.

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

**Comments:** Soil with mowed brush at surface

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

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

**Completion Time:** N/A

**Soil Backfill Date:** 10-01-2009

**Backfill Time:** 08:17
<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 (feet)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SS</td>
<td>0.3</td>
<td>SM</td>
<td></td>
<td>0.0</td>
<td></td>
<td>Gravel road base</td>
<td></td>
</tr>
</tbody>
</table>

Gravel road base

Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Fill]

Total Depth = 1.1 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil samples S001 (1 sleeve) and split S001SP (1 sleeve) at 12:00.

Backfilled with auger cuttings.
**Boring ID: HZBS0086**

<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>S</td>
<td>0.2</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (1 sleeve) at 13:50. Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Comments:** Vegetation at surface: Hand trowel (soil placed in stainless steel sleeve) | Well Comp. Date: N/A | Completion Time: N/A

Samplers: Hand trowel (soil placed in stainless steel sleeve) | Soil Backfill Date: 02-24-2009 | Backfill Time: 13:53

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

**Soil Backfill Date:** 02-24-2009 | **Backfill Time:** 13:53

**Vegetation at Surface:** Hand trowel (soil placed in stainless steel sleeve)
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/19/09**

**Boring ID: HZBS0087**

<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 (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></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 2.8  
**Easting (ft):** 266902.81  
**Northing (ft):** 1796147.74  
**Drill Start Date:** 02-24-2009  
**Drill Finish Date:** 02-24-2009  
**Logged By:** A. Leavitt  
**Drilling Contractor:** B.L. Hall  
**Reviewed By:** B. Martasin, P.G.  
**Site:** Happy Valley South  
**Job Number:** 1891614  
**PID:** 35  
**Drill Rig Type/Method:** Hand Auger  
**Comments:** Green vegetation at surface  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Samplers:** Hand trowel (soil placed in stainless steel sleeve)  
**Soil Backfill Date:** 02-24-2009  
**Backfill Time:** 13:24  

Total Depth = 2.8 ft; refusal on weathered Chatsworth Formation Sandstone.  
Collected soil sample S001 (1 sleeve) at 13:18.  
Backfilled with auger cuttings.
### Sample Interval Retained

<table>
<thead>
<tr>
<th>Depth (feet)</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>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth:** 2.3 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil samples S001 (1 sleeve) and duplicate D001 (1 sleeve) at 13:59.

Backfilled with auger cuttings.

**Boring ID:** HZBS0088

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

**Job Number:** 1891614

**Site:** Happy Valley South

**Logged By:** Ben Cisneros

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

**Completion Time:** N/A

**Soil Backfill Date:** 02-24-2009

**Backfill Time:** 14:04

**Sampler:** Hand trowel (soil placed in stainless steel sleeves)

**Vegetation:** no vegetation at surface

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

**Total Depth (ft):** 2.3

**Northing (ft):** 266959.79

**Easting (ft):** 1796091.43

**Drill Start Date:** 02-24-2009

**Start Time:** 13:55

**Logged By:** A. Leavitt

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

**Drill Finish Date:** 02-24-2009

**Finish Time:** 14:02

**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:** Ben Cisneros
<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Water Level</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>S</td>
<td>0.0</td>
<td>N/A</td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, fine subangular to subrounded gravel, weak cementation, plant debris [Fill]</td>
<td>5 5 35 35 20</td>
</tr>
</tbody>
</table>

- **Total Depth** = 0.6 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 (2 sleeves) at 10:51.
- Backfilled with auger cuttings.
<table>
<thead>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td>0.0</td>
<td></td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, fine subangular to subrounded gravel [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 1.2 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil samples S001 and split S00SP (total 4 sleeves) at 10:09.

Backfilled with auger cuttings.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot; (ppm)</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>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, fine subangular to subrounded gravel, weak cementation, plant debris [Fill]</td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (1 sleeve) at 11:13. Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>

**Boring ID:** HZBS0091

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

**Site:** Happy Valley South

**Job Number:** 1891614

**Logged By:** A. Leavitt

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

**Sample Interval:**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot; (ppm)</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>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, fine subangular to subrounded gravel, weak cementation, plant debris [Fill]</td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone. Collected soil sample S001 (1 sleeve) at 11:13. Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gravel</td>
</tr>
<tr>
<td>10</td>
</tr>
</tbody>
</table>
## Boring ID: HZBS0092

<table>
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<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>S</td>
<td>0.0</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/6), medium dense, moist, weak cementation, minor plant debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth = 0.8 ft; refusal on weathered Chatsworth Formation Sandstone.**

- Collected soil sample S001 (1 sleeve) at 08:13.
- Backfilled with auger cuttings.

### Project Details
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Boring ID:** HZBS0092
- **Job Number:** 1891614
- **Site:** Happy Valley South
- **Logged By:** A. Leavitt
- **Reviewed By:** B. Martasin, P.G.

### Logging Details
- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.8
- **Easting (ft):** 1796246.14
- **Start Time:** 08:08
- **Drill Start Date:** 02-25-2009
- **Start Time:** 08:08
- **Finish Time:** 08:15
- **Drill Finish Date:** 02-25-2009
- **Date / Time:** N/A
- **Date / Time:** N/A
- **Driller’s Name:** Ben Cisneros
- **Drill Rig Type/Method:** Hand Auger
- **Vegetation at surface:** Hand trowel (soil placed in stainless steel sleeve)

### Soil Analysis
- **Estimated % of Soil:**
  - Gravel: 5
  - Coarse Sand: 5
  - Med. Sand: 30
  - Fine Sand: 30
  - Sil/Clay: 30
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/19/09**

**MWH**

**Boring ID: HZBS0093**

Borehole Diam. (in.): 3

Total Depth (ft): 2.0

**Easting (ft):** 268923.29

**Start Time:**

**Finish Time:**

**Date / Time:**

Date / Time:

**Well Comp. Date:**

Soil Backfill Date:

**Start Time:** 13:28

Logged By: A. Leavitt

Reviewed By: B. Martasin, P.G.

**Drill Start Date:** 02-24-2009

**Drill Finish Date:** 02-24-2009

**Finishing Time:** 13:35

**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: Ben Cisneros

Comments: Vegetation and road gravel at surface

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

Job Number: 1891614

Site: Happy Valley South

**Job Number:**

**Logged By:**

**Reviewed By:**

**PID**

**Description**

**Job Number:** 1891614

**Logged By:** A. Leavitt

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

**Site:** Happy Valley South

**Comments:** Vegetation and road gravel at surface

**Sample Interval Retained**

**Sample Type**

**Recovery (%)**

**Blow Count/6”**

**PID (ppm)**

**Water Level**

**Depth (feet)**

**Graphic Log**

**USCS Soil Classification**

**Est. % of Soil**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<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>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>0.1</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Fill]

Total Depth = 2.0 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (1 sleeve) at 13:33.

Backfilled with auger cuttings.
### Field Instrumentation:

Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]

Total Depth = 0.9 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 (2 sleeves) at 12:54.

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>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></td>
<td></td>
<td>SM</td>
<td>0</td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Alluvium]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Total Depth = 0.9 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Collected soil sample S001 (2 sleeves) at 12:54.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Backfilled with auger cuttings.</td>
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</tr>
</tbody>
</table>
**Boring ID: HZBS0095**

<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></td>
<td></td>
<td>SM</td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
</tr>
<tr>
<td>1.5</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>
</tbody>
</table>

Collected soil sample S001 at 13:40.

Backfilled with auger cuttings.

**Comments:** Vegetation at surface

**Sampled:** Hand trowel (soil placed in stainless steel sleeve)

**Log of Boring:**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<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></td>
<td></td>
<td>SM</td>
<td></td>
<td></td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
</tr>
<tr>
<td>1.5</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>
<td></td>
</tr>
</tbody>
</table>

Collected soil sample S001 at 13:40.

Backfilled with auger cuttings.
### Boring Log

**Boring ID:** HZBS0096

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

**Site:** Happy Valley South

**Drill Start Date:** 02-25-2009 11:42

**Drill Finish Date:** 02-25-2009 11:47

**Logged By:** A. Leavitt

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

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

**Field Instrumentation:** PID

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

**Total Depth (ft):** 1.3

**Northing (ft):** 267051.39

**Easting (ft):** 1796258.75

**Job Number:** 1891614

**Start Time:** N/A

**Finish Time:** N/A

**Date / Time:** 02-25-2009

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

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

**Date / Time:** N/A

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

**Date / Time:** N/A

**Comments:** Vegetation and brush at surface

**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>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, moist, weak cementation, plant debris [Fill]</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>Total Depth = 1.3 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>1.3</td>
<td></td>
<td></td>
<td>Collected soil sample S001 (1 sleeve) at 11:45.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Sample Type:** Blown Count/6”

**Recovery (%):** 0.0

**Easting (ft):**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Northing (ft):**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Vegetation and brush at surface:**

**Samplers:** Hand trowel (soil placed in stainless steel sleeve)

**Logged By:** Ben Cisneros

**Job Number:** 1891614

**Start Time:** 02-25-2009 11:42

**Finish Time:** 02-25-2009 11:47

**Date / Time:** 02-25-2009

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

**Completion Time:** N/A

**Soil Backfill Date:** 02-25-2009

**Backfill Time:** 11:49

**Estimated % of Soil:**

<table>
<thead>
<tr>
<th>Gravel</th>
<th>Coarse Sand</th>
<th>Med. Sand</th>
<th>Fine Sand</th>
<th>Silty Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>30</td>
<td>35</td>
<td>30</td>
<td>5</td>
</tr>
</tbody>
</table>

**Well Comp. Date:**

**Completion Time:**

**Soil Backfill Date:**

**Backfill Time:**
Boring ID: HZBS0097

Borehole Diam. (in.): 3
Total Depth (ft): 0.6

Project: SSFL ISRA Sampling - Outfall 008 Area

Northing (ft): 267042.48
Easting (ft): 1796205.02

Job Number: 1891614
Site: Happy Valley South

Drill Start Date: 02-25-2009
Start Time: 12:09
Logged By: A. Leavitt

Drill Finish Date: 02-25-2009
Finish Time: 12:12
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: Ben Cisneros

Comments: Road gravel on surface

N/A

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

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

0 0

SM Silty Sand, dark yellowish brown (10YR 4/4), medium dense, moist, weak cementation, plant debris [Fill]

Total Depth = 0.6 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 at 12:11.

Backfilled with auger cuttings.
<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>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>SM</td>
<td>Silty Sand with Gravel, light brown (7.5YR 6/4), loose, dry</td>
<td>15 15 10 40 20</td>
</tr>
<tr>
<td>1</td>
<td>SM</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>75</td>
<td>SM</td>
<td>Silty Sand, brown (7.5YR 4/4), loose, moist</td>
<td>60 40</td>
</tr>
</tbody>
</table>

Total Depth = 1.5 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 by hand trowel at original location at 08:05 and soil sample S002 from auger head in boring 0.5 ft from original location at 14:00.

Backfilled with auger cuttings.
**Boring: HZBS0099**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Interval</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>Sil/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, light brown (7.5YR 6/4), loose, moist, rootlets [Alluvium]</td>
<td></td>
<td>10</td>
<td>55</td>
<td>35</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Total Depth = 0.6 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 at 08:30.
- Backfilled with native soil.
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/24/09**

**Boring ID: HZBS0100**

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

**Total Depth (ft): 0.5**

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

**Northing (ft): 266524.97**

**Easting (ft): 1795968.88**

**Job Number: 1891614**

**Site: Happy Valley South**

**Drill Start Date: 03-20-2009**

**Start Time: 10:37**

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

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

**Drill Finish Date: 03-20-2009**

**Finish Time: 10:40**

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

**Field Instrumentation: N/A**

**Depth 1st H₂O (ft): N/A**

**Date / Time: N/A**

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

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

**Date / Time: N/A**

**Driller’s Name: Ben Cisneros**

**Comments: Grass at surface**

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

**Completion Time: N/A**

**Samples: Hand trowel (soil placed in stainless steel sleeve)**

**Soil Backfill Date: 03-20-2009**

**Backfill Time: 10:45**

<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>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, brown (7.5YR 4/4), loose, moist, rootlets [Alluvium]</td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 10:40.</td>
</tr>
<tr>
<td>2</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Backfilled with native soil.</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>60</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  3/24/09**

**Boring ID:** HZBS0101

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

**Site:** Happy Valley South

<table>
<thead>
<tr>
<th>Borehole Diam. (in.):</th>
<th>Total Depth (ft):</th>
<th>Project Number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>0.5</td>
<td>1891614</td>
</tr>
</tbody>
</table>

**Northing:** 266144.17  **Easting:** 1796299.42

**Drill Start Date:** 03-20-2009  **Start Time:** 09:58

**Logged By:** B. Martasin, P.G.  **Reviewed By:** B. Martasin, P.G.

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

**Driller’s Name:** Ben Cisneros

**Drill Rig: N/A**  **Date / Time:** N/A

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

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

**Comments:** In drainage, sand and vegetation at surface

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

**Samplers:** Hand trowel (soil placed in stainless steel sleeve)

**Soil Backfill Date:** 03-20-2009  **Backfill Time:** 10:02

**Site:** Happy Valley South

**Drilling Contractor:** N/A

**In drainage, sand and vegetation at 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>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Sw</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>0.5</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 10:00.</td>
</tr>
<tr>
<td>2</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with native soil.</td>
</tr>
</tbody>
</table>

**Est. % of Soil**

- Gravel: 10
- Coarse Sand: 30
- Med. Sand: 30
- Fine Sand: 30
- Silt/Clay: 30

**Hand Trowel (soil placed in stainless steel sleeve)**
**Boring ID: HZBS0102**

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Sample Type</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Silty Sand, light brown (7.5YR 6/4), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

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

**Site:** Happy Valley South

**Driller's Name:** B. Martasin, P.G.

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

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

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

**Easting (ft):** 265861.24

**Northing (ft):** 1796086.55

**Start Time:** 09:40

**Start Date:** 03-20-2009

**Finish Time:** 09:45

**Finish Date:** 03-20-2009

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

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

**N/A**

**N/A**

**N/A**

**N/A**

**N/A**

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

**Comments:** In drainage, sand and vegetation at surface

**Soil Backfill Date:** 03-20-2009

**Backfill Time:** 09:50

**Job Number:** 1891614

**Date / Time:** 03-20-2009

**Date / Time:** 03-20-2009

**Water Level:** Retained

**Sample Type:** Blow Count/6"

**Recovery (%):** N/A

**PID (ppm):** N/A

**Depth (feet):**

<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>Silty Sand, light brown (7.5YR 6/4), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

**Total Depth = 0.3 ft; refusal on weathered Chatsworth Formation Sandstone.**

**Collected soil sample S001 at 09:45.**

**Backfilled with native soil.**
### Borehole Diam. (in.): 2

### Total Depth (ft): 0.5

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

### Site: Happy Valley South

### Job Number: 1891614

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

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

### Drill Start Date: 03-20-2009

### Start Time: 09:15

### Finish Time: 09:20

### Drill Rig Type/Method: Hand Trowel

### Depth 1st H₂O (ft): N/A

### Date / Time: N/A

### Est. % of Soil

<table>
<thead>
<tr>
<th>Sample Interval Retained (feet)</th>
<th>Sample Type</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>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, light brown (7.5YR 6/4), loose, moist, rootlets [Alluvium]</td>
<td>10 50 40</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.

Collected soil sample S001 at 09:20.

Backfilled with native soil.
###LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  4/7/09

**Borehole Diam. (in.): 2**
**Boring ID:** HZBS0104

**Total Depth (ft): 0.7**
**Project:** SSFL ISRA Sampling - Outfall 008 Area

**Job Number:** 1891614
**Site:** Happy Valley South

**Logged By:** B. Martasin, P.G.
**Drill Start Date:** 03-20-2009
**Drill Finish Date:** 03-20-2009

**Easting (ft): 1795430.24**
**Start Time:** 10:58
**Finish Time:** 11:00
**Drilling Contractor:** B.L. Hall
**Field Instrumentation:** N/A

**Northing (ft): 265875.16**
**Date / Time:** N/A
**Date / Time:** N/A

**Driller’s Name:** Ben Cisneros
**Drill Rig Type/Method:** Hand Trowel

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

**Comments:** Vegetation and hydroseed at surface

<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>Water Level</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
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<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td></td>
<td>Silty Sand, light brown (7.5YR 6/4), loose, moist, rootlets [Alluvium]</td>
<td>10 50 40</td>
</tr>
<tr>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>Total Depth = 0.7 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>Collected soil sample S001 at 11:00.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td>Backfilled with native soil.</td>
<td></td>
</tr>
</tbody>
</table>

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

**Backfill Time:** 11:05

**Soil Backfill Date:** 03-20-2009

**Hand trowel (soil placed in stainless steel sleeve)**

**Samplers:** B. Martasin, P.G.
**LOG OF BORING OUTFALL 008 AREA**  
**Boring ID:** HZBS0105  
**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 0.8  
**Northing (ft):** 266989.21  
**Easting (ft):** 1795744.52  
**Job Number:** 1891614  
**Drill Start Date:** 04-09-2009  
**Start Time:** 08:35  
**Logged By:** B. Martasin, P.G.  
**Drill Finish Date:** 04-09-2009  
**Finish Time:** 08:40  
**Reviewed By:** B. Martasin, P.G.  
**Drill Rig Type/Method:** Hand Auger

**Driller's Name:** Ben Cisneros  
**Field Instrumentation:** N/A

**Comments:** Disturbed soil with asphalt and concrete chunks at surface  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Sampler:** Hand trowel (soil placed in stainless steel sleeve)  
**Soil Backfill Date:** 04-09-2009  
**Backfill Time:** 08:45

**Sample Interval Retained**  
<table>
<thead>
<tr>
<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></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, light yellowish brown (10YR 6/4), loose, dry, rootlets [Artificial Fill]</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Total Depth = 0.8 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Collected soil sample S001 at 08:40.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Backfilled with native soil.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
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<td></td>
<td></td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Disturbed soil with asphalt and concrete chunks at surface**  
**Hand trowel (soil placed in stainless steel sleeve)**  
**Silty Sand, light yellowish brown (10YR 6/4), loose, dry, rootlets [Artificial Fill]**  
**Total Depth = 0.8 ft; refusal on weathered Chatsworth Formation Sandstone.**  
**Collected soil sample S001 at 08:40.**  
**Backfilled with native soil.**
**LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  4/30/09**

**Boring ID:** HZBS0106

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

**Site:** Happy Valley South

**Job Number:** 1891614

**Driller's Name:** Ben Cisneros

**Logging By:** B. Martasin, P.G.

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

**Result:**

<table>
<thead>
<tr>
<th>Sample Interval (ft)</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>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Silty Sand, brownish yellow (10YR 6/6), loose, dry [Alluvium]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>becomes brown (10YR 5/3, medium dense, moist</td>
<td></td>
</tr>
</tbody>
</table>

- Total Depth = 4.2 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil samples S001 at 08:20 and S002 at 08:30.
- Backfilled with native soil.
### LOG OF BORING OUTFALL008.GPJ  BOEING.GDT  4/30/09

<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>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, light yellowish brown (10YR 6/4), loose, dry, rootlets [Alluvium]</td>
</tr>
<tr>
<td>2</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 1.0 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 08:10, as well as duplicate D001.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with native soil.</td>
</tr>
</tbody>
</table>

**Boring ID:** HZBS0107

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

**Total Depth (ft):** 1.0

**Easting (ft):** 1795701.01

**Northing (ft):** 266922.59

**Drill Start Date:** 04-09-2009

**Start Time:** 08:07

**Drill Finish Date:** 04-09-2009

**Finish Time:** 08:13

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

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

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

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

**Job Number:** 1891614

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

**Site:** Happy Valley South

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

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

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

**Completion Time:** N/A

**Backfill Time:** 08:15

**Soil Backfill Date:** 04-09-2009

**Start Time:**

**Finish Time:**

**Northing (ft):** N/A

**Date / Time:** N/A

**Profile:**

**Comments:** Hand trowel (soil placed in stainless steel sleeve)

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

**Date / Time:** N/A

**Driller's Name:** Ben Cisneros

**Site:** Happy Valley South

**Drill Start Date:**

**Drill Finish Date:**

**Date / Time:**

**Comments:** Hand trowel (soil placed in stainless steel sleeve)
**LOG OF BORING**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Site:** Happy Valley South

<table>
<thead>
<tr>
<th>Sample Interval (feet)</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/&quot;</th>
<th>PID (ppm)</th>
<th>Water Level</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>Silty Sand, light brown (7.5YR 6/3), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

- **Total Depth:** 0.5 ft; terminated prior to refusal.
- **Collected soil sample S001 at 14:45.**
- **Backfilled with native soil.**

**Trench:**
- **Hand trowel (soil placed in stainless steel sleeve)**
- **Soil Backfill Date:** 04-09-2009  
**Backfill Time:** 14:45
<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>100</td>
<td>N/A</td>
<td>N/A</td>
<td>0</td>
<td>0</td>
<td></td>
<td>Silt, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]</td>
<td>10 50 40</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.
Collected soil sample S001 at 08:09.
Backfilled with native soil.
Boring ID: HZBS0110

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PIP (ppm)</th>
<th>Water Level (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium]</td>
<td>5 10 15 40 30</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.
Collected soil sample S001 at 08:00.
Backfilled with native soil.
<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Total Depth (ft)</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>0.5</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
</tr>
</tbody>
</table>

Collected soil sample S001 at 08:28.
Backfilled with native soil.
**Boring ID: HZBS0112**

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

**Site:** Happy Valley South

**Drill Start Date:** 06-01-2009  
**Start Time:** 09:42

**Drill Finish Date:** 06-01-2009  
**Finish Time:** 09:44

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

**Field Instrumentation:** N/A

**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 0.5

**Northing (ft):** 267007.97  
**Easting (ft):** 1795776.97

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

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

**Drill Rig Type/Method:** Slide Hammer

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

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

**Comments:** Vegetation at surface

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blown 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>0</td>
<td>SM</td>
<td>Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

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

**Collected soil sample S001 at 09:44.**

**Backfilled with native soil.**

**Job Number:** 1891614

**Logged By:** B. Cisneros

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

**Site:** Happy Valley South

**Job Number:** 1891614

**Logged By:** B. Cisneros

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

**Soil Backfill Date:** 06-01-2009  
**Backfill Time:** 09:46

**Vegetation at surface**

**Soil Backfill Date:** 06-01-2009  
**Backfill Time:** 09:46
**Description**

Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium]

- Total Depth = 0.5 ft; refusal on weathered Chatsworth Formation Sandstone.
- Collected soil sample S001 at 09:57.
- Backfilled with native soil.
### LOG OF BORING OUTFALL009.GPJ  BOEING.GDT  6/16/09

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

**Total Depth (ft):** 0.3

**Sample Interval Retained:**

<table>
<thead>
<tr>
<th>Sample Type</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>8</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>SM</td>
<td>Silty Sand, pale brown (10YR 6/3), medium dense, dry Alluvium</td>
<td>10 50 40</td>
</tr>
</tbody>
</table>

**Northing (ft):** 266820.28

**Easting (ft):** 1795797.28

**Drill Start Date:** 06-01-2009

**Start Time:** 08:16

**Logged By:** B. Martasin, P.G. #6356

**Reviewed By:** B. Martasin, P.G. #6356

**Drill Finish Date:** 06-01-2009

**Finish Time:** 08:18

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

**Field Instrumentation:** N/A

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

**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

**Soil Backfill Date:** 06-01-2009

**Backfill Time:** 08:20

**Vegetation at surface:** Hand trowel (soil placed in stainless steel sleeve)

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

**Site:** Happy Valley South

**Total Depth (ft):** 0.3

**refusal on weathered Chatsworth Formation Sandstone.**

Collected soil sample S001 at 08:18.

Backfilled with native soil.
Silty Sand, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 15:15.

Backfilled with native soil.
**Boring ID: HZBS0116**

**Project:** SSFL ISRA Sampling - Outfall 009 Area  
**Site:** Happy Valley South

**Job Number:** 1891614  
**Logged By:** B. Martasin, P.G. #8356  
**Reviewed By:** B. Martasin, P.G. #8356

**Drill Start Date:** 06-01-2009  
**Start Time:** 08:23  
**Drill Finish Date:** 06-01-2009  
**Finish Time:** 08:25

**Easting (ft):** 266784.93  
**Northing (ft):** 226784.93

**Driller’s Name:** B. Cisneros

**Sample Interval Retained** | **Sample Type** | **Recovery (%)** | **Blow Count/6”** | **PID(ppm)** | **Water Level** | **Depth (feet)** | **Graphic Log** | **USCS Soil Classification** | **Description** | **Est. % of Soil**
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
0 | SM | Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium] | 60 | 40

**Comments:** Vegetation at surface:  
*Slide hammer with stainless steel sleeve*  
**Soil Backfill Date:** 06-01-2009  
**Backfill Time:** 08:27

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

**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 0.5  
**Depth H₂O (ft):** N/A  
**Depth H₂O After Drilling (ft):** N/A  
**Drill Rig Type/Method:** Slide Hammer  
**Drill Rig: HZBS0116**  
**Drill Contractor:** B.L. Hall  
**Field Instrumentation:** N/A  
**Drill Start Date:** 06-01-2009  
**Drill Finish Date:** 06-01-2009  
**Date / Time:** N/A  
**Date / Time:** N/A

- Total Depth = 0.5 ft; terminated prior to refusal.
- Collected soil sample S001 at 08:25.
- Backfilled with native soil.
### Borehole Details
- **Borehole Diam. (in.):** 2
- **Total Depth (ft):** 0.5
- **Logged By:** B. Martasin, P.G. #8356
- **Logged Date:** 06-01-2009
- **Logged Time:** 08:41
- **Drill Rig Type/Method:** Slide Hammer
- **Vegetation at surface:** Slide hammer with stainless steel sleeve

### Soil Sample Details
- **Sample Type:** SM
- **USCS Soil Classification:** Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium]

#### Graphic Log
- **Depth (feet):** 0
- **Water Level:** Retained
- **Sample Interval:** S
- **Recovery (%):** 60
- **Blow Count/6":** 40
- **PID (ppm):**
  - Coarse Sand: N/A
  - Med. Sand: N/A
  - Fine Sand: N/A
  - Silt/Clay: N/A
- **Est. % of Soil:**
  - Gravel: N/A
  - Coarse Sand: N/A
  - Med. Sand: N/A
  - Fine Sand: N/A
  - Silt/Clay: N/A

#### Comments
- Total Depth = 0.5 ft; terminated prior to refusal.
- Collected soil sample S001 at 08:41.
- Backfilled with native soil.

---

**Project:** SSFL ISRA Sampling - Outfall 009 Area
**Site:** Happy Valley South
**Driller's Name:** B. Cisneros
**Drilling Contractor:** B.L. Hall
**Field Instrumentation:** N/A

**Drill Start Date:** 06-01-2009
**Drill Finish Date:** 06-01-2009
**Well Comp. Date:** N/A
**Completion Time:** N/A
**Soil Backfill Date:** 06-01-2009
**Backfill Time:** 08:43
### LOG OF BORING OUTFALL009.GPJ  BOEING.GDT  6/16/09

<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>
</table>
| 0                        | SM          |              |               |           |             |              |             | Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium] | Total Depth = 0.5 ft; terminated prior to refusal.  
Collected soil sample S001 at 09:26.  
Backfilled with native soil. |

**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 0.5  
**Northing (ft):** 266678.06  
**Easting (ft):** 1795884.64  
**Drill Start Date:** 06-01-2009  
**Start Time:** 09:24  
**Drill Finish Date:** 06-01-2009  
**Finish Time:** 09:26  
**Boring ID:** HZBS0118  
**Site:** Happy Valley South  
**Drill Rig Type/Method:** Slide Hammer  
**Logged By:** B. Martasin, P.G. #8356  
**Reviewed By:** B. Martasin, P.G. #8356  
**Driller's Name:** B. Cisneros  
**Job Number:** 1891614  
**Project:** SSFL ISRA Sampling - Outfall 009 Area  
**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Samplers:** Slide hammer with stainless steel sleeve  
**Soil Backfill Date:** 06-01-2009  
**Backfill Time:** 09:27  
**Comments:** Vegetation at surface
<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>Silty Sand, light yellowish brown (10YR 6/4), loose, dry, rootlets [Fill]</td>
<td></td>
</tr>
</tbody>
</table>

- Total Depth = 0.5 ft; terminated prior to refusal.
- Collected soil sample S001 at 08:55.
- Backfilled with native soil.
<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>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Collected soil sample S001 at 09:03.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Backfilled with native soil.</td>
</tr>
<tr>
<td>4</td>
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<td></td>
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<td>4</td>
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<td>6</td>
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<td></td>
</tr>
</tbody>
</table>

**Comments:** Hand trowel (soil placed in stainless steel sleeve)
**Borehole Diam. (in.):** 2  
**Total Depth (ft):** 0.5  
**Project:** SSFL ISRA Sampling - Outfall 009 Area  
**Job Number:** 1891614  
**Site:** Happy Valley South  
**Boring ID:** HZBS0121

<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>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand, pale brown (10YR 6/3), loose, dry, rootlets [Alluvium]</td>
<td>10</td>
<td>15 15 30 30</td>
</tr>
</tbody>
</table>

**Comments:** Vegetation at surface

**Drill Rig Type/Method:** Slide Hammer

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 06-01-2009  
**Backfill Time:** 09:18  
**Samplers:** Slide hammer with stainless steel sleeve

**Vegetation at surface:**

- Total Depth = 0.5 ft; terminated prior to refusal.
- Collected soil sample S001 at 09:15.
- Backfilled with native soil.
**LOG OF BORING OUTFALL 009.GPJ  BOEING.GDT  6/16/09**

**MWH**

**Boring ID:** HZBS0122

**Easting (ft):** 1796182.39  
**Start Time:** 09:20  
**Finish Time:** 09:21  
**Logged By:** B. Martasin, P.G. #8356  
**Reviewed By:** B. Martasin, P.G. #8356

**Date / Time:**

- **Drill Start Date:** 06-01-2009
- **Drill Finish Date:** 06-01-2009
- **Well Comp. Date:** N/A
- **Soil Backfill Date:** N/A

**Comments:**
- **Bedrock within 1 inch of surface**
- **No sample collected**

**Depth 1st H₂O (ft):** N/A  
**Date / Time:** N/A  
**Drill Rig Type/Method:** Hand Trowel  
**Driller’s Name:** B. Cisneros

**Total Depth (ft):** 0.1

**Soil Backfill Date:** N/A  
**Backfill Time:** N/A

**Sample Interval Retained**

<table>
<thead>
<tr>
<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>USCS Soil Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td>0</td>
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</tr>
</tbody>
</table>

**Bandstand Description**

- Total Depth = 0.1 ft; terminated on Chatsworth Formation Sandstone.

- Unable to collect sample due to shallow bedrock.
Boring ID: HZBS0123

Project: SSFL ISRA Sampling - Outfall 009 Area
Job Number: 1891614
Site: Happy Valley South

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

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

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

Samplers: Slide hammer with stainless steel sleeve

Soil Backfill Date: 06-01-2009
Backfill Time: 11:25

---

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/&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>SM</td>
<td>Silty Sand, pale brown (10YR 6/3), dense, dry [Alluvium]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>becomes reddish yellow (7.5YR 6/8) [Weathered Sandstone]</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Total Depth = 1.9 ft; refusal on weathered Chatsworth Formation Sandstone.</td>
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<td></td>
<td></td>
<td>Collected soil samples S001 and S001SP at 11:17.</td>
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<td></td>
<td>Backfilled with auger cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Est. % of Soil</th>
</tr>
</thead>
<tbody>
<tr>
<td>SilSiltyClay</td>
</tr>
<tr>
<td>Gravel</td>
</tr>
<tr>
<td>Coarse Sand</td>
</tr>
<tr>
<td>Med. Sand</td>
</tr>
<tr>
<td>Fine Sand</td>
</tr>
</tbody>
</table>

60 40
Boring ID: HZBS0123A

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

**Site:** Happy Valley South

**Logged By:** A. Goldenberg

**Reviewed By:** V. Vathanasin, 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>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></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), loose, dry, roots and rootlets, no odor, no staining [Fill]</td>
<td>10 5 30 25 30</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/4), medium dense to dense, dry to moist, roots and rootlets, no odor, no staining [Colluvium]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sandstone, brownish yellow (10YR 6/6), hard [Chatsworth Formation]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 2.3 ft; refusal on Chatsworth Formation Sandstone.


Backfilled with auger cuttings.
### Boring ID: HZBS0124

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

#### Site: Happy Valley South

#### Log Entry Details:
- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 1.8
- **Northings:** 266984.61
- **Easting:** 1796412.23
- **Date:** 06-01-2009
- **Job Number:** 1891614
- **Logged By:** B. Martasin, P.G. #8356
- **Reviewed By:** B. Martasin, P.G. #8356
- **Drill Rig Type/Method:** Hand Auger
- **Driller's Name:** B. Cisneros
- **Drilling Contractor:** Retained
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 06-01-2009
- **Backfill Time:** 11:08

#### Sample Harvest Details:
- **Samplers:** Grab from auger head collected with hand trowel (placed in sleeve)

#### Soil Descriptions:
- **Depth (feet):**
  - 0: Silty Sand, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]
  - 2: Becomes reddish yellow (7.5YR 6/8), grades coarser [Weathered Sandstone]

#### Soil Properties:
- **Total Depth = 1.8 ft; refusal on weathered Chatsworth Formation Sandstone.**
- **Collected soil samples S001 and D001 at 10:58.**
- **Backfilled with auger cuttings.**

#### Graph Log:
- **USCS Soil Classification:** SM
- **Description:**
  - Silty Sand, pale brown (10YR 6/3), medium dense, dry, rootlets [Alluvium]
  - Becomes reddish yellow (7.5YR 6/8), grades coarser [Weathered Sandstone]
  - Total Depth = 1.8 ft; refusal on weathered Chatsworth Formation Sandstone.
  - Collected soil samples S001 and D001 at 10:58.
  - Backfilled with auger cuttings.
### LOG OF BORING  OUTFALL008.GPJ  BOEING.GDT  12/16/09

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 8.5

**Drill Start Date:** 10-01-2009  
**Start Time:** NR  
**Logged By:** A. Goldenberg

**Drill Finish Date:** 10-06-2009  
**Finish Time:** NR  
**Reviewed By:** V. Vathanasin, 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:** A. Goldenberg

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

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

**Soil Backfill Date:** 10-06-2009  
**Backfill Time:** 08:30

#### Soil Description

<table>
<thead>
<tr>
<th>Sample Interval</th>
<th>Water Level</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</td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/6), medium dense, dry to moist, roots and rootlets, no odor, no staining [Fill]</td>
<td>5  10  25  30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), dense, moist, no odor, no staining [Colluvium]</td>
<td>10  35  25  30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.5</td>
<td></td>
<td>Hand Auger</td>
<td>Sandstone, very pale brown (10YR 7/4), hard [Chatsworth Formation]</td>
<td></td>
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</tr>
</tbody>
</table>

**Total Depth = 8.5 ft; refusal on Chatsworth Formation Sandstone.**

Collected soil samples S001 and S001-SP at 11:00 and S002 at 12:30.

Backfilled with auger cuttings.
Boring ID: HZBS0125

Project: SSFL ISRA Sampling - Outfall 008 Area

Site: Happy Valley South

Site: Happy Valley South

Sample located 4 ft S of asphalt road, just S of wood retaining wall

Grab sample collected in 6-inch stainless steel sleeve

Sample located 4 ft S of asphalt road, just S of wood retaining wall

Grab sample collected in 6-inch stainless steel sleeve

<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>Description</th>
<th>SM/ML</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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silty Sand / Sandy Silt, tannish brown, loose, moist, fine sandstone gravel, mica present [Alluvium]</td>
<td>10 5 10 25 50</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</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 10:00.</td>
<td></td>
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<tr>
<td>3</td>
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<td></td>
<td>Backfilled with auger cuttings.</td>
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</tr>
<tr>
<td>Sample Interval</td>
<td>Sample Type</td>
<td>Recovery (%)</td>
<td>Blow Count (ppm)</td>
<td>Water Level</td>
<td>USCS Soil Classification</td>
<td>Description</td>
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</tr>
<tr>
<td>0</td>
<td>SM</td>
<td></td>
<td></td>
<td>0</td>
<td>Silty Sand, tannish brown, loose, moist, trace sandstone gravel, mica present [Alluvium]</td>
<td></td>
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</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 09:50.

Backfilled with auger cuttings.
Silty Sand, loose, dry, sandstone gravel, mica present [Alluvium]

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 09:20.

Backfilled with auger cuttings.
**Boring ID: HZBS0128**

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

Project: SSFL ISRA Sampling - Outfall 008 Area

Northing (ft): 266936.56
Easting (ft): 1795640.04
Job Number: 1891614

Site: Happy Valley South - HVS-3

Logged By: S. Dawson
Logged By: M. Milman-Barris, P.G.

Drill Start Date: 06-30-2009
Start Time: 09:35
Drill Finish Date: 06-30-2009
Finish Time: 09:42

Drilling Contractor: B.L. Hall
Field Instrumentation: N/A

Driller's Name: Mike Hoehn

Comments: In vegetated gully 3 ft N of paved road, 1.5 ft N of white 6-inch water pipe

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

Drill Rig Type/Method: Hand Auger

---

**Sample Interval Retained**

<table>
<thead>
<tr>
<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></td>
<td></td>
<td></td>
<td>0</td>
<td>SM</td>
<td>Silty Sand, dark brown, loose, moist, mica present [Alluvium]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 09:45.</td>
</tr>
<tr>
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<td>2</td>
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<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>10</td>
<td>50</td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

Soil Backfill Date: 06-30-2009
Backfill Time: 09:47

In vegetated gully 3 ft N of paved road, 1.5 ft N of white 6-inch water pipe

Grab sample collected in 6-inch stainless steel sleeve
**Boring ID: HZBS0129**

<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>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.0</td>
<td></td>
<td>Poorly Graded Sand, reddish brown, loose, dry, weak cementation</td>
<td>5 80 15</td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 08:17.

Backfilled with auger cuttings.
**Boring ID: HZBS0130**

<table>
<thead>
<tr>
<th>Sample Interval (ft)</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>ML</td>
<td></td>
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<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>Silt with Sand, yellowish brown (10YR 5/4), medium stiff, dry, low dry strength, some rootlets, concrete debris [Sifted Alluvium]</td>
<td>Total Depth = 0.5 ft; terminated prior to refusal. Collected soil sample S001. Backfilled with auger cuttings.</td>
</tr>
<tr>
<td>1</td>
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<td>10</td>
<td>10</td>
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</tr>
</tbody>
</table>

**Log of Boring: Outfall 008.GPJ  Boeing.GDT  12/16/09**

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

**Site:** Happy Valley South - HVS-2A

**Logged By:** Ben Cisneros

**Comments:** Hummocky terrain, exposed soil with sparse grass and debris at surface

**Driller’s Name:** Ben Cisneros

**Field Instrumentation:** N/A

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

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

**Soil Backfill Date:** 07-14-2009  **Backfill Time:** 08:30

**Job Number:** 1891614

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

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

**Date / Time:** N/A  **Date / Time:** N/A

**Drill Start Date:** 07-14-2009  **Drill Finish Date:** 07-14-2009

**Start Time:** 08:20  **Finish Time:** 08:25

**Comments:** Hummocky terrain, exposed soil with sparse grass and debris at surface

**Sample Interval Retained:** N/A

**Sample Type:** N/A

**Recovery (%):** N/A

**Blow Count/6":** N/A

**PID (ppm):** N/A

**Water Level:** N/A

**PID:** N/A

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

**Total Depth (ft):** 0.5

**Northing (ft):** 266958.59  **Easting (ft):** 1796272.38

**Drill Start Date:** 07-14-2009  **Drill Finish Date:** 07-14-2009

**Completion Time:** 08:30

**Start Time:** 08:20  **Finish Time:** 08:25

**Site:** Happy Valley South - HVS-2A

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

**Comments:** Hummocky terrain, exposed soil with sparse grass and debris at surface

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

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

**Soil Backfill Date:** 07-14-2009  **Backfill Time:** 08:30

**Job Number:** 1891614

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

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

**Date / Time:** N/A  **Date / Time:** N/A

**Drill Start Date:** 07-14-2009  **Drill Finish Date:** 07-14-2009

**Start Time:** 08:20  **Finish Time:** 08:25

**Completion Time:** 08:30

**Start Time:** 08:20  **Finish Time:** 08:25

**Site:** Happy Valley South - HVS-2A

**Logged By:** S. Valenzuela  **Reviewed By:** M. Milman-Barris, P.G.
Boring ID: HZBS0131

Sample Interval | Water Level | Depth (feet) | Graphic Log | USCS Soil Classification | Description |
0 | SP | 0 | Poorly Graded Sand, reddish brown, medium dense, dry, weak to moderate cementation |
1 | | 1 | | |
2 | | 2 | | |
3 | | 3 | | |
4 | | 4 | | |
5 | | 5 | | |
6 | | 6 | | |
7 | | 7 | | |
8 | | 8 | | |
9 | | 9 | | |
10 | | 10 | | |

Comments: Dry soil covered with dried vegetation at surface, no debris

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 08:35.

Backfilled with auger cuttings.
**LOG OF BORING - OUTFALL 008 Area**

<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>ML</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Silt with Sand, yellowish brown (10YR 5/4), medium stiff, dry, nonplastic, low dry strength [Sifted Alluvium]</td>
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<tr>
<td>0.5</td>
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<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
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<td></td>
<td>Collected soil sample S001.</td>
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<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Boring ID:** HZBS0132  
**Job Number:** 1891614  
**Site:** Happy Valley South - HVS-2A  
**Drill Start Date:** 07-14-2009  
**Start Time:** 08:30  
**Drill Finish Date:** 07-14-2009  
**Finish Time:** 08:35  
**Logged By:** S. Valenzuela  
**Reviewed By:** M. Milman-Barris, P.G.  
**Sampled By:** Ben Cisneros  
**Comments:** Exposed soil with sparse vegetation at surface  
**Sampled:** 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:** 08:35  

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 0.5  
**Northing (ft):** 267039.87  
**Easting (ft):** 1796295.85  
**Drill Rig Type/Method:** Hand Auger  
**Depth H2O After Drilling (ft):** N/A  
**Site:** Happy Valley South - HVS-2A  
**Reviewed By:** M. Milman-Barris, P.G.  
**Driller’s Name:** Ben Cisneros  
**Drilling Contractor:** B.L. Hall  
**Field Instrumentation:** N/A  

**Sample Interval:***  
**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:***  
**Sil/Clay:***
**Boring ID:** HZBS0133

**Job Number:** 1891614

**Logged By:** M. Milman-Barris

**Sheet 1 of 1**

**Site:** Happy Valley South - HVS-2A

**Date / Time:** 07-14-2009

**Drill Start Date:** 07-14-2009

**Drill Finish Date:** 07-14-2009

**Start Time:** 08:46

**Finish Time:** 08:47

**Driller's Name:** Mike Hoehn

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

**Field Instrumentation:** N/A

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

**Comments:** Dry bare soil with gravel-size asphalt pieces and concrete debris at surface. Total Depth = 0.5 ft; terminated prior to refusal. Collected soil sample S001 at 08:47. Backfilled with auger cuttings.

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</th>
<th>Sample 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></td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td>Poorly Graded Sand, reddish brown, medium dense, dry, moderate cementation, one coarse sand-size piece of porcelain-like debris [Fill]</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. Collected soil sample S001 at 08:47. 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>10</td>
<td>10</td>
<td>80</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Logged By:** M. Milman-Barris

**Reviewed By:** S. Valenzuela, P.G.

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

**Sample Interval Retained:** N/A

**Sample Recovery (%):** N/A

**Blow Count/6":** N/A

**Water Level:** N/A

**Depth (feet):** N/A

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

**Completion Time:** N/A

**Soil Backfill Date:** 07-14-2009

**Backfill Time:** 08:48
<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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CL</td>
<td>Lean Clay with Sand, yellowish brown (10YR 5/6), medium stiff, dry, low to medium plasticity, medium dry strength, trace rootlets [Sifted Alluvium]</td>
</tr>
<tr>
<td>1</td>
<td></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.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:** Near HV road, soil with sparse vegetation and trace road gravel at surface

**Sample Types:** 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:** 08:45

**Est. % of Soil:**
- **Gravel:** 5
- **Coarse Sand:** 20
- **Med. Sand:** 75
- **Fine Sand:** 0
- **Silt/Clay:** 0

---

**Log of Boring:**
- **Site:** Happy Valley South - HVS-2A
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Driller's Name:** Ben Cisneros
- **Drilling Contractor:** B.L. Hall
- **Logged By:** S. Valenzuela
- **Reviewed By:** M. Milman-Barris, P.G.
**Boring ID: HZBS0135**

**Borehole Diam. (in.):** 3  
**Total Depth (ft):** 0.5  
**Project:** SSFL ISRA Sampling - Outfall 008 Area

**Logged By:** M. Milman-Barris  
**Site:** Happy Valley South - HVS-2A

**Easting (ft):** 267078.49  
**Logged By:** M. Milman-Barris

**Drill Start Date:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Drill Finish Date:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Easting (ft):** 1796213.00  
**Logged By:** M. Milman-Barris

**Start Time:** 08:59  
**Logged By:** M. Milman-Barris

**Finish Time:** 09:00  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Easting (ft):** 267078.49  
**Logged By:** M. Milman-Barris

**Start Time:** 08:59  
**Logged By:** M. Milman-Barris

**Finish Time:** 09:00  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009  
**Logged By:** M. Milman-Barris

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

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

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

**Well Comp. Date:** N/A  
**Reviewed By:** S. Valenzuela, P.G.

**Soil Backfill Date:** 07-14-2009  
**Reviewed By:** S. Valenzuela, P.G.

**Completion Time:** N/A  
**Reviewed By:** S. Valenzuela, P.G.

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

**Site:** Happy Valley South - HVS-2A

**Comments:** In 3-ft-deep drainage filled with vegetation (removed), adjacent to road

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

**Collected soil sample S001 at 09:00.**

**Backfilled with auger cuttings.**

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

<table>
<thead>
<tr>
<th>0</th>
<th>SP</th>
<th>Poorly Graded Sand, reddish brown, medium dense, dry, weak cementation [Alluvium]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Collected soil sample S001 at 09:00.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Gravel**

| 5 | 25 | 70 |
### Boring ID: HZBS0136

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Sample Type</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</td>
<td>Silty Sand, dark brown (10YR 3/3), medium dense, angular to subangular coarse sand derived from sandstone, trace burnt debris [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

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

Collected soil sample S001.

Backfilled with auger cuttings.
**Boring ID:** HZBS0137

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

**Site:** Happy Valley South - HVS-2A

**Driller's Name:** M. Milman-Barris

**Reviewed By:** S. Valenzuela, P.G.

**Logged By:** M. Milman-Barris

**Date / Time:** 07-14-2009 09:19

**Sample Interval Retained**

<table>
<thead>
<tr>
<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>SP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>SP</td>
<td>Poorly Graded Sand, reddish brown, medium dense, dry, moderate cementation, dry organics (sticks)</td>
<td></td>
</tr>
</tbody>
</table>

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 09:20.

Backfilled with auger cuttings.

**Comments:** Dry soil with some dried vegetation at surface, no debris

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

**Completion Time:** N/A

**Soil Backfill Date:** 07-14-2009

**Backfill Time:** 09:20
<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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>CL</td>
<td>Lean Clay with Sand, yellowish brown (10YR 5/4), medium stiff, dry, medium plasticity, medium dry strength [Sifted Alluvium]</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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Boring ID: HZBS0138**

<table>
<thead>
<tr>
<th>Borehole Diam. (in.): 3</th>
<th>Total Depth (ft): 0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northing (ft): 267109.79</td>
<td>Easting (ft): 1796270.72</td>
</tr>
<tr>
<td>Drill Start Date: 07-14-2009</td>
<td>Start Time: 09:00</td>
</tr>
<tr>
<td>Drill Finish Date: 07-14-2009</td>
<td>Finish Time: 09:05</td>
</tr>
<tr>
<td>Project: SSFL ISRA Sampling - Outfall 008 Area</td>
<td></td>
</tr>
<tr>
<td>Logged By: S. Valenzuela</td>
<td>Reviewed By: M. Milman-Barris, P.G.</td>
</tr>
<tr>
<td>Drilling Contractor: B.L. Hall</td>
<td>Field Instrumentation: N/A</td>
</tr>
<tr>
<td>Depth 1st H₂O (ft): N/A</td>
<td>Date / Time: N/A</td>
</tr>
<tr>
<td>Drill Rig Type/Method: Hand Auger</td>
<td></td>
</tr>
<tr>
<td>Well Comp. Date: N/A</td>
<td>Completion Time: N/A</td>
</tr>
<tr>
<td>Comments: Exposed soil at surface, near heavy brush</td>
<td></td>
</tr>
<tr>
<td>Soil Backfill Date: 07-14-2009</td>
<td>Backfill Time: 09:05</td>
</tr>
</tbody>
</table>

**Driller's Name:** Ben Cisneros

**Comments:**
- Exposed soil at surface, near heavy brush
- Grab sample collected in 6-inch stainless steel sleeve
- Collected soil sample S001.
Borehole Diam. (in.): 3
Total Depth (ft): 0.5
Northing (ft): 267148.87
Easting (ft): 1796248.07
Drill Start Date: 07-14-2009
Start Time: 09:36
Finish Time: 09:37
Drilling Contractor: B.L. Hall
Drill Rig Type/Method: Hand Auger
Well Comp. Date: N/A
Completion Time: N/A
Backfill Time: 09:37

**Field Notes:**

- Dry soil with some dried vegetation at surface, no debris
- Total Depth = 0.5 ft; terminated prior to refusal.
- Collected soil sample S001 at 09:37.
- Backfilled with auger cuttings.

### Soil Description

<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>S</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
<td>SP</td>
<td>SP (SP)</td>
<td>Poorly Graded Sand, reddish brown, medium dense, dry, angular gravel, coarse sand derived from sandstone, moderate cementation, dry organics (sticks)</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.</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 09:37.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<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>5</td>
<td>5</td>
<td></td>
<td></td>
<td>90</td>
</tr>
</tbody>
</table>
**Boring ID: HZBS0140**

<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></td>
<td></td>
<td></td>
<td>0</td>
<td>ML</td>
<td>Silt with Sand, dark yellowish brown (10YR 4/4), soft, dry, low dry strength, some rootlets [Sifted Alluvium]</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Collected soil sample S001.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Comments:** Exposed soil with sparse vegetation at surface, near small bush

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

**Completion Time:** N/A

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

**Soil Backfill Date:** 07-14-2009

**Backfill Time:** 09:20
Borehole Diam. (in.): 3
Total Depth (ft): 0.5
Project: SSFL ISRA Sampling - Outfall 008 Area

Nothing (ft): 267196.40
Easting (ft): 1796270.64
Job Number: 1891614
Site: Happy Valley South - HVS-2A

Drill Start Date: 07-14-2009
Start Time: 09:49
Logged By: M. Milman-Barris
Reviewed By: S. Valenzuela, P.G.

Drill Finish Date: 07-14-2009
Finish Time: 09:50
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: Mike Hoehn

Comments: In drainage, under tree, loose soil and dry vegetation at surface, no debris

Sample Intervals:

<table>
<thead>
<tr>
<th>Depth (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>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td>Poorly Graded Sand, reddish brown, loose, weak cementation, sticks and vegetation</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.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Collected soil sample S001 at 09:50.</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

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

Driller's Name: Mike Hoehn

In drainage, under tree, loose soil and dry vegetation at surface, no debris

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

Soil Backfill Date: 07-14-2009
Backfill Time: 09:50

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></td>
<td></td>
<td>10</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>
# LOG OF BORING  OUTFALL008.GPJ  BOEING.GDT  12/16/09

**Boring ID:** HZBS0142

**Job Number:** 1891614  
**Logged By:** S. Valenzuela

**Site:** Happy Valley South - HVS-2A  
**Date:** 07-14-2009

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

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

**Easting (ft):** 267225.36  
**Start Time:** 09:25

**Northing (ft):** 279631.44  
**Finish Time:** 09:35

**Borehole Diam. (in.):** 3  
**Drill Start Date:** 07-14-2009  
**Drill Finish Date:** 07-14-2009

**Total Depth (ft):** 0.5  
**Driller’s Name:** Ben Cisneros

**Borehole Diam. (in.):** 3  
**Sample Interval Retained:** 3

**Total Depth (ft):** 0.5  
**Field Instrumentation:** N/A

**Sample Type:** S  
**Comments:** At bottom of cliff, exposed soil at surface

**Graphic Log:**

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
</thead>
</table>
| 0            | CL                        | Sandy Lean Clay, yellowish brown (10YR 5/4), medium stiff, dry, low to medium plasticity, medium dry strength  
Total Depth = 0.5 ft; terminated prior to refusal.  
Collected soil sample S001.  
Backfilled with auger cuttings. |
| 1            |                          |             |
| 2            |                          |             |
| 3            |                          |             |
| 4            |                          |             |
| 5            |                          |             |
| 6            |                          |             |
| 7            |                          |             |
| 8            |                          |             |
| 9            |                          |             |
| 10           |                          |             |

**PID (ppm):** 5

**Water Level:** Retained

**Depth (feet):**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Sample Type:** S

**Sample Interval Retained:**

<table>
<thead>
<tr>
<th>Sample Interval Retained</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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

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

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

**Soil Backfill Date:** 07-14-2009  
**Backfill Time:** 09:35

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

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

**Driller’s Name:** Ben Cisneros
**Comments:** Dry, moderately cemented soil with dry grass and tall shrubs at surface. Total Depth = 0.5 ft; terminated prior to refusal. Collected soil sample S001 at 10:18. Backfilled with auger cuttings.

**Sample Interval Retained**

<table>
<thead>
<tr>
<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>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td>Poorly Graded Sand, reddish brown, medium dense, dry, moderate cementation, dry grass</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td>100</td>
</tr>
</tbody>
</table>

**Description**

Dry, moderately cemented soil with dry grass and tall shrubs at surface. Collected soil sample S001 at 10:18. Backfilled with auger cuttings.
**LOG OF BORING**

- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Site:** Happy Valley South - HVS-2B
- **Drilling Contractor:** B.L. Hall
- **Reviewed By:** M. Milman-Barris, P.G.
- **Logged By:** S. Valenzuela
- **Driller’s Name:** Ben Cisneros

### General Information
- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 0.5
- **Northing (ft):** 266942.24
- **Easting (ft):** 1796110.17
- **Start Time:** 09:30
- **Finish Time:** 09:40
- **Date / Time:** 07-14-2009
- **Drill Rig Type/Method:** Hand Auger
- **Comments:** Near bottom of hillside, medium grasses covering soil surface

### Soil Sample Collection
- **Sample Interval:** 0, 1, 2, 3, 4, 5, 6
- **Sample Type:** Grab sample collected in 6-inch stainless steel sleeve
- **Sample Retained:** N/A
- **Blow Count/6”:** N/A
- **PID (ppm):** N/A
- **Water Level:** N/A
- **Graph Log:** N/A
- **USCS Soil Classification:** SC

### Soil Description
- **Clayey Sand, yellowish brown (10YR 5/4), loose, moist, no cementation [Fill?]**
- **Total Depth = 0.5 ft; terminated prior to refusal.**
- **Collected soil sample S001.**
- **Backfilled with auger cuttings.**

### Est. % of Soil
- **Gravel:** tr
- **Coarse Sand:** tr
- **Med. Sand:** 20
- **Fine Sand:** 50
- **Silt/Clay:** 30
<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>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SC</td>
<td>Clayey Sand, yellowish brown (10YR 5/4), medium dense, dry, medium to high dry strength, weak cementation [Fill?]</td>
<td></td>
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<tr>
<td>1</td>
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<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
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<td></td>
<td>Collected soil sample S001.</td>
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<td>Backfilled with auger 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>PID (ppm)</td>
<td>Water Level</td>
<td>Graphic Log</td>
<td>USCS Soil Classification</td>
<td>Description</td>
<td>Est. % of Soil</td>
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<td>SP</td>
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<td></td>
<td></td>
<td></td>
<td>Poorly Graded Sand, light yellowish brown, medium dense, dry, moderate cementation</td>
<td>100</td>
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<td></td>
<td></td>
<td>Total Depth = 1.2 ft (14 in.); refusal on Chatsworth Formation Sandstone.</td>
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<td></td>
<td>Collected soil sample S001 at 12:53.</td>
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<td></td>
<td>Backfilled with auger cuttings.</td>
<td></td>
</tr>
</tbody>
</table>

Borehole Diam. (in.): 3
Total Depth (ft): 1.2
Project: SSFL ISRA Sampling - Outfall 008 Area
Notthing (ft): 266874.18
Easting (ft): 1796153.25
Job Number: 1891614
Drill Start Date: 07-15-2009
Start Time: 12:52
Logged By: M. Milman-Barris
Drill Finish Date: 07-15-2009
Finish Time: 12:54
Drilling Contractor: B.L. Hall
Depth 1st H₂O (ft): N/A
Date / Time: N/A
Driller's Name: Ben Cisneros
Drill Rig Type/Method: Hand Auger
Field Instrumentation: N/A
Comments: Bare soil and dry vegetation at surface (vegetation cleared earlier in day)
Well Comp. Date: N/A
Completion Time: N/A
Samplers: Grab sample collected in 6-inch stainless steel sleeve
Soil Backfill Date: 07-15-2009
Backfill Time: 12:54
Borehole Diam. (in.): 3  Total Depth (ft):  3.3  Project:  SSFL ISRA Sampling - Outfall 008 Area
Northing (ft):  266895.94  Easting (ft):  1796156.98  Job Number:  1891614  Site:  Happy Valley South - HVS-2B
Drill Finish Date:  07-15-2009  Finish Time:  12:44  Drilling Contractor:  B.L. Hall  Field Instrumentation:  N/A
Driller's Name:  Ben Cisneros

<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>S</td>
<td>SP</td>
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<td></td>
<td></td>
<td></td>
<td>0</td>
<td></td>
<td>Poorly Graded Sand, yellowish brown, medium dense, dry, moderate cementation [Fill]</td>
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<td>10</td>
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</tr>
</tbody>
</table>

Comments: Bare soil and dry vegetation at surface (vegetation cleared earlier)

Total Depth = 3.3 ft; refusal on Chatsworth Formation Sandstone.
Collected soil samples S001 at 12:42 and S002 at 12:44.
Backfilled with auger cuttings.

Water Level: Retained
PID (ppm): 12:46
Depth H₂O After Drilling (ft): N/A

GPS Coordinates: N/A

Well Comp. Date: N/A  Completion Time: N/A
Reviewed By: S. Valenzuela, P.G.

Backfilled with auger cuttings.

Sampled: Grab sample collected in 6-inch stainless steel sleeve
<table>
<thead>
<tr>
<th>Depth (ft)</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>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>S</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>SP</td>
<td>Poorly Graded Sand, yellowish brown, medium dense, dry, moderate cementation [Fill]</td>
</tr>
<tr>
<td>2.2</td>
<td>S</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>becomes dark yellowish brown loose, dry to moist, no cementation</td>
<td>Total Depth = 2.2 ft; refusal on Chatsworth Formation Sandstone. Collected soil samples S001 at 12:27 and S002 at 12:34. Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

Comments: 10 ft from gravel road; bare soil, dry vegetation, and scattered road gravel.

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

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

Soil Backfill Date: 07-15-2009  Backfill Time: N/A

Job Number: 1891614  Reviewed By: S. Valenzuela, P.G.
<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>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SP</td>
<td>Poorly Graded Sand, dark yellowish brown, loose, dry, no cementation [Alluvium]</td>
<td></td>
</tr>
</tbody>
</table>

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

Collected soil sample S001 at 12:08.

Backfilled with auger cuttings.
**Borehole Diam. (in.):** 3

**Total Depth (ft):** 0.5

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

**Job Number:** 1891614

**Site:** Happy Valley South - HVS-3

**Drill Start Date:** 07-15-2009

**Start Time:** 13:15

**Logged By:** M. Milman-Barris

**Reviewed By:** S. Valenzuela, P.G.

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

**Date / Time:** N/A

**Drill Finish Date:** 07-15-2009

**Finish Time:** 13:16

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

**Field Instrumentation:** N/A

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

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

**Date / Time:** N/A

**Driller’s Name:** Ben Cisneros

**Comments:** Dry soil with dry vegetation at surface

**Soil Backfill Date:** 07-15-2009

**Backfill Time:** 13:16

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

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**Description**

Poorly Graded Sand, dark yellowish brown, loose, dry, no cementation

Total Depth = 0.5 ft; terminated prior to refusal.

Collected soil sample S001 at 13:16.

Backfilled with auger cuttings.

**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></td>
<td></td>
<td></td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
**Boring ID: HZBS0151**

**Project:** SSFL ISRA Sampling - Outfall 008 Area  
**Job Number:** 1891614  
**Site:** Happy Valley South - HVS-1

<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>S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, dark yellowish brown (10YR 4/4), very loose, dry, mica present [Native]</td>
</tr>
<tr>
<td>0.5</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Total Depth = 0.5 ft; terminated prior to refusal.</td>
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<tr>
<td></td>
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<td></td>
<td>Collected soil sample S001.</td>
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<td></td>
<td>Backfilled with auger cuttings.</td>
</tr>
</tbody>
</table>

**Comments:** Heavy vegetation (mostly dry grass) removed prior to sampling, no debris.

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

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

**Soil Backfill Date:** 07-01-2009  
**Backfill Time:** 09:04
Silty Sand, yellowish brown (10YR 5/4), loose, dry, fine gravel, no cementation, mica present [Native]

Total Depth = 1.0 ft; terminated prior to refusal.
Collected soil sample S001.
Backfilled with auger cuttings.
**Boring ID:** HZBS0153

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

**Site:** Happy Valley South - HVS-1

**Drill Start Date:** 07-01-2009  
**Start Time:** 11:00

**Logged By:** A. Ruotolo

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

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

**Comments:** Heavy vegetation removed prior to sampling, no debris

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

<table>
<thead>
<tr>
<th>Depth (feet)</th>
<th>Sample Interval Retained</th>
<th>Water Level</th>
<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/6&quot;</th>
<th>PID (ppm)</th>
<th>Graphic Log</th>
<th>USCS Soil Classification</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>0</td>
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<td></td>
<td></td>
<td>SM</td>
<td>Silty Sand, yellowish brown (10YR 5/4), loose, dry, fine gravel, no cementation, mica present [Native]</td>
</tr>
<tr>
<td>1</td>
<td></td>
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<td></td>
<td>Total Depth = 1.5 ft; terminated prior to refusal. Collected soil sample S001. Backfilled with auger cuttings.</td>
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</tbody>
</table>

**Well Comp. Date:** N/A  
**Completion Time:** N/A  
**Soil Backfill Date:** 07-01-2009  
**Backfill Time:** 11:05
**Boring ID: HZBS0154**

<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>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></td>
<td>Silty Sand, brown (10YR 4/3), loose, dry, fine gravel, no cementation, mica present [Native]</td>
<td>tr 10 20 30 40</td>
</tr>
</tbody>
</table>

- **Drilling Contractor:** B.L. Hall
- **Field Instrumentation:** N/A
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Soil Backfill Date:** 07-01-2009
- **Backfill Time:** 13:25

**Comments:** On slope covered with dried vegetation, no debris

Collected soil sample S001.

Backfilled with auger cuttings.
Borehole Diam. (in.): 3  
Total Depth (ft): 1.5  
Project: SSFL ISRA Sampling - Outfall 008 Area  
Northing (ft): 266974.97  
Easting (ft): 1796005.93  
Job Number: 1891614  
Site: Happy Valley South - HVS-2C  
Drill Start Date: 07-01-2009  
Start Time: 12:47  
Logged By: A. Ruotolo  
Reviewed By: M. Milman-Barris, P.G.  
Drill Finish Date: 07-01-2009  
Finish Time: 12:48  
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: Ben Cisneros  
Comments: In small clearing surrounded by heavy vegetation, no debris  
Samplers: Grab sample collected in 6-inch stainless steel sleeve  
Well Comp. Date: N/A  
Completion Time: N/A  
Soil Backfill Date: 07-01-2009  
Backfill Time: 12:57  

<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>
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</thead>
<tbody>
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<td>SM</td>
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<td></td>
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<td>Silty Sand, brown (10YR 4/3), loose, dry, no cementation, mica present [Native]</td>
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<td>Sandstone, weathered [Chatsworth Formation]</td>
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<td>Total Depth = 1.5 ft; terminated prior to refusal.</td>
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<td>Collected soil sample S001.</td>
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**Boring ID: HZBS0156**

- **Borehole Diam. (in.):** 3
- **Total Depth (ft):** 1.5
- **Project:** SSFL ISRA Sampling - Outfall 008 Area
- **Northing (ft):** 266961.12
- **Easting (ft):** 1795939.68
- **Job Number:** 1891614
- **Site:** Happy Valley South - HVS-2C
- **Drill Start Date:** 07-01-2009
- **Start Time:** 13:11
- **Logged By:** A. Ruotolo
- **Drill Finish Date:** 07-01-2009
- **Finish Time:** 13:12
- **Drilling Contractor:** B.L. Hall
- **Field Instrumentation:** N/A
- **Driller’s Name:** Ben Cisneros
- **Comments:** Surface covered with vegetation (removed prior to sampling), no debris
- **Well Comp. Date:** N/A
- **Completion Time:** N/A
- **Samplers:** Grab sample collected in 6-inch stainless steel sleeve

<table>
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<th>Sample Type</th>
<th>Recovery (%)</th>
<th>Blow Count/&quot;</th>
<th>PID (ppm)</th>
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<th>Depth (feet)</th>
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<td></td>
<td></td>
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- **Total Depth = 1.5 ft; terminated prior to refusal.**
- **Collected soil sample S001.**
- **Backfilled with auger cuttings.**

- ** Depths:** 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
**Boring ID: HZBS0157**

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<thead>
<tr>
<th>Sample Interval</th>
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<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>
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<th>Coarse Sand</th>
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<td>SM</td>
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Comments: In small clearing between bushes, no debris

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

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

Soil Backfill Date: 07-01-2009  
Backfill Time: 13:02