

December 10, 2014

Mr. John Di Censo  
Town of Surfside  
Municipal Building  
9293 Harding Avenue  
Surfside, FL 33154

Subject: Soil Assessment Report for the  
Town of Surfside Coastal Area  
Located at between 88th Street and 95th Street  
Surfside, Miami-Dade County, FL  
LandScience Project Number: 2146811

Dear Mr. John Di Censo,

Please find attached two copies of this Soil Assessment Report (1 hard copy and 1 cd copy) are attached for your review.

LandScience appreciates the opportunity to assist you on this project. We look forward to providing you with our services again in the near future. Please feel free to contact us if you have questions concerning the report.

Yours Very Truly,

**LandScience, Inc.**



Andrew Whitaker  
Project Manager



Rob Ludicke, M.Sc., REP # 5985  
President

**SOIL ASSESSMENT REPORT**

for the

**TOWN OF SURFSIDE COASTAL AREA  
Located Between 88<sup>th</sup> Street and 95<sup>th</sup> Street  
Surfside, Miami-Dade County, Florida**

Prepared for

**TOWN OF SURFSIDE  
Municipal Building  
9293 Harding Avenue  
Surfside, Florida 33154**

Prepared by

**LANDSCIENCE, INC.  
12570 Northeast 7<sup>th</sup> Avenue  
North Miami, Florida 33161**

**December 2014  
LandScience Project No. 2146811**

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## 1.0 INTRODUCTION

This report presents a summary of activities and results of a Soil Assessment Report conducted for the following property:

Town of Surfside Coastal Area  
Located Between 88<sup>th</sup> Street and 95<sup>th</sup> Street  
Surfside, Miami-Dade County, Florida

The report presents the information gathered during the assessment, the methodologies utilized, and an evaluation of the information. It also includes our conclusions concerning environmental conditions at the above referenced property, and our recommendations for further environmental assessment, if necessary. Unless otherwise noted, the above referenced property will be referred to as the “subject property” throughout this report. This section presents a description of the subject property, the project background and objectives, and the scope of work performed.

During October 2014, LandScience was authorized to conduct a Soil Assessment of the Town of Surfside coastal sands between 88<sup>th</sup> Street and 95<sup>th</sup> Street. The Soil Assessment was conducted in accordance with LandScience’s Proposal Number 2148838, dated October 9, 2014, and in general accordance with the American Society for Testing and Materials document *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process* (ASTM E 1903 02). **Figure 1** is a 2013 aerial photograph showing the study area.

This Soil Assessment is not intended to be a comprehensive subsurface assessment of the entire area. The intent of the Soil Assessment is to assist the client in understanding the implications of existing environmental concerns that may be present at the subject property based on a reasonable level of field exploration and on the laboratory test data presented in this report. LandScience makes no final judgment nor is responsible for the independent conclusions, opinions, or recommendations made by others.

## **1.1 Site Description**

The subject property, coastal areas in the vicinity of 85<sup>th</sup> Street (North Shore Open Space Park), between 88<sup>th</sup> Street and 95<sup>th</sup> Street, and approximately 100 feet north of the Haulover Inlet, is located in Section 35, Township 52 South, Range 42 East, in Surfside, Miami-Dade County, Florida.

## **1.2 Project Background and Objectives**

Review of a Beach Sand Chemical Testing report prepared by Terracon and dated May 9, 2014, indicated that Terracon identified arsenic impacted sand along the stretch of beach between 88th and 95th Streets in the town of Surfside, which was re-nourished with imported sand from the Surf Club reconstruction project during April 2014.

Based on this information, LandScience was retained to conduct a soil assessment in an effort to determine the suitability of the re-nourishment sand for placement in the dune field at selected appropriate locations immediately to the west of the Surfside beach.

## **1.3 Scope of Work**

The scope of work for the Soil Assessment consisted of the following:

- The collection of forty-eight (48) soil samples from the 0 to 1 foot interval below land surface (bls) combined into eight (8) composite soil samples (6 composite soil samples from the study area and 2 composite soil samples from the control areas to the north and south of the study area) using a stainless-steel hand auger. Please note that upon initial sample collection it was determined that due to the well sorted and

dry conditions of the soil/sand, the stainless-steel auger was not able to collect the samples; therefore, grab samples were collected by hand.

- Laboratory analysis of the eight (8) composite soil samples for 8 Resource Conservation Recovery Act (RCRA) metals by Environmental Protection Agency (EPA) Method 6010, total recoverable petroleum hydrocarbons (TRPHs) by the Florida Department of Environmental Protection (FDEP) FL-PRO Method, chlorinated pesticides by EPA Method 8081, and polychlorinated biphenyls (PCBs) by EPA Method 8082.

- In addition, the six (6) composite soil samples from the 0 to 1 foot interval bls were analyzed for 8 RCRA metals using the Synthetic Precipitation Leachate Procedure (SPLP) Method.

- The preparation of a Soil Assessment Report summarizing all field activities and laboratory analytical results.

#### **1.4 Health and Safety Plan**

LandScience developed a Health and Safety Plan specific to the subject property as required by the Occupational Safety and Health Administration (OSHA) in accordance with Waste Operations and Emergency Response 29 CFR 1910.120. The Health and Safety Plan was prepared to reduce the risk of physical or chemical exposure that may affect on-site workers in the work area.

## 2.0 SOIL ASSESSMENT ACTIVITIES

This section is a discussion of soil assessment activities conducted at the subject property on October 31, 2014.

### 2.1 Soil Sampling and Analysis

On October 31, 2014, a representative of LandScience collected soil samples, SS-1 through SS-48 at the subject property. Specifically, soil samples, SS-1 through SS-6 [Control Composite Soil Sample (CCSS) 1], were collected from the control area to the south in the vicinity of 85<sup>th</sup> Street (North Shore Open Space Park); soil samples, SS-7 through SS-42 [Composite Soil Samples (CSS) 2 through 7] were collected from in the study area between 88<sup>th</sup> Street and 95<sup>th</sup> Street; and soil samples, SS-43 through SS-48 (CCSS-8), were collected from the control area to the north approximately 100 feet north of the Haulover Inlet. The approximate soil sample locations are depicted on **Figures 2a** through **2h**.

Soil samples were collected at the 0-1 foot bls interval from each location by hand. Prior to the collection of the soil samples, the LandScience representative donned a new, unused nitrile glove. The soil samples from each composite set were placed into a plastic re-sealable bags for mixing. The soil samples were then introduced into pre-cleaned sample containers, placed on ice, and transported to Florida Spectrum Environmental Services, Inc., for laboratory analysis. Composite soil samples, CCSS-1, CCSS-2, and CSS-2 through CSS-7 were analyzed for 8 RCRA metals by EPA Method 6010, organochlorine pesticides by EPA Method 8081, TRPHs by the FL-PRO Method, and for PCBs by EPA Method 8082. Chain of custody documentation accompanied the samples to the laboratory.

### 3.0 SOIL ASSESSMENT RESULTS

#### 3.1 Soil Analytical Results

The laboratory soil analytical results indicated the following:

##### Heavy Metals

Concentrations of arsenic were detected in composite soil samples, CCSS-1, CSS-1, CSS-2, CSS-3, CSS-4, CSS-5, and CSS-6, at levels which exceeded the soil cleanup target level for residential properties as established by the FDEP in Chapter 62-777, of the Florida Administrative Code (F.A.C.), Table II, *Soil Cleanup Target Levels (SCTLs)*, but were below the FDEP SCTLs for commercial properties. The concentrations of the remaining heavy metals tested in CCSS-1, CSS-1, CSS-2, CSS-3, CSS-4, CSS-5, and CSS-6 were either below the method detection limits or the FDEP SCTLs.

Heavy metal concentrations in composite soil sample, CCSS-2, were either below the method detection limits, or the FDEP SCTLs.

##### Organochlorine Pesticides

Organochlorine pesticide concentrations in composite soil samples, CCSS-1, CSS-1, CSS-2, CSS-3, CSS-4, CSS-5, CSS-6, and CCSS-2, were either below the method detection limits, or the FDEP SCTLs.

##### Total Recoverable Petroleum Hydrocarbons

TRPH concentrations in composite soil samples, CCSS-1, CSS-1, CSS-2, CSS-3, CSS-4, CSS-5, CSS-6, and CCSS-2, were either below the method detection limits, or the FDEP SCTLs.

##### Polychlorinated Biphenyls

PCB concentrations in composite soil samples, CCSS-1, CSS-1, CSS-2, CSS-3, CSS-4, CSS-5, CSS-6, and CCSS-2, were either below the method detection limits, or the FDEP SCTLs.

### Heavy Metal SPLP

Heavy metal concentrations using the SPLP method in composite soil samples, CCSS-1, CSS-2, CSS-3, and CCSS-2, were either below the method detection limits, or below the leachability based on groundwater criteria [e.g., groundwater cleanup target levels established by the FDEP in Chapter 62-777, of the F.A.C., Table I, *Groundwater Cleanup Target Levels (GCTLs)*].

However, lead concentrations using the SPLP method in composite soil samples, CSS-1, CSS-4, CSS-5, and CSS-6, were detected at levels which exceeded the FDEP GCTLs, but were below the FDEP “Low Yield/Poor Quality” criterion as established in Chapter 62-777, of the F.A.C., which is equal to 10 times the applicable chemical-specific groundwater criterion.

The laboratory analytical results are depicted in **Figures 3a-3h** through **Figures 6a-6h**, and are summarized in **Table 1** through **Table 4**. A copy of the laboratory data report including chain of custody documentation is included in **Appendix A**.

#### 4.0 CONCLUSIONS AND RECOMMENDATIONS

This section summarizes conclusions based on the information obtained during the Soil Assessment of the Town of Surfside Coastal Areas between 88<sup>th</sup> Street and 95<sup>th</sup> Street in Surfside, Miami-Dade County, Florida.

The laboratory analytical results indicated that the Surfside beach sand has not been impacted by organochlorine pesticides, polychlorinated biphenyls, total recoverable petroleum hydrocarbons, or arsenic, barium, chromium, lead, mercury, selenium, or silver at levels which will require further assessment or remediation.

The laboratory analytical results indicated that arsenic concentrations ranged from 3.8 to 6.46 mg/Kg in the re-nourishment sand samples (mean 5.4 mg/Kg), and from 1.8 to 2.39 mg/Kg in the control sand samples. Therefore, the arsenic concentrations present in the re-nourishment sand and control sand were consistent with natural background for this and other areas of coastal Florida, as indicated by a body of sampling data from LandScience and a number of reputable sources [i.e., Kimley-Horn (2014), Terracon (2014)]. Such arsenic background ranges from less than 1 mg/kg to over 15 mg/kg in Miami-Dade County with a central tendency estimate of 5.2 mg/Kg. Samples collected from both control sand locations and re-nourishment sand locations (1.8 mg/Kg to 6.46 mg/Kg) fall in the low to middle of the background range. It should be noted that naturally occurring background is indicative of conditions that are geological in origin and do not represent human activities.

Furthermore, based on evaluation of the previous similar data for sand samples, the Florida Department of Health (FDOH) concluded that there was not a significant increased health risk related to exposure to arsenic in the beach sand, even assuming lifetime exposure (FDOH, 2014). The FDOH statement supplemented the earlier conclusions of Dr. Samir Elmir, Ph.D, P.E., Director of Environmental Health & Engineering Services for the Florida Department of Health in Miami-Dade. In addition, Mr. Wilbur Mayorga, P.E., Chief of the Environmental Monitoring and Restoration Division of the Miami-Dade County Department of Regulatory and Economic Resources (DRER) has concluded that the test results are consistent with naturally occurring arsenic levels on the barrier islands in Miami-Dade County, which showed a Minimum Variance Unbiased

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Estimate (MVUE) of 5.2 mg/kg and a maximum of 15.1 mg/kg (Mayorga, 2004; Mayorga, 2014; Surfside, 2014).

Based on this information, it is the opinion of LandScience that the Surfside re-nourishment sand is suitable for placement in the dune field at selected appropriate locations immediately to the west of the Surfside beach.

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## 5.0 REFERENCES

### Reports

Florida Department of Environmental Protection, December 2005, *Chapter 62 of the Florida Administrative Code (FAC 62) Part 777*

American Society for Testing and Materials, *Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (ASTM E 1903 02)*.

Kimley-Horn, *2014 Laboratory data reports and sample location figures*. May, 2014.

FDOH (Florida Department of Health)/ATSDR (Agency for Toxic Substances and Disease Registry), *1996a. Health Consultation. Barker Chemical Site, Inglis, Levy County, Florida. August 8, 1996.*

FDOH (Florida Department of Health)/ATSDR (Agency for Toxic Substances and Disease Registry), *1996b. Exposure Investigation Report, Barker Chemical Site, Inglis, Levy County, Florida. August 13, 1996.*

FDOH (Florida Department of Health), *2014 E-mail from Dr. Samir Elmir, Miami Dade Health Department, to Michael P. Crotty, Town Manager, Town of Surfside, regarding arsenic found in beach sand at the Surf Club. May 14, 2014.*

Mayorga, W., *2004 Memorandum from Wilbur Mayorga, Pollution Remediation Section, to Jose Gonzales, Pollution Control Division, regarding natural background soil concentrations for the barrier islands of Miami-Dade County, November 7, 2004.*

Mayorga, W., *2014 Personal communication between Dr. Christopher Teaf and Wilbur Mayorga, May, 2014.*

Miami-Dade County, *2014 Miami-Dade County Anthropogenic Background Study. Miami-Dade Environmental Monitoring and Restoration Division. April 3, 2014.*

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Terracon (Terracon Consultants, Inc.), 2014 Beach sand chemical testing, Town of Surfside, Miami-Dade County, Florida. May 9, 2014.

## 6.0 LIMITATIONS OF STUDY

The assessment procedure was based on the client's agreement in a level of investigation considered to be prudent from a risk management philosophy and guided by common sense, professional judgment, and evaluation techniques being developed and used by governmental agencies for the investigation of properties subject to possible contamination. LandScience exercised the same degree of care and skill generally exercised by environmental professionals under similar circumstances and conditions. No other warranty is expressed or implied.

Observations and conclusions presented are not scientific certainties, but are solely professional opinions based upon the information available to us which may be incomplete or inaccurate. The services provided herein are in no way intended to be legal advice and should not be relied upon in any way for legal interpretations.

This study and report were prepared on the behalf of and exclusively for the Town of Surfside, solely for their use and reliance in the environmental assessment of the site. In the event this report and the findings herein, in whole or in part, are to be disseminated or conveyed to any other party or entity or used or relied on by any other party or entity, the Town of Surfside and LandScience will require an agreement on the part of said party or entity as to the provisions of the Limitation of Professional Liability and Limitation of Action found in the proposal agreement between the Town of Surfside and LandScience. Those provisions are as follows:

### **LIMITATION OF PROFESSIONAL LIABILITY and LIMITATION OF ACTION:**

**The Client, its successors, assigns and all persons or entities receiving and/or relying upon this report or any portion thereof, agree to limit any and all total liability for claims, for damages, cost of defense, or expenses to be asserted against LandScience as a result of its preparation of this report to a sum not to exceed an aggregate limit up to a maximum of \$1,000,000 for a period of one year following project initiation. After one year the limits of all liability will not exceed the amount paid to LandScience for its services.**

## **TABLES**

**TABLE 1  
SOIL ANALYTICAL SUMMARY  
FOR HEAVY METALS**

Facility Name: Town of Surfside Coastal Areas  
Facility Address: Between 88th Street and 95th Street

1 of 1

Sample			Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Location	Date	Depth (Ft.)								
CCSS-1	10/31/2014	0 -1	<b>2.39</b>	5.44	0.00380U	4.42	0.559	0.0270U	0.661	0.00550U
CCSS-2	10/31/2014	0 -1	1.80	5.93	0.00380U	3.07	0.317	0.0270U	0.794	0.00550U
CSS-1	10/31/2014	0 -1	<b>6.46</b>	8.41	0.00380U	4.99	4.85	0.0270U	0.618	0.00550U
CSS-2	10/31/2014	0 -1	<b>4.57</b>	5.38	0.00380U	4.07	2.01	0.0270U	0.553	0.00550U
CSS-3	10/31/2014	0 -1	<b>3.80</b>	5.80	0.00380U	3.80	1.75	0.0270U	0.600	0.00550U
CSS-4	10/31/2014	0 -1	<b>5.84</b>	8.95	0.00380U	4.08	5.24	0.0270U	0.556	0.00550U
CSS-5	10/31/2014	0 -1	<b>5.39</b>	7.29	0.00380U	4.04	3.54	0.0270U	0.699	0.00550U
CSS-6	10/31/2014	0 -1	<b>6.44</b>	8.72	0.00380U	4.07	2.62	0.0270U	0.581	0.00550U
FDEP SCTL	Leachability		***	<b>1,600</b>	<b>7.5</b>	<b>38</b>	***	<b>2.1</b>	<b>5.2</b>	<b>17</b>
FDEP SCTL	Direct Exposure Residential		<b>2.1</b>	<b>120</b>	<b>82</b>	<b>210</b>	<b>400</b>	<b>3</b>	<b>440</b>	<b>410</b>
FDEP SCTL	Direct Exposure Commercial		<b>12</b>	<b>130,000</b>	<b>1,700</b>	<b>470</b>	<b>1,400</b>	<b>17</b>	<b>11,000</b>	<b>8,200</b>

LEGEND:  
Concentrations in milligrams per kilogram (mg/Kg).  
U indicates compound was analyzed but not detected.  
\*\*\* Leachability values may be derived using the SPLP Test to calculate site-specific SCTLs or may be determined using TCLP in the event oily wastes are present.  
FDEP = Florida Department of Environmental Protection.  
SCTL = Soil Cleanup Target Level.  
Items in **bold** exceed FDEP SCTLs.

**TABLE 2  
SOIL ANALYTICAL SUMMARY  
FOR ORGANOCCHLORINE PESTICIDES**

**Facility Name: Town of Surfside Coastal Areas**  
**Facility Address: Between 88th Street and 95th Street**

Sample			4,4'-DDT
Location	Date	Depth (Ft.)	
CCSS-1	10/31/2014	0 - 1	0.000239U
CCSS-2	10/31/2014	0 - 1	0.000239U
CSS-3	10/31/2014	0 - 1	0.000239U
CSS-4	10/31/2014	0 - 1	0.0138
CSS-5	10/31/2014	0 - 1	0.000239U
CSS-6	10/31/2014	0 - 1	0.000239U
FDEP SCTL	Leachability		<b>11</b>
FDEP SCTL	Direct Exposure Residential		<b>2.9</b>
FDEP SCTL	Direct Exposure Commercial		<b>15</b>

**LEGEND:**

Concentrations in milligrams per kilogram (mg/Kg).

U indicates compound was analyzed but not detected.

FDEP = Florida Department of Environmental Protection.

SCTL = Soil Cleanup Target Level.

Items in **bold** exceed FDEP SCTLs.

Only constituents with concentrations above the method detection limits are shown on table.

**TABLE 3  
SOIL ANALYTICAL SUMMARY  
FOR POLYCHLORINATED BIPHENYLS**

**Facility Name: Town of Surfside Coastal Areas**

**Facility Address: Between 88th Street and 95th Street**

Sample			PCB-1254
Location	Date	Depth (Ft.)	
CCSS-1	10/31/2014	0 - 1	0.000786U
CCSS-2	10/31/2014	0 - 1	0.0863
CSS-3	10/31/2014	0 - 1	0.000786U
CSS-4	10/31/2014	0 - 1	0.000786U
CSS-5	10/31/2014	0 - 1	0.000786U
CSS-6	10/31/2014	0 - 1	0.000786U
FDEP SCTL	Leachability		<b>17</b>
FDEP SCTL	Direct Exposure Residential		<b>0.5</b>
FDEP SCTL	Direct Exposure Commercial		<b>2.6</b>

**LEGEND:**

Concentrations in milligrams per kilogram (mg/Kg).

U indicates compound was analyzed but not detected.

FDEP = Florida Department of Environmental Protection.

SCTL = Soil Cleanup Target Level.

Items in **bold** exceed FDEP SCTLs.

Only constituents with concentrations above the method detection limits are shown on table.

**TABLE 4**  
**SOIL ANALYTICAL SUMMARY**  
**FOR TOTAL RECOVERABLE PETROLEUM HYDROCARBONS**

**Facility Name: Town of Surfside Coastal Areas**  
**Facility Address: Between 88th Street and 95th Street**

Sample			TRPH
Location	Date	Depth (Ft.)	
CCSS-1	10/31/2014	0 - 1	0.190U
CCSS-2	10/31/2014	0 - 1	6.70
CSS-3	10/31/2014	0 - 1	0.190U
CSS-4	10/31/2014	0 - 1	5.68
CSS-5	10/31/2014	0 - 1	12.9
CSS-6	10/31/2014	0 - 1	2.00
FDEP SCTL	Leachability		<b>340</b>
FDEP SCTL	Direct Exposure Residential		<b>460</b>
FDEP SCTL	Direct Exposure Commercial		<b>2,700</b>

LEGEND:  
Concentrations in milligrams per kilogram (mg/Kg).  
U indicates compound was analyzed but not detected.  
FDEP = Florida Department of Environmental Protection.  
SCTL = Soil Cleanup Target Level.  
Items in **bold** exceed FDEP SCTLs.

**TABLE 5  
SOIL ANALYTICAL SUMMARY  
FOR HEAVY METALS BY SPLP**

Facility Name: Town of Surfside Coastal Areas  
Facility Address: Between 88th Street and 95th Street

1 of 1

Sample			Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
Location	Date	Depth (Ft.)								
CCSS-1	10/31/2014	0 -1	1.38U	49.0	0.211U	0.751U	2.92U	0.0630U	4.55U	0.260U
CCSS-2	10/31/2014	0 -1	1.38U	88.0	0.211U	0.751U	2.92U	0.0630U	4.55U	0.260U
CSS-1	10/31/2014	0 -1	9.00	61.0	0.211U	8.00	38.00	0.0630U	4.55U	0.260U
CSS-2	10/31/2014	0 -1	3.00I	61.0	0.211U	3.00	12.0	0.0630U	4.55U	0.260U
CSS-3	10/31/2014	0 -1	1.38U	34.0	0.211U	3.00	10.0	0.0630U	4.55U	0.260U
CSS-4	10/31/2014	0 -1	10.0	64.0	0.211U	11.0	50.0	0.0630U	4.55U	0.260U
CSS-5	10/31/2014	0 -1	4.00	40.0	0.211U	5.00	20.0	0.0630U	4.55U	0.260U
CSS-6	10/31/2014	0 -1	4.00	37.0	0.211U	5.00	17.0	0.0630U	4.55U	0.260U
FDEP GCTLs			<b>10</b>	<b>2,000</b>	<b>5</b>	<b>100</b>	<b>15</b>	<b>2</b>	<b>50</b>	<b>100</b>
FDEP Low Yield/Poor Quality Criterion			<b>100</b>	<b>20,000</b>	<b>50</b>	<b>1,000</b>	<b>150</b>	<b>20</b>	<b>500</b>	<b>1,000</b>

LEGEND:  
Concentrations in micrograms per liter (ug/L).  
U indicates compound was analyzed but not detected.  
I indicates concentration between Method Detection Limit and Practical Quantitative Limit  
FDEP = Florida Department of Environmental Protection.  
GCTL = Groundwater Cleanup Target Level.  
Items in **bold** exceed FDEP Low Yield/Poor Quality Criterion.

## **FIGURES**



**Legend**

— Approximate Study Area

Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, Swisstopo, and the GIS User Community

0 1,000 2,000 3,000 Feet

**LANDSCIENCE**

Miami, Florida

Project No: 2146811

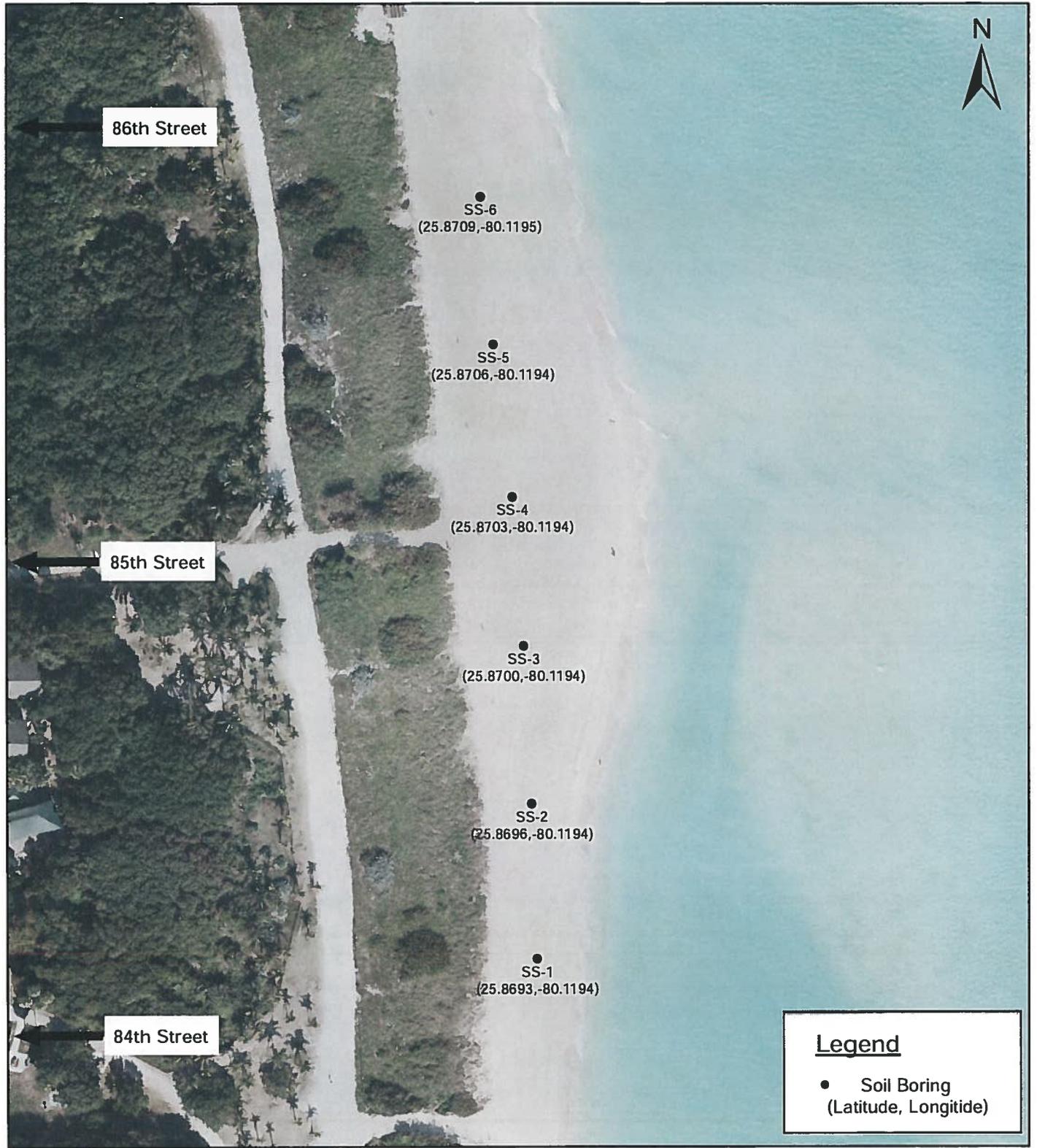
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

**FIGURE 1**  
**AREA MAP (2013 AERIAL PHOTOGRAPH)**  
**SHOWING STUDY AREA**

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2a  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 84th Street to 86th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2b  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 88th Street to 89th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

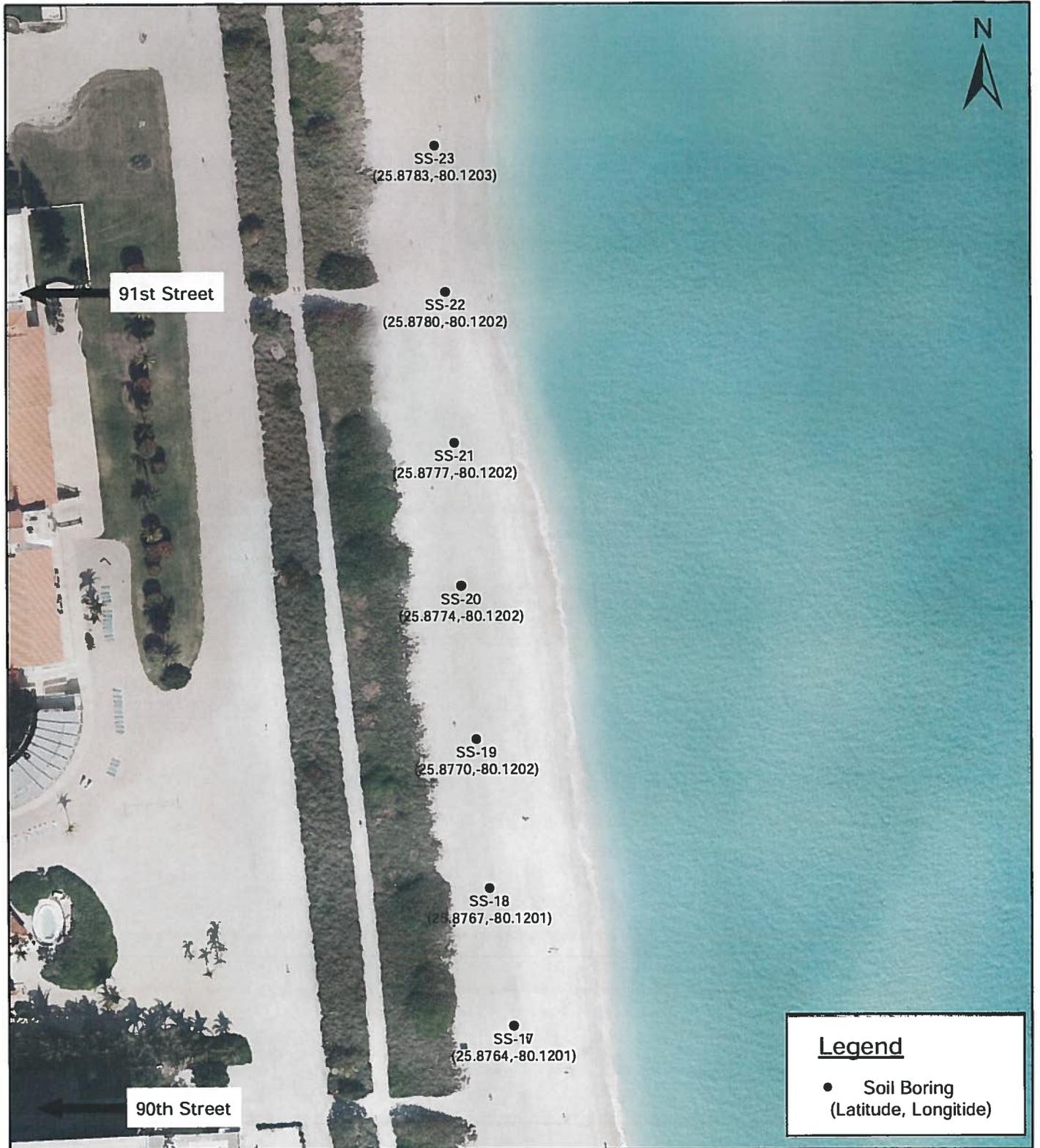
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2c  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 89th Street to 90th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

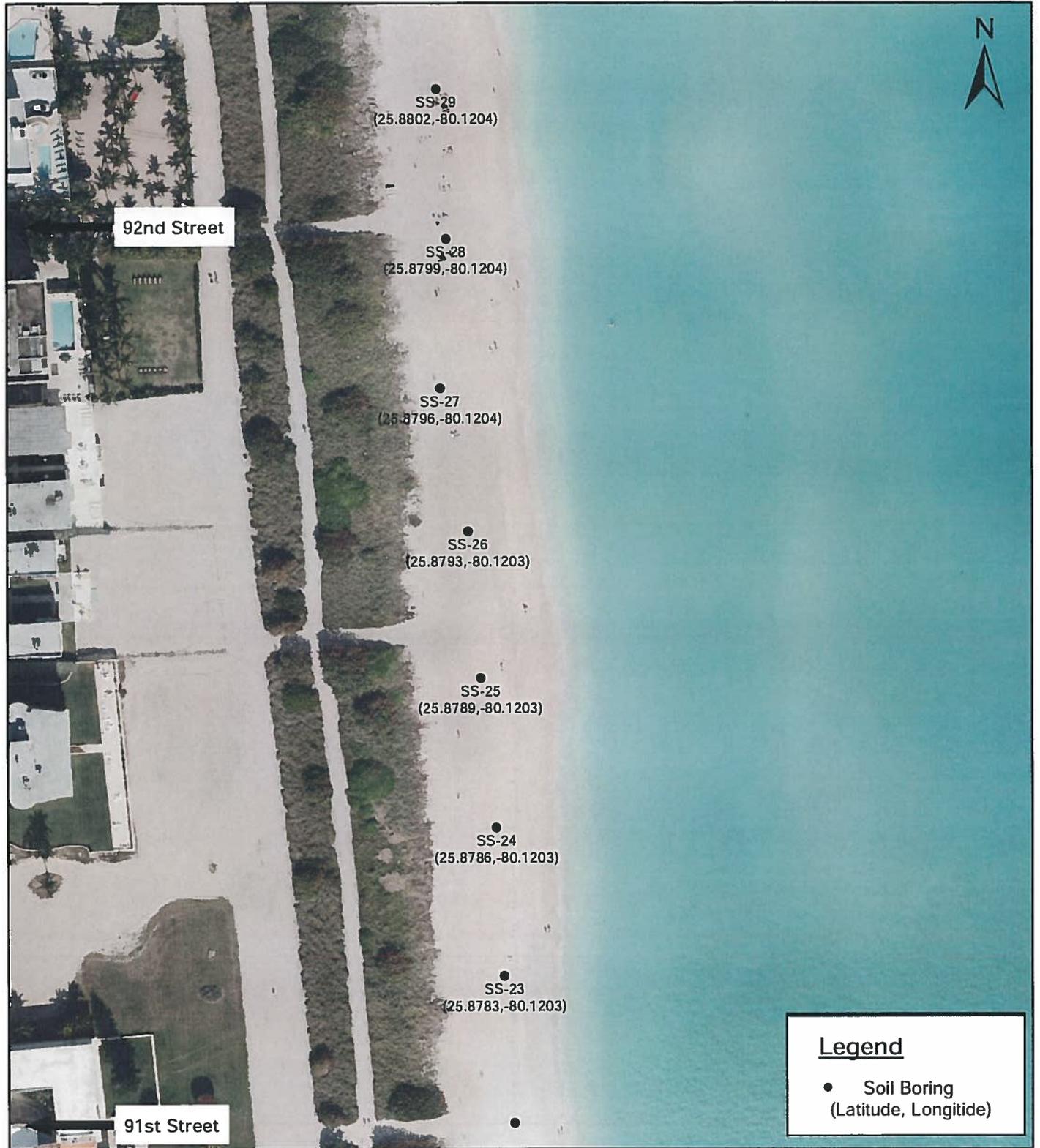
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2d  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 90th Street to 91st Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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Miami, Florida

Project No: 2146811

Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2e  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 91st Street to 92nd Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

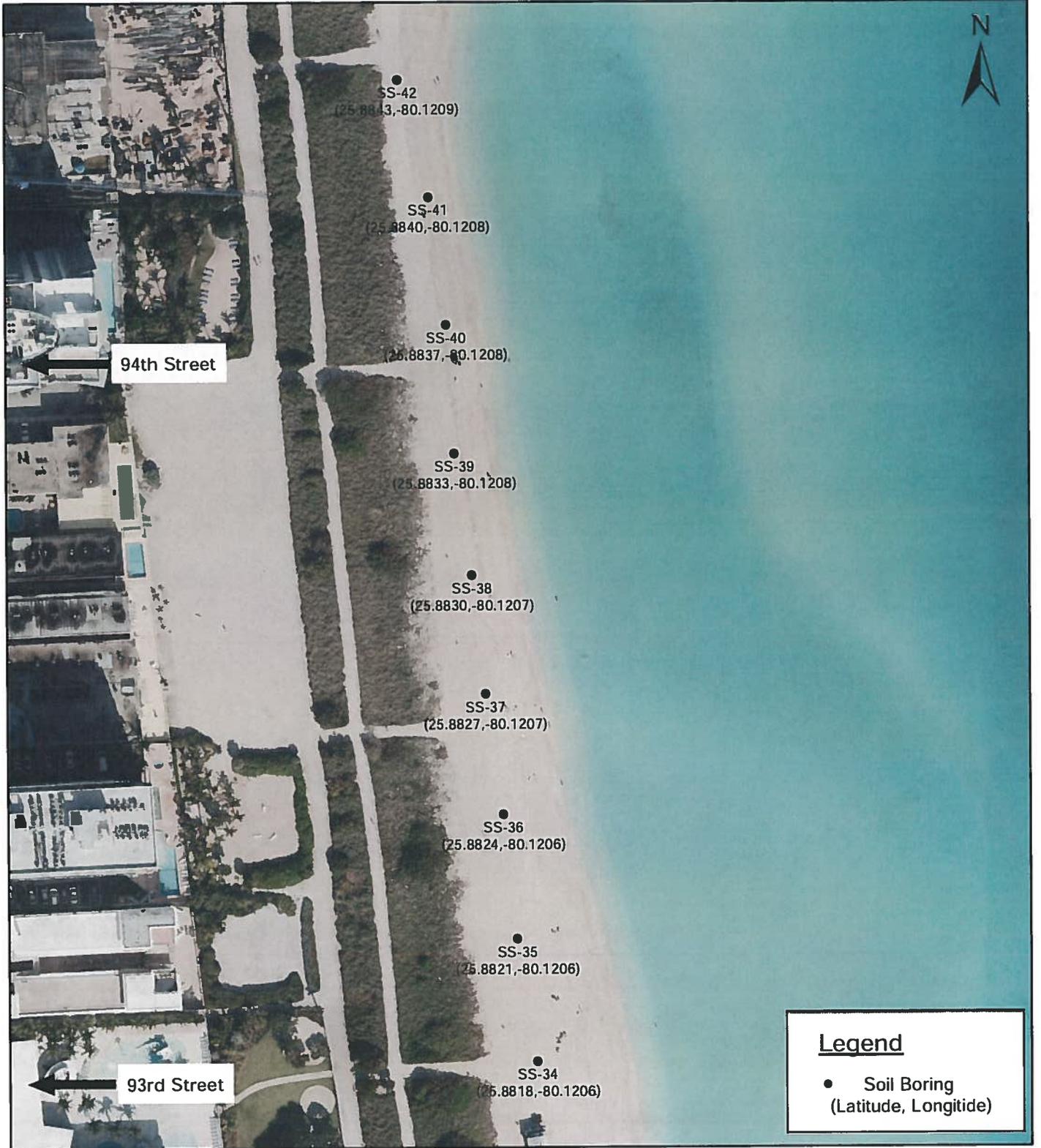
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2f  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 92nd Street to 93rd Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

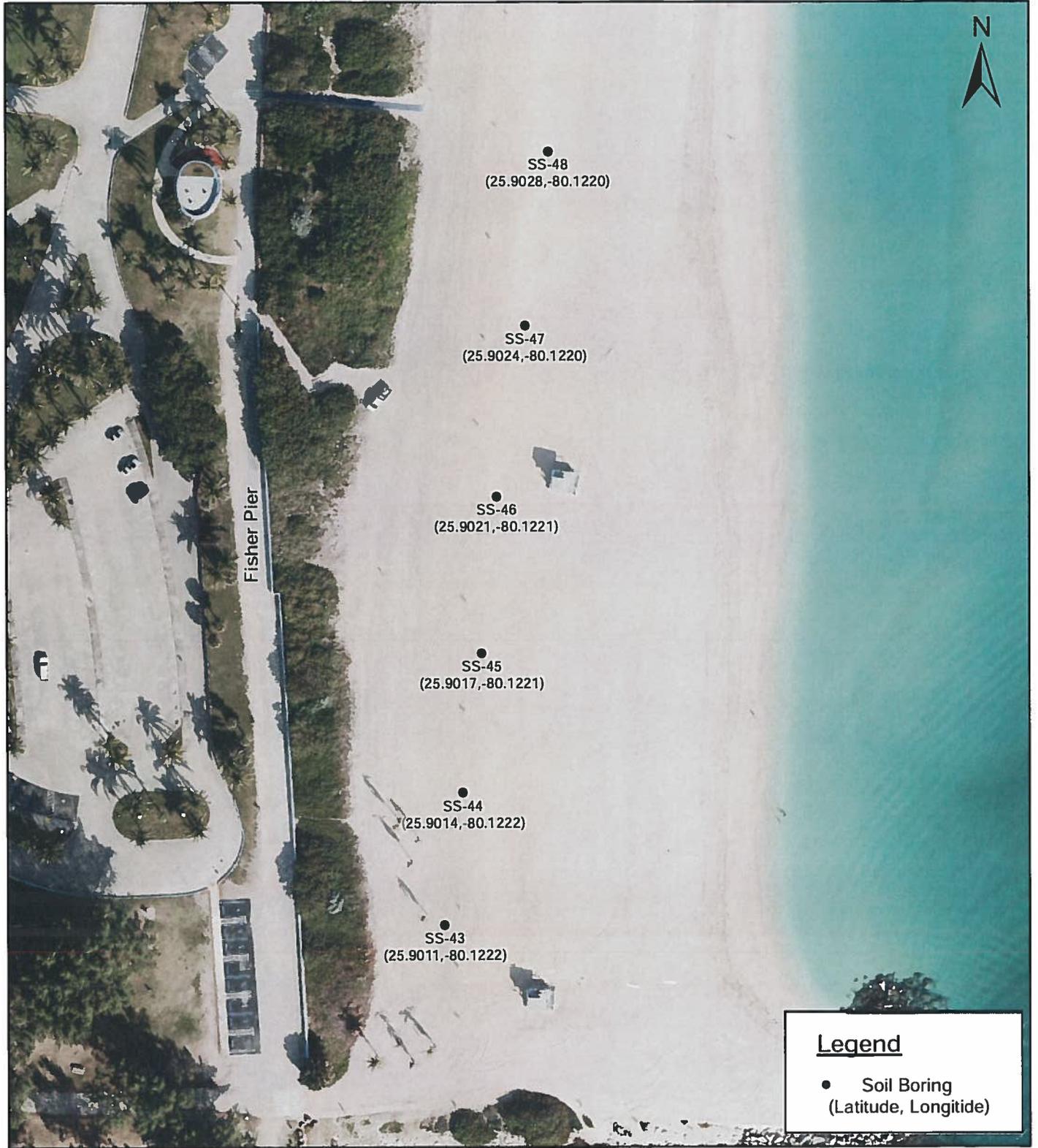
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2g  
SOIL BORING LOCATIONS  
October 31, 2014  
(From 93rd Street to 94th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



0 50 100 150 200 Feet

**Legend**

- Soil Boring (Latitude, Longitude)

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Miami, Florida

Project No: 2146811

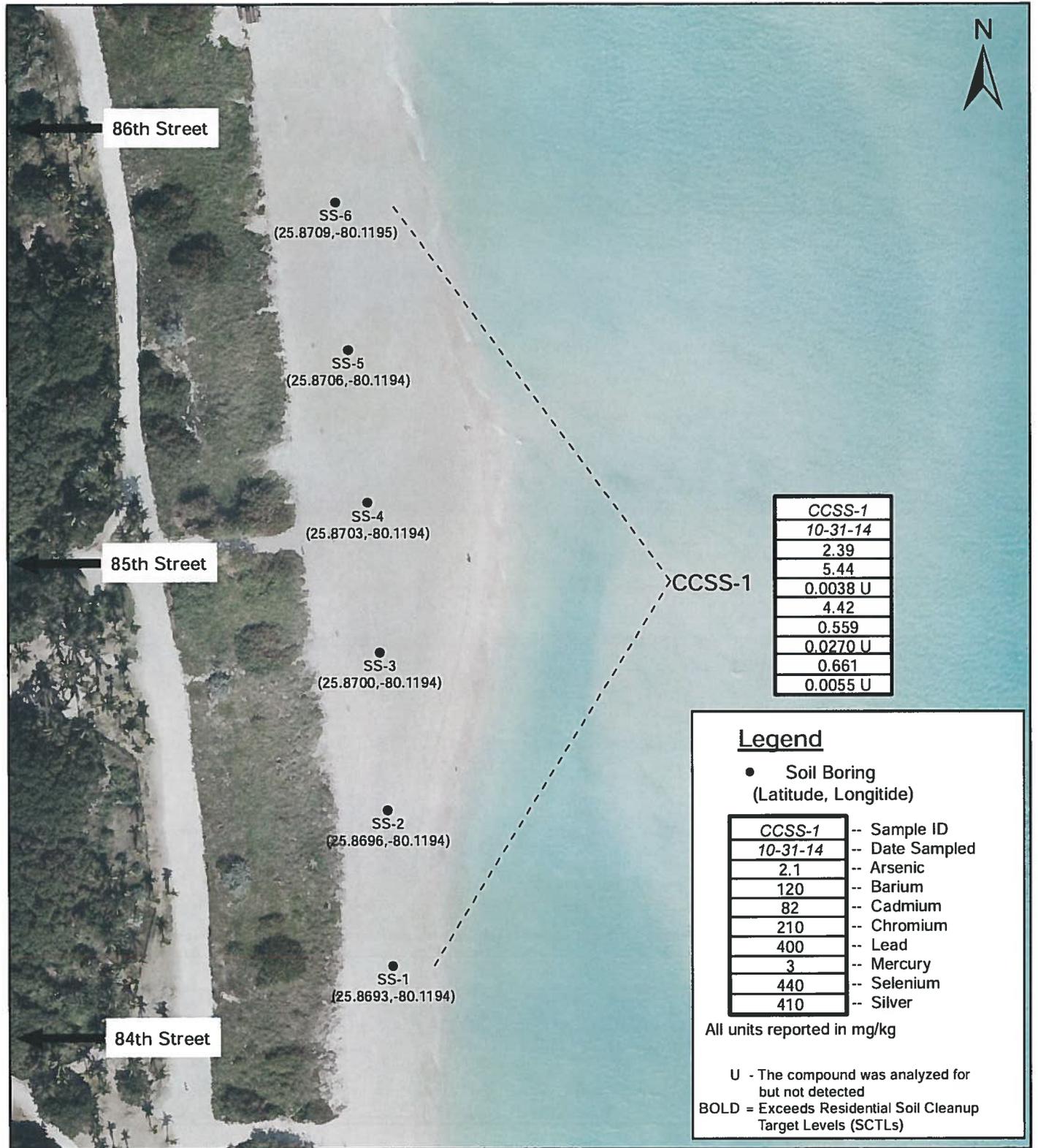
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 2h  
SOIL BORING LOCATIONS  
October 31, 2014  
(Fisher Pier)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



CCSS-1
10-31-14
2.39
5.44
0.0038 U
4.42
0.559
0.0270 U
0.661
0.0055 U

**Legend**

- Soil Boring (Latitude, Longitude)

CCSS-1	-- Sample ID
10-31-14	-- Date Sampled
2.1	-- Arsenic
120	-- Barium
82	-- Cadmium
210	-- Chromium
400	-- Lead
3	-- Mercury
440	-- Selenium
410	-- Silver

All units reported in mg/kg

U - The compound was analyzed for but not detected  
 BOLD = Exceeds Residential Soil Cleanup Target Levels (SCTLs)



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Miami, Florida

Project No: 2146811

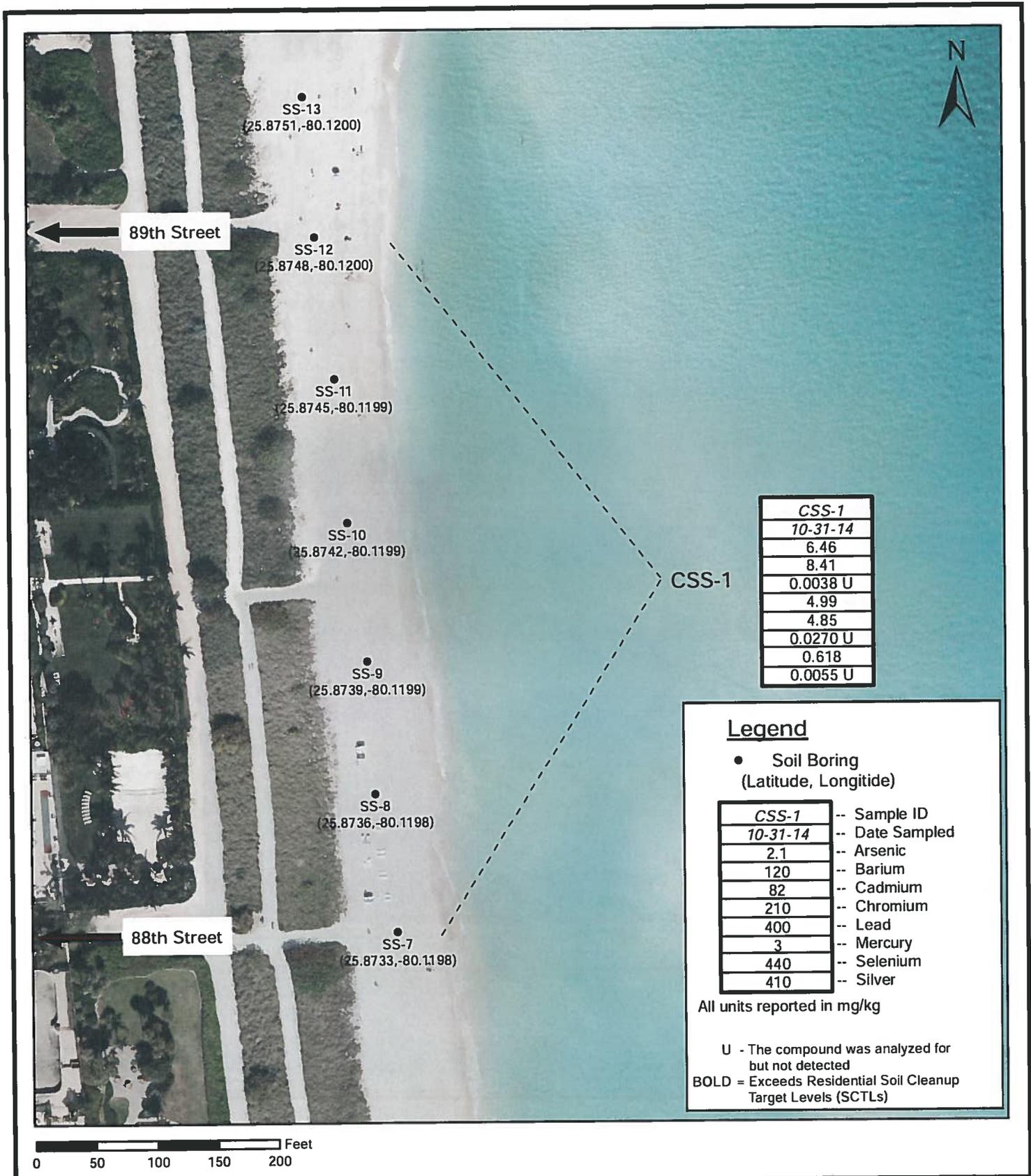
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 3a  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 84th Street to 86th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



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Miami, Florida

Project No: 2146811

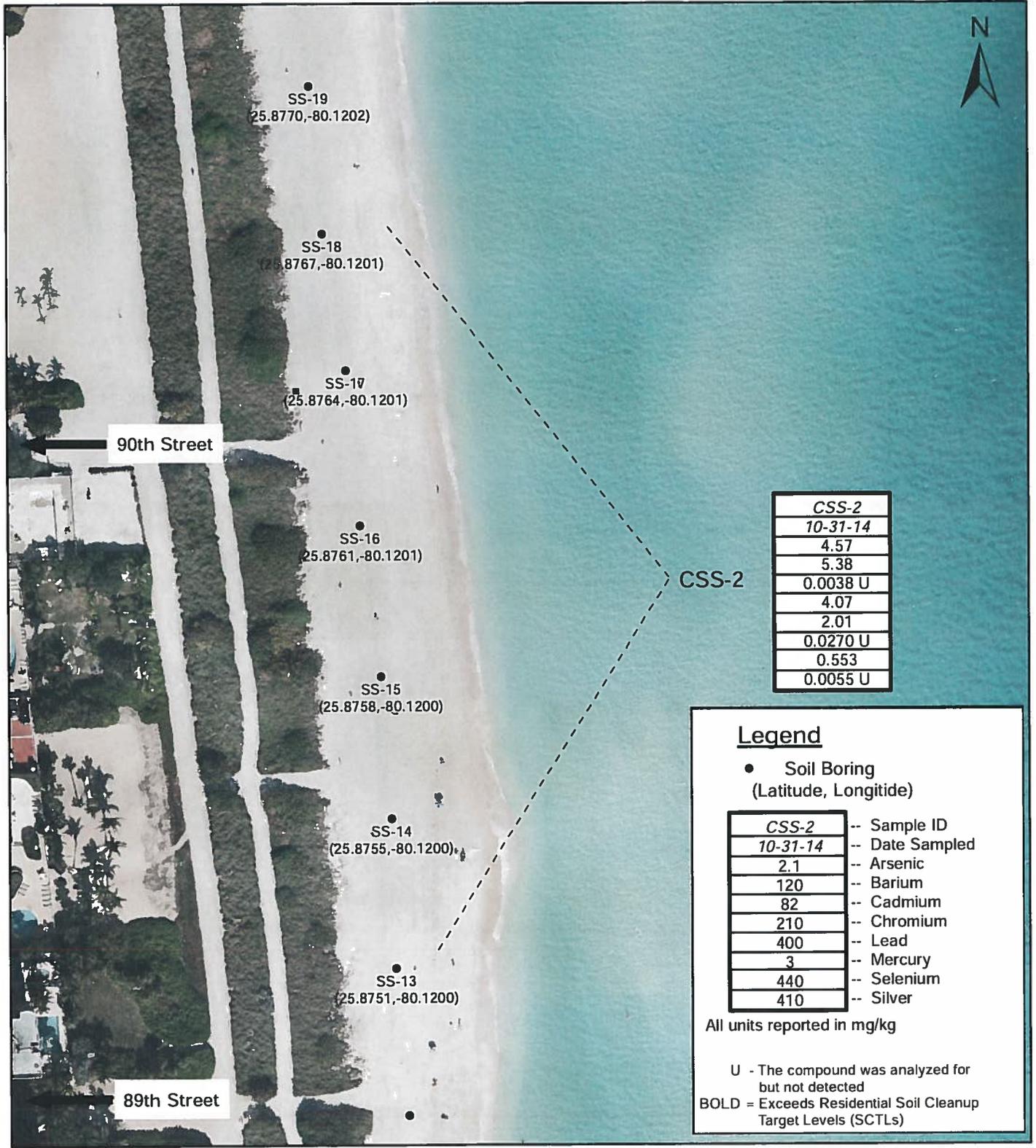
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 3b  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 88th Street to 89th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 50 100 150 200 Feet

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Project No: 2146811

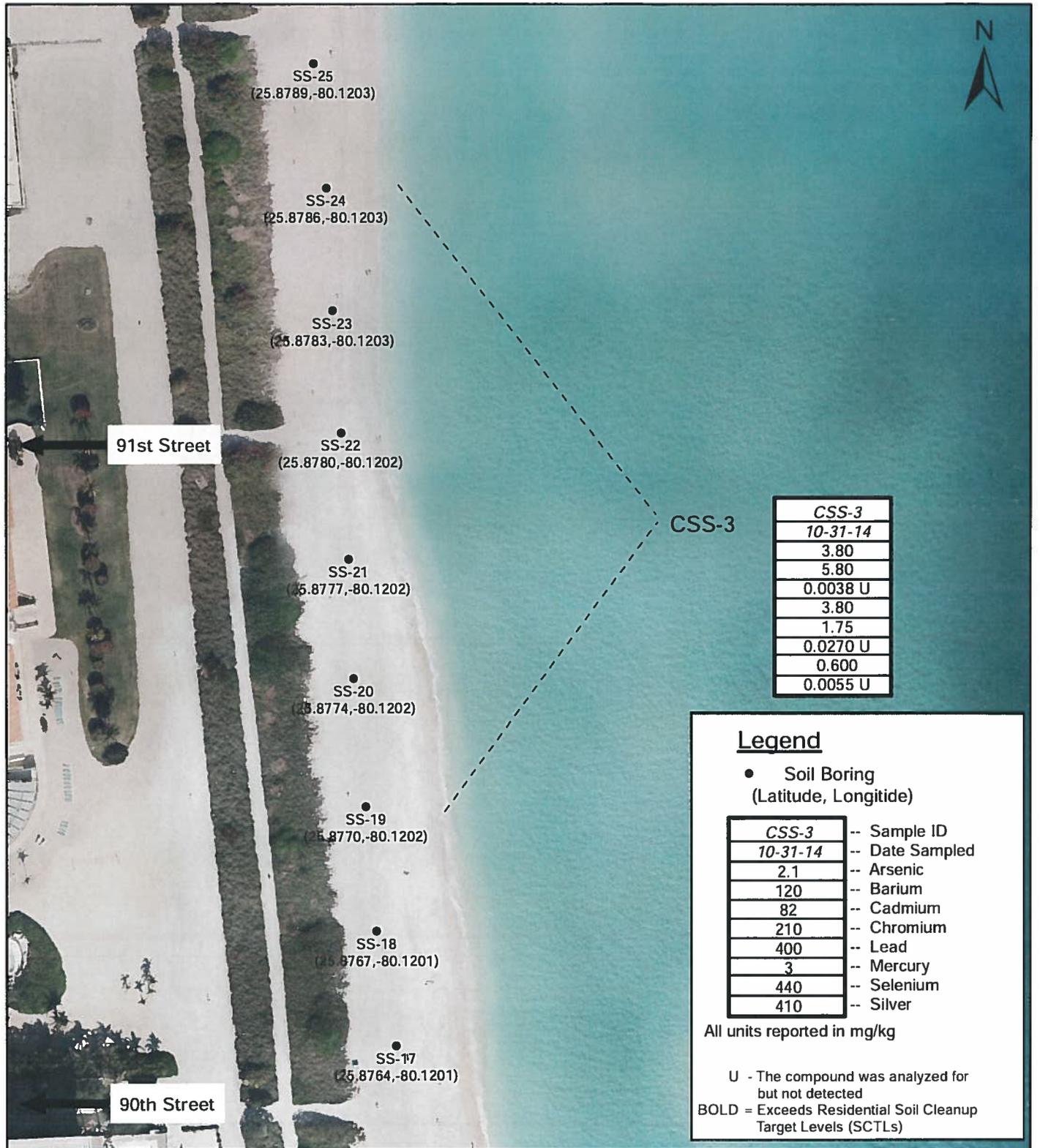
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 3c  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 89th Street to 90th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 60 120 180 240 Feet

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Project No: 2146811

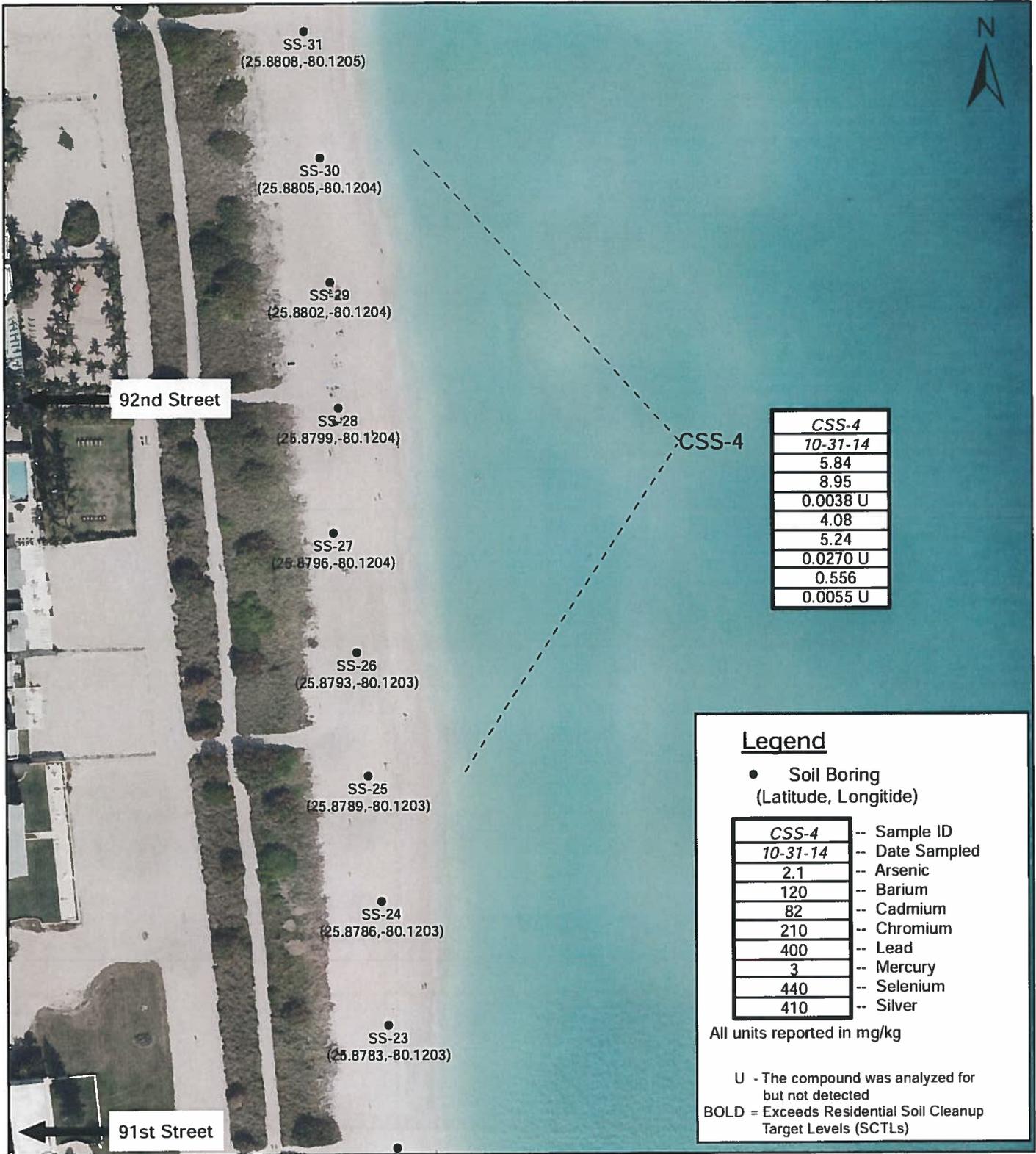
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 3d  
HEAVY METAL CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 90th Street to 91st Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



<i>CSS-4</i>
<i>10-31-14</i>
5.84
8.95
0.0038 U
4.08
5.24
0.0270 U
0.556
0.0055 U

**Legend**

- Soil Boring (Latitude, Longitude)

<i>CSS-4</i>	-- Sample ID
<i>10-31-14</i>	-- Date Sampled
2.1	-- Arsenic
120	-- Barium
82	-- Cadmium
210	-- Chromium
400	-- Lead
3	-- Mercury
440	-- Selenium
410	-- Silver

All units reported in mg/kg

U - The compound was analyzed for but not detected  
**BOLD** = Exceeds Residential Soil Cleanup Target Levels (SCTLs)

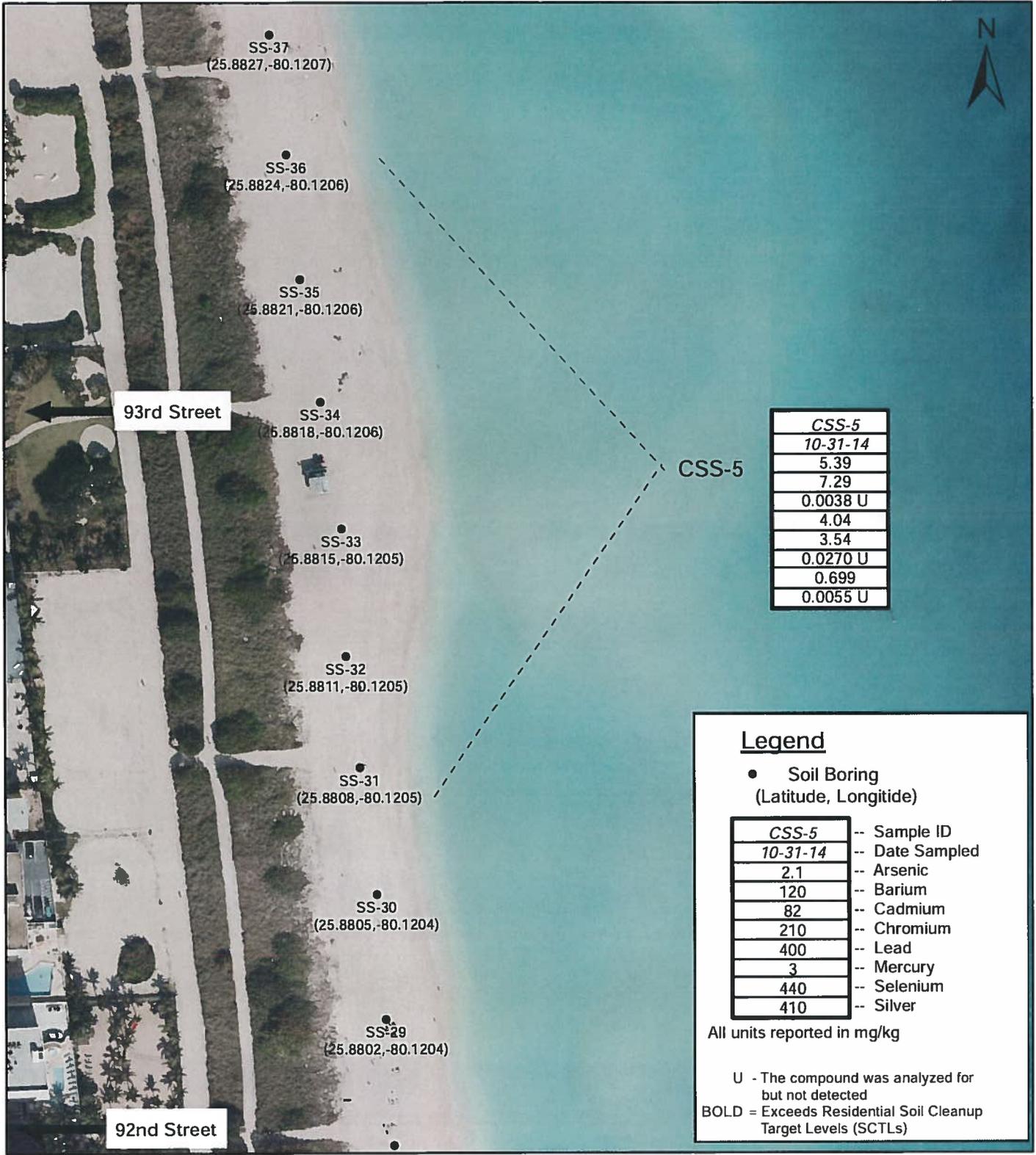


**LANDSCIENCE**  
 Miami, Florida

Project No: 2146811  
 Drawn By: VM  
 Date: 11/24/14  
 Client(s): Town of Surfside

**FIGURE 3e**  
**HEAVY METAL CONCENTRATIONS IN SOIL**  
 October 31, 2014  
 (From 91st Street to 92nd Street)

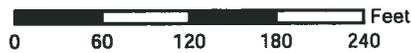
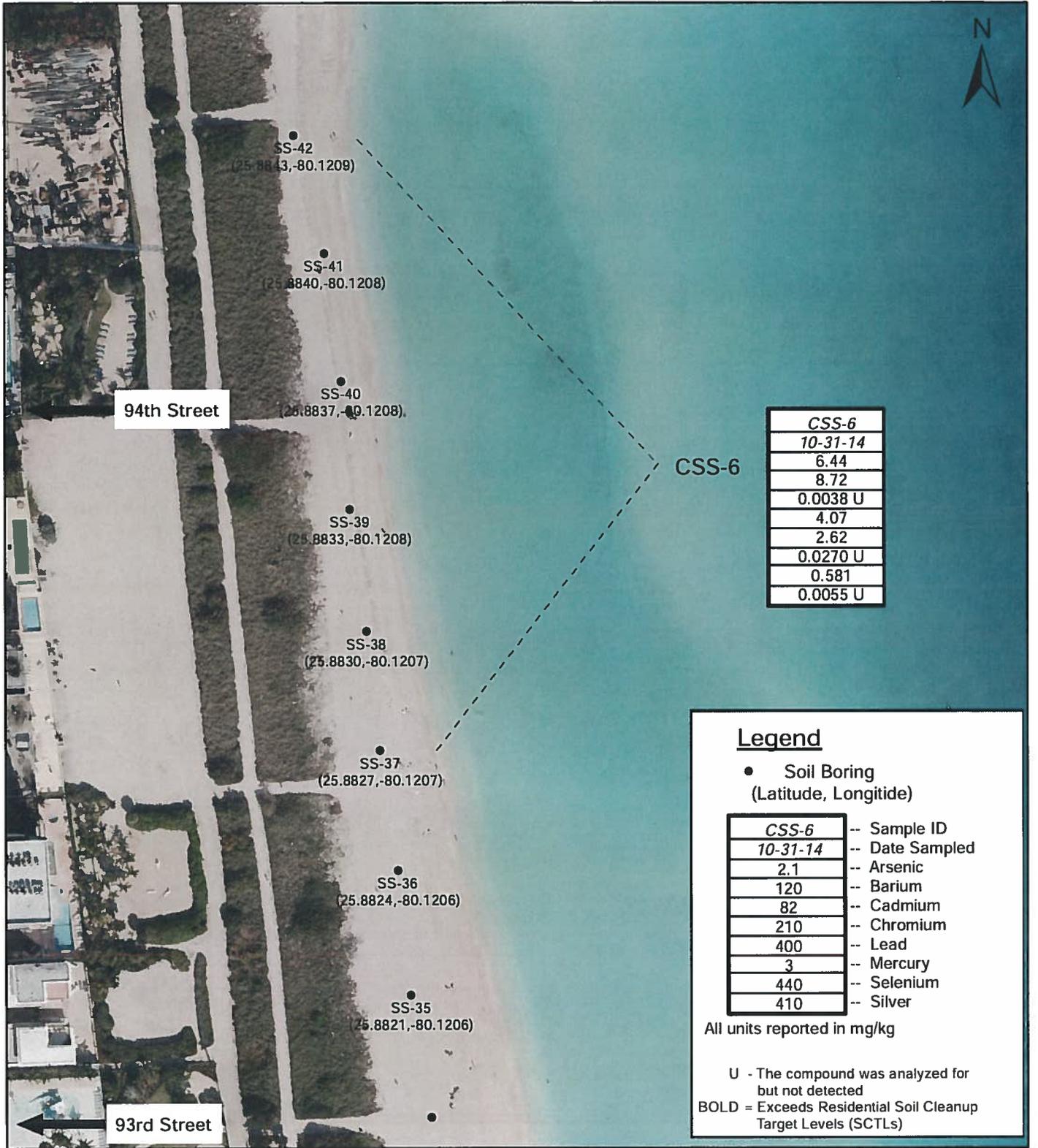
City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**LANDSCIENCE**  
Miami, Florida

Project No: 2146811  
 Drawn By: VM  
 Date: 11/24/14  
 Client(s): Town of Surfside

FIGURE 3f  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 92nd Street to 93rd Street)  
 City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



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Project No: 2146811

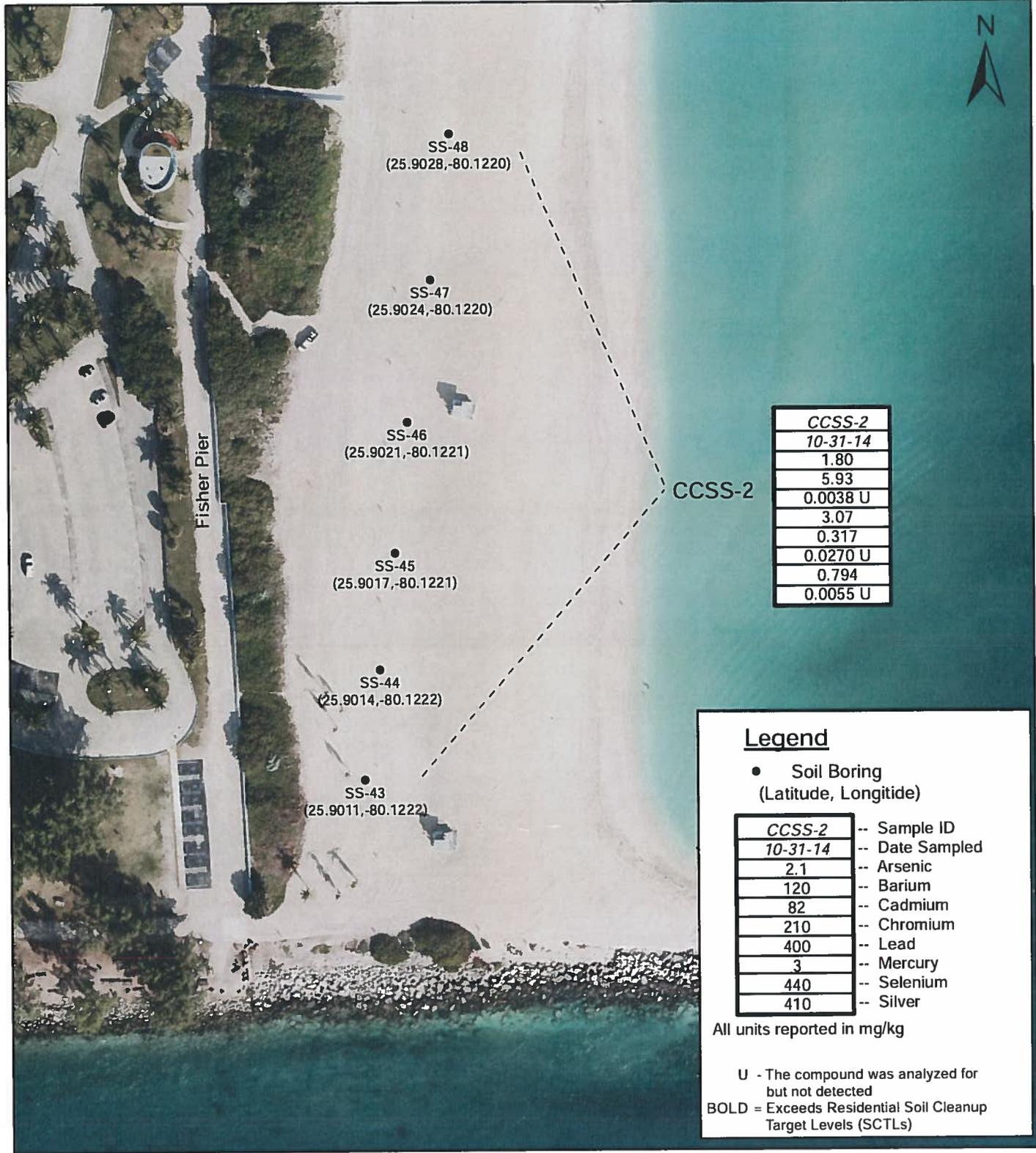
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 3g  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 93rd Street to 94th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



<b>CCSS-2</b>
<b>10-31-14</b>
<b>1.80</b>
<b>5.93</b>
<b>0.0038 U</b>
<b>3.07</b>
<b>0.317</b>
<b>0.0270 U</b>
<b>0.794</b>
<b>0.0055 U</b>

**Legend**

- Soil Boring (Latitude, Longitude)

<b>CCSS-2</b>	-- Sample ID
<b>10-31-14</b>	-- Date Sampled
<b>2.1</b>	-- Arsenic
<b>120</b>	-- Barium
<b>82</b>	-- Cadmium
<b>210</b>	-- Chromium
<b>400</b>	-- Lead
<b>3</b>	-- Mercury
<b>440</b>	-- Selenium
<b>410</b>	-- Silver

All units reported in mg/kg

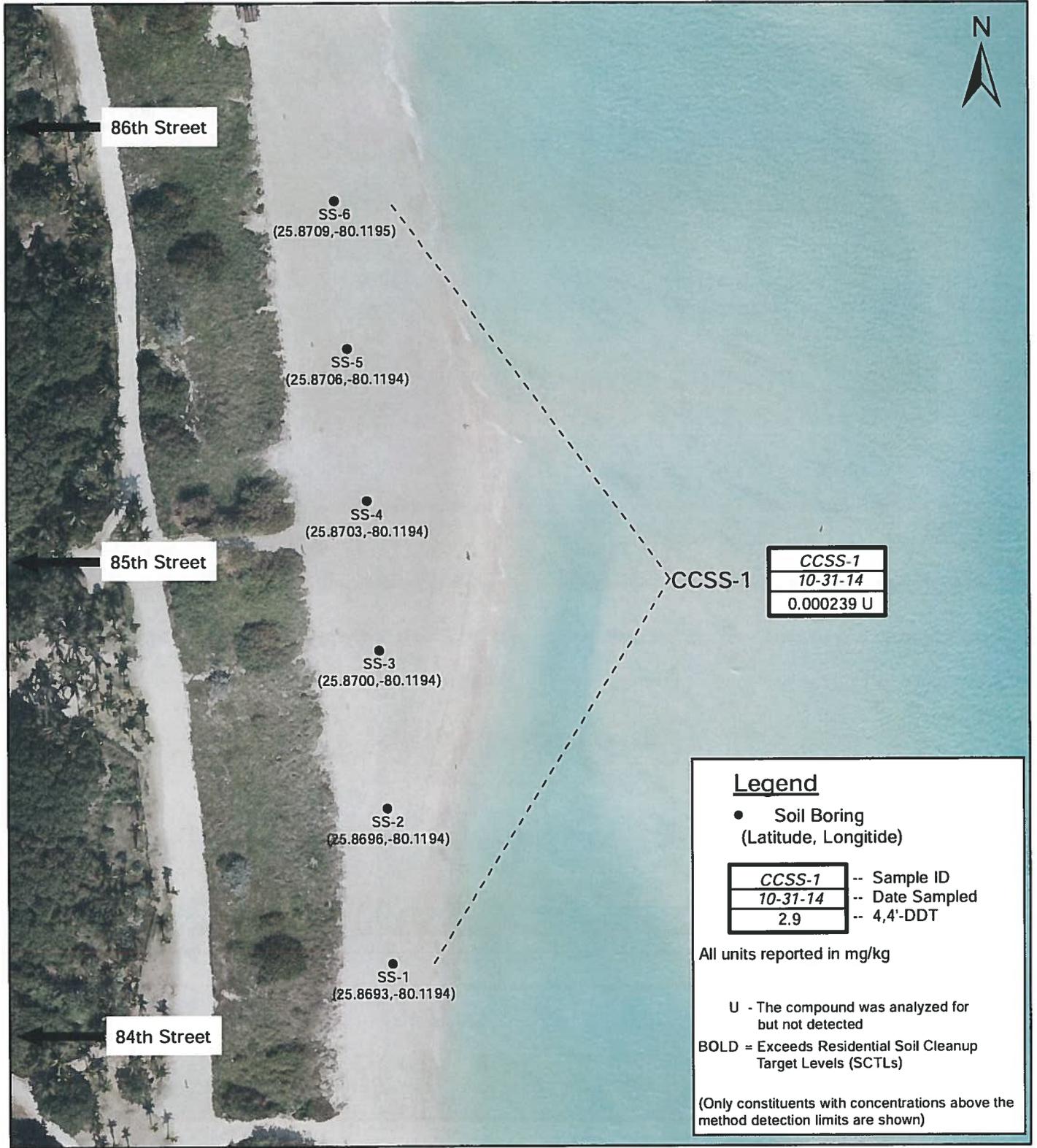
U - The compound was analyzed for but not detected  
 BOLD = Exceeds Residential Soil Cleanup Target Levels (SCTLs)

0 60 120 180 240 Feet

**LANDSCIENCE**  
 Miami, Florida

Project No: 2146811  
 Drawn By: VM  
 Date: 11/24/14  
 Client(s): Town of Surfside

FIGURE 3h  
 HEAVY METAL CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (Fisher Pier)  
 City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 50 100 150 200 Feet

**LANDSCIENCE**

Miami, Florida

Project No: 2146811

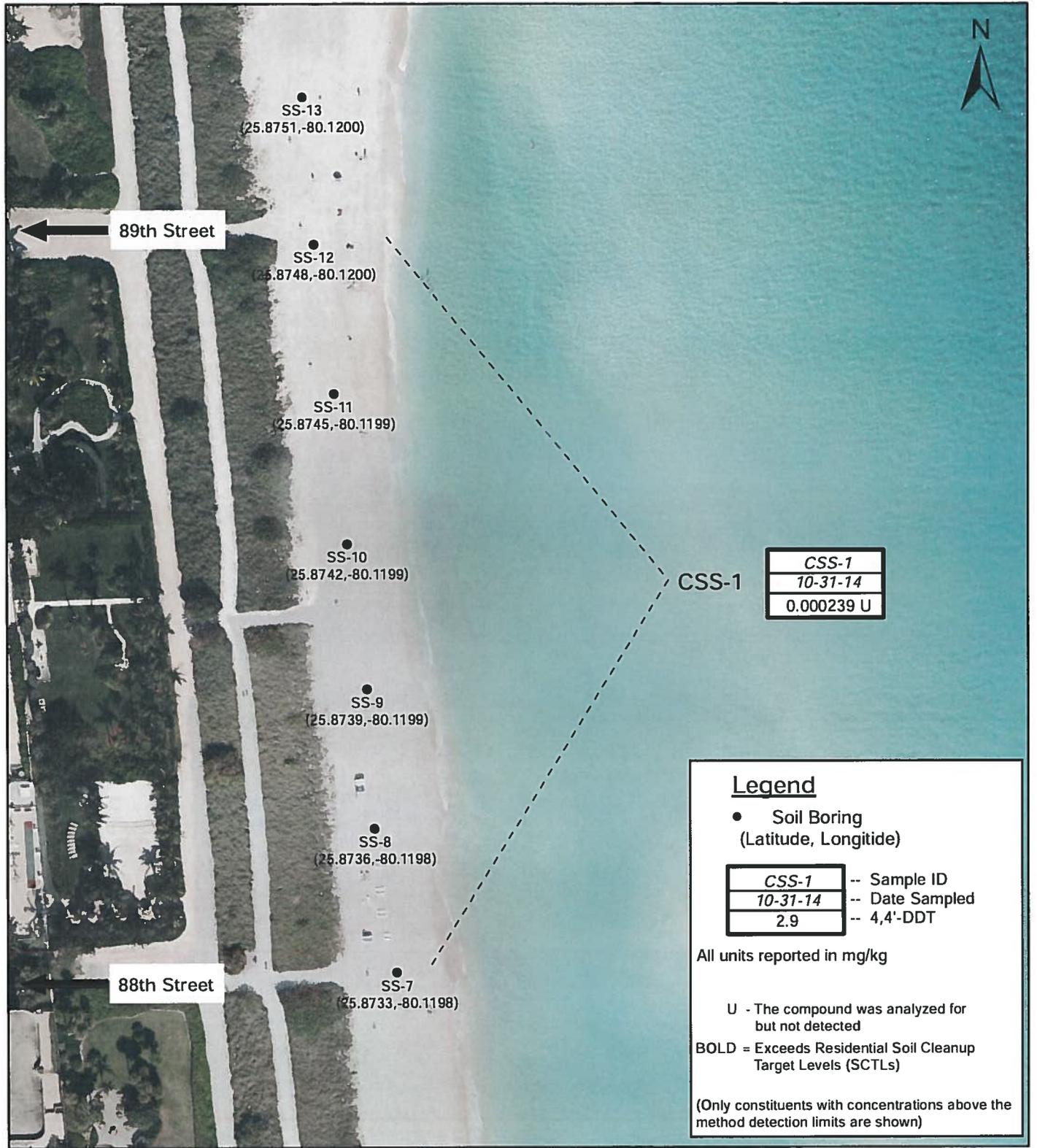
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4a  
 ORGANOCHLORINE PESTICIDE  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 84th Street to 86th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



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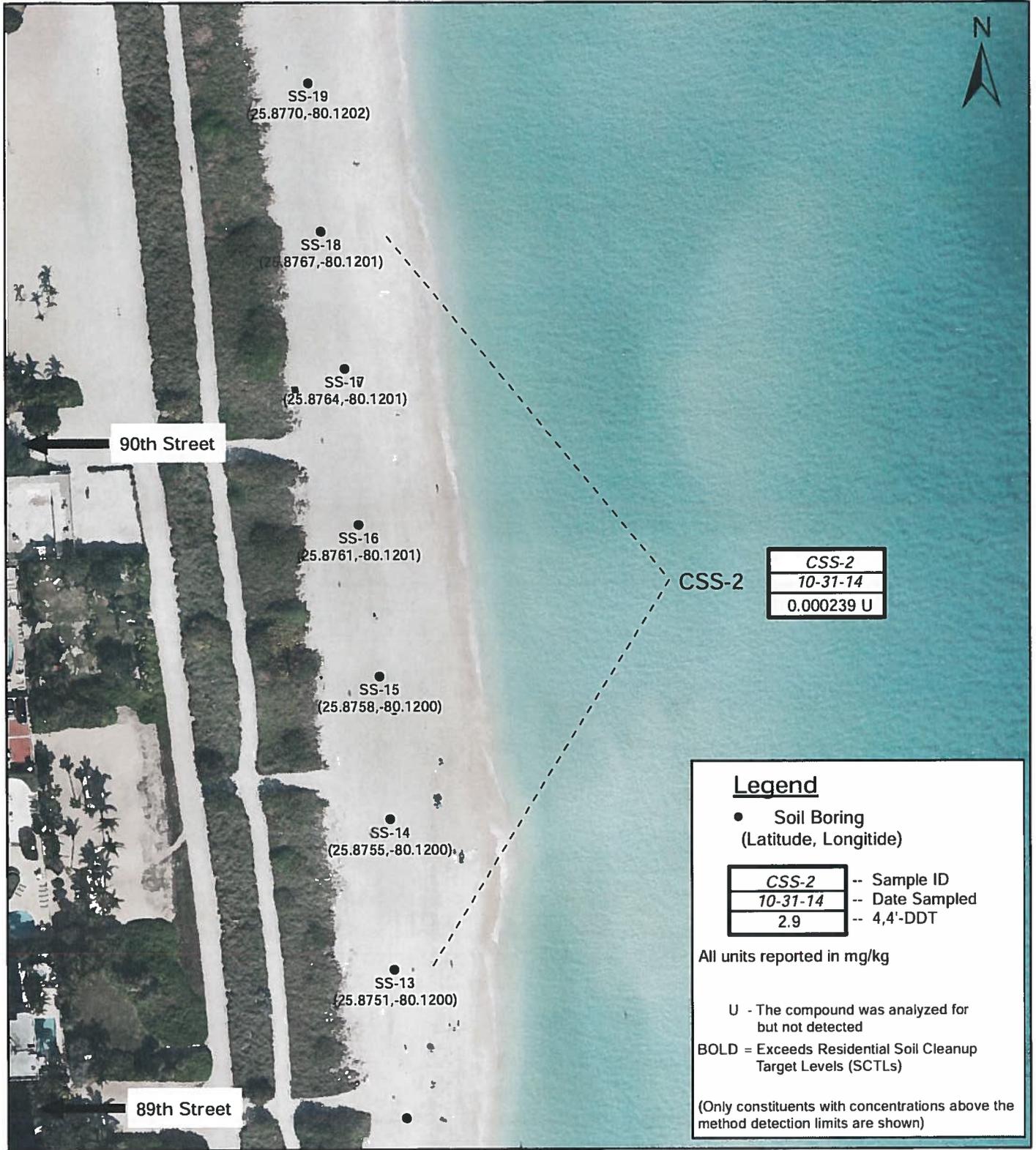
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4b  
 ORGANOCHLORINE PESTICIDE  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 88th Street to 89th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



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Drawn By: VM

Date: 11/24/14

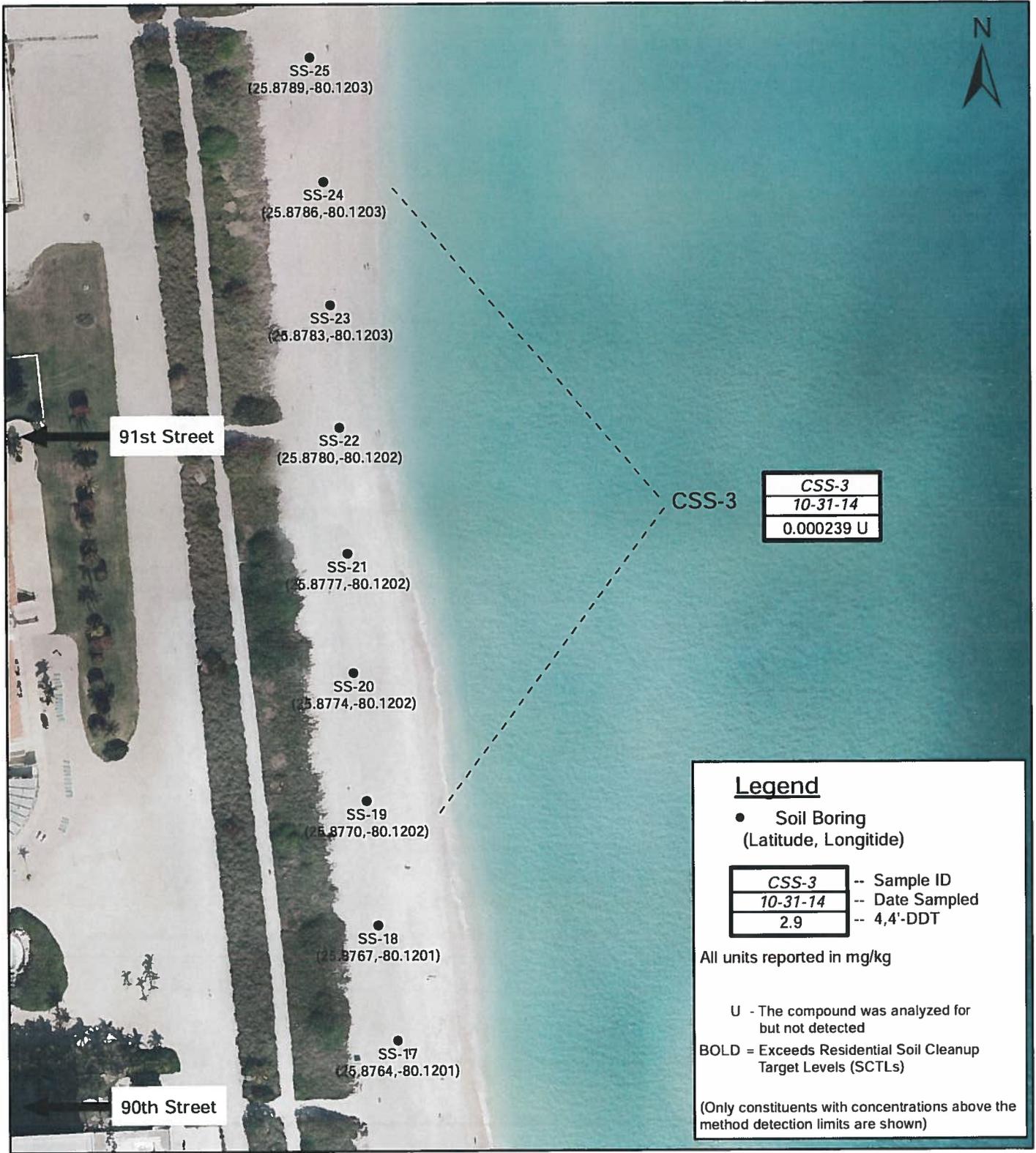
Client(s): Town of Surfside

FIGURE 4c  
ORGANOCHLORINE PESTICIDE  
CONCENTRATIONS IN SOIL

October 31, 2014

(From 89th Street to 90th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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Drawn By: VM

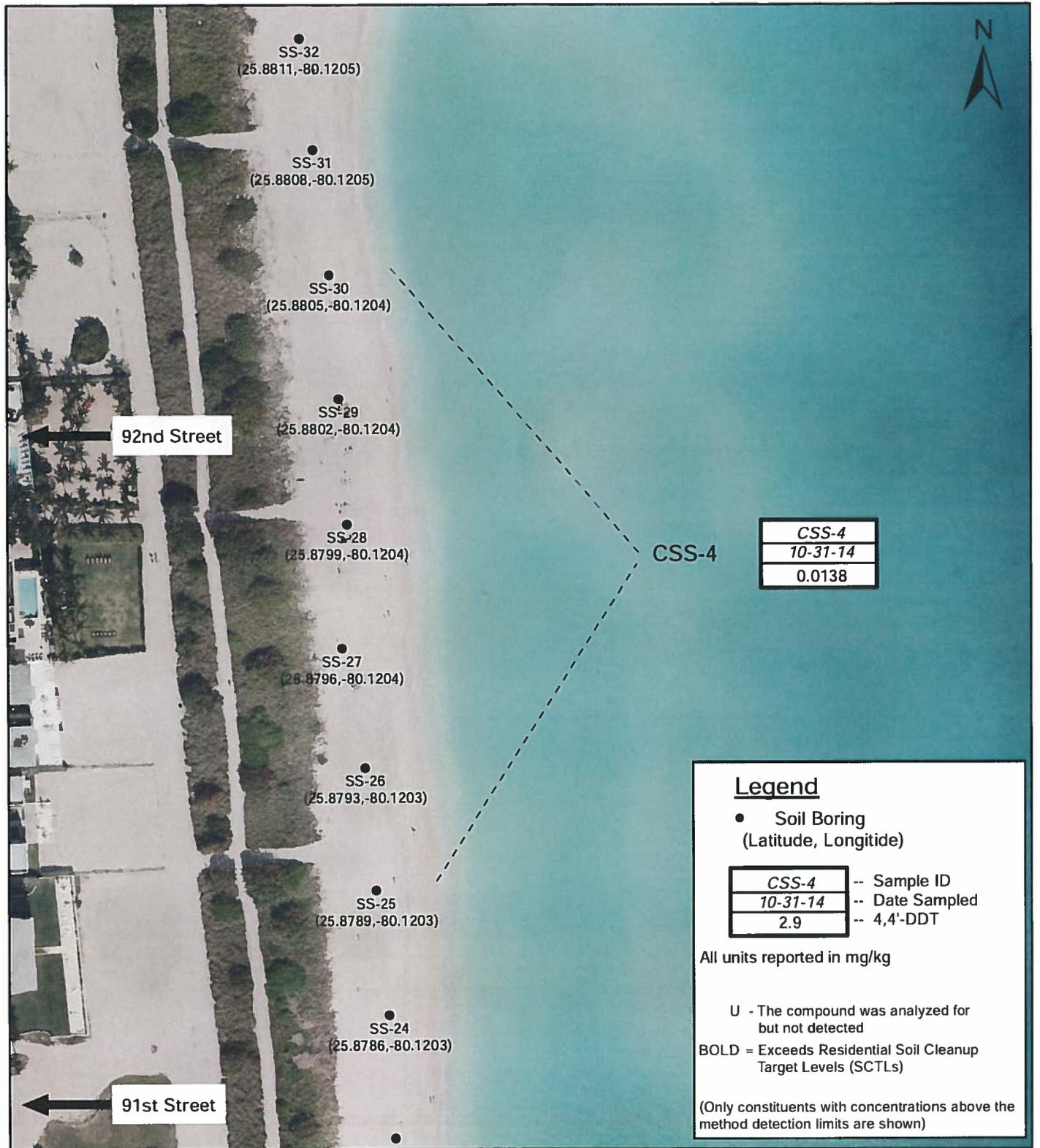
Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4d  
ORGANOCHLORINE PESTICIDE  
CONCENTRATIONS IN SOIL

October 31, 2014  
(From 90th Street to 91st Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

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Project No: 2146811

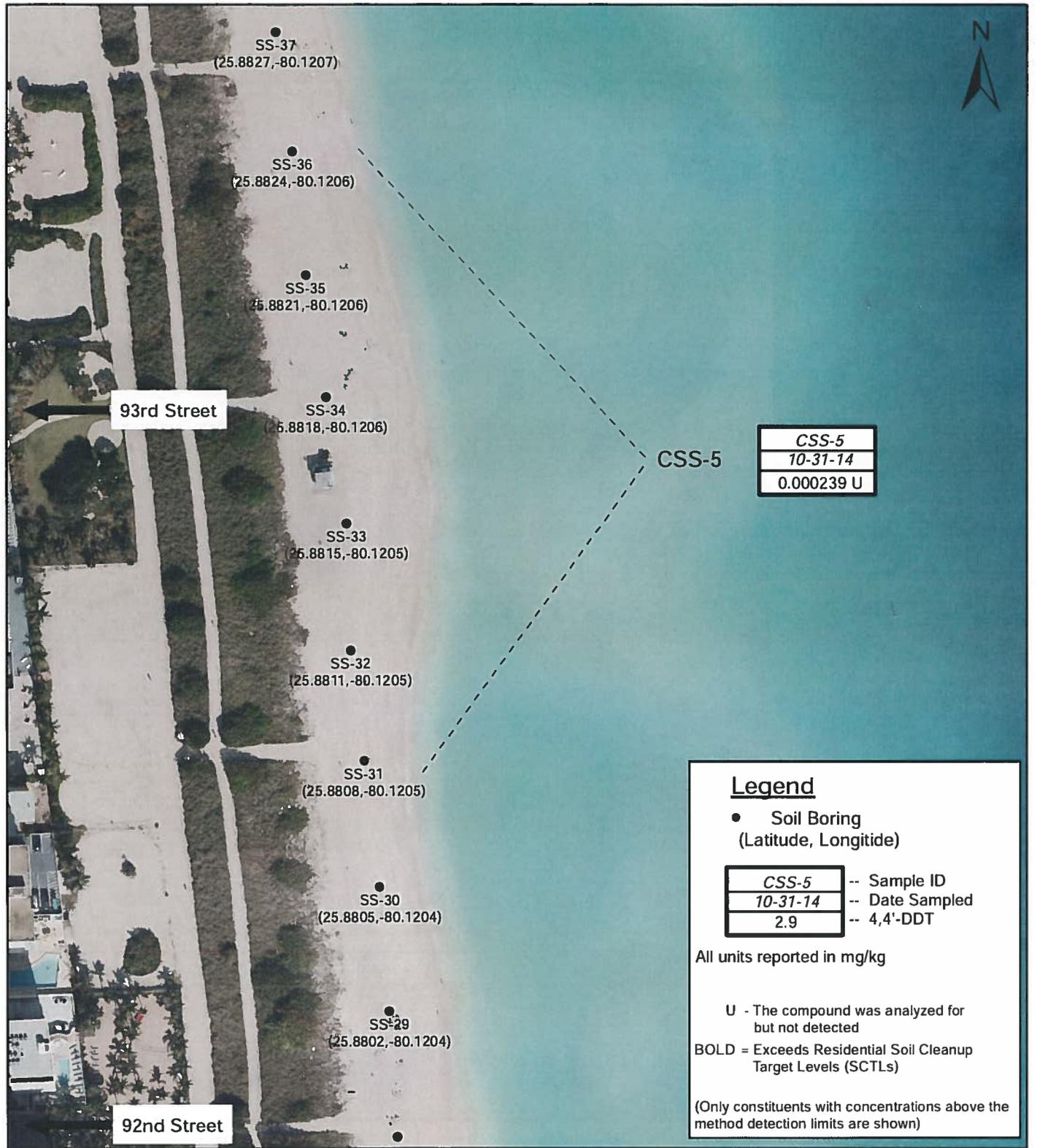
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4e  
ORGANOCHLORINE PESTICIDE  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 91st Street to 92nd Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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Miami, Florida

Project No: 2146811

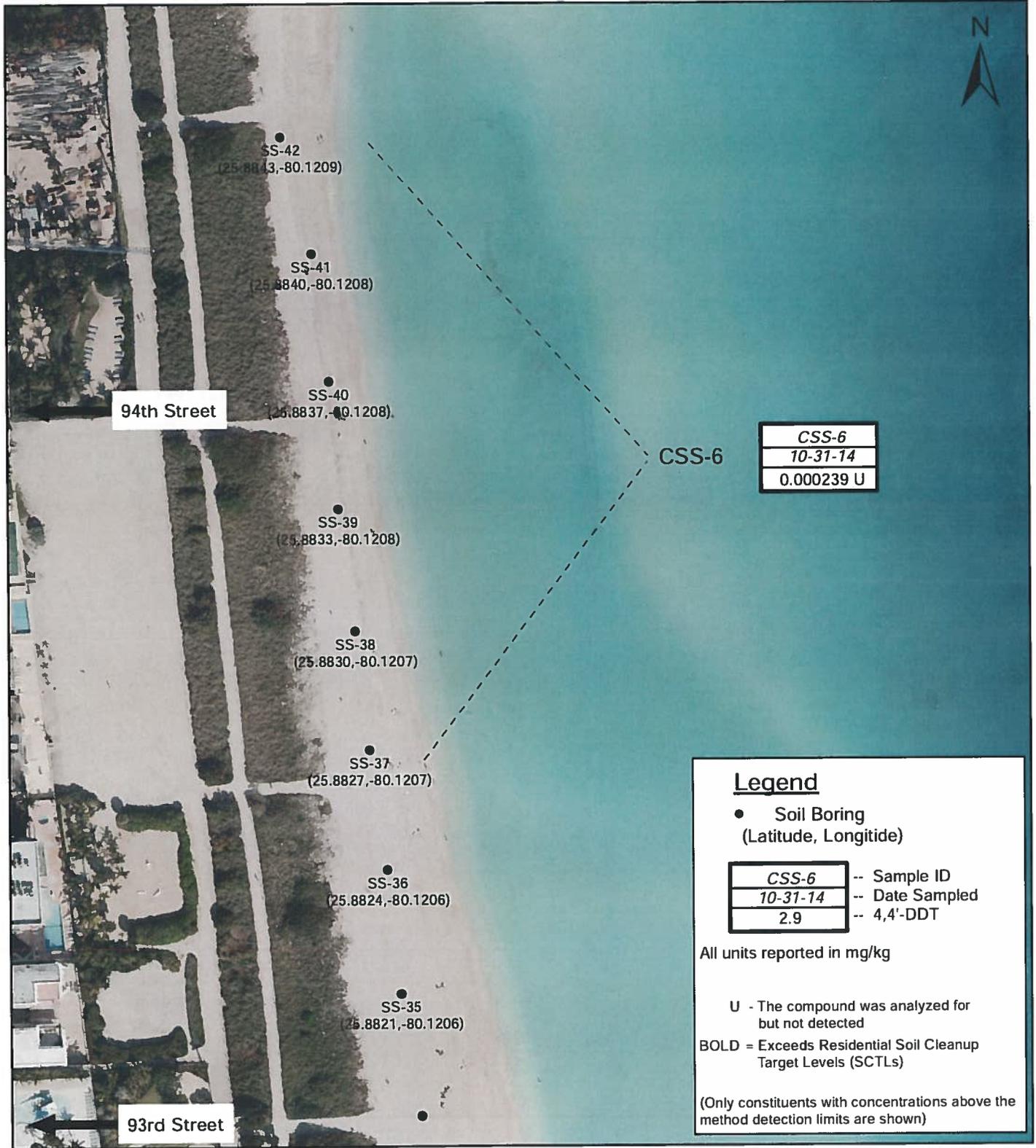
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4f  
 ORGANOCHLORINE PESTICIDE  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 92nd Street to 93rd Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**Legend**

- Soil Boring (Latitude, Longitude)

<b>CSS-6</b>	-- Sample ID
10-31-14	-- Date Sampled
2.9	-- 4,4'-DDT

All units reported in mg/kg

U - The compound was analyzed for but not detected

**BOLD** = Exceeds Residential Soil Cleanup Target Levels (SCTLs)

(Only constituents with concentrations above the method detection limits are shown)

0 60 120 180 240 Feet

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Project No: 2146811

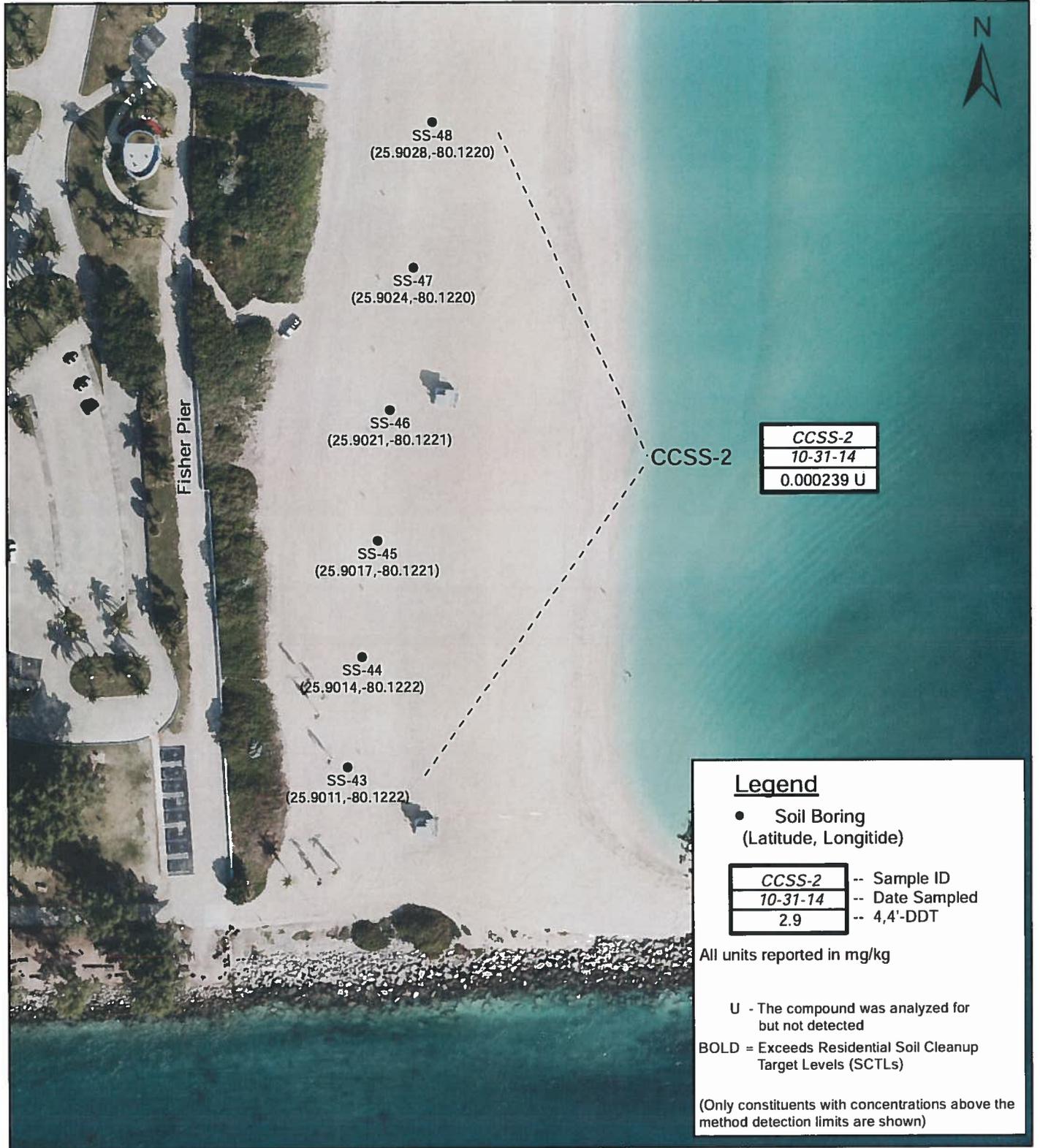
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 4g  
 ORGANOCHLORINE PESTICIDE  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 93rd Street to 94th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida

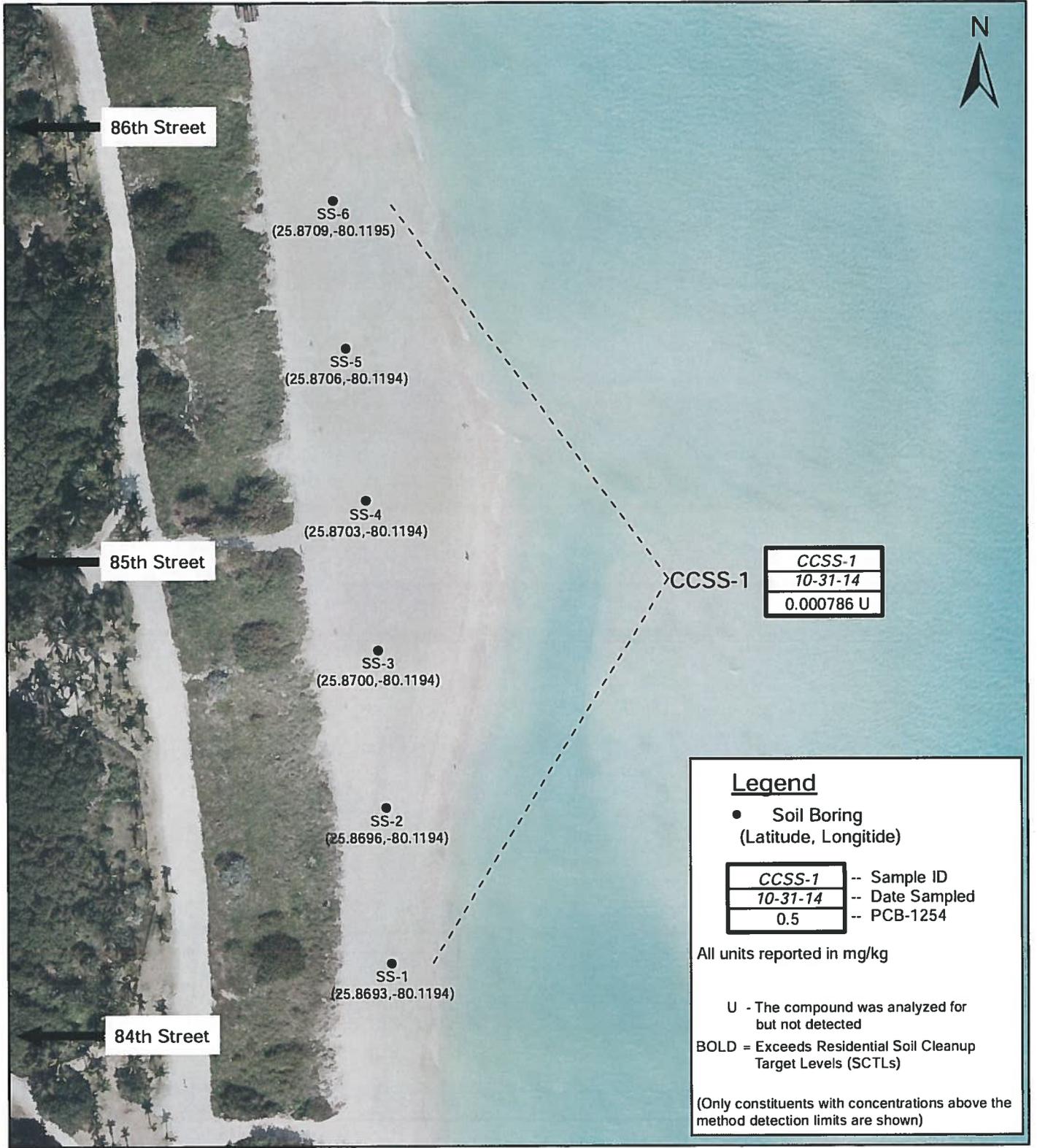


0 60 120 180 240 Feet

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Project No: 2146811  
 Drawn By: VM  
 Date: 11/24/14  
 Client(s): Town of Surfside

FIGURE 4h  
 ORGANOCHLORINE PESTICIDE  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (Fisher Pier)  
 City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 50 100 150 200 Feet

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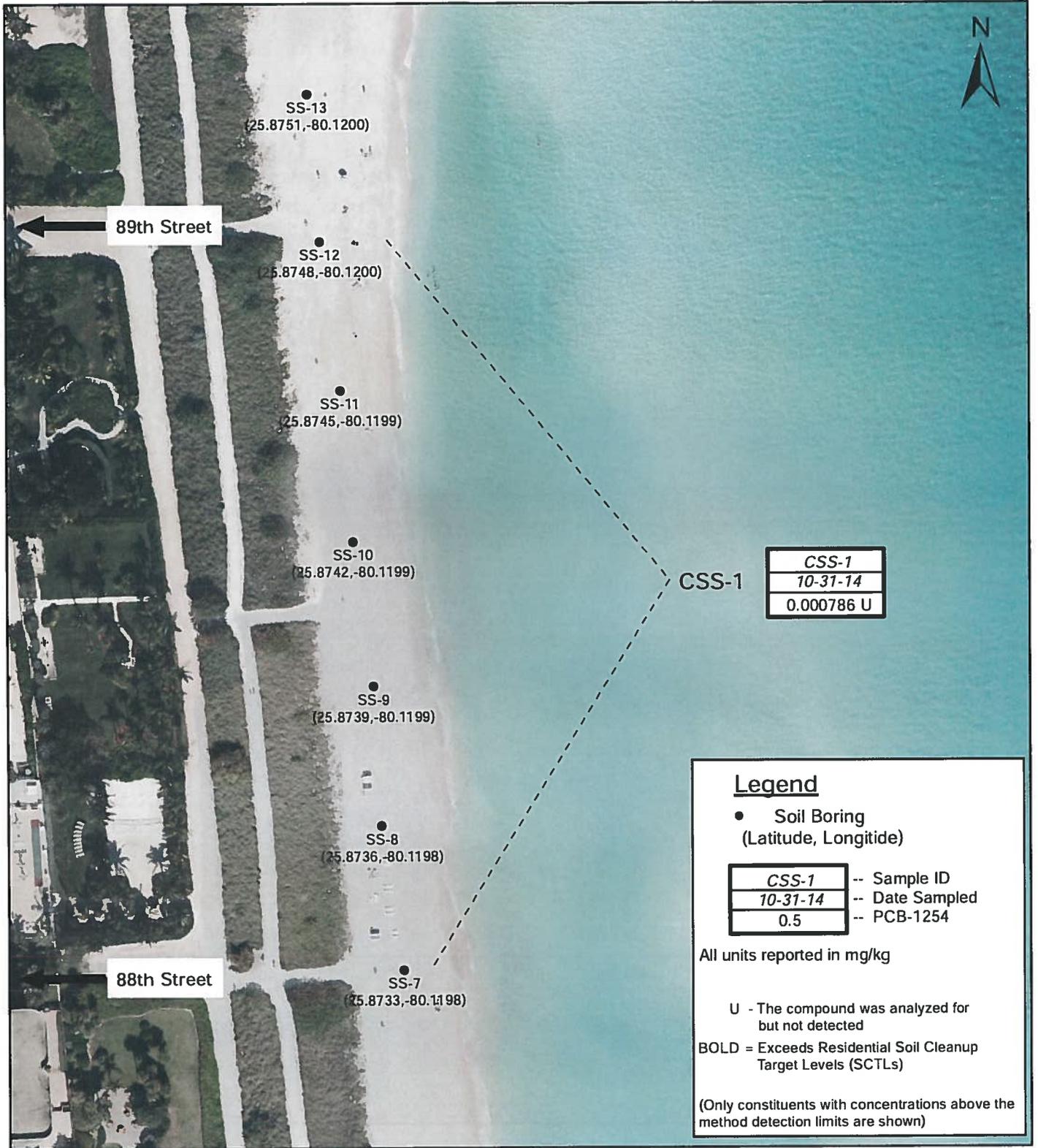
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 5a  
POLYCHLORINATED BIPHENYL  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 84th Street to 86th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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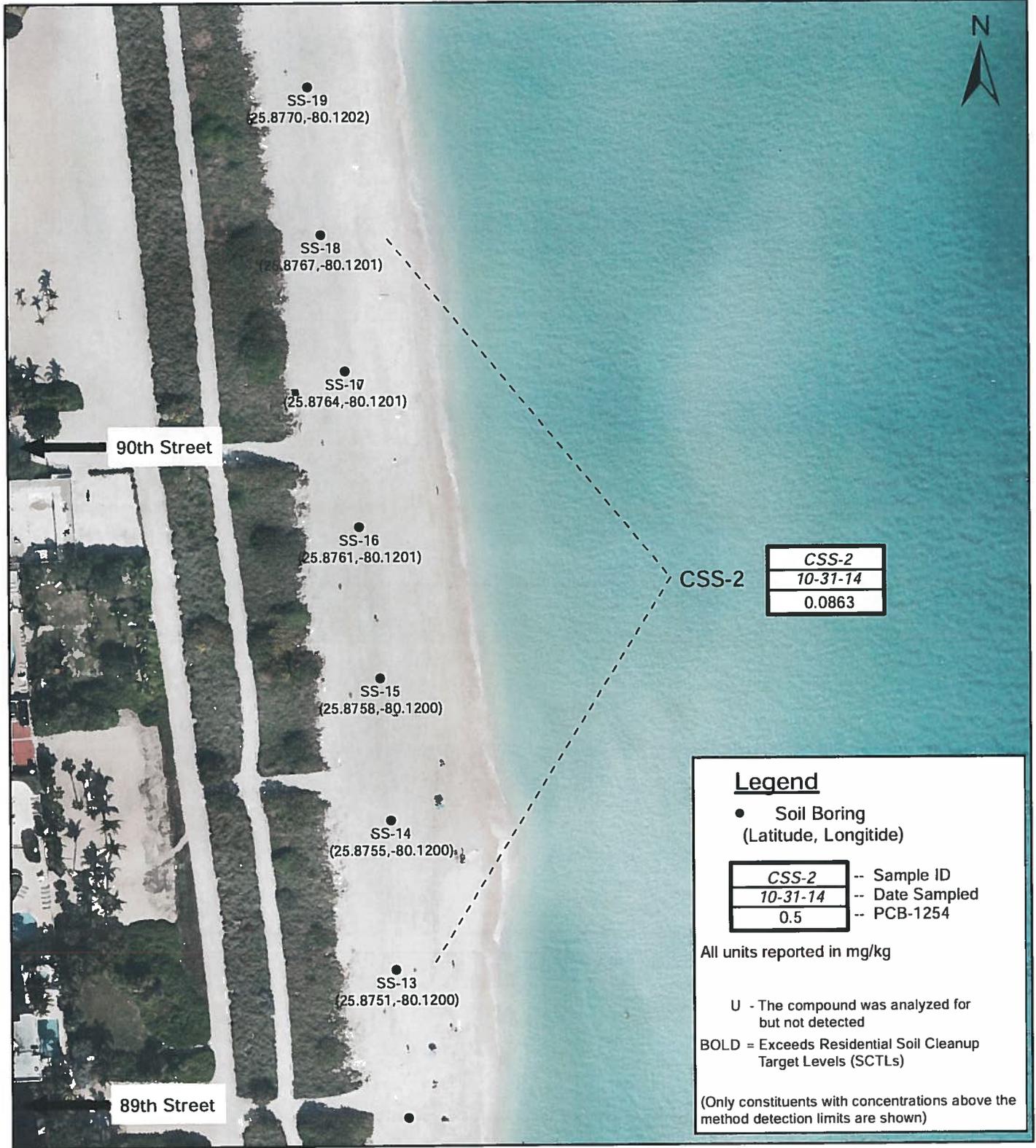
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 5b  
POLYCHLORINATED BIPHENYL  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 88th Street to 89th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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Miami, Florida

Project No: 2146811

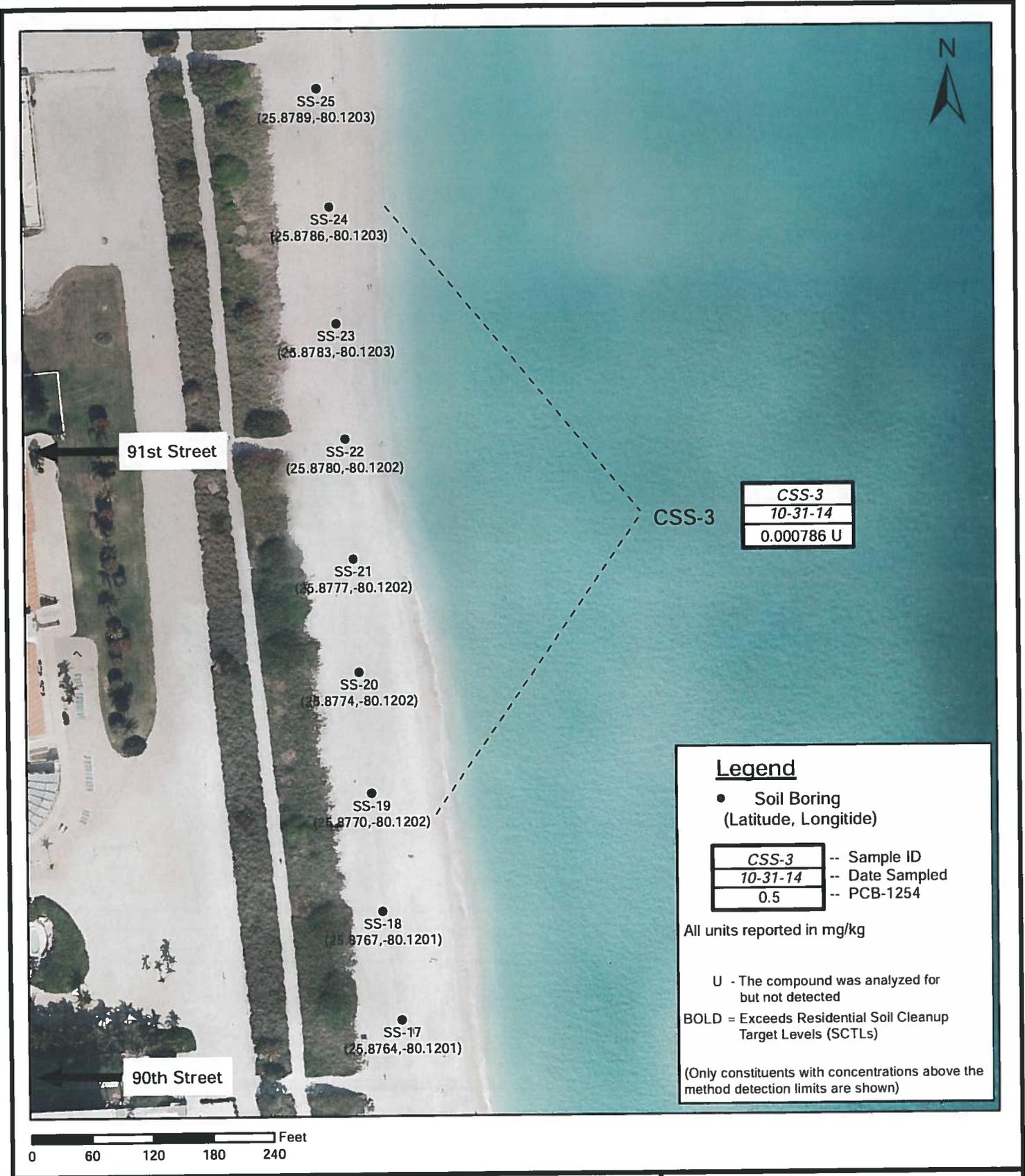
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 5c  
POLYCHLORINATED BIPHENYL  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 89th Street to 90th Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



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Project No: 2146811

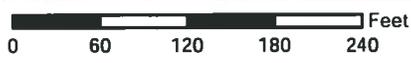
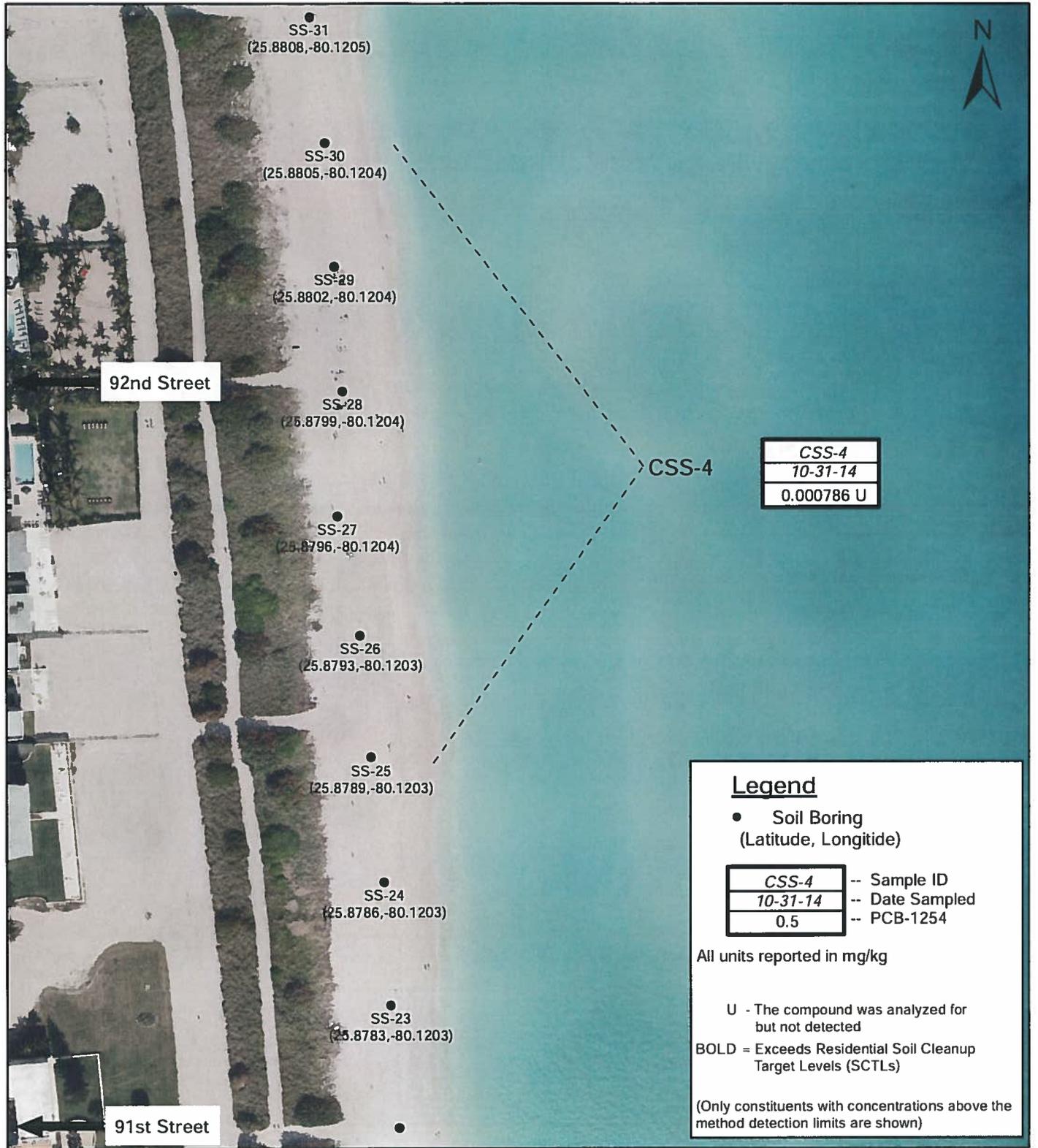
Drawn By: VM

Date: 11/24/14

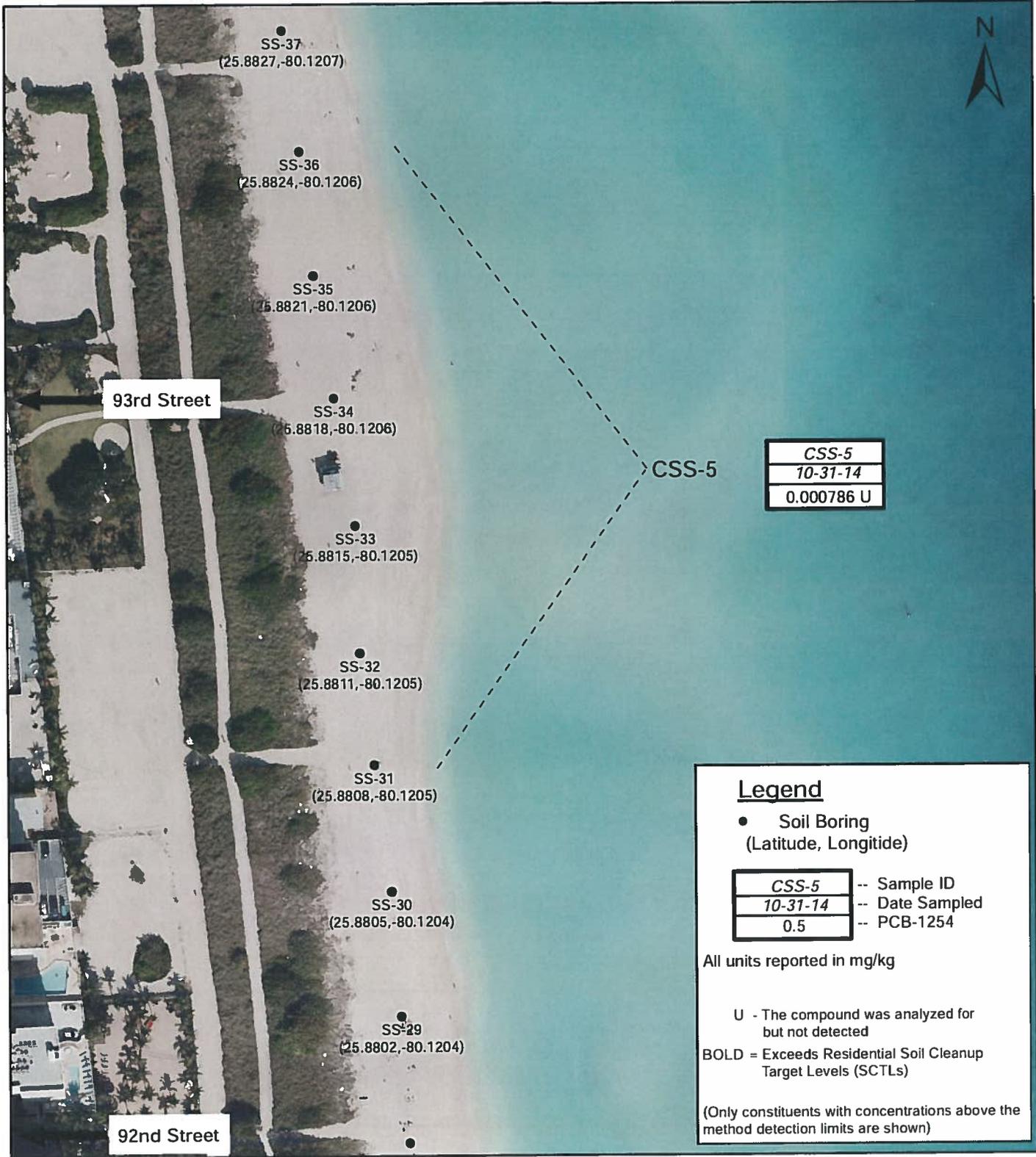
Client(s): Town of Surfside

FIGURE 5d  
POLYCHLORINATED BIPHENYL  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(From 90th Street to 91st Street)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



<p><b>LANDSCIENCE</b> Miami, Florida</p>	<p>Project No: 2146811 Drawn By: VM Date: 11/24/14 Client(s): Town of Surfside</p>	<p>FIGURE 5e POLYCHLORINATED BIPHENYL CONCENTRATIONS IN SOIL October 31, 2014 (From 91st Street to 92nd Street) City of Surfside Coastal Area Soil Evaluation Surfside, Miami-Dade County, Florida</p>
--	--	--



**Legend**

● Soil Boring  
(Latitude, Longitude)

<b>CSS-5</b>	-- Sample ID
<b>10-31-14</b>	-- Date Sampled
<b>0.5</b>	-- PCB-1254

All units reported in mg/kg

U - The compound was analyzed for but not detected

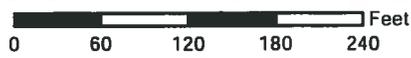
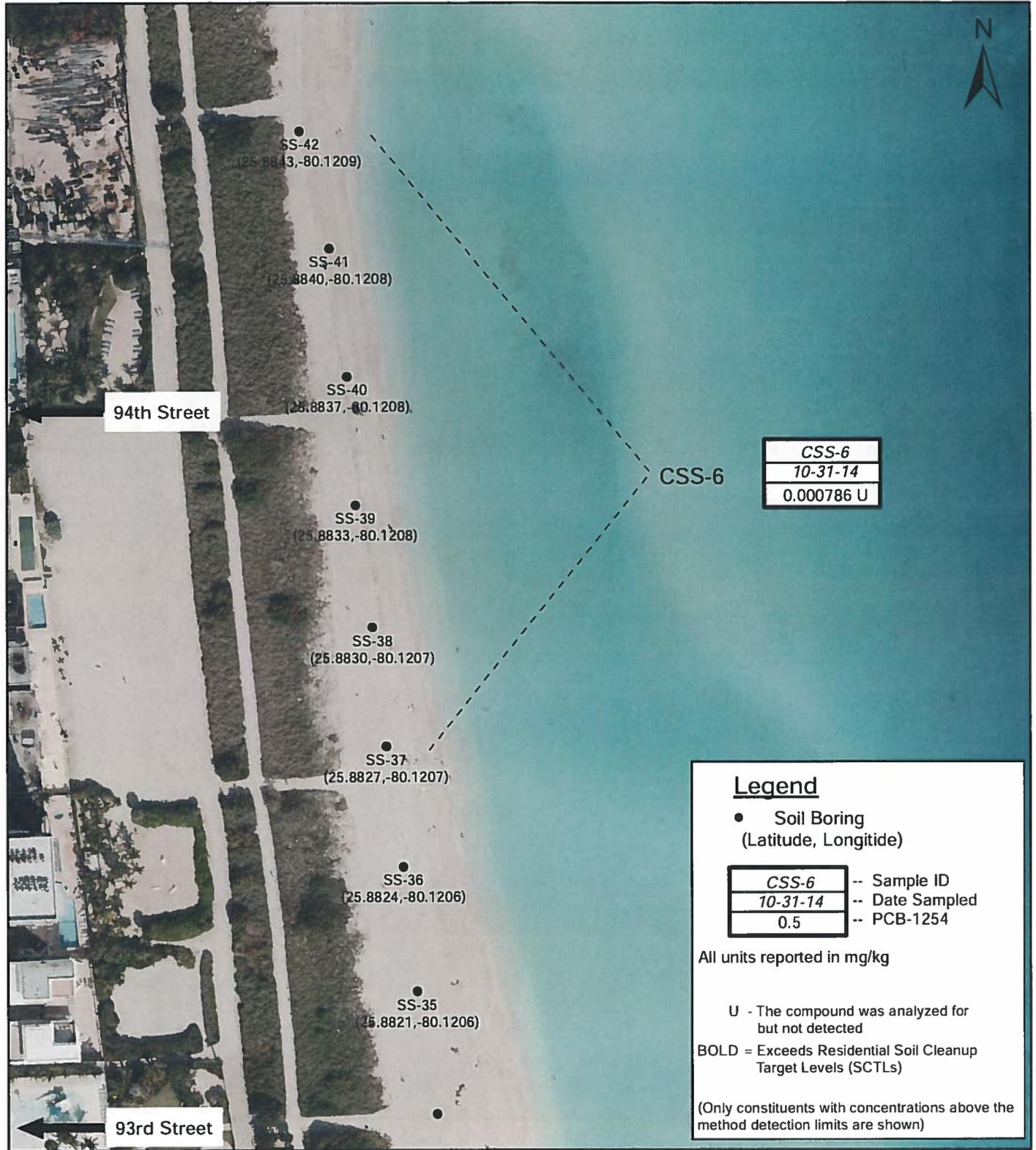
**BOLD** = Exceeds Residential Soil Cleanup Target Levels (SCTLs)

(Only constituents with concentrations above the method detection limits are shown)

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Miami, Florida

Project No: 2146811  
Drawn By: VM  
Date: 11/24/14  
Client(s): Town of Surfside

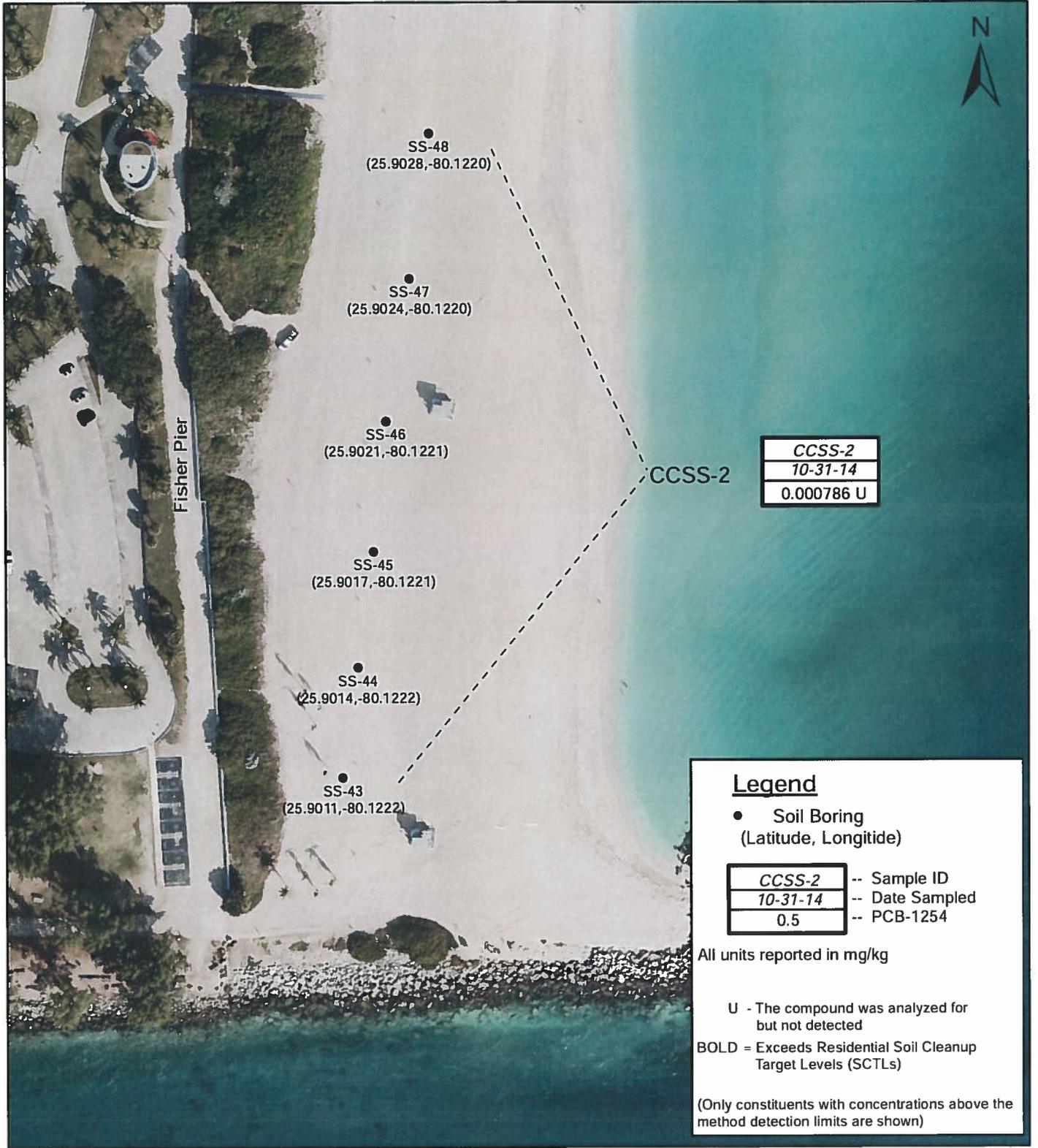
**FIGURE 5f**  
**POLYCHLORINATED BIPHENYL**  
**CONCENTRATIONS IN SOIL**  
October 31, 2014  
(From 92nd Street to 93rd Street)  
City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**  
Miami, Florida

Project No: 2146811  
 Drawn By: VM  
 Date: 11/24/14  
 Client(s): Town of Surfside

FIGURE 5g  
 POLYCHLORINATED BIPHENYL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 93rd Street to 94th Street)  
 City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 60 120 180 240 Feet

**LANDSCIENCE**

Miami, Florida

Project No: 2146811

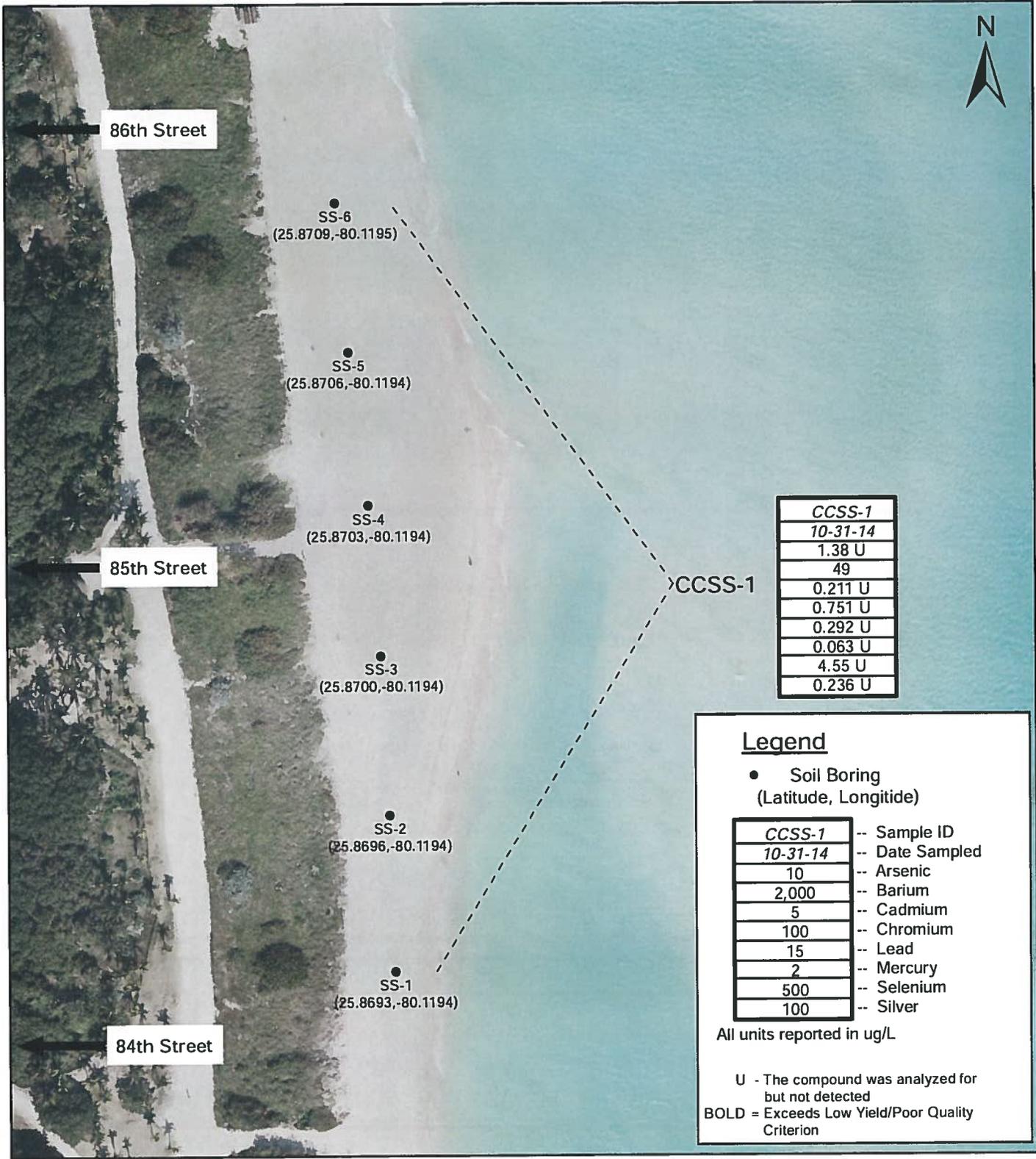
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 5h  
POLYCHLORINATED BIPHENYL  
CONCENTRATIONS IN SOIL  
October 31, 2014  
(Fisher Pier)

City of Surfside Coastal Area Soil Evaluation  
Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

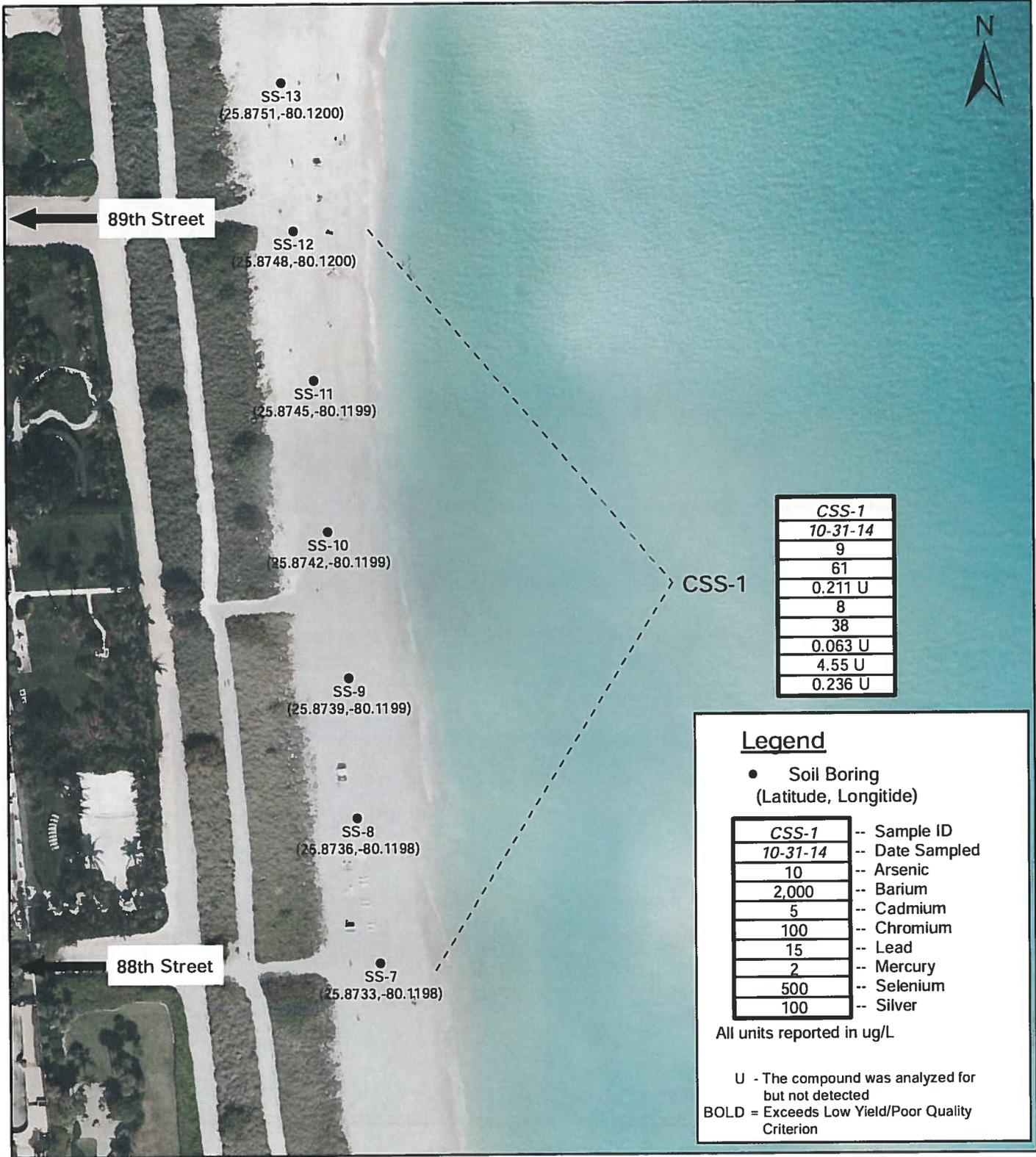
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6a  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 84th Street to 86th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

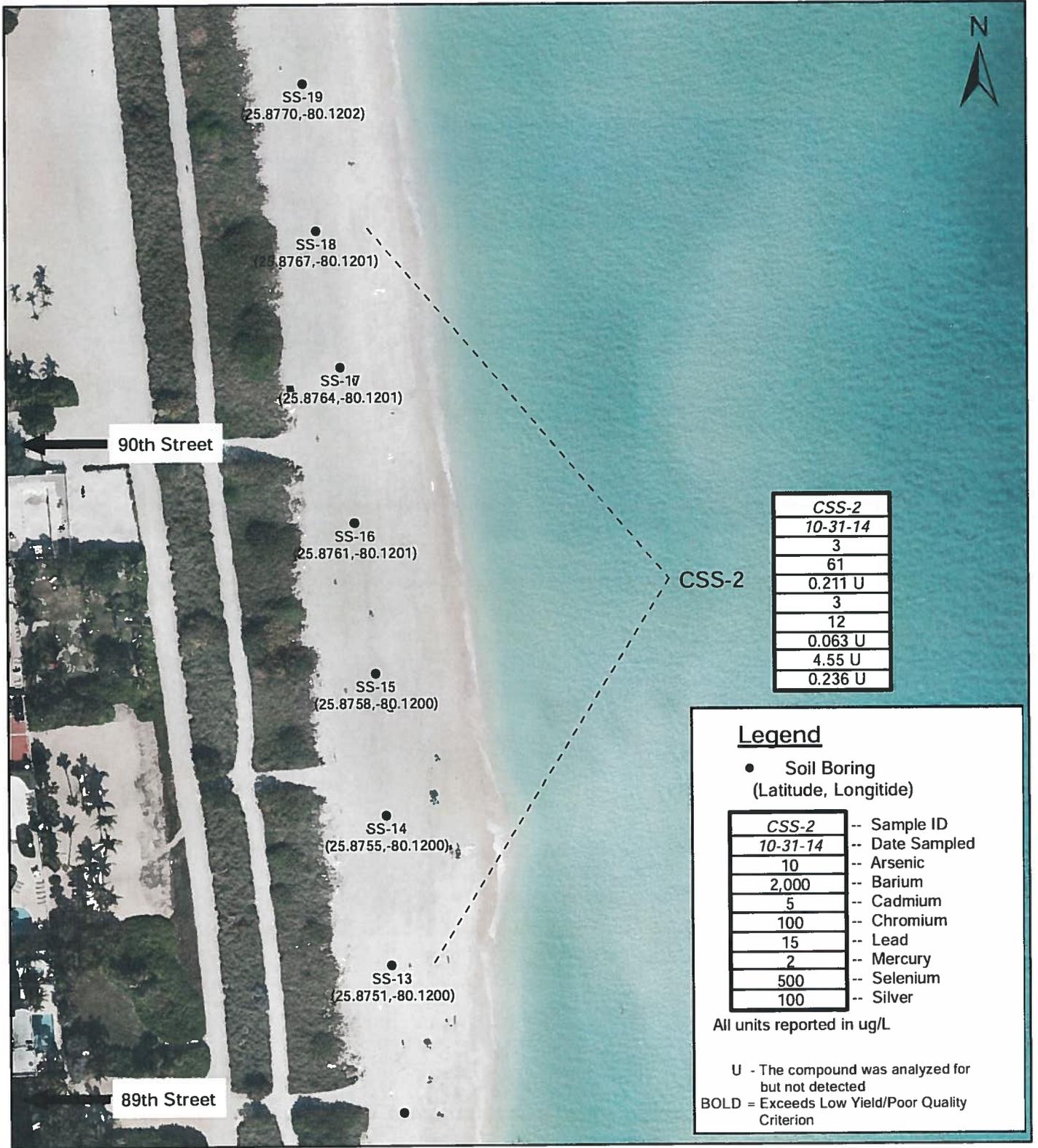
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6b  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 88th Street to 89th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 50 100 150 200 Feet

**LANDSCIENCE**

Miami, Florida

Project No: 2146811

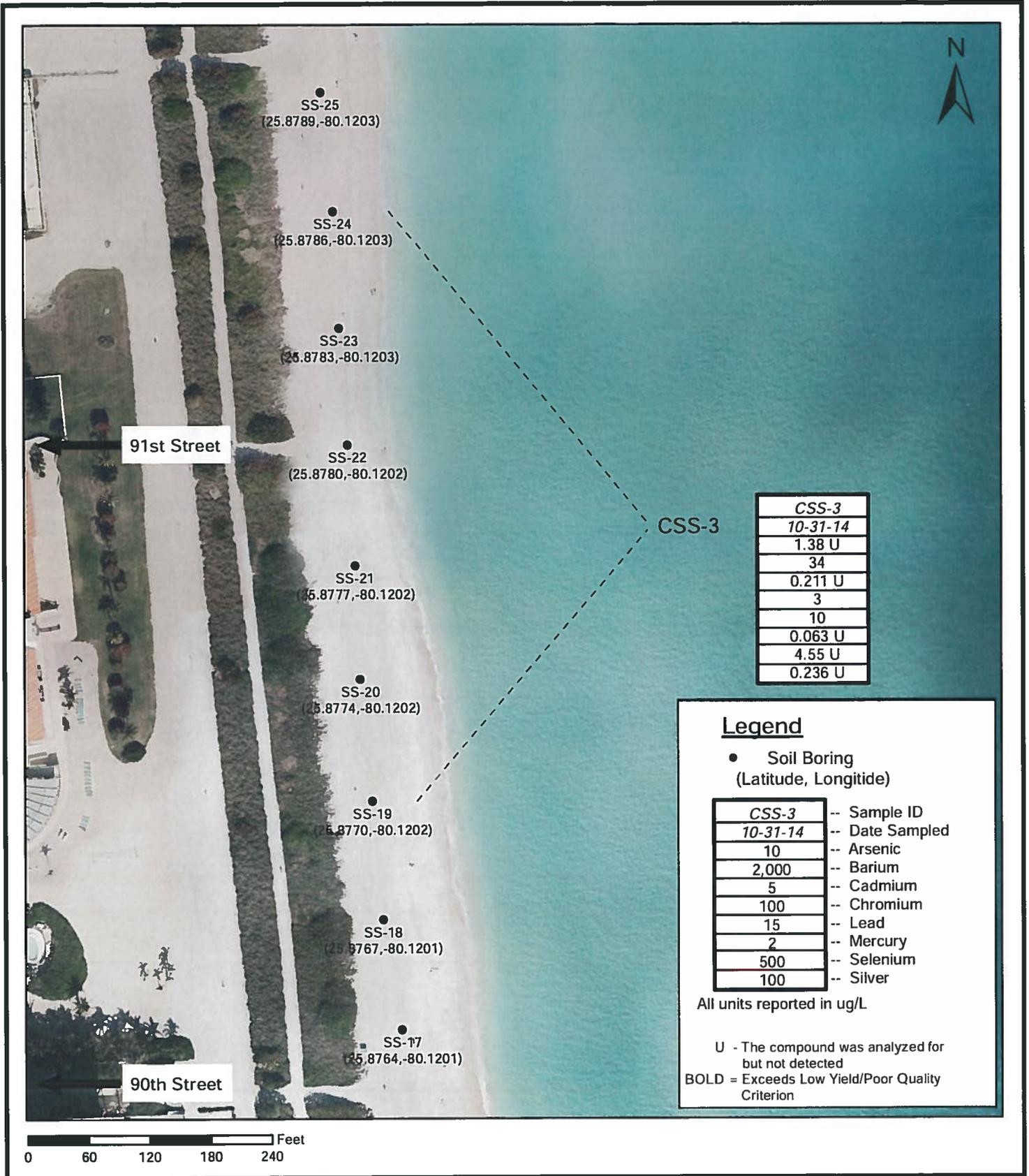
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6c  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 89th Street to 90th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

Drawn By: VM

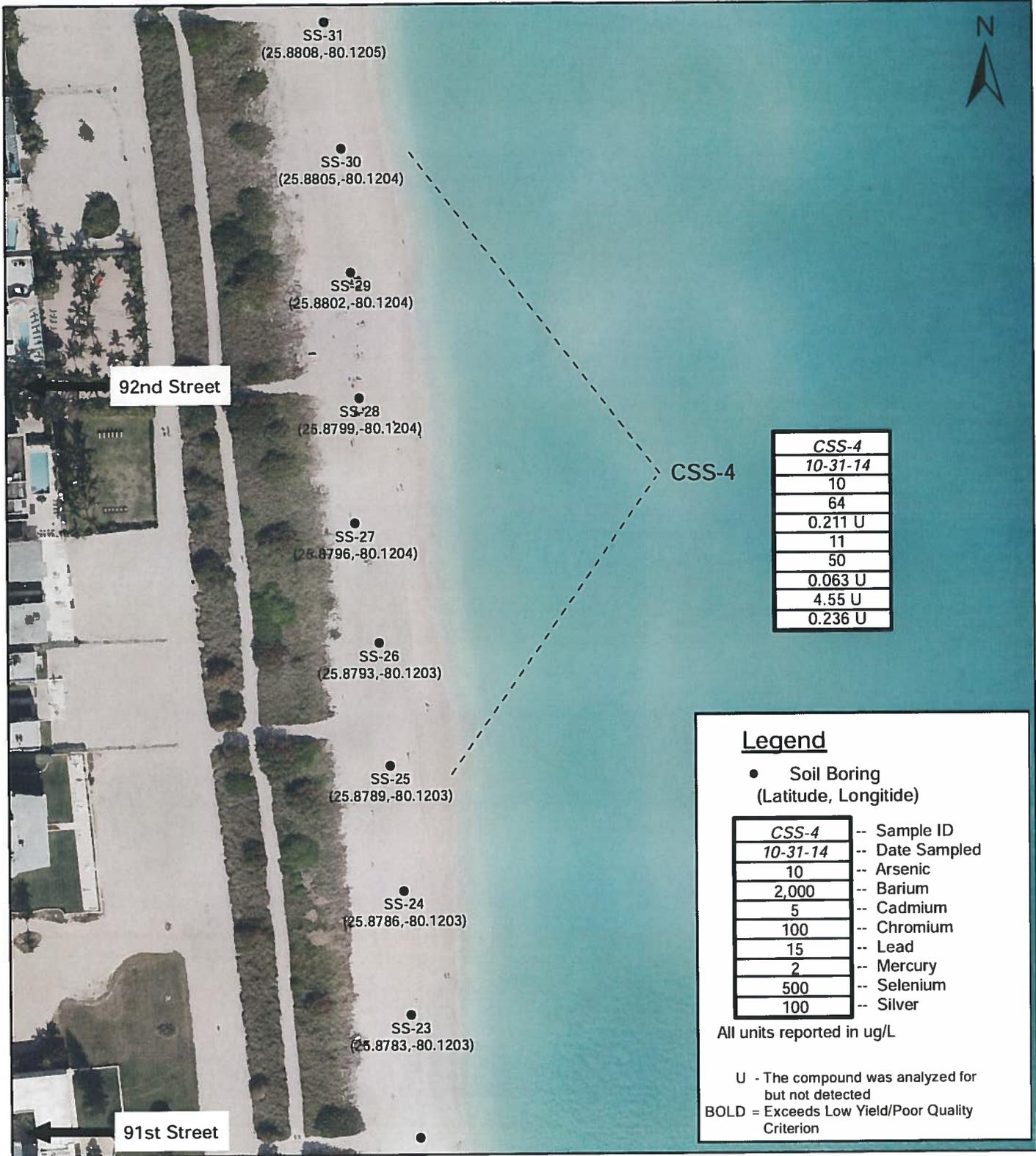
Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6d  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014

(From 90th Street to 91st Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



<i>CSS-4</i>
<i>10-31-14</i>
<b>10</b>
<b>64</b>
<b>0.211 U</b>
<b>11</b>
<b>50</b>
<b>0.063 U</b>
<b>4.55 U</b>
<b>0.236 U</b>

**Legend**

- Soil Boring (Latitude, Longitude)

<i>CSS-4</i>	-- Sample ID
<i>10-31-14</i>	-- Date Sampled
<b>10</b>	-- Arsenic
<b>2,000</b>	-- Barium
<b>5</b>	-- Cadmium
<b>100</b>	-- Chromium
<b>15</b>	-- Lead
<b>2</b>	-- Mercury
<b>500</b>	-- Selenium
<b>100</b>	-- Silver

All units reported in ug/L

U - The compound was analyzed for but not detected  
**BOLD** = Exceeds Low Yield/Poor Quality Criterion

0 60 120 180 240 Feet

**LANDSCIENCE**

Miami, Florida

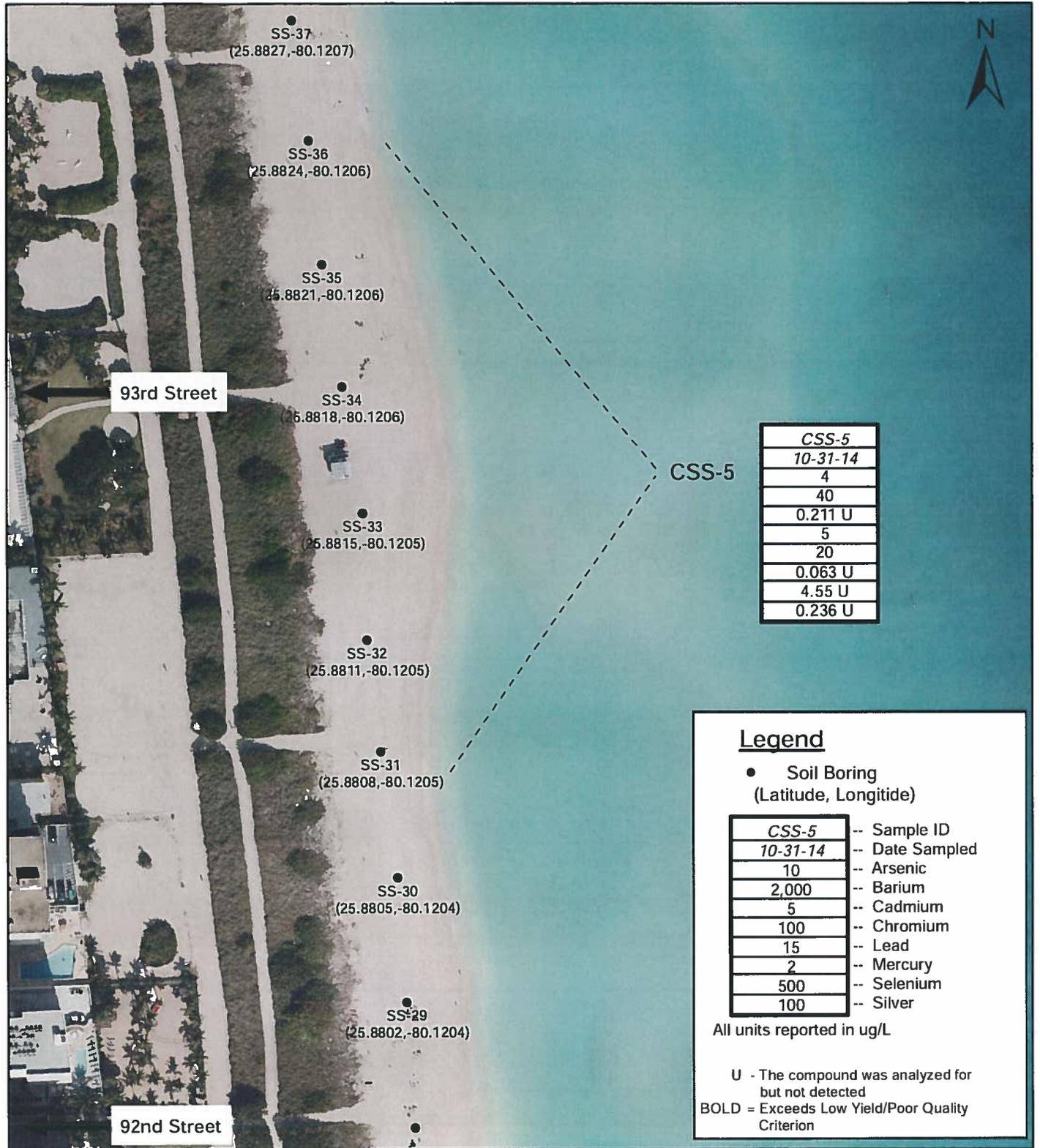
Project No: 2146811

Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6e  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 91st Street to 92nd Street)  
 City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



0 60 120 180 240 Feet

**LANDSCIENCE**

Miami, Florida

Project No: 2146811

Drawn By: VM

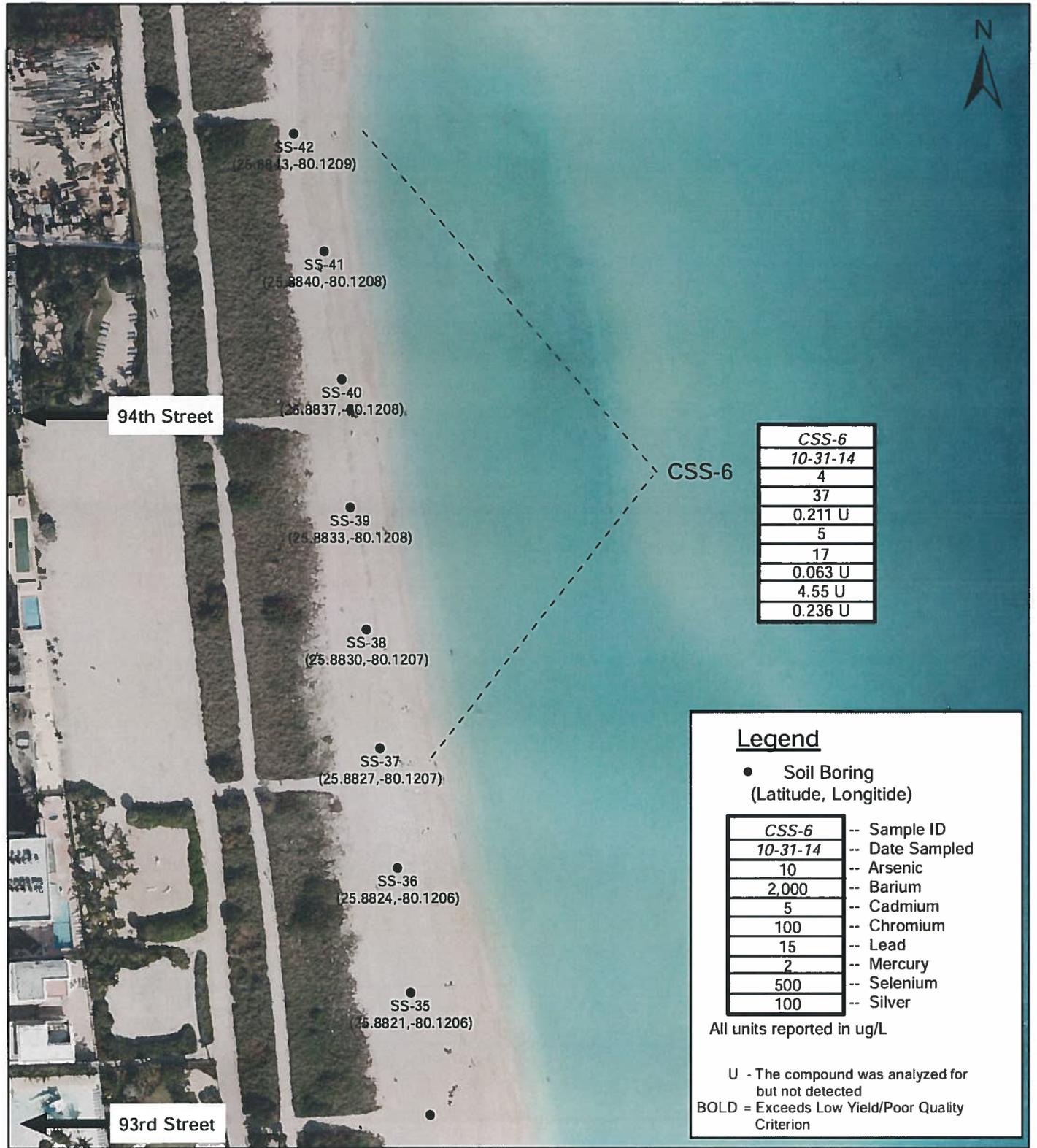
Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6f  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014

(From 92nd Street to 93rd Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



**LANDSCIENCE**

Miami, Florida

Project No: 2146811

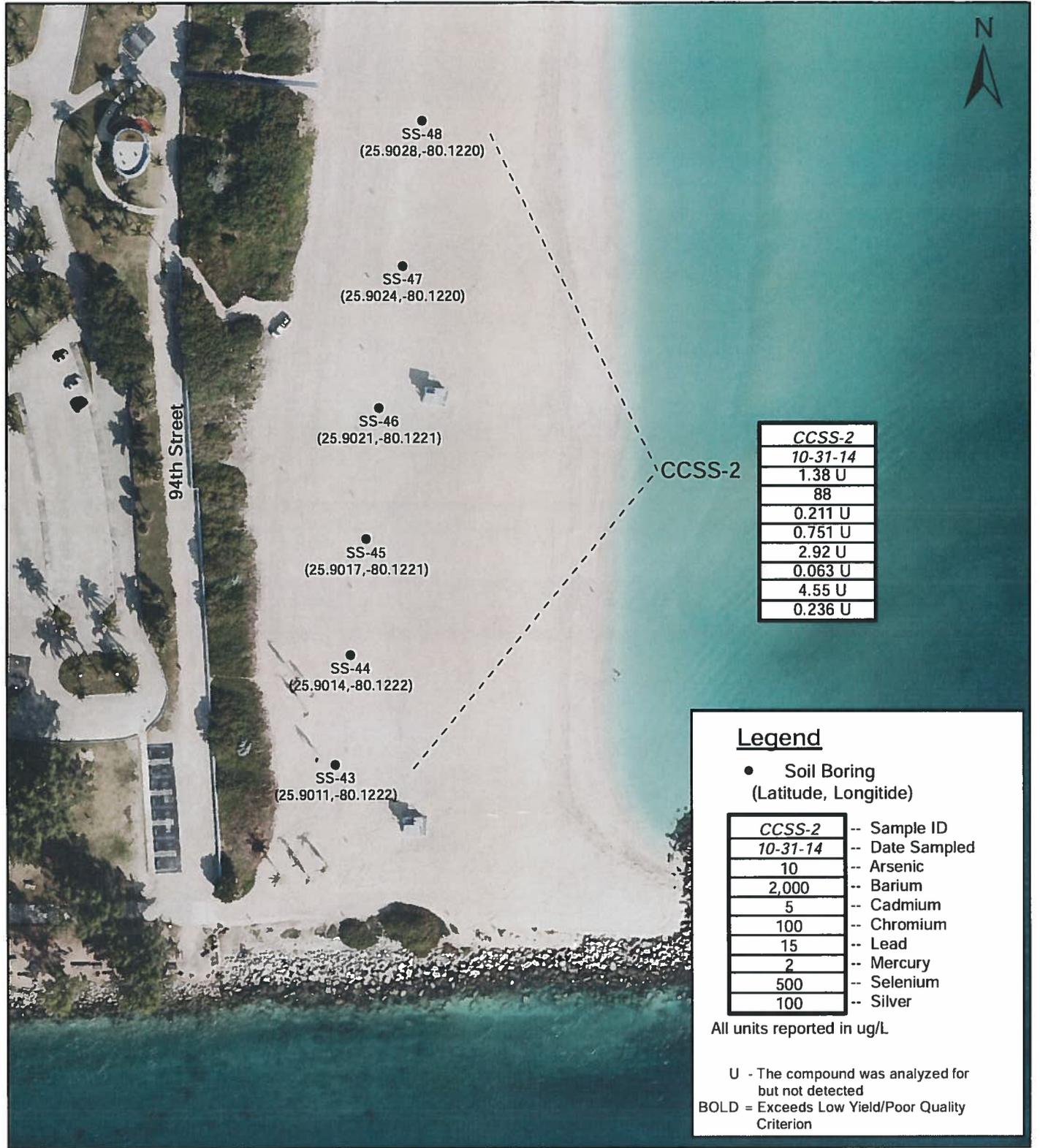
Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6g  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (From 93rd Street to 94th Street)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida



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Miami, Florida

Project No: 2146811

Drawn By: VM

Date: 11/24/14

Client(s): Town of Surfside

FIGURE 6h  
 SPLP HEAVY METAL  
 CONCENTRATIONS IN SOIL  
 October 31, 2014  
 (Fisher Pier)

City of Surfside Coastal Area Soil Evaluation  
 Surfside, Miami-Dade County, Florida

## **APPENDICES**

**APPENDIX A**

**Laboratory Analytical Reports and Chain of Custody Records  
for Soil Samples Collected on October 31, 2014**



Report To:  
 Mauricio Pages  
 Land Science Inc.  
 12570 NE 7th Avenue  
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Page 1 of 25  
 Report Printed: 11/10/2014  
 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-01  
 Client Sample ID: CCSS-1  
 Matrix: Solid

Collection Date: 10/31/14 09:27  
 Received Date: 10/31/14 14:09  
 Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	ND	U	mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 15:20	JR
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Wet Chemistry

% Solids	96.6		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	2.39		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 19:08	IN
Barium	5.44		mg/kg dry	1	0.00173	0.00518	EPA 6010	11/03 09:00	11/03 19:08	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 19:08	IN
Chromium	4.42		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 19:08	IN
Lead	0.559		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 19:08	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:12	EN
Selenium	0.661		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 19:08	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 19:08	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 01:30	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 01:30	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 01:30	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 01:30	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 01:30	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 01:30	JR

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Report Printed: 11/10/2014  
Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-01  
Client Sample ID: CCSS-1  
Matrix: Solid

Collection Date: 10/31/14 09:27  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 01:30	JR
delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 01:30	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 01:30	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 01:30	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 01:30	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 01:30	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 01:30	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 01:30	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 01:30	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 01:30	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 01:30	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 01:30	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 01:30	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 01:30	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 01:30	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 01:30	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 01:30	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 01:30	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 01:30	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 01:30	JR

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Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-01  
Client Sample ID: CCSS-1  
Matrix: Solid

Collection Date: 10/31/14 09:27  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 01:30	JR
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	ND	U	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:28	IN
Barium	0.0490		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:28	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:28	IN
Chromium	ND	U	mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:28	IN
Lead	ND	U	mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:28	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 11:57	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:28	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:28	IN

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 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-02  
 Client Sample ID: CSS-1  
 Matrix: Solid

Collection Date: 10/31/14 09:51  
 Received Date: 10/31/14 14:09  
 Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	ND	U	mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 15:51	JR
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Wet Chemistry

% Solids	96.9		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	6.46		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 19:13	IN
Barium	8.41		mg/kg dry	1	0.00162	0.00485	EPA 6010	11/03 09:00	11/03 19:13	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 19:13	IN
Chromium	4.99		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 19:13	IN
Lead	4.85		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 19:13	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:14	EN
Selenium	0.618		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 19:13	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 19:13	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 02:00	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 02:00	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 02:00	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 02:00	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 02:00	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 02:00	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 02:00	JR

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 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-02  
 Client Sample ID: CSS-1  
 Matrix: Solid

Collection Date: 10/31/14 09:51  
 Received Date: 10/31/14 14:09  
 Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 02:00	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 02:00	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 02:00	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 02:00	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 02:00	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 02:00	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 02:00	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 02:00	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 02:00	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 02:00	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 02:00	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 02:00	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 02:00	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 02:00	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 02:00	JR

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 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-02  
 Client Sample ID: CSS-1  
 Matrix: Solid

Collection Date: 10/31/14 09:51  
 Received Date: 10/31/14 14:09  
 Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	0.00900		mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:32	IN
Barium	0.0610		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:32	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:32	IN
Chromium	0.00800		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:32	IN
Lead	0.0380		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:32	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 11:59	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:32	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:32	IN

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Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-03  
Client Sample ID: CSS-2  
Matrix: Solid

Collection Date: 10/31/14 10:18  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	ND	U	mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 16:22	JR
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Wet Chemistry

% Solids	96.8		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	4.57		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 19:51	IN
Barium	5.38		mg/kg dry	1	0.00171	0.00512	EPA 6010	11/03 09:00	11/03 19:51	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 19:51	IN
Chromium	4.07		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 19:51	IN
Lead	2.01		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 19:51	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:16	EN
Selenium	0.553		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 19:51	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 19:51	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 02:30	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 02:30	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 02:30	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 02:30	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 02:30	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 02:30	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 02:30	JR

Florida-Spectrum Environmental Services, Inc.  
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528 Gooch Rd.  
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Big Lake Laboratory  
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Okeechobee, FL 34972

Spectrum Laboratories  
630 Indian St.  
Savannah, GA 31401



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 Report Printed: 11/10/2014  
 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-03  
 Client Sample ID: CSS-2  
 Matrix: Solid

Collection Date: 10/31/14 10:18  
 Received Date: 10/31/14 14:09  
 Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 02:30	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 02:30	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 02:30	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 02:30	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 02:30	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 02:30	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 02:30	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 02:30	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 02:30	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 02:30	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 02:30	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 02:30	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 02:30	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1254	0.0863		mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 02:30	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 02:30	JR

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Report Printed: 11/10/2014  
Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-03  
Client Sample ID: CSS-2  
Matrix: Solid

Collection Date: 10/31/14 10:18  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	0.00300	I	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:36	IN
Barium	0.0610		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:36	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:36	IN
Chromium	0.00300		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:36	IN
Lead	0.0120		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:36	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:01	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:36	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:36	IN

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Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-04  
Client Sample ID: CSS-3  
Matrix: Solid

Collection Date: 10/31/14 10:42  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	ND	U	mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 16:54	JR
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Wet Chemistry

% Solids	97.1		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	3.80		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 19:56	IN
Barium	5.80		mg/kg dry	1	0.00170	0.00510	EPA 6010	11/03 09:00	11/03 19:56	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 19:56	IN
Chromium	3.80		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 19:56	IN
Lead	1.75		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 19:56	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:19	EN
Selenium	0.600		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 19:56	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 19:56	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 03:00	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 03:00	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 03:00	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 03:00	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 03:00	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 03:00	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 03:00	JR

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Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-04  
Client Sample ID: CSS-3  
Matrix: Solid

Collection Date: 10/31/14 10:42  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 03:00	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 03:00	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 03:00	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 03:00	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 03:00	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 03:00	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 03:00	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 03:00	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 03:00	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 03:00	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 03:00	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 03:00	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 03:00	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 03:00	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 03:00	JR

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 Report Printed: 11/10/2014  
 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-04  
 Client Sample ID: CSS-3  
 Matrix: Solid

Collection Date: 10/31/14 10:42  
 Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	ND	U	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:40	IN
Barium	0.0340		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:40	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:40	IN
Chromium	0.00300		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:40	IN
Lead	0.0100		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:40	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:04	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:40	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:40	IN

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Report Printed: 11/10/2014  
Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-05  
Client Sample ID: CSS-4  
Matrix: Solid

Collection Date: 10/31/14 11:15  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	5.68		mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 15:20	JR
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Wet Chemistry

% Solids	96.9		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	5.84		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 20:01	IN
Barium	8.95		mg/kg dry	1	0.00158	0.00473	EPA 6010	11/03 09:00	11/03 20:01	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 20:01	IN
Chromium	4.08		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 20:01	IN
Lead	5.24		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 20:01	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:21	EN
Selenium	0.556		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 20:01	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 20:01	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 03:30	JR
4,4'-DDT	0.0138		mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 03:30	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 03:30	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 03:30	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 03:30	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 03:30	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 03:30	JR

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 Work Order # 14J0891  
 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-05  
 Client Sample ID: CSS-4  
 Matrix: Solid

Collection Date: 10/31/14 11:15  
 Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 03:30	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 03:30	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 03:30	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 03:30	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 03:30	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 03:30	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 03:30	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 03:30	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 03:30	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 03:30	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 03:30	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 03:30	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 03:30	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 03:30	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 03:30	JR

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 Project:  
 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-05  
 Client Sample ID: CSS-4  
 Matrix: Solid

Collection Date: 10/31/14 11:15  
 Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	0.0100		mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:44	IN
Barium	0.0640		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:44	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:44	IN
Chromium	0.0110		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:44	IN
Lead	0.0500		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:44	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:06	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:44	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:44	IN

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Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-06  
Client Sample ID: CSS-5  
Matrix: Solid

Collection Date: 10/31/14 11:37  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	12.9		mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 15:51	JR
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Wet Chemistry

% Solids	97.1		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	5.39		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 20:06	IN
Barium	7.29		mg/kg dry	1	0.00170	0.00509	EPA 6010	11/03 09:00	11/03 20:06	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 20:06	IN
Chromium	4.04		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 20:06	IN
Lead	3.54		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 20:06	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:28	EN
Selenium	0.699		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 20:06	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 20:06	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 04:00	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 04:00	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 04:00	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 04:00	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 04:00	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 04:00	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 04:00	JR

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 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-06  
 Client Sample ID: CSS-5  
 Matrix: Solid

Collection Date: 10/31/14 11:37  
 Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 04:00	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 04:00	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 04:00	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 04:00	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 04:00	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 04:00	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 04:00	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 04:00	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 04:00	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 04:00	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 04:00	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 04:00	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 04:00	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 04:00	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 04:00	JR

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 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-06  
 Client Sample ID: CSS-5  
 Matrix: Solid

Collection Date: 10/31/14 11:37  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	0.00400	I	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:48	IN
Barium	0.0400		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:48	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:48	IN
Chromium	0.00500		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:48	IN
Lead	0.0200		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:48	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:09	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:48	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:48	IN

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Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-07  
Client Sample ID: CSS-6  
Matrix: Solid

Collection Date: 10/31/14 12:03  
Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	2.00		mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 16:22	JR
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Wet Chemistry

% Solids	97.4		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	6.44		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 20:10	IN
Barium	8.72		mg/kg dry	1	0.00165	0.00494	EPA 6010	11/03 09:00	11/03 20:10	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 20:10	IN
Chromium	4.07		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 20:10	IN
Lead	2.62		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 20:10	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:31	EN
Selenium	0.581		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 20:10	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 20:10	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 04:30	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 04:30	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 04:30	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 04:30	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 04:30	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 04:30	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 04:30	JR

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 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-07  
 Client Sample ID: CSS-6  
 Matrix: Solid

Collection Date: 10/31/14 12:03  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 04:30	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 04:30	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 04:30	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 04:30	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 04:30	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 04:30	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 04:30	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 04:30	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 04:30	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 04:30	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 04:30	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 04:30	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 04:30	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 04:30	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 04:30	JR

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 Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
 Surfside

Lab ID: 14J0891-07  
 Client Sample ID: CSS-6  
 Matrix: Solid

Collection Date: 10/31/14 12:03  
 Received Date: 10/31/14 14:09  
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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	0.00400	I	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:53	IN
Barium	0.0370		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:53	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:53	IN
Chromium	0.00500		mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:53	IN
Lead	0.0170		mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:53	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:11	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:53	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:53	IN

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Big Lake Laboratory  
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 Okeechobee, FL 34972

Spectrum Laboratories  
 630 Indian St.  
 Savannah, GA 31401



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Report Printed: 11/10/2014  
Work Order # 14J0891  
Project:  
Town of Surfside - Coastal Area

Coastal Area Between 88th & 95th St.,  
Surfside

Lab ID: 14J0891-08  
Client Sample ID: CCSS-2  
Matrix: Solid

Collection Date: 10/31/14 12:35  
Received Date: 10/31/14 14:09  
Collected By: Mauricio Pages

Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Florida Petroleum Residual Organics

Total FL-PRO (C8-C40)	6.70		mg/kg dry	1	0.190	0.570	FL-PRO	11/04 09:03	11/04 16:54	JR
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Wet Chemistry

% Solids	89.5		% by Weight	1	0.100	0.300	SM2540G	11/03 13:39	11/03 14:42	AR
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Metals by EPA 6000/7000 Series Methods

Arsenic	1.80		mg/kg dry	1	0.0649	0.195	EPA 6010	11/03 09:00	11/03 20:15	IN
Barium	5.93		mg/kg dry	1	0.00180	0.00540	EPA 6010	11/03 09:00	11/03 20:15	IN
Cadmium	ND	U	mg/kg dry	1	0.00380	0.0114	EPA 6010	11/03 09:00	11/03 20:15	IN
Chromium	3.07		mg/kg dry	1	0.0380	0.114	EPA 6010	11/03 09:00	11/03 20:15	IN
Lead	0.317		mg/kg dry	1	0.0528	0.158	EPA 6010	11/03 09:00	11/03 20:15	IN
Mercury	ND	U	mg/kg dry	1	0.0270	0.0810	7471	11/03 09:00	11/03 13:33	EN
Selenium	0.794		mg/kg dry	1	0.104	0.311	EPA 6010	11/03 09:00	11/03 20:15	IN
Silver	ND	U	mg/kg dry	1	0.00550	0.0165	EPA 6010	11/03 09:00	11/03 20:15	IN

Organochlorine Pesticides by EPA Method 8081A

4,4'-DDE	ND	U	mg/kg dry	1	0.000144	0.000433	EPA 8081	11/04 12:15	11/05 05:00	JR
4,4'-DDT	ND	U	mg/kg dry	1	0.000239	0.000717	EPA 8081	11/04 12:15	11/05 05:00	JR
4,4'-DDD	ND	U	mg/kg dry	1	0.000126	0.000378	EPA 8081	11/04 12:15	11/05 05:00	JR
Aldrin	ND	U	mg/kg dry	1	0.000153	0.000460	EPA 8081	11/04 12:15	11/05 05:00	JR
alpha-BHC	ND	U	mg/kg dry	1	0.0000659	0.000198	EPA 8081	11/04 12:15	11/05 05:00	JR
beta-BHC	ND	U	mg/kg dry	1	0.000154	0.000464	EPA 8081	11/04 12:15	11/05 05:00	JR
Chlordane	ND	U	mg/kg dry	1	0.000269	0.000807	EPA 8081	11/04 12:15	11/05 05:00	JR

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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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Organochlorine Pesticides by EPA Method 8081A

delta-BHC	ND	U	mg/kg dry	1	0.000177	0.000532	EPA 8081	11/04 12:15	11/05 05:00	JR
Dieldrin	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 05:00	JR
Endosulfan I	ND	U	mg/kg dry	1	0.000196	0.000589	EPA 8081	11/04 12:15	11/05 05:00	JR
Endosulfan II	ND	U	mg/kg dry	1	0.000196	0.000588	EPA 8081	11/04 12:15	11/05 05:00	JR
Endosulfan sulfate	ND	U	mg/kg dry	1	0.000206	0.000619	EPA 8081	11/04 12:15	11/05 05:00	JR
Endrin	ND	U	mg/kg dry	1	0.000156	0.000468	EPA 8081	11/04 12:15	11/05 05:00	JR
Endrin aldehyde	ND	U	mg/kg dry	1	0.000260	0.000779	EPA 8081	11/04 12:15	11/05 05:00	JR
Endrin ketone	ND	U	mg/kg dry	1	0.000324	0.000963	EPA 8081	11/04 12:15	11/05 05:00	JR
gamma-BHC (Lindane)	ND	U	mg/kg dry	1	0.000148	0.000445	EPA 8081	11/04 12:15	11/05 05:00	JR
Heptachlor	ND	U	mg/kg dry	1	0.000183	0.000548	EPA 8081	11/04 12:15	11/05 05:00	JR
Heptachlor epoxide	ND	U	mg/kg dry	1	0.000174	0.000521	EPA 8081	11/04 12:15	11/05 05:00	JR
Methoxychlor	ND	U	mg/kg dry	1	0.000149	0.000448	EPA 8081	11/04 12:15	11/05 05:00	JR
Toxaphene	ND	U	mg/kg dry	1	0.00893	0.0268	EPA 8081	11/04 12:15	11/05 05:00	JR

Polychlorinated Biphenyls (as Congeners) by EPA Method 8082

PCB-1016	ND	U	mg/kg dry	1	0.00129	0.00386	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1221	ND	U	mg/kg dry	1	0.000739	0.00222	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1232	ND	U	mg/kg dry	1	0.00195	0.00584	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1242	ND	U	mg/kg dry	1	0.000775	0.00232	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1248	ND	U	mg/kg dry	1	0.000480	0.00144	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1254	ND	U	mg/kg dry	1	0.000786	0.00236	EPA 8082	11/04 12:20	11/05 05:00	JR
PCB-1260	ND	U	mg/kg dry	1	0.00144	0.00430	EPA 8082	11/04 12:20	11/05 05:00	JR

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Laboratory Analysis Report

Parameter	Result	QC	Units	Dil	MDL	PQL	Method	Date Ext.	Date Analy.	Analyst
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SPLP Extraction by EPA 1312

Fluid Type (1,2,or 3)	1.00		.	1			EPA 1312	11/03 15:00	11/04 09:30	MAZ
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SPLP Metals by 6000/7000 Series Methods

Arsenic	ND	U	mg/L	1	0.00138	0.00410	EPA 6010	11/04 10:00	11/04 14:56	IN
Barium	0.0880		mg/L	1	0.000236	0.000700	EPA 6010	11/04 10:00	11/04 14:56	IN
Cadmium	ND	U	mg/L	1	0.000211	0.000600	EPA 6010	11/04 10:00	11/04 14:56	IN
Chromium	ND	U	mg/L	1	0.000751	0.00230	EPA 6010	11/04 10:00	11/04 14:56	IN
Lead	ND	U	mg/L	1	0.00292	0.00880	EPA 6010	11/04 10:00	11/04 14:56	IN
Mercury	ND	U	mg/L	1	0.0000630	0.000190	7471	11/06 09:30	11/06 12:13	EN
Selenium	ND	U	mg/L	1	0.00455	0.0137	EPA 6010	11/04 10:00	11/04 14:56	IN
Silver	ND	U	mg/L	1	0.000260	0.000800	EPA 6010	11/04 10:00	11/04 14:56	IN

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Coastal Area Between 88th & 95th St.,  
 Surfside

**Notes and Definitions**

- U Indicated that the compound was analyzed for but not detected. This shall be used to indicate that the specific component was not detected. The value associated with the qualifier shall be the laboratory method detection limit.
- J-3 The matrix spike recovery exceeded method acceptance limits indicating matrix interference.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the detection limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- V Indicated that the analyte was detected in both the sample and the associated method blank.
- I The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.
- Z Too many colonies were present for accurate counting.

QC=Qualifier Codes as defined by DEP 62-160  
 Unless indicated, soil results are reported on actual (wet) weight basis.  
 Work performed by outside (subcontracted) labs denoted by SUB in Analyst Field.

Results relate only to this sample.

Maria Castellanos - Lab Manager

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Authorized CSM Signature (954) 978-6400  
 Florida-Spectrum Environmental Services, Inc.  
 Certification# E86006

All NELAP certified analysis are performed in accordance with Chapter 64E-1 Florida Administrative code, which has been determined to be equivalent to NELAC standards. Analysis certified by programs other than NELAP are designated with a "~".

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## **APPENDIX B**

### **Qualifications of Consultant**

## **RESUMES**

## **ROB LUDICKE, PRESIDENT**

Mr. Ludicke is a Registered Environmental Professional # 5985 and Registered Environmental Manager #12093, who has over 23 years of environmental consulting and engineering experience. He has a thorough knowledge of environmental rules and regulations, policies, and procedures. He has an extensive network of dedicated technical experts. He has conducted numerous Phase I/Phase II environmental site assessments.

In addition, Mr. Ludicke has conducted over 250 Property Condition Assessments of office buildings, shopping centers, warehouse buildings, maritime facilities, apartment buildings, etc.

## **PROFESSIONAL EXPERIENCE**

April 1998-Present

### **PRESIDENT**

LandScience, Inc., North Miami, FL

1992-March 1998

### **SENIOR ENVIRONMENTAL SCIENTIST/BRANCH MANAGER**

Ambient Technologies, Inc., Pompano Beach, FL

- Conducted Phase I/Phase II environmental site assessment projects.
- Hired, scheduled, and supervised subcontractors.
- Developed and implemented Hazard Analysis and Critical Control Point (HACCP) plans and Sanitation Standard Operating Procedures (SSOP) for food processing facilities.
- Researched and presented seminars on food safety issues.
- Successfully managed and operated branch office of environmental engineering/consulting firm.

1989-92

### **ENVIRONMENTAL SCIENTIST/PROJECT MANAGER**

Law Engineering Companies Group, Inc., Ft. Lauderdale, FL

- Conducted wetlands, endangered species, and Phase I and II environmental site assessments.
- Retained, scheduled, and supervised subcontractors.

1987-89

### **DIRECTOR OF TECHNICAL MARKETING AND SERVICES**

Spectralytix, Inc., Gaithersburg, MD

- Formulated technical solutions for specific environmental concerns.
- Initiated and Implemented a Marketing Plan to promote analytical laboratory services.
- Established a large personal client database through thorough product knowledge, excellent sales ability, and superior client service.
- Demonstrated quick, accurate, and decisive results of customer

problems/complaints.

- Increased profits 300 percent in less than one year; increased monthly sales by \$150,000.

1983-87

### **RESEARCH SCIENTIST**

For the Following Governmental Agencies:

- Food and Drug Administration, Washington, D.C.
- Naval Medical Research Unit III, Cairo, Egypt
- Walter Reed Army Institute of Research, Washington, D.C.

### **EDUCATION**

**MS Degree, Microbiology, 1987**

Catholic University of America, Washington, D.C.

**BS Degree, Biology, 1983**

Mount Saint Mary's College, Emmitsburg, MD

### **REGISTRATIONS, ACCREDITATIONS, AND CERTIFICATIONS**

- Registered Environmental Professional # 5985.
- Registered Environmental Manager # 12093.
- Property Condition Assessment Course as administered by ASTM, 2007
- Project Management Course, Atlanta, GA, 1990.
- Phase I Environmental Site Assessment Course, Atlanta, GA, 1991.
- National Association of Environmental Professionals.
- South Florida Association of Environmental Professionals.
- Teaching Assistantship, Catholic University of America, 1983.
- Certified OSHA Hazardous Waste, Health, and Safety Training.

## CURTIS L. DOKKEN, PE, BC, PC

### ENVIRONMENTAL ENGINEERING SUMMARY

Mr. Dokken has engineering and project management experience for a wide range of environmental construction projects including design/build projects. Experience in investigation/feasibility studies; preparation of detailed construction designs and specifications for remedial action programs involving petroleum, hazardous waste, transformers and pipeline facilities; industrial waste, and underground storage tanks management.

Relevant experience includes:

- Lead Engineer or Supporting Engineer for four of the largest groundwater and soil remediation systems in the Southeast at MIA Northwest Cargo Area, Concourse C, Concourse E, and Concourse F. *Project value \$12,000,000.*
- Engineering support for contamination assessments, remedial investigations/feasibility studies and remedial design/remedial action programs for sites containing hazardous waste, and pipeline facilities contaminated with polychlorinated biphenyls (PCB) and mercury.
- Removal and Installation of Underground Storage Tanks and Fuel Systems.
- QA/QC Engineer for the completion of the groundwater VOC and iron removal system at Site 82 of Camp Lejeune, North Carolina. Performed troubleshooting and modification of the VOC and iron removal system. Provided sub-contractor oversight and completion punchlist preparation. Also, assisted in the preparation and operation of the multi-well pump test.
- Project Manager of the Flamingo Water Improvements Project. Project consists of installation of a nanofiltration system, reservoir tank, water meters, radio telemetry system, and completion of the main treatment building and water main. *Project value \$2,500,000.*
- Lead Engineer/Project Manager for the design/build/operate of the South Dade Landfill Leachate Treatment System. *Project value \$3,500,000.*
- Preparation of engineering plans and specifications for spill prevention control and countermeasures (SPCC) engineering controls.
- Engineer of Record (EOR) for the installation and operation of six bio-venting systems at the Homestead Air force Base, Site 15B. The six bio-venting systems include approximately 4 miles of underground piping, treating and approximate area of 300,000 square feet along the active runway.

- Restoration Supervisor, responsible for the interior and exterior restoration of 100 residences and businesses over 15 month period in Jackson County, Mississippi for the United States Environmental Protection Agency (USEPA) and United States Army Corp of Engineers (USACE). Responsible for the restoration work plans, contracting and supervision of multiple contractors. Liaison between site owners, federal and local officials, and contractors.
- Project Engineer and client liaison for FDOT utility removal and installation. Developed work plan and oversight of implementation.
- Modification of an existing hydrocarbon contaminated groundwater remediation system to also treat cyanide.
- Engineering and contractor support for the remediation of arsenic impacted soils and waters at several private properties.
- Environmental Consulting/Assessment/Remedial Design/Construction Pla/Specifications/Construction Oversight in support of OHM's Miami International Airport (MIA) Contract.
- Project Manager, Lead Engineer, or Supporting Engineer for large-scale groundwater and soil remediation pilot studies at MIA Hanger 22, Concourse C and Concourse F.
- Provided Engineering and QA/QC support for removal of PCB impacted soils at FPL substations.
- Field team leader for characterization of the open burn/open detonation (OB/OD) area at the bombing range at Camp Shelby, Mississippi. Project included preservation of endangered species Project engineer for the RCRA closure plan.

### **AREAS OF EXPERTISE**

Engineering & Project Management  
 Environmental Construction  
 Investigation / Feasibility Studies

### **EDUCATION / PROFESSIONAL AFFILIATIONS**

B.S., Civil Engineering, University of Florida, 1990  
 State of Florida Professional Engineer, P.E.- 0051350  
 State of Florida Building Contractor License, CB - 059199  
 State of Florida Pollutant Storage Systems Contractor, PCC-1256787

### **TRAINING**

OSHA 40-hour Health and Safety Training  
 OSHA 8 hour Hazardous Waster Supervisor Training  
 OSHA 8-hour Annual Refresher Training  
 FDOT Traffic Safety in the Work Area Course

## **MAURICIO PAGES, SENIOR GEOLOGIST**

Mr. Pagés is a Senior Geologist, who has over 12 years of environmental consulting experience. He is very familiar with Florida Department of Transportation (FDOT) protocol, policies and regulations. He has conducted over 1,000 Phase I Environmental Site Assessments, numerous Phase II Environmental Site Assessments, Source Removals, Tank Closure Assessments, Contamination Assessments for petroleum products and other hazardous chemicals, and conducted Emergency Response activities for the FDOT District IV and Turnpike Enterprise.

### **PROFESSIONAL EXPERIENCE**

2011-Present    **DIRECTOR OF OPERATIONS/SENIOR GEOLOGIST**  
LandScience, Inc., North Miami, FL

2005-Present    **SENIOR GEOLOGIST**  
LandScience, Inc., North Miami, FL

2000-2005        **SENIOR HYDROGEOLOGIST/PROJECT MANAGER**  
Handex of Florida, Inc., Delray Beach, FL

- ▶ Conducted Phase I and Phase II Environmental Site Assessments.
- ▶ Underground Storage Tank (UST) Removal and preparation of Tank Closure Assessment Reports.
- ▶ Conducted source removal activities and prepared Source Removal Reports.
- ▶ Health and Safety Officer.
- ▶ Operation and Maintenance of Groundwater Remediation Systems.
- ▶ Coordinated and Participated in Emergency Response Activities for the FDOT District IV, and Turnpike Enterprise.

2000              **PROJECT GEOLOGIST**  
Tetra Tech, Inc., San Juan, Puerto Rico

- ▶ Phase I and Phase II Environmental Site Assessments.
- ▶ Operations and Maintenance of Pump and Treat Remediation System.
- ▶ Soil and Groundwater Sampling.

2000              **FIELD GEOLOGIST**  
EA Engineering, Inc., Miami, Florida

- ▶ Phase I and Phase II Environmental Site Assessments.
- ▶ Soil and Groundwater Monitoring during construction activities at Miami International Airport.

### **EDUCATION**

**BS Degree, Geology with Emphasis on Hydrogeology, 1999**  
Florida Atlantic University, Boca Raton, Florida

## **REGISTRATIONS, ACCREDITATIONS, AND CERTIFICATIONS**

- ▶ Advanced Maintenance of Traffic Supervisor
- ▶ PADI Scuba Diving Instructor
- ▶ OSHA 40- Hour Health and Safety for Hazardous Waste Operations Training

## **WAYNE G. MUNCHOW, ENVIRONMENTAL SCIENTIST**

Mr. Munchow is an environmental scientist familiar with federal, state, and local environmental rules and regulations, policies, and procedures. He has conducted Phase I Environmental Site Assessments and Limited Phase II Environmental Site Assessments on commercial, industrial, and agricultural properties.

### **PROFESSIONAL EXPERIENCE**

1999-Present

#### **ENVIRONMENTAL SCIENTIST**

LandScience Inc., North Miami, Florida

- ▶ Prepared Phase I Environmental Site Assessment Reports and Limited Phase II Environmental Site Assessment Reports.
- ▶ Supervised soil penetration tests and monitoring well installations.
- ▶ Performed field screening of potentially contaminated soil samples.
- ▶ Collected soil and groundwater samples for chemical analysis.

1997-1999

#### **STUDENT ASSISTANT TO PROFESSOR**

Florida Atlantic University, Davie, Florida

- ▶ Prepared and accurately processed academic data into graphs and charts.
- ▶ Organized and exhibited publicly viewed presentations regarding soil microbiology, the everglades, and food borne pathogens.
- ▶ Assisted in a variety of routine clerical and laboratory tasks.

### **EDUCATION**

BS Degree, Microbiology, 1999

Florida Atlantic University, Boca Raton, Florida

### **REGISTRATIONS, ACCREDITATIONS, AND CERTIFICATIONS**

- ▶ OSHA 40- Hour Health and Safety for Hazardous Waste Operations Training
- ▶ AHERA Building Inspectors Certificate

## **ANDREW WHITAKER, PROJECT MANAGER**

Mr. Whitaker is an environmental scientist who has experience in environmental consulting. He is familiar with federal, state, and local environmental rules and regulations, policies, and procedures. He has conducted Phase I/Limited Phase I Environmental Assessments on commercial, industrial, and agricultural properties.

### **PROFESSIONAL EXPERIENCE**

Present

#### **PROJECT MANAGER**

LandScience, Inc., North Miami, FL

- Researched and completed Phase I/Limited Phase I Environmental Site Assessment (ESA) reports in accordance with 1527-13 ASTM standards.
- Conducted Field Inspections on Various Commercial, Industrial and Agricultural Properties.
- Managed and Organized Projects.
- Assisted with Limited Phase II Environmental Site Assessments

### **EDUCATION**

Nova Southeastern University

**Bachelor of Science Degree in Environmental Science**

Undergraduate Research: *Intraguild predation of non-native Everglades cichlids*

Fort Lauderdale, FL

Sept 2007-May 2010

North Shore Community College

**Associate of Arts Degree in Liberal Arts**

Danvers, MA

Sept 2000-May 2004

## **THUYSI HO, ENVIRONMENTAL SCIENTIST**

Mr. Thuysi Ho is an Environmental Scientist whom conducted several Phase I Environmental Site Assessments and is familiar with local, state, and federal environmental regulation.

### **PROFESSIONAL EXPERIENCE**

- 10/2011-Present      Environmental Scientist  
LandScience, Inc, North Miami, FL
- Prepare and compose Phase I Environmental Site Assessment Reports, Limited Phase I Environmental Site Assessment Reports, and Transaction Site Process Report.
- 12/2008-10/2011      Environmental Technician  
Nationwide Laboratory Service
- Use Centrifuge, Manual Pipettes, and Automated Pipettes to prepare blood serum for testing of trace metals.
  - Use ICP-MS to analyze blood serum for Aluminum and Zinc.
  - Analyzed Data Printouts from ICP-MS and Conduct Repeat Analysis if necessary (i.e. when values are out of range/out of linearity).
  - Prepare Media Necessary for Colony Count Analysis.
  - Use Incubator to Incubate Tryptic Soy Agar Plates for Colony Count Analysis.
  - Use pH meter to test pH of Dialysate Water.
  - Assist in preparatory phase of Endotoxin Analysis, and streak Petri-plates for Colony Count Analysis.

### **EDUCATION**

Florida International University  
Bachelor of Science in Biological Sciences  
08/2008  
Minor in Criminal Justice

Miami, FL

## **SKILLS**

### Laboratory

- Aseptic Technique, Microscopy (Oil Immersion), Centrifugation, Automated Pipetting, Growing Live Culture on Petri Dishes.
- Quadrant Sampling Techniques, Lines Transect Sampling Techniques for Biological Organisms.

### Computers

- Expert Computer User, Created Charts and Graphs using Statistical Analysis via Microsoft Excel, Produced 15 page essays via Microsoft Word and Presented a Talk About Avian Flu via PowerPoint.
- Type 40 words per minute.

### Language

- Fluent Spanish (Reading, Writing, and Speaking).
- Fluent English (Reading, Writing, and Speaking).
- Conversational Vietnamese (Limited Speaking).

## **COREY KNUCKLES, ENVIRONMENTAL SCIENTIST**

Mr. Corey Knuckles is an Environmental Scientist whom conducted several Phase I Environmental Site Assessments and is familiar with local, state, and federal environmental regulation.

### **PROFESSIONAL EXPERIENCE**

#### **LandScience, Inc, North Miami, FL**

Environmental Scientist: March 2013-Present

*Responsibilities:* Prepare and compose Phase I Environmental Site Assessment Reports, Limited Phase I Environmental Site Assessment Reports, and Transaction Site Process Reports.

#### **Refresh Construction and Design, Charlotte, NC**

Painter and Sales Representative: Summer 2012

*Responsibilities:* Interacting with clients, painting client property, and assisting in additional sales.

#### **Camp Care 5K Run/Walk, Charlotte, NC**

Volunteer: September 2011

*Responsibilities:* Directing Participants to time chip stations, handing out time chips to runners before the run/walk and retrieving time chips from runners after the run/walk.

#### **Hands on Charlotte Speed Street Green Team, Charlotte, NC**

Volunteer: May 2011

*Responsibilities:* Working with other hands on Charlotte volunteers to assist the city in the recycling efforts for the annual speed street event held in uptown Charlotte. As a team volunteers would walk the event area to confirm that all recycling bins were being used only for recyclables. Volunteers also raised awareness by wearing green shirts that have a common recycling logo on the front and gave assistance to event participants of recyclable materials.

#### **Staples, Pinecrest, FL**

Stock/Sales Clerk: Seasonal 2010

*Responsibilities:* Inventory check, customer assistance, re-stocking shelves, night-time inventory, cashier, greeted customers, go-backs, unpacking of delivery truck and heavy lifting.

#### **Alligator Pools, Miami, FL**

Mason Worker: May 2004- Dec 2009

*Responsibilities:* Masonry, heavy lifting, moving materials, mixing of diamond-brite or bond kote, application of mosaic tile, cleaning tools or supplies, preparing pools for diamond brite application, acid washing pools, final preparations prior to filling pools, grout work, cleaning of coping, driving to job site, and replenishment of inventory.

## EDUCATION

### **Queens University of Charlotte**

Bachelors in Environmental Studies: 2013 Graduate

Relevant coursework in Environmental Science, GIS, Biology, Environmental Impact Assessment, Data Analysis, Tropical Island Systems, Research Methods, Biology, Conservation Biology, Environmental Philosophy, and Environmental Politics. Completed an independent research project which I proposed, conducted and presented a literature review on heavy metal content in urban soils and their possible effects within the city of Charlotte North Carolina.

### **Miami-Dade College**

Associates in Science: 2010 Graduate

Relevant coursework in Biology, Zoology, and Native Plants of South Florida.

### **Miami Palmetto Senior High**

2005 Graduate

## SKILLS

- ⤴ Complete knowledge in Microsoft Word, Power Point, Excel, and Access.
- ⤴ Course taken and experience using Geographic Information Systems (GIS).
- ⤴ Experience creating a phase one environmental impact assessment or EIA.

## **VALERIE MEBANE, ENVIRONMENTAL SCIENTIST**

Ms. Valerie Mebane is an Environmental Scientist whom conducted several Phase I Environmental Site Assessments and is familiar with local, state, and federal environmental regulation.

### **PROFESSIONAL EXPERIENCE**

May 2013-Present      Environmental Scientist / Project Manager  
LandScience, Inc, North Miami, FL

- Conducts Phase I Environmental Site Assessments
- Performs field inspections, researches property history, and analyzes regulatory documents to assess the potential environmental impacts on a variety of properties
- Prepares technical reports to present findings to clients

**August 2008–May 2013** Research Assistant  
**Pennsylvania State University,**

- Developed a methodology to model and map a soil's drought vulnerability
- Compiled, organized, and analyzed large and complex data sets
- Gained experience in environmental, crop, and climate simulation modeling
- Assisted with coursework development and teaching of ArcGIS workshops
- Provided education and support to staff and students in the use of GPS and GIS technologies
- Conducted independent research leading to publication
- Prepared proposals, reports, and presentations related to research

**Pennsylvania State University,**  
**August 2008 – December 2012**

*Teaching Assistant*

- Assisted professor with lectures and lab sessions preparing students in uses of geographic information systems and digital environmental spatial databases
- Graded student assignments
- Answered questions in office hours and served as mentor to undergraduate and graduate students

**Pennsylvania State University,  
May 2007 – August 2007**

*Research Assistant*

- Designed and maintained small grains crop variety trials
- Evaluated the effects of chemical treatments on crop yields
- Analyzed the ability of small grains to promote the development of ethanol and bio-diesel production

**EDUCATION:**

**Master of Science in Soil Science, August 2011**

The Pennsylvania State University, University Park, PA

**Bachelor of Science in Environmental Resource  
Management, May 2008**

The Pennsylvania State University, University Park, PA  
Environmental Soil Science Minor and Watershed & Water  
Resources Minor

**PUBLICATIONS:**

Mebane, V.J., R.L. Day, J.M. Hamlett, J.E. Watson, and  
G.W. Roth. 2013. Validating the FAO AquaCrop Model for  
Rainfed Maize in Pennsylvania. *Agron. J.* 105: 419-427.  
doi:10.2134/agronj2012.0337.

**COMPUTER SKILLS:** Microsoft Office (Word, Excel, Access, PowerPoint), ArcGIS  
(9.2, 9.3, 10.0, 10.1), ArcObjects, VBA, SQL Server, Matlab,  
Minitab, SAS, R, Hydrus

## **LICENSES**



State of Florida  
Board of Professional Engineers  
2639 North Monroe Street, Suite B-112  
Tallahassee, FL 32303-5268

Land Science, Inc.  
12570 NE 7TH AVENUE  
NORTH MIAMI, FL 33161

Each licensee is solely responsible for notifying the Florida Board of Professional Engineers in writing the licensee's current address.

Name changes require legal documentation showing name change. An original, a certified copy, or a duplicate of an original or certified copy of a document which shows the legal name change will be accepted unless there is a question about the authenticity of the document raised on its face, or because the genuineness of the document is uncertain, or because of another matter related to the application.

At least 90 days prior to the expiration date shown on this license, a notice of renewal will be sent to your last known address. If you have not yet received your notice 60 days prior to the expiration date, please call (850) 521-0500, or write, Florida Board of Professional Engineers, 2639 North Monroe Street, Suite B-112, Tallahassee, FL 32303-5268 or e-mail: board@fbpe.org. Our website address is <http://www.fbpe.org>.

# State of Florida

Board of Professional Engineers

Attests that  
Land Science, Inc.



FBPE  
FLORIDA BOARD OF  
PROFESSIONAL ENGINEERS

is authorized under the provisions of Section 471.023, Florida Statutes, to offer engineering services to the public through a Professional Engineer, duly licensed under Chapter 471, Florida Statutes.

Expiration: 2/28/2015  
Audit No: 228201502783

Certificate of Authorization

CA Lic. No:  
8312



**STATE OF FLORIDA  
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION**

**BOARD OF PROFESSIONAL GEOLOGISTS  
1940 NORTH MONROE STREET  
TALLAHASSEE FL 32399-0783**

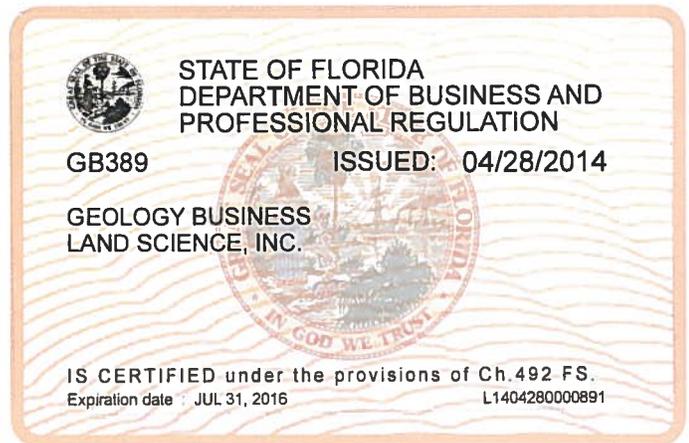
**(850) 487-1395**

**LAND SCIENCE, INC.  
12570 NE 7TH AVE  
LANDSCIENCE INC  
NORTH MIAMI FL 33161**

Congratulations! With this license you become one of the nearly one million Floridians licensed by the Department of Business and Professional Regulation. Our professionals and businesses range from architects to yacht brokers, from boxers to barbeque restaurants, and they keep Florida's economy strong.

Every day we work to improve the way we do business in order to serve you better. For information about our services, please log onto [www.myfloridalicense.com](http://www.myfloridalicense.com). There you can find more information about our divisions and the regulations that impact you, subscribe to department newsletters and learn more about the Department's initiatives.

Our mission at the Department is: License Efficiently, Regulate Fairly. We constantly strive to serve you better so that you can serve your customers. Thank you for doing business in Florida, and congratulations on your new license!



**DETACH HERE**

**RICK SCOTT, GOVERNOR**

**KEN LAWSON, SECRETARY**

**STATE OF FLORIDA  
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION  
BOARD OF PROFESSIONAL GEOLOGISTS**

LICENSE NUMBER	
GB389	

The **GEOLOGY BUSINESS**  
Named below IS CERTIFIED  
Under the provisions of Chapter 492 FS.  
Expiration date: JUL 31, 2016

**LAND SCIENCE, INC.  
12570 NE 7TH AVE  
MIAMI FL 33161**



**CERTIFICATE OF INSURANCE**



# CERTIFICATE OF LIABILITY INSURANCE

Date  
3/27/2014

**Producer:** Lion Insurance Company  
2739 U.S. Highway 19 N.  
Holiday, FL 34691  
(727) 938-5562

This Certificate is issued as a matter of information only and confers no rights upon the Certificate Holder. This Certificate does not amend, extend or alter the coverage afforded by the policies below.

**Insured:** South East Personnel Leasing, Inc. & Subsidiaries  
2739 U.S. Highway 19 N.  
Holiday, FL 34691

Insurers Affording Coverage		NAIC #
Insurer A:	Lion Insurance Company	11075
Insurer B:		
Insurer C:		
Insurer D:		
Insurer E:		

## Coverages

The policies of insurance listed below have been issued to the insured named above for the policy period indicated. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions, and conditions of such policies. Aggregate limits shown may have been reduced by paid claims.

INSR LTR	ADDL INSRD	Type of Insurance	Policy Number	Policy Effective Date (MM/DD/YY)	Policy Expiration Date (MM/DD/YY)	Limits		
		<b>GENERAL LIABILITY</b> <input type="checkbox"/> Commercial General Liability <input type="checkbox"/> Claims Made <input type="checkbox"/> Occur <hr/> General aggregate limit applies per. <input type="checkbox"/> Policy <input type="checkbox"/> Project <input type="checkbox"/> LOC				Each Occurrence	\$	
						Damage to rented premises (EA occurrence)	\$	
						Med Exp	\$	
						Personal Adv Injury	\$	
						General Aggregate	\$	
						Products - Comp/Op Agg	\$	
		<b>AUTOMOBILE LIABILITY</b> <input type="checkbox"/> Any Auto <input type="checkbox"/> All Owned Autos <input type="checkbox"/> Scheduled Autos <input type="checkbox"/> Hired Autos <input type="checkbox"/> Non-Owned Autos				Combined Single Limit (EA Accident)	\$	
						Bodily Injury (Per Person)	\$	
						Bodily Injury (Per Accident)	\$	
						Property Damage (Per Accident)	\$	
		<b>EXCESS/UMBRELLA LIABILITY</b> <input type="checkbox"/> Occur <input type="checkbox"/> Claims Made Deductible				Each Occurrence		
						Aggregate		
A		<b>Workers Compensation and Employers' Liability</b> Any proprietor/partner/executive officer/member excluded? <b>NO</b> If Yes, describe under special provisions below.	WC 71949	01/01/2014	01/01/2015	X	WC Statutory Limits OTH-ER E.L. Each Accident E.L. Disease - Ea Employee E.L. Disease - Policy Limits	 \$1,000,000 \$1,000,000 \$1,000,000

Other

**Lion Insurance Company is A.M. Best Company rated A- (Excellent). AMB # 12616**

### Descriptions of Operations/Locations/Vehicles/Exclusions added by Endorsement/Special Provisions:

Client ID: 91-67-743

Coverage only applies to active employee(s) of South East Personnel Leasing, Inc. & Subsidiaries that are leased to the following "Client Company":

**Land Science, Inc**

Coverage only applies to injuries incurred by South East Personnel Leasing, Inc. & Subsidiaries active employee(s).

Coverage does not apply to statutory employee(s) or independent contractor(s) of the Client Company or any other entity.

A list of the active employee(s) leased to the Client Company can be obtained by faxing a request to (727) 937-2138 or by calling (727) 938-5562.

**Project Name:**

FAX: 305-893-9364 & 954-331-4687 / ISSUE 03-27-14 (CF)

Begin Date 3/16/2014

**CERTIFICATE HOLDER**

INSURANCE RISK ANDVISOR, INC.

1560 SAWGRASS CORPORATE PKWY, 4TH FLOOR  
SUNRISE, FL 33323

**CANCELLATION**

Should any of the above described policies be cancelled before the expiration date thereof, the issuing insurer will endeavor to mail 30 days written notice to the certificate holder named to the left, but failure to do so shall impose no obligation or liability of any kind upon the insurer, its agents or representatives.

*John A. Ponce*