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January 15, 2010

NAVFAC Mid-Atlantic  
Marine Corps North Carolina IPT  
Environmental Business Line  
Code: OPNCEV  
Attn: Mr. David Borton, P.G.  
6506 Hampton Boulevard  
Building C, Room 314  
Norfolk, VA 23508-1278

Re: **CSFF Pump Station – Soil Sampling (FINAL)**  
Marine Corps Air Station, New River, North Carolina  
Navy Contract No. N62470-05-D-6200  
Delivery Order No. 0074  
CATLIN Project No. 209-034

Dear Mr. Borton:

CATLIN Engineers and Scientists (CATLIN) has collected 10 soil samples in the vicinity of the existing pump station at the Campbell Street Fuel Farm (CSFF) site aboard Marine Corps Air Station (MCAS) New River. The 10 soil samples obtained by CATLIN were collected to determine the extent of soil contamination above the North Carolina Department of Environment and Natural Resources (NCDENR) Action Levels for Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). It is our understanding that this information will be provided to the Contractor that will be doing the upgrades to the pump station in order to provide them guidance to excavate the contaminated soil during their activities. Please find below a summary of the CATLIN's additional sampling activities, findings and recommendations.

### **CSFF General Site Information and History**

The CSFF project site is located along White Street aboard the MCAS, New River in Onslow County, North Carolina (See Figure 1). The CSFF is an active fuel storage facility, which stores JP-5 fuel in four steel Aboveground Storage Tanks (ASTs) with capacities of 215,000 gallons each. These ASTs are connected by an aboveground fuel transfer line that enters a filter building before fuel is pumped to the flightline through an underground pipeline located along White Street. These ASTs replaced a system of eight USTs in 1985. The former USTs were reported to contain JP-5 fuel and aviation gasoline (AVGAS) and were of varying capacities ranging from unknown (two

USTs) to 120,000 gallons. Seven of the eight USTs were excavated and removed, and one AVGAS UST was reportedly filled with sand and abandoned in place. The abandoned AVGAS UST is reportedly located behind the filter building; however, the exact location is unknown. The CSFF UST site under NCDENR Incident Number 23297 is classified as Low Risk and Industrial/Commercial Land Use.

Various site assessments were completed at the CSFF project site in the early 1990s identifying soil and groundwater petroleum contamination, and the presence of free-phase product. The contamination was reportedly due to leaks from the former USTs and associated piping at the Fuel Farm/Building AS-143 area. The findings of the previous assessments have been summarized in reports submitted to NCDENR, Division of Waste Management (DWM), UST Section in the Wilmington Regional Office (WiRO).

### **2005 Fuel Port Release Information and History**

According to the September 2005 Soil Contamination Report prepared by Engineering and Environment, Inc. (EEI), on August 15, 2005 a fuel port was discovered in an open position during a fueling operation at the pump station. Upon discovery, the fuel port was immediately closed; however, an estimated 200 gallons of JP-5 was released. The spill was immediately reported to base personnel and first responders. NCDENR assigned this above-ground release Incident Number 87537.

EEI conducted soil excavation activities on August 16 and 17, 2005. As stated in the Soil Contamination Report, the horizontal excavation limits corresponded to an area where the ground surface appeared visually stained and the vertical extent of the majority of the excavation extended to four feet below land surface (BLS). According to EEI, the north end of the excavation sloped up from four feet BLS to the land surface and the eastern portion of the excavation extended to only two feet BLS as site structures limited the access of the backhoe used during the excavation. In the southern portion of the excavation a buried concrete pad was present and surface material (approximately four inches of gravel) was removed with shovels, exposing hard-packed soil overlying the pad; the pad was not disturbed during the activities. EEI reported that approximately 30 cubic yards of petroleum-contaminated soil was removed from the release area. Attachment 1 contains a figure illustrating the extent of the August 2005 EEI excavation area.

At the conclusion of the excavation, EEI collected four soil samples and then backfilled the excavation with clean fill material (See figure in Attachment 1). All four soil samples were analyzed for GRO and DRO. Soil sample S0001 was collected from the southern portion of the excavation at the base (approximately 0.5' BLS). Soil sample S0002 was collected from the eastern sidewall of the excavation at a depth of approximately 1 foot BLS. Soil sample S0003 was collected from the central sidewall of the excavation at a depth of approximately 1.5 feet BLS. Soil sample S0004 was collected from the western sidewall of the excavation at a depth of approximately 1.5 feet BLS. Analytical results revealed soil samples S0001, S0002 and S0004 each contained GRO and DRO

at concentrations above the NCDENR Action Levels. Therefore, additional soil excavation was recommended. In June 2006 Sovereign Consulting Inc. (Sovereign) began the additional soil excavation activities at the subject site. According to the September 21, 2006 Soil Cleanup Report prepared by Sovereign, approximately 1,100 tons of petroleum-impacted soil was excavated and removed from the subject site. The boundary of the excavation is illustrated on a figure in Attachment 1. Soils were excavated within the boundary to the water table (approximately seven feet BLS). Sovereign collected soil confirmation samples from the sidewalls of the excavation at a depth of approximately four to six feet BLS per GRO/DRO analysis. Analytical results revealed soil contamination above the NCDENR action levels in the samples collected from the northern, northeastern and eastern sidewalls. Therefore, Sovereign conducted additional excavation in these areas and collected additional soil confirmation samples from the sidewalls of the excavation per GRO/DRO analysis. Analytical results from this second round of confirmation sampling revealed no exceedances of the NCDENR action levels in all the samples except one. Soil sample USTCSFF-SB12 collected from the eastern sidewall of the excavation at a depth of approximately 2.75 feet BLS revealed DRO at a concentration of 386 mg/kg which was still above the 40 mg/kg NCDENR action level. However, subsequent to the soil excavation it was discovered that the USTCSFF-SB12 location was within the boundary of former UST#8 at the CSFF site. Therefore, the soil contamination indentified in this area is now being addressed under the MCB Camp Lejeune UST Program as a separate project.

Also, please note that Sovereign collected two soil samples from within the pump station (USTCSFF-P01 and USTCSFF-P02) in June 2006. As stated in the Soil Cleanup Report, each of these samples contained GRO and DRO above the NCDENR action levels of 10 mg/kg and 40 mg/kg, respectively. However, further soil excavation in the vicinity of the pump station was not feasible at that time due to the potential for structural damage to the aboveground piping system. The soil contamination in this area was planned for remediation during the upgrades to the pumping station.

### **2008 Leaking Valves Release Information and History**

As documented in a January 9, 2009 letter from Marine Corps Base (MCB) Camp Lejeune to the NCDENR Wilmington Regional Office, a release of JP-5 occurred on November 19, 2008 from three leaking rising-stem valves at the CSFF Pump Station. The leaks were addressed and stopped on November 19, 2008. NCDENR assigned this above-ground release Incident Number 94045.

The January 9, 2009 letter stated two areas of contaminated soil were excavated at the pump station in order to address the leaking valves release. Excavation Area 1 measured approximately three feet by three feet and was approximately 1.5 feet deep. Excavation Area 2 measured approximately five feet by ten feet and was approximately one foot deep. Attachment 1 contains a figure showing the locations of the excavation areas.

One soil sample (CSFF-EX1-Bottom) was collected from the bottom of Excavation Area 1 and was analyzed per EPA Method 8015 per GRO and DRO. The analytical results for this sample indicated GRO and DRO at concentrations above the NCDENR Action Levels. Three soil samples (CSFF-EX2-North, CSFF-EX2-Bottom and CSFF-EX2-South) were collected from Excavation Area 2 and these samples were also analyzed per EPA Method 8015 per GRO and DRO. The analytical results for the samples from Excavation Area 2 indicated that neither GRO nor DRO was present at concentrations above the NCDENR Action Levels (See figure in Attachment 1 for sample locations and results).

The analytical results from the confirmation sampling conducted indicated that soil contamination above the NCDENR Action Levels was not present at the western end of the southern concrete pad (i.e. Excavation Area 2). The soil contamination identified at Excavation Area 1 was planned for remediation when the upgrade to the pumping station takes place.

### **Current Soil Sampling**

Demolition and replacement of the CSFF Pump Station is planned in the near future. As previously stated, it is our understanding that Camp Lejeune has determined that excavation of the contaminated soil would be conducted during demolition of the existing pump station. Therefore, CATLIN was tasked to collect soil samples in the vicinity of the pump station to define the extent of vadose zone soil contamination in order to provide the Contractor with approximate limits of excavation.

On November 24, 2009, CATLIN personnel arrived on-site to conduct soil sampling activities. Six soil borings (USTCSFF-PS-SB01 through USTCSFF-PS-SB06) were installed around the perimeter of the pump station and one soil boring (USTCSFF-PS-SB07) was installed in the center of the pump station (See Figure MD401). Each of the borings were installed to a depth between three to five feet BLS by hand auger technique (See Attachment 2 for Boring Logs). One soil sample was collected for laboratory analysis from each boring at the interval with the highest Organic Vapor Analyzer (OVA) reading from within the vadose zone, or in the absence of elevated OVA readings from the interval just above the capillary fringe.

The analytical results from the above-stated sampling revealed GRO and/or DRO above the NCDENR Action Levels in three of the perimeter samples. Therefore, CATLIN personnel remobilized to the site on December 11, 2009 to install three additional soil borings and collect soil samples for laboratory analysis in an attempt to delineate the extent of vadose zone soil contamination. Again, one soil sample was collected for laboratory analysis from each boring. Soil lithology was similar to the previously installed borings and samples were collected from the interval exhibiting physical evidence of contamination or just above the capillary fringe.

The soil samples collected for laboratory analysis from both events were packed in the appropriate pre-labeled glassware and placed in a chilled cooler pending delivery to

SGS in Wilmington, North Carolina. SGS analyzed the samples per EPA Method 8015 per GRO and DRO.

The complete laboratory report and documentation for both sampling events are found in Attachment 3 and summarized as follows:

#### *EPA Method 8015 - GRO*

As indicated in Table 1, GRO was detected at a concentration of 24.1 mg/kg in the USTCSFF-PS-SB01 soil sample. The USTCSFF-PS-SB07 sample and a field duplicate of this sample revealed GRO at concentrations of 213 mg/kg and 484 mg/kg, respectively. The three above-stated concentrations were all above the NCDENR Action Level of 10 mg/kg for GRO. All other soil samples revealed GRO concentrations below the NCDENR Action Levels or below the Method Detection Limit (MDL). The horizontal extent of soil contamination was defined by GRO concentrations below action levels at borings USTCSFF-PS-SB09, USTCSFF-PS-SB10, USTCSFF-PS-SB06, USTCSFF-PS-SB02, USTCSFF-PS-SB08, CSFF-EX2-South, CSFF-EX2-Bottom, CSFF-EX2-North, and USTCSFF-PS-SB05 as illustrated on Figure MD401.

#### *EPA Method 8015 - DRO*

As indicated in Table 1, DRO was detected at a concentration of 222 mg/kg in the USTCSFF-PS-SB01 soil sample. The USTCSFF-PS-SB03 sample revealed a DRO concentration of 56.6 mg/kg. Diesel Range Organics were detected at a concentration of 1180 mg/kg in the USTCSFF-PS-SB04 sample. The USTCSFF-PS-SB07 sample and a field duplicate of this sample revealed DRO at concentrations of 1440 mg/kg and 4500 mg/kg, respectively. The five above-stated concentrations were all above the NCDENR Action Level of 40 mg/kg for DRO. All other soil samples revealed DRO concentrations below the NCDENR Action Levels or below the MDL. The horizontal extent of soil contamination was defined by DRO concentrations below action levels at borings USTCSFF-PS-SB09, USTCSFF-PS-SB10, USTCSFF-PS-SB06, USTCSFF-PS-SB02, USTCSFF-PS-SB08, CSFF-EX2-South, CSFF-EX2-Bottom, CSFF-EX2-North, and USTCSFF-PS-SB05 as illustrated on Figure MD401.

### **Recommendations**

The soil sampling conducted by CATLIN in November and December 2009 has delineated the extent of vadose zone soil contamination in the vicinity of the CSFF Pump Station. CATLIN recommends that the area of soil contamination be excavated into the water table (estimated excavation depth of five feet BLS) to remove vadose zone and smear zone contamination. Since "clean" soil samples have been collected around the perimeter of the pump station, CATLIN recommends that the soil excavation boundary extend to the location of the clean soil samples. Therefore, CATLIN further recommends that no confirmation soil samples be collected as the excavation will extend to the previously identified clean locations. At the eastern portion of the pump station the excavation should extend to as close to the concrete dike wall, which surrounds ASTs #1 and 2, without jeopardizing the structural integrity of the wall.

The estimated extent of the soil excavation is shown on Figure MD401, and is approximately 50 feet by 65 feet. Assuming an excavation depth of approximately five feet, the estimated volume of soil to be removed is 16,250 cubic feet or 602 cubic yards. It is CATLIN's understanding that excavation activities will be completed by the contractor conducting the demolition of the pump station; however, during excavation activities an environmental professional will be on-site to ensure excavation activities extend to the proper horizontal and vertical boundaries.

It is recommended that this report be provided to NCDENR prior to the start of excavation activities in order to verify that no confirmation sampling will be needed and excavation activities can be documented within a Soil Cleanup Report.

CATLIN Engineers and Scientists appreciate the opportunity to continue to provide services to NAVFAC Mid-Atlantic and the MCB on your environmental projects.

Sincerely,



Shane A. Chasteen  
Project Scientist



Jeffery K. Becken, P.E.  
Project Manager



Attachments

cc: Ms. Susan Tsimpinos - NAVFAC Mid-Atlantic Contracts  
Commanding Officer - Attn: Director I&E/EMD/EQB (with two copies)

## **TABLES**

**TABLE 1  
SUMMARY OF SOIL LABORATORY RESULTS  
EPA METHOD 8015 (GRO-DRO)**

Incident Name and No.: CSFF 2005 Fuel Port Release - 87537

Sample ID	Contaminant of Concern →		Gasoline Range Organics	Diesel Range Organics
	Date Collected	Sample Depth (ft. BLS)		
NCDENR Action Level (mg/kg)			10	40
USTCSFF-PS-SB01	11/24/2009	1-2	<b>24.1</b>	<b>222</b>
USTCSFF-PS-SB02	11/24/2009	2-3	<8.88	21.3
USTCSFF-PS-SB03	11/24/2009	1-2	<7.73	<b>56.6</b>
USTCSFF-PS-SB04	11/24/2009	2-3	<8.28	<b>1180</b>
USTCSFF-PS-SB05	11/24/2009	2-3	<7.61	2.24 J
USTCSFF-PS-SB06	11/24/2009	2-3	<8.84	18.2
USTCSFF-PS-SB07	11/24/2009	0-1	<b>213</b>	<b>1440</b>
USTCSFF-PS-DUP*	11/24/2009	0-1	<b>484</b>	<b>4500</b>
USTCSFF-PS-SB08	12/11/2009	2-3	<5.96	<7.96
USTCSFF-PS-SB09	12/11/2009	2-3	<5.17	9.95
USTCSFF-PS-SB10	12/11/2009	1-2	5.71	<7.29

All results in milligrams per kilogram (mg/kg).

\* = Field duplicate collected from USTCSFF-PS-SB07 boring.

ft. BLS = Feet Below Land Surface.

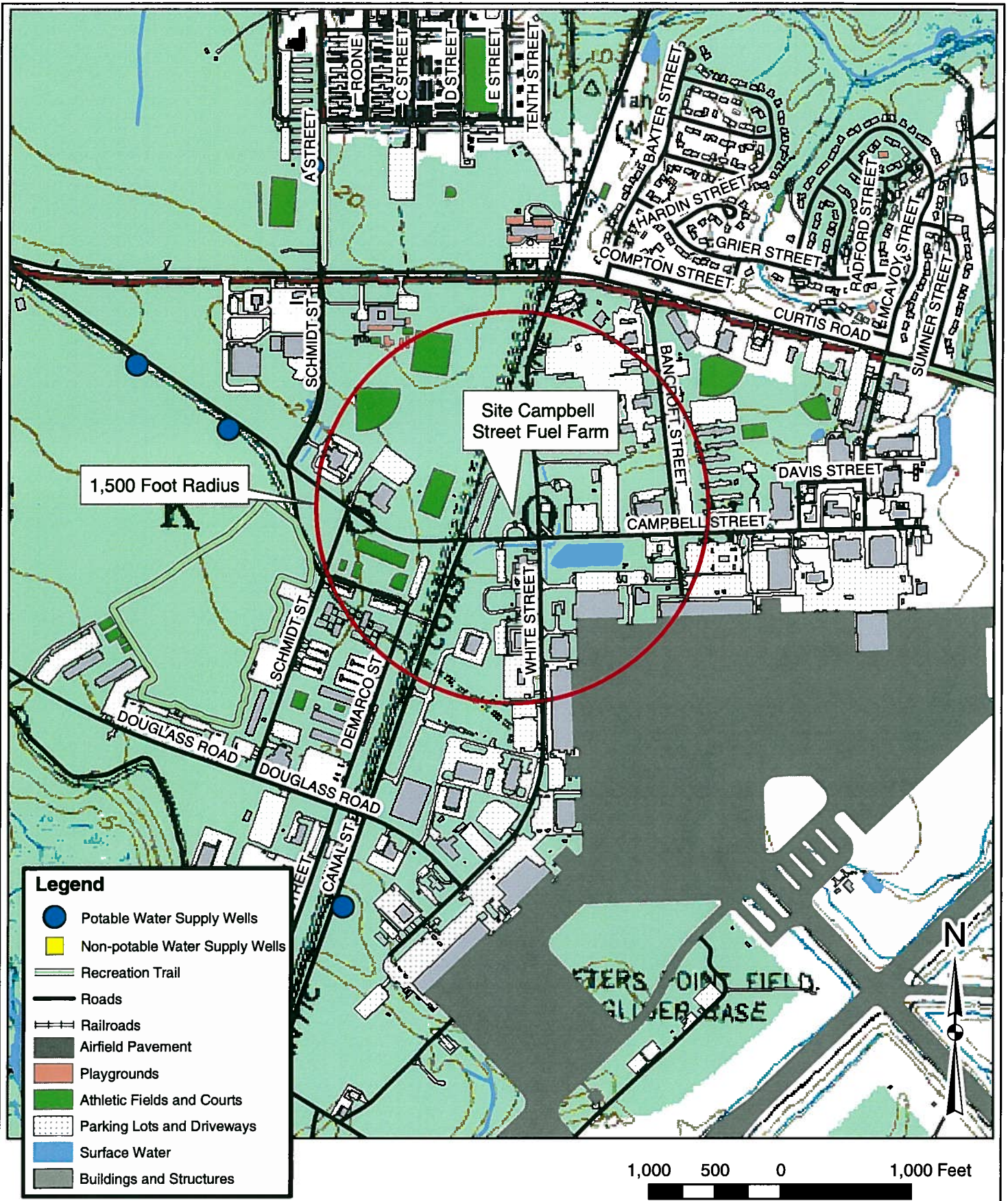
< = Less than method detection limit (MDL)

J = Estimated concentration, below calibration range and above MDL


NCDENR = North Carolina Department of Environment and Natural Resources

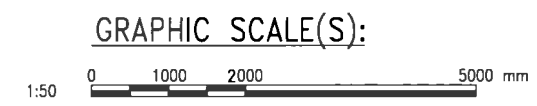
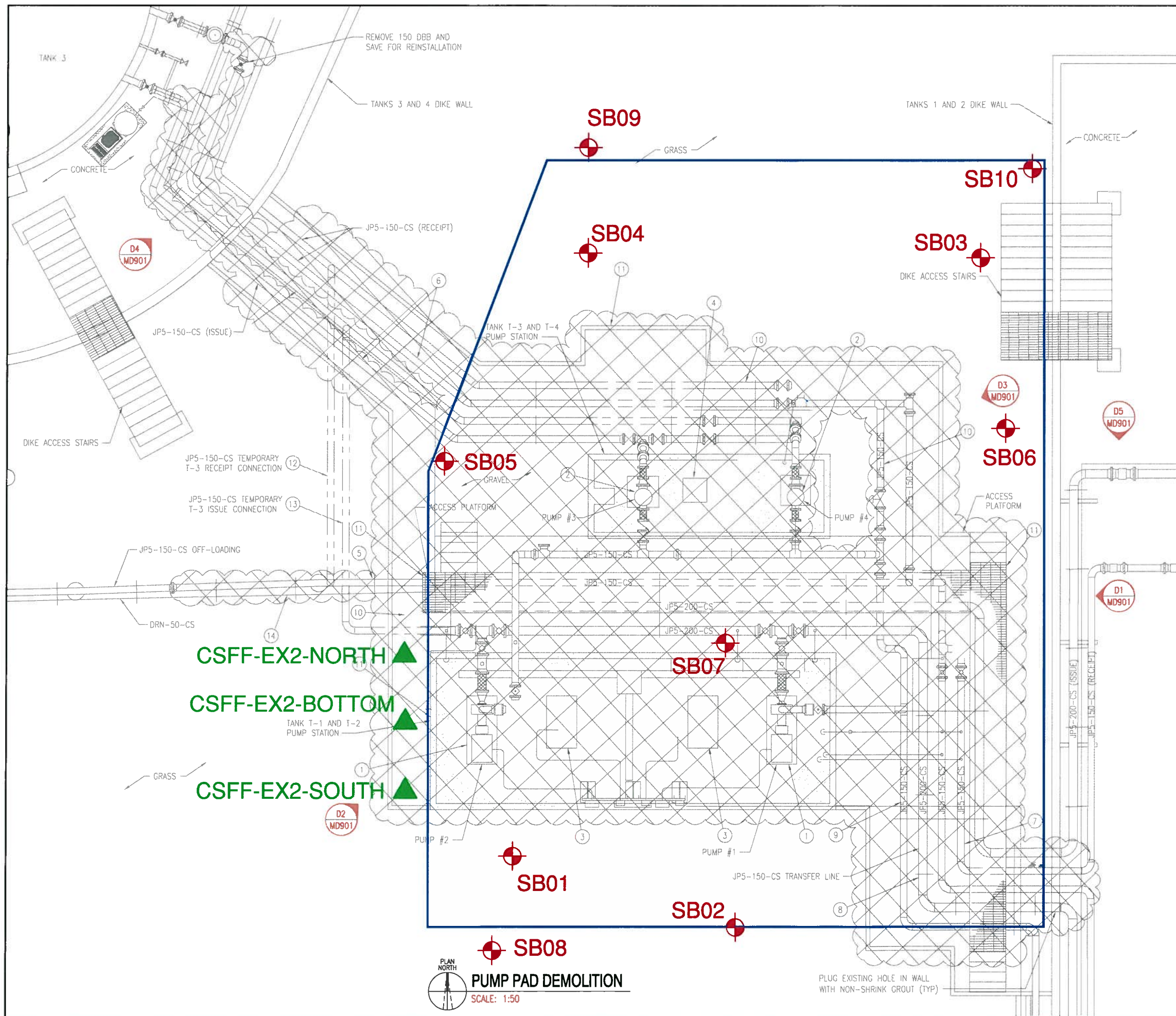
**Bold** results indicate concentration above the NCDENR Action Level

## FIGURES






Data Sources: Data Layers provided by MCB Camp Lejeune GIS Office.

 <p><b>CATLIN</b> Engineers and Scientists 220 Old Dairy Road Wilmington, NC 28405 Corporate License No. for Engineering Services C-0585</p>	PROJECT SOIL SAMPLING REPORT CSFF PUMP STATION MARINE CORPS AIR STATION NEW RIVER, NC		TITLE <b>SITE LOCATION MAP</b>		<b>FIGURE</b>  <b>1</b>
	JOB NO. 209-034	DATE DEC 2009	SCALE AS SHOWN	DRAWN BY SAC	CHECKED BY MEM




**LEGEND**

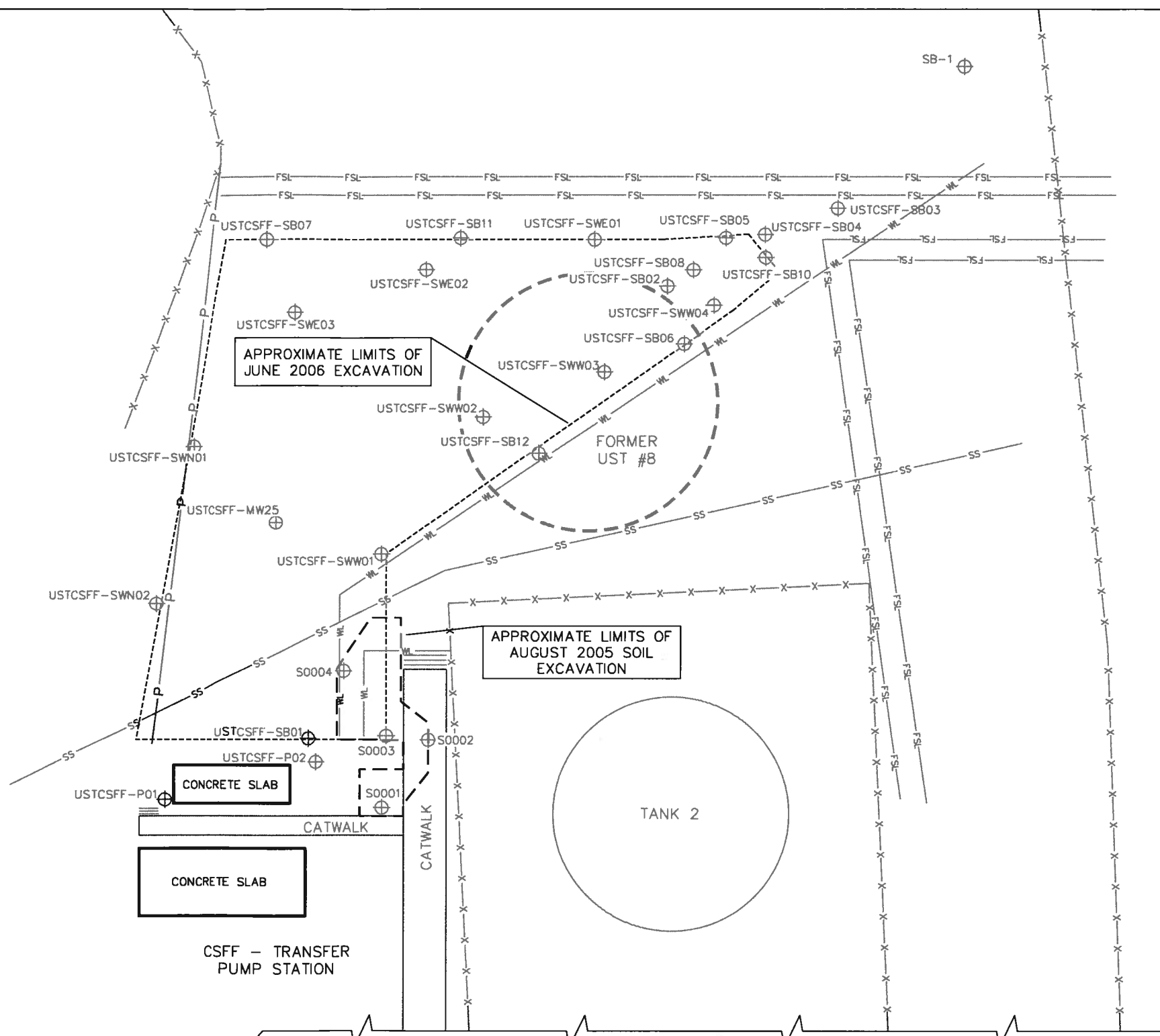
	2008 LEAKING VALVE CONFIRMATION SAMPLE
	CATLIN SOIL BORING
	ESTIMATED EXCAVATION EXTENT

**NOTES:**

1. BASE DRAWING OBTAINED FROM NAVFAC DRAWING TITLE "MILCON P-275 PUMP STATION UPGRADES, PUMP PAD DEMOLITION" FIGURE NUMBER MD401.
2. CATLIN SAMPLE LOCATION NOMENCLATURE PREFIX = USTCSFF-PS--.

 <b>CATLIN</b> Engineers Scientists 220 Old Dairy Road Wilmington, NC 28405 Corporate License No. for Engineering Services C-6885	PROJECT CSFF PUMPING STATION SOIL SAMPLING MARINE CORPS BASE CAMP LEJEUNE, N.C.	TITLE SAMPLE LOCATIONS AND ESTIMATED EXCAVATION EXTENT	FIGURE <b>2</b>
	JOB NO. 209-034 DATE: JAN 2010	SCALE: AS SHOWN DRAWN BY: THW CHECKED BY: SAC	WPMKIG/PROJECT/2009/209034/CSFF FUEL PORT ADD'L SAMPLING/FIGURES/FIGURE2

**ATTACHMENT 1**  
**HISTORICAL FIGURES**

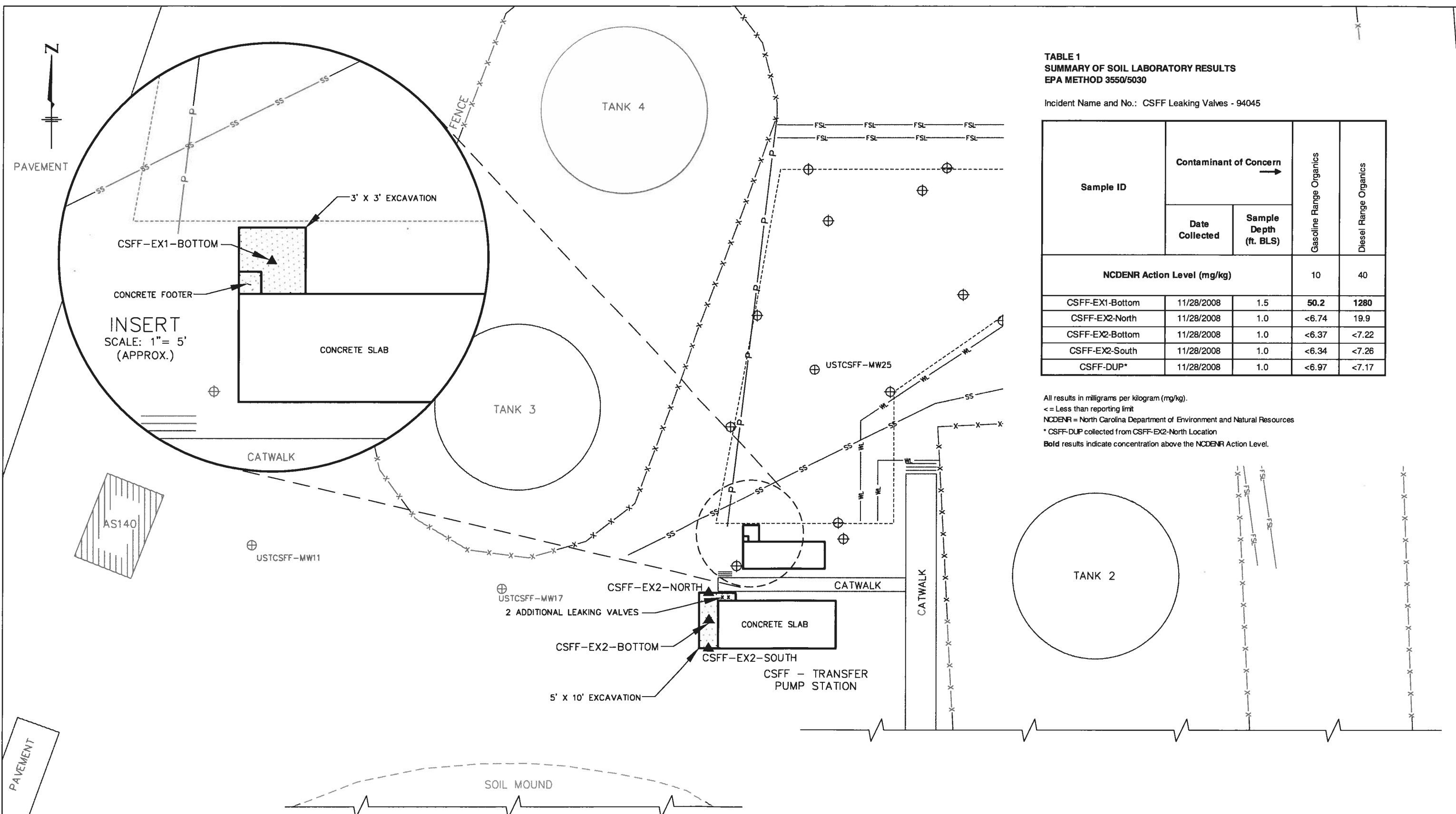


**LEGEND**

EXISTING	NEW	DESCRIPTION	EXISTING	DESCRIPTION
		BUILDING		SEWER LINE
		RECOVERY WELL		POWER LINE
		TYPE II MONITORING WELL		WATER LINE
		TYPE III MONITORING WELL		JUNE 2006 EXCAVATION LINE
		SOIL BORING		AUGUST 2005 EXCAVATION LINE
		FENCE		FORMER UST TANK
				FIRE SUPPRESSION LINE

NOTE: SAMPLE LOCATIONS AND EXCAVATION BOUNDARIES ARE APPROXIMATE.

	PROJECT	SOIL SAMPLING 2005 FUEL PORT RELEASE CAMPBELL STREET FUEL FARM CAMP LEJEUNE, N.C.	TITLE	SITE PLAN WITH SOIL SAMPLE LOCATIONS	FIGURE	1	
	JOB NO.	208-077	DATE	MAY 2009	SCALE:	1"=20'	
				DRAWN BY:	THW	CHECKED BY:	SAC



**TABLE 1  
SUMMARY OF SOIL LABORATORY RESULTS  
EPA METHOD 3550/5030**

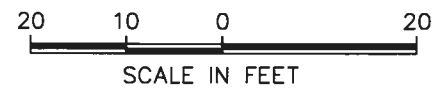
Incident Name and No.: CSFF Leaking Valves - 94045

Sample ID	Contaminant of Concern →		Gasoline Range Organics	Diesel Range Organics
	Date Collected	Sample Depth (ft. BLS)		
NCDENR Action Level (mg/kg)			10	40
CSFF-EX1-Bottom	11/28/2008	1.5	<b>50.2</b>	<b>1280</b>
CSFF-EX2-North	11/28/2008	1.0	<6.74	19.9
CSFF-EX2-Bottom	11/28/2008	1.0	<6.37	<7.22
CSFF-EX2-South	11/28/2008	1.0	<6.34	<7.26
CSFF-DUP*	11/28/2008	1.0	<6.97	<7.17

All results in milligrams per kilogram (mg/kg).  
 <= Less than reporting limit  
 NCDENR = North Carolina Department of Environment and Natural Resources  
 \* CSFF-DUP collected from CSFF-EX2-North Location  
**Bold** results indicate concentration above the NCDENR Action Level.

**LEGEND**

EXISTING	NEW	DESCRIPTION	EXISTING	DESCRIPTION
		BUILDING	—SS—	SEWER LINE
		RECOVERY WELL	—P—	POWER LINE
		TYPE II MONITORING WELL	—WL—	WATER LINE
		TYPE III MONITORING WELL	-----	2006 EXCAVATION LINE
		SOIL BORING	—FSL—	FIRE SUPPRESSION LINE
		GRAB SOIL SAMPLE	—X—X—X—	FENCE



	PROJECT	SOIL SAMPLING (LEAKING VALVES) CAMPBELL STREET FUEL FARM CAMP LEJEUNE, N.C.	TITLE	SOIL EXCAVATION AREAS AND SOIL SAMPLE LOCATIONS	FIGURE	2
	JOB NO.	208-077	DATE	DEC 2008	SCALE:	1"=20'
		DRAWN BY:	LCJ	CHECKED BY:	SAC	

**ATTACHMENT 2**  
**BORING LOGS**



# BORING LOG



209-034  
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 209-034	STATE: NC	COUNTY: Onslow	LOCATION: New River Air Base
PROJECT NAME: CSFF Additional Soil Sampling		LOGGED BY: Shane Chasteen	BORING ID: USTCSFF-PS
		DRILLER: Dimitri Talbert	<b>-SB02</b>
NORTHING:	EASTING:	CREW:	
SYSTEM:	BORING LOCATION: South side of pump station		LAND ELEV.: NM
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: N/A	BORING DEPTH: 4.0
START DATE: 11/24/09	FINISH DATE: 11/24/09	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	OVA RESULTS (ppm)					LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
			0	1000	2000	3000	4000						
0.0										0.0	LAND SURFACE		
			▲3.4								Topsoil overlying brown to orange, SANDY CLAY. Low plasticity. Moist. No HCO.		
1.0										1.0			
			▲1.7								Tan to light gray SAND. Moist. No HCO.		
2.0										2.0			
			▲2.1				UST CSFF -PS -SB02				Gray, f. SAND. Moist. No HCO.		
3.0										3.0			
			▲3.7								Black, SILTY SAND w/ wood fragments. Grades downward to f. sand and clayey sand. Moist, wet at base of interval. Strange odor (not HCO)		
4.0										4.0		Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG\_209-034\_CSEF ADDITIONAL SOIL SAMPLING.GPJ.CATLIN.GDT\_12/22/09

▽ = 0hr. DTW

▼ = 24hr. DTW

# BORING LOG

PROJECT NO.: 209-034	STATE: NC	COUNTY: Onslow	LOCATION: New River Air Base
PROJECT NAME: CSFF Additional Soil Sampling		LOGGED BY: Shane Chasteen	BORING ID: USTCSFF-PS
		DRILLER: Dimitri Talbert	-SB03
NORTHING:	EASTING:	CREW:	
SYSTEM:	BORING LOCATION: North side of pump station by stairs		LAND ELEV.: NM
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: N/A	BORING DEPTH: 4.0
START DATE: 11/24/09	FINISH DATE: 11/24/09	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT				MOI.	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
	0.5	0.5	0.5	0.5		0	1000	2000	3000	4000				DEPTH	ELEVATION
0.0														0.0	LAND SURFACE
					▲1.7										Brown, f. SILTY SAND. Moist. No HCO.
1.0														1.0	
											UST CSFF -PS -SB03				Brown to black, SILTY to CLAYEY SAND. Moist. No HCO.
					▲2.9									2.0	
2.0															
					▲2.0										Brown, SANDY CLAY. Moist. No HCO.
														3.0	
3.0															
					▲1.5										Gray, SANDY CLAY. Low plasticity. No HCO.
														4.0	
4.0															Boring Terminated at Depth 4.0 ft

CATLIN\ENVIRO\LOG\_209-034.CSFF\_ADDITIONAL\_SOIL\_SAMPLING.GPJ\_CATLIN.GDT\_12/22/09

 = 0hr. DTW
  = 24hr. DTW



# BORING LOG



209-034  
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 209-034	STATE: NC	COUNTY: Onslow	LOCATION: New River Air Base
PROJECT NAME: CSFF Additional Soil Sampling		LOGGED BY: Shane Chasteen	BORING ID: USTCSFF-PS
		DRILLER: Dimitri Talbert	-SB05
NORTHING:	EASTING:	CREW:	
SYSTEM:	BORING LOCATION: West side of pump station		LAND ELEV.: NM
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: N/A	BORING DEPTH: 4.0
START DATE: 11/24/09	FINISH DATE: 11/24/09	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT				MOI.	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK		
	0.5	0.5	0.5	0.5		0	1000	2000	3000	4000				DEPTH	DESCRIPTION	ELEVATION
0.0														0.0	LAND SURFACE	
					▲0.5										Dark brown, SILTY SAND. Moist. No HCO.	
1.0														1.0		
					▲1.5										Light to dark brown, SILTY SAND. Moist. No HCO.	
2.0														2.0		
					▲1.5						UST CSFF -PS -SB05				Tan to gray, SANDY CLAY. Moist. No HCO.	
3.0														3.0		
					▲1.0										Gray CLAY w/ orange mottling. Low plasticity. Moist to wet. No HCO.	
4.0														4.0		
															Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG. 209-034.CSFF-ADDITIONAL SOIL SAMPLING GEI. CATLIN.GOT. 12/22/09

▽ = 0hr. DTW

▼ = 24hr. DTW

# BORING LOG



209-034  
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 209-034	STATE: NC	COUNTY: Onslow	LOCATION: New River Air Base
PROJECT NAME: CSFF Additional Soil Sampling		LOGGED BY: Shane Chasteen	BORING ID: USTCSFF-PS-SB06
NORTHING:		EASTING:	CREW:
SYSTEM:		BORING LOCATION: East side of Northern concrete pad	LAND ELEV.: NM
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: N/A	BORING DEPTH: 4.0
START DATE: 11/24/09	FINISH DATE: 11/24/09	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT				MOI.	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK		
	0.5	0.5	0.5	0.5		0	1000	2000	3000	4000				DEPTH	DESCRIPTION	ELEVATION
0.0														0.0	LAND SURFACE	
1.0					▲1.6									1.0	Brown, SILTY f. SAND. Moist. No HCO.	
2.0					▲3.1									2.0	Same as above w/ clay. No HCO.	
3.0					▲16.4						UST CSFF -PS -SB06			3.0	Brown, SANDY CLAY. Moist. No HCO.	
4.0					▲10.9									4.0	Brown to black, SILTY SAND. Moist to wet. Strong organic odor, but no HCO.	
															Boring Terminated at Depth 4.0 ft	

CATLIN ENVIRO. LOG\_209-034.CSFF ADDITIONAL SOIL SAMPLING.GPJ.CATLIN.GDI. 12/22/09

▽ = 0hr. DTW

▼ = 24hr. DTW

# BORING LOG

PROJECT NO.: 209-034	STATE: NC	COUNTY: Onslow	LOCATION: New River Air Base
PROJECT NAME: CSFF Additional Soil Sampling		LOGGED BY: Shane Chasteen	BORING ID: USTCSFF-PS
		DRILLER: Dimitri Talbert	-SB07
NORTHING:	EASTING:	CREW:	
SYSTEM:	BORING LOCATION: North side of Southern concrete pad		LAND ELEV.: NM
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: N/A	BORING DEPTH: 5.0
START DATE: 11/24/09	FINISH DATE: 11/24/09	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	OVA RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK		
							DEPTH	DESCRIPTION	ELEVATION
0.0							0.0	LAND SURFACE	
			▲360	UST CSFF -PS -SB07 +DUP				Gravel at surface. Brown to tan, f. to vf. SAND. Moist. Strong HCO.	
1.0			▲148				1.0	Same as above w/ some clay. HCO.	
2.0			▲43.4				2.0	Same as above w/ silt, no clay. HCO.	
3.0			▲16.8				3.0	Gray CLAY. Med. plasticity. Moist. HCO.	
4.0			▲95.0				4.0	Same as above, but high plasticity. Wet. Strong HCO.	
5.0							5.0	Boring Terminated at Depth 5.0 ft	

CATLIN ENVIRO. LOG 209-034 CSFF ADDITIONAL SOIL SAMPLING.GPJ CATLIN.GDT 11/22/09

▽ = 0hr. DTW      ▼ = 24hr. DTW

**ATTACHMENT 3**

**LABORATORY REPORT AND CHAIN-OF-CUSTODY DOCUMENTATION**



SGS North America, Inc.

List of Reporting Abbreviations  
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are  $10\% < \%R < LCL$ ; # of MEs are allowable and compounds are not detected in the sample.

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

- 1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB01  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-1B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 14:15  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 82.72

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	24.1	9.09	mg/Kg	1	12/01/09 11:34

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	112.0	112.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP120109  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 5.32 g  
Final Volume: 5 mL

Analyst: BAO

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB02  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-2B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 14:25  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 80.44

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	8.88	mg/Kg	1	11/30/09 19:07

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	102.0	102.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 5.6 g  
Final Volume: 5 mL

Analyst: BAO

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB03  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-3B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 14:45  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 85.63

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.73	mg/Kg	1	11/30/09 19:34

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	104.0	104.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 6.04 g  
Final Volume: 5 mL

Analyst: DVO

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB04  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-4B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 15:00  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.34

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	8.28	mg/Kg	1	11/30/09 20:00

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	99.8	99.8		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 5.73 g  
Final Volume: 5 mL

Analyst: BAO

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB05  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-5B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 15:40  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.64

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.61	mg/Kg	1	11/30/09 20:27

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	102.0	102.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 6.21 g  
Final Volume: 5 mL

Analyst: BAO

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB06  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-6B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 16:30  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 83.04

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	8.84	mg/Kg	1	11/30/09 20:54

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	101.0	101.0		70-130

Comments:

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 5.45 g  
Final Volume: 5 mL

Analyst: BAJ

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB07  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-7B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 17:00  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.82

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	213	179	mg/Kg	20	11/30/09 21:20

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	106.0	106.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP113009  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 5.26 g  
Final Volume: 5 mL

Analyst: BAO

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-DUP  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-8B  
Lab Project ID: G128-2467  
Report Basis: Dry Weight

Analyzed By: DVO  
Date Collected: 11/24/2009 17:30  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.07

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	484	281	mg/Kg	40	12/01/09 12:00

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	103.0	103.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP120109  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: DVO

Prep Method: 5035  
Initial Wt/Vol: 6.77 g  
Final Volume: 5 mL

Analyst: BAD

Reviewed By: MD

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB01  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-1D  
Lab Project ID: G128-2467

Date Collected: 11/24/2009 14:15  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 82.72  
Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	222	7.49	1.46	mg/Kg	1	12/01/09 13:35
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>	
OTP		40	40-140	30.9	77.2	

**Comments:**

J= Estimated value between MDL and RL

**Batch Information**


Analytical Batch: EP120109  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15625  
Prep Method: 3541  
Prep Date: 11/30/09  
Initial Prep Wt/Vol: 32.27 G  
Prep Final Vol: 10 mL

Analyst: TR

NC Certification #481

N.C. Certification #481

Reviewed By:   
DRO XLS  
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SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB02  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-2D  
Lab Project ID: G128-2467

Date Collected: 11/24/2009 14:25  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 80.44  
Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	21.3	7.76	1.51	mg/Kg	1	12/01/09 14:03
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>	
OTP		40	40-140	30.6	76.6	

Comments:

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120109  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15625  
Prep Method: 3541  
Prep Date: 11/30/09  
Initial Prep Wt/Vol: 32.05 G  
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

N.C. Certification #481

Reviewed By: OPJ  
DRO XLS  
Page 12 of 19

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB03  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-3D  
Lab Project ID: G128-2467

Date Collected: 11/24/2009 14:45  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 85.63  
Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	56.6	7.26	1.42	mg/Kg	1	12/01/09 14:31
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>	
OTP		40	40-140	30.1	75.3	

**Comments:**

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120109  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15625  
Prep Method: 3541  
Prep Date: 11/30/09  
Initial Prep Wt/Vol: 32.18 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

N.C. Certification #481

Reviewed By: [Signature]  
DRO.XLS  
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SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB04  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-4D  
Lab Project ID: G128-2467

Date Collected: 11/24/2009 15:00  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.34  
Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	1180	72.7	14.2	mg/Kg	10	12/02/09 17:36

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	NA	NA

**Comments:**  
NA : Surrogates diluted out

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120209  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15625  
Prep Method: 3541  
Prep Date: 11/30/09  
Initial Prep Wt/Vol: 32.61 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

N.C. Certification #481

Reviewed By: MM  
DRO XLS  
Page 14 of 19

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB05  
Client Project ID: CSFF Soil Sampling Pump Station  
Lab Sample ID: G128-2467-5D  
Lab Project ID: G128-2467

Date Collected: 11/24/2009 15:40  
Date Received: 11/25/2009  
Matrix: Soil  
Solids 84.64  
Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	2.24	7.17	1.4	mg/Kg	1	12/02/09 18:33 J
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>	
OTP		40	40-140	32	80.1	

**Comments:**

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120209  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15625  
Prep Method: 3541  
Prep Date: 11/30/09  
Initial Prep Wt/Vol: 32.96 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

N.C. Certification #481

Reviewed By: MD  
DRG XLS  
Page 15 of 19

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB06	Date Collected: 11/24/2009 16:30
Client Project ID: CSFF Soil Sampling Pump Station	Date Received: 11/25/2009
Lab Sample ID: G128-2467-6D	Matrix: Soil
Lab Project ID: G128-2467	Solids 83.04
	Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	18.2	7.43	1.45	mg/Kg	1	12/01/09 15:56
<b>Surrogate Spike Results</b>		<b>Spike Added</b>		<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40		40-140	34.5	86.2

**Comments:**

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120109	Prep batch: 15625
Analytical Method: 8015	Prep Method: 3541
Instrument: GC6	Prep Date: 11/30/09
Analyst: DTF	Initial Prep Wt/Vol: 32.41 G
	Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

N.C. Certification #481

Reviewed By: CP  
DRO XLS  
Page 16 of 19

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons  
by GC/FID 8015**

Client Sample ID: USTCSFF-PS-SB07	Date Collected: 11/24/2009 17:00
Client Project ID: CSFF Soil Sampling Pump Station	Date Received: 11/25/2009
Lab Sample ID: G128-2467-7D	Matrix: Soil
Lab Project ID: G128-2467	Solids 84.82
	Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	1440	72.0	14	mg/Kg	10	12/02/09 19:01
<b>Surrogate Spike Results</b>						
		<b>Spike Added</b>		<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40		40-140	NA	NA

**Comments:**  
NA : Surrogates diluted out

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120209	Prep batch: 15625
Analytical Method: 8015	Prep Method: 3541
Instrument: GC6	Prep Date: 11/30/09
Analyst: DTF	Initial Prep Wt/Vol: 32.76 G
	Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

N.C. Certification #481

Reviewed By: MD  
DRO XLS  
Page 17 of 19

SGS North America, Inc.

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-DUP  
 Client Project ID: CSFF Soil Sampling Pump Station  
 Lab Sample ID: G128-2467-8D  
 Lab Project ID: G128-2467

Date Collected: 11/24/2009 17:30  
 Date Received: 11/25/2009  
 Matrix: Soil  
 Solids 84.07  
 Report Basis: Dry Weight

Parameter	Result	RL	MDL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	4500	146	28.5	mg/Kg	20	12/02/09 19:29
<b>Surrogate Spike Results</b>		<b>Spike Added</b>		<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40		40-140	NA	NA

**Comments:**  
 NA : Surrogates diluted out

J= Estimated value between MDL and RL

**Batch Information**

Analytical Batch: EP120209  
 Analytical Method: 8015  
 Instrument: GC6  
 Analyst: DTF

Prep batch: 15625  
 Prep Method: 3541  
 Prep Date: 11/30/09  
 Initial Prep Wt/Vol: 32.58 G  
 Prep Final Vol: 10 mL

Analyst: DTF

NC Certification #481

N.C. Certification #481

Reviewed By: DD  
DRO XLS  
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Jeff Becken  
Richard Catlin & Associates  
P.O. Box 10280  
Wilmington, NC 28404-0280

Report Number: G128-2476

Client Project: CSFF

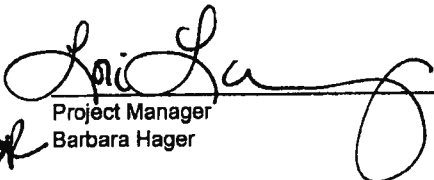
Dear Jeff Becken,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Barbara Hager at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America, Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,  
SGS North America, Inc.

  
Project Manager  
Barbara Hager

16 December 2009  
Date

List of Reporting Abbreviations  
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are  $10\% < \%R < LCL$ ; # of MEs are allowable and compounds are not detected in the sample.

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

- 1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB08  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-1A  
Lab Project ID: G128-2476  
Report Basis: Dry Weight

Analyzed By: BAO  
Date Collected: 12/11/2009 11:25  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 78.21

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.96	mg/Kg	1	12/15/09 17:50

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	98.9	98.9		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP121509  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: BAO

Prep Method: 5035  
Initial Wt/Vol: 6.44 g  
Final Volume: 5 mL

Analyst: BAO

NC Certification #481

Reviewed By: BAO  
GRO.XLS

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB09  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-2A  
Lab Project ID: G128-2476  
Report Basis: Dry Weight

Analyzed By: BAO  
Date Collected: 12/11/2009 11:30  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 83.75

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.17	mg/Kg	1	12/15/09 18:17

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	98.9	98.9		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP121509  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: BAO

Prep Method: 5035  
Initial Wt/Vol: 6.93 g  
Final Volume: 5 mL

Analyst: BAO

NC Certification #481

Reviewed By: BAO  
GRD XLS

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB10  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-3A  
Lab Project ID: G128-2476  
Report Basis: Dry Weight

Analyzed By: BAO  
Date Collected: 12/11/2009 11:40  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 83.86

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	5.71	4.35	mg/Kg	1	12/15/09 18:44

**Surrogate Spike Results**

	Added	Result	Recovery	Flag	Limits
BFB	100	104.0	104.0		70-130

**Comments:**

**Batch Information**

Analytical Batch: VP121509  
Analytical Method: 8015  
Instrument ID: GC4  
Analyst: BAO

Prep Method: 5035  
Initial Wt/Vol: 8.23 g  
Final Volume: 5 mL

Analyst: BAO

NC Certification #481

Reviewed By: BAO  
GRO.XLS

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB08  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-1D  
Lab Project ID: G128-2476

Date Collected: 12/11/2009 11:25  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 78.21  
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	7.96	mg/Kg	1	12/15/09 14:35
<b>Surrogate Spike Results</b>		<b>Spike Added</b>	<b>Control Limits</b>	<b>Spike Result</b>	<b>Percent Recovery</b>
OTP		40	40-140	30.9	77.3

**Comments:**


**Batch Information**

Analytical Batch: EP121509  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15718  
Prep Method: 3541  
Prep Date: 12/14/09  
Initial Prep Wt/Vol: 32.13 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By:   
DRO XLS

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB09  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-2D  
Lab Project ID: G128-2476

Date Collected: 12/11/2009 11:30  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 83.75  
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	9.95	7.41	mg/Kg	1	12/15/09 15:03

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	28	69.9

Comments:

**Batch Information**

Analytical Batch: EP121509  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15718  
Prep Method: 3541  
Prep Date: 12/14/09  
Initial Prep Wt/Vol: 32.22 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By: ORA  
DRO XI S

**Results for Total Petroleum Hydrocarbons**  
by GC/FID 8015

Client Sample ID: USTCSFF-PS-SB10  
Client Project ID: CSFF  
Lab Sample ID: G128-2476-3D  
Lab Project ID: G128-2476

Date Collected: 12/11/2009 11:40  
Date Received: 12/11/2009  
Matrix: Soil  
Solids 83.86  
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	7.29	mg/Kg	1	12/15/09 16:27

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.4	73.4

Comments:

**Batch Information**

Analytical Batch: EP121509  
Analytical Method: 8015  
Instrument: GC6  
Analyst: DTF

Prep batch: 15718  
Prep Method: 3541  
Prep Date: 12/14/09  
Initial Prep Wt/Vol: 32.71 G  
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By:   
DRO XLS



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<b>1</b> CLIENT: <u>Catlin</u>					SGS Reference: <u>6128-2476</u>					PAGE <u>1</u> OF <u>1</u>				
CONTACT: <u>Jeff Beckin</u> PHONE NO.: <u>(910) 452.5861</u>					No C O N T A I N E R S					Preservatives Used: <u>- MS04</u>				
PROJECT: <u>CSFF</u> SITE/PWSID#: <u>209-034</u>										Analysis Required: <u>(3)</u>				
REPORTS TO: <u>Jeff Beckin</u>										<u>PRO</u> <u>GRO</u>				
INVOICE TO: <u>Sheila @ Catlin</u> QUOTE #: <u>D00101</u> P.O. NUMBER: <u>391211-6</u>														
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No	SAMPLE TYPE	Preservatives Used	Analysis Required	C=COMP	G=GRAB	REMARKS			
✓	<u>USTCSFF-PS-SB08</u>	<u>12/11</u>	<u>1125</u>	<u>S</u>	3	G	1	2						
✓	<u>USTCSFF-PS-SB09</u>	<u>12/11</u>	<u>1130</u>	<u>S</u>	3	G	1	2						
✓	<u>USTCSFF-PS-SB10</u>	<u>12/11</u>	<u>1140</u>	<u>S</u>	3	G	1	2						
<b>5</b> Collected/Relinquished By: (1) <u>[Signature]</u> Date: <u>12/11/09</u> Time: <u>1530</u> Received By: <u>[Signature]</u>					<b>4</b> Shipping Carrier: _____ Samples Received Cold? (Circle) <u>YES</u> <u>NO</u> Shipping Ticket No: _____ Temperature °C: <u>7.5</u> <u>on way coming down to temp</u>									
Relinquished By: (2) _____ Date: _____ Time: _____ Received By: _____					Special Deliverable Requirements: _____ Chain of Custody Seal: (Circle) INTACT      BROKEN <u>ABSENT</u>									
Relinquished By: (3) _____ Date: _____ Time: _____ Received By: _____					Special Instructions: <u>5-day turnaround. Report low runs. Report in EDD format</u>									
Relinquished By: (4) _____ Date: _____ Time: _____ Received By: _____					Requested Turnaround Time: <u>5-day turnaround</u> <input checked="" type="checkbox"/> RUSH <input type="checkbox"/> STD <small>Date Needed</small>									