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SITE ASSESSMENT PLAN FOR SITE 307 PRODUCT LINE LEASE WITH TRANSMITTAL  
CSS PANAMA CITY FL  
4/1/1999  
BROWN AND ROOT ENVIRONMENTAL

7766-3.7.1



**TETRA TECH NUS, INC.**

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TtNUS/TLH/99-022/7766/7.2.3

01 April, 1999

Project Number 7766

Mr. Dave Grabka  
Environmental Specialist  
Florida Department of Environmental Protection  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Reference: Clean Contract No. N62467-94-D0888  
Contract Task Order No. 0047

Subject: Site Assessment Report for Site 307 Product Line Release  
Coastal Systems Station  
Panama City, Florida

Dear Mr. Grabka:

On behalf of the Department of the Navy, Southern Division Naval Facilities Engineering Command, (SOUTHDIV), Tetra Tech NUS, Inc. is pleased to submit to your review and approval, two copies of the Site Assessment Report (SAR) for Site 307 Product Line Release, Coastal Systems Station.

If you have any questions regarding this assessment or require additional information, please contact me at (850) 656-5458.

Very truly yours,

A handwritten signature in cursive script that reads "Gerald F. Goode".

Gerald F. Goode, P.G.  
Task Order Manager

GG/gg

Enclosures (2)

c: Mr. N. Ugolini, SOUTHDIV  
Mr. A. McDonald, Coastal Systems Station  
Ms. D. Wroblewski (Cover Letter Only)  
✓ Mr. M. Perry/File

**Site Assessment Report**  
for  
**Site 307 Product Line Release**

at

**Coastal Systems Station**  
Panama City, Florida



**Southern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62467-94-D-0888**  
**Contract Task Order 0047**

April 1 1999

**SITE ASSESSMENT REPORT  
FOR SITE 307 PRODUCT LINE RELEASE**

**COASTAL SYSTEMS STATION  
PANAMA CITY, FLORIDA**

**Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:  
Tetra Tech NUS, Inc.  
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**CONTRACT NUMBER N62467-94-D-0888  
CONTRACT TASK ORDER 0047**

**APRIL 1999**

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## EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) for a product line release associated with Site 307 at Coastal Systems Station (CSS) in Panama City, Florida. The SA was conducted in accordance with the requirements of Chapter 62-770, Florida Administrative Code (F.A.C.). The assessment report was submitted to the Florida Department of Environmental Protection (FDEP) for approval.

### **TtNUS performed the following actions during the SA:**

- Reviewed available Navy documents to identify potential sources and receptors for petroleum hydrocarbons in the vicinity, to evaluate private potable wells in a 0.25-mile radius and public water supply wells within a 0.50-mile radius, to locate nearby surface water bodies, and to determine surface hydrology and drainage;
- Reviewed previously prepared Closure Assessment Reports for Tank 172 to determine boring locations and monitoring well placements;
- Reviewed tank and line tightness test data and the Tank Closure Assessment Report for Tank 307R1 to evaluate source area for the petroleum release associated with the product line;
- Conducted site survey to identify utilities and to construct a site plan;
- Performed direct push investigation, collected soil and groundwater samples for field screening of total petroleum hydrocarbons using an organic vapor analyzer;
- Collected groundwater samples from direct push borings for mobile lab screening of DRO-TPH and GRO-TPH constituents;
- Installed shallow permanent monitoring wells to approximately 13 feet below land surface (bls) and a vertical delineation well to approximately 30 feet bls;
- Collected groundwater samples from the permanent monitoring wells for laboratory analysis of Gasoline and Kerosene Analytical Group parameters;
- Collected soil samples for laboratory analysis of the Gasoline and Kerosene Analytical Group parameters; and
- Surveyed monitoring well top of casing elevations and collected depth to groundwater measurements to evaluate the groundwater flow direction.

### **Conclusion**

Evaluation of soil assessment data indicates that no "excessively contaminated" or "contaminated" soil, as defined by Chapter 62-770.200, F.A.C., is present in the vadose zone. This evaluation is based on soil vapor concentration data supported by laboratory analysis of soil samples collected at the site.

Laboratory analysis of groundwater samples collected from the site monitoring wells reported dissolved hydrocarbons to be less than laboratory detection limits and at levels below the FDEP Groundwater Target Cleanup Levels. No free product was detected during in the monitoring wells during the SA investigation.

There is no evidence to indicate that fuel films appearing on the surface water (at the storm water outfall) on Alligator Bayou are the result of a product line failure at the site. The product line fuel release location was contained within a concrete lined utility.

The suspected source for a fuel release in Alligator Bayou is from a former distribution system associated with Area of Concern 2 (AOC2). CSS personnel observed fuel entering a storm water junction box and storm water drain pipe which is connected to the outfall on Alligator Bayou. The storm water junction box is located downgradient of AOC2 and upgradient of Site 307.

### **Recommendation**

Based on the findings from this investigation, it is recommended that a No Further Action with conditions or restrictions be approved for the site.

## 1.0 INTRODUCTION

### 1.1 PURPOSE AND SCOPE

A Site Assessment (SA) was conducted at a product line release for Tank 307R1 (Site 307) located at Coastal Systems Station (CCS) in Panama City, Florida by Tetra Tech NUS (TtNUS), Inc. The SA was conducted for the US Navy (Navy) Southern Division Naval Facilities Engineering Command under Contract Task Order 0047, for the Comprehensive Long-term Environmental Action Navy (CLEAN III), Contract Number N62467-94-D-0888. The Florida Department of Environmental Protection (FDEP) Facility Identification Number is 038518667.

The purpose of this SA was to determine the nature and extent of petroleum hydrocarbon impacted soil and groundwater in the area of a failed product line for the underground storage tank (UST) system for Tank 307R1. The assessment included the area where CSS personnel identified visual observation of a fuel release. The assessment was conducted in accordance with Chapter 62-770.600, Florida Administrative Code (F.A.C.).

In July 17, 1997, a fuel release was identified in Alligator Bayou by CSS personnel. The fuel had appeared to enter the bayou from a storm water outfall located in the sidewall of a seawall constructed on the west dock of Alligator Bayou. During investigation of the release by CSS personnel, approximately 20 to 55 gallons of diesel fuel and water were discovered in a concrete lined utility trench bordering the seawall. The utility trench contained conduits for various utilities along with double-walled product pipe for UST system 307R1. The site assessment was initiated following the discovery of the diesel fuel in the utility trench. A Discharge Reporting Form filed for the product line release is provided in Appendix A.

A Site Assessment Report (SAR) Summary Sheet, as required by Chapter 62-770, F.A.C. is included in Appendix B.

### 1.2 SITE DESCRIPTION

#### 1.2.1 Location

The CSS facility is located on the western shore of St. Andrew Bay in Panama City, Bay County, Florida. The facility is bounded by US Highway 98 to the north, St. Andrew Bay to the east, State

Road 292B (Magnolia Beach Road) to the south, and State Road 292 (Thomas Drive) to the west as shown on Figure 1-1. Specifically, the CSS facility is located within Section 33 of Township 3 South, Range 15 West and Section 4 of Township 4 South, Range 15 West, as shown on United States Geological Survey (USGS) Panama City Beach, 7.5 Minute Series Quadrangle and presented as Figure 1-2.

### **1.2.2 Site Description**

Site 307 consists of a concrete-lined utility trench, containing the product line for UST 307R. The UST distribution system supplied diesel fuel to a dispenser island located on the pier of the west dock of Alligator Bayou. The diesel fuel from the distribution system was used to supply fuel for water vessel operations.

The concrete-lined utility trench containing the product line extends from the dispenser island approximately 30 feet to south. This section of product line is bordered on the west by Alligator Bayou, as shown on Figure 1-3. The concrete-lined utility trench and product line continues approximately 60 feet due east toward the boom wash area for Site 333, where the concrete-lined utility trench ends and the product line goes beneath concrete.

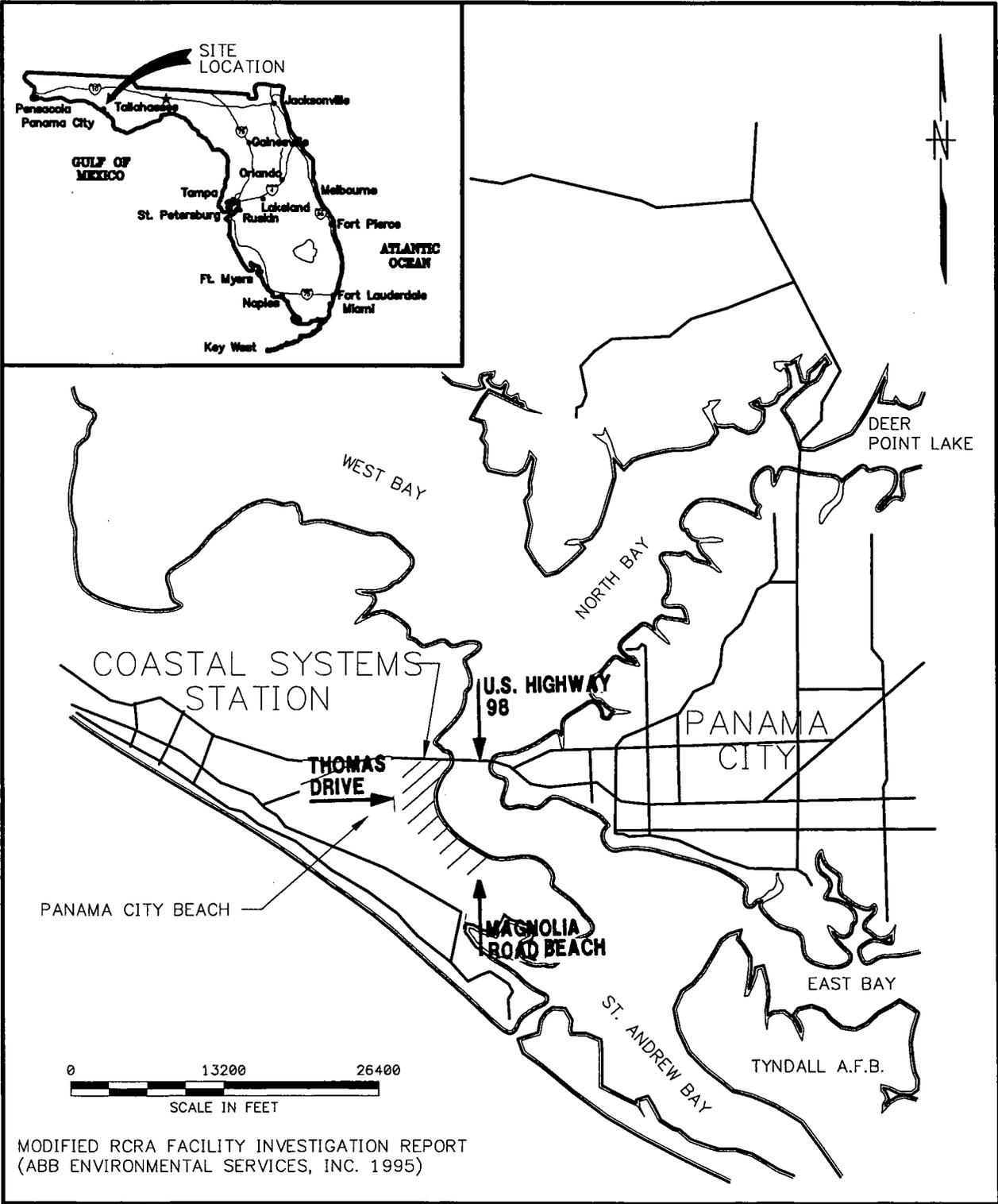
The concrete-lined trench is approximately 4 feet wide and 2 feet deep in the section of piping that runs adjacent to the seawall and Alligator Bayou. The thickness of the concrete adjacent to the trench has been cored to a depth of 13 inches. The concrete-lined trench is approximately 2 feet wide and 2 feet deep in the section of piping that extends east toward the boom wash area.

The product line is constructed of 2-inch double walled fiberglass. The double walled system is divided into four sections, from the UST to the dispenser. Each section is configured with a separate leak detection zone. This SA investigated the section of product line that runs adjacent to the seawall on Alligator Bayou where CSS personnel identified a visually observation of a fuel release and subsequent line tightness test identified a line failure.

### **1.2.3 Topography and Drainage**

The topography at the site is relatively flat with a land surface elevation of approximately 6 feet above National Geodetic Vertical Datum (NGVD), 1929. The site is covered by a concrete surface providing a physical barrier for the infiltration of rainfall into the subsurface. An outfall for

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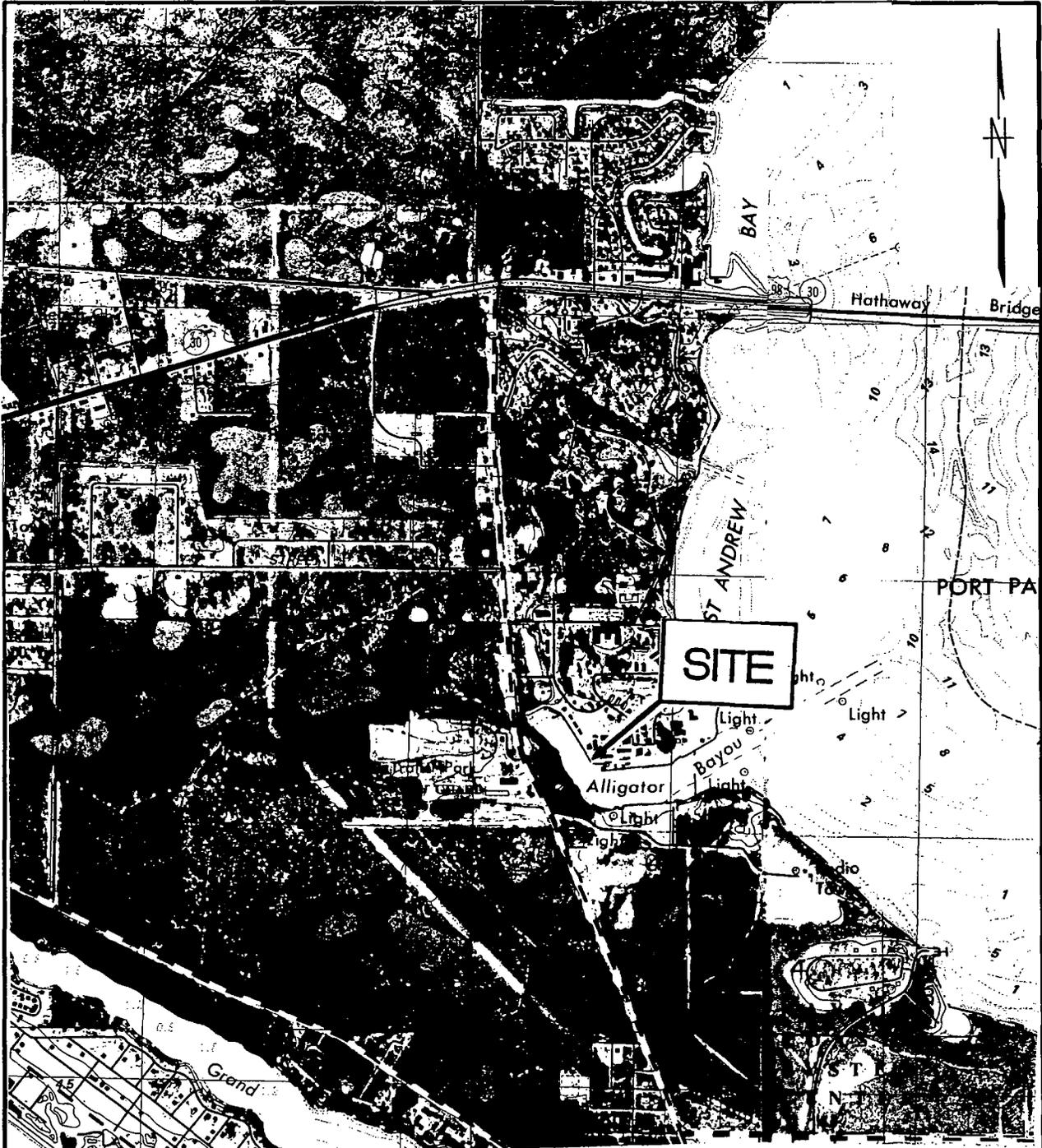


MODIFIED RCRA FACILITY INVESTIGATION REPORT  
(ABB ENVIRONMENTAL SERVICES, INC. 1995)

DRAWN BY KW DATE 12/28/98		SITE VICINITY MAP SITE 307 PRODUCT LINE RELEASE COASTAL SYSTEMS STATION PANAMA CITY, FLORIDA	CONTRACT NO. 7766	
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COST/SCHED-AREA			APPROVED BY DATE	
SCALE AS NOTED			DRAWING NO. FIGURE 1-1 REV. 0	

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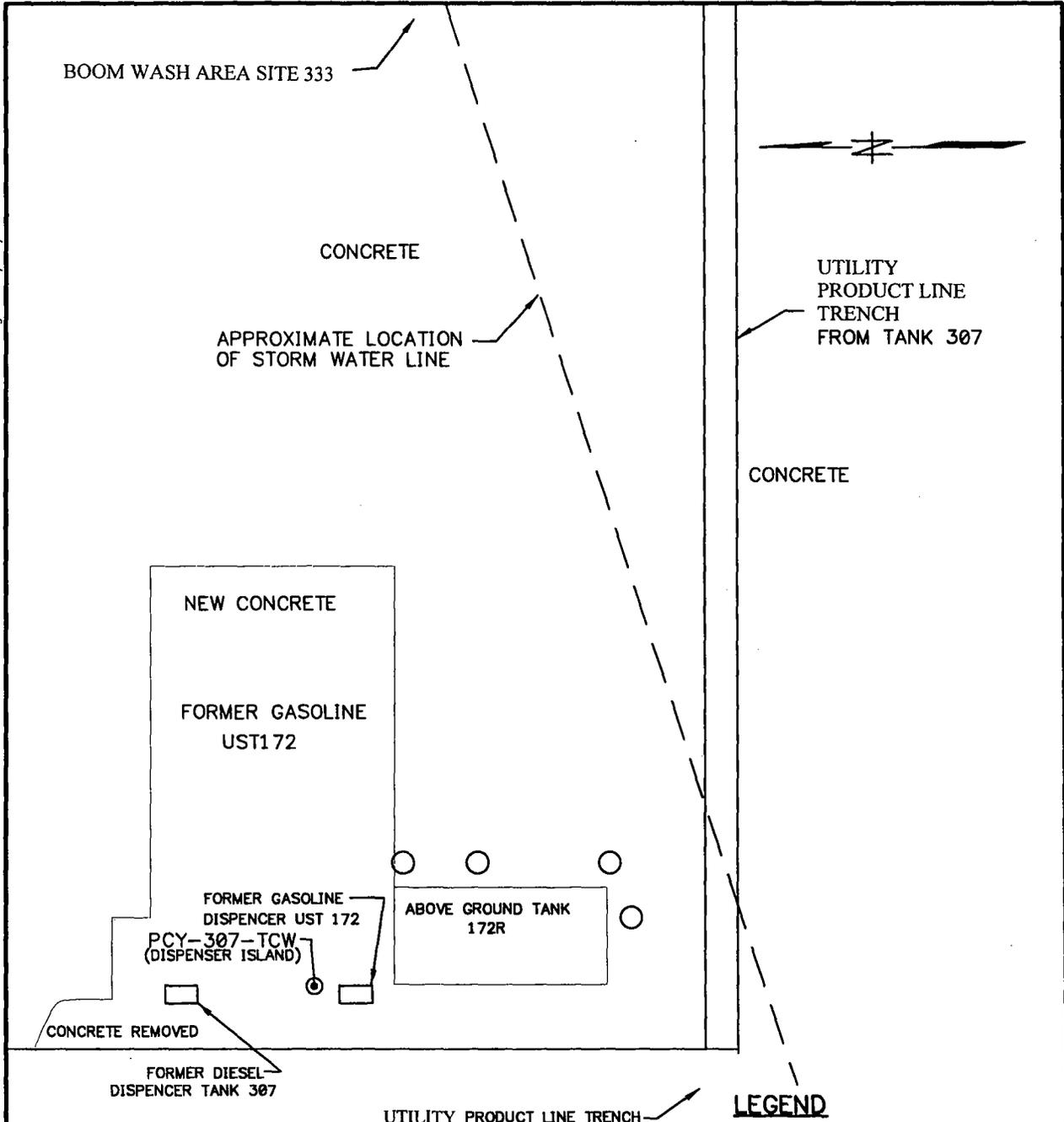


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CHECKED BY DATE			APPROVED BY DATE	
COST/SCHED-AREA SCALE AS NOTED			APPROVED BY DATE	
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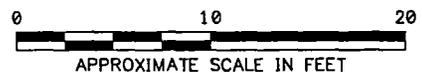


UTILITY  
PRODUCT LINE  
TRENCH  
FROM TANK 307

CONCRETE

**LEGEND**

- ⊙ EXISTING MONITORING WELL
- BUMPER POST



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SCALE AS NOTED	



**SITE PLAN  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 1-3	REV. 0

FORM CADD NO. SDIV\_AV.DWG - REV 0 - 1/20/98

a subsurface storm water drainpipe borders the site to the south as shown on Figure 1-3. The outfall is located in the seawall on the west dock of Alligator Bayou. Alligator Bayou borders the site to the west and is the nearest surface water body. Alligator Bayou is an inlet to St. Andrews Bay, which is designated as a Class III surface water by the State of Florida, suitable for fish and wildlife propagation and water sports (ABB Environmental Services Inc., RCRA Facility Investigation (RFI) Report. 1995).

#### **1.2.4 Regional Hydrogeology**

The regional hydrogeology of CSS Panama City is described in the RFI Report (ABB Environmental Services, Inc., 1995). According to this report, surficial deposits at CSS are Pleistocene to Recent (Holocene) coastal plain sediments of marine and estuarine origin. They predominately consist of quartz sand, clayey sand, and gravel. These deposits vary in thickness from 70 to 100 feet in Bay County. The surficial aquifer is located within these deposits.

Regionally, the Pliocene-age Jackson Bluff Formation underlies the Recent surficial deposits in parts of southwestern Bay County, but is absent in the vicinity of CSS. The Jackson Bluff Formation is composed of calcareous sandy clay and clayey shell marl.

The Intracoastal Formation underlies the surficial deposits at CSS. The Intercoastal Formation is middle Miocene to late Pliocene. The Intracoastal Formation is composed of sand and poorly consolidated limestone interbedded with discontinuous clay and low permeability sandy limestone. This formation is approximately 150 feet thick at CSS Panama City. The lower beds of the Intracoastal Formation are part of the Floridan aquifer system.

As described in the RFI, groundwater at CSS occurs in two major aquifer systems: unconfined surficial aquifer and the Floridan aquifer system, which is under confined and artesian conditions. A third, aquifer discussed in the literature exists in a thin (10 to 25 feet in thickness) permeable sand and shell zones within the Intracoastal Formation, and is separated from the water table aquifer from the Floridan aquifer system by interbedded low-permeability clay and limestone. Because the Jackson Bluff Formation is absent at CSS, and the low permeability clay lenses in the surficial aquifer and Intracoastal Formation are discontinuous, the surficial aquifer may be hydraulically connected to the Floridan aquifer system through the semiconfining strata of the Intracoastal Formation.

The surficial aquifer is reported to have insufficient thickness to produce significant quantities of water and its quality is generally undesirable for human use (i.e., dissolved solids, acidity, and iron content). The semi-confined aquifer within the Intracoastal Formation does not produce enough water to be considered a significant water source. The Floridan aquifer is capable of yielding water at a rate between 250 and 500 gallons per minute to wells. The potable zone of the Floridan aquifer system is approximately 250 feet sea level and 1,100 feet in thickness.

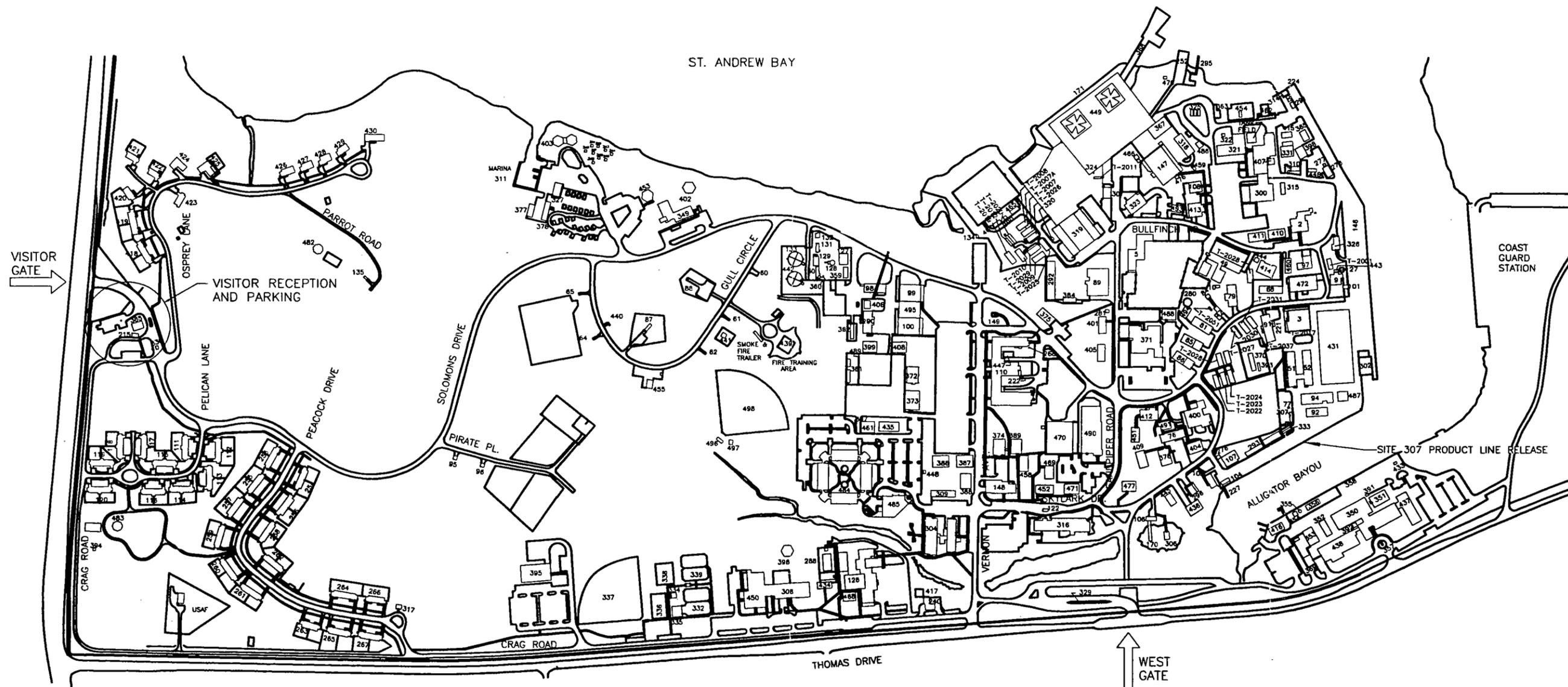
### **1.2.5 Land Use**

The site is located in the southwest area of the CSS property as shown on Figure 1-4. This area of the base is comprised of research facilities and various support activities. The site is a diesel fuel distribution system located on the west dock of Alligator Bayou. Regulated underground storage tank systems for facilities located in the immediate area include former gasoline UST 172, which borders the site to the east and Tank 307R1 located east of the area of the product line (E.E. Jordan Company, Release Detection Program for Underground Storage Tanks, May 1990).

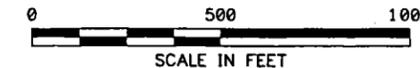
Other sources for petroleum hydrocarbon contamination in the immediate study area consist of Solid Waste Management Unit 1 (SWMU-1), Site 333, and Area of Concern 2 (AOC2). SWMU-1 was a marshy depression used as a disposal area from approximately 1945 to 1953. Site 333 is utilized as a spill containment boom wash area and consists of a containment area, underground waste oil tank (holding tank), and oil water/separator. AOC2 was a former 50,000 gallon diesel tank and associated transfer lines.

SWMU1 was a disposal area received general house hold wastes, food scraps, scrap metal, scrap lumber, and small quantities of paint, paint thinner, battery acids, solvents, and photographic chemicals. Waste oil and bilge water were also poured on the ground and burned (ABB Environmental Services Inc., 1995). The part of the site nearest to Alligator Bayou is now under the concrete deck of the west dock. Buried waste in this area may have been removed during dock construction and dock reconstruction in the early 1950s and late 1970s, respectively (ABB Environmental Services, Inc., 1995).

Site 333 is utilized as a spill containment boom wash area and consists of a containment area, underground waste oil tank (holding tank), and oil water/separator. The site is located east of Site 307 as shown on Figure 1-3. The oil/water separator was installed in the 1970's and was primarily used to collect rinse water from diesel booms used to contain spills. Bowser-tank trucks



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BASE SITE LOCATION MAP  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEMS STATION  
PANAMA CITY, FLORIDA

CONTRACT NO. 7766	
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used to haul waste oil were previously stored in the boom containment wash area. Some used oil from these trucks may have been processed through the oil/water separator system. The oil/water separator also receives water from a floor drain from Structure 307, which is a hazardous drum storage area. The oil/water separator system was installed in the late 1970s. The system was upgraded with a new oil/water separator and holding tank in November 1995.

AOC2 consists of a former aboveground storage tank and its associated transfer piping. The tank was constructed in 1943 and was originally used to store diesel fuel unloaded from barges at the South Dock. Underground transfer lines were used to distribute fuel from the tank to other vessels. Approximately 50,000 gallons of diesel fuel were lost from the tank system in 1953. The exact location of the leak and whether or not the underground piping had failed was unknown. The former tank was refurbished in 1957 by complete dismantling, cleaning, and was reassembled with new bolts, gaskets, and the replacement of 28 bottom plates. The tank was then used to store gasoline, aviation fuel, diesel fuel, and waste oil storage. Numerous small leaks, primarily at the tank seams, were reported to have occurred both before and after the tank was refurbished.

In the mid 1960s, an estimated 10,000 gallons of oil was released from ruptured fuel transfer lines located between the dock and storage tank. Following the rupture, seepage of diesel oil was observed in Alligator Bayou at the South Dock's steel bulkhead (ABB Environmental Services, Inc., 1995).

The tank was removed in 1979. Transfer piping from the tank wall to an earthen berm was removed. The earthen berm provided secondary containment at a distance of 60 feet around the tank. The remaining piping was capped and abandoned in place. (ABB Environmental Services, Inc., 1995).

#### **1.2.6 Potable Water Well Survey**

The potable water supply information presented in this report was obtained from RFI completed for CSS (ABB Environmental Services Inc., 1995). According to this report no private potable wells or public potable supply wells are located with ¼-mile and ½-mile radius of the site respectively.

Potable water for most of Panama City and Panama City Beach, including CSS is supplied by

The Bay County Water System, operated by the Bay County Public Utilities Department. The system draws surface water from Deer Point Lake, located 7 miles northeast of CSS and supplies 83 to 95 percent of the potable water in the area.

Panama City Beach operates a public water system that uses a combination of groundwater withdrawal and surface water. The groundwater is obtained from 13 wells located in western Bay County and surface water is purchased from the Bay County Water System.

The RFI indicates that records from the Northwest Florida Water Management District list 42 permitted wells screened in the surficial aquifer system in the vicinity of CSS. These 42 wells are classified as "domestic" or other "public supply" and are 2-inch and 4-inch-diameter wells with yields of generally less than 20 gallons per minute.

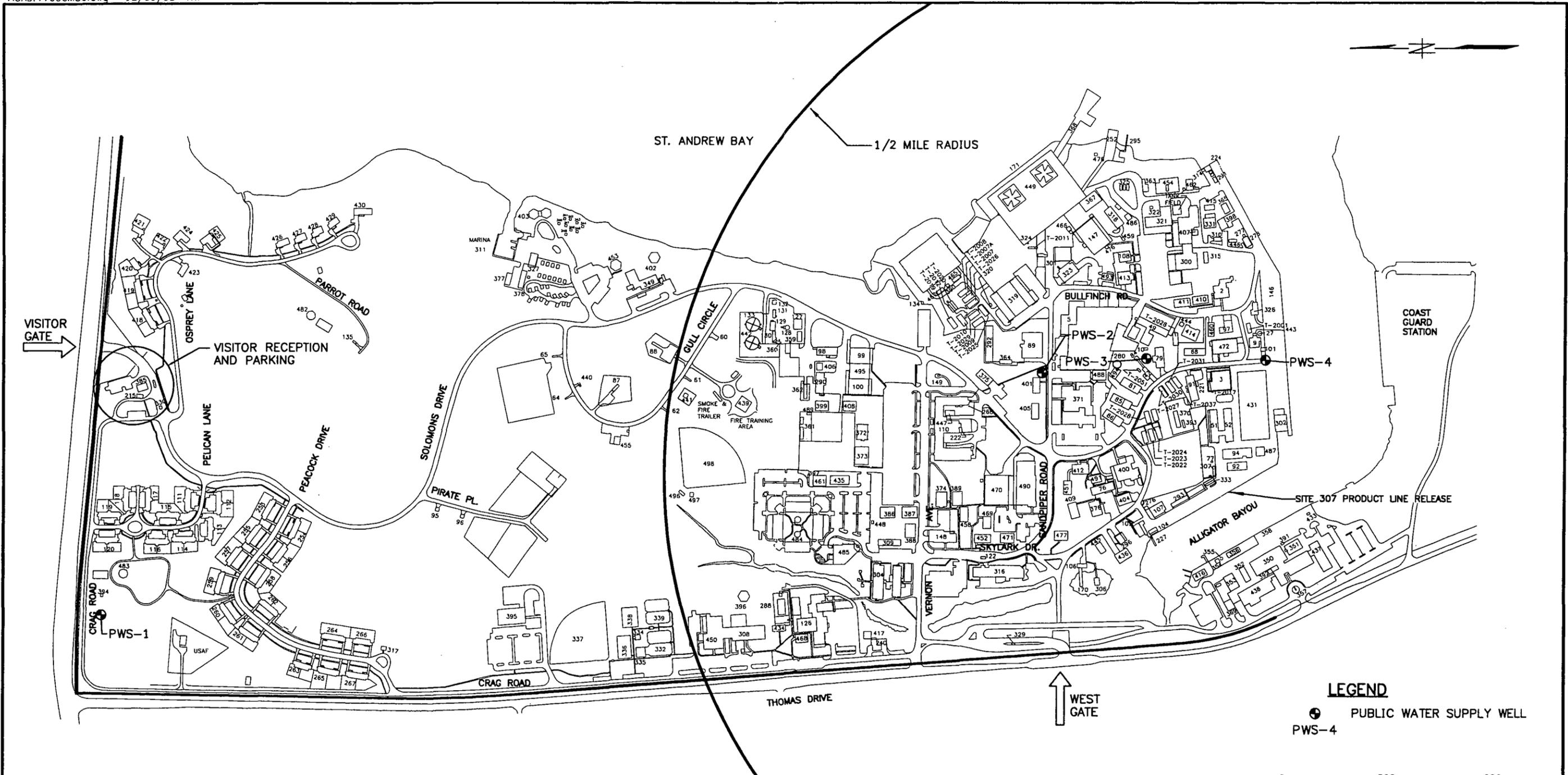
Four public water supply wells are located at CSS. The well locations are provided on Figure 1-5. These wells have 12-inch diameter casings and are completed at depths of 350 to 400 feet bls. Of the four wells, only PWS-1, located near the housing area at Building 394, adjacent to highway 98, is currently in use. It is used to provide water for air conditioning and heat pumps only and draws water from the Floridan aquifer system from approximately 400 feet bls. The remaining wells are inactive.

### **1.3 SITE HISTORY AND OPERATIONS**

#### **1.3.1 Site History**

CSS is one of seven major research, test, and evaluation laboratories of the Space and Naval Warfare Systems Command. The facility was first established in 1942 as a harbor for World War II convoy ships and as a liaison with a nearby shipyard. It later became an amphibious landing craft operations school. Research and development began in 1945 when the facility was renamed the US Navy Research Countermeasures Station. In 1952 a research and development program for the use of helicopters for mine countermeasures operations was implemented at the Base. The facility was redesignated as the Naval Coastal Systems Center in 1978 and again as Coastal Systems Station (CSS) in January 1992 (ABB Environmental Services, Inc. 1995).

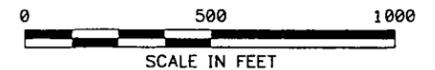
CSS consists of two operational areas: the approximately 360 acre laboratory area, located north of Alligator Bayou an inlet to St. Andrew Bay; and the approximate 300 acre ordnance area, located south of Alligator Bayou. The laboratory area consists of research facilities and various



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**LEGEND**

● PUBLIC WATER SUPPLY WELL  
PWS-4



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LOCATION OF PUBLIC WATER SUPPLY WELLS  
RCRA FACILITY INVESTIGATION REPORT  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEMS STATION  
PANAMA CITY, FLORIDA

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DRAWING NO. FIGURE 1-5	REV. 0

support activities and tenants. Site 307 is located in the laboratory area on the west dock of Alligator Bayou.

### **1.3.2 Structural Integrity of Tanks and Lines**

The UST 307R1 system consists of a 6,000-gallon Owens-Corning double-walled fiberglass UST approximately 8 feet in diameter, buried under an earthen mound with two feet of cover. The bottom of the tank was approximately 8 feet below the elevation of the surrounding grade. The UST system consisted of double-walled fiberglass pipe delivery system. An above ground suction pump was used to distribute the fuel to a fuel dispenser located on the edge of the concrete pier on the west dock of Alligator Bayou.

The double-walled pipe system consists of four sections, from the UST to the dispenser. Each section is configured with a separate leak detection zone (Bechtel Environmental Inc., CSS Panama City Summary Report, UST Testing at Tank 307R. 1998). The gate valves used for isolation valves between sections of the pipeline are located either in shallow valve pits, above ground or within concrete-lined utility trenches.

Tightness tests were conducted on the UST system by Bechtel Environmental Inc. in January 1998. Results of the tests, identified the following:

- The inner tank tested tight but the outer shell failed the test.
- The product line passed the test in the portion of the pipeline system that was buried underground or below concrete, but failed to test tight in sections of piping visible in the concrete lined trenches.
- None of the outer wall piping passed the tests.
- The only visible release of fuel was identified in the final section of pipe located in the concrete trench along the edge of the west dock on Alligator Bayou.

The tightness test results and certifications for the UST and associated piping system is provided in Appendix C.

### **1.3.3 Initial Remedial Action**

The diesel fuel observed in the concrete lined utility trench was attributed to a crack in the double-walled piping on the diesel line. Upon discovery of the release, flow of the diesel product in the pipe was turned off. CSS personnel accessed that the fuel identified in the utility trench had not

entered Alligator Bayou and that the fuel release identified in the bayou on July 17, 1997 came from another source.

#### **1.3.4 Previous Investigations Conducted Near Site 307**

Previous investigations conducted in the area near Site 307 included: the subsurface storm water drain pipe for the storm water outfall on Alligator Bayou, UST 172, Tank 307R1, and Site 333.

##### Drain pipe for storm water outfall:

**On July 28, 1997**, CSS personnel identified a second release of diesel fuel coming from the storm water outfall. Visual inspection of the fuel by CSS personnel identified the fuel as clear (not emulsified). The release was immediately contained with booms and was estimated at less than 20 gallons based on the small areal spread of the diesel fuel on the water. Upon discovery of the second release, Tank 307R1 was emptied. Prior to emptying the tank, monitoring ports within the tank's double wall were monitored by CSS personnel for hydrocarbon vapors. No hydrocarbon vapors were detected during vapor monitoring of the tank distribution system.

**On July 29, 1997**, CSS personnel discovered a junction box for the storm water drain system, which connects to the outfall on Alligator Bayou. Inside the junction box, diesel fuel like substance was observed flowing into the box and entering the storm water drainpipe. As part of an interim remedial action, Bechtel Environmental Inc. installed well points to lower the water table and prevent fuel from entering the junction box while repairs were made to the junction box. The junction box where fuel entered the storm sewer is located upgradient to Site 333 and Tank 307R1. AOC2) which contained a former 50,000 gallon diesel tank and associated transfer lines, is located upgradient of the junction box and is suspected as the source for the diesel fuel release into Alligator Bayou.

As part of the interim remedial action to investigate potential source(s) for the fuel release, a tank and line tightness test was performed on Tank 307R1 in January 1998. Results of the tightness test are discussed in Section 1.3.2.

##### UST172

**In December 1997**, A Tank Closure Assessment was completed for UST 172, which recommended a No Further Action based on groundwater and soil data collected during the Closure Assessment. UST 172 is a gasoline storage tank which supplied gasoline to a dispenser located adjacent to the diesel dispenser for Tank 307R1 on the west dock. During removal of the dispenser island, CSS personnel identified a diesel release beneath the diesel dispenser. The concrete beneath the dispenser island was removed to allow access for soil testing beneath the

dispenser during the SA for Site 307. After removal of the UST, above ground storage Tank 172R was installed on the west dock. This tank stores octane fuel, which supplies water vessels on the west dock. The location of the tank is shown on Figure 1-3. The Tank Closure Assessment for UST 172 is included in Appendix D.

#### Tank 307R1

**In August 1998**, a Tank Closure Assessment was completed for Tank 307R1. Tank 307R1 is located east of the boom wash rack for Site 333. Results of the Closure Assessment indicated no petroleum contamination was identified in soil and groundwater sample samples above the FDEP target levels for storage tank closures. The Tank Closure Assessment is provided in Appendix E.

#### Site 333

**In November 1995**, a Discharge Notification Form was filed for Site 333 during a system upgrade, which included the installation of a new oil/water separator and new waste oil holding tank. The discharge was reported based on soil vapor readings and groundwater quality testing conducted during the removal of the site's waste oil tank. Soils from the excavation of the waste oil tank were removed as an initial remedial action.

**In February 1997**, a Contamination Assessment Report (CAR) was completed for Site 333 which identified no excessively contaminated soil at the site, as defined in Chapter 62-770.200 F.A.C. Levels of total naphthalene, total lead, vinyl chloride, phenanthrene, cis 1-d dichlorothene, and total recoverable hydrocarbons were detected in the groundwater at Monitoring Only levels. In an effort to reduce the concentrations to meet No Further Action (NFA) status, an Alternative Remedial Procedure was approved by the FDEP to over pump some of the site monitoring wells where product thickness had been measured. The product observed at the site appeared to be heavily weathered.

**In June 1997**, the Alternative Remedial Procedure was performed and groundwater samples were collected. The groundwater results indicated the dissolved petroleum constituents were at NFA levels.

**In August 1997**, the results from the Alternative Remedial Procedure, were in the process of being submitted to the FDEP for review, when a fuel release occurred in Alligator Bayou and the submittal of the report was discontinued by the FDEP pending the out come of an investigation to identify the source for the fuel release identified in Alligator Bayou.

## **2.0 SUBSURFACE INVESTIGATION METHODS**

### **2.1 QUALITY ASSURANCE**

The site investigation was conducted in accordance with the Standard Operating Procedures prescribed by the FDEP Quality Assurance Section Document DER-001/92, and adopted by the TtNUS' Comprehensive Quality Assurance Plan (CQAP) Number 980038.

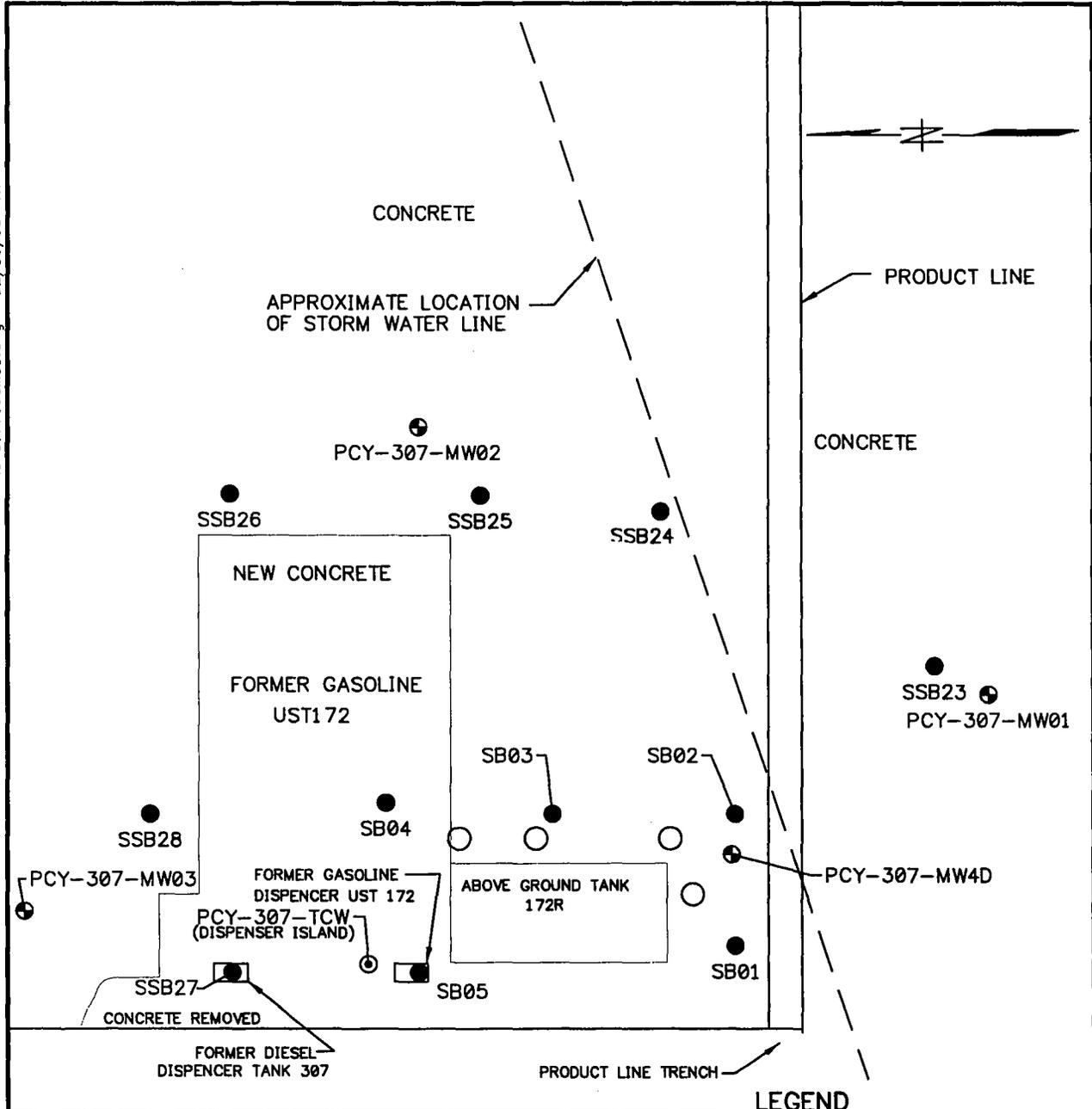
### **2.2 DIRECT-PUSH SOIL BORING PROCEDURES**

TtNUS conducted a soil vapor assessment at the site on May 27 and May 28, 1998. Nine soil borings (SB01 through SB05 and SSB24 through SSB28) were advanced in the immediate area of the former product line and dispenser island. Soil samples were collected from each boring for the purpose of organic vapor screening and for lithologic description. Select soil samples were retained for laboratory analysis. Soil borings were advanced by a Stratoprobe, truck mounted, direct-push, hydraulic soil probe using three-foot long stainless steel split barrel samplers lined with plastic sleeves. The samples were collected at two-foot intervals from the ground surface until the water table was encountered at approximately 5 feet bls. Each boring was abandoned by filling the boring annulus with Type I Portland cement. Soil boring locations and the boring completion depths are summarized on Figure 2-1 and Table 2-1, respectively. Soil boring logs are provided in Appendix F.

Prior to the advancement of the soil probe at each boring location, the probe was decontaminated according to TtNUS's CQAP. Soil samples were visually inspected for evidence of oil staining. Soil vapor analysis was conducted on each soil sample collected from the vadose zone using an Organic Vapor Analyzer-Flame Ionization Detector (OVA-FID). Soil vapor analysis was performed in accordance with the headspace method prescribed by Chapter 62-770.200(8) F.A.C. This method of headspace screening is presented in detail in Appendix G. Headspace concentrations from soil vapor analysis are summarized in Table 2-1.

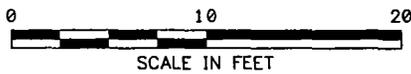
Soil cuttings generated from the direct-push soil borings were placed in a 55-gallon steel drum. A composite soil sample was collected from the drum and analyzed by USEPA Methods SW-846 8021B (volatile organic hydrocarbons and volatile organic aromatics), 8310/FLPRO (polynuclear

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**LEGEND**

- ⊙ EXISTING MONITORING WELL
- SOIL BORING LOCATIONS
- ⊕ MONITORING WELL PCY-307-MW01
- BUMPER POST



DRAWN BY KW	DATE 12/28/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**SOIL BORING LOCATION MAP  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-1	REV. 0

FORM CADD NO. SDIV\_AV.DWG - REV 0 - 1/20/98

**TABLE 2-1  
SOIL VAPOR MEASUREMENTS  
Navy Coastal Systems Station Site 307 Product Line Release  
Panama City, Florida  
FDEP FACILITY No. 038518667**

Soil Boring No.	Date of Measurement	Sample Interval (feet bls)	Headspace Readings (ppm)		
			Total Organic Reading	Carbon Filtered Reading	Net Reading
SSB24	05-27-98	2	ND	ND	ND
		4	ND	ND	ND
		6	ND	ND	ND
SSB25	05-27-98	2	ND	ND	ND
		4	ND	ND	ND
		6	ND	ND	ND
SSB26	05-27-98	2	ND	ND	ND
		4	ND	ND	ND
		6	ND	ND	ND
SSB27	05-27-98	2	200	ND	200
		4	350	ND	350
		6	200	ND	200
SSB28	05-27-98	2	ND	ND	ND
		4	ND	ND	ND
		6	10	5	5
SB01	05-28-98	2	ND	ND	ND
		4	ND	ND	ND
SB02	05-28-98	2	ND	ND	ND
		4	100	40	60
SB03	05-28-98	2	ND	ND	ND
		4	50	ND	50
SB04	05-28-98	2	ND	ND	ND
		4	ND	ND	ND
SB05	05-28-98	2	ND	ND	ND
		4	200	70	130
PCY-307-MW01	09-19-98	2	ND	ND	ND
		4	ND	ND	ND
PCY-307-MW03	09-19-98	2	ND	ND	ND
		4	ND	ND	ND
PCY-307-MW4D	09-18-98	4	100	10	90
SB06	02-04-99	1-2	NR	NR	NR
SB07	02-04-99	1-2	NR	NR	NR

bls     below land surface  
ppm    part per million equivalent methane  
ND     not detected  
NR     not recorded

Wet soils encountered at 5 feet bls.

aromatic hydrocarbons and total recoverable petroleum hydrocarbons), 9020M (total halides), and 6010A and 7471A (eight RCRA metals). The soil was removed for proper disposal by a Florida-licensed waste hauler. Pre-burn soil laboratory data sheets and waste manifests are included in Appendix H.

Rinsate water from the decontamination of sampling equipment was containerized in 55-gallon drums and removed for proper disposal by a Florida-licensed waste hauler.

On October 13, 1998 TtNUS collected a confirmation soil sample at boring SB05 using a stainless steel hand auger. This boring was advanced to 5 feet bls. On February 4, 1999, two additional soil borings, SB06 and SB07, were conducted by TtNUS using a stainless steel hand auger. These borings were advanced to 2 feet bls to provide additional soil analytical data from beneath the former dispenser island and near the product line area near Alligator Bayou.

#### **2.2.1 Drilling and Soil Sampling Methodology**

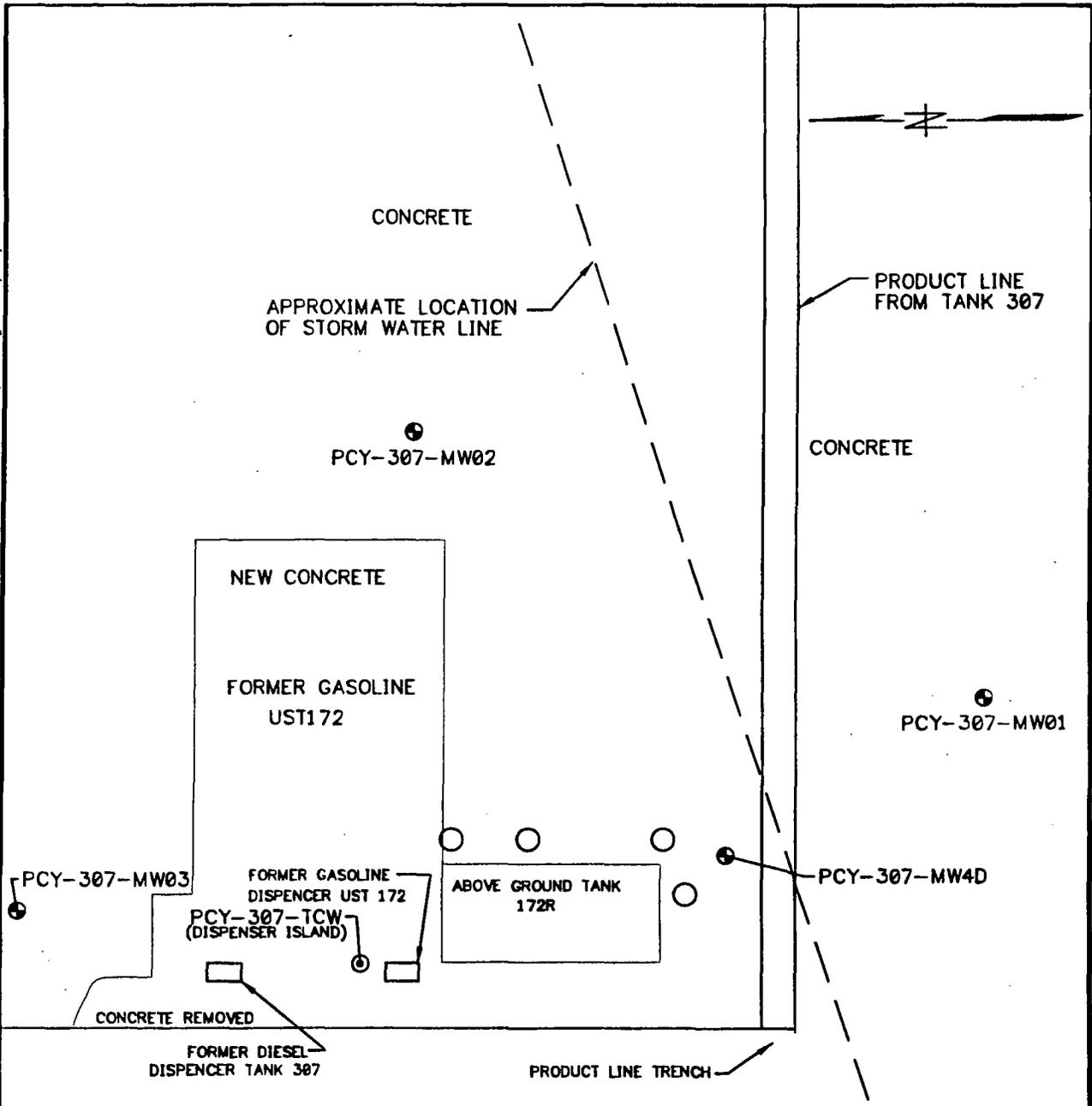
On September 18 through September 19, 1998, borings to facilitate the installation of groundwater monitoring wells PCY-307-MW01, PCY-307-MW02, and PCY-307-MW03 and PCY-307-MW4D were advanced by Environmental Drilling Services under the supervision of a TtNUS geologist. The locations of the borings are shown on Figure 2-2, and soil boring logs are included in Appendix F.

Prior to the collection of the soil samples the auger flights, drill rods, and split spoons were decontaminated according to the TtNUS CQAP.

Buried utilities were investigated at each boring location by advancing the soil boring with a post hole digger from 0 to 4 feet bls. The borings were continued with a BK 81 drill rig, using 4 1/4-inch inside diameter (ID) hollow stem augers. Soil samples were collected using a split spoon sampler and standard penetrations tests were conducted in accordance with the American Society for Testing and Materials (ASTM) D-1586 recommended procedures.

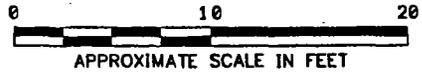
Headspace analysis was conducted on each soil sample collected above the water table during the soil vapor assessment. Grab samples were collected at two foot intervals from approximately 0 to 4 feet bls. Soil vapor analysis was performed in accordance with Chapter 62-770,200(8),

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**LEGEND**

- ⊙ EXISTING MONITORING WELL
- MONITORING WELL PCY-307-MW01
- BUMPER POST



DRAWN BY KW	DATE 12/29/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**MONITORING WELL LOCATON MAP  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 2-2	REV. 0

F.A.C. The headspace methodology presented in detail in Appendix G. Hydrocarbon vapor concentrations from soil vapor analysis are summarized in Table 2-1.

### **2.3 MONITORING WELL CONSTRUCTION**

On September 18 through September 19, 1998, four borings to facilitate monitoring well installations were drilled by Environmental Drilling Services under the supervision of a TtNUS geologist. The locations of the monitoring wells are provided on Figure 2-2. Monitoring wells PCY-307-MW01, PCY-307-MW02, and PCY-307-MW03 were screened to intersect the water table. Monitoring well PCY-307-MW4D was installed as a vertical delineation well. Monitoring well placements were selected based on groundwater field screening and soil assessment data, and were located to provide spatial coverage around the study area. Results of the sampling were used to assess if dissolved petroleum compounds are present in the groundwater at the location of the failed product line for Tank 307R1.

The monitoring wells were installed using a BK81 Mobile drill rig and 4 1/4-inch ID hollow-stem augers. Each well was constructed of 2-inch ID, threaded, schedule 40 PVC riser and 0.010-inch slot well screen with silt trap and well bottom cap. The shallow monitoring wells were installed to approximately 13 feet bls and were completed with a 10-foot screen section. Each annulus was filled to approximately 1-foot above the well screen with US Standard Sieve size 20/30 silica sand. A 1.5-foot layer of bentonite pellets was placed above the sand pack and hydrated. The remainder of the annulus was grouted to the surface. The vertical delineation well was installed to approximately 30 feet bls and was completed with a 5-foot screen section set approximately 20 feet onto the water table. The annulus was filled to approximately 2 feet above the well screen with 20/30 silica sand. A 2-foot thick fine sand seal of US Standard Sieve size 30/65 was placed above the 20/30 silica sand. The remainder of the boring was tremie grouted to the surface.

Each well is secured with a locking, watertight cap within a steel, 8-inch diameter steel manhole. The manhole was set within a 24-inch square concrete apron finished slightly above grade. Well completion logs are provided in Appendix I.

Each well was developed using a suction pump. During well development, field measurements of pH, temperature, and specific conductance were monitored from the purge water generated. The wells were developed up to a maximum of one hour or until the field measurements became stable and the purge water clear. Water quality stabilization was determined using the following

criteria: temperature +/-0.5°C, pH +/-0.1 unit, and specific conductance +/-10 umhos/cm. The wells were developed under the supervision of a TtNUS geologist.

All development water and soil cuttings generated during monitoring well installations were containerized in 55-gallon steel drums for proper disposal.

## **2.4 LITHOLOGIC SAMPLING**

Soil samples were collected during the direct-push soil vapor assessment to assess the shallow subsurface geologic conditions at the site. Samples used for lithologic description were collected from a stainless steel split-spoon sampler lined with plastic sleeves. Soil boring logs are included as Appendix F.

## **2.5 SOIL VAPOR ANALYSIS**

Headspace analysis was conducted on soil samples collected during the soil vapor assessment using an OVA-FID. The soil vapor analysis was performed according to the headspace method prescribed in Chapter 62-770.200(8) F.A.C. Screened soil samples with corrected headspace levels in excess of 500 ppm are defined as "excessively contaminated soil" at gasoline contaminated sites and 50 ppm or higher at diesel contaminated sites. The Headspace Methodology for Determining Soil Organic Vapor Concentrations is described in detail in Appendix G.

## **2.6 SOIL SAMPLING**

A portion of each split-spoon sample collected during the direct-push investigation was removed for OVA field screening. The plastic sleeve sampler was cut to remove the empty section of the sample sleeve and a plastic cap was inserted on the ends of the sample sleeve to prohibit headspace inside the sampler. The sample was immediately placed on ice. Based on OVA field screening data, grab samples for laboratory analysis were collected from soil samples with high, medium, and low vapor concentrations. The samples collected from capillary fringe soils at 4 to 5 feet bls were collected to confirm the soil vapor screening results. A low concentration sample was collected at boring SB01 (non-detect), medium concentration sample at SB02 (50 ppm), and a high concentration sample at SB05 (130 ppm) for laboratory analysis.

The soil samples were analyzed for parameters in the Gasoline and Kerosene Analytical Groups in accordance with Chapter 62-770.600(4)(a), F.A.C. sampling requirements. Samples were

analyzed by SW-846 Method 8021B for volatile organic aromatics (BTEX and MTBE), SW-846 Method 8310 for polynuclear aromatic hydrocarbons (PAHs) and total recoverable petroleum

hydrocarbon (TRPH) by the FLPRO analytical method. The samples were collected to confirm the presence of petroleum-related compounds. The laboratory data reports are included in Appendix J.

Volatile organic aromatics were resampled for at boring location SB05 on October 13, 1998 due to a poor seal cap on the Encore sampler during the first sampling event. The sample was collected from 4 to 5 feet bls using a stainless steel hand auger and Encore sampler. The sample was designated as sample SB05-0405-002.

Two additional soil samples were collected from 1 to 2 feet bls on February 4, 1999. The samples were collected at boring locations SB06 and SB07 using a hand auger. The samples were analyzed for TRPH and PAH constituents. This sampling event was performed based on the results of a project review meeting between TtNUS and the FDEP on January 14, 1999. The rationale for the sampling is provided in a letter to the FDEP included as Appendix K.

## **2.7 HYDROLOGIC INVESTIGATION**

### **2.7.1 Groundwater Level Measurements**

The depth to groundwater in the monitoring wells were collected on October 5, 1998 and November 6, 1998. Measurements were collected from the north rim of the top of well casings using an electronic water level indicator. The water level measurements were collected to determine the depth to water in the surficial aquifer and to evaluate the groundwater flow direction. The water level measurement field forms are provided in Appendix L.

TtNUS surveyed the elevation of the north rim for each top of well casing for newly installed monitoring wells PCY-307-MW01 through PCY-307-MW4D and the tank closure assessment well associated with the former dispenser island (PCY-307-TCW (dispenser island)) for Tank 172. The top of well casing elevation was surveyed to the nearest 0.01 foot relative to a benchmark datum established near the site, (the top of well casing for PCY-333-MW01 (Brown and Root Environmental, Contamination Assessment Report for Site 333, 1997) using an auto-level transit and surveying rod. The water table elevations were calculated by subtracting the measured

depth to water from the surveyed top of casing elevation. Surveying measurements are presented in Appendix M.

## **2.8 WATER SAMPLING**

### **2.8.1 Free Product Sampling**

Prior to the collection of water level measurements on October 5, 1998, each monitoring well was checked for free product using an electronic oil/water level interphase probe. The probe is capable of detecting free product thickness of 0.01 feet or greater.

### **2.8.2 Groundwater Sampling Direct-Push Investigation**

During the direct-push field investigation, groundwater samples were collected for field mobile lab screening at soil boring locations SB01, SB02, SB03, SB04, SB05, SSB24, and SSB25. Borings were advanced into the top of the surficial aquifer and groundwater samples were collected for mobile laboratory screening. Groundwater samples were collected at depths of 7 feet bls. The depth the samples were collected is summarized on Table 3-3. At boring SB01 samples were collected at 7 feet bls and 24 feet bls to evaluate the vertical migration of petroleum hydrocarbons. All groundwater samples were collected using a detachable drive tip attached to a 24-inch long, retractable, stainless steel well screen encased in the lead probe tube. After the water sampler was advanced into the water-bearing zone, the probe was withdrawn 24 inches to allow the retractable screen to open to the formation. For groundwater recovery, a length of new Teflon tubing was inserted into the probe and connected to a peristaltic pump. Several screen volumes were then pumped from the probe in order to reduce the turbidity level. After sufficient purging, groundwater samples were collected by pumping directly into 40 ml vials. The samples were immediately taken to the on-site mobile laboratory for screening for TPH-DRO and TPH-GRO constituents. All purge water was placed in 55-gallon drums on-site for later characterization and disposal. The results of the mobile laboratory screening are presented in Appendix N.

### **2.8.3 Groundwater Sampling of Monitoring Wells**

groundwater sampling of monitoring wells was performed to determine the presence or absence of dissolved petroleum hydrocarbons at the site. TtNUS personnel collected groundwater samples on October 6, 1998 from wells PCY-307-MW01, PCY-307-MW02, PCY-307-MW03,

PCY-307-MW4D, and PCY-307-TCW (dispenser island) for analysis of parameters in the Gasoline and Kerosene Analytical Groups in accordance with Chapter 62-770.600(e), F.A.C. The groundwater samples were collected using new Teflon tubing and a peristaltic pump.

Approximately five well volumes of groundwater were removed from each well using the peristaltic pump and Teflon tubing. Temperature, pH, specific conductance measurements, and well purge volumes were recorded at the time of sample collection and are provided in Appendix L. Groundwater samples were placed on ice and shipped to Accutest Laboratories, Inc., in Orlando, Florida.

All sampling activities were performed in accordance with the procedures prescribed in the FDEP Quality Assurance Section's Standard Operating Procedures for Laboratory Operations and Sample Collection Activities, (DER-001/92), adopted by TtNUS' CQAP. In accordance with DER-001/92 section 4.4.2, sample preservation was accomplished by obtaining pre-preserved containers from a laboratory with a DER approved CQAP (Accutest Laboratories, Inc.). During the sampling events, quality control samples (e.g. equipment blanks) were prepared and submitted to the laboratory as required by the approved CQAP. Sampling activities were documented in a site-specific field logbook, and samples were transmitted under chain-of-custody protocols to the laboratory. Groundwater laboratory data sheets are included in Appendix O.

### 3.0 RESULTS OF INVESTIGATION

#### 3.1 SITE HYDROGEOLOGY

##### 3.1.1 Lithology

The site lithology is underlain by sediments composed predominately of light gray to dark gray sand, fine-to medium-grained. Sand was encountered from approximately 2 feet bls to 30 feet bls, the maximum depth drilled during this assessment investigation. At the surface, the site is covered by a 6-inch to 10-inch thick concrete layer. The concrete is underlain by a 1 foot thick layer of red sandy clay which overlies the light gray to dark gray sand deposit. A geologic cross section location map is provided as Figure 3-1. A geologic cross section of the site is depicted on Figure 3-2. Soil boring logs are included as Appendix G.

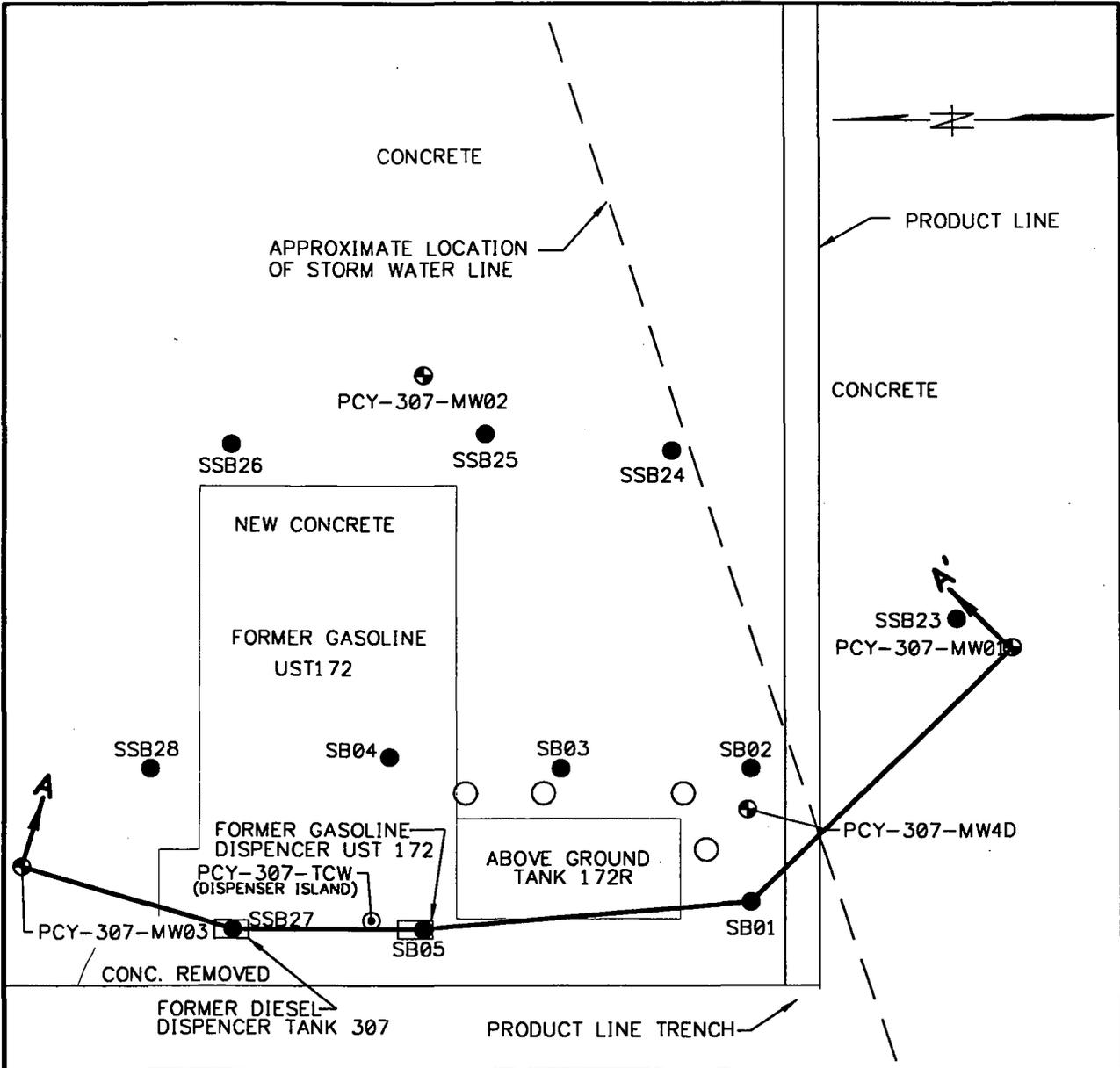
##### 3.1.2 Groundwater Flow Direction

Groundwater elevation measurements collected from the site monitoring wells on October 5, 1998 indicate the groundwater flow direction across the site is toward the southwest. The direction of groundwater flow on October 5, 1998 is consistent with historical groundwater flow direction maps presented in the RIF (ABB Environmental Services, Inc., 1995). Comparison of the depth to groundwater measurements from the site monitoring wells on October 5, 1998 and November 6, 1998 identified approximately 0.5 feet in groundwater level fluctuations between the monitoring events. On October 5, 1998, the depth to groundwater at the site ranged from 4.15 feet to 4.24 feet below top of well casings. Depth to water measurements collected on November 6, 1998, ranged in depth from 4.53 feet to 4.69 feet below top of well casings. The groundwater flow direction for October 5, 1998 is provided on Figure 3-3. No free product detected during water elevation measurements collected at the site. Depth to groundwater and groundwater elevation measurements are provided in Table 3-1.

#### 3.2 SOIL QUALITY

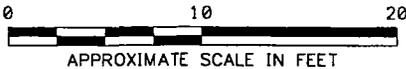
The vertical and horizontal distribution of petroleum impacted soil in the vadose zone was assessed through soil vapor analysis performed during the direct-push investigation and monitoring well boring installations as described in Section 2.2 of this report. Soil samples collected from 4 to 5 feet bls, exhibited vapor concentrations of 60 ppm (SB02), 50 ppm (SB03),

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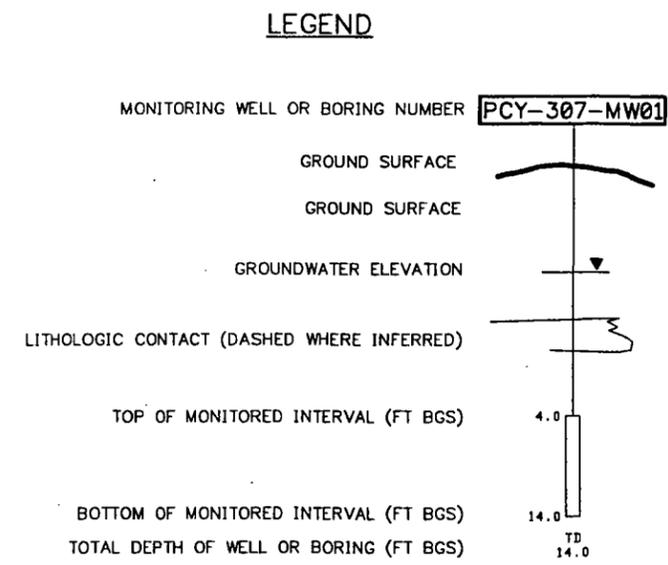
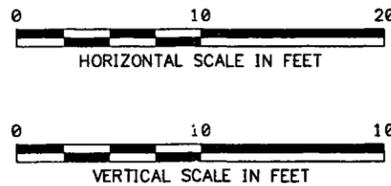
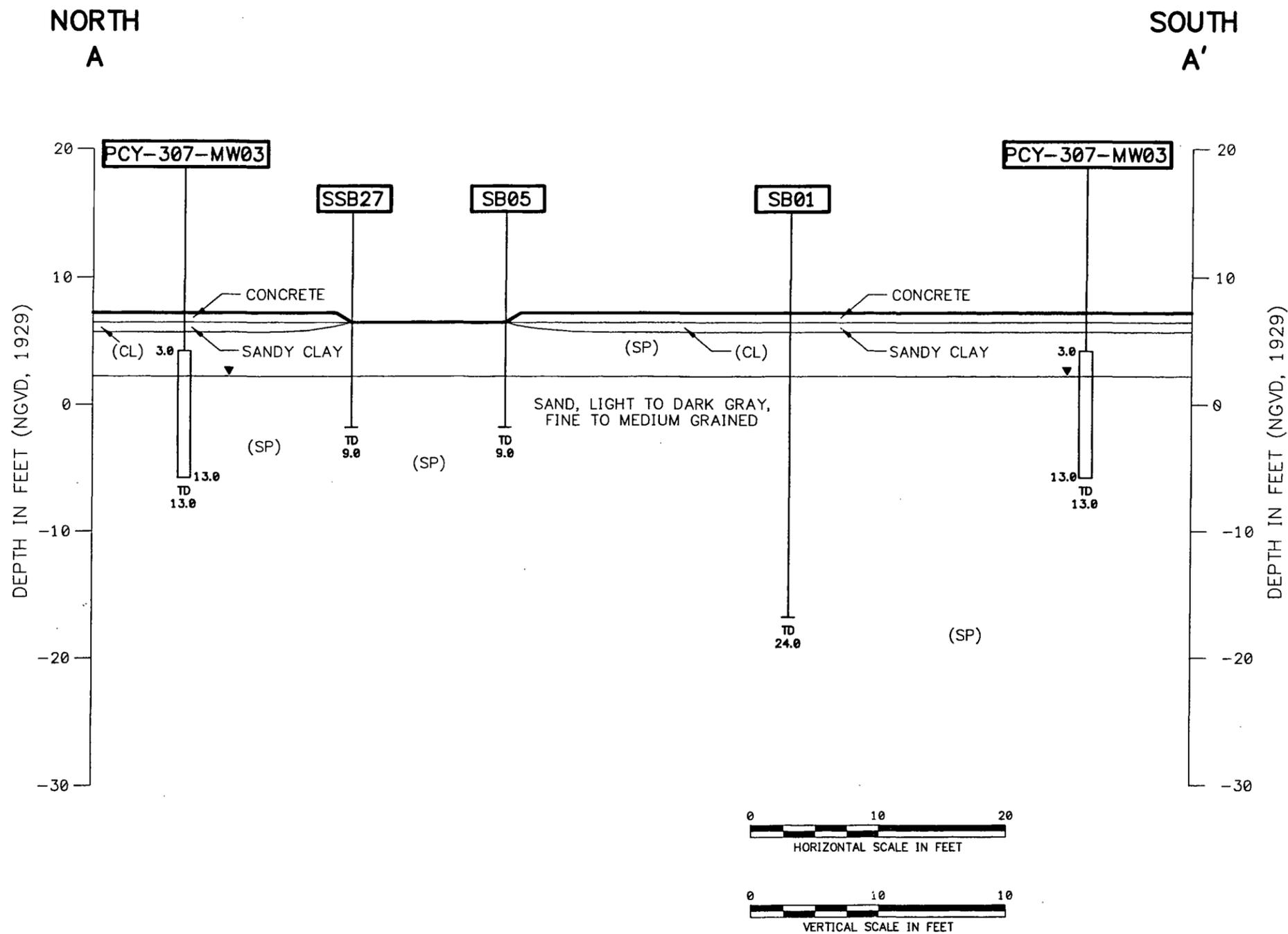
**LEGEND**

- ⊙ EXISTING MONITORING WELL
- SOIL BORING LOCATIONS
- BUMPER POST
- ⊕ MONITORING WELL PCY-307-MW01



DRAWN BY MF DATE 3/18/99 CHECKED BY DATE COST/SCHED-AREA SCALE AS NOTED		<b>GEOLOGIC CROSS SECTION LOCATION A-A'</b> <b>SITE 307 PRODUCT LINE RELEASE</b> <b>COASTAL SYSTEM STATION</b> <b>PANAMA CITY, FLORIDA</b>	CONTRACT NO. 7766 APPROVED BY DATE APPROVED BY DATE DRAWING NO. FIGURE 3-1 REV. 0
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NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

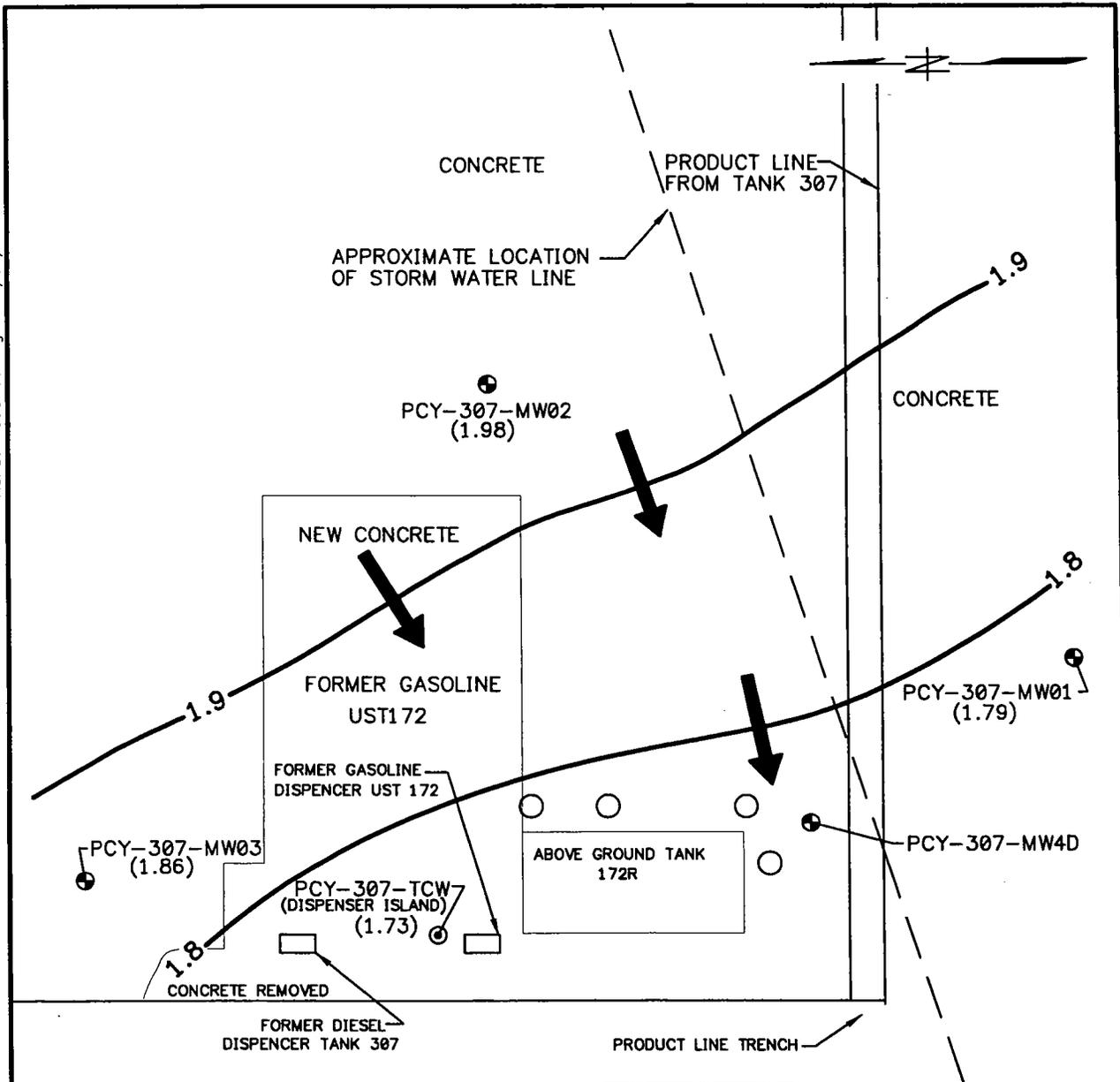
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CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**GEOLOGIC CROSS SECTION A-A'**  
**SITE 307 PRODUCT LINE RELEASE**  
**COASTAL SYSTEMS STATION**  
**PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
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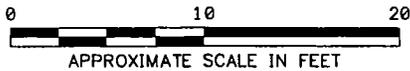
ACAD: 7766CM53.dwg 12/30/98 KW



ALLIGATOR BAYOU

**LEGEND**

- 1.9 — GROUNDWATER CONTOUR  
DASHED WHERE INFERRED
- ⊙ EXISTING MONITORING WELL
- ⊕ MONITORING WELL PCY-307-MW01
- BUMPER POST
- (1.79) GROUNDWATER ELEVATION
- ➔ GROUNDWATER FLOW



DRAWN BY KW	DATE 12/29/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**GROUNDWATER ELEVATION CONTOUR MAP**  
OCTOBER 5, 1998  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-3	REV. 0

FORM CADD NO. SDIV\_AV.DWG - REV 0 - 1/20/98

**TABLE 3-1  
DEPTH TO GROUNDWATER MEASUREMENTS  
Site 307 Product Line Release  
Coastal Systems Station, Panama City, Florida**

Monitoring Well ID	Date	Top of Well Casing Elevation (feet NGVD)	Free Product Thickness (feet)	Depth to Water (feet bls)	Water Table Elevation (feet NGVD)	Well Screen Interval (feet bls)
PCY-307-MW01	10/05/98	6.03	0.00	4.24	1.79	3 to 13
	11/06/98			4.69	1.34	
PCY-307-MW02	10/05/98	6.15	0.00	4.17	1.98	3 to 13
	11/06/98			4.54	1.61	
PCY-307-MW03	10/05/98	6.01	0.00	4.15	1.86	3 to 13
	11/06/98			4.61	1.40	
PCY-307-MW4D	10/05/98	5.96	0.00	3.93	2.03	25 to 30
	11/06/98			4.53	1.43	
PCY-307-TCW (dispenser Island)	10/05/98	5.91	0.00	4.18	1.73	3 to 13
	11/06/98			4.69	1.22	

Notes: bls = below land surface.  
ID = identification  
NGVD = elevation relative to the National Geodetic Vertical Datum 1929.

130 ppm (SB05), 350 ppm (SSB27). A soil sample collected at 1 to 2 feet bls at SSB27 registered a vapor concentration of 200 ppm. Soil vapor screening results are presented in Table 2-1. Soil boring locations and hydrocarbon vapor readings are depicted on Figure 3-4.

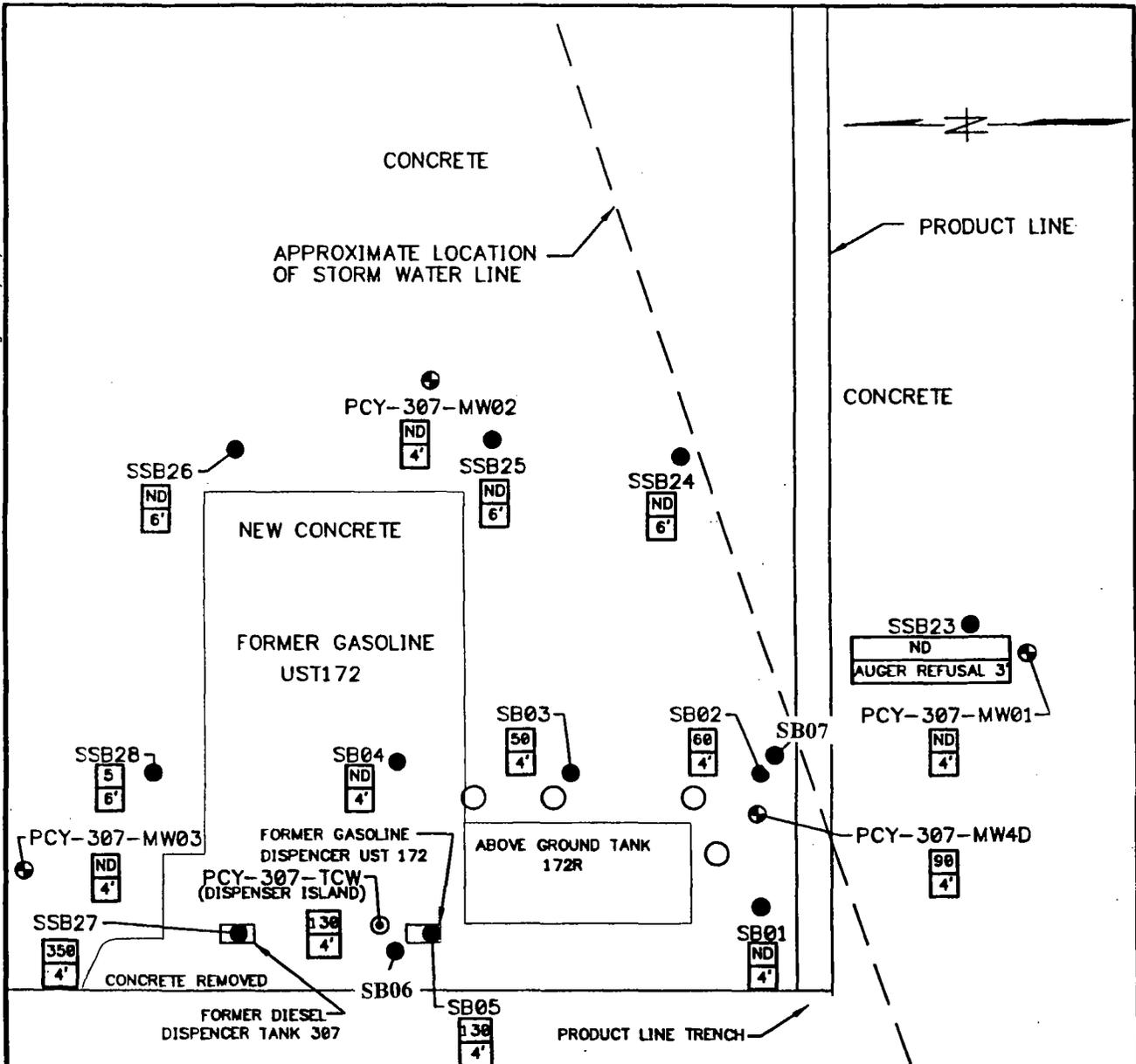
Laboratory analysis of soil samples collected from 4 to 5 feet bls at SB01, SB02, and SB05 identified TRPH concentrations above the FDEP Soil Cleanup Target Levels (SCTLs) for Direct Exposure I for TRPH (350 mg/kg), as established in Chapter 62-770, F.A.C. TRPH concentrations of 22,200 mg/kg, 17,600 mg/kg, and 11,800 mg/kg were detected at SB01, SB02, and SB05, respectively. Total VOAs were detected in the soil sample from SB05 at 6,696 ug/kg. The VOA constituents included ethylbenzene (366 ug/kg) and total xylenes (6,330 ug/kg). These concentrations are below the FDEP SCTLs for ethylbenzene and total xylenes established at 240 mg/kg and 290 mg/kg, respectively. The VOA concentrations were considered non-representative since the lab reported a poor seal on the cap for the Encore Sampler. A confirmation sample was collected adjacent to boring location SB05 (sample designated as SB05-0405-002) from at 4 to 5 feet bls. The results from this sampling event reported VOA constituents below detection limits.

Soil samples collected from 1 to 2 feet below land surface at SB06 and SB07 reported TRPH to be below laboratory detection limits. PAH constituents benzo (b) fluoranthene and chrysene were detected at SB06 at concentrations of 6.80 ug/kg and 5.45 ug/kg, respectively. Benzo (b) fluoroanthene (8.39 ug/kg), benzo (g,h,i) perylene (11.3 ug/kg), and indeno (1,2,3-cd) pyrene (8.70 ug/kg) were detected in SB07. The PAH constituents at SB06 and SB07 were reported below the SCTLs established for these constituents. Soil quality data is summarized on Table 3-2. The soil laboratory data sheets are included in Attachment J, and the SCTLs requirements are presented in Appendix P.

### **3.3 GROUNDWATER QUALITY**

Groundwater quality results from the mobile laboratory field screening reported TPH-DRO constituents in groundwater grab samples collected from soil boring locations SB01, SB02, SB03, SB04, SB05, SSB24, and SSB25. The TPH-DRO concentrations from samples collected near the water table surface ranged from 0.59 milligrams per liter (mg/L) at SSB24 to 541 mg/l at SB01. A TPH-DRO concentration of 5,080 mg/L and a TPH-GRO concentration of 3.12 mg/L were detected in a grab sample collected at 24 feet bls at SB01. TPH-GRO concentrations were

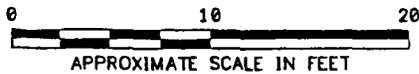
ACAD:7766CM54.dwg 12/30/98 KW



ALLIGATOR BAYOU

**LEGEND**

- ⊙ EXISTING MONITORING WELL
- SOIL BORING LOCATIONS
- BUMPER POST
- ⊕ MONITORING WELL PCY-307-MW01
- 5 SOIL HYDROCARBON VAPOR CONC.
- 6 SAMPLE DEPTH (FEET)
- ND NOT DETECTED



NOTE: SOIL BORINGS INSTALLED MAY 1998 MONITORING WELLS INSTALLED SEPTEMBER 1998

DRAWN BY KW	DATE 12/28/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



SOIL HYDROCARBON VAPOR CONCENTRATION  
MAP MAY & SEPTEMBER 1998  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-4	REV. 0

**TABLE 3-2  
SUMMARY OF SOIL QUALITY:  
SELECTED PARAMETERS FROM THE KEROSENE  
ANALYTICAL GROUP  
Site 307 Product Line Release  
Navy Coastal Systems Station, Panama City, Florida  
FDEP ID No. 038518667**

Soil Boring Location	Date Sampled	Sample Depth (feet bls)	Total VOA (µg/kg)	TPH (mg/kg)	Chrysene (µg/kg)	Fluor-anth (µg/kg)	Napth (µg/kg)	Benzo (a) anth (µg/kg)	Benzo (a) pyrene (µg/kg)	Benzo (b) fluoran (µg/kg)	Benzo (k) fluor (µg/kg)	Benzo (ghi) (µg/kg)	Indeno (1,2,3,-cd) (µg/kg)	Phenan-threne (ug/kg)	Pyrene (µg/kg)
SSB01	5-28-98	4-5	ND <sup>(1)</sup>	22200	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>
SSB02	5-28-98	4-5	ND <sup>(1)</sup>	17600	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>
SSB05	5-28-98	4-5	6696 <sup>(2)</sup>	11800	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>	ND <sup>(3)</sup>
	10-13-98	4-5	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SSB06	2-4-99	1-2	NA	ND	5.45	ND	ND	ND	ND	6.80	ND	ND	ND	ND	ND
SSB07	2-4-99	1-2	NA	ND	ND	ND	ND	ND	ND	8.39	ND	11.3	8.70	ND	ND
<b>FDEP SELECT SOIL CLEANUP TARGET LEVELS DIRECT EXPOSURE #1</b>			Benzene 1100 Toluene 300000 Ethylbenzne 240000 Xylenes 290000	<b>350</b>	<b>140000</b>	<b>2800000</b>	<b>1000000</b>	<b>1400</b>	<b>100</b>	<b>1400</b>	<b>15000</b>	<b>2300000</b>	<b>1500</b>	<b>1900000</b>	<b>2200000</b>

Total VOA sum of benzene, toluene, ethylbenzene and xylenes concentrations  
 Fluor fluorene  
 Napth naphthalene  
 Benzo (b) fluoran benzo(b)fluoranthene  
 Benzo (g,h,i) benzo(g,h,i)perylene

TPH total recoverable petroluem hydrocarbons  
 Fluor-anth fluoranthene  
 Benzo (a) anth benzo(a)anthracene  
 Benzo (k) fluor benzo(k)fluoranthene  
 Indeno (i,2,3-c,d) indeno(1,2,3-cd)pyrene

NA not analyzed  
 ug/kg concentrations reported in micrograms per kilogram  
 mg/kg concentrations reported in milligrams per kilogram

- 1) Results are considered minimum values due to poor seal cap on Encore sampler.  
 2) Results are considered minimum values due to poor seal cap on Encore sampler. Results confirmed by reanalysis on dissimilar column.  
 3) Elevated detection limits due to matrix interference. Reported Detection Limit ranged from 38000 ug/kg to 40000 ug/kg.

reported below detection limits in all other field screening samples. TPH-DRO and TPH-GRO groundwater field screening concentrations are summarized in Table 3-3 and are illustrated on Figure 3-5 and Figure 3-6, respectively.

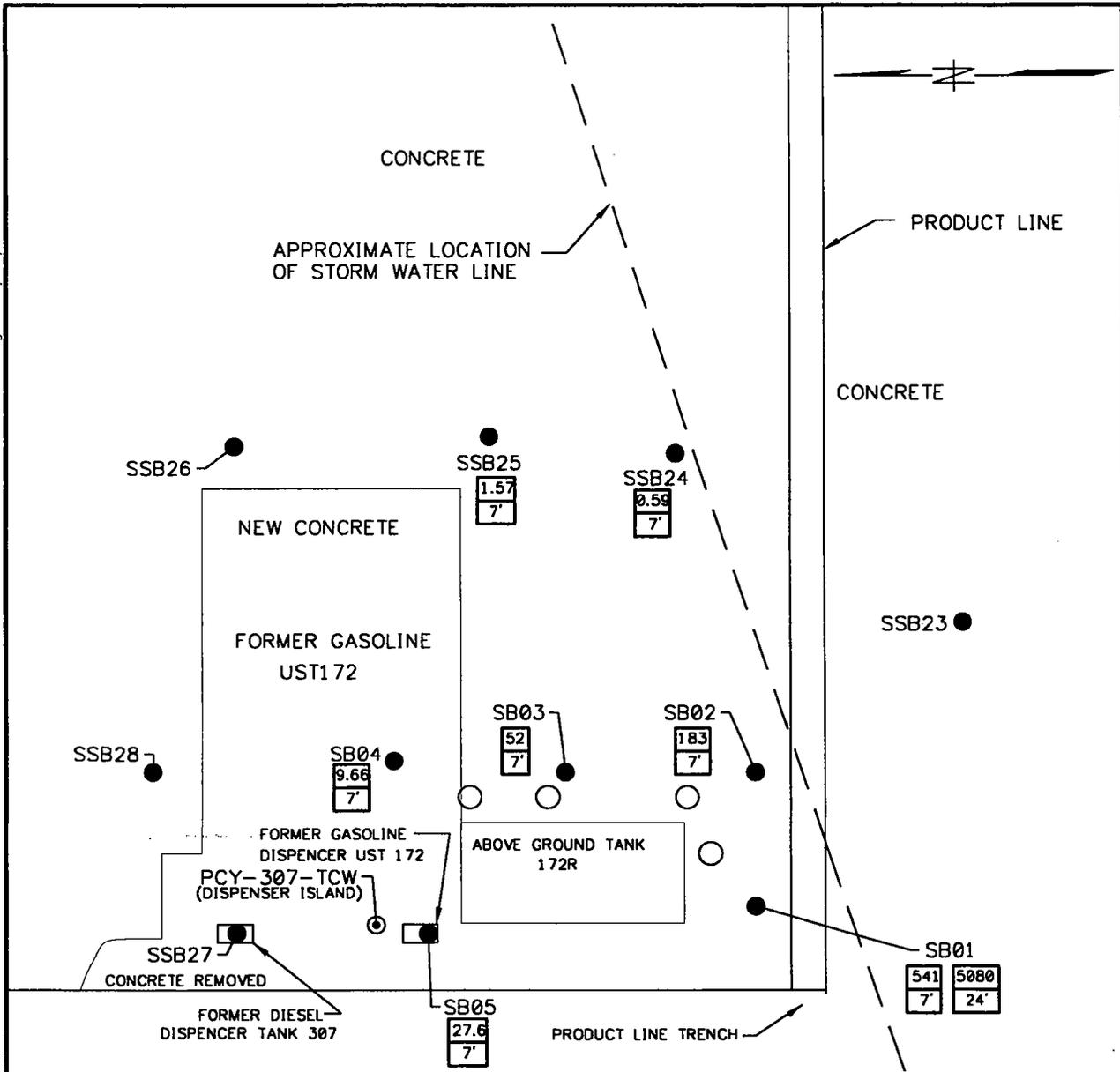
Laboratory analysis of groundwater samples collected from the site monitoring wells reported all parameters in the Gasoline and Kerosene Analytical Group were less than the laboratory detection limits. No free product was visually observed or detected during groundwater sampling. Figure 3-7 illustrates the areal distribution of petroleum constituents based on the October 6, 1998 sampling event. A summary of the groundwater results (Gasoline and Kerosene Analytical Group parameters) from the October 6, 1998 sampling event is presented in Table 3-4.

**TABLE 3-3**  
**SUMMARY OF FIELD SCREENING GROUNDWATER ANALYSIS**  
**Navy Coastal Systems Station**  
**Site 307 Product Line Release**  
**Panama City, Florida**  
**FDEP FACILITY No. 038518667**

<b>Soil Boring Location</b>	<b>Sample Date</b>	<b>Sample Depth (feet bls)</b>	<b>TPH-GRO (mg/L)</b>	<b>TPH-DRO (mg/L)</b>
SSB24	5-27-98	7	<0.50	0.59
SSB25	5-27-98	7	<0.50	1.57
SB01	5-28-98	7	<0.50	541
SB01	5-28-98	24	3.12	5080
SB02	5-28-98	7	<0.50	183
SB03	5-28-98	7	<0.50	52
SB04	5-28-98	7	<0.50	9.66
SB05	5-28-98	7	<0.50	27.6

bls = below land surface  
mg/L = milligrams per liter  
Practical Qualitative Limits

ACAD: 7766CM55.dwg 03/18/99 MF



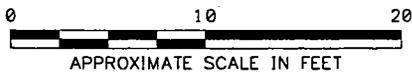
ALLIGATOR BAYOU

**LEGEND**

- ⊙ EXISTING MONITORING WELL
- SOIL BORING LOCATIONS
- BUMPER POST
- |    |
|----|
| 52 |
| 7' |

 TPH-DRO CONC. mg/L
- |    |
|----|
| 7' |
|----|

 SAMPLE DEPTH (FEET)



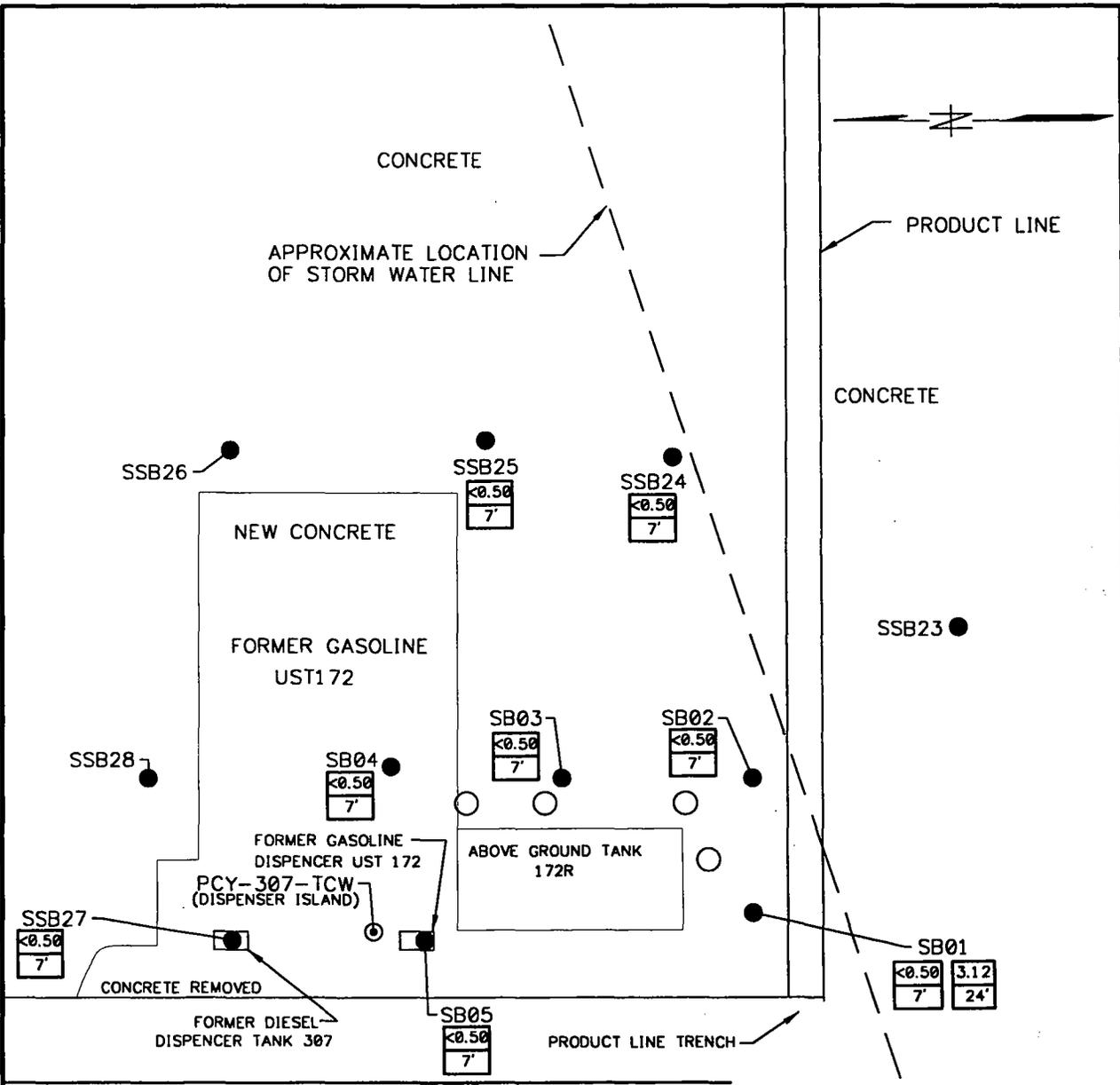
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KW	12/28/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**GROUNDWATER FIELD SCREENING  
CONCENTRATIONS TPH-DRO  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-5	REV. 0

ACAD:7766CM56.dwg 12/30/98 KW

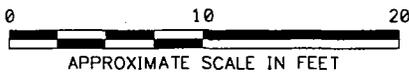


ALLIGATOR BAYOU

**LEGEND**

- ⊙ EXISTING MONITORING WELL
- SOIL BORING LOCATIONS
- BUMPER POST
- |      |
|------|
| 3.12 |
| 24'  |

 TPH-GRO CONC. mg/L  
SAMPLE DEPTH (FEET)



DRAWN BY KW	DATE 12/28/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	

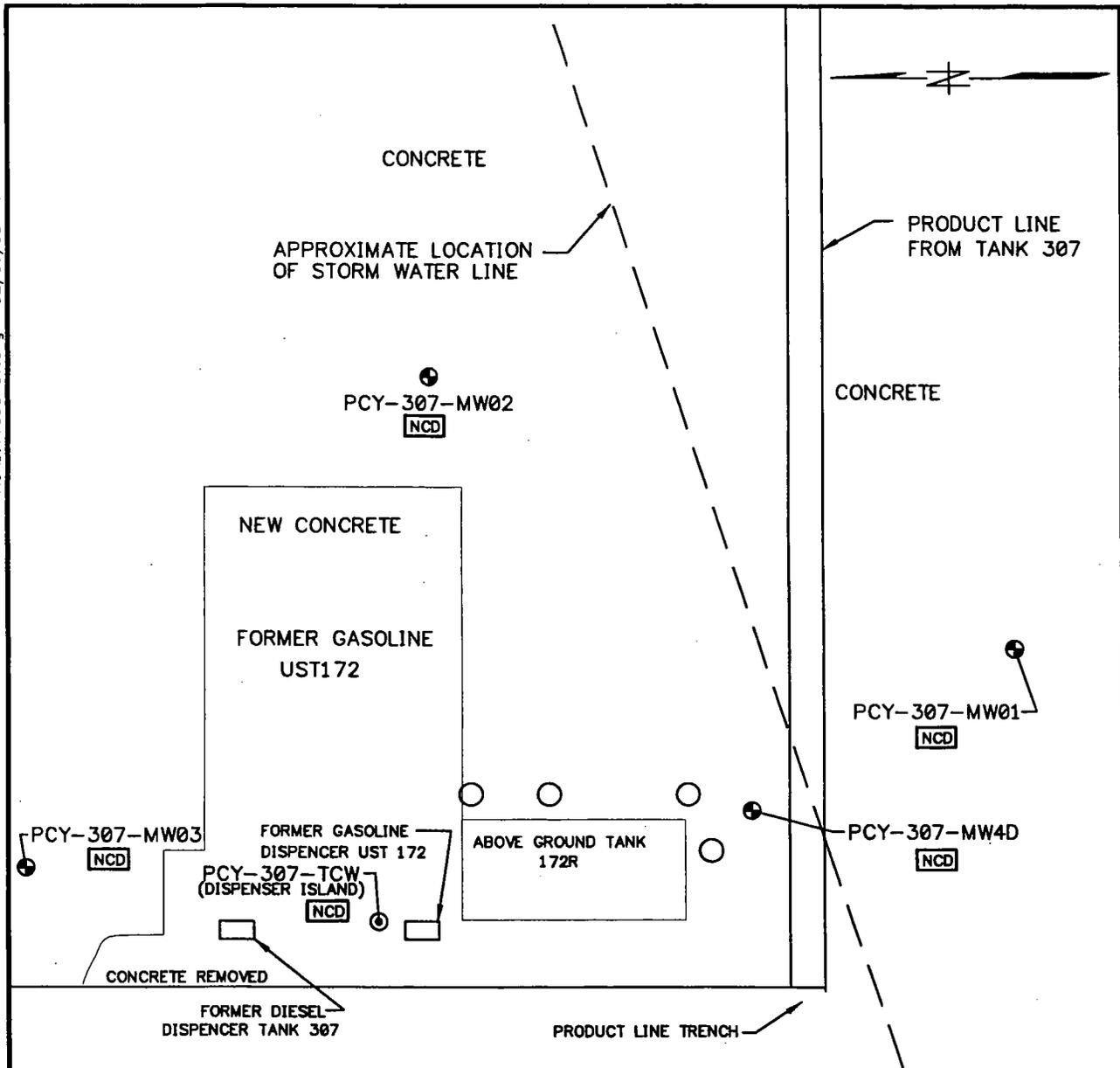


GROUNDWATER FIELD SCREENING  
CONCENTRATION THP-GRO MAY 1998  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-6	REV. 0

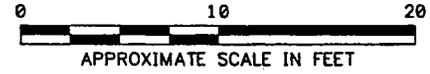
FORM CADD NO. SDIV\_AV.DWG - REV 0 - 1/20/98

ACAD:7766CM57.dwg 12/30/98 KW



**LEGEND**

- ⊙ EXISTING MONITORING WELL
- ⊕ MONITORING WELL PCY-307-MW01
- BUMPER POST
- NCD** NO CONSTITUENTS DETECTED (µg/L)



DRAWN BY KW	DATE 12/28/98
CHECKED BY	DATE
COST/SCHED-AREA	
SCALE AS NOTED	



**GASOLINE AND KEROSENE PARAMETER  
ANALYTICAL GROUP GROUNDWATER  
DISTRIBUTION MAP OCTOBER 1998  
SITE 307 PRODUCT LINE RELEASE  
COASTAL SYSTEM STATION  
PANAMA CITY, FLORIDA**

CONTRACT NO. 7766	
APPROVED BY	DATE
APPROVED BY	DATE
DRAWING NO. FIGURE 3-7	REV. 0

**TABLE 3-4  
SUMMARY OF GROUNDWATER QUALITY:  
SELECT PARAMETERS FOR GASOLINE AND KEROSENE ANALYTICAL GROUPS  
Site 307 Product Line Release  
Coastal Systems Station, Panama City, Florida  
FDEP ID No. 038518667**

Well ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethyl benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	DCE (µg/L)	EDB (µg/L)	TRPH (mg/L)	PHE NAN (µg/L)	FLU (µg/L)	NAP (µg/L)	Lead (mg/L)
PCY-307-MW01	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.0	<1.0	<1.0	<0.0030
PCY-307-MW02	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.0	<1.0	<1.0	<0.0030
PCY-307-MW03	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.0	<1.0	<1.0	<0.0030
PCY-307-MW04D	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.1	<1.1	<1.1	<0.0030
PCY-307-TCW (Former Dispenser)	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.1	<1.1	<1.1	<0.0030
Duplicate	10/06/98	<1.0	<1.0	<1.0	<3.0	<5.0	<1.0	<0.020	<0.50	<1.2	<1.2	<1.2	<0.0030
Equipment Blank	10/06/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.020	<0.50	<1.1	<1.1	<1.1	<0.0030
<b>FDEP GROUND WATER CLEANUP TARGET LEVELS</b>		<b>1</b>	<b>40</b>	<b>30</b>	<b>20</b>	<b>35</b>	<b>3</b>	<b>0.02</b>	<b>5</b>	<b>210</b>	<b>280</b>	<b>20</b>	<b>0.015</b>

NOTE:

MTBE methyl tert-butyl ether  
DCE 1,2-Dichloroethane  
EDB 1,2-Dibromoethane = ethylene dibromide  
TRPH total petroleum hydrocarbons (sample analyzed by Florida Pro Method)  
PHENAN phenanthrene  
FLU fluorene  
NAP naphthalene

## 4.0 DISCUSSION

The diesel fuel discovered in the concrete lined utility trench that contained the product line for UST 307R1, was attributed to a crack in the product line double-walled piping. At the time of the discovery, CSS personnel estimated 20 to 55 gallons of fuel and water had been contained in the trench and the fuel release had not entered Alligator Bayou. The section of product line where visual observation of the fuel release was identified is located within the concrete containment trench adjacent to the seawall on the west dock of Alligator Bayou. Subsequent tank and line tightness test confirmed the UST system failed to test tight in a section of product line within the concrete lined utility trench. With the discovery of a fuel release in Alligator Bayou, Tank 307R1 was emptied of its contents and a Tank Closure was performed. A No Further Action was proposed for Tank 307R1 from data collected during the closure assessment.

The removal of Tank 307R1 and the abandonment of the product line eliminates the potential for any future release of petroleum from this UST system. Visual observations, by CSS personnel during removal of the UST dispenser island in August 1997, identified a diesel release had occurred beneath the dispenser island. Laboratory analysis of groundwater and soil collected from beneath the dispenser island during the SA identified petroleum constituents **below FDEP cleanup criteria for both groundwater and soil.**

The concrete lined utility trench provides a physical barrier between the subsurface soils and the product piping. Near the seawall on Alligator Bayou, the concrete adjacent to trench was cored to a depth of 13 inches. This was the greatest depth the concrete core could be advanced during the SA. The concrete surface on the west dock is generally 8 to 10 inches thick. The top of the concrete utility trench is completed with metal plate lids and the bottom of the trench is completed above the water table approximately 2 feet bls. The concrete surface cap restricts the infiltration of groundwater at the site and minimizes the leaching of any petroleum constituents that may be in the soil.

Underlying the concrete at the site are fine-to-medium grained sand, the soil type for the surficial aquifer. Depth to water in the surficial aquifer was determined to be approximately 4 bls with the direction of groundwater flow toward the west. The total dissolved solids content in the surficial aquifer in the area of CSS qualifies the aquifer as a G-II aquifer (Chapter 62-3.403 F.A.C.). Alligator Bayou immediately borders the concrete lined utility trench to the west and prohibits any subsurface utilities from potentially intersecting the water table and eliminates a preferential

pathway for the migration of dissolved hydrocarbons. Subsurface water and electrical lines are contained within the product line concrete trench.

TtNUS conducted a soil hydrocarbon vapor survey in May 1998. Vapor readings collected from soil samples at 4 to 5 feet bls and within the capillary fringe (wet zone), exhibited the highest hydrocarbon vapor concentrations. A vadose zone soil sample collected at 2 feet bls from beneath the dispenser island (SSB27) reported the only hydrocarbon vapor concentration in vadose zone soils.

Laboratory analysis of soil samples collected during the SA, reported TRPH as the only parameter above FDEP SCTLs in samples collected from the wet zone. Soil samples collected for laboratory analysis from 1 to 2 feet bls (vadose zone samples) from beneath the former dispenser island and near the concrete utility trench, reported **TRPH below laboratory detection limits.**

Groundwater monitoring wells (PCY-307-MW01 through PCY-307-MW03) were installed to evaluate the horizontal extent of petroleum constituents in the area of the failed product line for Tank 307R1. These wells were used to evaluate the horizontal extent of petroleum constituents. The Tank Closure Assessment well installed for the Tank Closure of Tank 172 (PCY-307-TCW), was used to monitor groundwater quality at the source of the release (source well). Existing structures (above ground tank 172R1, seawall, Alligator Bayou) limited drill rig access in the study area. Monitoring wells PCY-307-TCW and PCY-307-M03 are located adjacent and within 5 feet of the product line trench near Alligator Bayou. Well PCY-307-MW01 is located approximately 20 feet from the product line trench at Alligator Bayou and adjacent to the product line (concrete lined utility trench) leading from Tank 307 down to the west dock. The vertical extent of petroleum hydrocarbons in the groundwater was assessed by groundwater quality collected from vertical delineation well (PCY-307-MW4D), installed near the source of the release.

Laboratory analysis of groundwater samples collected during the SA, indicate dissolved hydrocarbon concentrations below the FDEP Target Cleanup Levels for parameters in the Gasoline and Kerosene Analytical Group as identified in Chapter 62-770.600(4)(a). **All parameters were reported below the laboratory detection limits from the groundwater samples collected from the site monitoring wells on October 6, 1998.**

Alligator Bayou is the nearest surface water body bordering the site on the west. A storm water drain, collecting surface water runoff from a parking lot northeast of the site, borders the site to

the south. The outfall for the storm water drain is located within the seawall for Alligator Bayou. During July 1997, a fuel release was observed by CSS personnel to have entered Alligator Bayou from the storm water outfall. An interim remedial action conducted by Bechtel Environmental Inc, identified a fuel entering the storm drain from a storm water junction box located upgradient of the site (junction box located near southwest end of parking lot). Since the outfall for the storm drain is at the site locality and visual observations of a fuel release entering the Bayou have been documented, no surface water samples were collected for Gasoline and Kerosene analytical group parameters. A boom has been placed around the outfall to contain any fuel discharge from the storm water drain outfall.

No well fields and surface water intakes for supplying drinking water to the local area, are located within a 0.50-mile radius of the site. No domestic water wells were identified within 0.25-mile of the site. Soil and groundwater quality data collected during the SA, indicate freshwater aquifers utilized in the study area are not likely to be threatened from the release identified at the site. Data collected from the SA indicates the release was contained within the concrete lined utility trench. There is no evidence to suggest the failed product line has impacted Alligator Bayou.

## 5.0 CONCLUSIONS AND RECOMMENDATION

The results of the SA for Site 307 product line release suggest the following:

- Groundwater in the surficial aquifer at the site has a G-II classification.
- Private potable water wells were not identified within 0.25-mile radius of the site. Municipal well fields were not identified within a 0.50-mile radius of the site.
- Laboratory analysis of soils collected from vadose zone samples identified Chemicals of Concern at levels below Select Soil Cleanup Target Levels (SCTLs) for Direct Exposure I.
- Free product was not encountered at the site.
- Laboratory analysis reported dissolved hydrocarbon to be less than laboratory detection limits and at levels below the FDEP Groundwater Target Cleanup Levels.
- TRPH concentrations detected in soil samples collected during the field screening investigation from the capillary fringe, could not be confirmed by laboratory analysis of soil samples collected from 1 to 2 feet bls. Laboratory analysis of groundwater samples collected at the site reported TRPH at non detect levels.

The following site conditions were identified from the SA:

- Free product does not exist in wells, boreholes, open drainage ditches open excavations or trenches, or on near by surface water. Free product is not present in sewer lines, subsurface conduits, or vaults, and no other fire or explosive hazard exists as a result of the release of petroleum.
- There is no evidence to indicate that the fuel films appearing on the surface water (at the storm water outfall) on Alligator Bayou are the result of the product line failure. The product line at the release location was contained within a concrete-lined utility trench.
- The suspected source for the fuel is former fuel distribution system associated with AOC2. CSS personnel observed fuel entering a storm water junction box and storm water drain pipe which is connected to the outfall on Alligator Bayou.

- No excessively contaminated soil or contaminated soil was encountered in vadose zone soils, as supported by laboratory analysis of soil samples collected from beneath the former dispenser island and near the concrete trench for the product line concrete. The highest vapor concentrations were detected in soils at 4 to 5 feet bls within the capillary fringe. Vadose zone soil samples identified petroleum products' chemicals of concern at levels less than the lower of the Direct Exposure I SCTLs.
- All the petroleum products' chemicals of concern analyzed for in groundwater samples are less than the applicable cleanup target levels specified Chapter 62-770, Table VI, F.A.C.

Based on the findings from this investigation, it is proposed the site be considered for **No Further Action without conditions or restrictions.**

## 6.0 REFERENCES

- ABB Environmental Services, Inc., 1995, RCRA Facility Investigation, Coastal Systems Station  
Panama City, Florida.
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Naval Coastal Systems Center, Panama City, Florida.
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- U.S. Geological Survey. Panama City, FLA., Quadrangle 1982. 7.5 minute series, Topographic  
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- U.S. Geological Survey. Panama City Beach, FLA., Quadrangle 1982. 7.5 minute series,  
Topographic Quadrangle Maps of Florida: scale 1:24,000.

**APPENDIX A**

**DISCHARGE REPORTING FORM**



Florida Department of Environmental Regulation... Tallahassee, Florida 32399-2400

Discharge Reporting Form
Effective Date: December 10, 1990
DER Approval No.

Discharge Reporting Form

Use this form to notify the Department of Environmental Regulation of:

- 1. Results of tank tightness testing that exceed allowable tolerances within ten days of receipt of test result.
2. Petroleum discharges exceeding 25 gallons on pervious surfaces as described in Section 17-761.460 F.A.C. within one working day of discovery.
3. Hazardous substance (CERCLA regulated), discharges exceeding applicable reportable quantities established in 17-761.460(2) F.A.C., within one working day of the discovery.
4. Within one working day of discovery of suspected releases confirmed by: (a) released regulated substances or pollutants discovered in the surrounding area. (b) unusual and unexplained storage system operating conditions. (c) monitoring results from a leak detection method or from a tank closure assessment that indicate a release may have occurred. or (d) manual tank gauging results for tanks of 550 gallons or less, exceeding ten gallons per weekly test or five gallons averaged over four consecutive weekly tests.

Mail to the DER District Office in your area listed on the reverse side of this form

PLEASE PRINT OR TYPE
Complete all applicable blanks

1. DER Facility ID Number: 038518667 2. Tank Number: 307R1 3. Date: 07/18/97
4. Facility Name: COASTAL SYSTEMS STATION
Facility Owner or Operator: U. S. NAVY (CODE CP2S)
Facility Address: 6703 W. HWY 98, PANAMA CITY, FL 32407-7001
Phone Number: (850) 235-5859 County: BAY
Mailing Address: SAME AS ABOVE

5. Date of receipt of test results or discovery: 7/17/97 month/day/year

- 6. Method of initial discovery. (circle one only)
A. Liquid detector (automatic or manual)
B. Vapor detector (automatic or manual)
C. Tightness test (underground tanks only)
D. Emptying and Inspection.
E. Inventory control.
(F) Vapor or visible signs of a discharge in the vicinity.
G. Closure: (explain)
H. Other:

7. Estimated number of gallons discharged: 20-55 GALLONS

8. What part of storage system has leaked? (circle all that apply) A. Dispenser (B) Pipe (C) Fitting D. Tank E. Unknown

- 9. Type of regulated substance discharged. (circle one)
A. leaded gasoline
B. unleaded gasoline
C. gasohol
(D) vehicular diesel
F. aviation gas
G. jet fuel
L. used/waste oil
M. diesel
Q. new/lube oil
V. hazardous substance includes pesticides, ammonia, chlorine and derivatives (write in name of Chemical Abstract Service CAS number)
Z. other (write in name)

- 10. Cause of leak. (circle all that apply)
(A) Unknown
B. Split
C. Loose connection
D. Corrosion
E. Puncture
F. Installation failure
G. Spill
H. Overfill
I. Other (specify)

- 11. Type of financial responsibility. (circle one)
A. Third party insurance provided by the state insurance contractor
B. Self-insurance pursuant to Chapter 17-769.500 F.A.C.
(C) Not applicable
D. None

12. To the best of my knowledge and belief all information submitted on this form is true, accurate, and complete.

J.M. CROSS, DIRECTOR, SAFETY & ENVIRONMENTAL OFFICE
Printed Name of Owner, Operator or Authorized Representative
Signature of Owner, Operator or Authorized Representative

**APPENDIX B**

**SAR SUMMARY SHEET**

**SITE ASSESSMENT REPORT SUMMARY SHEET**

Facility Name: Coastal Systems Station, Site 307 Product Line Release Reimbursement Site:

Location: Panama City, Florida State Contract Site:

EDI #: \_\_\_\_\_ FAC I.D.# 038518667 Other: Non-Prog.

Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of Spill: Diesel UST Date of Spill: Unknown

(2) Type of Product:	Gasoline Group	Gallons Lost	Kerosene Group	Gallons Lost
<input type="checkbox"/> Leaded	_____	_____	<input type="checkbox"/> Kerosene	_____
<input type="checkbox"/> Unleaded Regular	_____	_____	<input checked="" type="checkbox"/> Diesel	<u>≈ 20 to 55 gallons</u>
<input type="checkbox"/> Unleaded Premium	_____	_____	<input type="checkbox"/> JP-4 Jet Fuel	_____
<input type="checkbox"/> Gasohol	_____	_____	<input type="checkbox"/> Jet A Fuel	_____
<input type="checkbox"/> Undetermined	_____	_____	<input type="checkbox"/> Unknown	_____

(3) Description of IRA: UST system taken off line and tank removed.  Free product Removal: Fuel in utility trench removed by CSS personnel. (gals) -

Tightness test conducted on UST system prior to removal.  Soil Removal: \_\_\_\_\_ (cubic yds)  
 Soil Incineration: \_\_\_\_\_ (cubic yds)

(4) Free Product still present (yes/no) No Maximum apparent product thickness: N/A (feet)

(5) Maximum Groundwater contamination levels (ppb):  
 Total VOA: ND benzene: ND EDB: ND  
 lead: ND MTBE: ND TPH, NAPs: ND

(6) Brief lithologic description: Light gray sand, fine to medium grained to approximately 30 feet bls. No significant lithologic variations across site.

(7) Areal and vertical extent of soils contamination defined (yes/no) TRPH in wet soils at capillary fringe.  
A soil from beneath dispenser island registered an OVA reading of 200 ppm at 2 feet bls. Soil laboratory analysis indicate petroleum concentrations at 1 to 2 feet bls are below FDEP SCTLs.

Highest current soil concentration (OVA):	<u>200 (beneath former dispenser island)</u>	(ppm) Gasoline and Kerosene Analytica Paramters: (confirmation sampling from 1 to 2 feet report PAH consituents below FDEP SCTLs)	PAH constituents (ppb) <u>&lt;11.3</u>
---	--	---	--

(8) Lower aquifer contaminated? (yes/no) \_\_\_\_\_  
 Depth of vertical contamination: No dissolved Hydrocarbons were detected in groundwater laboratory sample analysis..  
 No.dssolved hydrocarbons were detected in groundwater samples from water table Mws (screened: 3 to 13 bls).  
 No dissolved hydrocarbons were detected in the groundwater sample from the vertical delineation well (screened:25 to 30 ft bls).

(9) Date of last complete round of groundwater sampling: 10/06/98 Date of last soil sampling: 2/4/99

(10) QAPP approved? (yes/no) Date: 8/24/98

(11) Direction (e.g. NNW) of surficial groundwater flow: west (Fig. 3-3 Section 3)

(12) Average depth to groundwater: 4 to 4.5 (ft)

(13) Observed range of seasonal groundwater fluctuations: @ .5 (ft) (based on water level data collected during the SAR investigation)

(14) Estimated rate of groundwater flow: NA (ft/day)

(15) Hydraulic gradient across site: NA (ft/ft)

(16) Aquifer characteristics:	Values	Units	Method
Hydraulic conductivity	<u>NA</u>	<u>ft/day</u>	<u>Site proposed for NFA status</u>
Storage coefficient	<u>NA</u>	<u>ft/ft</u>	<u>Site proposed for NFA status</u>
Aquifer thickness	<u>NA</u>	<u>ft</u>	<u>Site proposed for NFA status</u>
Effective soil porosity	<u>NA</u>	<u>%</u>	<u>Site proposed for NFA status</u>
Transmissivity	<u>NA</u>	<u>gal/day/ft</u>	<u>Site proposed for NFA status</u>

(17) Other remarks: The suspected source for a fuel release observed in Alligator Bayou is AOC2 located upgradient of the site. Other potential source areas include SWMU1 and Site 333.

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**APPENDIX C**

**CSS PANAMA CITY SUMMARY REPORT UST SYSTEM TESTING  
AT TANK 307R1  
(FEBRUARY 1998)**

425 - 00005

# Bechtel

Oak Ridge Corporate Center  
151 Lafayette Drive  
P.O. Box 350  
Oak Ridge, Tennessee 37831-0350  
Telephone: (423) 220-2000

FEB 17 1998

*Per telcon w/Conk  
2/18/98 @ 1710. h  
to add wording abt  
slam system &  
give ball park estis  
for replacing piping  
slam system components  
repair of tank. @*

Commanding Officer  
Department of the Navy  
Naval Facilities Engineering Command  
Attention: Mr. Nick Ugolini, 1843  
2155 Eagle Drive, P.O. Box 190010  
North Charleston, SC 29419-9010

SUBJECT: Bechtel Job No. 22567  
Department of the Navy Contract No. N62467-93-D-0936  
DO 0086, EMERGENCY RESPONSE AT WESTDOCK, TANK 307  
Site/Subject Code: 425/1250

Dear Mr. Ugolini:

Enclosed are copies of the test results and certifications for the UST No. 307 and associated piping system at CSS Panama City. Also included is a narrative summary report which describes the tests that were performed and the logic upon which the series of tests were based.

In summary, the inner tank tested tight, but the outer shell failed the tests, even after uncovering typical possible leak points on the top of the tank. Some leaks were located on the tank outer shell at fittings and connection points, and repaired, but it was not possible to locate and repair the remaining leak(s) in the tank outer shell.

The product pipeline passed the test in the portion that is buried under ground or below concrete; the sections that are visible in concrete lined trenches did not pass. None of the outer wall piping passed the tests. The only apparent (visible) release to the environment was in the final section of pipe located in the concrete lined trench along the edge of the pier, just before the dispenser. Since the dispenser itself, and a portion of the final section of piping had been removed by others, it was not possible to determine whether there had been additional leaks from fittings beneath the dispenser before it was removed from service.

Please contact either Tom Conrad at (423) 220-2205 or myself at (423) 220-2167 if you have any questions concerning this report.

Sincerely,

*Karen S. Atchley*  
Karen S. Atchley  
Project Manager

TMC:dcm:LR:335  
Enclosure: As stated

cc: Mike Cross (3), CSS Panama City  
Van Smith (1), CSS Panama City



Bechtel Environmental, Inc.

Post-It® Fax Note	7671	Date	2/18/98	# of pages	▶
To	MIKE CROSS	From	K. Atchley		
Co./Dept.		Co.			
Phone #		Phone	(423) 220-2167		
Fax #	(904) 239-4774	Fax #			

CSS Panama City  
Summary Report  
UST System Testing at Tank 307R1  
February 17, 1998

### 1.0 Introduction

This report describes the tests that were performed under DO 86 at Coastal Systems Station Panama City, Florida, to determine the physical integrity of the Underground Storage Tank (UST) system and associated product lines at Tank 307R1

### 2.0 Description of UST System

The UST 307R1 system consists of a 6,000 gallon Owens-Corning double-wall fiberglass UST, 8' - 1 1/4" in diameter, buried under an earthen mound with two feet of cover, such that the bottom of the tank is about eight feet below the elevation of the surrounding grade (the grade beyond the boundary of the mound), and a double-walled fiberglass pipe fuel delivery system. The pumping system consists of an above-ground suction pump located on a concrete pad in a fenced compound adjacent to the mounded area. The compound includes the pump controls and the leak detection alarm system. The fuel dispenser (now removed) was located remotely from the tank, close to the edge of the concrete pier (West Dock).

The double-wall pipe system is divided into four sections, from the UST to the dispenser. Each section is configured with a separate leak detection zone. The gate valves that are used for isolation valves between sections of the pipeline are located either in shallow valve pits, above ground, or within concrete-lined utility trenches.

Table 1

Section Number	Leak Detection Zone as Labeled on Panel in Compound	Description of Pipe Section (Shown partially on NAVFAC Dwg. 5188518)
1	PD 1	2 1/2" double walled fiberglass reinforced pipe (FRP); runs from sectionalizing (sect.) valve on top of UST to the above-ground galvanized steel pipe and sect. valve, at the pump station.
2	PD 2	Above ground 2" galvanized steel pipe from the pump station transitioning to FRP nearby and running below ground until it comes up into a shallow filter pad, transitioning again from the double walled FRP to 2" galvanized steel on the filter pad.
3	TPD 1 *	2" double walled FRP; runs about 15 ft underground from the dispenser location near the edge of the pier, to a sect. valve in the trench along the edge of the pier, where it connects to TPD 2. This line was not tested because it was previously reported to have leaked (Mike Clayton).
4	TPD 2 *	2" double walled FRP; runs from the sect. valve at TPD 1 in the utility trench for a distance of about 30 ft along the edge of the pier to another sect. valve in the same trench.

CSS Panama City  
Summary Report  
UST System Testing at Tank 307R1  
February 17, 1998

5	TPD 3 *	2" double walled FRP; runs from a sect. valve at TPD 2 about 2 ft along the edge of the pier to a tee (opposite side of tee also has sect. valve), turning shoreward into a covered concrete lined trench which extends about 60 ft across the pier, then through the wall at the end of the trench underground about 2 ft where it comes up to connect to 2" galvanized steel transition on the filter pad.
---	---------	--

\* Note: These three sections are referred to in this report as TPD1, TPD2, and TPD3 for the purpose of clarity, to indicate that they are in a trench and to differentiate them from PD1 and PD2. The actual panel labels in the field for these sections are PD 1, PD 2, and PD 3, respectively. In other words the panel has two PD 1's and two PD 2's.

### 3.0 Problem Statement

#### 3.1 Scope of Work

There was a dual objective to the testing that was performed. The first objective was to satisfy the requirements of the Florida Department of Environmental Protection for an inspection of the structural integrity of the UST system as part of an Assessment Report, and the second objective was to determine whether the system can be retained in service for future use, meeting all State and Federal compliance requirements.

To meet these objectives, the plan was to perform a precision tightness test on UST 307R1 and hydrostatic tightness tests (inner walls) on associated product delivery lines from the UST to the dispenser location at the edge of the West Dock pier; also to perform tests of the interstitial space on the double walled UST and the double walled pipe, to determine the physical integrity of the secondary containment outer walls.

#### 3.2 Description of Work Approach

The work was divided into two parts, the precision test of the inner shell of the UST performed by Tanknology-NDE (report attached) and the hydrostatic piping tests and secondary containment tests, performed by Southern Petroleum Systems using the Petrotite pipe testing method for the product piping, nitrogen gas for the secondary wall of the piping, and vacuum for the UST outer shell.

The precision test was to determine the structural integrity of the inner shell of the 6,000 gal UST, to determine whether it might have been the source of a release of fuel into the environment. The Hydrostatic tests of the connected fuel delivery piping system from the tank to the dispenser were similarly to determine the structural integrity of the primary piping, to determine if it might have been the source of a release of fuel into the environment. The tests of the outer wall of the tank and the piping system were to determine if the entire UST system meets the requirements for secondary containment, such that the system can be retained in service, or economically repaired and retained in service, meeting Federal and State compliance requirements.

CSS Panama City  
Summary Report  
UST System Testing at Tank 307R1  
February 17, 1998

#### 4.0 Results of Work Performed

##### 4.1 Precision Tank Test

The tank was filled with diesel fuel by the base fuel handling department. The precision test was performed using the VacuTect tank testing system. The tank tested tight (certificate attached), indicating that there is good structural integrity of the inner shell of the tank, and that it is unlikely that there have been any releases of fuel from shell of the tank.

##### 4.2 Tank Secondary Containment Tests

The two concrete pads and 2 ft of soil were removed from the top of the UST, excavating by hand. This was done to provide visible access to all fittings and connections along the top of the UST, so that openings and connections (sensor wiring and vent stack) could be temporarily isolated from the secondary shell. The part of the tank between the two manways was not uncovered, because a concrete grade beam, not shown on the drawings, was discovered to lie across the center of the tank, presumably for the purpose of providing additional ballast. The use of such grade beams is not recommended for fiberglass UST installations, due to point-loading forces that can distort and crack the shell of the tank. The decision was made to not disturb this grade beam for the initial test periods, for fear of causing a crack to occur by releasing the weight of the grade beam from the tank.

The interstitial space around the tank was tested with vacuum to test the integrity of the outer shell. The first test failed, and a leak was located around a 4 in PVC fitting, and repaired. The tank was retested and failed again, but no leaks could be found along the exposed sections of the tank.

A second test was performed following the repair, and the tank failed again. After consulting with the base environmental personnel (Mike Cross, Mike Clayton, and Arturo McDonald) it was decided to remove the grade beam from the top of the tank and inspect the tank for vacuum leaks. The concrete beam was removed from the top of the tank, and soil was removed by hand. The top of the tank was clean and inspected for cracks. Nothing was found to indicate a breach in the outer shell at this location on top of the tank.

A third vacuum test was performed, and the tank again failed; the top of the tank was again thoroughly inspected during this test to look for possible leak locations, but nothing was found. The test was terminated, and the conclusion was made that there is a leak in the outer shell of the tank that is not related to any of the openings, fittings, or joints that are visible on the top of the tank. Repair of this tank would involve complete excavation to determine the cause(s) of the leaks, and to determine if repairs are feasible.

##### 4.3 Precision Pipeline Tests

The line must be full of fuel to perform the hydrostatic tests; the line was found to be nearly full, and was topped-off with fuel provided by the base fuel department. The PetroTite system was used to apply 40 psig pressure to the inner wall of the pipe system in the steps described below.

425-00003

CSS Panama City  
Summary Report  
UST System Testing at Tank 307R1  
February 17, 1998

- Test #1 - The first test was performed by applying pressure at the UST end of the pipe system against the entire line as far as the end of TPD 2. The sect. valve between TPD 2 and TPD 3 was closed for this test. Pipe section TPD 3 is the 15 ft section (approx.) from the dispenser to the sect. valve at TPD 2, which was not included in the test because it was previously determined by others to have leaked (verbal from Mike Clayton). This hydrostatic test failed.
- Test #2 - The second test was performed after closing the sect. valve between TPD 2 and TPD 3. This test passed, indicating that pipe sections PD 1, PD 2, and TPD 3 are all tight, and that it is unlikely that any leaks have occurred from this part of the system. This indicates there may be a leak in the inner pipe in section TPD 2.

#### 4.4 Pipeline Secondary Containment Tests

Dry nitrogen at 3 psig was used to pressurize the outer wall of the double walled FRP pipe at the standard test ports. All sections of pipe failed to hold pressure as described below. During the testing period there was no release of fuel observed from any of the outer walls of the exposed FRP sections, including section TPD 2, for which the inner pipe failed. The entire length of TPD 2 is visible within the concrete lined trenches. None of the buried sections of pipe failed the inner wall test, but all failed the outer wall test.

- Test #1 - Section PD 1 from UST to pump station failed to hold pressure.
- Test #2 - Section PD 2 from pump station to filter pad failed to hold pressure.
- Test #3 - Section TPD 3 from filter pad across pier to valve in utility trench on edge of pier failed to hold pressure.
- Test #4 - Section TPD 2 in utility trench on edge of pier failed to hold pressure.

#### 5.0 Certifications and Reports

The certifications and reports from FDEP licensed specialty subcontractors are listed below and are included with this summary report as attachments. A field sketch showing the schematic arrangement of the UST and lines that were tested is also included as an attachment.

##### Attachments:

- (1) Underground Storage Tank System Test Report; Southern Petroleum Systems; January 12, 1998
- (2) Certificate of Underground Storage Tank System Testing; Tanknology-NDE; January 8, 1998
- (3) Field Sketch of UST 307R1 and associated piping system.

485-00033



2016 STANHOME WAY, ORLANDO, FLORIDA 32804 PHONE 407 481-9755 FAX 407 481-9722

JACKSONVILLE 904 384-1000 MIAMI 305 558-0440 TAMPA 813 620-3300

### Underground Storage Tank System Test Report

Date of report: January 12, 1998

Location: US Navy Coastal Systems Station, Panama City, Florida

Technician: Scott Roberts ID of Tank System: UST 307

Tank Precision Tightness Test: by others (Tanknology-NDE)

Tank Outer Shell Test:

Date of Test: January 7, 8, 9, 1998

Test (1) applied 22" Hg vacuum; would not hold vacuum - failed

Test (2) repaired leak at top of tank and retested with 20" Hg vacuum - failed

Test (3) removed grade beam from above tank, to look for an obvious leak in outer shell; cleaned top of tank and checked fittings for tightness; applied 22" Hg vacuum - failed

Line Tests:

Date of Test: January 7, 8, 9, 1998

Internal Pipe Tests (Petrotite):

Test (1) product line from tank to isolation valve at end of section PD 2 along edge of pier failed Petrotite test.

Test (2) product line from tank to isolation valve at end of section PD 3 in concrete lined trench (with covers) passed Petrotite test.

Secondary Containment Pipe Tests:

Test (1) applied 3 psig nitrogen to interstitial space from UST to suction pump; lost pressure - failed (buried pipe labeled PD 1 on alarm panel).

Test (2) applied 3 psig nitrogen to interstitial space from pump to filter; lost pressure - failed (buried pipe labeled PD 2 on alarm panel).

Test (3) applied 3 psig nitrogen to interstitial space of pipe in concrete trench section PD 3, the pipe section from filter to edge of pier; lost pressure - failed.

Test (4) applied 3 psig nitrogen to interstitial space of pipe in concrete trench section PD 2, the pipe section in trench along edge of pier; lost pressure - failed.

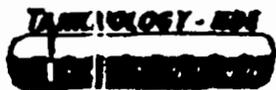
Test (5) last section of line labeled PD 1 at edge of pier showed visible leak - failed.

Signed: 

Date: 2/10/98

SERVING THE PETROLEUM INDUSTRY SINCE 1953

CERTIFICATE OF UNDERGROUND STORAGE TANK SYSTEM TESTING



TANKNOLOGY-NDE  
5900 SHOAL CREEK, BUILDING 200  
AUSTIN, TEXAS 78757  
(512) 451-6334  
FAX (512) 459-1459

425 - 0000

TEST RESULT SITE SUMMARY REPORT

TEST TYPE: VacuTest PURPOSE: REQUEST

TEST DATE: 01/08/98 WORK ORDER NUMBER: 9106790

CLIENT: JPS TREADWELL, INC. SITE: COASTAL SYSTEMS STATION  
180 SOUTH EDGEWOOD AVE. HWY 98 (NAVAL BASE)  
JACKSONVILLE, FL 32205 PANAMA CITY, FL 32401

ATTN: TOM FRANKLIN

The following test(s) were conducted at the site above in accordance with all applicable portions of Federal, NFPA and local regulations

Tank Tests

1	DIESEL	6,000	97.00	PASS	0.000	PASS
---	--------	-------	-------	------	-------	------

Line and Leak Detector Tests

1	DIESEL					
---	--------	--	--	--	--	--

TANKNOLOGY-NDE appreciates the opportunity to serve you, and looks forward to working with you in the future. Please call any time, day or night, when you need us.

TANKNOLOGY-NDE Representative:  
MARK LINDSEY

Test conducted by:  
EDDIE KETTLES

*Mark Lindsey*

Reviewed:

Technician Certification Number:

Printed 02/11/98 13:34 KOHLMeyer

**TANKNOLOGY-NDE**

425-00095  
 WORK ORDER NUMBER 9106790  
 SITE COASTAL SYSTEMS STATION

TEST DATE: 01/08/98  
 CLIENT: OZE TREADWELL, INC.

Tank ID: 1	Material: DW FIBER-G	Bottom to top #8 in inches: 113.0
Product: DIESEL	Tank manifolded:	Bottom to grade #8 in inches: 116.0
Capacity in gallons: 6,000	Vent manifolded:	Fill pipe length in inches: 16.0
Diameter in inches: 97.00	Vapor recovery manifolded:	Fill pipe diameter in inches: 4.0
Length in inches: 190	Impact Valves Operational: X	Stage I vapor recovery:
Tank age (years):	Overfill protection:	Stage II vapor recovery:
Fuel pump rating:	Overfill protection:	Installed:
COMMENTS CP installed on: / /		

	Start (in)	End (in)
Dipped Wire Level:	0.00	0.00
Dipped Product Level:	83.00	83.00
Probe Wire Level:	0.000	0.000

Ingress Detected: Water # Bubble # Unseen #  
 Test time: 12:49-14:54  
 VacuTect Test Type: single tank  
 VacuTect Probe Entry Point: #111  
 Pressure Set Point: 0.93  
 Tank water level in inches: 0.00  
 Water table depth in inches: 67.00  
 Determined by (method): MORTA WELL  
 Result: PASS

COMMENTS  
 TANK IS TIGHT.

Make:	Model:	S/N:
Open time in sec:	Holding psi:	Resiliency cc:
Test leak rate ml/min:	Metering psi:	Carb. leak in gph:
Results:		

COMMENTS  
 No LD.

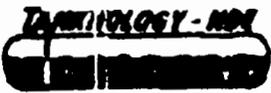
Material: DW FIBER-G

Diameter (in):  
 Length (ft):  
 Test psi:  
 Bleedback cc:  
 Test time (min):  
 Test 1: Start time:  
 Finish psi:  
 Vol change cc:  
 Test 2: Start time:  
 Finish psi:  
 Vol change cc:  
 Test 3: Start time:  
 Finish psi:  
 Vol change cc:  
 Final gph:  
 Result:

Pump type: BOOZEMAN  
 Pump make: UNIDPOINT

COMMENTS  
 NO PRODUCT LINE TESTED. ALREADY HAD ANOTHER COMPANY TEST IT.

8900 SHOAL CREEK BUILDING 200, AUSTIN, TEXAS 78757 (512) 451-4334 Printed 02/11/98 13:34



8900 SHOAL CREEK, BUILDING 200  
AUSTIN, TEXAS 78757  
(512) 451-8334  
FAX (512) 458-1459

425 - 0000

TEST DATE: 01/08/98  
CLIENT: SPS TREADWELL, INC.

WORK ORDER NUMBER: 9106790  
SITE: COASTAL SYSTEMS STATION

**COMMENTS**

TANK TESTED TIGHT.

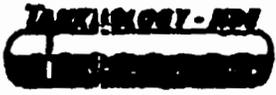
**PARTS REPLACED**

[REDACTED]	
[REDACTED]	[REDACTED]

**HELIUM PINPOINT TEST RESULTS (IF APPLICABLE)**

[REDACTED]	
[REDACTED]	[REDACTED]

[REDACTED]	
[REDACTED]	[REDACTED]

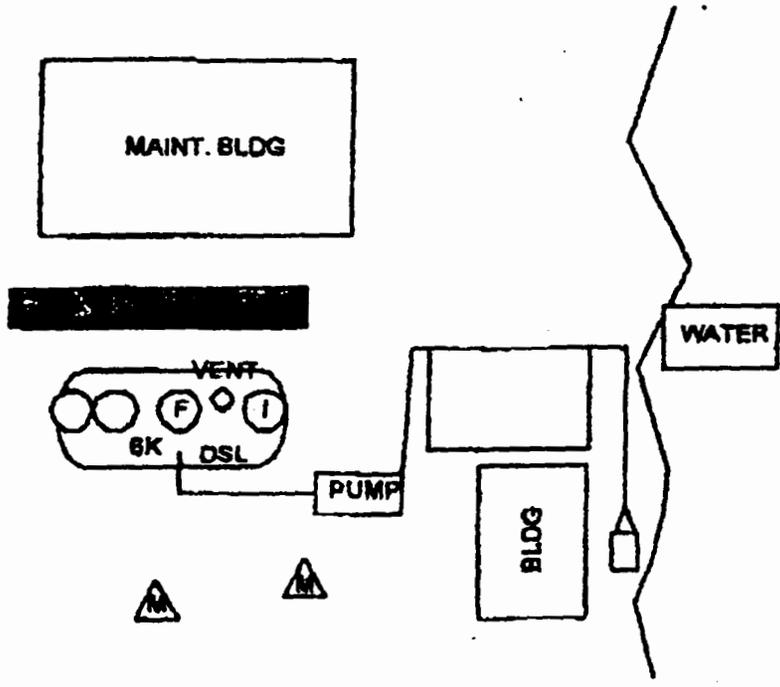


TANKNOLOGY-NDE  
8900 SHOAL CREEK, BUILDING 200  
AUSTIN, TEXAS 78757  
(512) 451-6334  
FAX (512) 459-1459

425 - 00003

TEST DATE: 01/08/98  
CLIENT: SPS TREADWELL, INC.

WORK ORDER NUMBER: 9106790  
SITE: COASTAL SYSTEMS STATION



Printed 02/11/98 13:34 KOHLMAYER

DRAWN BY Bill HEIRDEYS

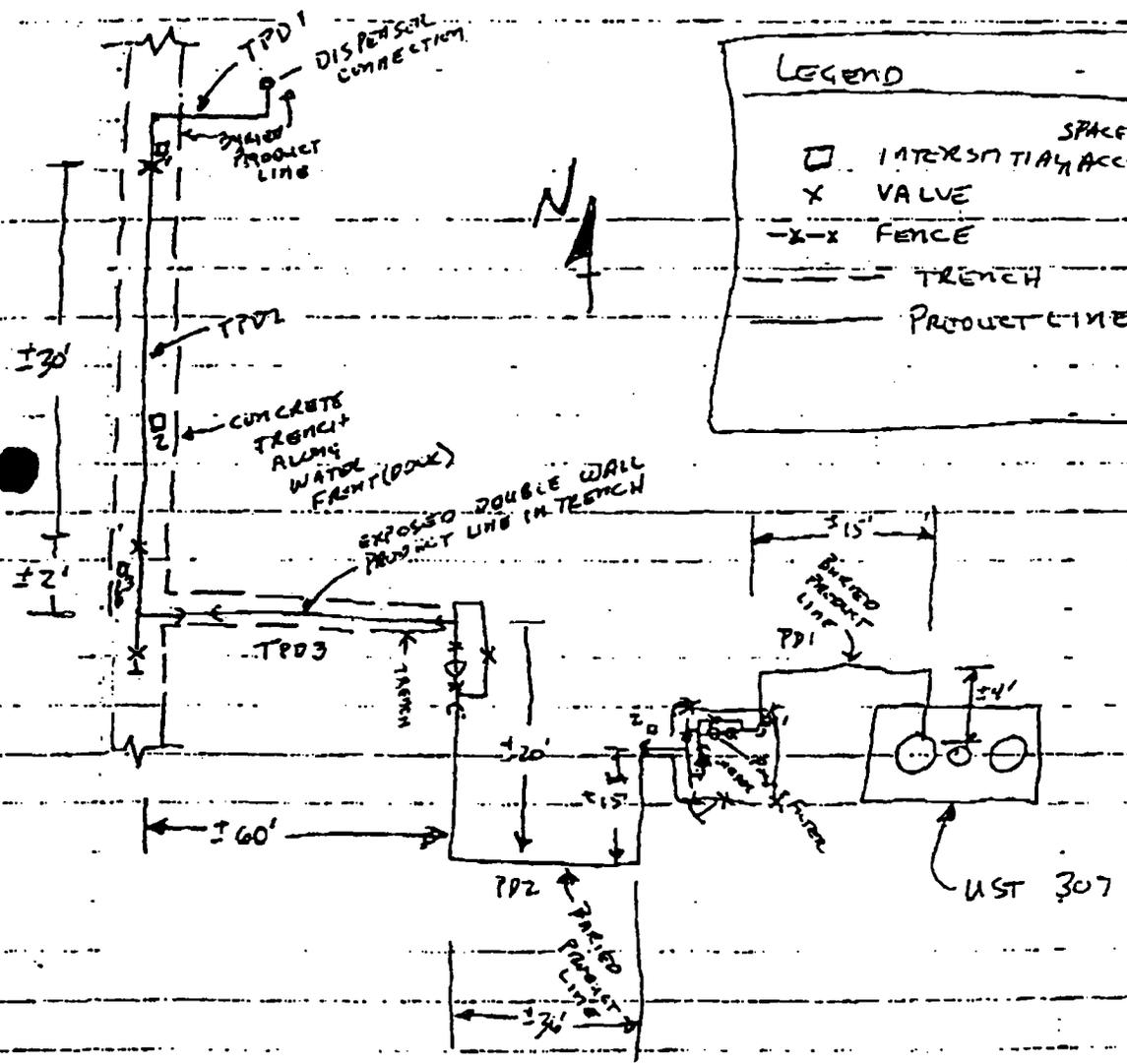
1/8/97

PRELIM. DATA.

	LINE DESIGNATION	LINE PRODUCT	OTHER SHOW
Pump Sta.	PD1	NO LEAK	LEAK
	PD2	NO LEAK	LEAK
Trench	TPD1	NO TEST	NO TEST, VISIBLE FUEL
	TPD2	LEAK	LEAK
	TPD3	NO LEAK	LEAK

TANK 307

- INTERSTITIAL SPACE LEAKED
- FAILED VACUUM TEST
- VACUUM TEST ON TANK PASSED. NO LEAK DETECTED.



## APPENDIX D

### TANK CLOSURE ASSESSMENT REPORT UST 172

**CLOSURE ASSESSMENT REPORT**  
**UNDERGROUND STORAGE TANK**  
**TANK 172**

**NAVAL SURFACE WARFARE CENTER**  
**COASTAL SYSTEMS STATION**  
**PANAMA CITY, FLORIDA**

**Unit Identification Code: N61331**

**Prepared by:**

**Navy Public Works Center**  
**Environmental Department**  
**310 John Tower Road**  
**Pensacola, Florida, 32508**

**Prepared for:**

**Commanding Officer, Coastal Systems Station**  
**Dahlgren Division, Naval Surface Warfare Center**  
**6703 West Highway 98**  
**Panama City, Florida 32407-7001**

**Mr Mike Clayton, Code CP2S, Environmental Engineer**

**December 1997**

**CLOSURE ASSESSMENT REPORT**  
**UNDERGROUND STORAGE TANK**  
**TANK 172**

**NAVAL SURFACE WARFARE CENTER**  
**COASTAL SYSTEMS STATION**  
**PANAMA CITY, FLORIDA**

**Unit Identification Code: N61331**

**Prepared by:**

**Navy Public Works Center**  
**Environmental Department**  
**310 John Tower Road**  
**Pensacola, Florida, 32508**

**Prepared for:**

**Commanding Officer, Coastal Systems Station**  
**Dahlgren Division, Naval Surface Warfare Center**  
**6703 West Highway 98**  
**Panama City, Florida 32407-7001**

**Mr Mike Clayton, Code CP2S, Environmental Engineer**

**December 1997**

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Naval Surface Warfare Center  
Coastal Systems Station  
Panama City, Florida

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2.0	Operator .....	1
3.0	Site Location .....	1
4.0	Date of Closure .....	1
5.0	Project Description .....	1
6.0	Tank Contents .....	1
7.0	Tank Condition .....	2
8.0	Excavation Area .....	2
9.0	Soil Screening .....	2
10.0	Groundwater Analysis .....	2
11.0	Findings and Conclusions .....	2
12.0	Recommendations .....	2
13.0	Closure Assessment .....	3
14.0	Project Manager .....	3
15.0	Project Number .....	3
16.0	Report Date .....	3

### FIGURES

Figure 1: Vicinity Map  
Figure 2: Site Map

### ATTACHMENTS

Attachment A: Photographs  
Attachment B: Disposal Documents - UST  
Attachment C: Storage Tank Registration Form  
Attachment D: Application for Closure of Pollutant Storage Tank System  
Attachment E: Underground Storage Tank Installation and Removal Form  
Attachment F: Closure Assessment Form, Soil & Groundwater Analyses  
Attachment G: Decontamination Certification

CLOSURE ASSESSMENT REPORT  
UNDERGROUND STORAGE TANK  
TANK 172

**1.0 Facility**

Facility 146, Naval Surface Warfare Center  
Coastal Systems Station  
Panama City, Bay County, Florida

**2.0 Operator**

Commanding Officer, Coastal Systems Station  
Dahlgren Division, Naval Surface Warfare Center  
6703 West Highway 98, Code CP2S  
Panama City, Florida 32407-7001

**3.0 Site Location**

The Coastal Systems Station is located along St Andrew Bay in Panama City, Florida (Figure 1).

**4.0 Date of Closure**

11 August 1997

**5.0 Project Description**

The US Navy Public Works Center (PWC), Pensacola, Florida was tasked by the Coastal Systems Station (CSS), Panama City to close a 2000 gallon underground storage tank (UST) system along the west dock, Facility 146, CSS Panama City (Figure 2). The UST was removed, cleaned and rendered unuseable by PWC. Photographs of the removal are provided in Attachment A. The UST was properly disposed by Southern Waste Systems, Inc, (SWS), Panama City, Florida (Attachment B).

The Storage Tank Registration Form, Application for Closure of Pollutant Storage Tank System, Underground Storage Tank Installation & Removal Form, Closure Assessment Form, and Decontamination Certification are provided as Attachments C, D, E, F, and G respectively.

**6.0 Tank Contents**

The UST was used to store gasoline for water vessel operation. The contents were emptied by CSS prior to commencement of work.

The rinsate from the UST cleaning operations was disposed at the Fire Training Facility, Building 439, CSS, Panama City. The petroleum constituents were separated from the water and incinerated.

## **7.0 Tank Condition**

The UST was cylindrically shaped and constructed of fiberglass. The UST was in good condition at the time of removal.

## **8.0 Excavation Area**

The excavation was made approximately eight (8) feet wide, twelve (12) feet long and five (5) feet deep. The excavation was filled with clean fill, compacted to grade, and paved with concrete.

## **9.0 Soil Screening**

Four (4) soil borings were installed around the UST using a manually operated hollow stem auger. The soil samples were collected and screened for organic vapor concentrations using the headspace screening technique. The soil samples were extracted at each corner of the excavation. The soil samples were extracted above the groundwater level which was approximately five feet below grade. The soil boring locations and results are provided in Attachment F.

The soil screening was conducted in accordance with the headspace screening criteria in Chapter 62-770 FAC and PWC's Comprehensive Quality Assurance Plan using an organic vapor analyzer (OVA). The OVA was manufactured by Thermo Environmental Instruments, Inc (Model 680 HVM) and equipped with a flame ionization detector (FID).

## **10.0 Groundwater Analysis**

A temporary groundwater monitoring well was installed on 5 November 1997 by GFA International, Inc, Sarasota, Florida. The well was constructed with a 2" diameter by 13 foot long, Schedule 40 polyvinyl chloride (PVC) riser. The riser was equipped with a ten foot long by 0.010 inch slotted screen. The well consisted of a coarse silica sand filter and a bentonite seal. The top of the well was encased with concrete and equipped with a lock and a steel cover. The well location, well construction diagram, and groundwater laboratory analyses are provided in Attachment F.

The well was sampled by PWC on 13 November 1997. These samples were transported to the PWC Laboratory in Pensacola, Florida and analyzed for volatile content in accordance with Environmental Protection Agency (EPA) Method 8260, for poly aromatic hydrocarbons (PAH's) in accordance with EPA Method 8270, for ethylene dibromide content in accordance with EPA Method 504, for lead content in accordance with EPA Method 239.2, and for total petroleum hydrocarbon content in accordance with the State of Florida, Petroleum Range Organics (FL-PRO) method.

## **11.0 Findings and Conclusions**

There was no petroleum contamination detected above the state target levels for storage tank closures.

## **12.0 Recommendations**

This site is recommended for No Further Action.

**13.0 Closure Assessment**

Performed by the US Navy, Public Works Center (PWC) Pensacola, Florida.

**14.0 Project Manager**

Paul R. Semmes, P.E.

**15.0 Project Number**

1396004

**16.0 Report Date**

5 December 1997

The engineering evaluations and professional opinions rendered in this Closure Assessment Report that describes the work associated with the storage tank removal at the Coastal Systems Station, Panama City, Florida were conducted or developed in accordance with the commonly accepted procedures consistent with applicable standards of practice. If conditions are determined to exist differently than those described, the undersigned professional engineer should be notified to evaluate the effects of any additional information on the design described in this report.

Paul R. Semmes, P.E.  
Professional Engineer (#44137)

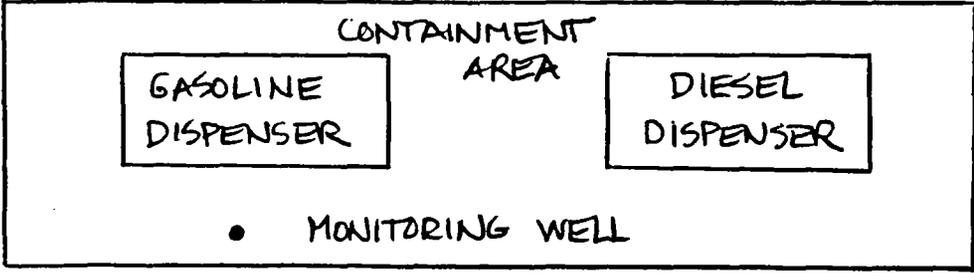
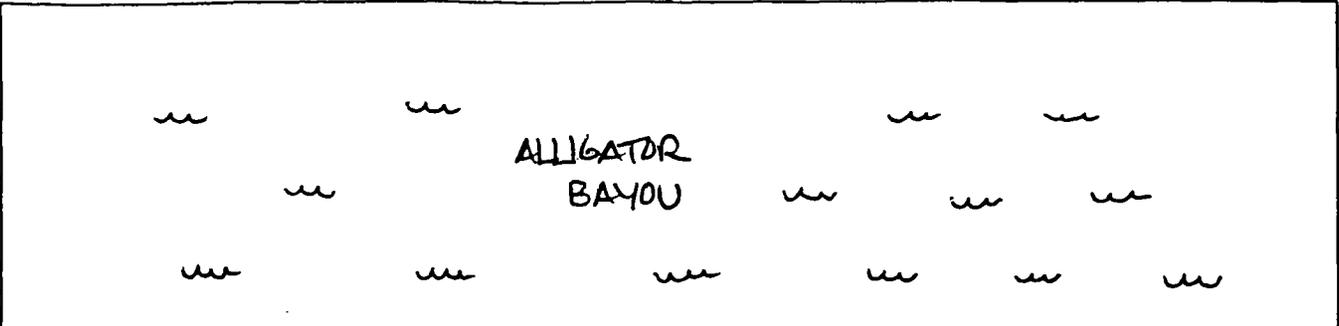
5 December 1997

# FIGURES

**FIGURE 1**  
**Vicinity Map**

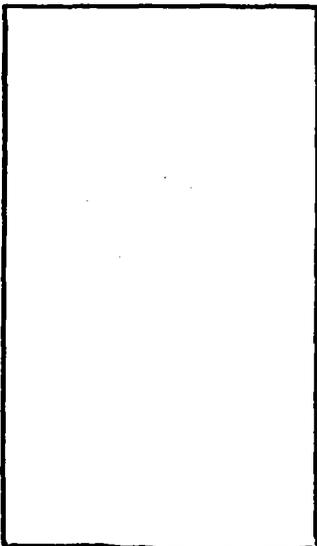


**FIGURE 2**  
**Site Map**



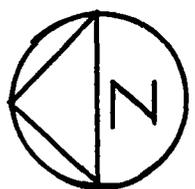
SS-1 •

• SS-2



SS-3 •

• SS-4



NAVAL AIR STATION		DATE		BY		TITLE	



**ATTACHMENTS**

**ATTACHMENT A**  
**Photographs**



**ATTACHMENT B**  
**Disposal Document - UST**



December 5, 1997

C.O. - Code 423.3  
Paul Semmes  
310 John Tower Road  
Pensacola, Florida 32508

Dear Paul:

Enclosed are the copies of the disposal ticket for the fiberglass tanks from OWS 363, 371, and 146. Also enclosed are copies of disposal of the liquid for 363 OWS.

These documents certify that all waste was disposed of properly and in a timely fashion. The original manifest have been sent to Coastal System Stations.

If I can be of further assistance please feel free to contact me at 850-234-8428.

Sincerely,

Candace M. Esparza  
Southern Waste Service

Panama City

Ft. Myers

Pensacola

Ft. Lauderdale

Tampa Bay

Montgomery

Savannah

STEELFIELD LANDFILL  
 P O BOX 1230  
 PANAMA CITY, FL 32402

001013  
 SOUTHERN WASTE SERVICES  
 HARRY MARSH  
 1619 MOYLAN ROAD  
 PANAMA CITY BEACH FL 32407

SITE	TICKET	GRID
02	102123	
WEIGHMASTER		
BRANNING		
DATE IN	TIME IN	
09/19/97	10:40	
DATE OUT	TIME OUT	
09/19/97	11:03	

VEHICLE	ROLL OFF

REFERENCE	ORIGIN
	FCB

Scale Gross Weight 43200 LB Inbound - Cash ticket  
 Scale 1 Tare Weight 33680 LB  
 Net Weight 9520 LB

QTY.	DESCRIPTION	AMOUNT
4.76	C CGD UNSIZED/NER-TN @ \$ 25.00 per TON	119.00

**FILE**

*Net 7600*

VEH & CAN 6002-1  
 DRIVER DON

NET AMOUNT	119.00
TENDERED	119.00
CHANGE	0.00

Operating hours...7:00 AM to 4:00 PM Monday through Saturday  
 \*\*\* This is to certify that this load does not contain any hazardous materials, medical waste, fluorescent light tubes, motor oils, car batteries or liquids of any type.

SIGNATURE *[Signature]*

CK# 7600

**ATTACHMENT C**  
**Storage Tank Registration Form**



# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form # 17-701 (03/97)  
 Form Title: Storage Tank Registration Form  
 Effective Date: December 01, 1990  
 DER Application No. \_\_\_\_\_ (Place in the DER)

## Storage Tank Registration Form

Please Print or Type - Review Instructions Before Completing Form

1. DER Facility ID Number: 038518667      2. Facility Type: (F) FEDERAL  
 3. New Registration     New Owner Data     Facility Revision     Tank(s) Revision   
 4. County and Code of tank(s) location: BAY / 03

5. Facility Name: NSWC Coastal Systems Station  
 Tank(s) Address: 6703 West Hwy 98  
 City/State/Zip: Panama City, FL 32407-7001  
 Contact Person: Mike Clayton, Code CP2S      Telephone: (850) 235-5859  
 6. Financial Responsibility Type: C

7a. Tank(s) Owner: U.S. Navy (NSWC Coastal Systems Station)  
 Owner Mailing Address: 6703 West Hwy 98  
 City/State/Zip: Panama City, FL 32407-7001  
 Contact Person: Mike Clayton, Code CP2S      Telephone: (850) 235-5859

7b. New Owner Signature/Change Date: N/A / /

8. Location (optional)    Latitude: ° ' "    Longitude: ° ' "    Section \_\_\_\_\_    Township \_\_\_\_\_    Range \_\_\_\_\_

Complete One Line For Each Tank At This Facility (Use Codes - See Instructions)

Complete 9 - 16 for tanks in use; 9 - 19 for tanks out of use

9	10	11	12	13	14	15	16	17	18	19
G110AB	500	H	xx/82	U	CM	B	X	B	0	8/97
G129	550	H	xx/79	U	CMN	B	X	B	0	8/97
G322	1175	H	xx/75	U	CMN	B	D	B	0	8/97
363	6000	L	xx/81	U	EM	B	B	B	0	8/97
172	2000	B	xx/80	U	EMN	DI	DM	B	0	8/97

20. Naval Public Works Center, Pensacola, FL      DPR# \_\_\_\_\_  
Certified Contractor      Department of Professional Regulation License Number \_\_\_\_\_

\*For new tank installation or tank removal

To the best of my knowledge and belief all information submitted on this form is true, accurate and complete.

J. M. CROSS, DIRECTOR, SAFETY & ENV.  
 Print name & title of owner or authorized person

[Signature]  
 Signature

22 AUG 97

Date ENCL

**ATTACHMENT D**  
**Application for Closure of**  
**Pollutant Storage Tank System**

# APPLICATION FOR CLOSURE OF POLLUTANT STORAGE TANK SYSTEM

Provide the facility information requested below.

FDEP Facility # 03/8518667 Facility Name NSWC - CSS

Facility Location Building 146 (TANK #172)

Property Owner Commanding Officer, Coastal Systems Station (Code P25)

Property Owner Address 6703 West Highway, 98 Panama City, Florida 32407-7001

Phone (850) 235-5859

Method of Tank Closure Removal

**Pollutant Storage Systems Specialty Contractor (PSSSC) who will be on site supervising closure activities. Attach copy of PSSSC license.**

Individual Licensed as PSSSC N/A PSSSC # N/A

Firm U.S. Navy - Public Works Center (PWC)

Address 310 John Tower Road, Pensacola, FL 32508

**Indicate the firm (s) that will degas, remove, and transport the tank(s), and the method of degassification.**

Degassification Method Air Eduction (API 1604-4.2.5)

Firm Removing Tanks U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 452-4315

Firm Transporting Tanks U. S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 452-4315

Firm Receiving Tanks for Ultimate Disposal U.S. Navy - DRMO

Contact Mr. Gayle Brown Phone (850) 452-3459

**Indicate the laboratory that will conduct groundwater analysis.**

Contracted Laboratory U.S. Navy - PWC Phone (850) 452-3180

Contact Mr. Joe Moore FDEP QA/QC 920121G

**Indicate firm(s) transporting and disposing of contaminated soils.**

Firm Transporting Soils Southern Waste Systems, Inc.

Contact Ms. Candace Esparza Phone (850)234-8428

Firm Remediating/Disposing Soils Southern Waste Systems, Inc.

Contact Ms. Candace Esparza Phone (850) 234-8428

Disposal/Remediation Method Landfill

**Indicate the firm(s) that will transport and ultimately dispose of residual product and sludge from the tanks.**

Firm Transporting Residual Product and Sludge Southern Waste Systems, Inc.

(850) 234-8428

Contact Ms. Candace Esparza Phone (850) 234-8428

Firm Receiving/Disposal Residual Product and Sludge Southern Waste Systems, Inc.

(850) 234-8428

Contact Ms. Candace Esparza Phone (850) 234-8428

**Indicate the firm and names of personnel that will conduct field sampling.**

Contracted Firm U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 452-4315

Person (s) Sampling Mr. Paul Semmes, P.E.

Equipment used for soil screening (Specific Make and Model) Organic Vapor Analyzer

(OVA) Thermo Environmental (680 HVM) equipped w/Flame Ionization Detector (FID).

**ATTACHMENT E**  
**Underground Storage Tank**  
**Installation and Removal Form**



# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form #	17-761.800(15)
Form Title	Underground Storage Tank Installation & Removal Form for Certified Contractors
Effective Date	December 10, 1990
DER Application No.	(Filed in by DER)

## Underground Storage Tank Installation and Removal Form For Certified Contractors

Pollutant Storage System Specialty Contractors as defined in Section 489.113, Florida Statutes (Certified contractors as defined in Section 17-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards.

### General Facility Information

- DER Facility Identification No.: 03/8518667
- Facility Name: NSWC Coastal Systems Station Telephone: (235) 5859
- Street Address (physical location): Building 146 (TANK #172)
- Owner Name: CO, Coastal Systems Station Telephone: (850) 235-5859
- Owner Address: 6703 West Highway 98, Panama City, Florida 32407-7001
- Number of Tanks: a. Installed at this time None b. Removed at this time One
- Tank(s) Manufactured by: Unknown
- Date Work Initiated: 8/11/97 9. Date Work Completed: 8/11/97

### Underground Pollutant Tank Installation Checklist

Please certify the completion of the following installation requirements by placing an (X) in the appropriate box.

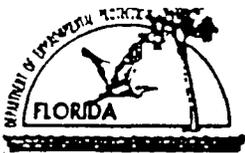
- The tanks and piping are corrosion resistant and approved for use by State and Federal Laws.
- Excavation, backfill and compaction completed in accordance with NFPA (National Fire Protection Association) 30(87), API (American Petroleum Institute) 1615, PEI (Petroleum Equipment Institute) RP100-87 and the manufacturers' specifications.
- Tanks and piping pretested and installed in accordance with NFPA 30(87), API 1615, PEI/RP100(87) and the manufacturers' specifications.
- Steel tanks and piping are cathodically protected in accordance with NFPA 30(87), API 1632, UL (Underwriters Laboratory) 1746, STI (Steel Tank Institute) R892-89 and the manufacturer's specifications.
- Tanks and piping tested for tightness after installation in accordance with NFPA 30(87) and PEI/RP100-87.
- Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 17-761.640, Florida Administrative Code (F.A.C.)
- Spill and overflow protection devices installed in accordance with Section 17-761.500, F.A.C.
- Secondary containment installed for tanks and piping as applicable in accordance with Section 17-761.500, F.A.C.

Please Note: The numbers following the abbreviations (e.g. API 1615) are publication or specification numbers issued by these institutions.

### Underground Pollutant Tank Removal Checklist

- Closure assessment performed in accordance with Section 17-761.800, F.A.C.
- Underground tank removed and disposed of as specified in API 1604 in accordance with Section 17-761.800, F.A.C.

**ATTACHMENT F**  
**Closure Assessment Form**  
**Soil & Groundwater Analyses**



Closure Assessment Form

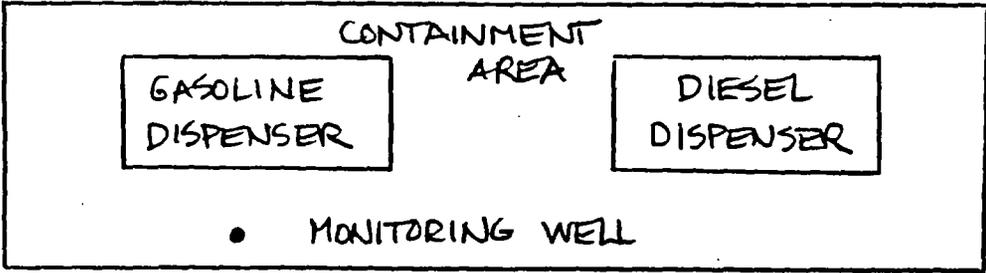
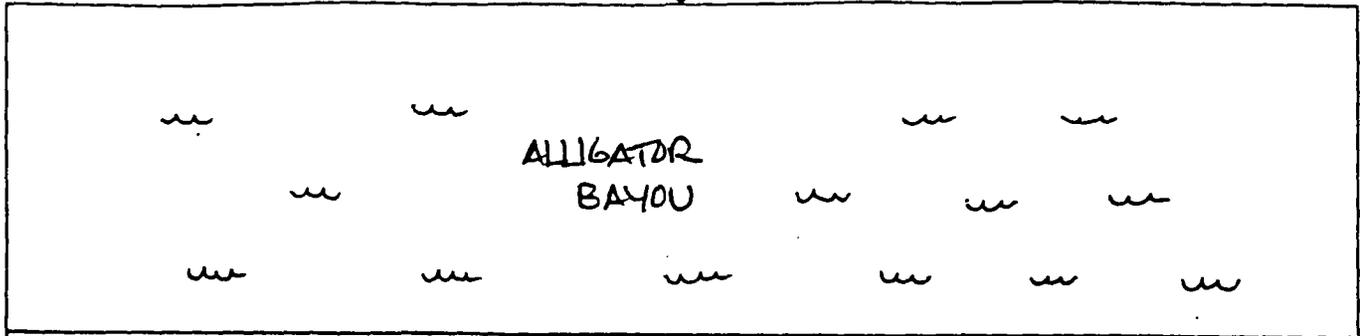
Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage tank closure assessment was performed in accordance with Rule 62-761.800(3) or 62-762.800(3), Florida Administrative Code.

Please Print or Type
Complete All Applicable Blanks

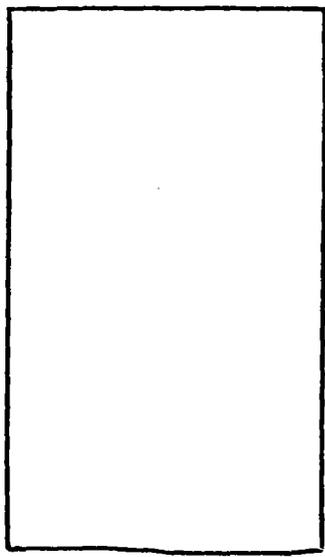
- 1. Date 12/5/97
2. DEP Facility ID Number: 03/8518667
3. County Bay
4. Facility Name: NSWC Coastal Systems Station
5. Facility Owner: Commanding Officer, Coastal Systems Station
6. Facility Address: Building 146 (TANK #172)
7. Mailing Address: 6703 West Highway 98, Panama City, Florida 32407-7001
8. Telephone Number: (850) 235-5859
9. Facility Operator: Mike Clayton
10. Are the Storage Tank(s): (Circle one or both) A. Aboveground or B. Underground
11. Type of Product(s) Stored: Gasoline
12. Were the Tank(s): (Circle one) A. Replaced B. Removed C. Closed in Place D. Upgraded (aboveground tanks only)
13. Number of Tanks closed: One
14. Age of Tanks: 17

Facility Assessment Information

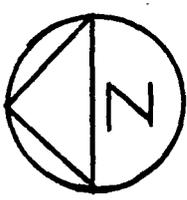
- Yes No Not Applicable
1. Was a Discharge Reporting Form submitted to the Department? If yes, When: Where:
2. Is the depth to ground water less than 20 feet?
3. Are monitoring wells present around the storage system? If yes, please specify Vapor Monitoring Water Monitoring
4. Is there free product present in the monitoring wells or within the excavation?
5. Were the petroleum hydrocarbon vapor levels in the soil greater than 500 parts per million for gasoline? Specify sample type: Vapor Monitoring wells Soil sample(s)
6. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene? Specify sample type: Vapor Monitoring wells Soil sample(s)
7. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels? (See target levels on reverse side of this form and supply laboratory data sheet(s).)
8. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
9. Are any potable wells located within 1/4 of a mile radius of the facility?
10. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance: 10'
11. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.
12. If a facility has a pollutant storage tank system that has both gasoline and kerosine/diesel stored on site, both EPA method 602 and EPA method 610 must be performed on the ground water samples.



SS-1 • SS-2



SS-3 • SS-4



NAVAL AIR STATION		DATE		BY		CHECKED	
PROJECT		DRAWN		SCALE		SHEET	
DESCRIPTION		NO.		REV.		DATE	

**Summary of OVA Readings**

**Closure Assessment Report  
Underground Storage Tank, Tank 172  
Naval Surface Warfare Center  
Coastal Systems Station  
Panama City, Florida**

Hand Auger Sample No.	Depth (Feet)	Unfiltered (ppm)	Filtered (ppm)	Total Hydrocarbon Readings (ppm)
SS-1	5	3	<1	3
SS-2	5	5	1	4
SS-3	5	68	63	5
SS-4	5	<1	<1	0

*Readings for unfiltered samples are total hydrocarbon readings including methane; readings for filtered samples are methane only.*

*Notes: ppm = parts per million.*

**Navy Public Works Center  
Environmental Laboratory**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Engineering  
Address: Bldg.458, Code 400  
NAS Pensacola, FL 32508  
Phone #: (850) 452-4315  
Contact: Paul Semmes

**Analytical Report**

601/602 Volatiles by Method 8260

Lab Report Number: 74942  
Sample Date: 11/13/97  
Received Date: 11/13/97  
Sample Site: Panama City  
Job Order No.: 139 6004

LAB Sample ID#	1- 74942			
Sample Name / Location	NAVCSS MW # 172			
Collector's Name	P. Keane			
Date & Time Collected	11/13/97 @ 0920			
Sample Type (composite or grab)	Grab			
Analyst	M. Chambers			
Date of Extraction / Initials	11/14/97 MC			
Date of Analysis	11/14/97			
Sample Matrix	GW			
Dilution	X 1			
<b>Compound Name</b>	<b>1- 74942</b>	<b>units</b>	<b>Det. Limit</b>	<b>Flags</b>
Benzene	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	1	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodifluoromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	1	
Methyl-tert-butyl ether (MTBE) *	BDL	ug/L	1	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichlorofluoromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

**SURROGATE SPIKE RECOVERIES**

	Acceptance Limits	Percent Recovery
1,2-Dichloroethane-d4	75-133	121
Toluene-d8	86-119	101
Bromofluorobenzene	85-116	107

COMMENTS :

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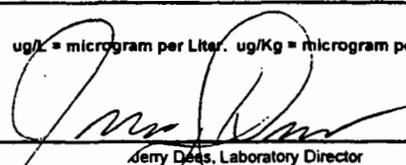
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BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram. \* = FL HRS certification pending.

Approved by :



Jerry Deas, Laboratory Director

Date: 12/2/97

Report Generated

**Navy Public Works Center  
Environmental Laboratory**

**Analytical Report**

**610 PAH's by Method 8270**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
22-3180/3642  
(850) 452-2799/2387

Client: NPWC Engineering  
Address: Bldg.458, Code 400  
NAS Pensacola, FL 32508  
Phone #: (850) 452-4315  
Contact: Paul Semmes

Lab Report Number: 74942  
Sample Date: 11/13/97  
Received Date: 11/13/97  
Sample Site: Panama City  
Job Order No.: 139 6004

LAB Sample ID#	1- <b>74942</b>				
Sample Name / Location	NAVCSS MW# 172				
Collector's Name	P. Keane				
Date & Time Collected	11/13/97 @ 0920				
Sample Type (composite or grab)	Grab				
Analyst	J. Moore				
Date of Extraction / Initials	11/17/97 JJ				
Date of Analysis	11/20/97				
Sample Matrix	GW				
Dilution	X 1				
Compound Name	1-	74942	units	Det. Limit	Flags
Acenaphthene	BDL		ug/L	2	
Acenaphthylene	BDL		ug/L	2	
Anthracene	BDL		ug/L	2	
Benzo(a)anthracene	BDL		ug/L	2	
Benzo(a)pyrene	BDL		ug/L	2	
Benzo(b)fluoranthene	BDL		ug/L	2	
Benzo(g,h,i)perylene	BDL		ug/L	2	
Benzo(k)fluoranthene	BDL		ug/L	3	
Chrysene	BDL		ug/L	2	
Dibenz(a,h)anthracene	BDL		ug/L	2	
Fluoranthene	BDL		ug/L	2	
Fluorene	BDL		ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL		ug/L	2	
1-Methylnaphthalene *	BDL		ug/L	2	
2-Methylnaphthalene	BDL		ug/L	3	
Naphthalene	BDL		ug/L	2	
Phenanthrene	BDL		ug/L	2	
Pyrene	BDL		ug/L	2	

**SURROGATE SPIKE RECOVERIES**

	Acceptance Limits	Percent Recovery
Nitrobenzene-d5	35-114	87
2-Fluorobiphenyl	43-116	96
Terphenyl-d14	33-141	86

COMMENTS :

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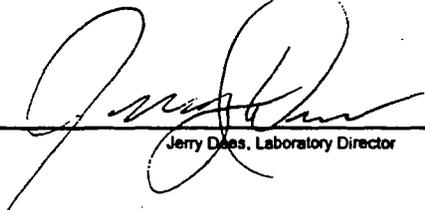
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BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram. \* = FL HRS certification pending.

Approved by :

  
Jerry Drees, Laboratory Director

Date: 12/2/97

Report Generated

**Navy Public Works Center  
Environmental Laboratory**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Engineering  
Address: Bldg. 458, Code 400  
NAS Pensacola, FL 32508  
Phone #: (850) 452-4315  
Contact: Paul Semmes

**Analytical Report**

**Ethylene Dibromide by Method 504**

Lab Report Number: 74942  
Sample Date: 11/13/97  
Received Date: 11/13/97  
Sample Site: Panama City  
Job Order No.: 139 6004

LAB Sample ID#	1- <b>74942</b>			
Sample Name / Location	NAVCSS MW# 172			
Collector's Name	BH/PK			
Date & Time Collected	11/13/97 @ 0920			
Sample Type (composite or grab)	Grab			
Analyst	M. Chambers			
Date of Extraction / Initials	11/20/97 MC			
Date of Analysis	11/20/97			
Sample Matrix	GW			
Dilution	X 1			
<b>Compound Name</b>	<b>1- 74942</b>	<b>units</b>	<b>Det. Limit</b>	<b>Flags</b>
Ethylene Dibromide	BDL	ug/L	0.02	

**SURROGATE SPIKE RECOVERIES**

	Acceptance Limits	Percent Recovery
Tetra-Chloro-m-Xylene	54-140	94

COMMENTS :

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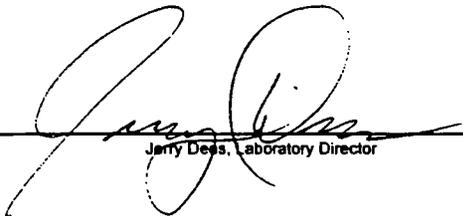
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BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram.

Approved by :

  
Jerry Deas, Laboratory Director

Date: 12/2/97

Report Generated

**Navy Public Works Center  
Environmental Laboratory**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Engineering  
Address: Bldg. 458, Code 400  
NAS Pensacola, FL 32508  
Phone #: (850) 452-4315  
Contact: Paul Semmes

**Analytical Report**

**Petroleum Range Organics by FLPRO**

Lab Report Number: 74942  
Sample Date: 11/13/97  
Received Date: 11/13/97  
Sample Site: Panama City  
Job Order No.: 139 6004

LAB Sample ID#	1- <b>74942</b>			
Sample Name / Location	NAVCSS MW # 172			
Collector's Name	BH/PK			
Date & Time Collected	11/13/97 @ 0920			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of extraction / Initials	11/17/97 JJ			
Date of Analysis	11/24/97			
Sample Matrix	GW			
Dilution	x 1			
Parameter	1- <b>74942</b>	units	Det. Limit	Flags
Petroleum Range Organics by FLPRO	BDL	mg/L	0.25	

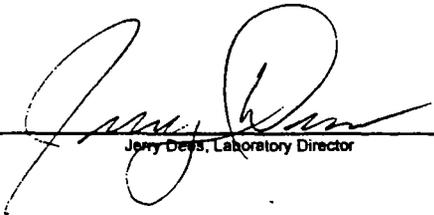
**SURROGATE SPIKE RECOVERIES**

	Acceptance Limits	Percent Recovery
ortho-Terphenyl	82-142*	72
Nonatriacontane (C-39)	42-193*	74

COMMENTS : \* = Suggested surrogate recovery limits listed in the method. In-house laboratory limits are in the process of being determined.

BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

Approved by :

  
\_\_\_\_\_  
Jerry Davis, Laboratory Director

Date: 12/2/97

**Navy Public Works Center  
Environmental Laboratory**

**Analytical Report**

**Total Lead by Method 239.2**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Engineering  
Address: Bldg. 458, Code 400  
NAS Pensacola, FL 32508  
Phone #: (850) 452-4315  
Contact: Paul Semmes

Lab Report Number: 74942  
Sample Date: 11/13/97  
Received Date: 11/13/97  
Sample Site: Panama City  
Job Order No.: 139 6004

LAB Sample ID#	1- <b>74942</b>			
Sample Name / Location	NAVCSS MW # 172			
Collector's Name	P. Keane			
Date & Time Collected	11/13/97 @ 0920			
Sample Type (composite or grab)	Grab			
Analyst	B. Nelson			
Date of Analysis	11/17/97			
Sample Matrix	GW			
Dilution	X 1			
<b>Element Name</b>	<b>1-</b>	<b>74942</b>	<b>units</b>	<b>Det. Limit</b>
Lead	0.015	mg/L	0.003	Flags

COMMENTS :

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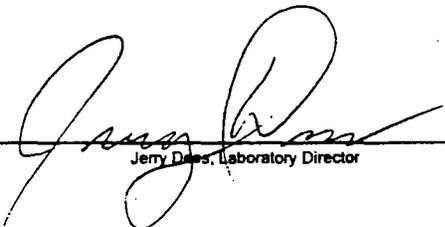
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BDL = Below Detection Limit. mg/L = milligram per Liter. mg/Kg = milligram per Kilogram.

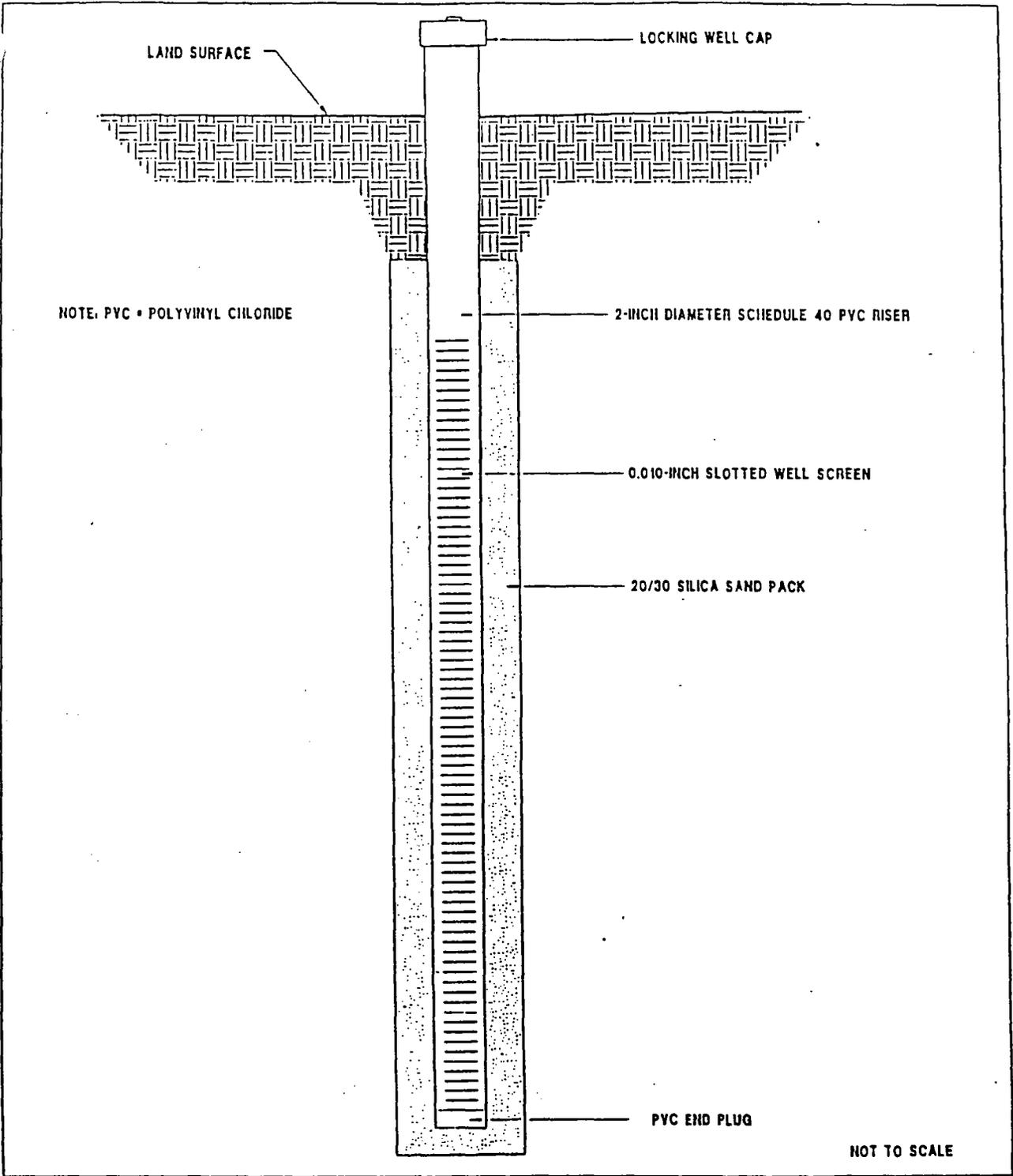
Approved by :

  
\_\_\_\_\_  
Jerry Doss, Laboratory Director

Date:

12/2/97

Report Generated



TYPICAL TEMPORARY MONITORING WELL  
INSTALLATION DETAIL

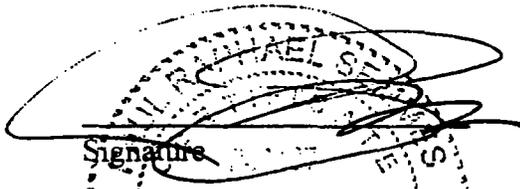
**ATTACHMENT G**  
**Decontamination Certification**

# CERTIFICATE OF DECONTAMINATION

It is hereby certified that the following Storage Tanks located at the Naval Surface Warfare Center, Coastal Systems Station, Panama City, Florida have been decontaminated by the Navy Public Works Center (PWC), Pensacola, Florida:

Bldg 92	Bldg 110	Bldg 300	Bldg 371
Bldg 94 (TANK #52)	Bldg 129	Bldg 321 (TANK #322)	
Bldg 98	Bldg 146 (TANK #172)	Bldg 363	

The Storage Tanks listed above have been triple rinsed and cleaned in accordance with 40 CFR 261.7(b)(3)(i) and have been rendered unusable.

  
Signature  
Paul R Semmes, PE  
Environmental Engineer  
Title  
REGISTERED ENGINEER  
FLORIDA  
12/5/97  
Date

**APPENDIX E**

**CLOSURE ASSESSMENT UST 307R1**

**CLOSURE ASSESSMENT**  
**UNDERGROUND STORAGE TANK**  
**TANK 307R1**

**NAVAL SURFACE WARFARE CENTER**  
**COASTAL SYSTEMS STATION**  
**PANAMA CITY, FLORIDA**

**Unit Identification Code: N61331**

**Prepared by:**

**Navy Public Works Center**  
**Engineering Department (Code 423.3)**  
**310 John Tower Road**  
**Pensacola, Florida, 32508**

**Prepared for:**

**Commanding Officer, Coastal Systems Station**  
**Dahlgren Division, Naval Surface Warfare Center**  
**6703 West Highway 98**  
**Panama City, Florida 32407-7001**

**Mr Mike Clayton, Code WPE**  
**Environmental Engineer**

**October 1998**

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Closure Assessment Report  
Underground Storage Tank  
Tank 307R1, Coastal Systems Station  
Panama City, Florida

Chapter	Title	Page No.
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2.0	Operator .....	1
3.0	Site Location .....	1
4.0	Date of Closure .....	1
5.0	Tank Status .....	1
6.0	Tank Contents .....	1
7.0	Tank Condition .....	2
8.0	Excavation Area .....	2
9.0	Soil Screening .....	2
10.0	Groundwater Analysis .....	2
11.0	Conclusions .....	2
12.0	Recommendations .....	3
13.0	Closure Assessment .....	3
14.0	Project Manager .....	3
15.0	Project Number .....	3
16.0	Report Date .....	3

**FIGURES**

- Figure 1: Vicinity Map
- Figure 2: Site Map

**ATTACHMENTS**

- Attachment A: Photographs of UST Removal
- Attachment B: Disposal Documentation
- Attachment C: Storage Tank Registration Form
- Attachment D: Application for Closure of Pollutant Storage Tank System
- Attachment E: Underground Storage Tank Installation and Removal Form
- Attachment F: Closure Assessment Form, Soil and Groundwater Analysis
- Attachment G: Decontamination Certification

## ACRONYMS

AST	Aboveground Storage Tank
CFR	Code of Federal Regulations
CSS	Coastal Systems Station, Panama City, Florida
DRMO	Defense Reutilization and Marketing Office
EPA	Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
OVA	Organic Vapor Analyzer
PWC	Public Works Center, Pensacola, Florida
UST	Underground Storage Tank

**CLOSURE ASSESSMENT REPORT**  
**UNDERGROUND STORAGE TANK**  
**TANK 307R1**

**1.0 Facility**

Tank 307R1  
Naval Surface Warfare Center  
Coastal Systems Station  
Panama City, Bay County, Florida

**2.0 Operator**

Commanding Officer, Coastal Systems Station  
Dahlgren Division, Naval Surface Warfare Center  
6703 West Highway 98, Code WPE  
Panama City, Florida 32407-7001

**3.0 Site Location**

The Coastal Systems Station (CSS) is located along Highway 98 on the west bank of St Andrew Bay (Figure 1). The Drum Storage Facility, Facility 307 is located near the west dock (Figure 2).

**4.0 Date of Closure**

7 August 1998

**5.0 Project Description**

The Navy Public Works Center (PWC), Pensacola, Florida was tasked by the Coastal Systems Station (CSS), Panama City, Florida to remove and properly close a 6000 gallon underground storage tank (UST) located at the north side of Facility 307, CSS, Panama City, Florida. The UST was removed, cleaned, and rendered unusable by PWC. Photographs of the removal are provided as Attachment A. The UST was properly disposed by Southern Waste Systems, Inc., Panama City, Florida (Attachment B).

The Storage Tank Registration Form, Application for Closure of Pollutant Storage Tank System, Underground Storage Tank Installation and Removal Form, Closure Assessment Form, and Certificate of Decontamination are provided in Attachments C, D, E, F, and G respectively.

**6.0 Tank Contents**

The UST was used to store diesel for water vessel operation. The contents of the UST was emptied by CSS prior to commencement of work.

## **7.0 Tank Condition**

The UST was constructed of double-walled, fiberglass. The UST was in good condition at the time of removal.

## **8.0 Excavation Area**

The size of the excavation, was approximately twelve (12) feet wide by twenty (20) feet long and eight (8) feet deep. The excavation was filled with clean fill and compacted to grade.

## **9.0 Soil Screening**

Eleven (11) soil borings were installed around the UST using a manually operated, hollow stem auger. The soil samples were collected and screened for organic vapor concentrations using the headspace screening technique. The soil samples were extracted at each corner of the UST above the vadose zone. The soil boring locations and screening results are provided in Attachment F.

The soil screening was conducted in accordance with the headspace screening criteria in Chapter 62-770 of the Florida Administrative Code (FAC) using an organic vapor analyzer (OVA). The OVA was manufactured by Thermo Environmental Instruments, Inc (Model 680 HVM) and equipped with a flame ionization detector (FID).

## **10.0 Groundwater Analysis**

A temporary groundwater monitoring well was installed on 24 August 1998 by W Grady Swann, Inc, Pensacola, Florida. The well was constructed with a 2" diameter by 13 foot long, Schedule 40 polyvinyl chloride (PVC) riser pipe. The riser was equipped with a ten foot long by 0.010 inch slotted screen. The well was constructed with a coarse silica sand filter and a bentonite seal. The top of the well was encased with concrete and equipped with a lock and a steel cover. The well location and well construction diagram are provided in Attachment F.

The well was sampled by W. Grady Swann, Inc. on 24 August 1998 in accordance with their Comprehensive Quality Assurance Plan (FDEP #970117). The samples were transported to the PWC Laboratory in Pensacola, Florida and analyzed for volatile content in accordance with Environmental Protection Agency (EPA) Method 8260 and for polycyclic aromatic hydrocarbon (PAH) content accordance with EPA Method 8270. The laboratory analyses were performed in accordance with PWC's Comprehensive Quality Assurance Plan (FDEP #920121G). The groundwater analyses are provided in Attachment F.

## **11.0 Conclusions**

There were no indications of petroleum contamination noted above the state target levels for storage tank closures.

**12.0 Recommendations**

This site is recommended for No Further Action.

**13.0 Closure Assessment**

Performed by the Navy Public Works Center (PWC) Pensacola, Florida.

**14.0 Project Manager**

Paul R. Semmes, P.E.

**15.0 Project Number**

1396007

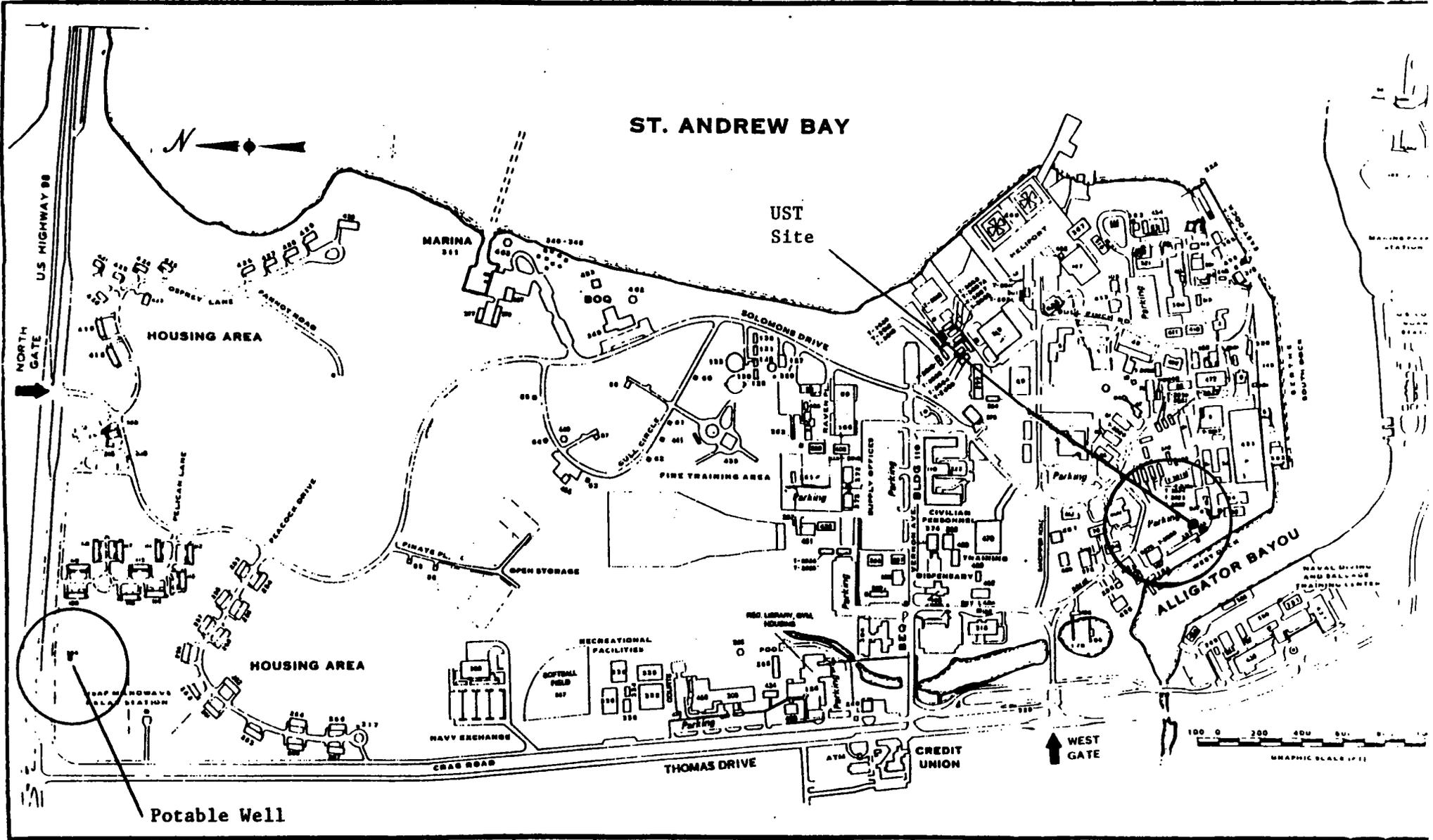
**16.0 Report Date**

5 October 1998

**FIGURES**

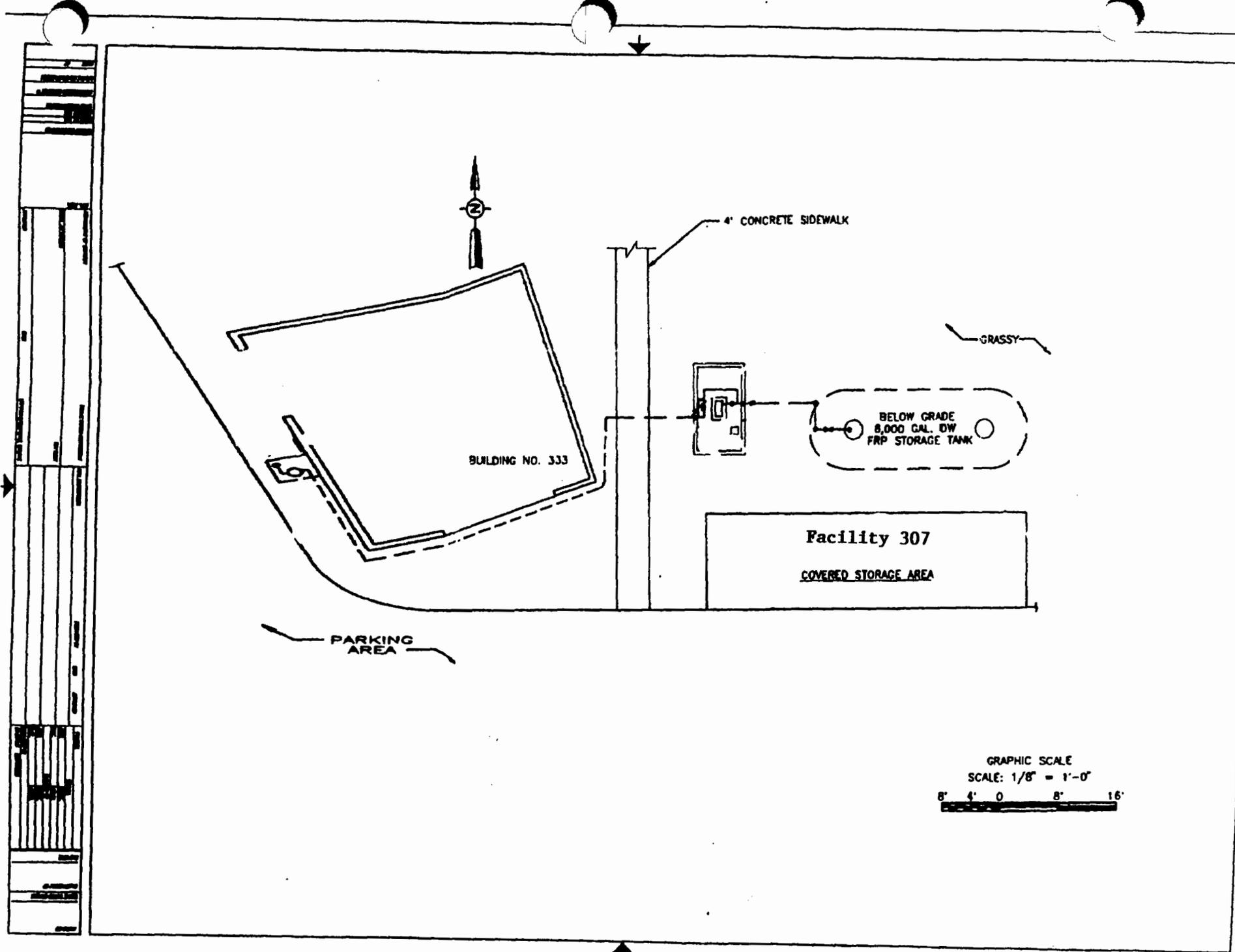
**FIGURE 1**  
**Vicinity Map**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 1



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 1

**FIGURE 2**  
**Site Map**



BUILDING NO. 333

4' CONCRETE SIDEWALK

GRASSY

BELOW GRADE  
8,000 GAL. DW  
FRP STORAGE TANK

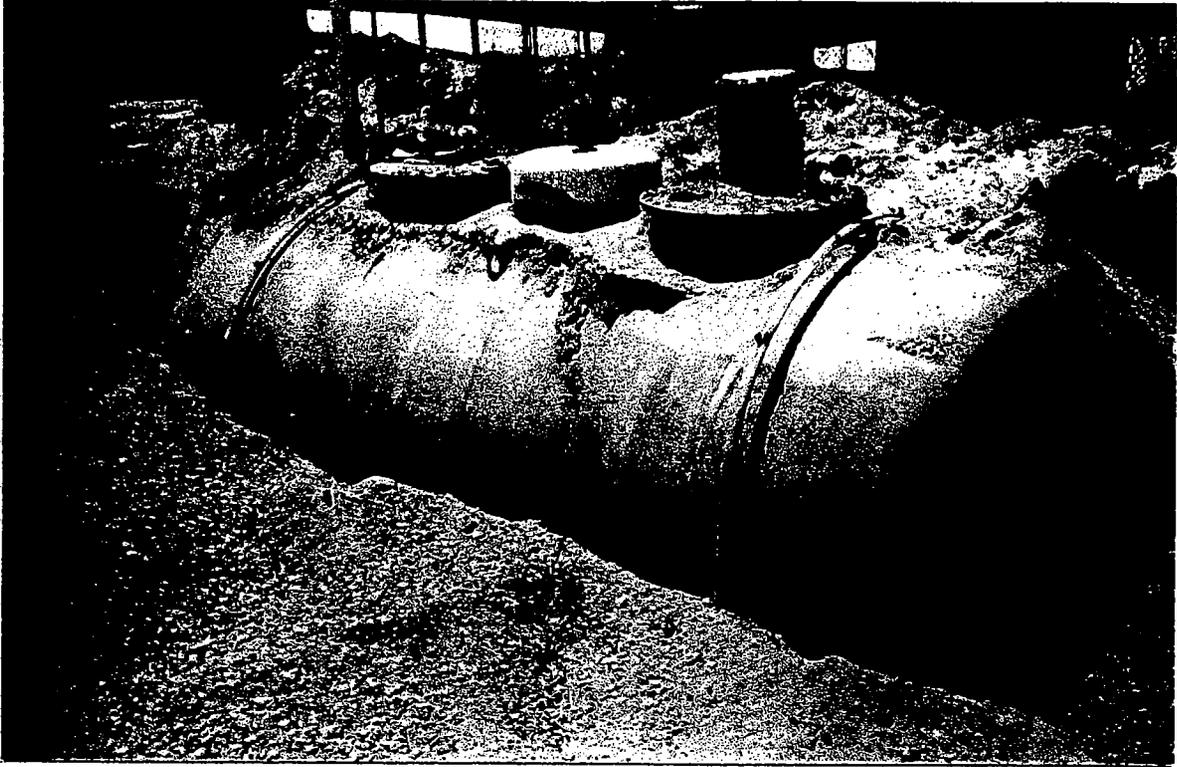
Facility 307  
COVERED STORAGE AREA

PARKING  
AREA

GRAPHIC SCALE  
SCALE: 1/8" = 1'-0"  
8' 4' 0 8' 16'

# **ATTACHMENTS**

**ATTACHMENT A**  
**Photographs of UST Removal**



**ATTACHMENT B**  
**Disposal Documentation**

COPY

STEELFIELD LANDFILL  
P O BOX 1290  
PANAMA CITY, FL 32402

001013  
SOUTHERN WASTE SERVICES  
HARRY MARSH  
1619 MOYLAN ROAD  
PANAMA CITY BEACH FL 32407

SITE: 117358	
TICKET: 117358	
WEIGHTMASTER: BRANNING	
DATE IN: 08/07/98	TIME IN: 13:02
DATE OUT: 08/07/98	TIME OUT: 13:40
VEHICLE: ROLL OFF	
REFERENCE:	ORIGIN: PCB

Scale 2 Gross Weight 34820 LB      Inbound - Cash ticket  
Scale 1 Tare Weight 31750 LB  
Net Weight 3060 LB

QTY	UNIT	DESCRIPTION	RATE	EXTENSION	TAXES	TOTAL
1.53	T	R TRASH NONBURN-TON	25.00	38.25	0.00	38.25

FILE

VEH & CAN NO NUMBERS  
DRIVER WEST

Operating hours...7:00 AM to 4:00 PM Monday through Saturday  
\*\*\* This is to certify that this load does not contain any hazardous materials, medical waste, fluorescent light tubes, motor oils, car batteries or liquids of any type.

SIGNATURE *Wes Hallag*

NET AMOUNT
38.25
TENDERED
38.25
CHANGE
0.00
CHECK NO.
9274

002  
SOUTHERN WASTE SERVICES  
10/09/98 FRI 09:08 FAX 904 234 2431

20 TP 3859

**OILY WASTES DISPOSAL FORM**

TYPE OF WASTE: DIESEL & WATER  
(BILGEWATER, OIL/WATER SEPARATOR, OIL STORAGE TANK, ETC.)

SOURCE(S): TANK 307 PANAMA CITY  
(LOCATION WASTE COLLECTED)

ESTIMATED QUANTITY: WASTE MORE WATER THAN OIL  
(GALLONS, DRUMS, ETC.)

SOURCE SIGNATURE AND DATE: Berge & Mann  
(RESPONSIBLE PERSON FROM SOURCE)

ASSUMED CONSTITUENTS: 900 gal Diesel & water  
(WATER, HYDRAULIC FLUID, DIESEL, FUEL OIL, OTHER, ETC.)

TESTS CONDUCTED: NON HOLEPUNED  
(LAB ANALYSIS - METALS, VOLATILES, ETC., HALOGENATED SOLVENTS, ETC.)

RESULTS OF TESTS: NON

SIGNATURE OF PERSON PERFORMING TESTING AND DATE: Berge & Mann

REVIEWER'S SIGNATURE AND DATE: Bud J. Taylor 08/20/98  
(CODE FOR PERSONNEL: SMITH, TAYLOR OR GAY'S WORDS)

WTP SUPERVISOR'S APPROVAL AND DATE: John E. Taylor 8-20-98

NOTES: \_\_\_\_\_

**ATTACHMENT C**  
**Storage Tank Registration Form**



# Storage Tank Facility Registration Form

Submit a completed form for the facility when registration of storage tanks or compression vessels is required by Chapter 376.303, Florida Statutes

Please review *Registration Instructions* before completing the form.

Please check all that apply	<input type="checkbox"/> New Registration	<input type="checkbox"/> New Owner	<input type="checkbox"/> New Tanks
	<input type="checkbox"/> Facility Info Update/Correction	<input type="checkbox"/> Owner Info Update/Correction	<input checked="" type="checkbox"/> Tank Info Update/Correction

**A. FACILITY INFORMATION**

County: Bay DEP Facility ID: 03/8518667

Facility Name: Naval Surface Warfare Center, Coastal Systems Station  
 Facility Address: TANK 307, CSS City: Panama City Zip: 32407-7001  
 Facility Contact: Mr Mike Clayton Business Phone: 850 ) 235-5859  
 Facility Type(s): V F NAICS Code: \_\_\_\_\_ Financial Responsibility: C

24 Hour Emergency Contact: \_\_\_\_\_ Emergency Phone: \_\_\_\_\_

**B. RESPONSIBLE PERSON INFORMATION** - Identify individual(s) or business(es) responsible for storage tank management, fueling operations, and/or cleanup activities at the facility location named above. Provide additional information in an attachment if necessary.

Name: <u>Commanding Officer, CSS (Code CPE)</u>	Facility - Responsible Person Relation Type:	Effective Date
Mail address: <u>6703 West Highway 98</u>	<input checked="" type="checkbox"/> Facility Account Owner (pays fees)	
City, ST, Zip: <u>Panama City, Florida 32407-7001</u>	Facility Account Owner information must be provided when the facility contains active (in-use) storage tanks on site.	
Contact: <u>Mr Mike Clayton</u>	STCM Account Number (if known):	
Telephone: <u>(850) 235-5859</u>	Identify other appropriate facility relationships for this party: <input checked="" type="checkbox"/> Facility Owner/Operator <input checked="" type="checkbox"/> Property Owner <input checked="" type="checkbox"/> Storage Tank Owner	

Name:	Other owner, relationship type(s)	Effective Date
Mail address:	<input type="checkbox"/> Facility Owner/Operator	
City, ST, Zip:	<input type="checkbox"/> Property Owner	
Contact:	<input type="checkbox"/> Storage Tank Owner	
Telephone:	<input type="checkbox"/> Other	

**C. TANK/VESSEL INFORMATION** - Complete one row for each storage tank or compression vessel system located at this facility.

Tank ID	T/V	A/U	Capacity	Installed	Content	Status/Effective Date	Construction	Piping	Monitoring
<u>307R</u>	<u>T</u>	<u>U</u>	<u>6000</u>	<u>XX/89</u>	<u>D</u>	<u>B 8/7/98</u>	<u>EIMN</u>	<u>CFIJK</u>	<u>FK</u>

Certified Contractor (performing tank installation or removal): US Navy, Public Works DBPR License No.: N/A

Registration Certification: To the best of my knowledge and belief, all information submitted on this form is true, accurate, and complete.

B. D. PIERRELL, LCDR, USN Signature: [Signature] Date: 10/13/98  
 Printed Name & Title: PUBLIC WORKS OFFICER

**ATTACHMENT D**  
**Application for Closure**  
**of Pollutant Storage Tank System**

**APPLICATION FOR CLOSURE OF POLLUTANT STORAGE TANK SYSTEM**

**Provide the facility information requested below.**

FDEP Facility # 03/8518667 Facility Name U. S. Navy

Facility Location Facility 307, Coastal Systems Station

Property Owner Commanding Officer, Coastal Systems Station (Code EMC)

Property Owner Address 6703 West Highway 98, Panama City, Florida 32407-7001

Phone (850) 235-5859

Method of Tank Closure Removal

**Pollutant Storage Systems Specialty Contractor (PSSSC) who will be on site supervising closure activities. Attach copy of PSSSC license.**

Individual Licensed as PSSSC N/A PSSSC # N/A

Firm U.S. Navy - Public Works Center (PWC)

Address 310 John Tower Road, Pensacola, FL 32508

**Indicate the firm (s) that will degas, remove, and transport the tank(s), and the method of degassification.**

Degassification Method Air Eduction (API 1604-4.2.5)

Firm Removing Tanks U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 452-4315

Firm Transporting Tanks Southern Waste Systems, Inc

Contact Ms Candace Esparza Phone (850) 234-8428

Firm Receiving Tanks for Ultimate Disposal Southern Waste Systems, Inc

Contact Ms Candace Esparza Phone (850) 234-8428

Indicate the laboratory that will conduct groundwater analysis.

Contracted Laboratory U.S. Navy - PWC Phone (850) 452-3180

Contact Mr. Joe Moore FDEP QA/QC 920121G

Indicate firm(s) transporting and disposing of contaminated soils.

Firm Transporting Soils N/A

Contact \_\_\_\_\_ Phone \_\_\_\_\_

Firm Remediating/Disposing Soils N/A

Contact \_\_\_\_\_ Phone \_\_\_\_\_

Disposal/Remediation Method \_\_\_\_\_

Indicate the firm(s) that will transport and ultimately dispose of residual product and sludge from the tanks.

Firm Transporting Residual Product and Sludge US Navy - Public Works Center

Contact Mr Bobby Hunter Phone (850) 452-2170

Firm Receiving/Disposal Residual Product and Sludge American Environmental Services

Contact Mr Chris Ellswarth Phone (850) 457-8645

Indicate the firm and names of personnel that will conduct field sampling.

Contracted Firm U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 452-4315

Person (s) Sampling Mr. Paul Semmes, P.E.

Equipment used for soil screening (Specific Make and Model) Organic Vapor Analyzer

(OVA) Thermo Environmental (680 HVM) equipped w/Flame Ionization Detector (FID).

**ATTACHMENT E**  
**Underground Storage Tank Installation**  
**and Removal Form**



# Underground Storage System Installation and Removal Form for Certified Contractors

Pollutant Storage Systems Contractor as defined in Section 489.113, Florida Statutes (certified contractors as defined in Section 62-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the underground storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards. This includes system components such as dispenser liners, piping sumps, and overflow protection devices.

### General Facility Information

Facility Name: NSWC, Coastal Systems Station	DEP Facility Identification No.: 03/8518667
Street Address (physical location): Facility 307, Coastal Systems Station	
County: Bay	Telephone #: 850 ) 235-5859
Owner Name: Commanding Officer, CSS (Code CPE)	Telephone #: 850 ) 235-5859
Owner Address: 6703 West Highway 98, Panama City, Florida 32407-7001	

### Storage Tank System Information

Number of Tanks Installed: None	Number of Tanks Removed: One (1)
Date Work Initiated: 8/7/98	Date Work Completed: 8/7/98
Tank(s) Manufactured by: Unknown	
Description of work Completed: Removed One Double-Walled, Fiberglass UST	

### Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Protection; that to the best of my knowledge and belief, the storage tank system installation, replacement or removal at this facility was conducted in accordance with Chapter 489, Florida Statutes, Section 376.303, Florida Statutes, and Chapter 62-761, Florida Administrative Code, and its adopted reference standards and documents for underground storage tank systems.

US Navy Public Works Center  
(Type or Print)  
Certified Pollutant Tank Contractor Name

*Johnnie W Kizer*  
Certified Tank Contractor Signature

*Johnnie W Kizer*  
Field Supervisor Name

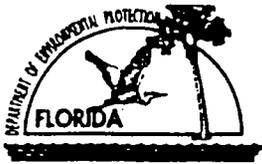
N/A  
PSSC Number  
Pollutant Storage Systems  
Contractor License Number

10-14-98  
Date

10-14-98  
Date

The owner or operator of the facility must register the tanks with the Department upon completion of the installation. The installer must submit this form to the County no more than 30 days after the completion of installation, replacement, or removal of a storage tank system.

**ATTACHMENT F**  
**Closure Assessment Form**  
**Soil and Groundwater Analyses**



Florida Department of Environmental Protection

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DEP Form # 62-761.800(3)
Form Title: Closure Assessment Form
Effective Date: December 10, 1990
DEP Application No. (Filled in by DEP)

Closure Assessment Form

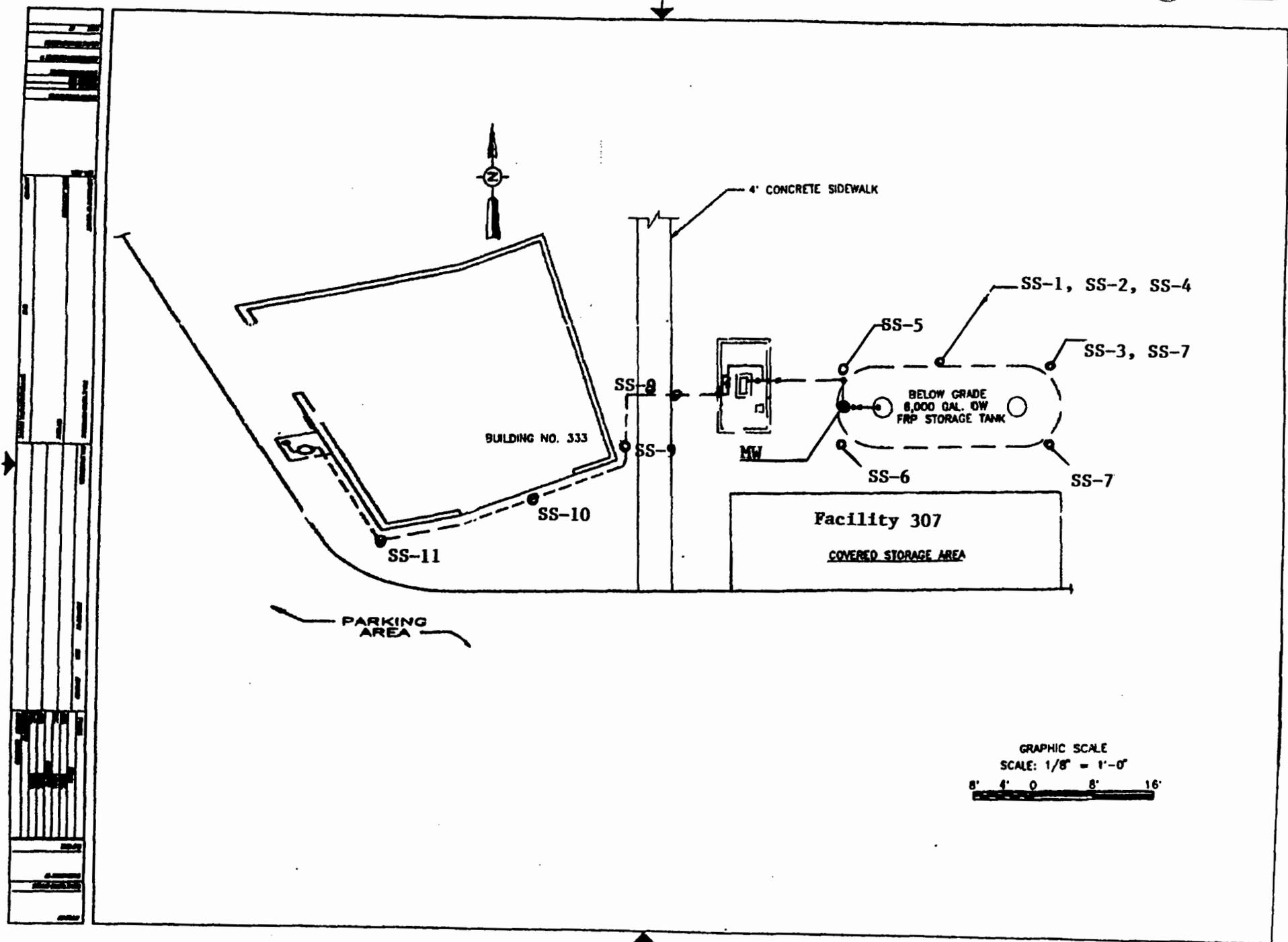
Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assessment was performed in accordance with Rule 62-761.800(3) or 62-762.800(3), Florida Administrative Code.

Please Print or Type
Complete All Applicable Blanks

- 1. Date 10/5/98
2. DEP Facility ID Number: 03/8518667
3. County Bay
4. Facility Name: Naval Surface Warfare Center, Coastal Systems Station
5. Facility Owner: Commanding Officer, Coastal Systems Station (Code WPE)
6. Facility Address: TANK 307, Coastal Systems Station
7. Mailing Address: 6703 West Highway 98, Panama City, Florida 32407-7001
8. Telephone Number: (850) 235-5859
9. Facility Operator: Mr Mike Clayton
10. Are the Storage Tank(s): (Circle one or both) A. Aboveground or (B) Underground
11. Type of Product(s) Stored: Diesel
12. Were the Tank(s): (Circle one) A. Replaced (B) Removed C. Closed in Place D. Upgraded (aboveground tanks only)
13. Number of Tanks closed: One (1)
14. Age of Tanks: 9 yrs

Facility Assessment Information

- Yes No Not Applicable
1. Was a Discharge Reporting Form submitted to the Department?
2. Is the depth to ground water less than 20 feet?
3. Are monitoring wells present around the storage system?
4. Is there free product present in the monitoring wells or within the excavation?
5. Were the petroleum hydrocarbon vapor levels in the soil greater than 500 parts per million for gasoline?
6. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene?
7. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels?
8. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?
9. Are any potable wells located within 1/4 of a mile radius of the facility?
10. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance: 300'
11. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.
12. If a facility has a pollutant storage tank system that has both gasoline and kerosine/diesel stored on site, both EPA method 602 and EPA method 610 must be performed on the ground water samples.



BUILDING NO. 333

4' CONCRETE SIDEWALK

SS-1, SS-2, SS-4

SS-5

SS-3, SS-7

BELOW GRADE  
8,000 GAL. DW  
FRP STORAGE TANK

MW

SS-6

SS-7

Facility 307

COVERED STORAGE AREA

SS-9

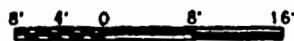
SS-8

SS-10

SS-11

PARKING AREA

GRAPHIC SCALE  
SCALE: 1/8" = 1'-0"



**Summary of OVA Readings**

**Closure Assessment Report  
Underground Storage Tank  
Tank 307R1  
Coastal Systems Station  
Panama City, Florida**

<b>Hand Auger Sample No.</b>	<b>Depth (Feet)</b>	<b>Unfiltered (ppm)</b>	<b>Filtered (ppm)</b>	<b>Total Hydrocarbon Readings (ppm)</b>
SS-1	2	1	<1	1
SS-2	8	28	<1	28
SS-3	3	<1	<1	0
SS-4	7	<1	<1	0
SS-5	7	2	<1	2
SS-6	7	<1	<1	0
SS-7	7	<1	<1	0
SS-8	2	<1	<1	0
SS-9	2	<1	<1	0
SS-10	2	<1	<1	0
SS-11	2	<1	<1	0

*Readings for unfiltered samples are total hydrocarbon readings including methane; readings for filtered samples are methane only.*

*Notes: ppm - parts per million.*

**Navy Public Works Center  
Environmental Laboratory**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Environmental  
Address: Bldg. 3887, Code 910  
NAS Pensacola, FL 32508  
Phone #: 452-4728  
Contact: Paul Semmes

**Analytical Report**

**Total Volatiles by Method 8260**

Lab Report Number: 83303  
Sample Date: 26 Aug 98  
Received Date: 27 Aug 98  
Sample Site: Naval Coastal Systems  
Job Order No.: 139 6007

LAB Sample ID#	1-	<b>83303</b>		
Sample Name / Location	Replacement Well Tank Closure Assessment			
Collector's Name	Grady Swann			
Date & Time Collected	26 Aug 98 @ 1320			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	10 Sep 98 JM			
Date of Analysis	10 Sep 98			
Sample Matrix	Groundwater			
Dilution	X 1			
Compound Name	1-	<b>83303</b>	units	Det. Limit Flags
Benzene	BDL		ug/L	1
Ethylbenzene	BDL		ug/L	1
Toluene	BDL		ug/L	1
m,p-Xylene	BDL		ug/L	1
o-Xylene	BDL		ug/L	1

**SURROGATE SPIKE RECOVERIES**

	Acceptance Limits	Percent Recovery
1,2-Dichloroethane-d4	75-133	90
Toluene-d8	86-119	102
Bromoflourobenzene	86-116	103

Explanation of Flags:

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COMMENTS :

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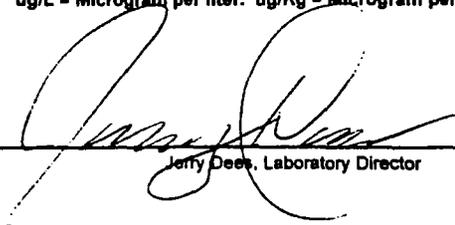
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BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. \* = FL HRS certification pending.

Approved by :

  
\_\_\_\_\_  
Jerry Dees, Laboratory Director

Date: 9/29/98

Report Generated

# Navy Public Works Center Environmental Laboratory

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NPWC Environmental  
Address: Bldg. 3887, Code 910  
NAS Pensacola, FL 32508  
Phone #: 452-4728  
Contact: Paul Semmes

## Analytical Report

610 PAH's by Method 8270

Lab Report Number: 83303  
Sample Date: 26 Aug 98  
Received Date: 27 Aug 98  
Sample Site: Naval Coastal Systems  
Job Order No.: 139 6007

LAB Sample ID#	1- <b>83303</b>			
Sample Name / Location	Replacement Well Tank Closure Assessment			
Collector's Name	Grady Swann			
Date & Time Collected	26 Aug 98			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	31 Aug 98 JM			
Date of Analysis	11 Sep 98			
Sample Matrix	Groundwater			
Dilution	X 1			
<b>Compound Name</b>	<b>1- 83303</b>	<b>units</b>	<b>MDL</b>	<b>Flags</b>
Acenaphthene	BDL	ug/L	2	
Acenaphthylene	BDL	ug/L	2	
Anthracene	BDL	ug/L	2	
Benzo(a)anthracene	BDL	ug/L	2	
Benzo(a)pyrene	BDL	ug/L	2	
Benzo(b)fluoranthene	BDL	ug/L	2	
Benzo(g,h,i)perylene	BDL	ug/L	2	
Benzo(k)fluoranthene	BDL	ug/L	3	
Chrysene	BDL	ug/L	2	
Dibenz(a,h)anthracene	BDL	ug/L	2	
Fluoranthene	BDL	ug/L	2	
Flourene	BDL	ug/L	2	
Indeno(1,2,3-cd)pyrene	BDL	ug/L	2	
1-Methylnaphthalene *	BDL	ug/L	2	
2-Methylnaphthalene	BDL	ug/L	3	
Naphthalene	BDL	ug/L	2	
Phenanthrene	BDL	ug/L	2	
Pyrene	BDL	ug/L	2	

### SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Nitrobenzene- d5	36-114	78
2-Flourobiphenyl	43-116	81
Terphenyl -d14	33-141	99

Explanation of Flags:

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COMMENTS : Surrogate recovery limits derived from EPA OLM01.0 SOW 3/90.

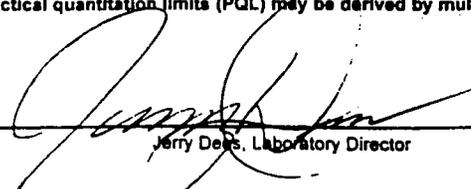
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BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram. \* = FL HRS certification pending.  
MDL = Method detection limit. Practical quantitation limits (PQL) may be derived by multiplying the MDL by 4.

Approved by :

  
Jerry Deeks, Laboratory Director

Date: 9/29/98

Report Generated  
End of Report

# HAZARDOUS WASTE CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

NPWC Environmental Laboratory

3887, Code 920  
 Pensacola, Fl. 32508  
 Ph#: (904) 452-4728/3642  
 DSN: 922-4728/3642  
 FAX: (904) 452-2799/2387

Requester: Naval Coastal Systems  
 Address: \_\_\_\_\_  
 Phone #: \_\_\_\_\_  
 Contact: Paul Seares  
 Job Order #: 1396007

Report Required? Yes No DEP? Yes No  
 Lab ID Number: \_\_\_\_\_  
 Sample Date: \_\_\_\_\_  
 Received Date: \_\_\_\_\_  
 Sample Site: Area 100  
 Lab Due Date: \_\_\_\_\_

Sample ID #	Lab	#1-	#2-	#3-	#4-	Notes
Sample Name	-----	<u>Replacement well</u>				Replacement well Tank closure assessment
or Location	-----					
Sampled by	-----	<u>Grady Swann</u>				
Collection Date	-----	<u>8/26/98</u>				
Date/Time	-----	<u>13:20</u>				
Sample Matrix	-----	<u>GW</u>				

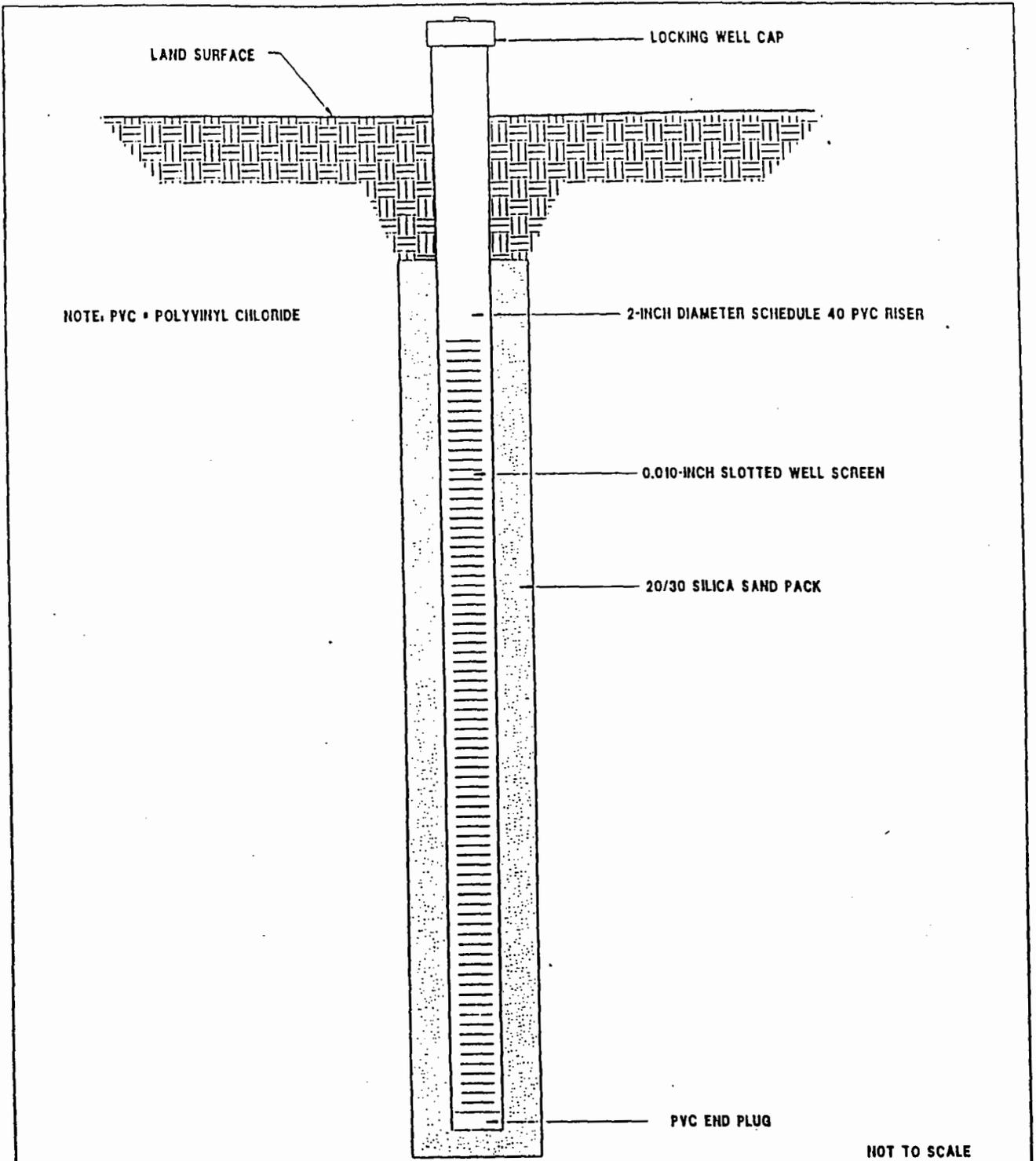
GROUP PARAMETERS by Method Name	METHOD #	X	Bottle ID #'s	FY97	Containers	Preservatives						
										Units	Required (L/S)	Used (Liquids)
HW Charact. (complete)	EPA SW 846									56	See below	See below
Ignitability (Flashpoint)	SW 846 1010									2	250ml/4 oz.	4° C
Reactivity (Cyanide & Sulfide)	EPA SW-846									4	1L/4 oz.	4° C
Corrosivity (pH)	SW 846 9040/9045i									0.5	250ml/4 oz.	4° C
Toxicity (TCLP) complete	EPA SW-846									50	See below	See below
Toxicity (TCLP) complete	EPA SW-846									50	See below	See below
TCLP Non Volatile Extraction	SW 846 1311									4	40 ml x 3/4 oz.	4° C
TCLP Volatile ZHE Extraction	SW 846 1311									4	1Lx/32 oz.	HCl to pH<2.4° C
TCLP BNA Extractables	SW 846 8270									16	1Lx3/4 oz.	4° C
TCLP Acid Extractables	SW 846 8270									9	1Lx3/4 oz.	4° C
TCLP B/N Extractables	SW 846 8270									9	1Lx3/4 oz.	4° C
TCLP Pesticides	SW 846 8080									9	1Lx3/4 oz.	4° C
TCLP Herbicides	SW 846 8150									9	1Lx3/4 oz.	4° C
TCLP Volatiles	SW 846 8260									8	40 ml x 3/4 oz.	HCl to pH<2.4° C
TCLP Metals (8)	EPA SW-846									65	500 ml/4 oz.	HNO <sub>3</sub> to pH<2
Multiphasic Samples	EPA SW-846									+50%	See above	See above
Complete Priority Pollutants	EPA SW-846									40	See below	See below
PP Acid Extractables	SW 846 8270									9	1Lx3/4 oz.	4° C
PP B/N Extractables	SW 846 8270									9	1Lx3/4 oz.	4° C
PP Pesticide/PCB's	SW 846 8080									9	1Lx3/4 oz.	4° C
PP Volatiles	SW 846 8260									8	40 ml x 3/4 oz.	HCl to pH<2.4° C
PP Metals (13)	EPA SW-846									9	500 ml/4 oz.	HNO <sub>3</sub> to pH<2
PP Cyanide/Phenol	EPA SW-846									4	1L Plastic/1L Glass	NaOH/H <sub>2</sub> SO <sub>4</sub>
Toxicity (TCLP) less Pest/Herb	EPA SW-846									36	See below	See below
F001 - F005 Solvents	EPA SW-846									24	1Lx38.40ml/4/16 oz.	4° C
Kerosene Anal. Group (FL-PRO)	SW-846/FL DEP									24	Multiple	As Required
FL-PRO	FL DEP									5	1Lx3/16 oz.	H <sub>2</sub> SO <sub>4</sub> to pH<2.4° C
Total Volatiles	SW 846 8260									8	40 ml x 3/4 oz.	HCl to pH<2.4° C
Total BNA Extractables	SW 846 8270									16	1Lx2/16 oz.	4° C
Total RCRA Metals (8)	EPA SW-846									65	500 ml/4 oz.	HNO <sub>3</sub> to pH<2
Single Metals	EPA SW-846									1	500 ml/4 oz.	HNO <sub>3</sub> to pH<2
PCB's in Cl	SW 846 8080									3	40 ml/4 oz.	None
PCB's in Water/Sol/Wipes	SW 846 8080									4	1L/4 oz.	None

Other:  
BETX+MTBE (Y26.0) ✓  
PAH'S (G10) (G10) ✓

Comments: W/QUESTIONS, call Paul Seares

Relinquished by: W. GRADY SWANN  
 Date/Time: 8/27/98 @ 13:50 P

Received by: PP Seares  
 Date/Time: 8/27/98 12:50 P



TYPICAL TEMPORARY MONITORING WELL  
INSTALLATION DETAIL

**ATTACHMENT G**  
**Certificate of Decontamination**

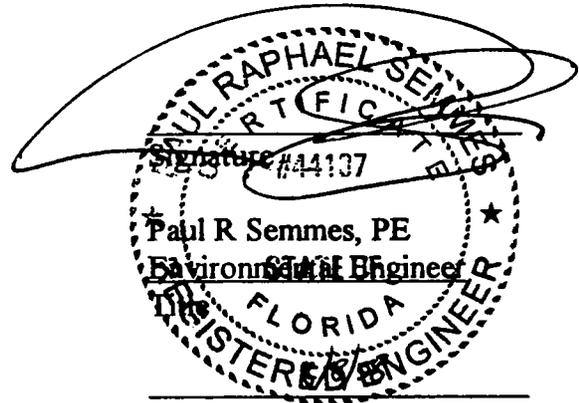
**DEPARTMENT OF THE NAVY  
NAVY PUBLIC WORKS CENTER  
310 JOHN TOWER ROAD  
PENSACOLA, FLORIDA 32508-5303**

# **CERTIFICATE OF DECONTAMINATION**

It is hereby certified that the following Underground Storage Tank located at the Coastal Systems Station, Panama City, Florida has been decontaminated by the Navy Public Works Center (PWC), Pensacola, Florida:

Tank 307R1

The tank has been emptied in accordance with 40 CFR 261.7, vapor freed, triple rinsed, cleaned and has been rendered unusable.



\_\_\_\_\_  
Date

## APPENDIX F

### SOIL BORING LOGS



PROJECT NO: 7766

PROJECT NAME: CTO 0047 Site 307

PROJECT LOCATION: Navy Coastal Systems Station

DATE DRILLED: 5/28/98

DRILLING COMPANY: TEG

SURFACE ELEVATION: Feet

DRILLING METHOD: Direct Push

BORING DIAMETER: Inches 3.5

DRILLING RIG: Strataprobe

GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT. <small>unfiltered sample filtered</small>	PID (ppm)			USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.			
0	SS-1	DP				80	Concrete 0 to 8"	
5	SS-2	DP				100	CL Sandy Clay, red, fine to med. grained sand, plastic, soft	
10	SS-3	DP	Z			100	SP Sand, light gray, fine to med. grained, wet at 5' bls	
15	SS-4	DP	Z			100	SP Sand, dark gray, fine to med. grained, (sweet organic odor) wet from 6 to 12' bls	
20	SS-5	DP				100	SP Sand, light gray, fine grained, trace of fines, wet	
25	SS-6	DP	Z	NA		100		
30	SS-7	DP				100		
35	SS-8	DP	Z			100		
40							E.O.B	



PROJECT NO: 7766

PROJECT NAME: CTO 0047

Side 307

PROJECT LOCATION: Navy Coastal Systems Station

DATE DRILLED: 5/28/98

DRILLING COMPANY: TEG

SURFACE ELEVATION: Feet

DRILLING METHOD: Direct Push

BORING DIAMETER: Inches 3.5

DRILLING RIG: Stratoprobe

GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample Filtered	B. Zone	Borehole	Drill B. Z.			
0	SS-1	DR NO NO					CC	Concrete 0 to 6"	
5	SS-2	100 40		2		2	SP	Sandy Clay, Fine to medium grained sand, plastic, soft, mist	
10	SS-3	80 40					SP	Sand, black, Fine to medium grained, organic odor from 4 to 7' b/s, wet at 5' b/s	
15								Sand, light gray, Fine to medium grained, trace of fines, wet	
20									
25									
30									
35									
40									



SOUTHNAVFAC

LOG OF BORING SB03

PROJECT NO: 7766	PROJECT NAME: CTO 0047 Site 307
PROJECT LOCATION: Navy Coastal Systems Station	DATE DRILLED: 5/28/98
DRILLING COMPANY: TEG	SURFACE ELEVATION: Feet
DRILLING METHOD: Direct Push	BORING DIAMETER: Inches 3.5
DRILLING RIG: Strataprobe	GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)			% GRAPHIC LOG Recovery	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Unfiltered Sample Filtered	B. Zone	Borehole				
0	SS-1	DP ND ND				60 cc	Concrete 0 to 6"		
5	SS-2	50 ND		2		80 SP	Sandy clay, red. Fine to medium grained Sands, plastic, soft, moist		
		Wet					Sand, dark gray, fine to medium grained, trace of fines, organic odor, wet at 5'61s		
	SS-3					40 SP	Sand, light gray, fine grained, wet		
10		E.O.B							
15									
20									
25									
30									
35									
40									



SOUTHNAVFAC

LOG OF BORING 5804

Page ( of )

PROJECT NO: 7766

PROJECT NAME: CTO 0047

Site 307

PROJECT LOCATION: Navy Coastal Systems Station

DATE DRILLED: 5/28/98

DRILLING COMPANY: TEG

SURFACE ELEVATION: Feet

DRILLING METHOD: Direct Push

BORING DIAMETER: Inches 3.5

DRILLING RIG: Strata probe

GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				% GRAPHIC LOG RECOVERY	USCS/RD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample Filtered	B. Zone	Borehole	Drill B. Z.				
0	SS-1	PP	no				60	SP	Concrete 0 to 8" Sand, light brown, fine to medium grained, wet at 5' bls (Former Tank 172 Area) Sand, light gray, fine to medium grained, trace of fines, wet	
5	SS-2		no	2			80	SP		
10	SS-3		no				100	SP		
10			E.O.B.							
15										
20										
25										
30										
35										
40										



SOUTHNAVFAC

LOG OF BORING SB05

PROJECT NO: 7766

PROJECT NAME: CTO 0047

Site 307

PROJECT LOCATION: Navy Coastal Systems Station

DATE DRILLED: 5/28/98

DRILLING COMPANY: TEG

SURFACE ELEVATION: Feet

DRILLING METHOD: Direct Push

BORING DIAMETER: Inches 3.5

DRILLING RIG: Strataprobe

GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG Recovery	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			unfiltered Sample & Filtered	B. Zone	Borehole	Drill B. Z.				
0-5	SS-1	↑ OP	ND ND				50	CL	Sandy clay red, fine to medium grained sand, plastic fines, moist	
5-7	SS-2		200 70	2			100	SP	Sand, light gray, fine to medium grained, organic odor at 5' bls, wet at 5' bls	
7-10	SS-3	↓	50 15				100	SP	Sand, dark gray, fine to medium grained, trace of fines, wet	
10-40			E. O. B.							



**SOUTHNAVFAC**

# LOG OF BORING SB06

Page 1 of 1

PROJECT NO: 7766	PROJECT NAME: CDD 0047	Site 307
PROJECT LOCATION: Navy Coastal Systems Station	DATE DRILLED: 2-4-99	
DRILLING COMPANY: Tetra Tech, Inc	SURFACE ELEVATION: Feet	
DRILLING METHOD: Hand Auger	BORING DIAMETER: Inches, 3"	
DRILLING RIG: NA	GEOLOGIST: Gerald Goode	

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample	B. Zone	Borehole	Drill B. Z.				
5								Concrete removed from surface to 8" below land surface Sand, light gray fine to medium grained, trace of fines, moist		
10										
15										
20										
25										
30										
35										
40										



SOUTHNAVFAC

LOG OF BORING SB07 Page 1 of 1

PROJECT NO: 7766	PROJECT NAME: (TO 0047 Site 307
PROJECT LOCATION: Navy Coastal Systems Station	DATE DRILLED: 2-4-99
DRILLING COMPANY: Tekn Tech NUS	SURFACE ELEVATION: Feet
DRILLING METHOD: Hand Auger	BORING DIAMETER: Inches 3"
DRILLING RIG: NA	GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample	B. Zone	Borehole	Drill B. Z.				
0								Concrete 0 to 8"		
5		F.O.B						clayey sand, reddish brown, slightly plastic fines (40%), soft, damp.		
10								Sand, light gray, fine to medium grained, trace of fines, moist.		
15										
20										
25										
30										
35										
40										



SOUTHNAVFAC

# LOG OF BORING SS24

Page 1 of 1

PROJECT NO: 7766

PROJECT NAME: CTD 0047 Site A062/Swmu

PROJECT LOCATION: Navy Coastal Systems Station

DATE DRILLED: 5/27/98

DRILLING COMPANY: TEG

SURFACE ELEVATION: Feet

DRILLING METHOD: Direct Push

BORING DIAMETER: Inches 3.5

DRILLING RIG: Strat probe

GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG Scale 1/2"	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.					
0	SS-1	20				80	CL	Asphalt 0 to 6" Sandy clay, red, plastic, soft, moist.		
5	SS-2	20	5	-	5	100	SP	Sand, light gray, fine to medium grained, trace of fines, wet at 5 1/2 ft.		
10	SS-3	20	5			100	SP			
15										
20										
25										
30										
35										
40										

JCE NUMBER:



SOUTHNAVFAC

LOG OF BORING 55B25

PROJECT NO: 7766	PROJECT NAME: CTO 0047 Ac2/sumy1
PROJECT LOCATION: Navy Coastal Systems Station	DATE DRILLED: 5/27/98
DRILLING COMPANY: TEG	SURFACE ELEVATION: Feet
DRILLING METHOD: Direct Push	BORING DIAMETER: Inches 3.5
DRILLING RIG: Statprobe	GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)			% GRAPHIC LOG RECORDED	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			unfiltered Sample Filtrate	B. Zone	Borehole				
0	SS-1	DP	no			60	CL	Concrete Repoint 0 to 6"	
5	SS-2		no			100	SP	Sandy clay, red, plastic, soft moist.	
10	SS-3		no			80	SP	Sand, light gray, fine to medium grained, wet at 5' b/s.	
10		↓	E.O.B.						



SOUTHNAVFAC

LOG OF BORING *SSB26*

PROJECT NO: *7766*

PROJECT NAME: *CTD 0047 AOC2/sumul*

PROJECT LOCATION: *Naval Coastal Systems Station*

DATE DRILLED: *5/27/98*

DRILLING COMPANY: *TEG*

SURFACE ELEVATION: *Feet*

DRILLING METHOD: *Direct Push*

BORING DIAMETER: *Inches 3.5*

DRILLING RIG: *St. 901 Prob*

GEOLOGIST: *Gerald Goode*

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG <i>Pressure</i>	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			<i>Sample Depth</i>	B. Zone	Borehole	Drill B. Z.				
0-6"	SS-1	DP	<i>no nd</i>				CL	Concrete 0 to 6"		
6-5 1/2'	SS-2		<i>no nd</i>	Z		Z	SP	Sandy clay red. plastic, soft, moist		
5 1/2'-6'			<i>no nd</i>	wet	E	0.8		Sand, light gray. Fine to medium grained, wet at 5 1/2 feet		
6'-6 1/2'								Refusal at 6 1/2'		



SOUTHNAVFAC

LOG OF BORING SSB27

PROJECT NO: 7766 PROJECT NAME: CTO 0047 A02/Surreal  
 PROJECT LOCATION: Navy Coastal Systems Station DATE DRILLED: 5/27/98  
 DRILLING COMPANY: TEG SURFACE ELEVATION: Feet  
 DRILLING METHOD: Direct Push BORING DIAMETER: Inches 3.5  
 DRILLING RIG: Stratoprobe GEOLOGIST: Gerald Good

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)			USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.			
0	SS-1	200			50	SP	dispenser Island - Gasoline Sand, light gray, fine to medium grained, gasoline like odor, Sand dark gray (petroleum staining) fine to medium grained, gasoline like odor wet at 5' b/s.	
5	SS-2	350	5		100	SP		
10	SS-3	200	3 wet		60	SP		
10			E. O.B.					



SOUTHNAVFAC

LOG OF BORING 55B28

PROJECT NO: 7766  
 PROJECT LOCATION: Navy Coastal Systems Station  
 DRILLING COMPANY: TEG  
 DRILLING METHOD: Direct Push  
 DRILLING RIG: Stratoprobe

PROJECT NAME: CTO 0047 Accz/Summ 1  
 DATE DRILLED: 5/29/98  
 SURFACE ELEVATION: Feet  
 BORING DIAMETER: Inches 3.5"  
 GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLONS/FT.	PID (ppm)			USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.			
0	SS-1	ND ND				CL	Concrete 0 to 6"	
5	SS-2	ND ND			5'	SP	Sandy clay, med. plastic, soft moist.	
5	SS-3	10 5	5		5'	SP	Sand, light brown fine to medium grained, wet at 5' bls.	
10			E.O.B.				Sand, light gray, fine to medium grained, occasional silt seam, wet.	



SOUTHNAVFAC

LOG OF BORING MW01

Page (of)

PROJECT NO: CTD 0047	PROJECT NAME: 307 CTD 0047
PROJECT LOCATION: Coastal System Station	DATE DRILLED: 9/19/98
DRILLING COMPANY: Environmental Drilling Services	SURFACE ELEVATION: Feet
DRILLING METHOD: Hollow Stem Auger	BORING DIAMETER: Inches 8"
DRILLING RIG: GE01	GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample	B. Zone	Borehole	Drill B. Z.				
5	Grab							<p>Due to close proximity to the DPT borings the well was blind drilled to completion.</p> <p>- Fill material, bricks and clayey sand, to 3' b/s.</p> <p>Sand, light gray. Fine to medium grained, wet at 4' b/s. Sand unit becomes dark grayish E.O.B. green at 10' b/s.</p>		
5	Grab									
10										
15										
20										
25										
30										
35										
40										



SOUTHNAVFAC

LOG OF BORING MW02

Page (of) 1

PROJECT NO: CTO 0047

PROJECT NAME: 307 - CTO 0047

PROJECT LOCATION: Coastal System Station

DATE DRILLED: 9/19/98

DRILLING COMPANY: Environmental Drilling Services

SURFACE ELEVATION: Feet

DRILLING METHOD: Hollow Stem Auger

BORING DIAMETER: Inches 3

DRILLING RIG: DKB1

GEOLOGIST: Gerald Goolsby

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)				GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			Sample	B. Zone	Borehole	Drill B. Z.				
5								Due to close proximity to DPT borings, this well was blind drilled to 13' b/s		
10								Sand, light gray, fine to medium grained, wet at 5' b/s.		
15								E.O.B.		
20										
25										
30										
35										
40										



SOUTHNAVFAC

LOG OF BORING MWD3

PROJECT NO: CTO 0047

PROJECT NAME: Site 307 CTO 0047

PROJECT LOCATION: Coastal Systems Station

DATE DRILLED: 9/19/98

DRILLING COMPANY: Environmental Drilling Services

SURFACE ELEVATION: Feet

DRILLING METHOD: Hollow Stem Auger

BORING DIAMETER: Inches 8"

DRILLING RIG: BKBI

GEOLOGIST: Gerald Good

DEPTH feet	SAMPLE NUMBER	BLOWS/FT.	PID (ppm)			GRAPHIC LOG	USCS/ROD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.				
0-1	60b	10/ft					Concrete 0-8"		
1-2	60h	10/ft					Clayey Sand, reddish brown, plastic finer, moist		
2-4							Sand, light gray fine to medium grained, wet at 4' b/s		
4-13							Due to close proximity to DPT borings, the well was blind drilled to 13' b/s.		
13-15							EOB		



SOUTHNAVFAC

LOG OF BORING MW40

Page 1 of 1

PROJECT NO: CTO 0047	PROJECT NAME: 307 CTO 0047
PROJECT LOCATION: Coastal Engine Station	DATE DRILLED: 9/18/98
DRILLING COMPANY: Environmental Drilling Services	SURFACE ELEVATION: Feet
DRILLING METHOD: Hollow Stem Auger	BORING DIAMETER: Inches 8
DRILLING RIG: BCB1	GEOLOGIST: Gerald Goode

DEPTH feet	SAMPLE NUMBER	BLOWS/FT. <i>with hand</i>	PID (ppm)			GRAPHIC LOG	USCS/RQD	GEOLOGIC DESCRIPTION Density/Consistency, Hardness, Color	WELL DIAGRAM
			B. Zone	Borehole	Drill B. Z.				
5	SS	6rb	100	10					
5-10							Sand, light gray, fine to medium grained, moist		
10-15							Sand, black, fine grained, (hard pan (remains 1/2 in) just like odor, wet at 4' bls)		
15-30							Sand, dark gray, fine to medium grained.		
30-40							Clay - dark gray, soft, highly plastic E.C.B. (observed on tip of auger)		

## APPENDIX G

### HEADSPACE METHODOLOGY FOR DETERMINING SOIL ORGANIC VAPOR CONCENTRATIONS

## HEADSPACE METHODOLOGY FOR DETERMINING SOIL ORGANIC VAPOR CONCENTRATION

Soil headspace readings were obtained utilizing the following method which conforms to the requirements of Chapter 62-770.200(8), F.A.C.

Two 16 ounce glass soil jars were half-filled with soil sample (duplicate samples). The soil jars were then sealed utilizing "mason jar" type open top screw on caps with foil in place of the conventional solid jar tops. The soil samples were allowed to equilibrate to ambient temperature which was within the FDEP temperature range.

The samples were tested with a Foxboro Century 128, an organic vapor analyzer (OVA) equipped with a flame ionization detector (FID). Prior to each days activities, the OVA was field calibrated with 100 ppm methane in air, in accordance with the manufacturers specifications. Sample testing was performed by inserting the OVA probe through the foil sample cover and recording the highest OVA reading. Following collection of this OVA reading, the OVA was fitted with a granular activated carbon filter probe. The OVA was then used to test the headspace above the duplicate sample. Carbon absorbs petroleum hydrocarbons and thus the filtered reading is assumed to represent naturally occurring organic vapors.

Upon completion of the screening exercise, the carbon filtered result was subtracted from the un-filtered result, to obtain a net petroleum vapor value. In accordance with Chapter 62-770.200(2), corrected headspace levels in excess of 50 ppm is defined as excessively contaminated soil for diesel contaminated soil.

## APPENDIX H

### PRE-BURN SOIL LABORATORY DATA SHEETS AND WASTE MANIFESTS

**Technical Report for**

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**Tetra-Tech, NUS**

Site 307-CSS, Panama City

7766 Site 307

Accutest Job Number: F2458

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**Report to:**

**Tetra Tech, NUS  
1311 Executive Center Drive  
Ellie Building, Suite 220  
Tallahassee, FL 32301**

**ATTN: Gerald Goode**

**Total number of pages in report:**



**Harry Behzadi, Ph.D.  
Laboratory Director**

Results relate only to the items tested.

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.



## Sample Summary

Tetra-Tech, NUS

Date: 07/27/98

Site 307-CSS, Panama City  
Project No: 7766 Site 307

Job No: F2458

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
F2458-1	05/28/98	08:30 GG	05/29/98	AQ	Ground Water	307-SS-SB01-0405-001B
F2458-2	05/28/98	08:45 GG	05/29/98	SO	Soil	307-SS-SB01-0405-
F2458-3	05/28/98	13:45 GG	05/29/98	SO	Soil	IDW-SOIL-DRUMB
F2458-4	05/28/98	09:45 GG	05/29/98	SO	Soil	307-SS-SB02-0405-
F2458-5	05/28/98	11:30 GG	05/29/98	SO	Soil	307-SS-SB05-0405-

## Report of Analysis

**Client Sample ID:** 307-SS-SB01-0405-001B  
**Lab Sample ID:** F2458-1  
**Matrix:** AQ - Ground Water  
**Method:** FLORIDA-PRO  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 05/28/98  
**Date Received:** 05/29/98  
**Percent Solids:** n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00802.D	1	06/02/98	NF	06/01/98	OP387	GOP32
Run #2							

CAS No.	Compound	Result	RDL	Units Q
	TPH (C8-C40)	ND	0.50	mg/l

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		40-140%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

<b>Client Sample ID:</b> 307-SS-SB01-0405-001B	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-1	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 610	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I05918.D	1	05/30/98	NF	05/29/98	OP391	GIJ252
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	10	ug/l	
208-96-8	Acenaphthylene	ND	10	ug/l	
120-12-7	Anthracene	ND	10	ug/l	
56-55-3	Benzo(a)anthracene	ND	10	ug/l	
50-32-8	Benzo(a)pyrene	ND	10	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	10	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	10	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	10	ug/l	
218-01-9	Chrysene	ND	10	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	10	ug/l	
206-44-0	Fluoranthene	ND	10	ug/l	
86-73-7	Fluorene	ND	10	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	10	ug/l	
91-20-3	Naphthalene	ND	10	ug/l	
90-12-0	1-Methylnaphthalene	ND	10	ug/l	
91-57-6	2-Methylnaphthalene	ND	10	ug/l	
85-01-8	Phenanthrene	ND	10	ug/l	
129-00-0	Pyrene	ND	10	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	67%		40-125%
84-15-1	o-Terphenyl	85%		45-130%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

<b>Client Sample ID:</b> 307-SS-SB01-0405-001B	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-1	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 601/602	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF006300.D	1	06/09/98	JG	n/a	n/a	GEF143
Run #2							

**Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
625-98-9	1-Chloro-3-fluorobenzene	96 %		75-125 %
462-06-6	Fluorobenzene	96 %		75-125 %
98-08-8	aaa-Trifluorotoluene	99 %		75-125 %

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB01-0405-	
<b>Lab Sample ID:</b> F2458-2	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> EPA 8100	<b>Percent Solids:</b> 85.7
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	I05993.D	100	06/04/98	NF	06/02/98	OP390	GIJ255
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	39000	ug/kg	
208-96-8	Acenaphthylene	ND	39000	ug/kg	
120-12-7	Anthracene	ND	39000	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39000	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39000	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39000	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39000	ug/kg	
218-01-9	Chrysene	ND	39000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39000	ug/kg	
206-44-0	Fluoranthene	ND	39000	ug/kg	
86-73-7	Fluorene	ND	39000	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39000	ug/kg	
91-20-3	Naphthalene	ND	39000	ug/kg	
90-12-0	1-Methylnaphthalene	37700	39000	ug/kg	J
91-57-6	2-Methylnaphthalene	56900	39000	ug/kg	
85-01-8	Phenanthrene	ND	39000	ug/kg	
129-00-0	Pyrene	ND	39000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	0% <sup>b</sup>		35-125%
84-15-1	o-Terphenyl	0% <sup>b</sup>		35-135%

- (a) Elevated detection limits due to matrix interference.
- (b) Outside control limits due to dilution.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

**Client Sample ID:** 307-SS-SB01-0405-  
**Lab Sample ID:** F2458-2  
**Matrix:** SO - Soil  
**Method:** FLORIDA-PRO  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 05/28/98  
**Date Received:** 05/29/98  
**Percent Solids:** 85.7

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00810.D	500	06/02/98	NF	06/01/98	OP388	GOP32
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	22200	4800	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	0% <sup>a</sup>		40-140%	

(a) Outside control limits due to dilution.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB01-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-2	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 85.7
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006293.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

### Purgeable Aromatics

CAS No.	Compound	Result	RDL	Units Q
71-43-2	Benzene	ND	120	ug/kg
100-41-4	Ethylbenzene	ND	120	ug/kg
1634-04-4	Methyl Tert Butyl Ether	ND	120	ug/kg
108-88-3	Toluene	ND	120	ug/kg
1330-20-7	Xylenes (total)	ND	360	ug/kg

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	98%		50-150%
462-06-6	Fluorobenzene	94%		50-150%
625-98-9	1-Chloro-3-fluorobenzene	103%		50-150%

(a) En Core sampler was not properly capped; results are considered minimum values.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis****Client Sample ID:** IDW-SOIL-DRUMB**Lab Sample ID:** F2458-3**Date Sampled:** 05/28/98**Matrix:** SO - Soil**Date Received:** 05/29/98**Method:** EPA 8100**Percent Solids:** 92.5**Project:** Site 307-CSS, Panama City

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	105980.D	2	06/03/98	NF	06/02/98	OP390	GIJ254
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	720	ug/kg	
208-96-8	Acenaphthylene	ND	720	ug/kg	
120-12-7	Anthracene	ND	720	ug/kg	
56-55-3	Benzo(a)anthracene	ND	720	ug/kg	
50-32-8	Benzo(a)pyrene	ND	720	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	720	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	720	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	720	ug/kg	
218-01-9	Chrysene	ND	720	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	720	ug/kg	
206-44-0	Fluoranthene	ND	720	ug/kg	
86-73-7	Fluorene	ND	720	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	720	ug/kg	
91-20-3	Naphthalene	ND	720	ug/kg	
90-12-0	1-Methylnaphthalene	ND	720	ug/kg	
91-57-6	2-Methylnaphthalene	ND	720	ug/kg	
85-01-8	Phenanthrene	ND	720	ug/kg	
129-00-0	Pyrene	ND	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	84 %		35-125 %
84-15-1	o-Terphenyl	90 %		35-135 %

(a) Elevated detection limits due to matrix interference.

ND = Not detected

RDL = Reported Detection Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	
<b>Lab Sample ID:</b> F2458-3	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> FLORIDA-PRO	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00821.D	10	06/03/98	NF	06/01/98	OP388	GOP33
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	345	90	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	92%		40-140%	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-3	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 92.5
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	EF006294.D	100	06/08/98	RAW	n/a	n/a	GEF140

**VOA PPL List**

CAS No.	Compound	Result	RDL	Units Q
71-43-2	Benzene	ND	210	ug/kg
75-25-2	Bromoform	ND	210	ug/kg
75-27-4	Bromodichloromethane	ND	210	ug/kg
74-83-9	Bromomethane	ND	210	ug/kg
56-23-5	Carbon tetrachloride	ND	210	ug/kg
108-90-7	Chlorobenzene	ND	210	ug/kg
75-00-3	Chloroethane	ND	210	ug/kg
67-66-3	Chloroform	ND	210	ug/kg
74-87-3	Chloromethane	ND	210	ug/kg
10061-01-5	cis-1,3-Dichloropropene	ND	210	ug/kg
124-48-1	Dibromochloromethane	ND	210	ug/kg
75-71-8	Dichlorodifluoromethane	ND	210	ug/kg
75-34-3	1,1-Dichloroethane	ND	210	ug/kg
107-06-2	1,2-Dichloroethane	ND	210	ug/kg
75-35-4	1,1-Dichloroethene	ND	210	ug/kg
156-60-5	trans-1,2-Dichloroethene	ND	210	ug/kg
10061-02-6	trans-1,3-Dichloropropene	ND	210	ug/kg
78-87-5	1,2-Dichloropropane	ND	210	ug/kg
100-41-4	Ethylbenzene	ND	210	ug/kg
75-09-2	Methylene chloride	ND	1000	ug/kg
1634-04-4	Methyl Tert Butyl Ether	ND	210	ug/kg
79-34-5	1,1,2,2-Tetrachloroethane	ND	210	ug/kg
127-18-4	Tetrachloroethene	ND	210	ug/kg
108-88-3	Toluene	ND	210	ug/kg
71-55-6	1,1,1-Trichloroethane	ND	210	ug/kg
79-00-5	1,1,2-Trichloroethane	ND	210	ug/kg
79-01-6	Trichloroethene	ND	210	ug/kg
75-69-4	Trichlorofluoromethane	ND	210	ug/kg
75-01-4	Vinyl chloride	ND	210	ug/kg
110-75-8	2-Chloroethyl vinyl ether	ND	210	ug/kg
541-73-1	1,3-Dichlorobenzene	ND	210	ug/kg
106-46-7	1,4-Dichlorobenzene	ND	210	ug/kg
95-50-1	1,2-Dichlorobenzene	ND	210	ug/kg
1330-20-7	Xylenes (total)	ND	630	ug/kg
156-59-2	cis-1,2-Dichloroethene	ND	210	ug/kg

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Report of Analysis

Page 2 of 2

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	
<b>Lab Sample ID:</b> F2458-3	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> SW846 8021B	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006294.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

### VOA PPL List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	80 %		50-150 %
75-29-6	2-Chloropropane	86 %		50-150 %
98-08-8	aaa-Trifluorotoluene	91 %		50-150 %
462-06-6	Fluorobenzene	87 %		50-150 %
625-98-9	1-Chloro-3-fluorobenzene	93 %		50-150 %
625-98-9	1-Chloro-3-fluorobenzene	96 %		50-150 %

(a) En Core sampler was not properly capped; results are considered minimum values.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



**Report of Analysis**

**Client Sample ID:** IDW-SOIL-DRUMB

**Lab Sample ID:** F2458-3

**Matrix:** SO - Soil

**Project:** Site 307-CSS, Panama City

**Date Sampled:** 05/28/98

**Date Received:** 05/29/98

**Percent Solids:** 92.5

**General Chemistry**

Analyte	Result	RDL	Units	DF	Analyzed By	Method
Solids, Percent	92.5		%	1	06/01/98 EP	EPA 160.3 M
Total Organic Halides	<10	10	mg/kg	1	06/12/98 ANJ	SW846 9020 M

RDL = Reported Detection Limit



# Report of Analysis

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-3	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

## Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Arsenic	<1.1	1.1	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Barium	<22	22	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Cadmium	<0.43	0.43	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Chromium	3.0	1.1	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Lead	20.3	11	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Mercury	<0.18	0.18	mg/kg	1	06/01/98	06/02/98 JK	SW846 7471A
Selenium	<11	11	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A
Silver	<1.1	1.1	mg/kg	1	06/01/98	06/02/98 JK	SW846 6010A

RDL = Reported Detection Limit



## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB02-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-4	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 83.2
<b>Method:</b> EPA 8100	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	I05981.D	100	06/03/98	NF	06/02/98	OP390	GIJ254
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	40000	ug/kg	
208-96-8	Acenaphthylene	ND	40000	ug/kg	
120-12-7	Anthracene	ND	40000	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40000	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40000	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40000	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40000	ug/kg	
218-01-9	Chrysene	ND	40000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40000	ug/kg	
206-44-0	Fluoranthene	ND	40000	ug/kg	
86-73-7	Fluorene	ND	40000	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40000	ug/kg	
91-20-3	Naphthalene	ND	40000	ug/kg	
90-12-0	1-Methylnaphthalene	ND	40000	ug/kg	
91-57-6	2-Methylnaphthalene	ND	40000	ug/kg	
85-01-8	Phenanthrene	ND	40000	ug/kg	
129-00-0	Pyrene	ND	40000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	0% <sup>b</sup>		35-125%
84-15-1	o-Terphenyl	0% <sup>b</sup>		35-135%

(a) Elevated detection limits due to matrix interference.

(b) Outside control limits due to dilution.

ND = Not detected

RDL = Reported Detection Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

<b>Client Sample ID:</b> 307-SS-SB02-0405-	
<b>Lab Sample ID:</b> F2458-4	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> FLORIDA-PRO	<b>Percent Solids:</b> 83.2
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00822.D	400	06/03/98	NF	06/01/98	OP388	GOP33
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	17600	4000	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% <sup>a</sup>		40-140%

(a) Outside control limits due to dilution.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB02-0405-	
<b>Lab Sample ID:</b> F2458-4	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> SW846 8021B	<b>Percent Solids:</b> 83.2
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006295.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

### Purgeable Aromatics, Full List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	120	ug/kg	
108-90-7	Chlorobenzene	ND	120	ug/kg	
100-41-4	Ethylbenzene	ND	120	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	120	ug/kg	
108-88-3	Toluene	ND	120	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	120	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	120	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	120	ug/kg	
1330-20-7	Xylenes (total)	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	96%		50-150%
462-06-6	Fluorobenzene	90%		50-150%
625-98-9	1-Chloro-3-fluorobenzene	96%		50-150%

(a) En Core sampler was not properly capped; results are considered minimum values.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB05-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-5	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 88.2
<b>Method:</b> EPA 8100	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	I05994.D	100	06/04/98	NF	06/02/98	OP390	GIJ255
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	38000	ug/kg	
208-96-8	Acenaphthylene	ND	38000	ug/kg	
120-12-7	Anthracene	ND	38000	ug/kg	
56-55-3	Benzo(a)anthracene	ND	38000	ug/kg	
50-32-8	Benzo(a)pyrene	ND	38000	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	38000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	38000	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	38000	ug/kg	
218-01-9	Chrysene	ND	38000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	38000	ug/kg	
206-44-0	Fluoranthene	ND	38000	ug/kg	
86-73-7	Fluorene	ND	38000	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	38000	ug/kg	
91-20-3	Naphthalene	ND	38000	ug/kg	
90-12-0	1-Methylnaphthalene	ND	38000	ug/kg	
91-57-6	2-Methylnaphthalene	ND	38000	ug/kg	
85-01-8	Phenanthrene	ND	38000	ug/kg	
129-00-0	Pyrene	ND	38000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	0% <sup>b</sup>		35-125%
84-15-1	o-Terphenyl	0% <sup>b</sup>		35-135%

- (a) Elevated detection limits due to matrix interference.
- (b) Outside control limits due to dilution.

<p>ND = Not detected</p> <p>RDL = Reported Detection Limit</p> <p>E = Indicates value exceeds calibration range</p>	<p>J = Indicates an estimated value</p> <p>B = Indicates analyte found in associated method blank</p> <p>N = Indicates presumptive evidence of a compound</p>
---	---



**Report of Analysis**

**Client Sample ID:** 307-SS-SB05-0405-  
**Lab Sample ID:** F2458-5  
**Matrix:** SO - Soil  
**Method:** FLORIDA-PRO  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 05/28/98  
**Date Received:** 05/29/98  
**Percent Solids:** 88.2

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00823.D	300	06/03/98	NF	06/01/98	OP388	GOP33
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	11800	2800	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% <sup>a</sup>		40-140%

(a) Outside control limits due to dilution.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

<b>Client Sample ID:</b> 307-SS-SB05-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-5	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 88.2
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006296.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

**Purgeable Aromatics, Full List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	160	ug/kg	
108-90-7	Chlorobenzene	ND	160	ug/kg	
100-41-4	Ethylbenzene <sup>b</sup>	366	160	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	160	ug/kg	
108-88-3	Toluene	ND	160	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	160	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	160	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	160	ug/kg	
1330-20-7	Xylenes (total) <sup>b</sup>	6330	470	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	94%		50-150%
462-06-6	Fluorobenzene	90%		50-150%
625-98-9	1-Chloro-3-fluorobenzene	105%		50-150%

(a) En Core sampler was not properly capped; results are considered minimum values.

(b) Confirmed by reanalysis on dissimilar column.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



39470

Please print or type  
(Form designed for use on elite (12-pitch) typewriter.)

<b>NON-HAZARDOUS WASTE MANIFEST</b>	1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of <b>9812054</b>
-------------------------------------	------------------------------	-----------------------	-----------------------------

3. Generator's Name and Mailing Address <b>Coastal Systems Station 5703 Hwy 88 Panama City Beach FL 32407</b>		
Generator's Phone (850) 235-5859		

5. Transporter 1 Company Name <b>Southern Waste Services</b>	6. US EPA ID Number <b>FL000093683</b>	A. Transporter's Phone <b>(800) 852-8878</b>
---	---	---

7. Transporter 2 Company Name	8. US EPA ID Number	B. Transporter's Phone
-------------------------------	---------------------	------------------------

9. Designated Facility Name and Site Address <b>Springhill Landfill 4643 Hwy 273 Graceville, FL</b>		10. US EPA ID Number <b>5032233773</b>	C. Facility's Phone <b>(850) 263-7100</b>
--	--	---	--

11. Waste Shipping Name and Description	12. Containers		13. Total Quantity	14. Unit W/Vol
	No.	Type		
a. <b>Petroleum Contaminated Soil CTO 8<sup>1524</sup> 33</b>	1	DM	55	g
b. <b>Petroleum Contaminated Soil CTO 47<sup>1524</sup> 55</b>	20	DM	1100	g
c. <b>EMPTY Crushed Drums 2104<sub>10</sub></b>	26	DM	1040	D
d.				

D. Additional Descriptions for Materials Listed Above	E. Handling Codes for Wastes Listed Above
---	---

15. Special Handling Instructions and Additional Information  
**WMI 510519**  
**Sub 9 812054**

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name <b>Bill Logsdon</b>	Signature <i>Bill Logsdon</i>	Month Day Year <b>12 30 98</b>
---	----------------------------------	-----------------------------------

17. Transporter 1 Acknowledgement of Receipt of Materials	Printed/Typed Name <b>B. U. Seakle</b>	Signature <i>B. U. Seakle</i>	Month Day Year
---	---	----------------------------------	----------------

18. Transporter 2 Acknowledgement of Receipt of Materials	Printed/Typed Name	Signature	Month Day Year
---	--------------------	-----------	----------------

19. Discrepancy Indication Space  
**014005**

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 9.		
Printed/Typed Name <b>CARRIE MOSS</b>	Signature <i>Carrie Moss</i>	Month Day Year <b>12 31 98</b>
<b>note sent</b>	<i>[Signature]</i>	<b>12 31 98</b>

GENERATOR

TRANSPORTER

FACILITY

**NON-HAZARDOUS WASTE MANIFEST**

1. Generator's US EPA ID No.

Manifest Document No.

2. Page 1 of

9812051

3. Generator's Name and Mailing Address  
**COASTAL SYSTEMS STATION**  
 6703 HWY 98  
 PANAMA CITY BEACH, FL 32409

4. Generator's Phone (850) 235-5857

5. Transporter 1 Company Name  
 SEVEN WASTE SERVICES  
 6. US EPA ID Number  
 FL000073683.1

A. Transporter's Phone  
 (850) 852-8878

7. Transporter 2 Company Name  
 MCKENZIE Tank Lines  
 8. US EPA ID Number  
 FL0000398268

B. Transporter's Phone  
 850-265-2371

9. Designated Facility Name and Site Address  
 OIL RECOVERY Company  
 750 DUNLOP Rd.  
 Mobile AL  
 10. US EPA ID Number  
 AL015302052

C. Facility's Phone  
 (334) 433-7681

11. Waste Shipping Name and Description

12. Containers No. Type

13. Total Quantity

14. Unit W/Vol

a. NON HAZARDOUS WASTE WATER CT08 2 TT 5.5 G

b. NON HAZARDOUS WASTE WATER CT07 2 TT 5.5 G

c. NON HAZARDOUS WASTE WATER CT047 1 TT 1320 G

d.

Additional Descriptions for Materials Listed Above

E. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

**COMPLETED**

1430 gnl

16. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name  
 Bill Coesdon

Signature  
*Bill Coesdon*

Month Day Year  
 1 1 98

17. Transporter 1 Acknowledgement of Receipt of Materials  
 Printed/Typed Name  
 BRUNN NEAFIE

Signature  
*BRUNN*

Month Day Year  
 1 1 98

18. Transporter 2 Acknowledgement of Receipt of Materials  
 Printed/Typed Name  
 James H. Pierce

Signature  
*James H. Pierce*

Month Day Year  
 1 1 99

19. Discrepancy Indication Space  
 mckenzie # 334494

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name  
 Jerry Hamblin

Signature  
*Jerry Hamblin*

Month Day Year  
 1 1 99

TRANSPORTER #2

## APPENDIX I

### MONITORING WELL COMPLETION LOGS



# MONITORING WELL SHEET

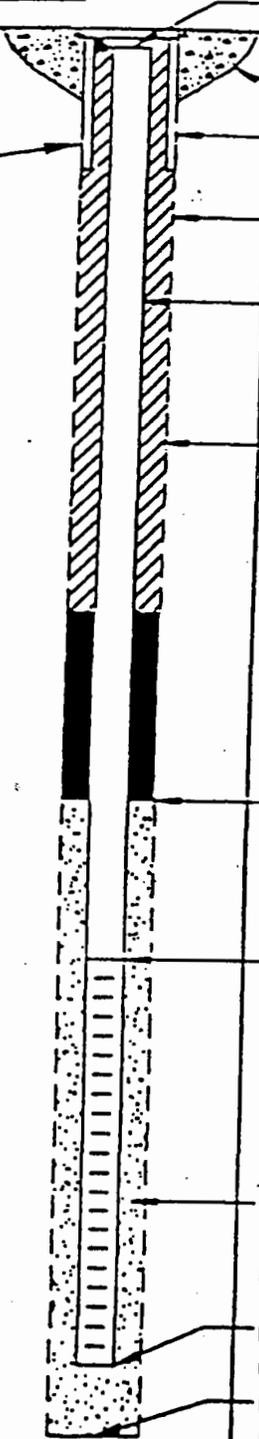
PROJECT CTD 0047  
 PROJECT NO. 7766  
 ELEVATION \_\_\_\_\_  
 FIELD GEOLOGIST Gerald Goode

LOCATION Coastal Systems Station Site 307  
 BORING 307-MW01  
 DATE 9/19/98

DRILLER Environmetal Drilling Service  
 DRILLING METHOD Water Seal Auger  
 DEVELOPMENT METHOD \_\_\_\_\_

Ground Elevation \_\_\_\_\_

Flush mount surface casing with lock

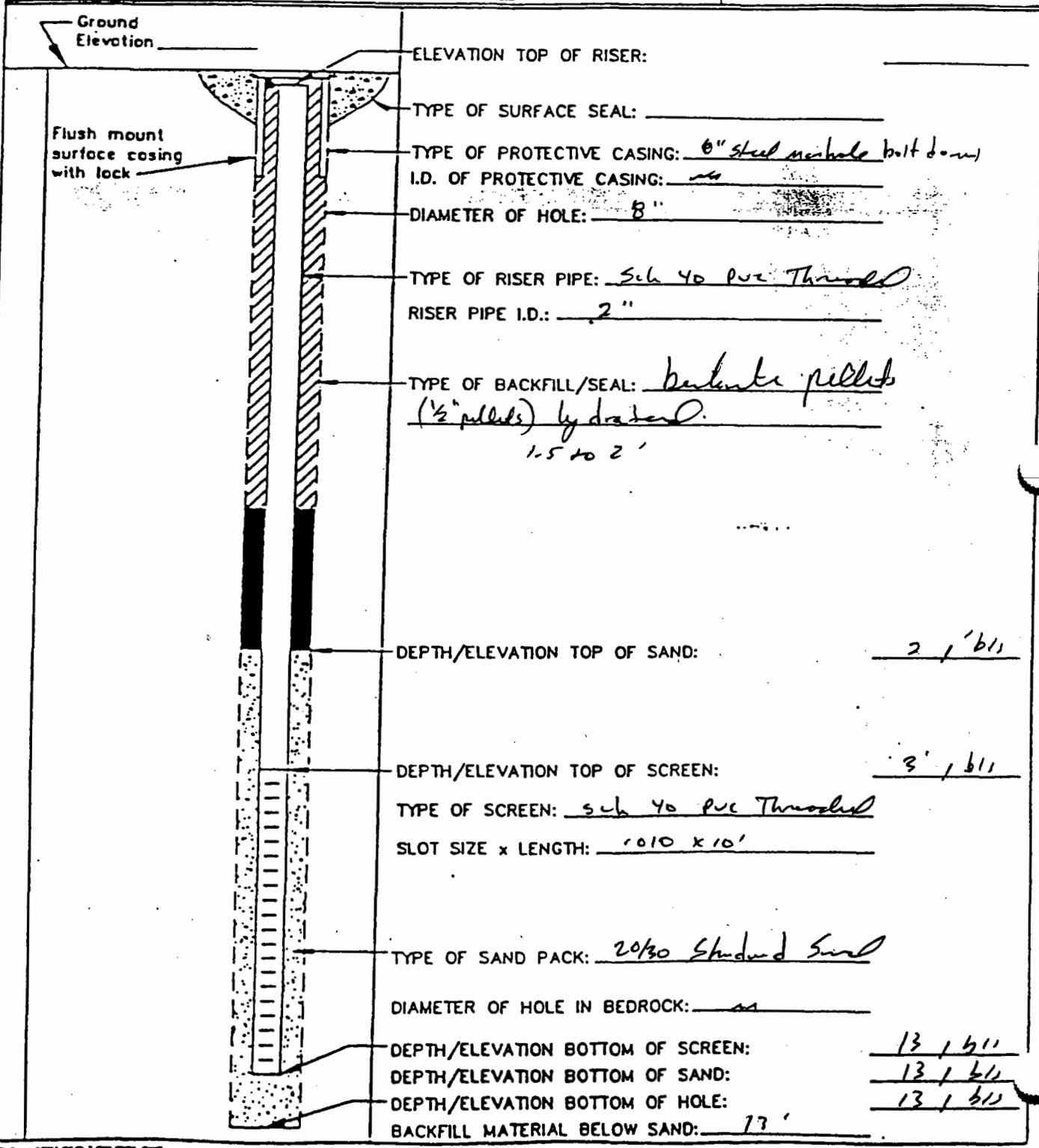


ELEVATION TOP OF RISER: \_\_\_\_\_  
 TYPE OF SURFACE SEAL: \_\_\_\_\_  
 TYPE OF PROTECTIVE CASING: 8" Steel annular (bott down)  
 I.D. OF PROTECTIVE CASING: \_\_\_\_\_  
 DIAMETER OF HOLE: 8"  
 TYPE OF RISER PIPE: SCL. 40 PVC Threaded  
 RISER PIPE I.D.: 7  
 TYPE OF BACKFILL/SEAL: B. Lignite pellets 1/2" hydrated 1.5 to 2' b/s  
 DEPTH/ELEVATION TOP OF SAND: 2' / b/s  
 DEPTH/ELEVATION TOP OF SCREEN: 3' / b/s  
 TYPE OF SCREEN: SCL. 40 PVC Threaded  
 SLOT SIZE x LENGTH: .010 x 10'  
 TYPE OF SAND PACK: 20/30 Standard Sand  
 DIAMETER OF HOLE IN BEDROCK: 1"  
 DEPTH/ELEVATION BOTTOM OF SCREEN: 13' / b/s  
 DEPTH/ELEVATION BOTTOM OF SAND: 13' / b/s  
 DEPTH/ELEVATION BOTTOM OF HOLE: 13' / b/s  
 BACKFILL MATERIAL BELOW SAND: 13' b/s



# MONITORING WELL SHEET

PROJECT <u>CTO 0047</u>	LOCATION <u>Coastal Systems Station Site 307</u>	DRILLER <u>Environmental Drilling Services</u>
PROJECT NO. <u>7766</u>	BORING <u>307-mw02</u>	DRILLING METHOD <u>Water Seal Open</u>
ELEVATION _____	DATE <u>9/19/98</u>	DEVELOPMENT METHOD _____
FIELD GEOLOGIST <u>Gerald Gooder</u>		



ELEVATION TOP OF RISER: \_\_\_\_\_

TYPE OF SURFACE SEAL: \_\_\_\_\_

TYPE OF PROTECTIVE CASING: 6" steel mesh hole bolt down

I.D. OF PROTECTIVE CASING: as

DIAMETER OF HOLE: 8"

TYPE OF RISER PIPE: Sub 40 PVC Threaded

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: benlate pellets (1/2" pellets) by diameter. 1.5 to 2'

DEPTH/ELEVATION TOP OF SAND: 2' 1 1/2"

DEPTH/ELEVATION TOP OF SCREEN: 3' 1 1/2"

TYPE OF SCREEN: sub 40 PVC Threaded

SLOT SIZE x LENGTH: 1010 x 10'

TYPE OF SAND PACK: 20/30 Standard Sand

DIAMETER OF HOLE IN BEDROCK: as

DEPTH/ELEVATION BOTTOM OF SCREEN: 13' 1 1/2"

DEPTH/ELEVATION BOTTOM OF SAND: 13' 1 1/2"

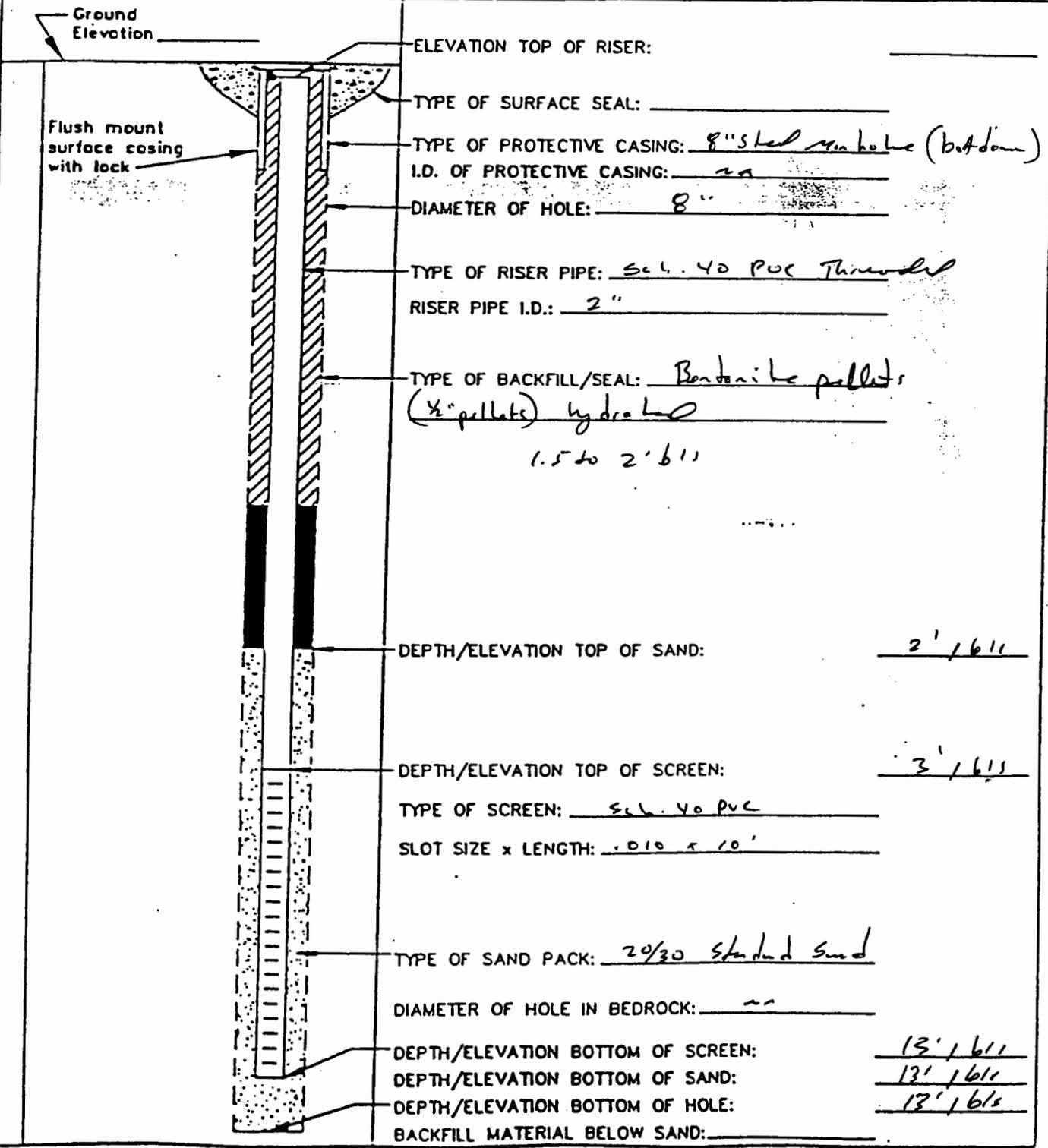
DEPTH/ELEVATION BOTTOM OF HOLE: 13' 1 1/2"

BACKFILL MATERIAL BELOW SAND: 17'



# MONITORING WELL SHEET

PROJECT <u>150 0047</u>	LOCATION <u>Coastal System Station</u>	DRILLER <u>Eastern and Pacific Services</u>
PROJECT NO. <u>7766</u>	BORING <u>307-mw03</u>	DRILLING METHOD <u>Waterless Air</u>
ELEVATION _____	DATE <u>9/19/98</u>	DEVELOPMENT METHOD _____
FIELD GEOLOGIST <u>Gerald Goode</u>		

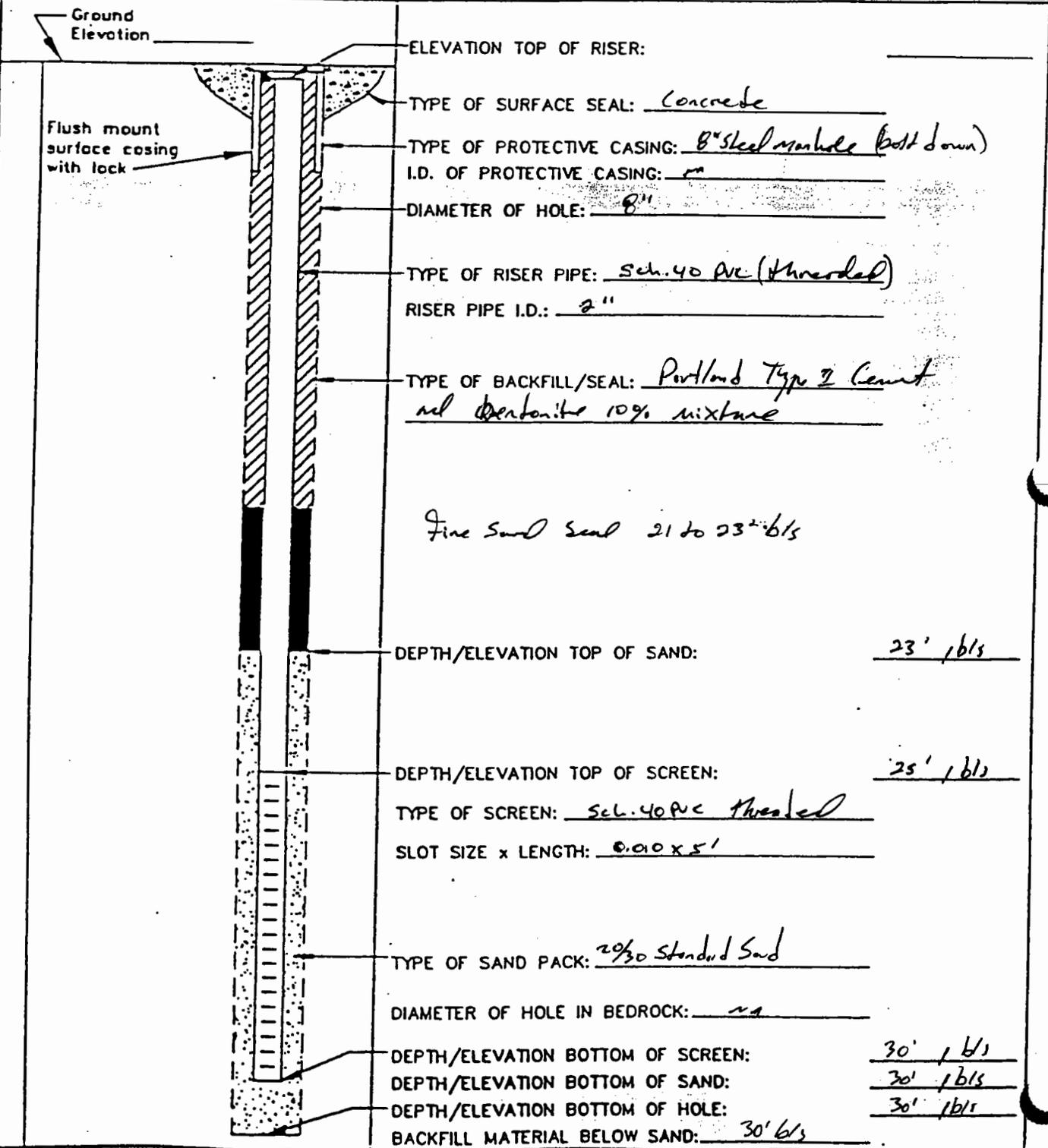




# MONITORING WELL SHEET

DATE: \_\_\_\_\_

PROJECT <u>CTD 0047</u>	LOCATION <u>Coastal Station 512 307</u>	DRILLER <u>Environmental Drilling Services</u>
PROJECT NO. <u>7113</u>	BORING <u>P04-307-1114D</u>	DRILLING METHOD <u>Wagon Star Auger</u>
ELEVATION _____	DATE <u>9/18/98</u>	DEVELOPMENT METHOD _____
FIELD GEOLOGIST <u>Gerald Gooder</u>		



NOTE: USE 1/2" DIA. WELDED WIRE

## APPENDIX J

### SOIL LABORATORY DATA SHEETS

**Technical Report for**

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**Tetra-Tech, NUS**

**Site 307-CSS, Panama City**

**7766 Site 307**

**Accutest Job Number: F2458**

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**Report to:**

**Tetra Tech, NUS  
1311 Executive Center Drive  
Ellie Building, Suite 220  
Tallahassee, FL 32301**

**ATTN: Gerald Goode**

**Total number of pages in report:**



**Harry Behzadi, Ph.D.  
Laboratory Director**

**Results relate only to the items tested.**

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# Report of Analysis

**Client Sample ID:** 307-SS-SB01-0405-001B  
**Lab Sample ID:** F2458-1  
**Matrix:** AQ - Ground Water  
**Method:** FLORIDA-PRO  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 05/28/98  
**Date Received:** 05/29/98  
**Percent Solids:** n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00802.D	1	06/02/98	NF	06/01/98	OP387	GOP32
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB01-0405-001B	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-1	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 601/602	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF006300.D	1	06/09/98	JG	n/a	n/a	GEF143
Run #2							

**Purgeable Aromatics, MTBE**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
625-98-9	1-Chloro-3-fluorobenzene	96%		75-125%
462-06-6	Fluorobenzene	96%		75-125%
98-08-8	aaa-Trifluorotoluene	99%		75-125%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB01-0405-							
<b>Lab Sample ID:</b> F2458-2					<b>Date Sampled:</b> 05/28/98		
<b>Matrix:</b> SO - Soil					<b>Date Received:</b> 05/29/98		
<b>Method:</b> FLORIDA-PRO					<b>Percent Solids:</b> 85.7		
<b>Project:</b> Site 307-CSS, Panama City							

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00810.D	500	06/02/98	NF	06/01/98	OP388	GOP32
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	22200	4800	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% <sup>a</sup>		40-140%

(a) Outside control limits due to dilution.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	
<b>Lab Sample ID:</b> F2458-3	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> EPA 8100	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	I05980.D	2	06/03/98	NF	06/02/98	OP390	GIJ254
Run #2							

**BN PAH List**

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	720	ug/kg	
208-96-8	Acenaphthylene	ND	720	ug/kg	
120-12-7	Anthracene	ND	720	ug/kg	
56-55-3	Benzo(a)anthracene	ND	720	ug/kg	
50-32-8	Benzo(a)pyrene	ND	720	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	720	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	720	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	720	ug/kg	
218-01-9	Chrysene	ND	720	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	720	ug/kg	
206-44-0	Fluoranthene	ND	720	ug/kg	
86-73-7	Fluorene	ND	720	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	720	ug/kg	
91-20-3	Naphthalene	ND	720	ug/kg	
90-12-0	1-Methylnaphthalene	ND	720	ug/kg	
91-57-6	2-Methylnaphthalene	ND	720	ug/kg	
85-01-8	Phenanthrene	ND	720	ug/kg	
129-00-0	Pyrene	ND	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	84%		35-125%
84-15-1	o-Terphenyl	90%		35-135%

(a) Elevated detection limits due to matrix interference.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	
<b>Lab Sample ID:</b> F2458-3	<b>Date Sampled:</b> 05/28/98
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 05/29/98
<b>Method:</b> SW846 8021B	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006294.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

## VOA PPL List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	210	ug/kg	
75-25-2	Bromoform	ND	210	ug/kg	
75-27-4	Bromodichloromethane	ND	210	ug/kg	
74-83-9	Bromomethane	ND	210	ug/kg	
56-23-5	Carbon tetrachloride	ND	210	ug/kg	
108-90-7	Chlorobenzene	ND	210	ug/kg	
75-00-3	Chloroethane	ND	210	ug/kg	
67-66-3	Chloroform	ND	210	ug/kg	
74-87-3	Chloromethane	ND	210	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	210	ug/kg	
124-48-1	Dibromochloromethane	ND	210	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	210	ug/kg	
75-34-3	1,1-Dichloroethane	ND	210	ug/kg	
107-06-2	1,2-Dichloroethane	ND	210	ug/kg	
75-35-4	1,1-Dichloroethene	ND	210	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	210	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	210	ug/kg	
78-87-5	1,2-Dichloropropane	ND	210	ug/kg	
100-41-4	Ethylbenzene	ND	210	ug/kg	
75-09-2	Methylene chloride	ND	1000	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	210	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	210	ug/kg	
127-18-4	Tetrachloroethene	ND	210	ug/kg	
108-88-3	Toluene	ND	210	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	210	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	210	ug/kg	
79-01-6	Trichloroethene	ND	210	ug/kg	
75-69-4	Trichlorofluoromethane	ND	210	ug/kg	
75-01-4	Vinyl chloride	ND	210	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	210	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	210	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	210	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	210	ug/kg	
1330-20-7	Xylenes (total)	ND	630	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	210	ug/kg	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

<b>Client Sample ID:</b> IDW-SOIL-DRUMB	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-3	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 92.5
<b>Project:</b> Site 307-CSS, Panama City	

**General Chemistry**

<b>Analyte</b>	<b>Result</b>	<b>RDL</b>	<b>Units</b>	<b>DF</b>	<b>Analyzed By</b>	<b>Method</b>
Solids, Percent	92.5		%	1	06/01/98 EP	EPA 160.3 M
Total Organic Halides	< 10	10	mg/kg	1	06/12/98 ANJ	SW846 9020 M

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RDL = Reported Detection Limit



# Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB02-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-4	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 83.2
<b>Method:</b> EPA 8100	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	105981.D	100	06/03/98	NF	06/02/98	OP390	GIJ254
Run #2							

### BN PAH List

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	40000	ug/kg	
208-96-8	Acenaphthylene	ND	40000	ug/kg	
120-12-7	Anthracene	ND	40000	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40000	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40000	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40000	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40000	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40000	ug/kg	
218-01-9	Chrysene	ND	40000	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40000	ug/kg	
206-44-0	Fluoranthene	ND	40000	ug/kg	
86-73-7	Fluorene	ND	40000	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40000	ug/kg	
91-20-3	Naphthalene	ND	40000	ug/kg	
90-12-0	1-Methylnaphthalene	ND	40000	ug/kg	
91-57-6	2-Methylnaphthalene	ND	40000	ug/kg	
85-01-8	Phenanthrene	ND	40000	ug/kg	
129-00-0	Pyrene	ND	40000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	0% <sup>b</sup>		35-125%
84-15-1	o-Terphenyl	0% <sup>b</sup>		35-135%

- (a) Elevated detection limits due to matrix interference.
- (b) Outside control limits due to dilution.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB02-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-4	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 83.2
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	EF006295.D	100	06/08/98	RAW	n/a	n/a	GEF140
Run #2							

### Purgeable Aromatics, Full List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	120	ug/kg	
108-90-7	Chlorobenzene	ND	120	ug/kg	
100-41-4	Ethylbenzene	ND	120	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	120	ug/kg	
108-88-3	Toluene	ND	120	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	120	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	120	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	120	ug/kg	
1330-20-7	Xylenes (total)	ND	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	96%		50-150%
462-06-6	Fluorobenzene	90%		50-150%
625-98-9	1-Chloro-3-fluorobenzene	96%		50-150%

(a) En Core sampler was not properly capped; results are considered minimum values.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> 307-SS-SB05-0405-	<b>Date Sampled:</b> 05/28/98
<b>Lab Sample ID:</b> F2458-5	<b>Date Received:</b> 05/29/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 88.2
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P00823.D	300	06/03/98	NF	06/01/98	OP388	GOP33
Run #2							

CAS No.	Compound	Result	RDL	Units Q
	TPH (C8-C40)	11800	2800	mg/kg
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	0% <sup>a</sup>		40-140%

(a) Outside control limits due to dilution.

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



**Technical Report for****Tetra-Tech, NUS**

Site 307-CSS, Panama City

7766

Accutest Job Number: F3037

**Report to:**

Tetra Tech, NUS  
1311 Executive Center Drive  
Ellie Building, Suite 220  
Tallahassee, FL 32301

ATTN: Gerald Goode

Total number of pages in report: 7

  
**Harry Behzadi, Ph.D.**  
Laboratory Director

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**ACCUTEST**

### Sample Summary

Tetra-Tech, NUS

Date: 10/20/98

Site 307-CSS, Panama City  
Project No: 7766

Job No: F3037

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F3037-1	10/13/98	17:00 GG	10/14/98	SO	Soil	PCY-307-SB05-0405-002
F3037-2	10/13/98	16:30 GG	10/14/98	AQ	Ground Water	PCY-307-SB05-0405-002B



# Report of Analysis

Client Sample ID:	PCY-307-SB05-0405-002	Date Sampled:	10/13/98
Lab Sample ID:	F3037-1	Date Received:	10/14/98
Matrix:	SO - Soil	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	K001816.D	100	10/14/98	RAW	n/a	n/a	VK21
Run #2							

### VOA 8021 List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	200	ug/kg	
75-27-4	Bromodichloromethane	ND	200	ug/kg	
75-25-2	Bromoform	ND	200	ug/kg	
108-90-7	Chlorobenzene	ND	200	ug/kg	
75-00-3	Chloroethane	ND	200	ug/kg	
67-66-3	Chloroform	ND	200	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	500	ug/kg	
56-23-5	Carbon tetrachloride	ND	200	ug/kg	
75-34-3	1,1-Dichloroethane	ND	200	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	200	ug/kg	
106-93-4	1,2-Dibromoethane	ND	200	ug/kg	
107-06-2	1,2-Dichloroethane	ND	200	ug/kg	
78-87-5	1,2-Dichloropropane	ND	200	ug/kg	
124-48-1	Dibromochloromethane	ND	200	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	500	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	200	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	200	ug/kg	
541-73-1	m-Dichlorobenzene	ND	200	ug/kg	
95-50-1	o-Dichlorobenzene	ND	200	ug/kg	
106-46-7	p-Dichlorobenzene	ND	200	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	200	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	200	ug/kg	
100-41-4	Ethylbenzene	ND	200	ug/kg	
74-83-9	Methyl bromide	ND	500	ug/kg	
74-87-3	Methyl chloride	ND	500	ug/kg	
75-09-2	Methylene chloride	ND	500	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	200	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	200	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	200	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	200	ug/kg	
127-18-4	Tetrachloroethylene	ND	200	ug/kg	
108-88-3	Toluene	ND	200	ug/kg	
79-01-6	Trichloroethylene	ND	200	ug/kg	
75-69-4	Trichlorofluoromethane	ND	500	ug/kg	
75-01-4	Vinyl chloride	ND	500	ug/kg	
1330-20-7	Xylene (total)	ND	600	ug/kg	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F3037  
 Account: TETRFLTA Tetra-Tech, NUS  
 Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F2992-3MS	K001779.D	1	10/02/98	RAW	n/a	n/a	VK21
F2992-3MSD	K001780.D	1	10/02/98	RAW	n/a	n/a	VK21
F2992-3	K001774.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

F3037-1

CAS No.	Compound	F2992-3 ug/kg	Spike Q ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	51.5	54.7	106	48.0	93	13	73-122/24
75-27-4	Bromodichloromethane	ND	51.5	54.5	106	48.9	95	11	63-127/24
75-25-2	Bromoform	ND	51.5	56.1	109	47.4	92	17	56-135/24
108-90-7	Chlorobenzene	ND	51.5	54.3	105	45.3	88	18	74-115/24
75-00-3	Chloroethane	ND	51.5	43.6	85	39.9	77	9	48-142/30
67-66-3	Chloroform	ND	51.5	46.8	91	45.2	88	3	74-120/23
110-75-8	2-Chloroethyl vinyl ether	ND	258	376	146*	351	136*	7	80-120/20
56-23-5	Carbon tetrachloride	ND	51.5	55.0	107	47.0	91	16	26-154/21
75-34-3	1,1-Dichloroethane	ND	51.5	53.5	104	47.9	93	11	71-122/24
75-35-4	1,1-Dichloroethylene	ND	51.5	45.8	89	40.9	79	11	67-127/24
106-93-4	1,2-Dibromoethane	ND	51.5	57.3	111	49.7	96	14	71-135/24
107-06-2	1,2-Dichloroethane	ND	51.5	54.4	106	49.8	97	9	67-159/24
78-87-5	1,2-Dichloropropane	ND	51.5	57.0	111	51.3	100	10	70-124/18
124-48-1	Dibromochloromethane	ND	51.5	58.8	114	50.2	97	16	64-122/20
75-71-8	Dichlorodifluoromethane	ND	51.5	32.9	64	30.7	60	7	59-122/20
156-59-2	cis-1,2-Dichloroethylene	ND	51.5	55.5	108	48.9	95	13	71-122/25
10061-01-5	cis-1,3-Dichloropropene	ND	51.5	54.7	106	48.3	94	12	59-129/23
541-73-1	m-Dichlorobenzene	ND	51.5	48.8	95	33.5	65*	37*	75-120/18
95-50-1	o-Dichlorobenzene	ND	51.5	46.5	90	32.1	62*	37*	72-120/21
106-46-7	p-Dichlorobenzene	ND	51.5	47.7	93	32.8	64*	37*	70-120/22
156-60-5	trans-1,2-Dichloroethylene	ND	51.5	50.5	98	44.8	87	12	66-123/18
10061-02-6	trans-1,3-Dichloropropene	ND	51.5	58.0	113	48.9	95	17	59-134/24
100-41-4	Ethylbenzene	ND	51.5	54.2	105	44.4	86	20	72-120/24
74-83-9	Methyl bromide	ND	51.5	44.8	87	39.2	76	13	35-150/40
74-87-3	Methyl chloride	ND	51.5	41.5	80	38.0	74	9	23-150/42
75-09-2	Methylene chloride	ND	51.5	50.2	97	47.2	92	6	61-135/24
1634-04-4	Methyl Tert Butyl Ether	ND	51.5	55.6	108	51.4	100	8	80-120/20
71-55-6	1,1,1-Trichloroethane	ND	51.5	53.6	104	48.0	93	11	75-120/20
79-34-5	1,1,2,2-Tetrachloroethane	ND	51.5	53.3	103	43.4	84	20	37-170/44
79-00-5	1,1,2-Trichloroethane	ND	51.5	58.6	114	50.7	98	14	68-133/22
127-18-4	Tetrachloroethylene	ND	51.5	63.5	123*	49.8	97	24	66-119/27
108-88-3	Toluene	ND	51.5	56.7	110	47.7	93	17	70-122/18
79-01-6	Trichloroethylene	ND	51.5	52.5	102	45.3	88	15	42-154/36
75-69-4	Trichlorofluoromethane	ND	51.5	38.2	74	36.5	71	4	44-126/27
75-01-4	Vinyl chloride	ND	51.5	43.0	83	40.0	78	7	29-178/4
1330-20-7	Xylene (total)	ND	154	166	107	134	87	21	58-127/24

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F2992-3MS	K001779.D	1	10/02/98	RAW	n/a	n/a	VK21
F2992-3MSD	K001780.D	1	10/02/98	RAW	n/a	n/a	VK21
F2992-3	K001774.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

F3037-1

CAS No.	Surrogate Recoveries	MS	MSD	F2992-3	Limits
1868-53-7	Dibromofluoromethane	95%	103%	93%	80-120%
2037-26-5	Toluene-D8	104%	103%	99%	81-117%
460-00-4	4-Bromofluorobenzene	103%	100%	103%	74-121%
17060-07-0	1,2-Dichloroethane-D4	103%	103%	95%	80-120%

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-MB3	EF007426.D 1		10/15/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

GEF179-BS, F3012-1MS, F3012-1MSD

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-MB3	EF007426.D 1		10/15/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

GEF179-BS, F3012-1MS, F3012-1MSD

CAS No.	Surrogate Recoveries		Limits
74-97-5	Bromochloromethane	103%	75-125%
75-29-6	2-Chloropropane	97%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	92%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	89%	75-125%
462-06-6	Fluorobenzene	97%	75-125%
98-08-8	aaa-Trifluorotoluene	95%	75-125%

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-MB1	K001771.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

VK21-BS, F2992-3MS, F2992-3MSD

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	2.0	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	ug/kg	
75-25-2	Bromoform	ND	2.0	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	ug/kg	
75-00-3	Chloroethane	ND	2.0	ug/kg	
67-66-3	Chloroform	ND	2.0	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/kg	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/kg	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/kg	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	ug/kg	
74-83-9	Methyl bromide	ND	5.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	ug/kg	
75-09-2	Methylene chloride	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	2.0	ug/kg	
108-88-3	Toluene	ND	2.0	ug/kg	
79-01-6	Trichloroethylene	ND	2.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	6.0	ug/kg	

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-MB1	K001771.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

VK21-BS, F2992-3MS, F2992-3MSD

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
2037-26-5	Toluene-D8	97%	81-117%
460-00-4	4-Bromofluorobenzene	100%	74-121%
17060-07-0	1,2-Dichloroethane-D4	92%	80-120%



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-SB05-0405-002	<b>Date Sampled:</b> 10/13/98
<b>Lab Sample ID:</b> F3037-1	<b>Date Received:</b> 10/14/98
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8260B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	K001816.D	100	10/14/98	RAW	n/a	n/a	VK21
Run #2							

### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
2037-26-5	Toluene-D8	92%		81-117%
460-00-4	4-Bromofluorobenzene	97%		74-121%
17060-07-0	1,2-Dichloroethane-D4	98%		80-120%

(a) Dilution required due to matrix interference. Sample results reported on a wet weight basis.

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound





**ACCUTEST.**

### Report of Analysis

Client Sample ID: PCY-307-SB05-0405-002B  
 Lab Sample ID: F3037-2  
 Matrix: AQ - Ground Water  
 Method: SW846 8021B  
 Project: Site 307-CSS, Panama City

Date Sampled: 10/13/98  
 Date Received: 10/14/98  
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007458.D	1	10/16/98	JG	n/a	n/a	GEF179
Run #2							

#### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	93%		75-125%
75-29-6	2-Chloropropane	109%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	100%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	96%		75-125%
462-06-6	Fluorobenzene	104%		75-125%
98-08-8	aaa-Trifluorotoluene	100%		75-125%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15  
 ORLANDO, FL 32811  
 TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #: 7766  
 ACCUTEST QUOTE #:

CLIENT INFORMATION	FACILITY INFORMATION	ANALYTICAL INFORMATION	MATRIX CODES
Teta Tech NUS NAME 1311 Executive Center Dr. Ellis Bldg. Suite 220 ADDRESS Tallahassee FL 32301 CITY STATE ZIP SEND REPORT TO: Gerald Goode PHONE # 850 656-5458	Site 307 PROJECT NAME Navy Coastal Systems Station LOCATION Panama City FL PROJECT NO. 7766 FAX # 850-656-7403	(Vertical text: Encor Sample (104) 802 H2O/Precipitate)	DW - DRINKING WATER GW - GROUND WATER WW - WASTE WATER SO - SOIL SL - SLUDGE OL - OIL LIQ - OTHER LIQUID SOL - OTHER SOLID

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION			MATRIX	# OF BOTTLES	PRESERVATION					LAB USE ONLY	
		DATE	TIME	SAMPLED BY:			HCl	NaOH	HNO3	H2SO4	NONE		
	PCY-307-SB05-0405-002	10-13-98	17:00	D.D.	SO	4	9	None				4	Vapor over 130
	PCY-307-SB05-0405-002B	10-13-98	16:30	A.A.	H2O	2						2	Equipment Blank
Temperature Blank included													
						6						4	2

DATA TURNAROUND INFORMATION	DATA DELIVERABLE INFORMATION	COMMENTS/REMARKS
<input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> 48 HOUR RUSH <input type="checkbox"/> 24 HOUR EMERGENCY <input type="checkbox"/> OTHER APPROVED BY: _____ EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED	<input type="checkbox"/> STANDARD <input type="checkbox"/> COMMERCIAL "B" <input checked="" type="checkbox"/> DISK DELIVERABLE <input type="checkbox"/> STATE FORMS <input type="checkbox"/> OTHER (SPECIFY) _____	KHA0392 Samples Iced Air Bill # FedEx 805905932560 020X

**SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY**

RELINQUISHED BY: 1. <u>Richard ...</u>	DATE TIME: 9-21-98 15:00	RECEIVED BY: 1. <u>Bill ...</u>	DATE TIME: 10-13-98	RELINQUISHED BY: 2.	DATE TIME:	RECEIVED BY: 2.	
RELINQUISHED BY: 3. <u>Bill ...</u>	DATE TIME: 10-13-98 11:30	RECEIVED BY: 3. <u>Richard ...</u>	DATE TIME: 10-14-98	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.	
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	DATE TIME:	SEAL #	PRESERVE WHERE APPLICABLE <input type="checkbox"/>	ON ICE <input type="checkbox"/>	TEMPERATURE _____ C

# **QA/QC DATA**

# Blank Spike Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-BS	EF007450.D	1	10/16/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	21.3	106	69-120
75-27-4	Bromodichloromethane	20	22.5	112	54-120
75-25-2	Bromoform	20	19.9	100	34-126
74-83-9	Bromomethane	20	17.0	85	47-150
56-23-5	Carbon tetrachloride	20	22.2	111	48-124
108-90-7	Chlorobenzene	20	20.4	102	74-129
124-48-1	Dibromochloromethane	20	21.8	109	57-131
75-00-3	Chloroethane	20	14.1	70	43-150
67-66-3	Chloroform	20	22.1	110	48-125
74-87-3	Chloromethane	20	12.8	64	53-150
106-93-4	1,2-Dibromoethane	20	21.0	105	50-150
95-50-1	1,2-Dichlorobenzene	20	20.3	102	71-131
541-73-1	1,3-Dichlorobenzene	20	20.3	102	70-125
106-46-7	1,4-Dichlorobenzene	20	20.2	101	73-127
75-71-8	Dichlorodifluoromethane	20	21.7	108	50-150
75-34-3	1,1-Dichloroethane	20	21.0	105	51-136
107-06-2	1,2-Dichloroethane	20	22.5	112	50-144
75-35-4	1,1-Dichloroethene	20	22.1	110	72-148
156-59-2	cis-1,2-Dichloroethene	20	21.8	109	50-150
156-60-5	trans-1,2-Dichloroethene	20	24.2	121	60-128
78-87-5	1,2-Dichloropropane	20	19.7	98	57-121
10061-01-5	cis-1,3-Dichloropropene	20	21.7	108	55-120
10061-02-6	trans-1,3-Dichloropropene	20	21.6	108	49-121
100-41-4	Ethylbenzene	20	20.4	102	83-121
75-09-2	Methylene chloride	20	24.2	121	58-130
1634-04-4	Methyl Tert Butyl Ether	20	21.3	106	72-131
79-34-5	1,1,2,2-Tetrachloroethane	20	19.8	99	25-135
127-18-4	Tetrachloroethene	20	21.7	108	54-127
108-88-3	Toluene	20	20.5	102	62-125
71-55-6	1,1,1-Trichloroethane	20	22.3	112	63-120
79-00-5	1,1,2-Trichloroethane	20	20.8	104	49-133
79-01-6	Trichloroethene	20	21.8	109	30-170
75-69-4	Trichlorofluoromethane	20	18.9	94	54-147
75-01-4	Vinyl chloride	20	17.6	88	39-164
1330-20-7	Xylenes (total)	60	61.0	102	77-118

# Blank Spike Summary

**Job Number:** F3037  
**Account:** TETRFLTA Tetra-Tech, NUS  
**Project:** Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-BS	EF007450.D	1	10/16/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Surrogate Recoveries	BSP	Limits
74-97-5	Bromochloromethane	109%	75-125%
75-29-6	2-Chloropropane	90%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	105%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	109%	75-125%
462-06-6	Fluorobenzene	105%	75-125%
98-08-8	aaa-Trifluorotoluene	105%	75-125%

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-MB4	EF007457.D 1		10/16/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

# Method Blank Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GEF179-MB4	EF007457.D 1		10/16/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Surrogate Recoveries		Limits
74-97-5	Bromochloromethane	92%	75-125%
75-29-6	2-Chloropropane	103%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	90%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	88%	75-125%
462-06-6	Fluorobenzene	95%	75-125%
98-08-8	aaa-Trifluorotoluene	94%	75-125%

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F3037  
 Account: TETRFLTA Tetra-Tech, NUS  
 Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F3012-1MS	EF007446.D	1	10/16/98	JG	n/a	n/a	GEF179
F3012-1MSD	EF007447.D	1	10/16/98	JG	n/a	n/a	GEF179
F3012-1	EF007362.D	1	10/08/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Compound	F3012-1 ug/l	Spike Q ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	20	21.8	109	21.8	109	0	69-120/12
75-27-4	Bromodichloromethane	ND	20	22.3	112	21.8	109	2	54-120/17
75-25-2	Bromoform	ND	20	21.0	105	19.4	97	8	34-126/23
74-83-9	Bromomethane	ND	20	15.6	78	17.2	86	10	47-150/26
56-23-5	Carbon tetrachloride	ND	20	21.7	108	22.2	111	2	48-124/19
108-90-7	Chlorobenzene	ND	20	19.9	100	20.3	102	2	74-129/14
124-48-1	Dibromochloromethane	ND	20	21.9	110	21.0	105	4	57-131/19
75-00-3	Chloroethane	ND	20	17.4	87	17.4	87	0	43-150/26
67-66-3	Chloroform	ND	20	22.0	110	22.2	111	1	48-125/19
74-87-3	Chloromethane	ND	20	16.9	84	15.1	76	11	53-150/14
106-93-4	1,2-Dibromoethane	ND	20	22.7	114	22.4	112	1	50-150/30
95-50-1	1,2-Dichlorobenzene	ND	20	20.4	102	20.2	101	1	71-131/15
541-73-1	1,3-Dichlorobenzene	ND	20	19.7	98	19.6	98	0	70-125/14
106-46-7	1,4-Dichlorobenzene	ND	20	20.3	102	20.0	100	1	73-127/14
75-71-8	Dichlorodifluoromethane	ND	20	22.8	114	23.1	116	1	50-150/30
75-34-3	1,1-Dichloroethane	ND	20	20.8	104	21.3	106	2	51-136/21
107-06-2	1,2-Dichloroethane	ND	20	23.5	118	23.4	117	0	50-144/23
75-35-4	1,1-Dichloroethene	ND	20	21.6	108	22.4	112	4	72-148/19
156-59-2	cis-1,2-Dichloroethene	ND	20	21.6	108	22.0	110	2	50-150/30
156-60-5	trans-1,2-Dichloroethene	ND	20	23.8	119	24.0	120	1	60-128/17
78-87-5	1,2-Dichloropropane	ND	20	20.4	102	19.9	100	2	57-121/16
10061-01-5	cis-1,3-Dichloropropene	ND	20	22.1	110	21.0	105	5	55-120/16
10061-02-6	trans-1,3-Dichloropropene	ND	20	22.1	110	21.4	107	3	49-121/18
100-41-4	Ethylbenzene	ND	20	21.7	108	21.0	105	3	83-121/10
75-09-2	Methylene chloride	ND	20	26.1	130	25.8	129	1	58-130/13
1634-04-4	Methyl Tert Butyl Ether	ND	20	23.6	118	23.4	117	1	72-131/15
79-34-5	1,1,2,2-Tetrachloroethane	ND	20	21.1	106	20.9	104	1	25-135/28
127-18-4	Tetrachloroethene	ND	20	20.9	104	21.5	108	3	54-127/18
108-88-3	Toluene	ND	20	20.3	102	20.6	103	1	62-125/16
71-55-6	1,1,1-Trichloroethane	ND	20	22.0	110	22.2	111	1	63-120/12
79-00-5	1,1,2-Trichloroethane	ND	20	21.7	108	21.3	106	2	49-133/21
79-01-6	Trichloroethene	ND	20	21.9	110	21.9	110	0	33-170/34
75-69-4	Trichlorofluoromethane	ND	20	19.1	96	19.3	96	1	54-147/16
75-01-4	Vinyl chloride	ND	20	18.0	90	18.0	90	0	39-164/21
1330-20-7	Xylenes (total)	ND	60	64.7	108	62.4	104	4	77-118/10

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
F3012-1MS	EF007446.D	1	10/16/98	JG	n/a	n/a	GEF179
F3012-1MSD	EF007447.D	1	10/16/98	JG	n/a	n/a	GEF179
F3012-1	EF007362.D	1	10/08/98	JG	n/a	n/a	GEF179

The QC reported here applies to the following samples:

Method: SW846 8021B

F3037-2

CAS No.	Surrogate Recoveries	MS	MSD	F3012-1	Limits
74-97-5	Bromochloromethane	110%	112%	99%	75-125%
75-29-6	2-Chloropropane	84%	88%	92%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	114%	105%	97%	75-125%
625-98-9	1-Chloro-3-fluorobenzene	101%	105%	88%	75-125%
462-06-6	Fluorobenzene	105%	106%	103%	75-125%
98-08-8	aaa-Trifluorotoluene	101%	103%	101%	75-125%

# Blank Spike Summary

Job Number: F3037  
 Account: TETRFLTA Tetra-Tech, NUS  
 Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-BS	K001781.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

F3037-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	46.8	94	73-122
75-27-4	Bromodichloromethane	50	49.4	99	63-127
75-25-2	Bromoform	50	53.9	108	56-135
108-90-7	Chlorobenzene	50	49.1	98	74-115
75-00-3	Chloroethane	50	42.5	85	48-142
67-66-3	Chloroform	50	41.8	84	74-120
110-75-8	2-Chloroethyl vinyl ether	250	362	145*	80-120
56-23-5	Carbon tetrachloride	50	47.0	94	26-154
75-34-3	1,1-Dichloroethane	50	47.1	94	71-122
75-35-4	1,1-Dichloroethylene	50	39.7	79	67-127
106-93-4	1,2-Dibromoethane	50	53.2	106	71-135
107-06-2	1,2-Dichloroethane	50	50.6	101	67-159
78-87-5	1,2-Dichloropropane	50	50.9	102	70-124
124-48-1	Dibromochloromethane	50	52.3	105	64-122
75-71-8	Dichlorodifluoromethane	50	34.4	69	59-122
156-59-2	cis-1,2-Dichloroethylene	50	49.4	99	71-122
10061-01-5	cis-1,3-Dichloropropene	50	48.6	97	59-129
541-73-1	m-Dichlorobenzene	50	46.8	94	75-120
95-50-1	o-Dichlorobenzene	50	46.9	94	72-120
106-46-7	p-Dichlorobenzene	50	46.3	93	70-120
156-60-5	trans-1,2-Dichloroethylene	50	43.8	88	66-123
10061-02-6	trans-1,3-Dichloropropene	50	50.5	101	59-134
100-41-4	Ethylbenzene	50	47.6	95	72-120
74-83-9	Methyl bromide	50	41.4	83	35-150
74-87-3	Methyl chloride	50	40.0	80	23-150
75-09-2	Methylene chloride	50	46.0	92	61-135
1634-04-4	Methyl Tert Butyl Ether	50	50.4	101	80-120
71-55-6	1,1,1-Trichloroethane	50	46.3	93	75-120
79-34-5	1,1,2,2-Tetrachloroethane	50	49.9	100	37-170
79-00-5	1,1,2-Trichloroethane	50	51.4	103	68-133
127-18-4	Tetrachloroethylene	50	44.9	90	66-119
108-88-3	Toluene	50	47.6	95	70-122
79-01-6	Trichloroethylene	50	44.7	89	42-154
75-69-4	Trichlorofluoromethane	50	39.8	80	44-126
75-01-4	Vinyl chloride	50	41.3	83	29-178
1330-20-7	Xylene (total)	150	147	98	58-127

# Blank Spike Summary

Job Number: F3037  
Account: TETRFLTA Tetra-Tech, NUS  
Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-BS	K001781.D	1	10/02/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

F3037-1

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	80-120%
2037-26-5	Toluene-D8	102%	81-117%
460-00-4	4-Bromofluorobenzene	99%	74-121%
17060-07-0	1,2-Dichloroethane-D4	100%	80-120%

# Method Blank Summary

Job Number: F3037  
 Account: TETRFLTA Tetra-Tech, NUS  
 Project: Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-MB6	K001814.D	1	10/14/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

F3037-1

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	2.0	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	ug/kg	
75-25-2	Bromoform	ND	2.0	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	ug/kg	
75-00-3	Chloroethane	ND	2.0	ug/kg	
67-66-3	Chloroform	ND	2.0	ug/kg	
110-75-8	2-Chloroethyl vinyl ether	ND	5.0	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	ug/kg	
75-34-3	1,1-Dichloroethane	ND	2.0	ug/kg	
75-35-4	1,1-Dichloroethylene	ND	2.0	ug/kg	
106-93-4	1,2-Dibromoethane	ND	2.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	2.0	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	ug/kg	
156-59-2	cis-1,2-Dichloroethylene	ND	2.0	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	ug/kg	
541-73-1	m-Dichlorobenzene	ND	2.0	ug/kg	
95-50-1	o-Dichlorobenzene	ND	2.0	ug/kg	
106-46-7	p-Dichlorobenzene	ND	2.0	ug/kg	
156-60-5	trans-1,2-Dichloroethylene	ND	2.0	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	ug/kg	
74-83-9	Methyl bromide	ND	5.0	ug/kg	
74-87-3	Methyl chloride	ND	5.0	ug/kg	
75-09-2	Methylene chloride	ND	5.0	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	2.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	ug/kg	
127-18-4	Tetrachloroethylene	ND	2.0	ug/kg	
108-88-3	Toluene	ND	2.0	ug/kg	
79-01-6	Trichloroethylene	ND	2.0	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	ug/kg	
75-01-4	Vinyl chloride	ND	5.0	ug/kg	
1330-20-7	Xylene (total)	ND	6.0	ug/kg	

# Method Blank Summary

**Job Number:** F3037  
**Account:** TETRFLTA Tetra-Tech, NUS  
**Project:** Site 307-CSS, Panama City

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VK21-MB6	K001814.D	1	10/14/98	RAW	n/a	n/a	VK21

The QC reported here applies to the following samples:

Method: SW846 8260B

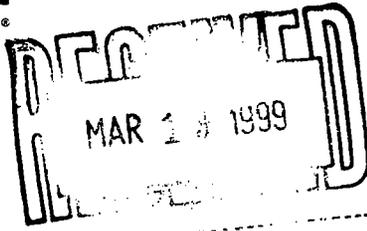
F3037-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	98%	80-120%
2037-26-5	Toluene-D8	92%	81-117%
460-00-4	4-Bromofluorobenzene	101%	74-121%
17060-07-0	1,2-Dichloroethane-D4	96%	80-120%



**ACCUTEST.**

03/15/99



**Technical Report for**

**Tetra-Tech, NUS**

Site 307 CSS, Panama City

7766 CTO 0047

Accutest Job Number: F3623

**Report to:**

Tetra Tech, NUS  
1311 Executive Center Drive  
Ellie Building, Suite 220  
Tallahassee, FL 32301

**ATTN: Gerald Goode**

**Total number of pages in report:**

**Harry Behzadi, Ph.D.  
Laboratory Director**

Results relate only to the items tested.

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## Sample Summary

Tetra-Tech, NUS

Date: 03/15/99

Job No: F3623

Site 307 CSS, Panama City  
Project No: 7766 CTO 0047

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F3623-1	02/04/99	12:30 JG	02/05/99	AQ	Ground Water	307 SB06 0102-001B
F3623-2	02/04/99	12:45 JG	02/05/99	SO	Soil	307 SB06 0102-001
F3623-3	02/04/99	17:15 JG	02/05/99	SO	Soil	307 SB07 0102-001



# Report of Analysis

Client Sample ID: 307 SB06 0102-001B  
Lab Sample ID: F3623-1  
Matrix: AQ - Ground Water  
Method: FLORIDA-PRO  
Project: Site 307 CSS, Panama City

Date Sampled: 02/04/99  
Date Received: 02/05/99  
Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P03175.D	1	02/11/99	SKW	02/11/99	OP665	GOP154
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> 307 SB06 0102-001B		<b>Date Sampled:</b> 02/04/99
<b>Lab Sample ID:</b> F3623-1		<b>Date Received:</b> 02/05/99
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8310		
<b>Project:</b> Site 307 CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	02/12/99	AMA	02/10/99	M:OP1036	M:GC895
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	1.1	ug/l	
120-12-7	Anthracene	ND	1.1	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.17	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.17	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.17	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.17	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.17	ug/l	
218-01-9	Chrysene	ND	0.17	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.17	ug/l	
206-44-0	Fluoranthene	ND	1.1	ug/l	
86-73-7	Fluorene	ND	1.1	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.17	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	ug/l	
91-20-3	Naphthalene	ND	1.1	ug/l	
85-01-8	Phenanthrene	ND	1.1	ug/l	
129-00-0	Pyrene	ND	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> 307 SB06 0102-001	
<b>Lab Sample ID:</b> F3623-2	<b>Date Sampled:</b> 02/04/99
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 02/05/99
<b>Method:</b> FLORIDA-PRO	<b>Percent Solids:</b> 93.4
<b>Project:</b> Site 307 CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P03161.D	1	02/11/99	SKW	02/10/99	OP675	GOP153
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	8.43	8.9	mg/kg	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits	
84-15-1	o-Terphenyl	79%		40-140%	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range  
J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> 307 SB06 0102-001	
<b>Lab Sample ID:</b> F3623-2	<b>Date Sampled:</b> 02/04/99
<b>Matrix:</b> SO - Soil	<b>Date Received:</b> 02/05/99
<b>Method:</b> SW846 8310	<b>Percent Solids:</b> 93.4
<b>Project:</b> Site 307 CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	02/12/99	AMA	02/12/99	M:OP998	M:GC896
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	34	ug/kg	
208-96-8	Acenaphthylene	ND	34	ug/kg	
120-12-7	Anthracene	ND	34	ug/kg	
56-55-3	Benzo (a) anthracene	ND	5.2	ug/kg	
50-32-8	Benzo (a) pyrene	ND	5.2	ug/kg	
205-99-2	Benzo (b) fluoranthene	6.80	5.2	ug/kg	
191-24-2	Benzo (g,h,i) perylene	ND	5.2	ug/kg	
207-08-9	Benzo (k) fluoranthene	ND	5.2	ug/kg	
218-01-9	Chrysene	5.45	5.2	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	5.2	ug/kg	
206-44-0	Fluoranthene	ND	5.2	ug/kg	
86-73-7	Fluorene	ND	34	ug/kg	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	5.2	ug/kg	
90-12-0	1-Methylnaphthalene	ND	34	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	ug/kg	
91-20-3	Naphthalene	ND	34	ug/kg	
85-01-8	Phenanthrene	ND	34	ug/kg	
129-00-0	Pyrene	ND	5.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	53%		20-130%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> 307 SB07 0102-001	<b>Date Sampled:</b> 02/04/99
<b>Lab Sample ID:</b> F3623-3	<b>Date Received:</b> 02/05/99
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 95.6
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307 CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P03162.D	1	02/11/99	SKW	02/10/99	OP675	GOP153
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		40-140%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> 307 SB07 0102-001	<b>Date Sampled:</b> 02/04/99
<b>Lab Sample ID:</b> F3623-3	<b>Date Received:</b> 02/05/99
<b>Matrix:</b> SO - Soil	<b>Percent Solids:</b> 95.6
<b>Method:</b> SW846 8310	
<b>Project:</b> Site 307 CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	02/12/99	AMA	02/12/99	M:OP998	M:GC896
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	34	ug/kg	
208-96-8	Acenaphthylene	ND	34	ug/kg	
120-12-7	Anthracene	ND	34	ug/kg	
56-55-3	Benzo (a) anthracene	ND	5.1	ug/kg	
50-32-8	Benzo (a) pyrene	ND	5.1	ug/kg	
205-99-2	Benzo (b) fluoranthene	8.39	5.1	ug/kg	
191-24-2	Benzo (g,h,i) perylene	11.3	5.1	ug/kg	
207-08-9	Benzo (k) fluoranthene	ND	5.1	ug/kg	
218-01-9	Chrysene	ND	5.1	ug/kg	
53-70-3	Dibenz(a,h)anthracene	ND	5.1	ug/kg	
206-44-0	Fluoranthene	ND	5.1	ug/kg	
86-73-7	Fluorene	ND	34	ug/kg	
193-39-5	Indeno (1,2,3-cd) pyrene	8.70	5.1	ug/kg	
90-12-0	1-Methylnaphthalene	ND	34	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	ug/kg	
91-20-3	Naphthalene	ND	34	ug/kg	
85-01-8	Phenanthrene	ND	34	ug/kg	
129-00-0	Pyrene	ND	5.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	60%		20-130%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# CHAIN OF CUSTODY

4405 VINELAND ROAD • SUITE C-15  
 ORLANDO, FL 32811  
 TEL: 407-425-6700 • FAX: 407-425-0707

ACCUTEST JOB #:

ACCUTEST QUOTE #:

P.O.# 8049-7766-PP8312

<b>CLIENT INFORMATION</b>		<b>FACILITY INFORMATION</b>		<b>ANALYTICAL INFORMATION</b>		<b>MATRIX CODES</b>	
NAME: <u>Tetra Tech US, Inc.</u> ADDRESS: <u>1311 Executive Center Drive Suite 220</u> <u>Tallahassee FL 32312</u> CITY, STATE ZIP		PROJECT NAME: <u>Site 307</u> LOCATION: <u>Navy Coastal Systems Station Panama City</u> PROJECT NO.: <u>7766</u> CTO 0047 FAX #: <u>850 656-7403</u>		Analytical Parameters: <u>TRPH-FL PRO</u> <u>PAHs - 8310</u> <u>TRPH-FC PRO</u> <u>PAHs - 8310</u>		DW - DRINKING WATER GW - GROUND WATER WW - WASTE WATER SO - SOIL SL - SLUDGE OI - OIL LIQ - OTHER LIQUID SOL - OTHER SOLID	
SEND REPORT TO: PHONE # <u>Gerald Goode 850-656-5409</u>							

ACCUTEST SAMPLE #	FIELD ID / POINT OF COLLECTION	COLLECTION			MATRIX	# OF BOTTLES	PRESERVATION					LAB USE ONLY	
		DATE	TIME	SAMPLED BY:			HCl	NaOH	HNO3	H2SO4	NONE		
3025-1	307 SB06 0102-001B	2-4-99	12:30	A.A.	SR	3				X	X		
-2	307 SB06 0102-001	2-4-99	12:45	A.A.	SD	2					X		
3	307 SB07 0102-001	2-4-99	17:15	Am	SD	2					X		
Soil 300 ml amber Rinsate Blank 950 ml amber													
Total													(7)

<b>DATA TURNAROUND INFORMATION</b>		<b>DATA DELIVERABLE INFORMATION</b>		<b>COMMENTS/REMARKS</b>	
<input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> 48 HOUR RUSH <input type="checkbox"/> 24 HOUR EMERGENCY <input type="checkbox"/> OTHER	APPROVED BY: _____	<input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> COMMERCIAL "B" <input checked="" type="checkbox"/> DISK DELIVERABLE <input type="checkbox"/> STATE FORMS <input type="checkbox"/> OTHER (SPECIFY) _____	Shipped Fed Ex. Airbill # 494783950	CR # 751 Samples Iced Custody Seal Placed on Sample Cooler	
EMERGENCY OR RUSH IS FAX DATA UNLESS PREVIOUSLY APPROVED					

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

RELINQUISHED BY/SAMPLER: 1. <u>[Signature]</u> 02-02-99	DATE TIME: 11:00	RECEIVED BY: 2. <u>[Signature]</u>	RELINQUISHED BY: 2.	DATE TIME:	RECEIVED BY: 2. <u>[Signature]</u> 2-5-99 11:30
RELINQUISHED BY: 3. <u>[Signature]</u>	DATE TIME: 2-4-99	RECEIVED BY: 2. <u>[Signature]</u> 18:00 to cooler	RELINQUISHED BY: 4.	DATE TIME:	RECEIVED BY: 4.
RELINQUISHED BY: 5.	DATE TIME:	RECEIVED BY: 5.	SEAL #	PRESERVE WHERE APPLICABLE <input type="checkbox"/>	ON ICE <input type="checkbox"/>
			TEMPERATURE _____ C		

**APPENDIX K**

**PROJECT REVIEW MEETING SUMMARY LETTER**



## TETRA TECH NUS, INC.

1311 Executive Center Drive, Ellis Building. ■ Suite 220 ■ Tallahassee, FL 32031  
(850) 656-5458 ■ FAX (850) 656-7403 ■ www.tetrattech.com

TtNUS/TLH-99-010/7766/3.2

February 10, 1999

Mr. Dave Grabka  
Environmental Specialist  
Florida Department of Environmental Protection  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Reference: Clean Contract No. N62467-94-D0888  
Contract Task Order Number 0047

SUBJECT: Site 307 Site Assessment Review Meeting  
Navy Coastal Systems Station, Panama City

Dear Mr. Grabka:

On January 14, 1999 a meeting was held with FDEP and Tetra Tech NUS, Inc.(TtNUS) to review soil and groundwater quality data collected near the former product line for Tank 307 at the Navy Coastal Systems Station in Panama City. The purpose of the meeting was to review the depths at which soil samples were collected and to evaluate the soil quality. The following summarizes the results of the meeting.

- The results of soil samples collected for laboratory analysis from a geoprobe subsurface investigation were reviewed. The samples were collected at 4 to 5 feet below land surface (bls). Depth to groundwater measurements collected from site monitoring wells identified that the soil samples were collected from the water table to approximately 1 foot into the water table.
- The soil analysis identified TRPH concentrations at the water table (wet soil zone) to exceed the Soil Cleanup Target Levels (SCTLs) for residential and commercial/industrial use and leachability (Chapter 62-770, FAC, Table IV).
- The groundwater laboratory results of samples collected from site monitoring wells were reviewed. The results showed TRPH groundwater concentrations in the groundwater to be below laboratory detection limits.
- The TRPH in the soil may consist of a TRPH class composed of long-chained carbons (greater than the C<sub>8</sub>-C<sub>12</sub> Aromatic TRPH class). These long-chained hydrocarbons have very low leachabilities. Since the groundwater concentrations for TRPH were at non-detect levels, the TRPH constituents in the wet soils may correspond with the long-chained carbon classes of TRPH. The FDEP requested that TRPH Leachability testing from the wet soil zone not be conducted.
- The matrix interference identified in soil samples for PAH analysis possibly caused elevated laboratory detection limits. Since no PAH constituents were detected that had high direct exposure SCTLs, FDEP requested that additional samples not be collected to analyze for PAHs that have lower direct exposure SCTLs (i.e., benzo(a)anthracene, benzo(a)pyrene,

Mr. Dave Grabka, FDEP  
February 10, 1999  
Page 2

benzo(g,h,i)perylene, benzofluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene).

- FDEP and TiNUS agreed that two soil samples would be collected for analysis of TRPH and PAH constituents. One sample would be collected at the former dispenser island. The second sample would be collected along the former product line at Alligator Bayou. The samples would be collected from the vadose zone (1 to 2 feet bls). This data would be used to evaluate exposure potential to TRPH and PAH constituents.
- The Site 307 SAR submittal due date to the FDEP was established as April 1, 1999.

Please review this summary and advise on any discrepancies. Soil sampling activities are tentatively scheduled for the week of February 1, 1999.

Sincerely,



Gerald F. Goode, P.G.  
Task Order Manager

Gg/gg

c: Mr. N. Ugolini, SOUTHDIV  
Mr. A. McDonald, CSS, Panama City  
Mr. A. Kendrick, Ttnus

## APPENDIX L

### FIELD MEASUREMENTS AND SAMPLING FORMS







DEP Form # 62-770 (5/97)  
 Form Title: Petroleum or Petroleum Products  
 Water Sampling Log  
 Effective Date: \_\_\_\_\_

**Petroleum or Petroleum Products**

**Water Sampling Log**

PCY-307-MW01-

PCY-307-MW01-001

FDEP FACILITY NO.: 307 | WELL NO.: MW01 | SAMPLE ID: PCY-307-MW01 | DATE: 10/6/98  
 SITE NAME: CSS Parama City Site 307 | SITE LOCATION: Site 307

**PURGE DATA**

WELL DIAMETER (in): 2" | TOTAL WELL DEPTH (ft): 13 | DEPTH TO WATER (ft): 4.48 | WELL CAPACITY (gal/ft): 0.165

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

$(13 - 4.48) \times 0.165 = 1.41 \text{ gal}$

PURGE METHOD: Peristaltic Pump/Low flow		PURGING INITIATED AT: 7.27		PURGING ENDED AT: 0800					
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos/cm)	PURGE RATE (gpm): (0.8L/min) 0.29/min	TOTAL VOLUME PURGED (gal): 7 gal	APPEARANCE	DO	OTHER
0	0	7.00	27.3	0.434	Pale yellow	—	Cloudy	7.65 mg/L	
1	1.5	6.98	28.0	0.434	" "	—	Clear	7.43 mg/L	
2	3	6.97	28.2	0.439	Clear	—	Clear	7.45 mg/L	
3	5	7.00	27.8	0.438	" "	—	" "	" "	7.91?

**SAMPLING DATA**

SAMPLED BY / AFFILIATION: BGS + GG / Tetra Tech | SAMPLER(S) SIGNATURE(S): *[Signature]*  
 SAMPLING METHOD(S): Low flow | SAMPLING INITIATED AT: 0930 0800 | SAMPLING ENDED AT: 0940 0820

FIELD DECONTAMINATION: Y  | FIELD-FILTERED: Y  | DUPLICATE: Y

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
1	CG	40	HCL	80 ml	—	8021
2	CG	40	None	120 ml	—	504
3	HDP	500	HNO3	500 ml	—	Total Pb
4	AG	1000	None	2000 ml	—	8310
5	AG	1000	H2SO4	1000 ml	—	FL Pro

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)  
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

E: this does not constitute all the information required by Chapter 62-160, F.A.C.



DEP Form # 62-770 (5/92)  
 Form Title: Petroleum or Petroleum Products  
 Other Sampling Log  
 Effective Date:

**Petroleum or Petroleum Products**

**Water Sampling Log**

PCY-307-MW02 PCY-307-MW02-001

**FDEP FACILITY NO.:** WELL NO.: ↑ **SAMPLE ID:** ↑ **DATE:** 10/16/198  
**SITE NAME:** CSS Parama City Site 307 **SITE LOCATION:** Site 307

**PURGE DATA**

**WELL DIAMETER (in):** 2" **TOTAL WELL DEPTH (ft):** 13' **DEPTH TO WATER (ft):** 4.27 **WELL CAPACITY (gal/ft):** 0.165  
 1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =  
 = (13 - 4.27) x 0.165 = 1.44

PURGE METHOD:		PURGING INITIATED AT:		PURGING ENDED AT:					
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µs/cm)	PURGE RATE (gpm):	TOTAL VOLUME PURGED (gal):	APPEARANCE	ODOR	OTHER
					(900ml/min) 0.23	7.5			
0	0	6.46	27.9	0.218	Clear	Organic	Clear		8.00 mg/L
1	2	6.43	28.1	0.214	Clear	" "	Clear		8.05
2	3	6.40	28.3	0.214	Clear	" "	Clear		8.02
3	4.5	6.43	28.2	0.216	" "	" "	" "		8.08
4	6.5	6.39	28.3	0.220	Clear	" "	Clear		8.23
5	7.0	6.42	28.4	0.223	Clear	" "	Clear		8.23

**SAMPLING DATA**

**SAMPLED BY / AFFILIATION:** BGS + BG / Tetra Tech **SAMPLER(S) SIGNATURE(S):** [Signature]  
**SAMPLING METHOD(S):** Low flow **SAMPLING INITIATED AT:** 0930 **SAMPLING ENDED AT:** 0940

**FIELD DECONTAMINATION:** Y  **FIELD-FILTERED:** Y  **DUPLICATE:** Y

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
1	CG	40	HCL	80	-	8021
2	CG	40	None	120	-	504
3	HDP	500	HNO3	500	-	Total Pb
4	AG	1000	None	2000	-	8310
5	AG	1000	H2SO4	1000	-	FL-Pro

**REMARKS:**  
**MATERIAL CODES:** AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)  
**WELL CAPACITY:** 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.



DEP Form # 32-770 (03/02)  
 Form Title: Petroleum or Petroleum Products  
 Water Sampling Log  
 Effective Date:

**Petroleum or Petroleum Products**

**Water Sampling Log**

PCY-307-MW03 PCY-307-MW03-001

FDEP FACILITY NO.: Site 307	WELL NO.:	SAMPLE ID:	DATE: 10/6/98
SITE NAME: CSS Panama City Site 307		SITE LOCATION: Site 307	

**PURGE DATA**

WELL DIAMETER (in): 2"	TOTAL WELL DEPTH (ft): 13	DEPTH TO WATER (ft): 4.30	WELL CAPACITY (gal/ft): 0.165
------------------------	---------------------------	---------------------------	-------------------------------

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =

$= (13 - 4.30) \times 0.165 = 1.43$

PURGE METHOD: Perastaltic Pump (Low flow)				PURGING INITIATED AT: 0956		PURGING ENDED AT: 1025	
WELL VOLS PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos/cm)	PURGE RATE (rpm): 900 mL/min	TOTAL VOLUME PURGED (gal): 6	
					COLOR	ODOR	APPEARANCE
0	-	6.42	29.4	0.290	Pale yellow	-	Clear
1	1.5	6.38	29.0	0.303	" "	-	"
2	3.0	6.38	29.3	0.305	" "	-	Clear
3	5.0	6.42	29.1	0.306	Clear	-	Clear
							DO OTHER
							8.28
							8.46
							8.39
							8.48

**SAMPLING DATA**

SAMPLED BY: BBS-166 / Tetra Tech	SAMPLER(S) SIGNATURE(S): [Signature]
SAMPLING METHOD(S): Low flow	SAMPLING INITIATED AT: 1025
	SAMPLING ENDED AT: 1035

FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/>	FIELD-FILTERED: Y <input checked="" type="checkbox"/>	DUPLICATE: Y <input type="checkbox"/>
--	---	---------------------------------------

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
1	CG	40	HCL	80	-	8021
2	CG	40	None	120	-	584
3	HDP	500	HNO3	500	-	Total Pb
4	AG	1000	None	2000	-	8310
5	AG	1000	H2SO4	1000	-	FL-Pro

**REMARKS:**

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)

WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: This does not constitute all the information required by Chapter 62-160, F.A.C.



DEP Form # 62-773 (5/92)  
 Form Title: Petroleum or Petroleum Products  
 Water Sampling Log  
 Effective Date:

### Petroleum or Petroleum Products Water Sampling Log

PCG-307-MW40

FDEP FACILITY NO.: \_\_\_\_\_ WELL NO.: \_\_\_\_\_ SAMPLE ID: PCG-307-MW40 DATE: 10/6/98  
 SITE NAME: NAVY Coastal System Station SITE LOCATION: Site 307

#### PURGE DATA

WELL DIAMETER (in): 2 TOTAL WELL DEPTH (ft): 29.2 DEPTH TO WATER (ft): 3.41 WELL CAPACITY (gal/ft): .165  
 1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =  
 = ( 29.2 - 3.41 ) x .165 = 4.26

PURGE METHOD:					PURGING INITIATED AT: 11:55		PURGING ENDED AT: 1320	
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	ms/cm COND. (umhos)	PURGE RATE (gpm): 0.8 L/min	TOTAL VOLUME PURGED (gal): 55	APPEARANCE	DO OTHER
0	0	11.15	30.2	0.947	clear		clear	9.40
1	4	7.68	27.2	0.463	Brown/seric sed.		cloudy	10.07
2	9	7.04	27.0	0.416	Pale Yellow		clear	10.07 9.70
3	13.5	6.84	27.3	0.386	Pale Yellow		clear	9.66
4	18.0	6.75	27.0	0.364	Pale Yellow		clear	9.73
4.5	20.0	6.70	26.2	0.356	--		--	9.85

#### SAMPLING DATA

SAMPLED BY: BBS + GE / Tetra Tech SAMPLER(S) SIGNATURE(S): *[Signature]*  
 SAMPLING METHOD(S): Low flow SAMPLING INITIATED AT: 1320 SAMPLING ENDED AT: 1330

FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/>			FIELD-FILTERED: Y <input checked="" type="checkbox"/>			DUPLICATE: Y <input checked="" type="checkbox"/>	
SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD	
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH		
1	CG	40ml	HCL	80 ml	-	8021	
2	CG	40ml	None	120 ml	-	504	
3	HDP	500	HNO3	500	-	Total Pb	
4	AG	1000	None	2000	-	8310	
5	AG	1000	H2SO4	1000	-	FLP06	

REMARKS:  
 MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)  
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.17 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.



DEP Form # 62-770 (3/00)  
 Form Title: Petroleum or Petroleum Products  
 Well Sampling Log  
 Effective Date:

**Petroleum or Petroleum Products**

**Water Sampling Log**

PCY-307-TCW-001  
 PCY-307-TCW-001D

FDEP FACILITY NO.: \_\_\_\_\_ WELL NO.: \_\_\_\_\_ SAMPLE ID: \_\_\_\_\_ DATE: 016 198  
 SITE NAME: CS Panama City Site 307 SITE LOCATION: Site 307

**PURGE DATA**

WELL DIAMETER (in): 2" TOTAL WELL DEPTH (ft): 14 DEPTH TO WATER (ft): 4.31 WELL CAPACITY (gal/ft): 0.165

1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) x WELL CAPACITY =  
 = ( 14 - 4.31 ) x 0.165 = 1.59

PURGE METHOD: <i>Low Flow</i>		PURGING INITIATED AT: 1047		PURGING ENDED AT: 1120				
WELL VOLS. PURGED	CUMUL. VOLUME PURGED (gal)	pH	TEMP. (°C)	COND. (µmhos/cm)	PURGE RATE (rpm): 850 ml/min	TOTAL VOLUME PURGED (gal): 5.5	APPEARANCE	DO OTHER
0	—	7.19	29.6	1.09	Pale Yellow	—	Clear	9.92
2	3	7.36	28.9	1.06	" "	—	Clear	9.23
3	5	7.34	28.6	1.02	Clear	—	Clear	9.88
4	6.5	7.32	28.7	1.01	Clear	—	Clear	

**SAMPLING DATA**

SAMPLED BY: 065+66 / Tetra Tech SAMPLER(S) SIGNATURE(S): *[Signature]*  
 SAMPLING METHOD(S): *Low Flow* SAMPLING INITIATED AT: 1125 SAMPLING ENDED AT: 1144

FIELD DECONTAMINATION: Y  N  FIELD-FILTERED: Y  N  DUPLICATE:  Y  N

SAMPLE CONTAINER SPECIFICATIONS			SAMPLE PRESERVATION			INTENDED ANALYSIS AND/OR METHOD
NO.	MATERIAL CODE	VOLUME	PRESERVATIVE USED	TOTAL VOLUME ADDED IN FIELD (ml)	FINAL pH	
1	CG	40	HCL	80 ml	—	8021
2	CG	40	None	120	—	504
3	HDP	500	HNO3	500	—	Total Pb
4	AG	2000	None	2000	—	8310
5	AG	1000	H2SO4	1000	—	FL-Pro

REMARKS:

MATERIAL CODES: AG = AMBER GLASS; CG = CLEAR GLASS; HDP = HIGH DENSITY POLYETHYLENE; O = OTHER (SPECIFY)  
 WELL CAPACITY: 1.25" = 0.06 gal/ft; 2" = 0.16 gal/ft; 4" = 0.65 gal/ft; 6" = 1.47 gal/ft; 8" = 2.61 gal/ft; 12" = 5.88 gal/ft

NOTE: this does not constitute all the information required by Chapter 62-160, F.A.C.













# WELL DEVELOPMENT SHEET

PROJECT SITE NAME: 307 - 085  
 PROJECT NUMBER: 7766  
 WEATHER: HOT  
 STATIC WATER LEVEL: 4.03  
 TOTAL WELL DEPTH: 13.0  
 ONE CASING VOLUME: 1.43  
 START TIME: 1230  
 END TIME: \_\_\_\_\_

SITE/LOCATION: PANAMA CITY, FL  
 WELL ID.: PCY-302-MW01  
 DATE: 9/21/98  
 PERSONNEL: [Signature]  
 WELL TYPE: [PVC] [S.S.], or  
 OTHER \_\_\_\_\_  
 MEASURING DEVICE: ORIS T-PROBE  
 ADJUSTMENT FACTOR: [Signature]

[ ] DOMESTIC WELL,  MONITORING WELL, [ ] OTHER \_\_\_\_\_

METHOD & REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approximate Volume	Time	Color	pH (S.U.)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)
10	1230	CLEAR	7.83	.352	-10	4.21	32.6	.01
20	1240	CLEAR	7.91	.358	-10	4.37	32.2	.01
25	1245	CLEAR	7.92	.358	-10	4.35	32.3	.01

NOTE: All measurements to nearest 0.01 foot measured from top of well riser pipe unless otherwise noted.

ADDITIONAL COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SIGNATURE(s): [Signature]

PAGE 1 OF 1



# WELL DEVELOPMENT SHEET

PROJECT SITE NAME: 307-CSS SITE/LOCATION: PANAMA CITY, FL  
 PROJECT NUMBER: 7766 WELL ID.: PEY-307 - MW02  
 WEATHER: HOT - SUNNY DATE: 9/21/98  
 STATIC WATER LEVEL: 4.23 PERSONNEL: [Signature]  
 TOTAL WELL DEPTH: 13.0 WELL TYPE: [PVC] [S.S.], or  
 ONE CASING VOLUME: 1.90 OTHER: \_\_\_\_\_  
 START TIME: 1315 MEASURING DEVICE: ORS T.P.  
 END TIME: \_\_\_\_\_ ADJUSTMENT FACTOR: [Signature]

[ ] DOMESTIC WELL, [X] MONITORING WELL, [ ] OTHER

METHOD & REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approximate Volume	Time	Color	pH (S.U.)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (Celcius)	Salinity (%)
10	1315	CLEAR	7.45	.191	-10	5.10	30.4	Ø
25	1325	CLEAR	7.45	.191	-10	5.14	30.5	Ø
42	1335	CLEAR	7.47	.190	-10	5.26	30.4	Ø
55	1340	CLEAR	7.46	.191	-10	5.19	30.4	Ø

NOTE: All measurements to nearest 0.01 foot measured from top of well riser pipe unless otherwise noted.

ADDITIONAL COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SIGNATURE(S): [Signature]

PAGE 1 OF 1

4.68



# WELL DEVELOPMENT SHEET

PROJECT SITE NAME: 307-307-ESS SITE/LOCATION: PANAMA CITY, FL  
 PROJECT NUMBER: 7766 WELL ID.: PCY-307-MWD3  
 WEATHER: P. CLOUDY DATE: 9/21/98  
 STATIC WATER LEVEL: 3.98 PERSONNEL: ADP  
 TOTAL WELL DEPTH: 18.0 WELL TYPE: [RVC], [S.S.], or OTHER  
 ONE CASING VOLUME: 1.94 MEASURING DEVICE: ORS I.P.  
 START TIME: 0940 ADJUSTMENT FACTOR: 1  
 END TIME: \_\_\_\_\_

[ ] DOMESTIC WELL, [X] MONITORING WELL, [ ] OTHER

METHOD & REMARKS \_\_\_\_\_

Approximate Volume	Time	Color	pH (S.U.)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (Celsius)	Salinity (%)
	0940	CLEAR	7.44	.222	67	5.08	29.9	0
	0945	CLEAR	7.85	.223	-10	4.18	30.8	0
	1000	CLEAR	7.59	.232	-10	4.39	30.7	0
	1010	CLEAR	7.59	.232	-10	4.58	30.4	0

NOTE: All measurements to nearest 0.01 foot measured from top of well riser pipe unless otherwise noted.

ADDITIONAL COMMENTS: \_\_\_\_\_

SIGNATURE(S): [Signature]

PAGE 1 OF 1



# WELL DEVELOPMENT SHEET

PROJECT SITE NAME: 307-ESS SITE/LOCATION: Panama City FL  
 PROJECT NUMBER: 7766 WELL ID.: PCY-307-mw-4D  
 WEATHER: P. Cloudy DATE: 9/21/98  
 STATIC WATER LEVEL: 4.68 PERSONNEL: [Signature]  
 TOTAL WELL DEPTH: 13.0 WELL TYPE: [RVC], [S.S.], or  
 ONE CASING VOLUME: 1.33 OTHER: \_\_\_\_\_  
 START TIME: 1015 MEASURING DEVICE: CRS 1P.  
 END TIME: 1115 ADJUSTMENT FACTOR: Ø

[ ] DOMESTIC WELL,  MONITORING WELL, [ ] OTHER \_\_\_\_\_

METHOD & REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Approximate Volume	Time	Color	pH (S.U.)	Cond. (mS/cm)	Turbidity (NTU)	DO (mg/L)	Temp. (Celcius)	Salinity (%)
4	1015	DARK	9.94	.289	10	4.98	30.4	.01
8	1040	DARK	6.93-7.31	.290	999	4.62	31.1	Ø
15	1100	DARK	7.80	.290	999	4.65	31.1	Ø
20 GAL	1115	DARK	7.42	.290	999	4.72	31.2	Ø

NOTE: All measurements to nearest 0.01 foot measured from top of well riser pipe unless otherwise noted.

ADDITIONAL COMMENTS: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

SIGNATURE(s): [Signature]

PAGE 1 OF 1





# SOIL & SEDIMENT SAMPLE LOG SHEET

Page \_\_\_ of \_\_\_

Project Site Name: 307  
Project No.: 7766

Sample ID No.: PCY-307-SB05-0405-002  
Sample Location: SB05-Rsample  
Sampled By: Paul Howell  
C.O.C. No.: KK40392

- Surface Soil
- Subsurface Soil
- Sediment
- Other: \_\_\_\_\_
- QA Sample Type: \_\_\_\_\_

Type of Sample:  
 Low Concentration  
 High Concentration

### GRAB SAMPLE DATA:

Date:	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)
<u>10-13-98</u>	<u>4 to 5'</u>	<u>Pink gray</u>	<u>fine grained sand</u>
Time: <u>17:00</u>			
Method: <u>Hand Auger</u>			
Monitor Reading (ppm): <u>200 - 70 Silt = 130 - previous vapor reading at location</u>			

### COMPOSITE SAMPLE DATA:

Date:	Time	Depth	Color	Description (Sand, Silt, Clay, Moisture, etc.)

### SAMPLE COLLECTION INFORMATION:

Analysis	Container Requirements	Collected	Other
<u>VOAs - EnCore -</u>	<u>EnCore</u>		

### OBSERVATIONS / NOTES:

Strong fuel like odor

Asst Bill Kad Ex 805905932560 0200

### MAP:

Allixen Bay  
SB05-0405  
SB05-0405-002  
Above ground Tank

### Circle if Applicable:

MS/MSD <u>21</u>	Duplicate ID No.: <u> </u>
---------------------	-------------------------------

### Signature(s):

Paul Howell



# Brown & Root Environmental

## MULTIPLE SAMPLE LOG SHEET

- SURFACE SOIL
- SUBSURFACE SOIL
- SEDIMENT
- LAGOON/POND
- OTHER

SAMPLER(S) SIGNATURE *Mark Good*

PROJECT NAME: Site 307  
 PROJECT NUMBER: 7768

AREA DESIGNATION Site 307  
IDW (Accr/Summ,  
98, & 307)

Sample No.	SAMPLE METHOD	DEPTH (FT)	DATE	TIME	SAMPLED BY	CONCENTRATION (L) LOW (H) HIGH	(C) GRAB (C) COMPOSITE	ANALYSES				NO. OF CONT. TOTAL	SOIL DESCRIPTION
								MBEY/DETH	FL PRO PAH	METALS/DETH	8 P P PAH		
307-SS-SB01-0405	Excav	4-5	5/28/98	8:30	<i>[Signature]</i>	L	Grab	4	1			5	Sand, light to dark gray
307-SS-SB02-0405	Excav	4-5	5/28/98	9:45	<i>[Signature]</i>	L	Grab	4	1			5	Sand, dark gray
307-SS-SB05-0405	Excav	4-5	5/28/98	11:30	<i>[Signature]</i>	L	Grab	4	1			5	Sand, dark gray
IDW-Soil-Dum B	Excav	Center of soil pile in drum	5/28/98	13:00	<i>[Signature]</i>	L	Grab		4	1		5	Sand, dark gray

REMARKS:

LAB: *Accutest*  
*bill 6687476073*

COC NO: *307*

## APPENDIX M

### TOP OF WELL CASING SURVEY MEASUREMENTS

TITLE

PROJECT NO.

BOOK

Work continued from Page

Site 307

Sunny 75°F Wind Calm

STA	BS+	HI	FS-	EL±	Reclid-
BM	5.05	11.70		6.65	TOP of well casing Pcy-333-MW01
			5.69	6.01	Pcy-307-MW03
			5.68	6.02	Pcy-307-MW01
			5.74	5.96	Pcy-307-MW00
			5.79	5.91	Pcy-307-TCLW
			5.55	6.15	Pcy-307-MW02
5.53	11.68			6.15	TP1 shooting back at Pcy-307-MW02
			5.66	6.02	Pcy-307-MW03
			5.77	5.91	Pcy-307-TCLW
			5.72	5.96	Pcy-307-MW00
			5.65	6.03	Pcy-307-MW01
			5.03	6.65	Pcy-333-MW01
	5.35	12.00		6.65	TP3 shooting Pcy-333-MW01
			5.76	6.24	Pcy-A02-MW01
			5.61	6.39	Pcy-A02-MW00
				6.39	shooting Pcy-A02-MW00
				6.39	TPV
			5.77	6.24	Pcy-A02-MW01
			5.36	6.65	Pcy-333-MW01

A02  
Tide  
wall

SCIENTIFIC BINDERY PRODUCTIONS CHICAGO 60605

Work continued to Page

SIGNATURE

*M. J. Ford*

DATE

10-13-98

WITNESS

DATE

173

**APPENDIX N**  
**MOBILE LABORATORY DATA SHEETS**



# DATA REPORT

TETRATECH NUS (BROWN-N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-GRO ANALYSIS OF WATER (EPA METHOD 5030/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

SAMPLE ID	DATE COLLECTED	DATE ANALYZED	TPH-GRO (mg/L)	Surrogate Recovery (%)	Data Qualifiers	PQL
METHOD BLANK	—	5/28/98	ND	99.2		0.50
307-GW-SSB01-7	5/28/98	5/28/98	ND	96.3		0.50
307-GW-SSB01-24	5/28/98	5/28/98	3.12	80.3		0.50
307-GW-SSB02-7	5/28/98	5/28/98	ND	70.3		0.50
307-GW-SSB03-7	5/28/98	5/28/98	ND	86.7		0.50
307-GW-SSB04-7	5/28/98	5/28/98	ND	101		0.50
307-GW-DDB05-7	5/28/98	5/28/98	ND	97.4		0.50

"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE LISTED PRACTICAL QUANTITATION LIMITS (PQL'S)

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *J. H. M.*

### DATA QUALIFIERS

MI = MATRIX INTERFERENCE

DO = SURROGATE SPIKE DILUTED OUT

ALL SAMPLE VALUES OBTAINED BY DILUTION, PQL IS ADJUSTED ACCORDINGLY

DIVIDUAL VALUE OBTAINED BY DILUTION

E = ESTIMATED CONCENTRATION(S)



# DATA REPORT

TETRATECH NUS (BROWN -N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-DRO ANALYSIS OF WATER (EPA METHOD 3510/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

SAMPLE ID	DATE COLLECTED	DATE ANALYZED	TPH-DRO (mg/L)	Surrogate Recovery (%)	Data Qualifiers	PQL
METHOD BLANK	—	5/28/98	ND	95.3		0.50
307-GW-SSB01-7	5/28/98	5/28/98	541	78.2		0.50
307-GW-SSB-01-24	5/28/98	5/28/98	5080	81.0		0.50
307-GW-SSB02-7	5/28/98	5/28/98	183	124		0.50
307-GW-SSB03-7	5/28/98	5/28/98	52.0	120		0.50
307-GW-SSB04-7	5/28/98	5/28/98	9.66	98.2		0.50
307-GW-SSB05-7	5/28/98	5/28/98	27.6	131		0.50

307-GW-SSB05-8DUP	5/28/98	5/28/98	27.0	105		0.50
-------------------	---------	---------	------	-----	--	------

"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE LISTED PRACTICAL QUANTITATION LIMITS (PQL'S)

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *J. H. Min*

### DATA QUALIFIERS

MI = MATRIX INTERFERENCE

DO = SURROGATE SPIKE DILUTED OUT

D = ALL SAMPLE VALUES OBTAINED BY DILUTION, PQL IS ADJUSTED ACCORDINGLY

d = INDIVIDUAL VALUE OBTAINED BY DILUTION

E = ESTIMATED CONCENTRATION(S)



# DATA REPORT

TETRATECH NUS (BROWN-N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-GRO ANALYSIS OF WATER (EPA METHOD 5030/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

SAMPLE ID	DATE COLLECTED	DATE ANALYZED	TPH-GRO (mg/L)	Surrogate Recovery (%)	Data Qualifiers	PQL
METHOD BLANK	---	5/20/98	ND	96.2		0.50
AOC2-GW-SSB01-12	5/20/98	5/20/98	ND	MI		0.50
AOC2-GW-SSB03-8	5/20/98	5/20/98	ND	MI		0.50
AOC2-GW-SSB08-12	5/20/98	5/20/98	ND	MI		0.50
AOC2-GW-SSB08-21	5/20/98	5/21/98	ND	77.2		0.50
AOC2-GW-SSB09-9	5/21/98	5/21/98	ND	78.7		0.50
AOC2-GW-SSB10-12	5/21/98	5/21/98	ND	77.2		0.50
AOC2-GW-SSB11-12	5/21/98	5/21/98	ND	67.7		0.50
AOC2-GW-SSB13-12	5/21/98	5/21/98	ND	65.1		0.50
AOC2-GW-SSB14-9	5/21/98	5/21/98	ND	66.3		0.50
AOC2-GW-SSB14-18	5/21/98	5/21/98	ND	83.0		0.50
METHOD BLANK	....	5/21/98	ND	101		0.50
METHOD BLANK	...	5/27/98	ND	102		0.50
AOC2-GW-SSB17-7	5/27/98	5/27/98	ND	107		0.50
AOC2-GW-SSB18-7	5/27/98	5/27/98	ND	110		0.50
AOC2-GW-SSB18-24	5/27/98	5/27/98	ND	129		0.50
AOC2-GW-SSB21-7	5/27/98	5/27/98	ND	109		0.50
AOC2-GW-SSB24-7	5/27/98	5/27/98	ND	95.9		0.50
AOC2-GW-SSB25-7	5/27/98	5/27/98	ND	MI		0.50

} site 307  
Product line  
Release

"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE LISTED PRACTICAL QUANTITATION LIMITS (PQL'S)

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *J. H. Minie*

### DATA QUALIFIERS

MI = MATRIX INTERFERENCE

DO = SURROGATE SPIKE DILUTED OUT

D = ALL SAMPLE VALUES OBTAINED BY DILUTION, PQL IS ADJUSTED ACCORDINGLY

VD = INDIVIDUAL VALUE OBTAINED BY DILUTION

E = ESTIMATED CONCENTRATION(S)



# QA/QC DATA REPORT

TETRATECH NUS (BROWN-N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

TPH-GRO ANALYSIS OF WATER (EPA METHOD 5030/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

DATE ANALYZED: 5/28/98

SAMPLE SPIKED: GW-SSB24-7

*Site 307 Product line Release*

TPH-GRO  
(mg/L)

### MATRIX SPIKE

SPIKED CONC.	5.00
MEASURED CONC.	5.22
% RECOVERY	104.4%

### MATRIX SPIKE DUPLICATE

SPIKED CONC.	5.00
MEASURED CONC.	4.88
% RECOVERY	97.6%

### RELATIVE PERCENT

DIFFERENCE (RPD) 6.7%

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *T. H. Munn*



**QA/QC DATA REPORT**

TETRATECH NUS (BROWN -N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

**TEG PROJECT # 3-98179-C1**

**TPH-GRO ANALYSIS OF WATER (EPA METHOD 5030/8015 Mod.)**

**DATA REPORTED IN MILLIGRAMS PER LITER (PPM)**

DATE ANALYZED: 5/28/98

SAMPLE SPIKED: GW-SSB247 *Site 307 Product Line Release*

TPH-GRO  
(mg/L)

**MATRIX SPIKE**

SPIKED CONC.	5.00
MEASURED CONC.	5.22
% RECOVERY	104.4%

**MATRIX SPIKE DUPLICATE**

SPIKED CONC.	5.00
MEASURED CONC.	4.88
% RECOVERY	97.6%

RELATIVE PERCENT  
DIFFERENCE (RPD)

6.7%

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *J. H. Munn*



# DATA REPORT

TETRATECH NUS (BROWN -N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-DRO ANALYSIS OF WATER (EPA METHOD 3510/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

SAMPLE ID	DATE COLLECTED	DATE ANALYZED	TPH-DRO (mg/L)	Surrogate Recovery (%)	Data Qualifiers	PQL
METHOD BLANK	—	5/20/98	ND	98.8		0.50
AOC2-GW-SSB-01-12	5/20/98	5/20/98	33.6	MI		0.50
AOC2-GW-SSB03-8	5/20/98	5/21/98	153	104		0.50
AOC2-GW-SSB08-12	5/20/98	5/21/98	13.2	98.9		0.50
AOC2-GW-SSB08-21	5/20/98	5/21/98	1.62	MI		0.50
AOC2-GW-SSB09-9	5/21/98	5/21/98	17.1	90.1		0.50
AOC2-GW-SSB10-12	5/21/98	5/21/98	11.3	86.3		0.50
AOC2-GW-SSB11-12	5/21/98	5/21/98	21.6	124		0.50
AOC2-GW-SSB13-12	5/21/98	5/21/98	14.4	77.3		0.50
AOC2-GW-SSB14-9	5/21/98	5/21/98	23.8	MI		0.50
AOC2-GW-SSB14-18	5/21/98	5/21/98	178	84.4		0.50
METHOD BLANK	—	5/21/98	ND	95.9		0.50
METHOD BLANK	—	5/27/98	ND	97.2		0.50
AOC2-GW-SSB17-7	5/27/98	5/27/98	9.13	100		0.50
AOC2-GW-SSB18-7	5/27/98	5/27/98	3.47	87.3		0.50
AOC2-GW-SSB18-24	5/27/98	5/27/98	11.7	MI		0.50
AOC2-GW-SSB21-7	5/27/98	5/27/98	4.53	90.1		0.50
AOC2-GW-SSB24-7	5/27/98	5/27/98	0.59	116		0.50
AOC2-GW-SSB25-7	5/27/98	5/27/98	1.57	122		0.50
					<i>Site 307 Product line Release</i>	
AOC2-GW-SSB25-7D	5/27/98	5/27/98	1.51	126		0.50

ND\* INDICATES ANALYTE NOT DETECTED AT OR ABOVE LISTED PRACTICAL QUANTITATION LIMITS (PQL'S)

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *T.H.M.*

### DATA QUALIFIERS

MI = MATRIX INTERFERENCE

DO = SURROGATE SPIKE DILUTED OUT

D = ALL SAMPLE VALUES OBTAINED BY DILUTION, PQL IS ADJUSTED ACCORDINGLY

d = INDIVIDUAL VALUE OBTAINED BY DILUTION

E = ESTIMATED CONCENTRATION(S)



# QA/QC DATA REPORT

TETRATECH NUS (BROWN -N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-DRO ANALYSIS OF WATER (EPA METHOD 3510/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

DATE ANALYZED: 5/28/98

SAMPLE SPIKED: GW-SSB25-7 Site 307 Product Line Release

TPH-DRO  
(mg/L)

### MATRIX SPIKE

SPIKED CONC.	5.00
MEASURED CONC.	5.15
% RECOVERY	103.0%

### MATRIX SPIKE DUPLICATE

SPIKED CONC.	5.00
MEASURED CONC.	5.01
% RECOVERY	100.2%

### RELATIVE PERCENT

DIFFERENCE (RPD) 2.8%

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *Z.H. Mann*



# QA/QC DATA REPORT

TETRATECH NUS (BROWN-N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

TEG PROJECT # 3-98179-C1

## TPH-DRO ANALYSIS OF WATER (EPA METHOD 3510/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

DATE ANALYZED: 5/28/98

SAMPLE SPIKED: GW-SSB24-7

*Site 307 Product Line Release*

TPH-DRO  
(mg/L)

### MATRIX SPIKE

SPIKED CONC.	5.00
MEASURED CONC.	5.03
% RECOVERY	100.6%

### MATRIX SPIKE DUPLICATE

SPIKED CONC.	5.00
MEASURED CONC.	4.98
% RECOVERY	99.6%

### RELATIVE PERCENT

DIFFERENCE (RPD)	1.0%
------------------	------

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *Z.H.M.*



## QA/QC DATA REPORT

TETRATECH NUS (BROWN -N-ROOT)  
1311 EXECUTIVE CENTER, ELLIS BLD SUITE 220  
TALLAHASSEE FL 32301

COASTAL SYSTEM STATION SITE  
CLIENT PROJECT # 7766

EG PROJECT # 3-98179-C1

### PH-DRO ANALYSIS OF WATER (EPA METHOD 3510/8015 Mod.)

DATA REPORTED IN MILLIGRAMS PER LITER (PPM)

DATE ANALYZED: 5/28/98

SAMPLE SPIKED: GW-SSB247

*Site 307 Product Line Release*

TPH-DRO  
(mg/L)

#### MATRIX SPIKE

SPIKED CONC.	5.00
MEASURED CONC.	5.03
% RECOVERY	100.6%

#### MATRIX SPIKE DUPLICATE

SPIKED CONC.	5.00
MEASURED CONC.	4.98
% RECOVERY	99.6%

#### RELATIVE PERCENT

DIFFERENCE (RPD) 1.0%

ANALYSIS PERFORMED IN TEG'S CERTIFIED LABORATORY

ANALYSIS PERFORMED BY: ROBERT BARTHOLOMEW

DATA REVIEWED BY: *J. H. M.*

**APPENDIX O**  
**GROUNDWATER LABORATORY DATA SHEETS**

**Technical Report for**

Tetra-Tech, NUS  
Site 307-CSS, Panama City  
7766 CTO 0047  
Accutest Job Number: F3012

**Report to:**

Tetra Tech, NUS  
1311 Executive Center Drive  
Ellie Building, Suite 220  
Tallahassee, FL 32301  
  
ATTN: Gerald Goode

Total number of pages in report: 45



Harry Behzadi, Ph.D.  
Laboratory Director

Results relate only to the items tested.

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories.



## Sample Summary

Tetra-Tech, NUS

Date: 11/03/98

Site 307-CSS, Panama City  
Project No: 7766 CTO 0047

Job No: F3012

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
F3012-1	10/06/98	13:20 GG	10/07/98	AQ	Ground Water	PCY-307-MW4D-001
F3012-2	10/06/98	09:30 GG	10/07/98	AQ	Ground Water	PCY-307-MW02-001
F3012-3	10/06/98	08:40 GG	10/07/98	AQ	Ground Water	PCY-307-MW01-001B
F3012-4	10/06/98	10:25 GG	10/07/98	AQ	Ground Water	PCY-307-MW03-001
F3012-5	10/06/98	11:25 GG	10/07/98	AQ	Ground Water	PCY-307-TCW-001
F3012-6	10/06/98	11:25 GG	10/07/98	AQ	Ground Water	PCY-307-TCW-001D
F3012-7	10/06/98	08:00 GG	10/07/98	AQ	Ground Water	PCY-307-MW01-001



**Report of Analysis**

<b>Client Sample ID:</b>	PCY-307-MW4D-001	<b>Date Sampled:</b>	10/06/98
<b>Lab Sample ID:</b>	F3012-1	<b>Date Received:</b>	10/07/98
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	FLORIDA-PRO		
<b>Project:</b>	Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06956.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW4D-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-1	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8310	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	1.1	ug/l	
120-12-7	Anthracene	ND	1.1	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.16	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.16	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.16	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.16	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.16	ug/l	
218-01-9	Chrysene	ND	0.16	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.16	ug/l	
206-44-0	Fluoranthene	ND	1.1	ug/l	
86-73-7	Fluorene	ND	1.1	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.16	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	ug/l	
91-20-3	Naphthalene	ND	1.1	ug/l	
85-01-8	Phenanthrene	ND	1.1	ug/l	
129-00-0	Pyrene	ND	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	82%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW4D-001	
<b>Lab Sample ID:</b> F3012-1	<b>Date Sampled:</b> 10/06/98
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 10/07/98
<b>Method:</b> EPA 504.1	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01529.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

**Client Sample ID:** PCY-307-MW4D-001  
**Lab Sample ID:** F3012-1  
**Matrix:** AQ - Ground Water  
**Method:** SW846 8021B  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 10/06/98  
**Date Received:** 10/07/98  
**Percent Solids:** n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007362.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW4D-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-1	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007362.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	99%		75-125%
75-29-6	2-Chloropropane	92%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	97%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	88%		75-125%
462-06-6	Fluorobenzene	103%		75-125%
98-08-8	aaa-Trifluorotoluene	101%		75-125%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW4D-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-1	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

## Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit

**Report of Analysis**

<b>Client Sample ID:</b>	PCY-307-MW02-001	<b>Date Sampled:</b>	10/06/98
<b>Lab Sample ID:</b>	F3012-2	<b>Date Received:</b>	10/07/98
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	FLORIDA-PRO		
<b>Project:</b>	Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06957.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW02-001 <b>Lab Sample ID:</b> F3012-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8310 <b>Project:</b> Site 307-CSS, Panama City	<b>Date Sampled:</b> 10/06/98 <b>Date Received:</b> 10/07/98 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	ug/l	
120-12-7	Anthracene	ND	1.0	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.16	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.16	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.16	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.16	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.16	ug/l	
218-01-9	Chrysene	ND	0.16	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.16	ug/l	
206-44-0	Fluoranthene	ND	1.0	ug/l	
86-73-7	Fluorene	ND	1.0	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.16	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	ug/l	
91-20-3	Naphthalene	ND	1.0	ug/l	
85-01-8	Phenanthrene	ND	1.0	ug/l	
129-00-0	Pyrene	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	103%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW02-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-2	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 504.1	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01530.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l

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<b>ND = Not detected</b> <b>RDL = Reported Detection Limit</b> <b>E = Indicates value exceeds calibration range</b>	<b>J = Indicates an estimated value</b> <b>B = Indicates analyte found in associated method blank</b> <b>N = Indicates presumptive evidence of a compound</b>
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## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW02-001 <b>Lab Sample ID:</b> F3012-2 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8021B <b>Project:</b> Site 307-CSS, Panama City	<b>Date Sampled:</b> 10/06/98 <b>Date Received:</b> 10/07/98 <b>Percent Solids:</b> n/a
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Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007361.D	1	10/07/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW02-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-2	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007361.D	1	10/07/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	99%		75-125%
75-29-6	2-Chloropropane	92%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	96%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	87%		75-125%
462-06-6	Fluorobenzene	102%		75-125%
98-08-8	aaa-Trifluorotoluene	99%		75-125%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW02-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-2	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

## Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit



**ACCUTEST**

**Report of Analysis**

<b>Client Sample ID:</b>	PCY-307-MW01-001B	<b>Date Sampled:</b>	10/06/98
<b>Lab Sample ID:</b>	F3012-3	<b>Date Received:</b>	10/07/98
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	FLORIDA-PRO		
<b>Project:</b>	Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06958.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	79%		40-140%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

Client Sample ID: PCY-307-MW01-001B  
 Lab Sample ID: F3012-3  
 Matrix: AQ - Ground Water  
 Method: SW846 8310  
 Project: Site 307-CSS, Panama City

Date Sampled: 10/06/98  
 Date Received: 10/07/98  
 Percent Solids: n/a

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	1.1	ug/l	
120-12-7	Anthracene	ND	1.1	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.16	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.16	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.16	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.16	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.16	ug/l	
218-01-9	Chrysene	ND	0.16	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.16	ug/l	
206-44-0	Fluoranthene	ND	1.1	ug/l	
86-73-7	Fluorene	ND	1.1	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.16	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	ug/l	
91-20-3	Naphthalene	ND	1.1	ug/l	
85-01-8	Phenanthrene	ND	1.1	ug/l	
129-00-0	Pyrene	ND	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	97%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001B	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-3	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 504.1	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01531.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

**Client Sample ID:** PCY-307-MW01-001B  
**Lab Sample ID:** F3012-3  
**Matrix:** AQ - Ground Water  
**Method:** SW846 8021B  
**Project:** Site 307-CSS, Panama City

**Date Sampled:** 10/06/98  
**Date Received:** 10/07/98  
**Percent Solids:** n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007363.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001B	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-3	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007363.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	98%		75-125%
75-29-6	2-Chloropropane	93%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	98%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	89%		75-125%
462-06-6	Fluorobenzene	103%		75-125%
98-08-8	aaa-Trifluorotoluene	101%		75-125%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001B	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-3	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

## Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit

## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW03-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-4	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06959.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	75%		40-140%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW03-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-4	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8310	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	ug/l	
120-12-7	Anthracene	ND	1.0	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.15	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.15	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.15	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.15	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.15	ug/l	
218-01-9	Chrysene	ND	0.15	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.15	ug/l	
206-44-0	Fluoranthene	ND	1.0	ug/l	
86-73-7	Fluorene	ND	1.0	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.15	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	ug/l	
91-20-3	Naphthalene	ND	1.0	ug/l	
85-01-8	Phenanthrene	ND	1.0	ug/l	
129-00-0	Pyrene	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	95%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



**ACCUTEST.**

### Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW03-001	
<b>Lab Sample ID:</b> F3012-4	<b>Date Sampled:</b> 10/06/98
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 10/07/98
<b>Method:</b> EPA 504.1	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01532.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

Client Sample ID: PCY-307-MW03-001		Date Sampled: 10/06/98
Lab Sample ID: F3012-4		Date Received: 10/07/98
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: SW846 8021B		
Project: Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007364.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW03-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-4	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007364.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	98%		75-125%
75-29-6	2-Chloropropane	89%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	96%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	87%		75-125%
462-06-6	Fluorobenzene	102%		75-125%
98-08-8	aaa-Trifluorotoluene	100%		75-125%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

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<b>Client Sample ID:</b> PCY-307-MW03-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-4	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

### Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-5	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06960.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



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**Report of Analysis**

<b>Client Sample ID:</b> PCY-307-TCW-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-5	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8310	
<b>Project:</b> Site 307-CSS, Panama City	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.1	ug/l	
208-96-8	Acenaphthylene	ND	1.1	ug/l	
120-12-7	Anthracene	ND	1.1	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.17	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.17	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.17	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.17	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.17	ug/l	
218-01-9	Chrysene	ND	0.17	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.17	ug/l	
206-44-0	Fluoranthene	ND	1.1	ug/l	
86-73-7	Fluorene	ND	1.1	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.17	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.1	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.1	ug/l	
91-20-3	Naphthalene	ND	1.1	ug/l	
85-01-8	Phenanthrene	ND	1.1	ug/l	
129-00-0	Pyrene	ND	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	78%		20-160%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



**ACCUTEST.**

### Report of Analysis

<b>Client Sample ID:</b>	PCY-307-TCW-001	<b>Date Sampled:</b>	10/06/98
<b>Lab Sample ID:</b>	F3012-5	<b>Date Received:</b>	10/07/98
<b>Matrix:</b>	AQ - Ground Water	<b>Percent Solids:</b>	n/a
<b>Method:</b>	EPA 504.1		
<b>Project:</b>	Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01533.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

**ACCUTEST.****Report of Analysis**

Client Sample ID: PCY-307-TCW-001  
 Lab Sample ID: F3012-5  
 Matrix: AQ - Ground Water  
 Method: SW846 8021B  
 Project: Site 307-CSS, Panama City

Date Sampled: 10/06/98  
 Date Received: 10/07/98  
 Percent Solids: n/a

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	EF007365.D	1	10/08/98	JG	n/a	n/a	GEF179

**VOA 8021 List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected

RDL = Reported Detection Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-5	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007365.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	92%		75-125%
75-29-6	2-Chloropropane	90%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	98%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	89%		75-125%
462-06-6	Fluorobenzene	102%		75-125%
98-08-8	aaa-Trifluorotoluene	101%		75-125%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



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## Report of Analysis

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<b>Client Sample ID:</b> PCY-307-TCW-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-5	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

### Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit



**Report of Analysis**

<b>Client Sample ID:</b> PCY-307-TCW-001D	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-6	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307-CSS, Panama City	

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06961.D	1	10/12/98	NF	10/08/98	OP538	GII308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001D	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-6	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8310	
<b>Project:</b> Site 307-CSS, Panama City	

Run #1	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.2	ug/l	
208-96-8	Acenaphthylene	ND	1.2	ug/l	
120-12-7	Anthracene	ND	1.2	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.18	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.18	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.18	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.18	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.18	ug/l	
218-01-9	Chrysene	ND	0.18	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.18	ug/l	
206-44-0	Fluoranthene	ND	1.2	ug/l	
86-73-7	Fluorene	ND	1.2	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.18	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.2	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.2	ug/l	
91-20-3	Naphthalene	ND	1.2	ug/l	
85-01-8	Phenanthrene	ND	1.2	ug/l	
129-00-0	Pyrene	ND	1.2	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	64%		20-160%

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001D	
<b>Lab Sample ID:</b> F3012-6	<b>Date Sampled:</b> 10/06/98
<b>Matrix:</b> AQ - Ground Water	<b>Date Received:</b> 10/07/98
<b>Method:</b> EPA 504.1	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01534.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



**ACCUTEST.**

**Report of Analysis**

Client Sample ID: PCY-307-TCW-001D  
 Lab Sample ID: F3012-6  
 Matrix: AQ - Ground Water  
 Method: SW846 8021B  
 Project: Site 307-CSS, Panama City

Date Sampled: 10/06/98  
 Date Received: 10/07/98  
 Percent Solids: n/a

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007366.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001D	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-6	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007366.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	100%		75-125%
75-29-6	2-Chloropropane	94%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	97%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	87%		75-125%
462-06-6	Fluorobenzene	106%		75-125%
98-08-8	aaa-Trifluorotoluene	102%		75-125%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-TCW-001D	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-6	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

## Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-7	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> FLORIDA-PRO	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I06962.D	1	10/12/98	NF	10/08/98	OP538	GIJ308
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
	TPH (C8-C40)	ND	0.50	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	91%		40-140%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001 <b>Lab Sample ID:</b> F3012-7 <b>Matrix:</b> AQ - Ground Water <b>Method:</b> SW846 8310 <b>Project:</b> Site 307-CSS, Panama City	<b>Date Sampled:</b> 10/06/98 <b>Date Received:</b> 10/07/98 <b>Percent Solids:</b> n/a
--	---

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1		1	10/20/98	AMA	10/13/98	M:OP827	M:GC710
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
83-32-9	Acenaphthene	ND	1.0	ug/l	
208-96-8	Acenaphthylene	ND	1.0	ug/l	
120-12-7	Anthracene	ND	1.0	ug/l	
56-55-3	Benzo (a) anthracene	ND	0.15	ug/l	
50-32-8	Benzo (a) pyrene	ND	0.15	ug/l	
205-99-2	Benzo (b) fluoranthene	ND	0.15	ug/l	
191-24-2	Benzo (g,h,i) perylene	ND	0.15	ug/l	
207-08-9	Benzo (k) fluoranthene	ND	0.15	ug/l	
218-01-9	Chrysene	ND	0.15	ug/l	
53-70-3	Dibenz(a,h)anthracene	ND	0.15	ug/l	
206-44-0	Fluoranthene	ND	1.0	ug/l	
86-73-7	Fluorene	ND	1.0	ug/l	
193-39-5	Indeno (1,2,3-cd) pyrene	ND	0.15	ug/l	
90-12-0	1-Methylnaphthalene	ND	1.0	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	ug/l	
91-20-3	Naphthalene	ND	1.0	ug/l	
85-01-8	Phenanthrene	ND	1.0	ug/l	
129-00-0	Pyrene	ND	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	99%		20-160%

<b>ND</b> = Not detected <b>RDL</b> = Reported Detection Limit <b>E</b> = Indicates value exceeds calibration range	<b>J</b> = Indicates an estimated value <b>B</b> = Indicates analyte found in associated method blank <b>N</b> = Indicates presumptive evidence of a compound
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# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-7	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> EPA 504.1	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	MN01535.D	1	10/13/98	SKW	n/a	n/a	GMN72
Run #2							

CAS No.	Compound	Result	RDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.020	ug/l	

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range  
J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



## Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001		<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-7		<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water		<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B		
<b>Project:</b> Site 307-CSS, Panama City		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007367.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

**VOA 8021 List**

CAS No.	Compound	Result	RDL	Units	Q
71-43-2	Benzene	ND	1.0	ug/l	
75-27-4	Bromodichloromethane	ND	1.0	ug/l	
75-25-2	Bromoform	ND	1.0	ug/l	
74-83-9	Bromomethane	ND	1.0	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	ug/l	
108-90-7	Chlorobenzene	ND	1.0	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	ug/l	
75-00-3	Chloroethane	ND	1.0	ug/l	
110-75-8	2-Chloroethylvinyl ether	ND	1.0	ug/l	
67-66-3	Chloroform	ND	1.0	ug/l	
74-87-3	Chloromethane	ND	1.0	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	ug/l	
100-41-4	Ethylbenzene	ND	1.0	ug/l	
75-09-2	Methylene chloride	ND	5.0	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	ug/l	
108-88-3	Toluene	ND	1.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	ug/l	
79-01-6	Trichloroethene	ND	1.0	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	ug/l	

ND = Not detected  
 RDL = Reported Detection Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound



# Report of Analysis

<b>Client Sample ID:</b> PCY-307-MW01-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-7	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Method:</b> SW846 8021B	
<b>Project:</b> Site 307-CSS, Panama City	

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	EF007367.D	1	10/08/98	JG	n/a	n/a	GEF179
Run #2							

### VOA 8021 List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
74-97-5	Bromochloromethane	98%		75-125%
75-29-6	2-Chloropropane	90%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	96%		75-125%
625-98-9	1-Chloro-3-fluorobenzene	86%		75-125%
462-06-6	Fluorobenzene	101%		75-125%
98-08-8	aaa-Trifluorotoluene	99%		75-125%

ND = Not detected  
RDL = Reported Detection Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound



**ACCUTEST.**

## Report of Analysis

Page 1 of 1

<b>Client Sample ID:</b> PCY-307-MW01-001	<b>Date Sampled:</b> 10/06/98
<b>Lab Sample ID:</b> F3012-7	<b>Date Received:</b> 10/07/98
<b>Matrix:</b> AQ - Ground Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Site 307-CSS, Panama City	

### Metals Analysis

Analyte	Result	RDL	Units	DF	Prep	Analyzed By	Method
Lead	<0.0030	0.0030	mg/l	1	10/09/98	10/12/98 JK	EPA 200.7

RDL = Reported Detection Limit



**APPENDIX P**  
**FDEP GROUNDWATER AND SOIL CLEANUP TARGET LEVELS**

Chemicals of Concern	Table V Groundwater Cleanup Target Levels <sup>1</sup>	Table VII Freshwater Surface Water Criteria <sup>1</sup>	Table VII Marine Surface Water Criteria <sup>1</sup>	Table VIII Groundwater of Low Yield/ Poor Quality	Table IX Natural Attenuation Default Source Concentrations
Benzene	1 ug/l **	71 ug/l *	71 ug/l *	10 ug/l	100 ug/l
Ethylbenzene	30 ug/l **	605 ug/l	605 ug/l	300 ug/l	300 ug/l
Toluene	40 ug/l **	475 ug/l	475 ug/l	400 ug/l	400 ug/l
Total Xylenes	20 ug/l **	370 ug/l	370 ug/l	200 ug/l	200 ug/l
MTBE	35 ug/l	33600 ug/l	33600 ug/l	350 ug/l	350 ug/l
Acenaphthene	20 ug/l	3 ug/l	3 ug/l	200 ug/l	200 ug/l
Acenaphthylene	210 ug/l	0.031 ug/l *	0.031 ug/l *	2100 ug/l	2100 ug/l
Anthracene	2100 ug/l	0.3 ug/l	0.3 ug/l	21000 ug/l	21000 ug/l
Benzo(a)anthracene	0.2 ug/l	0.031 ug/l *	0.031 ug/l *	2 ug/l	20 ug/l
Benzo(a)pyrene	0.2 ug/l **	0.031 ug/l *	0.031 ug/l *	2 ug/l	20 ug/l
Benzo(b)fluoranthene	0.2 ug/l	0.031 ug/l *	0.031 ug/l *	2 ug/l	20 ug/l
Benzo(g,h,i)perylene	210 ug/l	0.031 ug/l *	0.031 ug/l *	2100 ug/l	2100 ug/l
Benzo(k)fluoranthene	0.5 ug/l	0.031 ug/l *	0.031 ug/l *	5 ug/l	50 ug/l
Chrysene	5 ug/l	0.031 ug/l *	0.031 ug/l *	50 ug/l	500 ug/l
Dibenzo(a,h)anthracene	0.2 ug/l	0.031 ug/l *	0.031 ug/l *	2 ug/l	20 ug/l
Fluoranthene	280 ug/l	0.3 ug/l	0.3 ug/l	2800 ug/l	2800 ug/l
Fluorene	280 ug/l	30 ug/l	30 ug/l	2800 ug/l	2800 ug/l
Indeno(1,2,3-c,d)pyrene	0.2 ug/l	0.031 ug/l *	0.031 ug/l *	2 ug/l	20 ug/l
Naphthalene	20 ug/l	26 ug/l	26 ug/l	200 ug/l	200 ug/l
Phenanthrene	210 ug/l	0.031 ug/l *	0.031 ug/l *	2100 ug/l	2100 ug/l
Pyrene	210 ug/l	0.3 ug/l	0.3 ug/l	2100 ug/l	2100 ug/l
1,1,2-dichloroethane	3 ug/l **	127 ug/l	127 ug/l	30 ug/l	300 ug/l
1,2-dibromoethane (EDB)	0.02 ug/l **	13 ug/l	13 ug/l	0.2 ug/l	2 ug/l
Toxicity bioassay tests	Not applicable	Pass test *	Pass test *	Not applicable	Not applicable
Arsenic	50 ug/l **	50 ug/l *	50 ug/l *	500 ug/l	500 ug/l
Barium	2000 ug/l **	###	###	20000 ug/l	20000 ug/l
Cadmium	5 ug/l **	##	0.3 ug/l *	50 ug/l	50 ug/l
Chromium	100 ug/l **	##	515 ug/l	1000 ug/l	1000 ug/l
Lead	15 ug/l **	##	5.6 ug/l *	150 ug/l	150 ug/l
Mercury	2 ug/l **	0.012 ug/l *	0.025 ug/l *	20 ug/l	20 ug/l
Selenium	50 ug/l **	5 ug/l *	71 ug/l *	500 ug/l	500 ug/l
Silver	100 ug/l **	0.07 ug/l *	0.35 ug/l	1000 ug/l	1000 ug/l
TRPHs	5 mg/l	5 mg/l	5 mg/l	50 mg/l	50 mg/l
Chloride	250 mg/l **#	####	####	2500 mg/l #	2500 mg/l #
Sulfate	250 mg/l **#	####	####	2500 mg/l #	2500 mg/l #
Total Dissolved Solids (TDS)	500 mg/l **#	####	####	5000 mg/l #	5000 mg/l #

<sup>1</sup> If the MDL given the condition of the sample, using the most sensitive and currently available technology, is higher than a specified criterion, the PQL shall be used.

In lieu of Table VI use the lower of Table V and Table VII Freshwater Surface Water Criteria.

\* As provided in Chapter 62-302, F.A.C.

\*\* As provided in Chapters 62-520 or 62-550, F.A.C.

# Only applicable to sites where the contamination is derived from petroleum as defined in Section 376.301, F.S.

## Hardness-dependent as provided in Chapter 62-302, F.A.C.

### Not greater than 10% above background concentration.

#### Not greater than 10% above background concentration and only applicable to sites where the contamination is derived from petroleum as defined in Section 376.301, F.S.

TABLE IV (Page 1 of 2)  
Selected Soil Cleanup Target Levels

Chemicals of Concern (Organic)	Direct Exposure (mg/kg)		Leachability (mg/kg) based on:			
	I #	II ##	Table V <sup>a</sup>	Table VI <sup>b</sup>	Table VII <sup>c</sup>	Table VIII <sup>d</sup>
PAHs:						
Acenaphthene	2300	22000	4	0.6	0.6	40
Acenaphthylene	1100	11000	22	0.003*	0.003*	220
Anthracene	19000	290000	2000	0.3	0.3	20000
Benzo(a)anthracene	1.4	5.1	2.9	0.4	0.4	29
Benzo(a)pyrene	0.1	0.5	7.8	1.2	1.2	78
Benzo(b)fluoranthene	1.4	5	9.8	1.5	1.5	98
Benzo(g,h,i)perylene	2300	45000	13000	2	2	130000
Benzo(k)fluoranthene	15	52	25	1.5	1.5	250
Chrysene	140	490	80	0.5	0.5	800
Dibenzo(a,h)anthracene	0.1	0.5	14	2.2	2.2	140
Fluoranthene	2800	45000	550	0.4	0.4	5500
Fluorene	2100	24000	87	9.4	9.4	870
Indeno(1,2,3-c,d)pyrene	1.5	5.2	28	4.3	4.3	280
Naphthalene	1000	8600	1	1	1.3	10
Phenanthrene	1900	29000	120	0.02*	0.02*	1200
Pyrene	2200	40000	570	0.8	0.8	5700
VOAs:						
Benzene	1.1	1.5	0.007	0.007	0.5	0.07
Ethylbenzene**	240	240	0.4	0.4	7.7	3.8
Toluene	300	2000	0.4	0.4	4.8	4
Total Xylenes**	290	290	0.3	0.3	5.3	2.9
OTHER:						
1,2-dichloroethane	0.6	0.9	0.02	0.02	0.7	0.2
MTBE	350	6100	0.2	0.2	150	1.6
TRPHs	350	2500	340	340	340	3400