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CONSTRUCTION DOCUMENTATION REPORT ENHANCED BIODEGRADATION INTERIM REMEDIAL ACTION AT STUDY AREA 36 NTC ORLANDO FL

3/1/2001

CH2M HILL

Construction Documentation Report
Enhanced Biodegradation IRA at Study Area 36

Naval Training Center Orlando
Orlando, Florida

Revision 00

Contract No. N62467-98-D-0995

Contract Task Order No. 0017

Submitted to:

U.S. Naval Facilities Engineering Command Southern Division

Prepared by:

CH2MHILL Constructors, Inc.

115 Perimeter Center Place, N.E.
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March 2001

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March 2001

Prepared/Approved By:

Steve Tsangaris, Project Manager — Date

Approved By:

R. Scott Newman, Program Manager — Date

Client Acceptance:

U.S. Navy Responsible Authority — Date

CH2MHILL
Constructors, Inc.

CERTIFICATE OF COMPLETION

CH2M HILL Constructors, Inc., attests that, to the best of its knowledge and belief, the work delivered under Contract No. N62467-98-D-0995, NTC Orlando, Contract Task Order (CTO) No. 0017, has been completed, inspected, and tested, and is in compliance with the contract.

Dawth Bonds
Project QC Manager

3-22-01
Date

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Acronym List

ABB	ABB Environmental Services
bls	below land surface
CCI	CH2M HILL Constructors, Inc.
CompQAP	Comprehensive Quality Assurance Plan
CTO	Contract Task Order
^{o}C	degrees Celsius
DCE	dichloroethene
DO	dissolved oxygen
FDEP	Florida Department of Environmental Protection
FL-PRO	Florida Petroleum Residual Organic
GCTL	Groundwater Cleanup Target Level
HSA	hollow stem auger
HLA	Harding Lawson Associates
HSP	Health and Safety Plan
IRA	interim remedial action
MEE	methane, ethane, and ethene
µg/L	micrograms per liter
mg/L	milligrams per liter
NAVFAC	Naval Facilities Engineering Command
NTC	Naval Training Center
OPT	Orlando Partnering Team
ORP	Oxidation Reduction Potential
PAH	polynuclear aromatic hydrocarbons
PCE	tetrachloroethene
POP	Project Operations Plan
psi	pounds per square inch
PVC	polyvinyl chloride
SA	Study Area
SI	Site Investigation
TCE	trichloroethene
TDS	total dissolved solids
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TRPH	total recoverable petroleum hydrocarbons
TtNUS	Tetra Tech NUS
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

1.0 Introduction

This Construction Documentation Report presents the activities related to the enhanced biodegradation Interim Remedial Action (IRA) for Study Area (SA) 36 at Naval Training Center (NTC) Orlando in Orlando, Florida. CH2M HILL Constructors, Inc. (CCI) was contracted by the Department of the Navy, Southern Division, Naval Facilities Engineering Command (NAVFAC), to implement an IRA at SA36. This work was performed under Response Action Contract No. N62467-98-D-0995, Contract Task Order (CTO) No. 0017 at NTC Orlando.

The scope of work and planned construction activities for the IRA are described in detail in the Work Plan for Enhanced Bioremediation IRA at SA36, NTC Orlando (CCI, 2000).

This Report includes a description of the following:

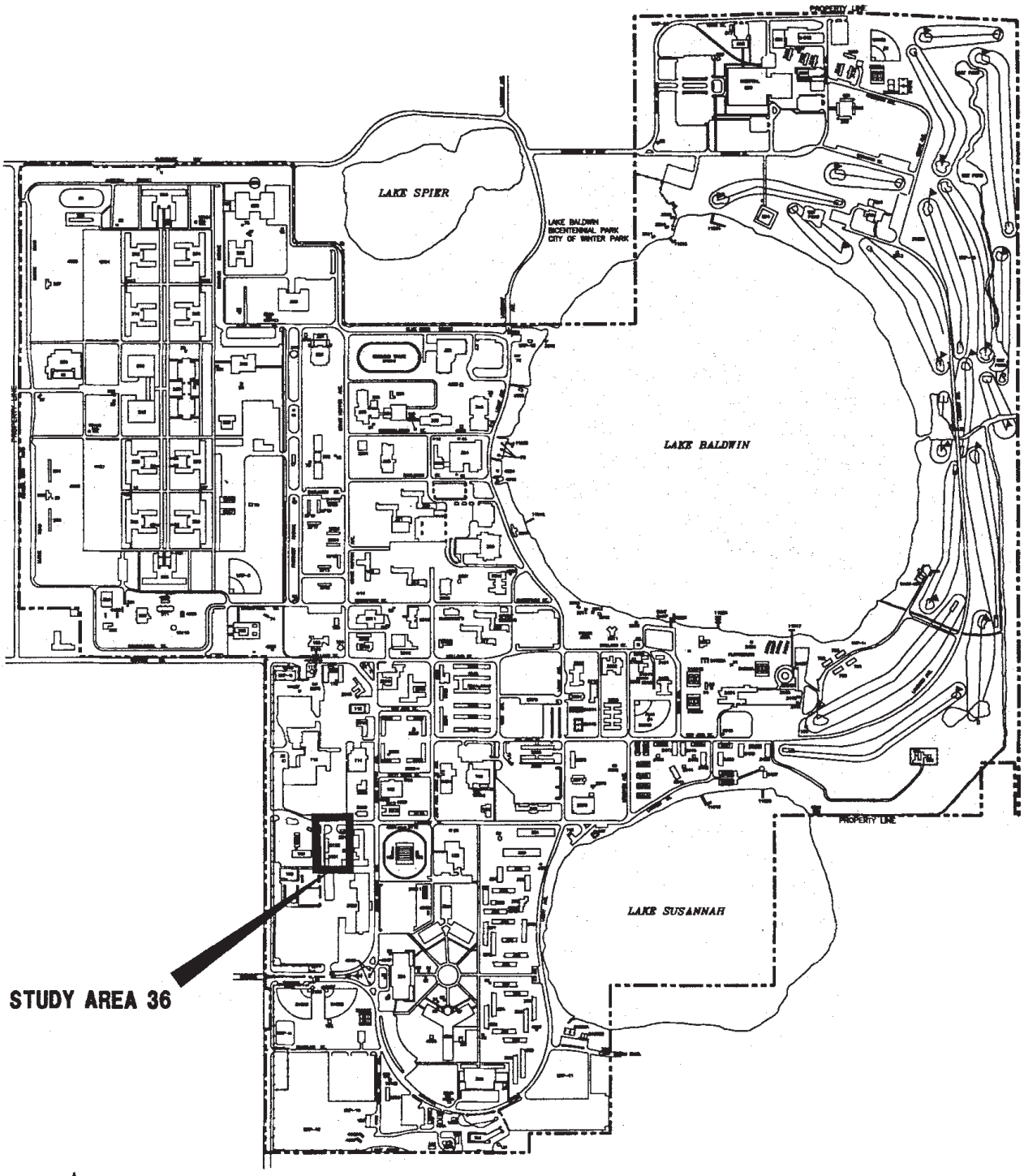
- Site location and description
- Site background and history
- Significant events
- Construction activities
- Remedial action objective and cleanup Goals
- Monitoring well and injection point installation
- Hydraulic conductivity testing
- Baseline groundwater sampling event
- Vegetable oil injection
- Performance monitoring of site groundwater
- Conclusions

The following information is included as appendices to this document:

- Boring Logs and Well Construction Diagrams
- Hydraulic Conductivity Raw Data and Curves
- Analytical Laboratory Data
- Monitoring Well Purging and Sampling Logs

1.1 Site Location and Description

SA36 is located south of Langley Street and west of Grace Hopper Avenue on the Main Base, as shown on Figure 1. The Main Base has been modified by Orlando NTC Partners to develop the land for residential use. Thus, the site used to contain Buildings 2121 and 2122, and the western half of the Public Works Yard. The areas to the east and south of Building 2121 were used to store a variety of items including pipes, fire hydrants, bricks, and hazardous materials such as waste oil drums, transformers and batteries. Building 2122 was the paint shop; paints and paint thinner were stored inside the building. A flammable materials storage cabinet was located at the north end of the building. Since the land development activities at the Main Base, the site area has been cleared of any buildings or roadways.



N

0 1000 2000

SCALE: 1 INCH = 2000 FEET

FIGURE 1

SITE LOCATION MAP

CONSTRUCTION DOCUMENTATION REPORT
STUDY AREA 36

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CH2MHILL

1.2 Site Background and History

An initial site screening investigation was conducted by Harding Lawson Associates (HLA) in 1997. The results of the initial screening investigation detected concentrations of metals, total recoverable petroleum hydrocarbons (TRPH), and polynuclear aromatic hydrocarbons (PAHs) in soil samples exceeding screening criteria. The investigation also detected volatile organic compound (VOC) concentrations in groundwater samples above screening criteria.

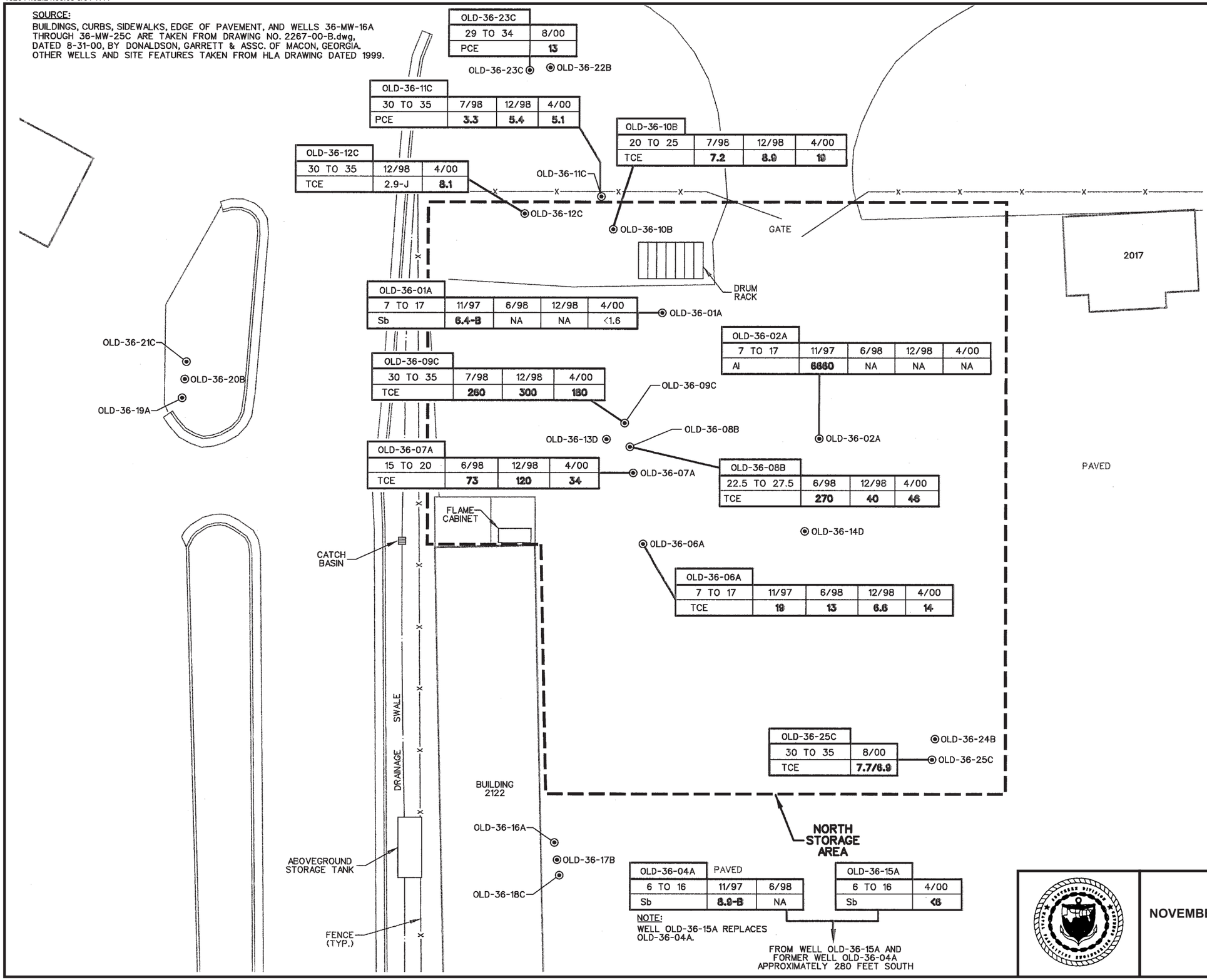
Subsequently, the Orlando Partnering Team (OPT) requested that HLA perform supplemental screening investigations in 1998 to evaluate and characterize the VOC contamination at the site. Concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) were detected exceeding the Groundwater Cleanup Target Levels (GCTLs), as shown on Figure 2.

The investigation results indicated that surface soils contain arsenic, barium, mercury, TRPH, and benzo(a)pyrene at concentrations exceeding the regulatory screening criteria (HLA, 1999). In addition, groundwater has exceedances of aluminum, antimony, TCE and PCE. The maximum TCE concentration detected in a monitoring well at the site was 300 µg/L. The results of the groundwater investigation at the site indicate that TCE and PCE concentrations in groundwater exceed the GCTL in an area of approximately 5,000 square feet. in the North Storage Area (HLA, 1999). Chlorinated solvent detections exceeded screening criteria to a depth of 35 feet below land surface (bls).

As a result of the TCE/PCE contamination detected at the site, the OPT requested that Tetra Tech NUS (TtNUS) conduct an additional site investigation (SI), which is currently ongoing. The OPT also requested CCI implement an IRA at the site consisting of enhanced biodegradation using vegetable oil.

152044.32.21.06.05 3/01 TPA

SOURCE:
BUILDINGS, CURBS, SIDEWALKS, EDGE OF PAVEMENT, AND WELLS 36-MW-16A THROUGH 36-MW-25C ARE TAKEN FROM DRAWING NO. 2267-00-B.dwg, DATED 8-31-00, BY DONALDSON, GARRETT & ASSC. OF MACON, GEORGIA. OTHER WELLS AND SITE FEATURES TAKEN FROM HLA DRAWING DATED 1999.



OLD-36-23C		
29 TO 34	8/00	
PCE	13	

OLD-36-11C			
30 TO 35	7/98	12/98	4/00
PCE	3.3	5.4	5.1

OLD-36-12C		
30 TO 35	12/98	4/00
TCE	2.9-J	8.1

OLD-36-10B			
20 TO 25	7/98	12/98	4/00
TCE	7.2	8.9	10

OLD-36-01A				
7 TO 17	11/97	6/98	12/98	4/00
Sb	6.4-B	NA	NA	<1.6

OLD-36-02A				
7 TO 17	11/97	6/98	12/98	4/00
Al	6660	NA	NA	NA

OLD-36-09C			
30 TO 35	7/98	12/98	4/00
TCE	260	300	180

OLD-36-07A			
15 TO 20	6/98	12/98	4/00
TCE	73	120	34

OLD-36-08B			
22.5 TO 27.5	6/98	12/98	4/00
TCE	270	40	46

OLD-36-06A				
7 TO 17	11/97	6/98	12/98	4/00
TCE	19	13	6.6	14

OLD-36-25C	
30 TO 35	8/00
TCE	7.7/6.9

OLD-36-04A	PAVED	
6 TO 16	11/97	6/98
Sb	8.9-B	NA

NOTE:
WELL OLD-36-15A REPLACES OLD-36-04A.

OLD-36-15A	
6 TO 16	4/00
Sb	<6

LEGEND

MONITORING WELL ⊙

WELL I.D. — SAMPLE COLLECTION DATE

OLD-36-10B		
20 TO 25	7/98	12/98
TCE	7.2	8.9

ANALYTE — SCREENED INTERVAL TO NEAREST FOOT — ANALYTE CONCENTRATION 1,2

INDICATES CONCENTRATION IS BETWEEN THE INSTRUMENT DETECTION LIMIT AND THE CONTRACT-REQUIRED DETECTION LIMIT	B
ESTIMATED VALUE	J
NOT ANALYZED	NA

1–CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
2–BOLD CONCENTRATION INDICATES EXCEEDANCE

SCREENING CRITERIA

ABBREVIATION	ANALYTE	GCTL[1]	BGSV[1]
Al	Aluminum	200	4067
PCE	Tetrachloroethene	3	-
Sb	Antimony	6	4.1
TCE	Trichloroethene	3	-

GCTL-GROUNDWATER CLEANUP TARGET LEVEL
BGSV-BACJGROUND SCREENING VALUE

NOTE:
ONLY ANALYTES EXCEEDING SCREENING CRITERIA IN AT LEAST ONE SAMPLE ARE PRESENTED.

N

20 0 20
SCALE IN FEET

Source: TETRATECH NUS

FIGURE 2
MONITORING WELL EXCEEDANCES
NOVEMBER 1997, JUNE/DECEMBER 1998, AND APRIL 2000
CONSTRUCTION DOCUMENTATION REPORT
STUDY AREA 36

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

2.0 Significant Events

From November 2000 to January 2001, monitoring well and injection point installation, baseline groundwater sampling, hydraulic conductivity testing and vegetable oil injection activities were conducted at SA36, NTC Orlando. Significant events of the IRA implementation are as follows:

September 14, 2000	Pre-construction Meeting was held at the NTC Orlando office (Caretaker Site Office).
November 7, 2000	CCI and Groundwater Protection (drilling subcontractor) mobilized to the site and began monitoring well and injection point installation.
November 15, 2000	CCI and Groundwater Protection (drilling subcontractor) begin development of newly installed monitoring wells and injection points
November 29, 2000	CCI collected groundwater samples to establish baseline groundwater concentrations for measurement of the IRA performance.
December 14, 2000	CCI conducted hydraulic conductivity or slug tests on monitoring wells and injection points at the site.
January 8, 2001	CCI began injecting vegetable oil into aquifer zones A, B, and C.
January 9, 2001	Vegetable oil injection was completed. A combined total of 900 gallons of vegetable oil was injected into aquifer zones A, B and C.

3.0 Construction Activities

The performance standards and scope of work for the enhanced biodegradation IRA at SA36 are described in detail in the Work Plan for Enhanced Bioremediation IRA at SA36 (CCI, 2000). The IRA activities were completed in compliance with the following documents:

- Health and Safety Plan
- Waste Management Plan
- Project Instructions for Well Installation and Sampling
- Work Plan Addendum 1-C for Study Areas 17, 36, and 39 (CCI, 2000)
- Basewide Work Plan (CCI, 1999)
- Project Operations Plan for Site Investigations and Remedial Investigations (ABB Environmental Services [ABB], 1997)

3.1 Remedial Action Objective and Cleanup Goals

The primary objective of the remedial action is to improve groundwater quality so that VOC concentrations meet regulatory GCTLs.

Chlorinated solvents may undergo biodegradation through three different pathways: as an electron acceptor, as an electron donor, or cometabolism. Under anaerobic conditions, biodegradation of chlorinated solvents usually proceeds through a process called reductive dehalogenation. In general, reductive dehalogenation occurs by sequential dechlorination. For the chlorinated ethenes, dechlorination progresses from PCE to TCE to DCE to vinyl chloride (VC) and ethene. PCE and TCE are the most susceptible of these compounds to reductive dehalogenation because they are the most oxidized. Because these compounds are used as electron acceptors, an appropriate source of carbon must be present for microbial growth and reductive dehalogenation to occur.

The most common approach utilized to stimulate reductive dehalogenation has been the addition of a carbon source dissolved in groundwater. Food-grade vegetable oil is a potential carbon source for microbial growth and the reductive dehalogenation process. The separate phase nature of vegetable oil allows for slow dissolution into groundwater thus making it a slow release carbon source. Vegetable oil is an inexpensive, innocuous carbon source that is not regulated as a contaminant by the United States Environmental Protection Agency (USEPA).

The approach to enhance biodegradation at SA36 is to inject vegetable oil as a carbon source for microbial growth and stimulation of the reductive dehalogenation process.

3.2 Monitoring Well and Injection Point Installation

Fifteen vegetable oil injection points and seven downgradient monitoring wells were installed using hollow stem auger (HSA) drilling methods. New wells and injection points

were placed around the two highest TCE/PCE concentration areas at the site. The first area is near well OLD-36-10B and the second area includes wells OLD-36-06A, OLD-36-07A, OLD-36-08B and OLD-36-09C.

For the source area near wells OLD-36-06A and 07A, the six injection points, designated OLD-36-INJ-01 through OLD-36-INJ-06, were located approximately 7 feet upgradient or southeast of wells 06A and 07A (Figure 3). The injection points are approximately 8 feet apart and follow in a row upgradient of wells 06A and 07A. The two monitoring wells for this area, designated OLD-36-26A and OLD-36-27A, were installed downgradient of wells 06A and 07A.

For the source area near well OLD-36-08B, the three injection points, designated OLD-36-INJ-07 through OLD-36-INJ-09, were located approximately 5 feet upgradient or southeast of well 08B. The injection points are approximately 8 feet apart and follow in a row. The two monitoring wells for this area, designated OLD-36-28B and OLD-36-29B, were installed downgradient of well OLD-36-08B.

For the source area near well OLD-36-09C, the three injection points, designated OLD-36-INJ-10 through OLD-36-INJ-12, were located approximately 5 feet upgradient or northwest of well 09C. The injection points are approximately 8 feet apart and follow in a row. Two monitoring wells, designated OLD-36-30C and OLD-36-31C, were installed downgradient of well OLD-36-09C. In addition, one monitoring well, designated OLD-36-32C, was installed upgradient of well 09C.

For the second area near well OLD-36-10B, the three injection points, designated OLD-36-INJ-13 through OLD-36-INJ-15, were located approximately 7 feet upgradient or southeast of well 10B. They are approximately 8 feet apart and follow in a row. All locations are shown on Figure 3 and construction details are summarized in Table 1.

All shallow injection points consist of 2-inch-diameter stainless steel risers and 10-foot stainless steel screens. All intermediate and deep injection points consist of 2-inch-diameter stainless steel risers and 5-foot stainless steel screens. All new shallow monitoring wells are constructed of 2-inch-diameter polyvinyl chloride (PVC) risers with 10-foot PVC screens, and intermediate and deep wells are constructed with 5-foot screens. The screens for both monitoring wells and injection points were factory slotted with 0.010-inch openings. Also, a 20/30 sand pack was used along with a 30/65 sand or bentonite seal and grout to surface. The injection point and monitoring well boring logs and construction diagrams are included as Appendix A.

The newly installed monitoring wells and injection points were developed with a surge-block using the protocols outlined in the Work Plan (CCI, 2000) and Project Operations Plan (POP) (ABB, 1997).

3.3 Hydraulic Conductivity Testing

To evaluate the permeability of the soils at the site, hydraulic conductivity was measured at 15 monitoring wells using slug-in (falling head) and slug-out (rising head) tests. The hydraulic conductivity or slug testing was performed in accordance with the procedures outlined in the POP (ABB, 1997).

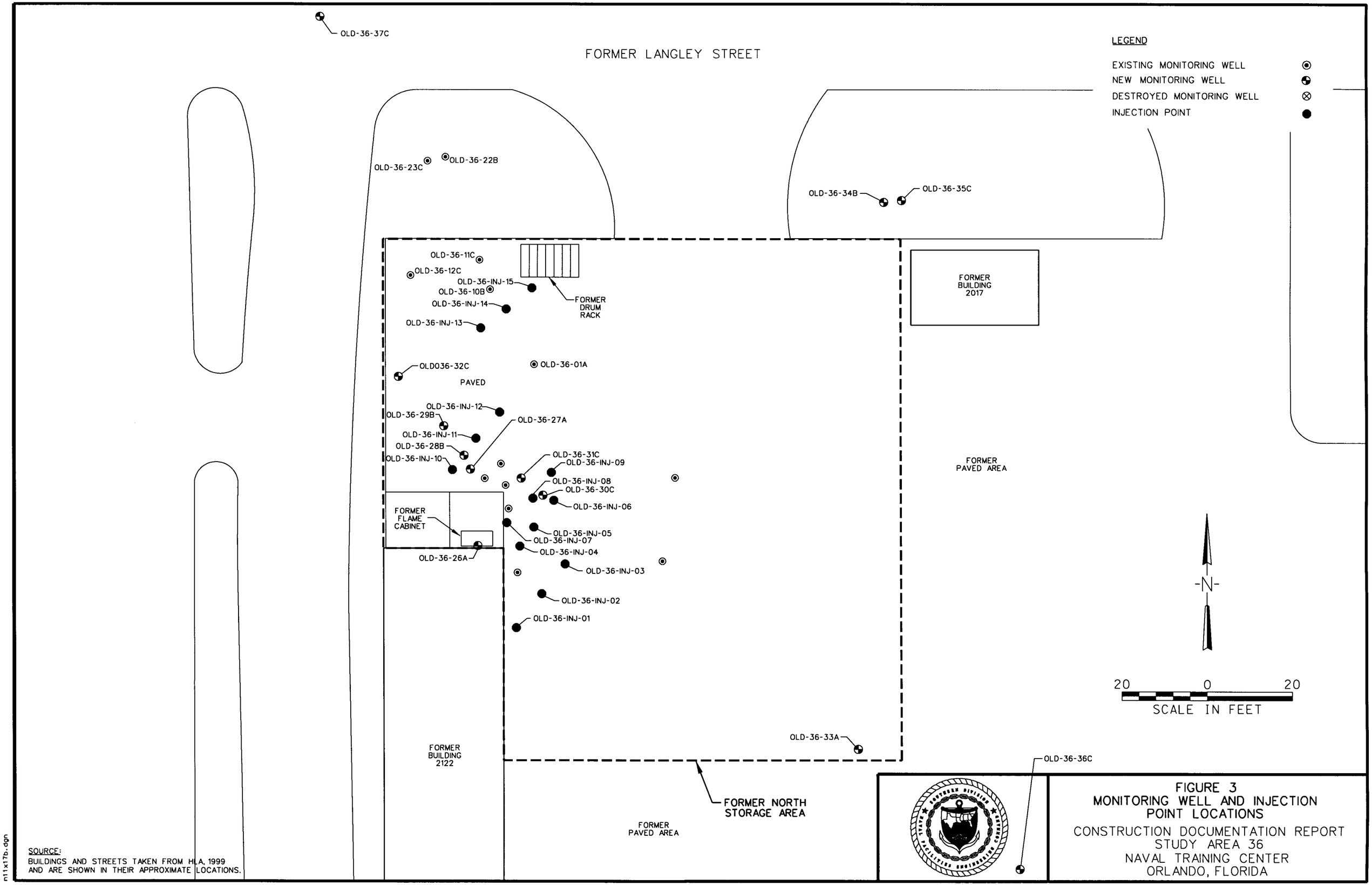


FIGURE 3
MONITORING WELL AND INJECTION POINT LOCATIONS

CONSTRUCTION DOCUMENTATION REPORT
STUDY AREA 36
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE:
:/Environmental/152044-NTC/152044 02-06-01/74570026.dgn/03-12-01

TABLE 1
Newly Installed Monitoring Wells and Injection Points
SA36, NTC Orlando

Identification	Diameter (inch)	Total Depth (feet bls)	Screened Interval (feet bls)	Screen Length (feet)	Aquifer Zone
Area Near wells OLD-36-06A, 07A, 08B and OLD-36-09C					
OLD-36-INJ-01	2	20	10 – 20	10	A
OLD-36-INJ-02	2	20	10 – 20	10	A
OLD-36-INJ-03	2	20	10 – 20	10	A
OLD-36-INJ-04	2	20	10 – 20	10	A
OLD-36-INJ-05	2	20	10 – 20	10	A
OLD-36-INJ-06	2	20	10 – 20	10	A
OLD-36-INJ-07	2	25	20 - 25	5	B
OLD-36-INJ-08	2	25	20 – 25	5	B
OLD-36-INJ-09	2	25	20 - 25	5	B
OLD-36-INJ-10	2	33	28 - 33	5	C
OLD-36-INJ-11	2	35	30 – 35	5	C
OLD-36-INJ-12	2	35	30 - 35	5	C
OLD-36-26A	2	20	10 – 20	10	A
OLD-36-27A	2	20	10 – 20	10	A
OLD-36-28B	2	27	22 – 27	5	B
OLD-36-29B	2	27	22 – 27	5	B
OLD-36-30C	2	35	30 – 35	5	C
OLD-36-31C	2	35	30 – 35	5	C
OLD-36-32C	2	35	30 - 35	5	C
Area Near wells OLD-36-10B					
OLD-36-INJ-13	2	25	20 - 25	5	B
OLD-36-INJ-14	2	25	20 - 25	5	B
OLD-36-INJ-15	2	25	20 - 25	5	B

The average hydraulic conductivity (K) value for the shallow zone or A zone (6 to 20 feet bls) is 27.8 feet/day. The average hydraulic conductivity for the intermediate zone or B zone (20 to 27 feet bls) is 6.0 feet/day and for the deep zone or C zone (28 to 35 feet bls) is 4.4 feet/day. These hydraulic conductivity values for the A, B, and C aquifer zones correlate well with previously collected data at the Main Base, NTC Orlando. The K test data collected at SA36 is summarized in Table 2, and the hydraulic conductivity raw data and curves are included as Appendix B.

3.4 Baseline Groundwater Sampling Event

Five different sampling events for laboratory analysis will be conducted as part of the IRA. The first sampling event was performed prior to injection activities, and will be used as the IRA baseline data. Four subsequent sampling events will be conducted at 2, 6, 9, and 12 months after injection to monitor performance of the treatment activities.

The baseline sampling was conducted in accordance with the POP and CCI's approved Florida Department of Environmental Protection (FDEP) Comprehensive Quality Assurance Plan (CompQAP). The analytical laboratory data for the baseline sampling event (December 2000) is included as Appendix C (CD only). Field testing equipment was calibrated according to the manufacturer instructions and recorded in the site logbook.

Groundwater samples were collected from the following 15 monitoring wells as part of the baseline sampling event in December 2000: OLD-36-06A, OLD-36-07A, OLD-36-26A, OLD-36-27A, OLD-36-08B, OLD-36-10B, OLD-36-28B, OLD-36-29B, OLD-36-09C, OLD-36-11C, OLD-36-12C, OLD-36-23C, OLD-36-30C, OLD-36-31C, and OLD-36-32C.

The locations and detections above GCTLs for these monitoring wells are shown on Figure 4. Groundwater samples from the monitoring wells were laboratory analyzed for the following analyte suite:

- VOCs by USEPA Method 8260B
- Nitrate, nitrite, chloride, and bromide by USEPA Methods 352, 354, 325, 320.1, respectively
- Alkalinity by USEPA Method 310.1
- Total organic carbon (TOC) by USEPA Method 9060 Modified
- Total petroleum hydrocarbons (TPH) by FDEP Florida Petroleum Residual Organic Methods (FL-PRO)
- Volatile fatty acids
- Methane, ethane and ethene (MEE) by AM19GA

In addition, the field team measured natural attenuation parameters of ferrous iron, manganese, hydrogen sulfide, and sulfate using Colorimetric Hach test kits. Oxidation-reduction potential (ORP), dissolved oxygen (DO), pH, specific conductivity, temperature, and turbidity were also measured. This information is summarized in Tables 3 and 4, respectively, and the monitoring well purging and sampling logs are included as Appendix D.

TABLE 2
Hydraulic Conductivity Results
SA36, NTC Orlando

Well Location	Well Zone	Screen Interval (feet bls)	Test Number	Type of Test	Hydraulic Conductivity (feet/day)	Average K (feet /day)
OLD-36-01A	Shallow	10 to 20	1	Slug - In	20.1	21.4
			2	Slug-Out	22.7	
OLD-36-02A	Shallow	10 to 20	1	Slug - In	20.0	26.7
			2	Slug-Out	33.4	
OLD-36-06A	Shallow	6.5 to 16.5	1	Slug - In	12.7	18.9
			2	Slug-Out	25.1	
OLD-36-10B	Intermediate	20 to 25	1	Slug - In	7.6	7.2
			2	Slug - In	6.9	
			3	Slug-Out	7.7	
			4	Slug-Out	6.7	
OLD-36-19A	Shallow	10 to 20	1	Slug - In	52.7	54.7
			2	Slug - In	53.1	
			3	Slug-Out	57.0	
			4	Slug-Out	56.1	
OLD-36-20B	Intermediate	22 to 27	1	Slug - In	1.2	0.9
			2	Slug-Out	0.5	
OLD-36-24B	Intermediate	22 to 27 (?)	1	Slug - In	8.2	9.2
			2	Slug - In	12.8	
			3	Slug-Out	8.1	
			4	Slug-Out	7.6	
OLD-36-27A	Shallow	10 to 20	1	Slug - In	2.0	1.8
			2	Slug-Out	1.6	
OLD-36-29B	Intermediate	22 to 27	1	Slug - In	0.9	0.9
			2	Slug - In	1.0	
			3	Slug-Out	0.8	
			4	Slug-Out	0.8	
OLD-36-30C	Deep	30 to 35	1	Slug - In	11.4	12.2
			2	Slug - In	12.9	
OLD-36-33A	Shallow	8 to 18	1	Slug - In	34.4	43.0
			2	Slug - In	32.0	
			3	Slug-Out	47.3	
			4	Slug-Out	58.2	
OLD-36-34B	Intermediate	20 to 25	1	Slug - In	10.3	11.9
			2	Slug - In	12.4	
			3	Slug-Out	12.7	
			4	Slug-Out	12.1	
OLD-36-35C	Deep	30 to 35	1	Slug - In	0.1	0.1
			2	Slug-Out	0.0	
OLD-36-36C	Deep	30 to 35	1	Slug - In	3.6	3.6
			2	Slug - In	3.9	
			3	Slug-Out	3.2	
			4	Slug-Out	3.7	
OLD-36-37C	Deep	30 to 35	1	Slug - In	1.5	1.6
			2	Slug-Out	1.6	

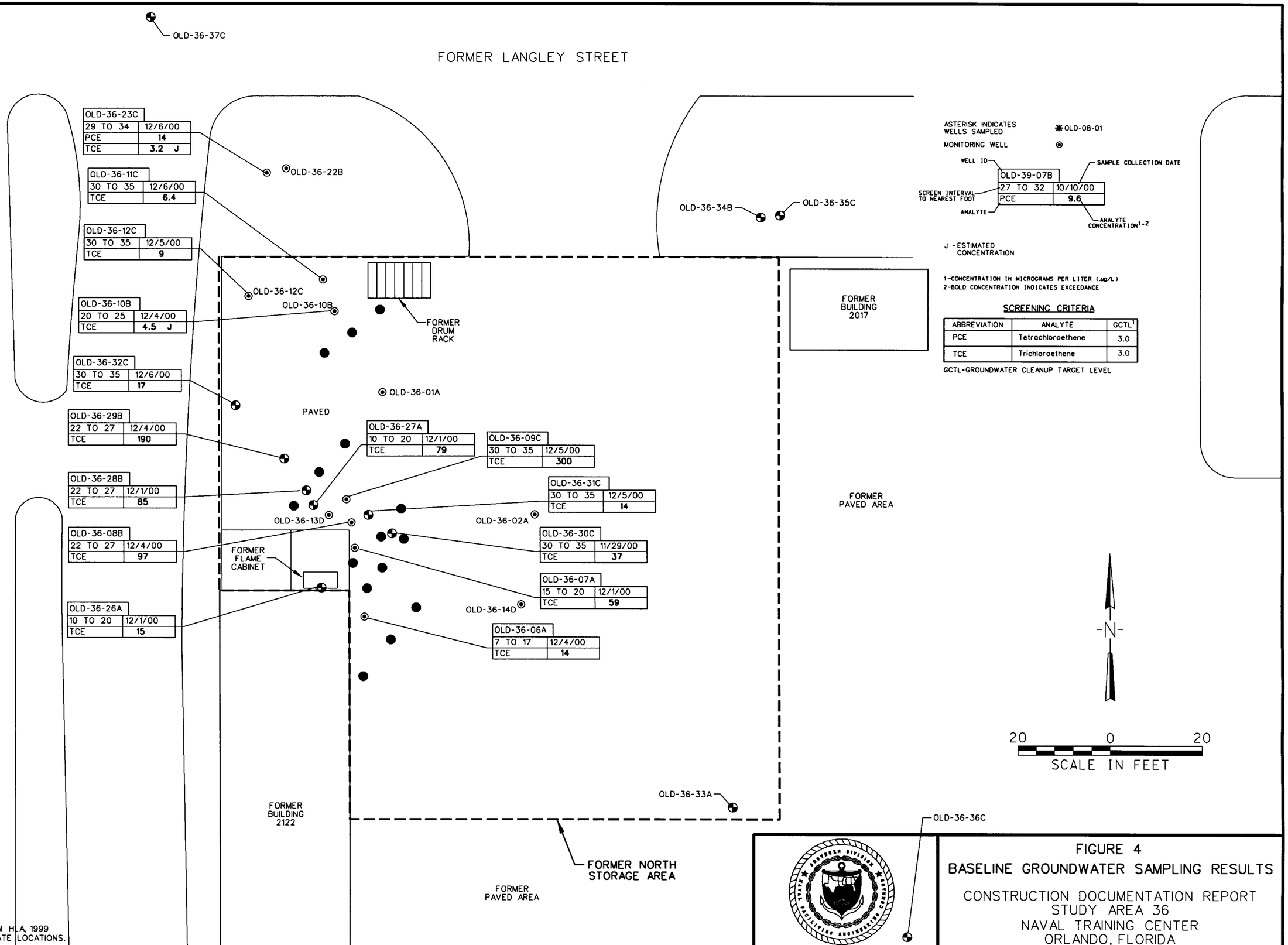


FIGURE 4
BASELINE GROUNDWATER SAMPLING RESULTS

CONSTRUCTION DOCUMENTATION REPORT
STUDY AREA 36
NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE:
:/Environmental/152044-NTC/152044 02-06-01/74570026.dgn/03-12-01

TABLE 3
Natural Attenuation Field Measurements
SA36, NTC Orlando

			Field Test Kit Parameters (mg/L)				
Station ID	**Date**	**Time**	**Ferrous Iron**	**Manganese**	**Hydrogen Sulfide**	**Sulfate**	**Dissolved Oxygen**
OLD-36-06A	12/04/2000	8:30	0.5	0	0.0	90	0.79
OLD-36-07A	12/01/2000	3:30	0.2	0	0.1	<50	0.54
OLD-36-26A	12/01/2000	9:15	1	0.2	0.3	>200	0.96
OLD-36-27A	12/01/2000	11:00	0.1	0	0.0	<50	0.98
OLD-36-08B	12/04/2000	10:30	0.5	0.1	1.0	80	0.98
OLD-36-10B	12/04/2000	3:00	0.2	0	0.3	>200	1.08
OLD-36-28B	12/01/2000	1:30	2.5	0	0.3	>200	0.59
OLD-36-29B	12/04/2000	1:45	2	0.1	NM	70.5	0.65
OLD-36-09C	12/05/2000	9:00	0.3	0.3	5.0	<50	0.71
OLD-36-11C	12/06/2000	11:30	0.1	0	0.7	100	0.79
OLD-36-12C	12/05/2000	3:00	0.2	0	0.0	>200	1.11
OLD-36-23C	12/06/2000	2:00	1.2	0.1	0.5	>200	0.75
OLD-36-30C	11/29/2000	2:00	0.6	0	1.0	70	0.90
OLD-36-31C	12/05/2000	11:15	1.2	0.3	0.0	60	0.79
OLD-36-32C	12/06/2000	9:00	0.1	0.1	0.2	>200	0.78

NM = Not measured due to color of sample.

mg/L = milligrams per liter

TABLE 4
Field Sampling Parameters
SA36, NTC Orlando

Station ID	Date	pH	Conductivity (mS/cm)	Temperature (^{o}C)	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
OLD-36-06A	12/04/2000	5.41	70	26.88	0.79	151.6	190
OLD-36-07A	12/01/2000	5.50	110	25.86	0.54	63	138
OLD-36-26A	12/01/2000	5.86	90	23.97	0.96	207.1	>1000
OLD-36-27A	12/01/2000	6.83	368	25.75	0.98	136.1	0.9
OLD-36-08B	12/04/2000	5.68	133	27.52	0.98	-81.8	143
OLD-36-10B	12/04/2000	5.60	102	27.36	1.08	16.9	508
OLD-36-28B	12/01/2000	6.13	333	25.94	0.59	-51.6	>1000
OLD-36-29B	12/04/2000	5.70	170	26.41	0.65	40.9	42
OLD-36-09C	12/05/2000	5.71	909	25.55	0.71	-178.1	95
OLD-36-11C	12/06/2000	5.33	90	26.61	0.79	18.1	189
OLD-36-12C	12/05/2000	5.36	87	26.22	1.11	78.9	808
OLD-36-23C	12/06/2000	5.61	78	25.60	0.75	-40.9	>1000
OLD-36-30C	11/29/2000	5.21	169	26.14	0.90	-32	82
OLD-36-31C	12/05/2000	5.41	106	25.95	0.79	48	80
OLD-36-32C	12/06/2000	6.51	248	26.63	0.78	-26.1	188

^{o}C – degrees Celsius
mS/cm – milliseconds per centimeter
mg/L – milligrams per liter
mV – millivolt
NTU – nephelometric turbidity unit

A summary of the baseline groundwater sampling data is presented in Table 5 and shown on Figure 4. PCE exceeded the regulatory GCTL of 3 µg/L in 1 of the 15 monitoring wells that was sampled during the baseline event with a concentration of 14 µg/L. TCE exceeded the regulatory GCTL of 3 µg/L in all 15 monitoring wells that were sampled during the baseline event. The TCE concentrations ranged from 3.2 J µg/L to 300 µg/L.

TABLE 5
Analytical Laboratory Data
SA-36, NTC Orlando

		Parameter													
Station ID	**Date**	**Alkalinity (mg/L)**	**Bromide (mg/L)**	**Chloride (mg/L) GCTL=250mg/L**	**Nitrate/Nitrite Nitrogen (mg/L) GCTL=10mg/L**	**FL-PRO (mg/L) GCTL=5mg/L**	**TDS (mg/L)**	**TOC (mg/L)**	**cis-1,2-DCE (ug/L) GCTL=70ug/L**	**PCE (ug/L) GCTL=3 ug/L**	**TCE (ug/L) GCTL=3 ug/L**	**Methane (ug/ml)**	**Ethane (ug/ml)**	**Ethene (ug/ml)**	**Volatile Fatty Acids (mg/L)**
OLD-36-06A	12/04/2000	1.5	ND	4.20	0.33	ND	110	10.70	ND	ND	14	ND	ND	ND	ND
OLD-36-07A	12/01/2000	16	ND	6.20	0.2	0.44 JB	110	12.50	ND	ND	59	ND	ND	ND	ND
OLD-36-26A	12/01/2000	26	ND	6.50	1.2	0.57 JB	260	46.60	ND	ND	15	ND	ND	ND	ND
OLD-36-27A	12/01/2000	160	ND	6.70	ND	0.49 JB	230	8.36	1.1 J	ND	79	ND	ND	ND	ND
OLD-36-08B	12/04/2000	24	ND	7.00	ND	ND	100	3.55	ND	ND	97	0.090	ND	ND	ND
OLD-36-10B	12/04/2000	25	ND	6.40	ND	ND	130	15.70	2.3 J	1.7 J	4.5 J	ND	ND	ND	ND
OLD-36-28B	12/01/2000	300	ND	8.70	ND	0.40 JB	920	90.50	0.54 J	ND	85	0.012	ND	ND	ND
OLD-36-29B	12/04/2000	27	ND	14.00	ND	ND	180	5.18	1.9 J	190	ND	ND	ND	ND	ND
OLD-36-09C	12/05/2000	280	ND	8.90	ND	0.35 JB	390	19.80	24	ND	300	ND	ND	ND	ND
OLD-36-11C	12/06/2000	14	ND	6.30	ND	0.34 J	85	8.77	3.5 J	1.3 J	6.4	ND	ND	ND	ND
OLD-36-12C	12/05/2000	17	ND	5.70	ND	0.44 JB	300	22.70	3.2 J	ND	9	ND	ND	ND	ND
OLD-36-23C	12/06/2000	25	ND	3.70	ND	0.28 J	600	15.00	0.81 J	14	3.2 J	0.037	ND	ND	ND
OLD-36-30C	11/29/2000	41	ND	9.40	ND	0.30 JB	140	6.21	ND	ND	37	ND	ND	ND	ND
OLD-36-31C	12/05/2000	18	ND	8.90	ND	0.40 JB	130	6.41	ND	ND	14	ND	ND	ND	ND
OLD-36-32C	12/06/2000	83	ND	7.90	ND	ND	620	18.50	ND	ND	17	ND	ND	ND	ND

Notes:
ND = not detected/reported above laboratory detection limit
TDS - Total Dissolved Solids
TOC = Total Organic Carbon
cis-1,2-DCE = cis-1,2-dichloroethene
PCE = tetrachloroethene
TCE = trichloroethene
J = Estimated values where the compounds are present at concentrations that are less than the quantitation limit but above the method detection limits.
JB = Analyte was detected in the Method Blank at a concentration above the method detection limit, and the concentrations in the samples were less than 10 times the concentration in the Method Blank.

3.5 Vegetable Oil Injection

Upon completion of the hydraulic conductivity testing, the baseline groundwater sampling and evaluation of analytical results, the vegetable oil injection process was initiated in January 2001. Approximately 60 gallons of vegetable oil (specifically food-grade soybean oil) was injected into each of the 15 new injection points. The actual volume of vegetable oil pumped into each injection point is summarized in Table 6. A total of 360 gallons of vegetable oil was injected into the area near wells OLD-36-06A and 07A (A zone), a total of 360 gallons was injected into the area near wells OLD-36-08B and 10B (B zone), and a total of 180 gallons was injected into the area near well OLD-36-09C (C zone). A combined total of 900 gallons of vegetable oil was injected at SA36.

A 1-inch diaphragm pump was used to inject the vegetable oil under pressure (approximately 2 pounds per square inch [psi]) into each of the injection points. The vegetable oil injection process was completed in 2 days. A schematic of the injection pump process is provided in Figure 5.

3.6 Performance Monitoring of Site Groundwater

Groundwater samples will be collected from 13 monitoring wells at the site as part of the treatment efficiency quarterly monitoring. Four sampling events will be conducted at 2, 6, 9, and 12 months after injection. The list of monitoring wells to be sampled and sampling parameters were provided to the OPT and approved during the February 2001 Partnering Team meeting.

The first round of efficiency monitoring (2 months after injection) was completed during the week of March 12, 2001. The treatment efficiency quarterly data report will be submitted to the OPT approximately 60 days after the analytical laboratory data is received.

TABLE 6
Vegetable Oil Injection Totals
SA36, NTC Orlando

Injection Point ID	Amount of Vegetable Oil Injected (gallons)	Aquifer Zone
OLD-36-INJ-01	60	A
OLD-36-INJ-02	60	A
OLD-36-INJ-03	60	A
OLD-36-INJ-04	60	A
OLD-36-INJ-05	60	A
OLD-36-INJ-06	60	A
Total Amount Injected for A zone = 360 gallons		
OLD-36-INJ-07	60	B
OLD-36-INJ-08	60	B
OLD-36-INJ-09	60	B
OLD-36-INJ-13	60	B
OLD-36-INJ-14	60	B
OLD-36-INJ-15	60	B
Total Amount Injected for B zone = 360 gallons		
OLD-36-INJ-10	60	C
OLD-36-INJ-11	60	C
OLD-36-INJ-12	60	C
Total Amount Injected for C zone = 180 gallons		

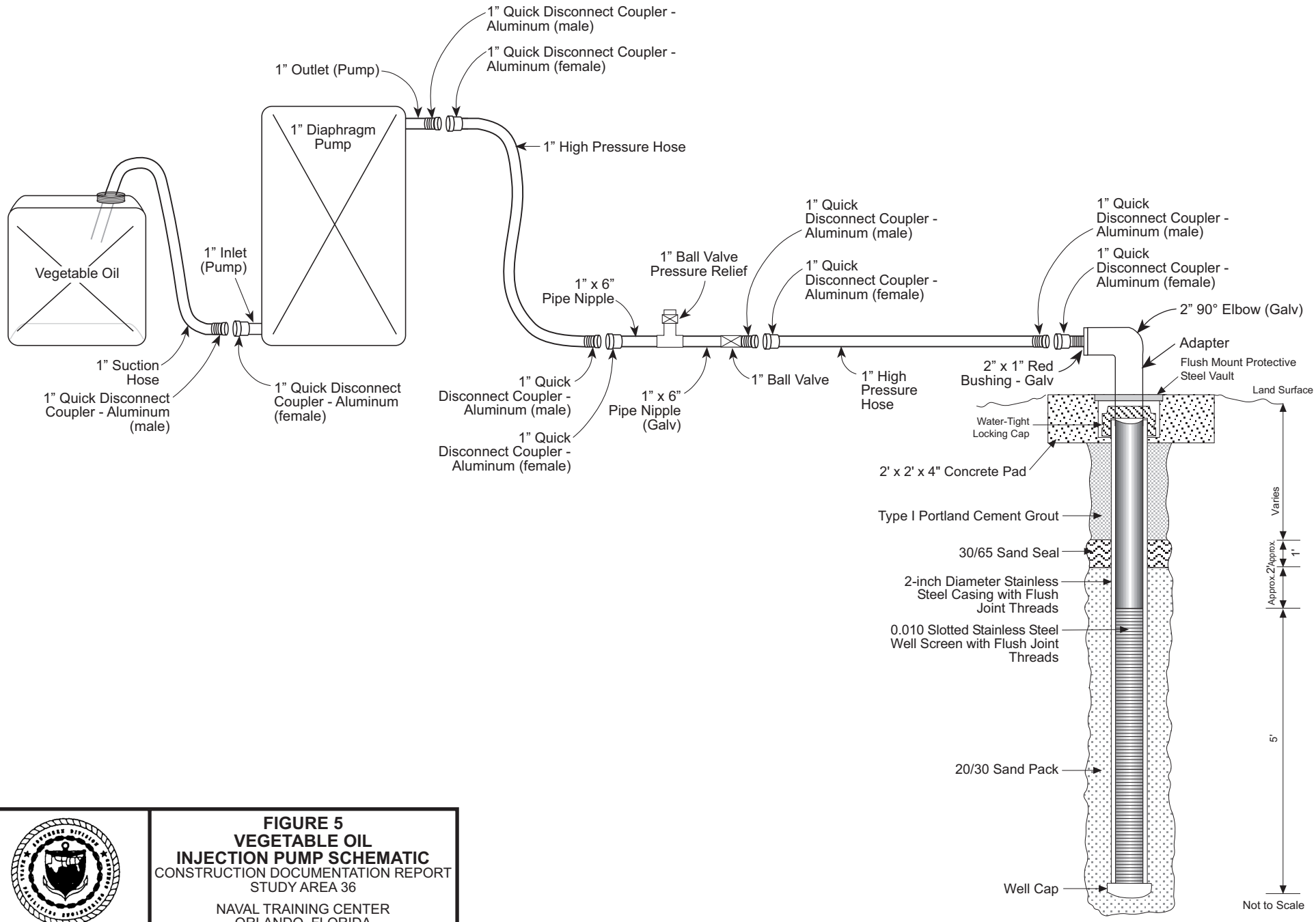


FIGURE 5
VEGETABLE OIL
INJECTION PUMP SCHEMATIC
CONSTRUCTION DOCUMENTATION REPORT
STUDY AREA 36

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

4.0 Conclusions

Vegetable oil was injected into 15 stainless steel injection points at SA36 to enhance the biodegradation process and remediate the contaminated groundwater in Aquifer Zones A, B, and C. The IRA was conducted in accordance with the approved Work Plan for SA36 (CCI, 2000). Conductivity data was collected, and a baseline groundwater sampling event was conducted to establish baseline concentrations prior to the vegetable oil injection. PCE exceeded the regulatory GCTL of 3 µg/L in 1 of the 15 monitoring wells that was sampled during the baseline event with a concentration of 14 µg/L. TCE exceeded the regulatory GCTL of 3 µg/L in all 15 monitoring wells that were sampled during the baseline event. The TCE concentrations ranged from 3.2 J µg/L to 300 µg/L.

The vegetable oil injection was conducted in January 2001. A total of 360 gallons were injected into Aquifer Zone A, 360 gallons were injected into Aquifer Zone B and 180 gallons were injected into Aquifer Zone C. Treatment efficiency monitoring of groundwater will be conducted at 2, 6, 9 and 12 months from the vegetable oil injection date.

5.0 References

ABB Environmental Services. *Project Operations Plan for Site Investigation and Remedial Investigation*. Orlando, Florida. 1997.

CH2M HILL Constructors, Inc. *Basewide Workplan for NTC Orlando*. Orlando, Florida. June 1999.

CH2M HILL Constructors, Inc. *Work Plan Addendum 1-C for Study Areas 17, 36 and 39, NTC Orlando*. Orlando, Florida. 2000.

CH2M HILL Constructors, Inc. *Work Plan for Enhanced Bioremediation IRA at SA36, NTC Orlando*. Orlando, Florida. November 2000.

Harding, Lawson Associates. *Base Realignment & Closure, Environmental Site Screening Report, SA36, NTC Orlando.* Orlando, Florida. April 1999.

Appendix A

Boring Logs and Well Construction Diagrams

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-01	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 115.19 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

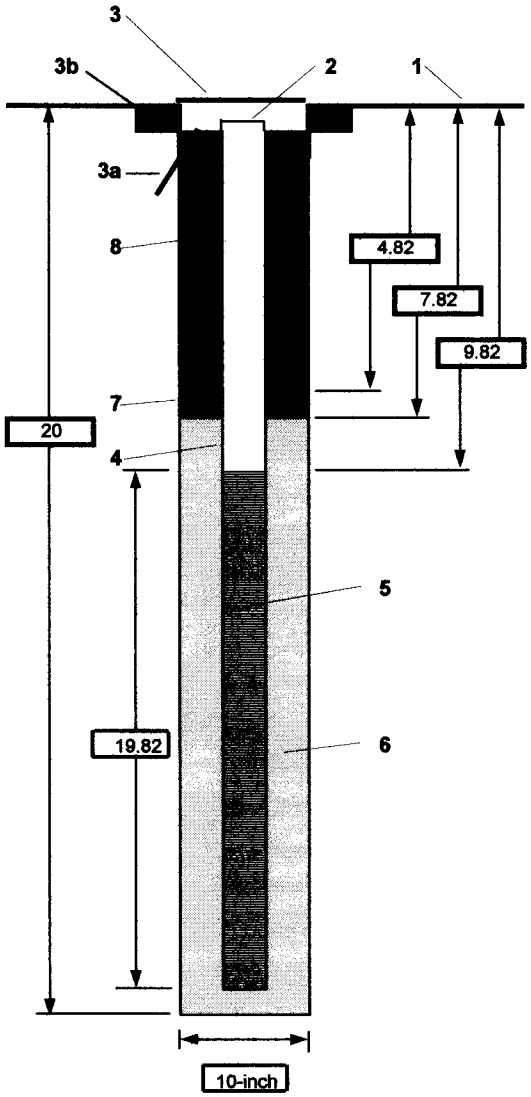
WATER LEVELS : 9.64 ft btoc — START : 11/7/00 09:50 — END : 10:45 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	16/24	SS-2"	5-4-5-3 (9)	Pinkish White (7.5 YR 8/2), dry, loose, medium sand (SP), well-sorted, subangular, some coal present	Headspace = 266 ppm Breathing zone, Above borehole = 0.0 ppr Background = 0.0 ppm Soil Temperature = 80 °F
10	10 to 12	22/24	SS-2"	2-8-16-14 (24)	Top 14", Pinkish White (7.5 YR 8/2), dry, loose, medium sand (SP), well-sorted, subangular, some coal present Bottom 10", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 191 ppm Background = 0.0 ppm Soil Temperature = 84 °F
15	15 to 17	18/24	SS-2"	4-4-2-4 (6)	Top 12", Light Brownish Gray (10 YR 6/2), damp, loose, fine to medium sand (SP), fairly well-sorted, subangular Bottom 12", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 77 ppm Breathing zone, Above borehole = 0.0 ppr Background = 0.0 ppm Soil Temperature = 80 °F
20	20 to 22	23/24	SS-2"	6-7-14-10 (21)	Top 11", Light Brownish Gray (10 YR 6/2), damp, loose, fine to medium sand, predominantly medium sand (SP), fairly well-sorted, subangular, some limestone ash present Bottom 12", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular End of Boring at 20.0 ft	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 87 °F
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-01 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.64 ft btoc START : 11/7/00 09:50 END : 10:45 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.4
2- Top of casing elevation	115.19
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	21 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537858.92
Easting = 549519.65

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-01 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.77 ft btoc START : 11/15/00 15:49 END : 16:10 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No drawdown noted

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid, Sulfur Odor

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
15:55	0	9.77	>999	26.6	5.98	0.595	Sulfur Odor Dark Brown, Salinity = 0.02
15:59	16	No Reading	>999	27.2	6.19	0.450	Dark Brown, Salinity = 0.02 OVM = 0.0 ppm, Background = 0.0 ppm
16:03	20	No Reading	>999	27.4	6.35	0.346	Sulfur Odor Dark Brown, Salinity = 0.02
16:05	33	No Reading	>999	27.3	6.36	0.277	Sulfur Odor Dark Brown, Salinity = 0.02
16:08	40	No Reading	>999	27.1	6.36	0.277	Sulfur Odor Dark Brown, Salinity = 0.02
16:09	47	No Reading	>999	27.2	6.40	0.229	Dark Brown, Salinity = 0.02 OVM = 0.0 ppm, Background = 0.0 ppm
16:10	55	9.68	>999	27.4	6.50	0.219	Sulfur Odor Dark Brown, Salinity = 0.02

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-02	SHEET 1 OF 1

SOIL BORING LOG

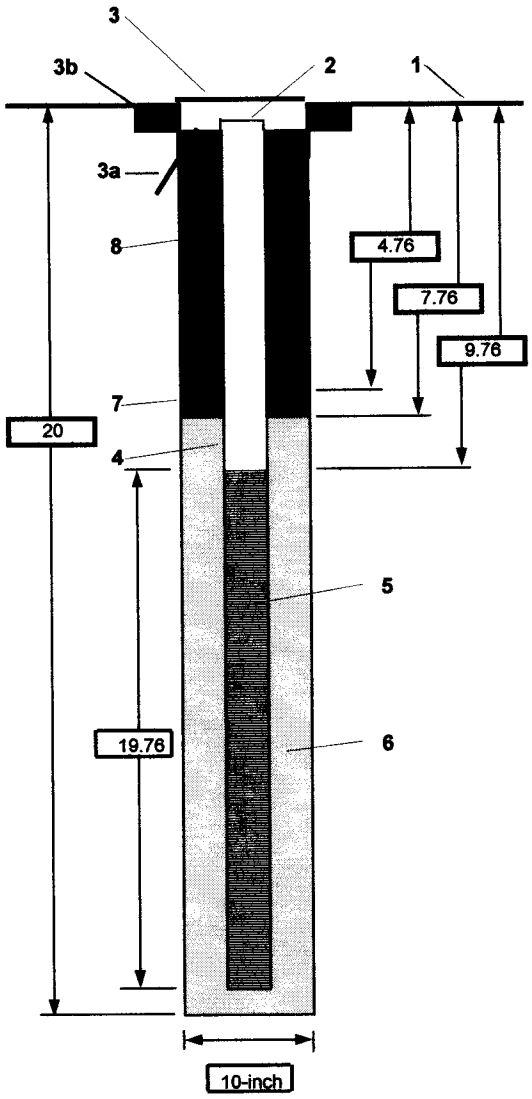
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 115.00 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.45 ft btoc
START : 11/7/000 10:50
END : 11:35
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	18/24	SS-2"	2-2-4-4 (6)	Pinkish White (7.5 YR 8/2), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 82 °F
10	10 to 12	24/24	SS-2"	3-5-8-12 (13)	Dark Brown (10 YR3/3), damp, medium dense, silty fine to coarse sand (SP/SM), poorly sorted, subangular	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 85 °F
15	15 to 17	22/24	SS-2"	5-5-5-7 (10)	Top 6", Dark Brown (10 YR3/3), damp, loose, fine to medium sand (SP), fairly well sorted, subangular, roots present Bottom 16", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 90 °F
20	20 to 22	20/24	SS-2"	8-9-19-20 (28)	Brown (10 YR 4/3) to Black (10 YR 2/1), wet, medium dense, medium sand (SP), to silty fine sand (SM), fairly well sorted, subangular, limestone ash layer present in spoon End of Boring at 20.0 ft	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 85 °F
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-02 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.45 ft btoc START : 11/7/00 10:50 END : 11:35 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.3
2- Top of casing elevation	115.00
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	61 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537866.87
Easting = 549525.67

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-02 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.45 ft btoc START : 11/15/00 12:54 END : 13:55 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.08 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
12:55	0	9.45	>999	No Reading	No Reading	No Reading	
13:10	22	No Reading	>999	26.7	6.05	0.248	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
13:52	32	No Reading	>999	27.0	5.44	0.250	Dark Brown, Salinity = 0.00
13:55	55	9.53	>999	27.0	5.80	0.200	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-03	SHEET 1 OF 1

SOIL BORING LOG

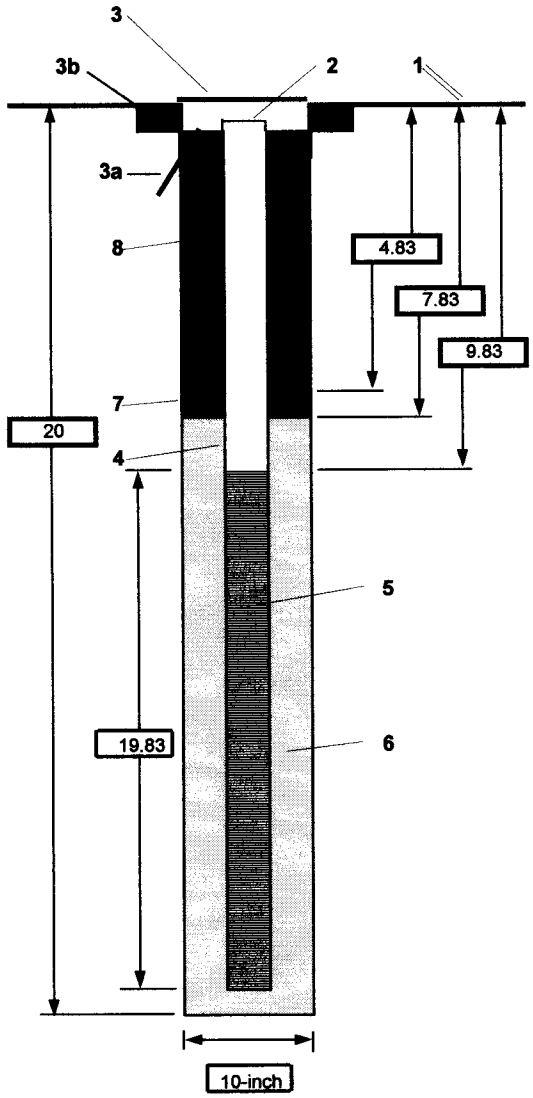
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 115.13 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.50 ft btoc
START : 11/7/00 12:45
END : 13:30
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	12/24	SS-2"	3-2-2-4 (4)	Light Brownish Gray (10 YR 6/2), dry, very loose, medium sand (SP), well-sorted, subangular, some limestone ash present	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 90 °F
10	10 to 12	12/24	SS-2"	1-2-8-10 (10)	Top 12", Grayish Brown (10 YR 5/2), dry, loose, medium sand (SP), well-sorted, subangular, Bottom 12", Dark Grayish Brown (10 YR 4/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 163 ppm Background = 0.0 ppm Soil Temperature = 92 °F
15	15 to 17	20/24	SS-2"	6-8-16-19 (24)	Very Dark Grayish Brown (10 YR 3/2), wet to damp, medium dense, medium sand (SP) to silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 92 °F
20	20 to 22	18/24	SS-2"	5-6-11-16 (17)	Top 9", Brown (10 YR 5/3), wet, medium dense, medium sand (SP), well-sorted, subangular Bottom 9", Very Dark Brown (10 YR 2/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular End of Boring at 20.0 ft	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 88 °F
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-03 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.50 ft btoc START : 11/7/00 12:45 END : 13:30 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.3
2- Top of casing elevation	115.13
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	43 minutes
Estimated purge volume	55 gallons

Comments
Nothing = 1537873.86
Easting = 549531.15

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-03 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.42 ft btoc START : 11/15/00 14:40 END : 15:23 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.09 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
14:50	0	9.42	659	26.6	5.98	0.429	Dark Brown, Salinity = 0.01 OVM = 0.0 ppm, Background = 0.0 ppm
14:54	10	No Reading	659	27.3	6.13	0.177	Dark Brown, Salinity = 0.00
15:01	17	No Reading	659	27.5	5.95	0.217	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
15:07	28	No Reading	659	27.5	5.92	0.132	Dark Brown, Salinity = 0.00
15:11	34	No Reading	939	27.6	5.89	0.117	Dark Brown, Salinity = 0.00
15:16	40	No Reading	659	28.3	5.90	0.155	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
15:18	47	No Reading	659	28.0	5.90	0.139	Dark Brown, Salinity = 0.00
15:23	55	9.51	659	27.8	5.89	0.134	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-04	SHEET 1 OF 1

SOIL BORING LOG

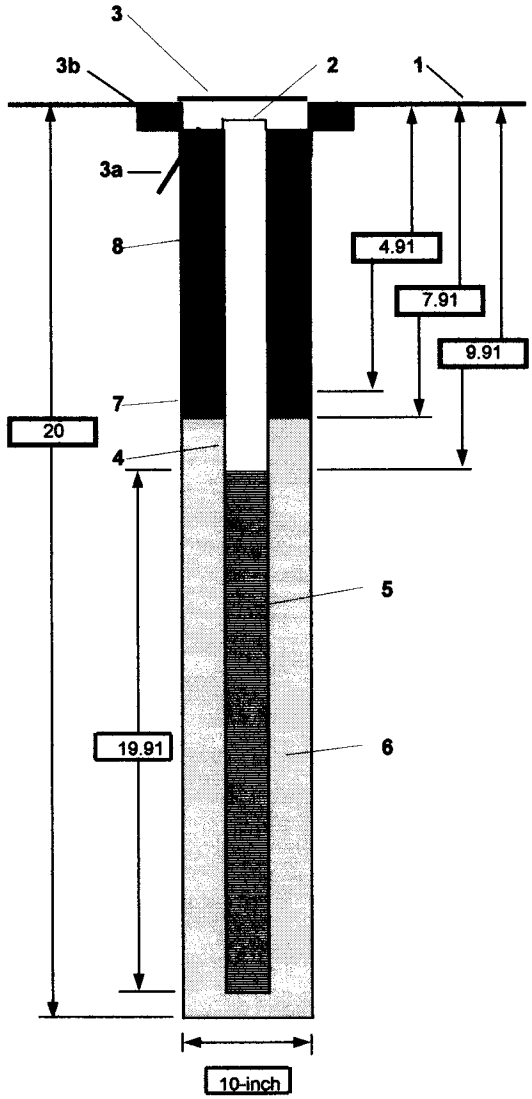
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 115.08 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.59 ft btoc
START : 11/7/00 13:40
END : 14:45
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	18/24	SS-2"	2-3-3-4 (6)	Light Gray (10 YR 7/2), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 90 °F
10	10 to 12	16/24	SS-2"	1-1-4-10 (5)	Top 12", Gray (10 YR 5/1), dry, loose, silty medium sand (SP), fairly poorly sorted, subangular Bottom 4", Gray (10 YR 5/1), wet, loose, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 99 °F
15	15 to 17	16/24	SS-2"	5-5-7-8 (12)	Top 2", Gray (10 YR 5/1), wet, medium dense, medium sand (SP), well-sorted, subangular Mid 12", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular Bottom 2", Gray (10 YR 5/1), wet, medium dense, medium sand (SP), well-sorted, subangular	Headspace = 9.1 ppm Breathing zone, Above borehole = 0.0 ppn Background = 0.0 ppm Soil Temperature = 91 °F
20	20 to 22	10/24	SS-2"	4-4-9-13 (13)	Brown (7.5 YR 4/3), wet, medium dense, silty fine to medium sand, primarily medium sand (SP/SM), fairly poorly sorted, subangular End of Boring at 20.0 ft	
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-04 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.59 ft btoc START : 11/7/00 13:40 END : 14:45 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.3
2- Top of casing elevation	115.08
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	16 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537878.02
Easting = 549520.52

CH2MHILL

PROJECT NUMBER	WELL NUMBER
152044.32.12.01.08	OLD-36-INJ-04 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.59 START : 11/16/00 07:48 END : 08:04 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.07 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
7:52	0	9.59	>999	25.1	5.05	0.202	Dark Brown, Salinity = 0.00 OVM = 10.0 ppm, Background = 2.8 ppm
7:54	16	No Reading	>999	25.6	5.17	0.127	Dark Brown, Salinity = 0.00
7:56	20	No Reading	>999	25.7	5.48	0.120	Dark Brown, Salinity = 0.00
7:58	30	No Reading	>999	26.4	5.48	0.116	Dark Brown, Salinity = 0.00 OVM = 8.0 ppm, Background = 2.8 ppm
8:02	40	No Reading	>999	26.7	5.45	0.116	Dark Brown, Salinity = 0.00
8:04	55	9.66	>999	26.8	5.41	0.115	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-05	SHEET 1 OF 1

SOIL BORING LOG

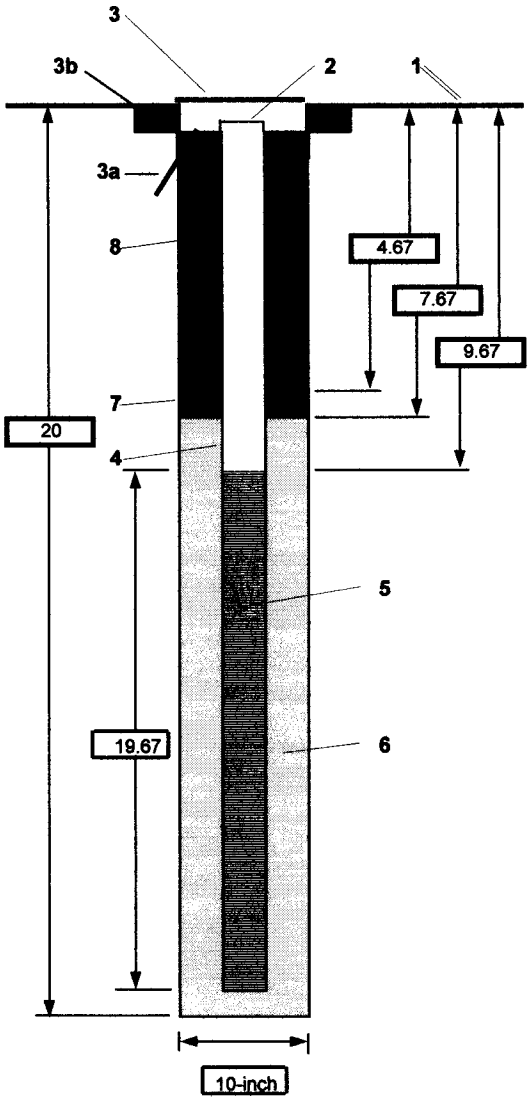
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 115.20 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.73 ft btoc
START : 11/7/00 15:00
END : 15:40
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	16/24	SS-2"	3-3-3-5 (6)	Light Gray (10 YR 7/2), dry, loose, medium sand (SP), well-sorted, subangular, some limestone ash present	Headspace = 33 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 92 °F
10	10 to 12	14/24	SS-2"	2-2-4-23 (6)	Top 18", Gray (10 YR 5/1), dry, loose, medium sand (SP), well-sorted, subangular, mottled in color Bottom 6", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 141 ppm Background = 0.0 ppm Soil Temperature = 93 °F
15	15 to 17	24/24	SS-2"	3-11-23-12 (34)	Top 10", Grayish Brown (10 YR 5/2), damp, dense, medium sand with some silt (SP), fairly well-sorted, subangular Bottom 14", Very Dark Grayish Brown (10 YR 3/2), wet, dense, silty fine sand with some medium sand (SM), fairly well-sorted, subangular	Headspace = 304 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 96 °F
20	20 to 22	16/24	SS-2"	8-4-11-21 (15)	Dark Brown (10 YR3/3), wet, medium dense, fine to medium sand (SP), fairly poorly sorted, subangular End of Boring at 20.0 ft	Headspace = 220 ppm Background = 0.0 ppm Soil Temperature = 90 °F
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-05 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.73 ft btoc START : 11/7/00 15:00 END : 15:40 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.4
2- Top of casing elevation	115.2
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	26 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537882.47
Easting = 549523.81

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-05 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.73 ft btoc START : 11/16/00 08:06 END : 08:32 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 1.87 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:09	0	9.73	>999	26.4	5.50	0.111	Dark Brown, Salinity = 0.00
8:11	10	No Reading	>999	27.4	5.41	0.107	Dark Brown, Salinity = 0.00 OVM = 8.3 ppm, Background = 2.9 ppm
8:20	20	No Reading	>999	27.2	5.41	0.117	Dark Brown, Salinity = 0.00
8:24	30	No Reading	>999	26.9	5.37	0.110	Dark Brown, Salinity = 0.00 OVM = 2.4 ppm, Background = 1.0 ppm
8:29	40	No Reading	>999	27.5	5.39	0.111	Dark Brown, Salinity = 0.00
8:32	55	11.61	>999	27.9	5.39	0.109	Dark Brown, Salinity = 0.00 OVM = 2.2 ppm, Background = 1.0 ppm

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-INJ-06	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando | LOCATION : SA-36

ELEVATION : 114.91 TOC | DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 9.51 ft btoc | START : 11/8/00 07:30 | END : 08:40 | LOGGER : Kim-Lee Murphy

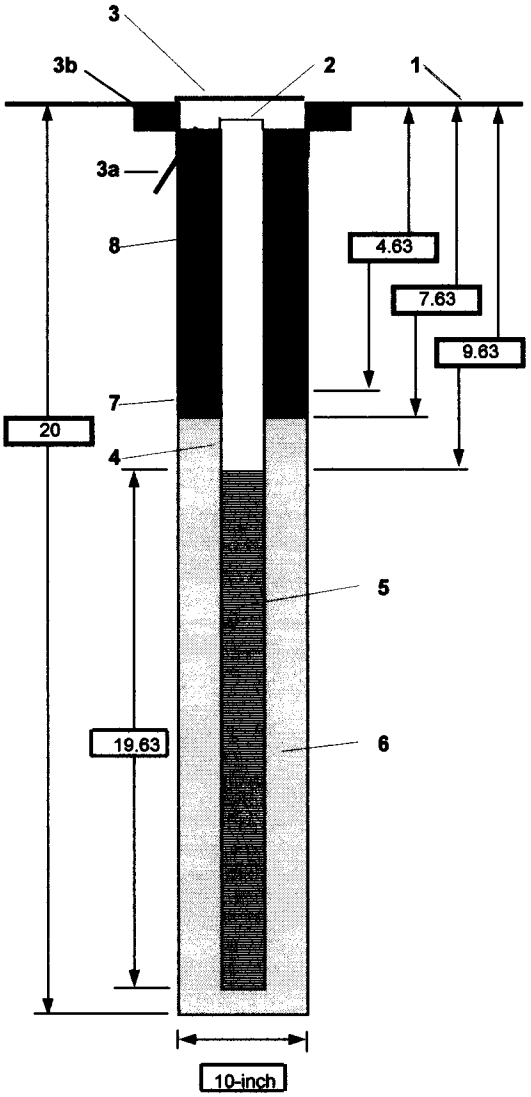
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	20/24	SS-2"	3-4-3-6 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 56.0 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 80 °F
10	10 to 12	18/24	SS-2"	3-3-14-26 (17)	Top 9", Very Pale Brown (10 YR 8/3) damp, loose, medium sand (SP), well-sorted, subangular, some limestone ash present Bottom 9", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 57.0 ppm Background = 0.0 ppm Soil Temperature = 82 °F
15	15 to 17	24/24	SS-2"	5-10-20-26 (30)	Same as above, bottom 4" has some medium sand	Headspace = 58.7 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 84 °F
20	20 to 22	24/24	SS-2"	10-7-15-41 (22)	Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular End of Boring at 20.0 ft	Headspace = 200.8 ppm Background = 0.0 ppm Soil Temperature = 83 °F
25						

PROJECT NUMBER	WELL NUMBER	
152044.32.12.01.08	OLD-36-INJ-06	SHEET 1 OF 1

CH2MHILL

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.51 ft btoc 8/007/00 07:30 END : 08:40 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	114.91
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	8 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	4 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	21 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537888.74
Easting = 549528.54

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-06 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.51 ft btoc START : 11/16/00 08:40 END : 09:02 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.5 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:42	0	9.51	>999	28.7	5.29	0.276	Dark Brown, Salinity = 0.01 OVM = 3.8 ppm, Background = 0.3 ppm
8:51	20	No Reading	>999	28.3	5.32	0.263	Dark Brown, Salinity = 0.01
8:52	24	No Reading	>999	28.8	5.32	0.262	Dark Brown, Salinity = 0.01
8:55	30	No Reading	>999	28.5	5.42	0.265	Dark Brown, Salinity = 0.01
8:58	35	No Reading	>999	28.8	5.33	0.284	Dark Brown, Salinity = 0.01 OVM = 0.9 ppm, Background = 0.0 ppm
9:00	40	No Reading	>999	28.8	5.44	0.267	Dark Brown, Salinity = 0.01
9:02	55	10.01	>999	28.7	5.40	0.265	Dark Brown, Salinity = 0.01

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-07	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 115.09 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 9.63 ft btoc — START : 11/8/00 10:15 — END : 11:30 — LOGGER : Kim-Lee Murphy

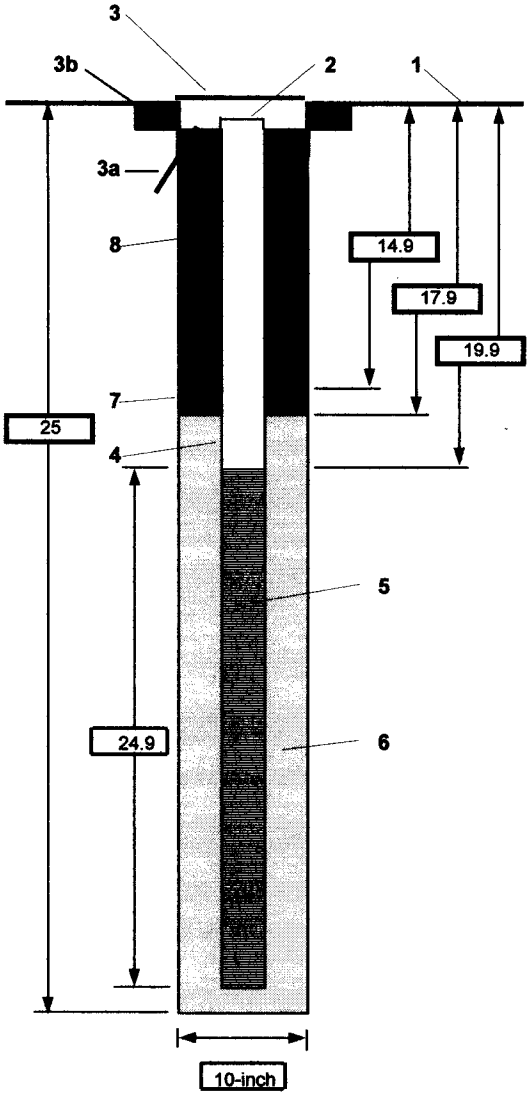
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	14/24	SS-2"	4-3-3-6 (6)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 205.3 ppm Background = 0.0 - 1.4 ppm Soil Temperature = 86 °F
10	10 to 12	24/24	SS-2"	7-10-21-24 (31)	Top 2", Very Dark Grayish Brown (10 YR 3/2), damp, dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Mid 2", Limestone Ash Bottom 20", Very Dark Grayish Brown (10 YR 3/2), wet, dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 716.5 ppm Breathing zone, Above borehole = 1.0 ppm Background = 0.0 - 1.4 ppm Soil Temperature = 85 °F
15	15 to 17	24/24	SS-2"	4-2-2-4 (4)	Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, with 2" lime ash lense	Headspace = 258.0 ppm Breathing zone, Above borehole = 0.7 ppm Background = 0.0 - 1.4 ppm Soil Temperature = 87 °F
20	20 to 22	24/24	SS-2"	12-13-17-27 (30)	Grayish Brown (10 YR 5/2), damp, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 169.2 ppm Background = 0.0 - 1.4 ppm Soil Temperature = 87 °F
25	25 to 27	24/24	SS-2"	7-25-50+ (75+)	Top 22", Grayish Brown (10 YR 5/2), damp, ve dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, with lime ash present Bottom 2", Dark Grayish Brown (10 YR 4/2), damp to wet, very dense, silty fine sand (SM), fairly well-sorted, subangular End of Boring at 25.0 ft	Headspace = 55.9 ppm Background = 0.0 - 1.4 ppm Soil Temperature = 88 °F

PROJECT NUMBER	WELL NUMBER	
152044.32.12.01.08	OLD-36-INJ-07	SHEET 1 OF 1

CH2MHILL

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.63 ft btoc START : 11/8/00 10:15 END : 11:30 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.3
2- Top of casing elevation	115.09
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	66 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537883.51
Easting = 549517.45

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-07 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.80 ft btoc START : 11/16/00 13:28 END : 14:34 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.20 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
13:29	0	9.80	>999	35.5	7.12	0.202	Dark Brown, Salinity = 0.00 OVM = 0.7 ppm, Background = 0.0 ppm
13:48	10	No Reading	>999	32.2	6.83	0.267	Dark Brown, Salinity = 0.01
14:00	22	No Reading	>999	31.7	6.88	0.258	Dark Brown, Salinity = 0.01 OVM = 0.7 ppm, Background = 0.0 ppm
14:06	30	No Reading	>999	31.9	6.83	0.236	Dark Brown, Salinity = 0.00
14:18	34	No Reading	>999	32.7	6.83	0.228	Dark Brown, Salinity = 0.00
14:24	38	No Reading	670	32.6	6.86	0.243	Dark Brown, Salinity = 0.00
14:27	45	No Reading	>999	33.1	6.95	0.251	Dark Brown, Salinity = 0.00
14:29	50	No Reading	>999	33.6	6.87	0.245	Dark Brown, Salinity = 0.00
14:31	52	No Reading	>999	33.5	6.79	0.195	Dark Brown, Salinity = 0.00
14:34	55	10.00	>999	33.6	6.86	0.208	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-08	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 114.74 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

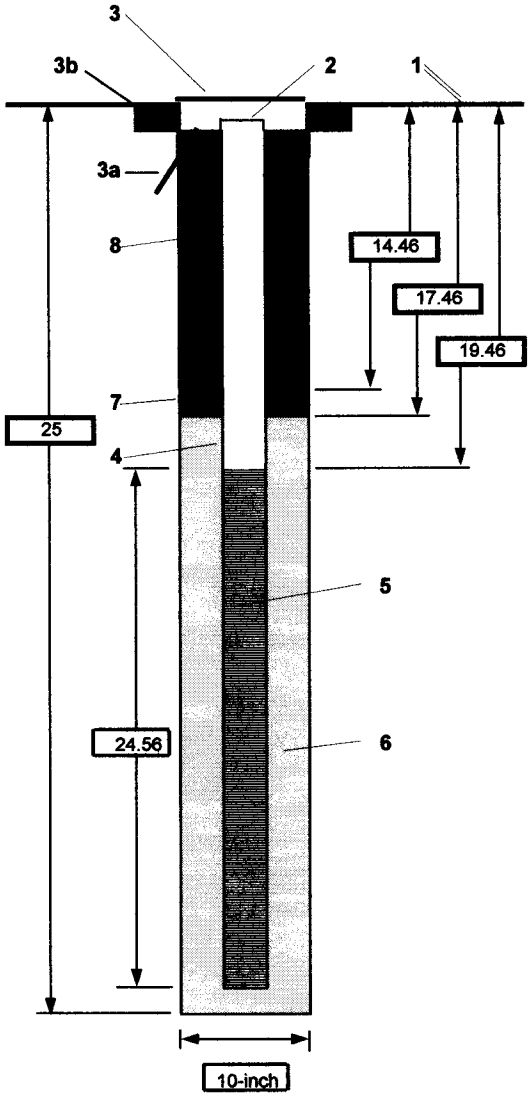
WATER LEVELS : 9.54 ft btoc — START : 11/8/00 12:25 — END : 13:30 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	20/24	SS-2"	4-4-3-4 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 19.6 ppm Background = 0.0 ppm Soil Temperature = 90 °F
10	10 to 12	24/24	SS-2"	8-7-17-20 (24)	Top 2", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Mid 2", Limestone Ash Bottom 20", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 5.3 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 88 °F
15	15 to 17	24/24	SS-2"	5-1-2-2 (3)	Top 6", lime ash Bottom 18", Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine sand (SM) grading into silty fine to medium sand (SP/SM) with de fairly poorly sorted, subangular	Headspace = 31.6 ppm Background = 0.0 ppm Soil Temperature = 84 °F
20	20 to 22	24/24	SS-2"	9-15-22-24 (37)	Top 8", Very Dark Grayish Brown (10 YR 3/2), wet, dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Mid 6", Lime Ash Bottom 10", Grayish Brown (10 YR 5/2), wet, dense, silty fine to medium sand, predominantly medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 22.2 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 86 °F
25	25 to 27	18/24	SS-2"	Weight-13-16 (13)	Top 22", Grayish Brown (10 YR 5/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, with lime ash present Bottom 2", Dark Grayish Brown (10 YR 4/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular End of Boring at 25.0 ft	Headspace = 20.9 ppm Background = 0.0 ppm Soil Temperature = 84 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-08 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.54 ft btoc START : 11/8/00 12:25 END : 13:30 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	114.74
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	84 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537889.25
Easting = 549523.63

CH2MHILL

PROJECT NUMBER	WELL NUMBER
152044.32.12.01.08	OLD-36-INJ-08 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 10.31 ft btoc START : 11/16/00 09:05 END : 10:36 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 1.78 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Lost part of swab pipe in well at 09:38. Did not begin pumping again till 10:30.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
9:10	0	10.32	>999	28.3	6.22	0.705	Dark Brown, Salinity = 0.03 OVM = 1.7 ppm, Background = 0.0 ppm
9:14	8	No Reading	>999	28.2	7.29	0.450	Dark Brown, Salinity = 0.01
9:20	17	No Reading	>999	28.4	7.13	0.345	Dark Brown, Salinity = 0.01 OVM = 2.0 ppm, Background = 0.0 ppm
9:25	20	No Reading	>999	27.9	7.08	0.303	Dark Brown, Salinity = 0.01
9:27	26	No Reading	>999	28.3	7.08	0.293	Dark Brown, Salinity = 0.01 OVM = 1.4 ppm, Background = 0.0 ppm
9:32	32	No Reading	670	28.0	6.82	0.303	Dark Brown, Salinity = 0.01
9:36	38	No Reading	>999	27.9	7.12	0.274	Dark Brown, Salinity = 0.01
10:32	45	No Reading	>999	28.1	6.98	0.278	Dark Brown, Salinity = 0.01
10:34	50	No Reading	>999	28.0	7.02	0.278	Dark Brown, Salinity = 0.01
10:44	---	12.10	---	---	---	---	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-09	SHEET 1 OF 1

SOIL BORING LOG

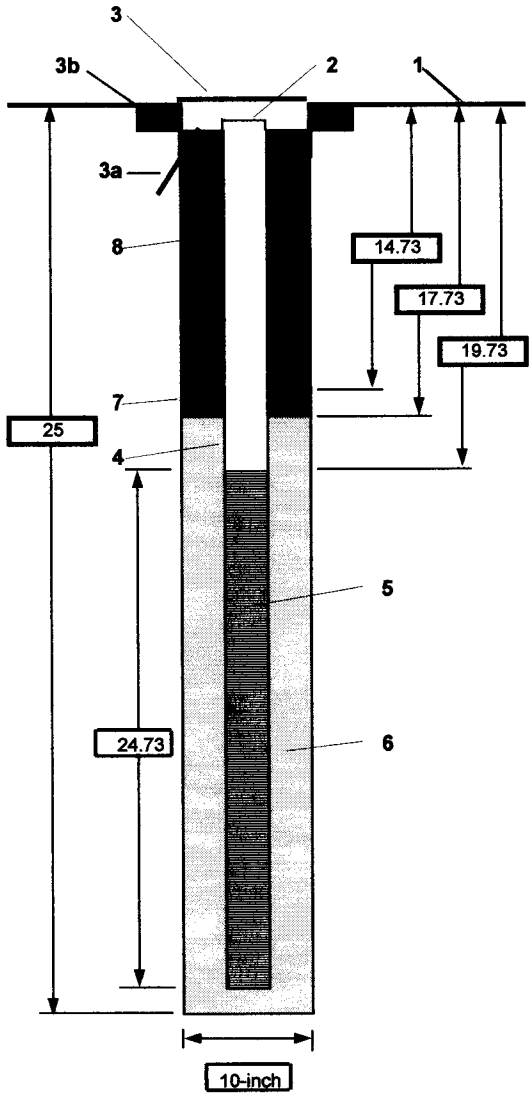
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.73
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 8.97 ft btoc
START : 11/8/00 14:15
END : 15:30
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	14/24	SS-2"	4-3-1-2 (4)	Very Pale Brown (10 YR 8/3), dry, very loose, medium sand (SP), well-sorted, subangular	Headspace = 320 ppm Background = 0.0 ppm Soil Temperature =91 °F
10	10 to 12	24/24	SS-2"	4-5-15-18 (20)	Top 6", limestone ash Bottom 18", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 86.2 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 90 °F
15	15 to 17	24/24	SS-2"	8-2-1-1 (3)	Top 8", lime ash Bottom 16", Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 0.0 ppm Background = 0.0 ppm Soil Temperature = 91 °F
20	20 to 22	24/24	SS-2"	7-8-13-19 (21)	Top 6", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Mid 6", lime Ash Bottom 12", Dark Grayish Brown (10 YR 4/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 88 °F
25	25 to 27	24/24	SS-2"	1-1-2-10 (3)	Dark Grayish Brown (10 YR 4/2), wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular End of Boring at 25.0 ft	Headspace = 326.6 ppm Background = 0.0 ppm Soil Temperature = 90 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-09 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 8.97 ft btoc START : 11/8/00 14:15 END : 15:30 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	114.73
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	69 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537895.28
Easting = 549527.96

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-09 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 10.10 ft btoc START : 11/16/00 10:40 END : 11:49 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No Drawdown Noted

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
10:47	0	12.05	>999	27.7	6.85	0.249	Dark Brown, Salinity = 0.00 OVM = 1.0 ppm, Background = 0.1 ppm
10:55	10	No Reading	>999	29.1	6.33	0.275	Dark Brown, Salinity = 0.00
11:03	16	No Reading	>999	33.6	6.30	0.238	Dark Brown, Salinity = 0.00
11:12	18	No Reading	>999	32.8	6.47	0.234	Dark Brown, Salinity = 0.00 OVM = 0.7 ppm, Background = 0.0 ppm
11:18	25	No Reading	>999	30.5	6.31	0.234	Dark Brown, Salinity = 0.00
11:24	29	No Reading	>999	33.7	6.40	0.226	Dark Brown, Salinity = 0.00
11:34	33	No Reading	>999	33.4	6.74	0.238	Dark Brown, Salinity = 0.00
11:43	39	No Reading	670	30.6	6.56	0.249	Dark Brown, Salinity = 0.00 OVM = 0.9 ppm, Background = 0.0 ppm
11:46	45	No Reading	>999	30.8	6.43	0.220	Dark Brown, Salinity = 0.00
11:49	55	No Reading	>999	31.0	6.45	0.229	Dark Brown, Salinity = 0.00
13:27	---	9.77	---	---	---	---	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-10	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 115.17 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.78 ft btoc — START : 11/9/00 07:45 — END : 10:34 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	20/24	SS-2"	2-3-3-6 (6)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 67.0 ppm Background = 0.0-1.0 ppm Breathing zone, Above borehole = 1.0 ppm Soil Temperature = 76 °F
10	10 to 12	18/24	SS-2"	6-6-18-25 (24)	Top 8", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular, limestone ash present Bottom 10", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 103.6 ppm Background = 0.0-1.0 ppm Soil Temperature = 79 °F
15	15 to 17	20/24	SS-2"	3-2-2-4 (4)	Grayish Brown (10 YR 5/2), wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, with occasional lime ash	Headspace = 118.6 ppm Background = 0.0-1.0 ppm Soil Temperature = 81 °F
20	20 to 22	17/24	SS-2"	4-6-16-16 (22)	Same as above, but medium dense with greater medium sand content	Headspace = 719.1 ppm Background = 2.0-3.0 ppm Breathing zone, Above borehole = 3.0 ppm Soil Temperature = 81 °F
25	25 to 27	24/24	SS-2"	8-14-36-50+ (50)	Top 20", Grayish Brown (10 YR 5/2), wet, dense, silty fine to medium sand, predominantly medium sand (SP/SM), fairly poorly sorted, subangular Bottom 4", Very Dark Grayish Brown (10 YR 3/2), damp, dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace >= 1999 ppm Background = 2.0-3.0 ppm Breathing zone, Above borehole = 6.0 ppm Soil Temperature = 87 °F

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-10	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 115.17 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.78 ft btoc
START : 11/9/00 07:45
END : 10:34
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	24/24	SS-2"	10-9-12-17 (21)	Top 20", Grayish Brown (10 YR 5/2), wet, dense, silty fine to medium sand, predominantly medium sand (SP/SM), fairly poorly sorted, subangular Bottom 4", Very Dark Grayish Brown (10 YR 3/2), damp, dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace >= 1999 ppm Background = 2.0-3.0 ppm Breathing zone, Above borehole = 5.0 ppm Soil Temperature = 89 °F
35	35 to 37	24/24	SS-2"	NR	Light Grayish Brown (10 YR 6/2), wet, loose, silty medium sand (SP/SM), fairly poorly sorted, subangular End of boring at 35.0 ft	Headspace = 1905 ppm Background = 2.0-3.0 ppm Soil Temperature = 89 °F
40						
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-10 SHEET 1 OF 1

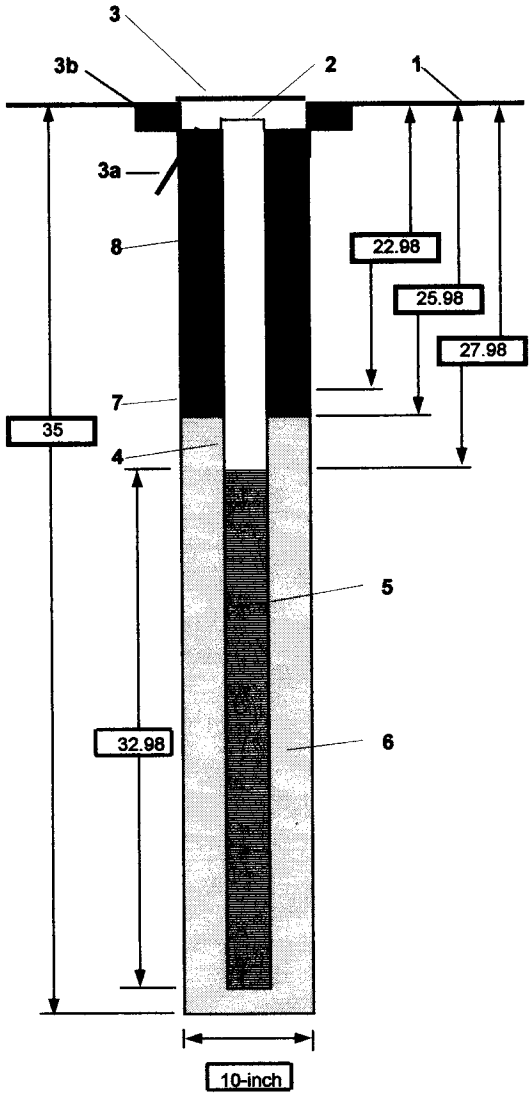
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.78 ft btoc START : 11/9/00 07:45 END : 10:34 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.4
2- Top of casing elevation	115.17
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	21 minutes
Estimated purge volume	55 gallons

Comments

Northing = 1537895.90

Easting = 549504.68

CH2MHILL

PROJECT NUMBER	WELL NUMBER	
152044.32.12.01.08	OLD-36-INJ-10	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 13.72 ft btoc START : 11/17/00 07:50 END : 08:11 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.07 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
7:58	0	13.72	>999	26.1	5.10	0.070	Dark Brown, Salinity = 0.00
8:00	10	No Reading	>999	27.0	5.57	0.257	Dark Brown, Salinity = 0.01 OVM = 9.5 ppm, Background = 6.2 ppm
8:03	20	No Reading	>999	26.2	5.67	0.122	Dark Brown, Salinity = 0.00
8:04	28	No Reading	>999	26.4	5.61	0.123	Dark Brown, Salinity = 0.00 OVM = 5.3 ppm, Background = 4.0 ppm
8:07	35	No Reading	>999	26.5	5.54	0.106	Dark Brown, Salinity = 0.00
8:09	52	No Reading	>999	26.6	5.52	0.101	Dark Brown, Salinity = 0.00
8:15	---	13.79	---	---	---	---	

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-INJ-11	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.66 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.51 ft btoc
START : 11/13/00 08:55
END : 10:15
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	16/24	SS-2"	3-3-5-6 (8)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 225.9 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.5 ppm Soil Temperature = 81 °F
10	10 to 12	10/24	SS-2"	3-8-50+ (58+)	Top 5", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular Bottom 5", Very Dark Grayish Brown (10 YR 3/2), dry, very dense, silty fine to medium sand (SM), fairly poorly sorted, subangular	Headspace = 216.6 ppm Background = 0.0 ppm Soil Temperature = 79 °F
15	15 to 17	24/24	SS-2"	4-2-2-2 (4)	Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine to coarse sand (SP/SM), poorly sorted, subangular to sub-rounded	Headspace = 111.6 ppm Background = 0.0 ppm Soil Temperature = 89 °F
20	20 to 22	22/24	SS-2"	6-8-11-8 (19)	Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 97.4 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 81 °F
25	25 to 27	18/24	SS-2"	28-22+ (22+)	Top 12", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Bottom 6", Brown (10 YR 4/3), damp, dense, very silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 137.3 ppm Background = 0.2 ppm Soil Temperature = 81 °F

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-11	SHEET 2 OF 2

SOIL BORING LOG

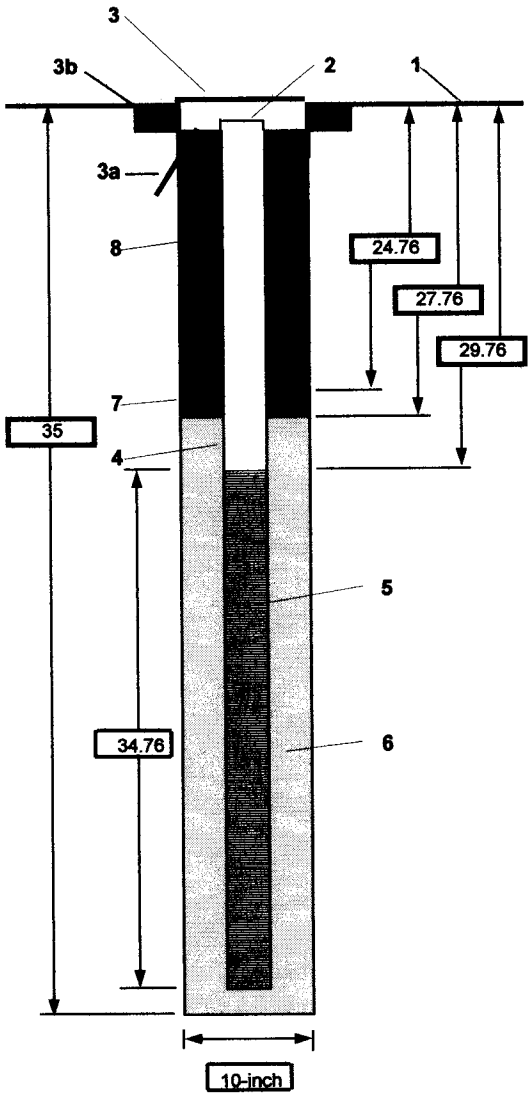
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.66 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.51 ft btoc
START : 11/13/00 08:55
END : 10:15
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	24/24	SS-2"	8-9-8-9 (17)	Brown (10 YR 4/3), damp, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 170.0 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 89 °F
35	35 to 37	20/24	SS-2"	2-4-2-2 (6)	Brown (10 YR 4/3), wet, loose, silty fine to coarse sand (SP/SM), poorly sorted, subangular to sub-rounded End of boring at 35.0 ft	Headspace = 53.5 ppm Background = 0.0 ppm Soil Temperature = 80 °F
40						
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-11 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.51 ft btoc START : 11/13/00 08:55 END : 10:15 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.1
2- Top of casing elevation	114.66
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	23 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537903.21
Easting = 549510.24

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-11 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 13:35 ft btoc START : 11/16/00 14:50 END : 15:13 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No drawdown noted

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
14:54	0	13.35	>999	38.5	6.59	0.261	Dark Brown, Salinity = 0.01 OVM = 0.8 ppm, Background = 0.0 ppm
14:58	10	No Reading					
15:03	20	No Reading	>999	29.6	5.77	0.256	Dark Brown, Salinity = 0.00
15:06	28	No Reading	>999	29.3	5.81	0.231	Dark Brown, Salinity = 0.00
15:10	40	No Reading	>999	29.9	5.76	0.172	Dark Brown, Salinity = 0.00
15:13	55	13.32	>999	29.8	5.74	0.157	Dark Brown, Salinity = 0.00

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-INJ-12	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 114.64 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.28 ft btoc — START : 11/13/00 10:55 — END : 12:05 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	11/24	SS-2"	2-3-4-4 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 4.0 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 85 °F
10	10 to 12	24/24	SS-2"	2-5-14-18 (19)	Top 12", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular Bottom 12", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SM), fairly poorly sorted, subangular	Headspace = 8.5 ppm Background = 0.0 ppm Soil Temperature = 85 °F
15	15 to 17	24/24	SS-2"	4-3-2-2 (5)	Top 14", Grayish Brown (10 YR 5/2), wet, loose, medium sand (SP), well-sorted, subangular Mid 2", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine sand (SM), fairly well-sorted, subangular Bottom 8", Grayish Brown (10 YR 5/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 4.2 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 83 °F
20	20 to 22	22/24	SS-2"	7-8-12-13 (20)	Dark Grayish Brown (10 YR 4/2), wet, medium dense, silty medium to fine sand (SP/SM), fairly poorly sorted, subangular	Headspace = 3.1 ppm Background = 0.0 ppm Soil Temperature = 84 °F
25	25 to 27	24/24	SS-2"	4-6-8-12 (14)	Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty medium to fine sand (SP/SM), fairly poorly sorted, subangular	Headspace = 25.6 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 84 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-INJ-12	SHEET 2 OF 2

SOIL BORING LOG

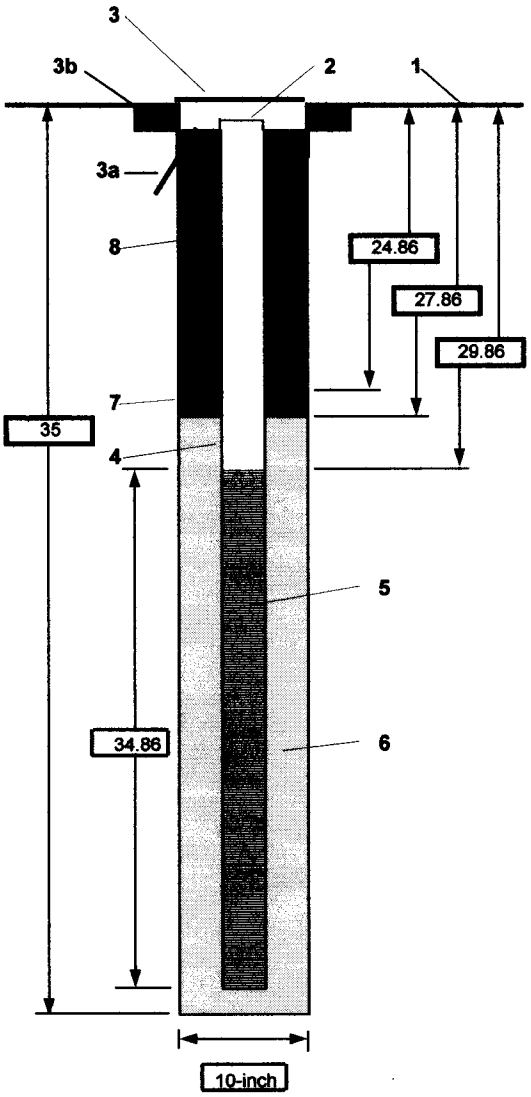
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.64 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.28 ft btoc
START : 11/13/00 10:55
END : 12:05
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	24/24	SS-2"	9-10-12-12 (22)	Top 14", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty medium to fine sand (SP/SM), fairly poorly sorted, subangular Bottom 10", Dark Yellowish Brown (10 YR 4/4), wet, medium dense, silty medium to fine sand (SP/SM), fairly poorly sorted, subangular	Headspace = 29.2 ppm Background = 0.0 ppm Soil Temperature = 87 °F
35	35 to 37	18/24	SS-2"	3-2-2-1 (4)	Top 16.5", Dark Grayish Brown (10 YR 4/2), wet, very loose, silty medium to coarse sand (SP/SM), poorly sorted, sub-rounded Bottom 1.5", Dark Grayish Brown (10 YR 4/2), wet, very loose, silty fine sand with some clay (SM), fairly well-sorted, slightly plastic, subangular	Headspace = 33.6 ppm Background = 0.0 ppm Soil Temperature = 85 °F
40					End of boring at 35.0 ft	
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-12 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.28 ft btoc START : 11/13/00 10:55 END : 12:05 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.1
2- Top of casing elevation	114.64
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	14 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537909.33
Easting = 549515.83

CH2MHILL

PROJECT NUMBER	WELL NUMBER
152044.32.12.01.08	OLD-36-INJ-12 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 13.43 ft btoc START : 11/16/00 15:23 END : 15:37 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No drawdown noted

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
15:24	0	13.43	>999	27.8	5.58	0.249	Dark Brown, Salinity = 0.00 OVM = 0.9 ppm, Background = 0.0 ppm
15:25	12	No Reading	>999	27.7	5.50	0.158	Dark Brown, Salinity = 0.00
15:29	24	No Reading	>999	27.7	5.42	0.134	Dark Brown, Salinity = 0.00
15:30	32	No Reading	>999	27.5	5.36	0.119	Dark Brown, Salinity = 0.00
15:33	35	No Reading	>999	27.6	5.34	0.116	Dark Brown, Salinity = 0.00
15:37	55	13.30	>999	27.5	5.30	0.114	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-13	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 115.05 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 9.78 ft btoc — START : 11/9/00 10:50 — END : 11:44 — LOGGER : Kim-Lee Murphy

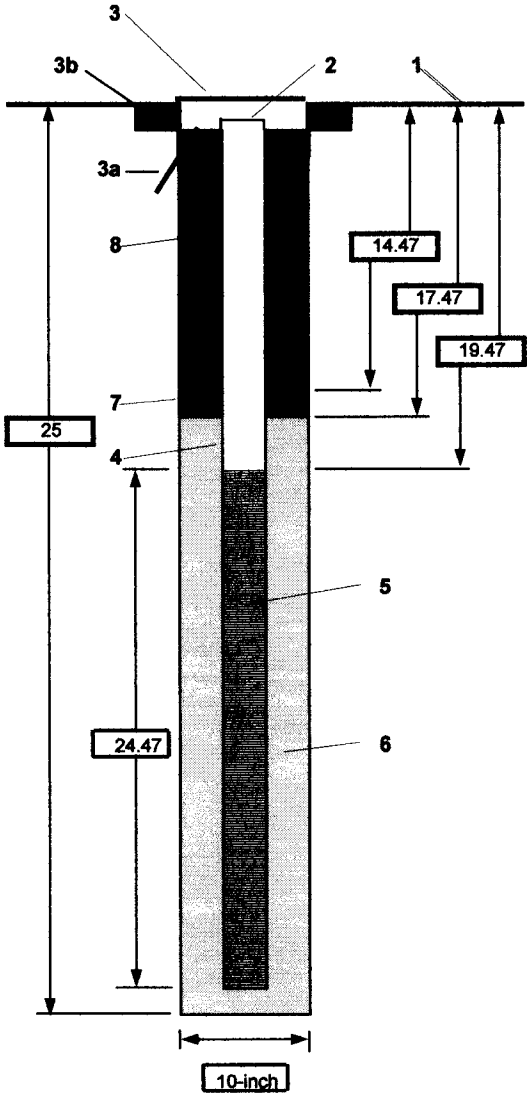
DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	19/24	SS-2"	4-4-4-6 (8)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 322 ppm Breathing zone, Above borehole = 0.2 ppm Background = 0.0 ppm Soil Temperature = 83 °F
10	10 to 12	24/24	SS-2"	4-7-13-16 (20)	Top 12", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular Bottom 12", Very Dark Grayish Brown (10 YR 3/2), damp to wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 371.4 ppm Background = 0.0 ppm Soil Temperature = 83 °F
15	15 to 17	24/24	SS-2"	5-4-2-1 (6)	Top 8", Very Pale Brown (10 YR 8/3 damp to wet, loose, silty medium sand (SP), fairly well-sorted, subangular Bottom 16", Very Dark Brown (10 YR 2/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 132.6 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 83 °F
20	20 to 22	24/24	SS-2"	9-10-10-13 (20)	Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 76.5 ppm Background = 0.0 ppm Soil Temperature = 82 °F
25	25 to 27	24/24	SS-2"	NR	Same as above End of Boring at 25.0 ft	Headspace = 222 ppm Background = 0.0 ppm Soil Temperature = 85 °F

PROJECT NUMBER	WELL NUMBER	
152044.32.12.01.08	OLD-36-INJ-13	SHEET 1 OF 1

CH2MHILL

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.78 ft btoc START : 11/9/00 10:50 END : 11:44 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.3
2- Top of casing elevation	115.05
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	19 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537929.01
Easting = 549511.38

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-13 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 10.12 ft btoc START : 11/16/00 15:42 END : 16:01 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.15 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
15:42	0	10.12	>999	29.1	8.09	0.478	Dark Brown, Salinity = 0.01 OVM = 0.5 ppm, Background = 0.0 ppm
15:45	10	No Reading	>999	29.8	7	0.240	Dark Brown, Salinity = 0.00
15:52	17	No Reading	>999	28.6	6.58	0.315	Dark Brown, Salinity = 0.01
15:54	30	No Reading	>999	28.5	5.69	0.127	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
15:59	40	No Reading	>999	29.2	5.65	0.105	Dark Brown, Salinity = 0.00
16:01	55	10.27	>999	28.9	5.63	0.120	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-14	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.94 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.74 ft btoc
START : 11/9/00 15:35
END : 16:20
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	18/24	SS-2"	2-2-4-3 (6)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 322 ppm Breathing zone, Above borehole = 0.2 ppm Background = 0.0 ppm Soil Temperature = 83 °F
10	10 to 12	18/24	SS-2"	5-8-10-10 (18)	Top 9", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular, mottled in color Bottom 9", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 371.4 ppm Background = 0.0 ppm Soil Temperature = 83 °F
15	15 to 17	16/24	SS-2"	4-4-3-2 (7)	Top 6", Very Dark Grayish Brown (10 YR 3/2) wet, loose, silty medium sand (SP), fairly well-sorted, subangular Bottom 10", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 132.6 ppm Breathing zone, Above borehole = 0.0 ppm Background = 0.0 ppm Soil Temperature = 83 °F
20	20 to 22	20/24	SS-2"	8-13-13-5 (26)	Same as above, but medium dense	Headspace = 76.5 ppm Background = 0.0 ppm Soil Temperature = 82 °F
25	25 to 27	24/24	SS-2"	4-5-9-10 (14)	Same as above, increase in silt content with depth End of Boring at 25.0 ft	Headspace = 222 ppm Background = 0.0 ppm Soil Temperature = 85 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-14 SHEET 1 OF 1

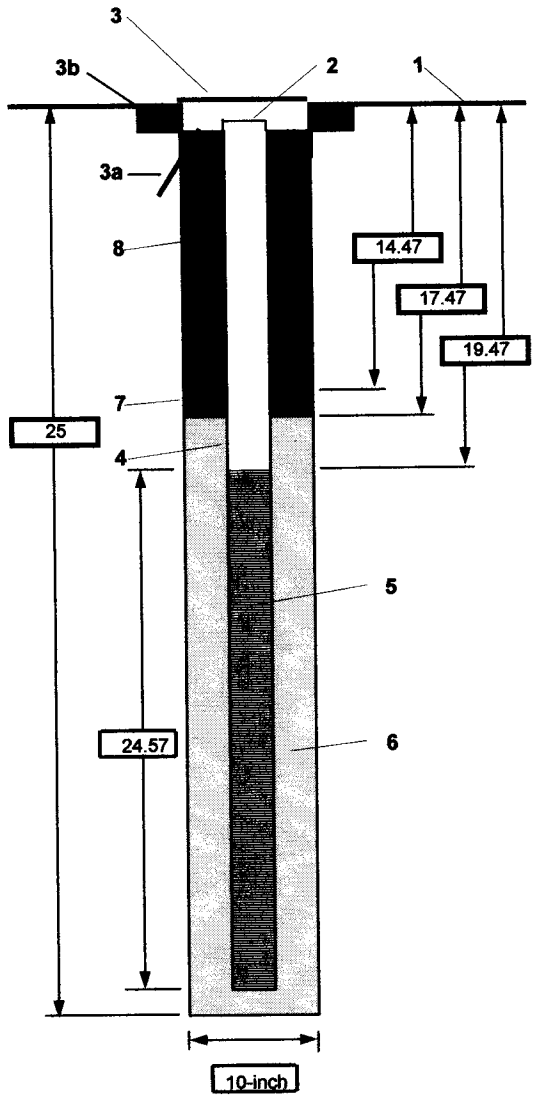
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 9.74 ft btoc START : 11/9/00 15:35 END : 16:20 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	114.94
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	14 minutes
Estimated purge volume	55 gallons

Comments

Northing = 1537933.26

Easting = 549517.36

CH2MHILL

PROJECT NUMBER	WELL NUMBER
152044.32.12.01.08	OLD-36-INJ-14 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 10.27 ft btoc START : 11/16/00 16:06 END : 16:20 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No drawdown noted

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
16:07	0	10.27	>999	27.8	5.02	0.084	Dark Brown, Salinity = 0.00 OVM = 0.5 ppm, Background = 0.0 ppm
16:08	12	No Reading	>999	28.2	4.87	0.077	Dark Brown, Salinity = 0.00
16:11	20	No Reading	>999	28.1	4.73	0.075	Dark Brown, Salinity = 0.00
16:12	28	No Reading	>999	28.4	4.7	0.070	Dark Brown, Salinity = 0.00
16:17	45	No Reading	>999	28.1	4.65	0.070	Dark Brown, Salinity = 0.00
16:25	---	10.08	---	---	---	---	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-INJ-15	SHEET 1 OF 1

SOIL BORING LOG

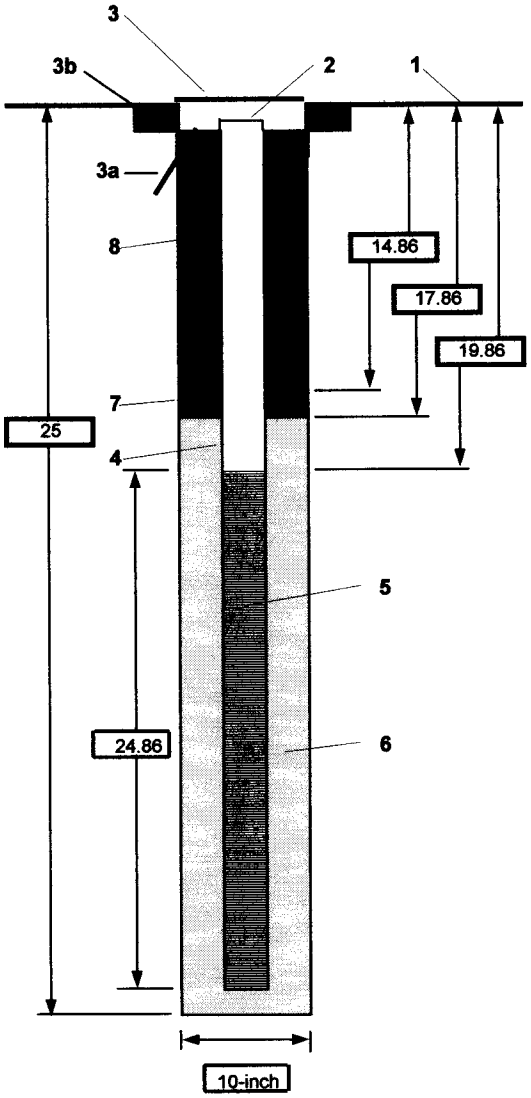
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 114.92 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.76 ft btoc
START : 11/10/00 07:40
END : 08:51
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	16/24	SS-2"	4-4-5-6 (9)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 119.5 ppm Breathing zone, Above borehole = 6.0 ppm Background = 6.0 ppm** Soil Temperature = 76 °F
10	10 to 12	18/24	SS-2"	2-10-15-20 (25)	Top 4", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular Bottom 14", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 120.0 ppm Background = 6.0 ppm** Soil Temperature = 77 °F
15	15 to 17	22/24	SS-2"	4-2-4-2 (6)	Top 6", Very Dark Grayish Brown (10 YR 3/2) wet, loose, medium sand (SP), well-sorted, subangular Bottom 16", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 83.0 ppm Breathing zone, Above borehole = 6.0 ppm Background = 6.0 ppm** Soil Temperature = 78 °F
20	20 to 22	24/24	SS-2"	6-14-14-20 (28)	Same as above, but medium dense, limestone ash present	Headspace = 63.5 ppm Background = 6.0 ppm** Soil Temperature = 76 °F
25	25 to 27	24/24	SS-2"	4-4-10-10 (14)	Same as above, increase in silt content with depth End of Boring at 25.0 ft	Headspace = 83.4 ppm Background = 6.0 ppm** Soil Temperature = 76 °F **Occasional Drizzle. PID not reading background properly in high air moisture

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-15 SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 9.76 ft btoc START : 11/10/00 07:40 END : 08:51 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	114.92
3- Wellhead protection cover type	Flushmount manhole cover
a) drain tube?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter Stainless Steel
5- Type/slot size of screen	2-inch diameter Stainless steel, 0.010-inch slot screen
6- Type screen filter	20/30 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	66 minutes
Estimated purge volume	55 gallons

Comments
Northing = 1537938.09
Easting = 549523.23

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-INJ-15 SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 9.97 ft btoc START : 11/17/00 07:25 END : 07:36 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.13 ft

TOTAL QUANTITY OF WATER DISCHARGED: 55 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
7:27	0	9.97	>999	26.7	4.87	0.121	Dark Brown, Salinity = 0.00 OVM = 0.5 ppm, Background = 0.0 ppm
7:30	17	No Reading	>999	26.5	4.69	0.084	Dark Brown, Salinity = 0.00
7:32	28	No Reading	>999	27.2	4.75	0.071	Dark Brown, Salinity = 0.00
7:33	40	No Reading	>999	27.5	4.78	0.07	Dark Brown, Salinity = 0.00
7:36	55	10.10	>999	27.2	4.87	0.067	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-26A	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 117.89 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 12.40 ft btoc
START : 11/8/00 09:00
END : 10:00
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	22/24	SS-2"	3-3-3-3 (6)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 673 ppm Background = 0.0 - 0.5 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 84 °F
10	10 to 12	22/24	SS-2"	3-5-17-34 (22)	Top 11", Very Pale Brown (10 YR 8/3) to Gray (10 YR 5/1), damp, loose, medium sand (SP), well-sorted, subangular Bottom 11", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 823.9 ppm Background = 0.0 - 0.5 ppm Soil Temperature = 85 °F
15	15 to 17	24/24	SS-2"	2-1-1-2 (2)	Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, mottled in color	Headspace = 272.2 ppm Background = 0.0 - 0.5 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 83 °F
20	20 to 22	24/24	SS-2"	4-4-9-17 (13)	Same as above, but medium dense End of Boring at 20.0 ft	Headspace = 253.9 ppm Background = 0.0 - 0.5 ppm Soil Temperature = 84 °F
25						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-26A	SHEET 1 OF 1

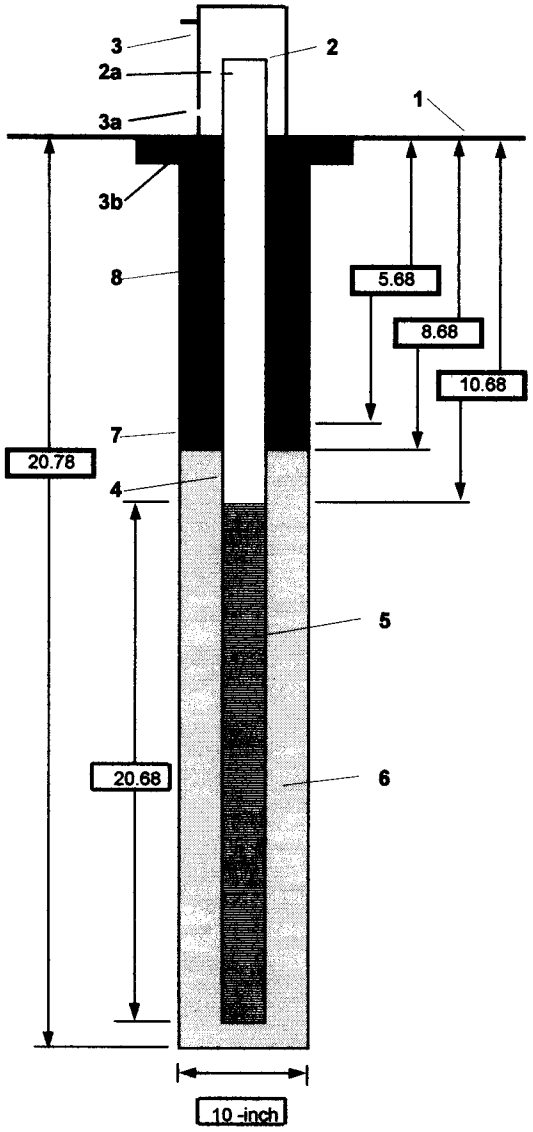
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 12.40 ft btoc START : 11/8/00 09:00 END : 10:00 LOGGER : Kim-Lee Murphy



1- Ground elevation at well: 115.5

2- Top of casing elevation: 117.89
a) vent hole?: No

3- Wellhead protection cover type: 4-inch Steel Sleeve above grade protector
a) weep hole?: No
b) concrete pad dimensions: 2-ft by 2-ft

4- Dia./type of well casing: 2-inch diameter PVC

5- Type/slot size of screen: 2-inch diameter PVC, 0.010-inch slot screen

6- Type screen filter: 30/45 Standard Silica Sand
a) Quantity used: 8 50-pound bags

7- Type of seal: Pre-hydrated Bentonite (Kwikgel)
a) Quantity used: 12.5 pounds
30/65 Standard Silica Sand
b) Quantity used: 25 pounds

8- Grout
a) Grout mix used: Holnam 1 Portland Cement with Kwikgel
b) Method of placement: Tremie Pipe
c) Vol. of well casing grout: 4 92.6-pound bags

Development method: Swabbing with Surge Block and Pumping

Development time: 24 minutes

Estimated purge volume: 110 gallons

Comments
Northing = 1537878.13
Easting = 549510.67

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-26A	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 12.46 ft btoc START : 11/20/00 13:05 END : 13:29 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.32 ft

TOTAL QUANTITY OF WATER DISCHARGED: 110 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
13:10	0	12.46	>999	25.4	5.23	0.106	Dark Brown, Salinity = 0.00
13:13	17	No Reading	>999	25.5	5.36	0.101	Dark Brown, Salinity = 0.00
13:17	32	No Reading	>999	27.3	5.41	0.102	Dark Brown, Salinity = 0.00
13:20	55	No Reading	>999	26.6	5.35	0.113	Dark Brown, Salinity = 0.00 OVM = 102.9 ppm, Background = 3.7 ppm
13:23	70	No Reading	>999	26.8	5.28	0.114	Dark Brown, Salinity = 0.00
13:26	80	No Reading	>999	26.3	5.31	0.107	Dark Brown, Salinity = 0.00 OVM = 307.5 ppm, Background = 3.7 ppm
13:29	110	12.78	>999	26.4	5.22	0.107	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-27A	SHEET 1 OF 1

SOIL BORING LOG

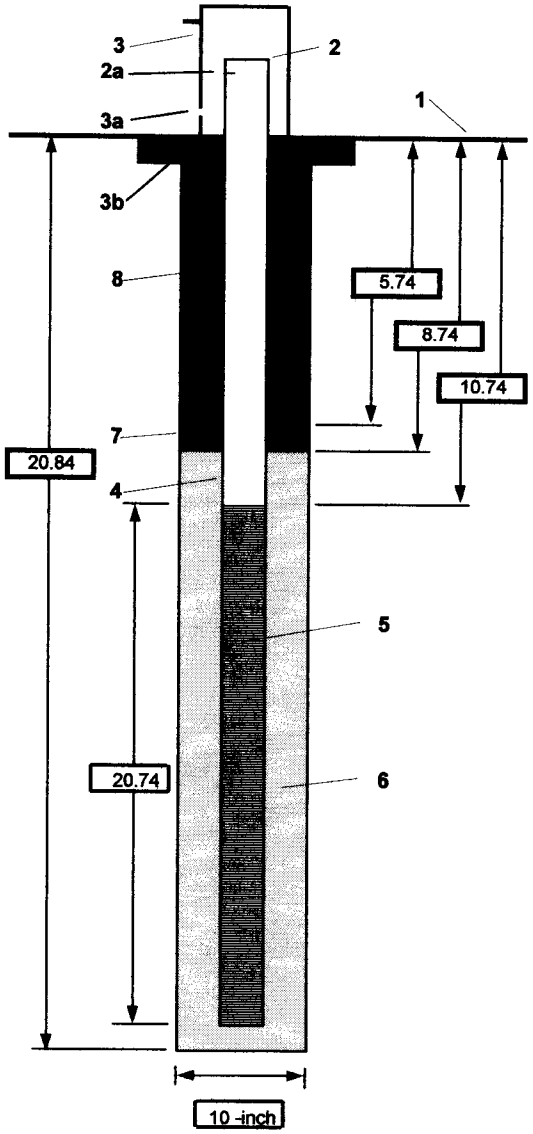
PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 118.01 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 12.61 ft btoc
START : 11/8/00 15:55
END : 16:36
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	24/24	SS-2"	2-4-4-6 (8)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 0.0 ppm** Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 84 °F
10	10 to 12	17/24	SS-2"	4-5-16-18 (21)	Top 2", Very Pale Brown (10 YR 8/3), damp, loose, medium sand (SP), well-sorted, subangular Mid 1", Limestone Ash Bottom 14", Dark Grayish Brown (10 YR 4/2) damp to wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 0.0 ppm** Background = 0.0 ppm Soil Temperature = 82 °F
15	15 to 17	24/24	SS-2"	5-2-1-3 (3)	Dark Grayish Brown (10 YR 4/2), damp to wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 287.9 ppm** Background = 0.0 ppm Soil Temperature = 82 °F
20	20 to 22	24/24	SS-2"	1-4-8-12 (12)	Same as above, but medium dense with sporadic lime ash End of Boring at 20.0 ft	Background = 287.9 ppm** Soil Temperature = 81 °F
25						** PID has low battery. Does NOT appear to be working properly.

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-27A	SHEET 1 OF 1

WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 12.61 ft btoc START : 11/8/00 15:55 END : 16:36 LOGGER : Kim-Lee Murphy



1- Ground elevation at well: 115.4

2- Top of casing elevation: 118.01
a) vent hole?: No

3- Wellhead protection cover type: 4-inch Steel Sleeve above grade protector
a) weep hole?: No
b) concrete pad dimensions: 2-ft by 2-ft

4- Dia./type of well casing: 2-inch diameter PVC

5- Type/slot size of screen: 2-inch diameter PVC, 0.010-inch slot screen

6- Type screen filter: 30/45 Standard Silica Sand
a) Quantity used: 8 50-pound bags

7- Type of seal: Pre-hydrated Bentonite (Kwikgel)
a) Quantity used: 12.5 pounds
30/65 Standard Silica Sand
b) Quantity used: 25 pounds

8- Grout
a) Grout mix used: Holnam 1 Portland Cement with Kwikgel
b) Method of placement: Tremie Pipe
c) Vol. of well casing grout: 4 92.6-pound bags

Development method: Swabbing with Surge Block and Pumping

Development time: 40 minutes

Estimated purge volume: 36 gallons

Comments
Northing = 1537896.05
Easting = 549508.93

CH2MHILL

PROJECT NUMBER	WELL NUMBER
152044.32.12.01.08	OLD-36-27A SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 12.77 ft btoc START : 11/20/00 10:30 END : 11:10 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: dry

TOTAL QUANTITY OF WATER DISCHARGED: 36 gallons

DISPOSITION OF DISCHARGE WATER: Clear

Note: Well continuously purging dry every few minutes. Well pumped dry 5 times.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
10:35	0	12.46	>999	24.2	6.11	0.373	Dark Brown, Salinity = 0.01
10:37	2	No Reading	>999	23.8	6.26	0.413	Dark Brown, Salinity = 0.01
10:42	8	No Reading	>999	25.8	6.36	0.456	Dark Brown, Salinity = 0.01
10:48	13	No Reading	>999	26.6	6.42	0.438	Dark Brown, Salinity = 0.01
10:54	16	No Reading	>999	27.2	6.66	0.435	Dark Brown, Salinity = 0.01
10:58	18	No Reading	770	25.2	6.56	0.416	Dark Brown, Salinity = 0.01
11:05	30	No Reading	170	27.9	6.65	0.430	Very Light Brown, Salinity = 0.01
11:10	36	Dry	114	25.8	6.67	0.428	Very Light Brown, Salinity = 0.01
11:25	—	13.30	—	—	—	—	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-28B	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 117.97 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.29 ft btoc — START : 11/10/00 09:30 — END : 11:24 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	17/24	SS-2"	3-3-3-5 (6)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 47.8 ppm Background = 0.0 - 0.2 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 80 °F
10	10 to 12	20/24	SS-2"	7-8-21-19 (29)	Top 8", Grayish Brown (10 YR 5/2), damp, medium dense, silty medium sand (SP/SM), fairly poorly sorted, subangular Bottom 12", Very Dark Brown (10 YR 2/2), wet, medium dense, silty fine sand (SM), fairly well sorted, subangular	Headspace = 75.0 ppm Background = 0.0 - 0.2 ppm Soil Temperature = 81 °F
15	15 to 17	20/24	SS-2"	2-2-3-3 (5)	Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 52.5 ppm Background = 0.0 - 0.2 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 81 °F
20	20 to 22	14/24	SS-2"	5-10-11-10 (21)	Same as above, but medium dense, predominantly medium sand	Headspace = 47.3 ppm Background = 0.0 - 0.2 ppm Soil Temperature = 81 °F
25	25 to 27	24/24	SS-2"	3-3-15-11 (18)	Same as above, increase in silt content with depth End of Boring at 25.0 ft	Headspace = 37.0 ppm Background = 0.0 - 0.2 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 81 °F

PROJECT NUMBER	WELL NUMBER	
152044.32.12.01.08	OLD-36-28B	SHEET 1 OF 1

CH2MHILL

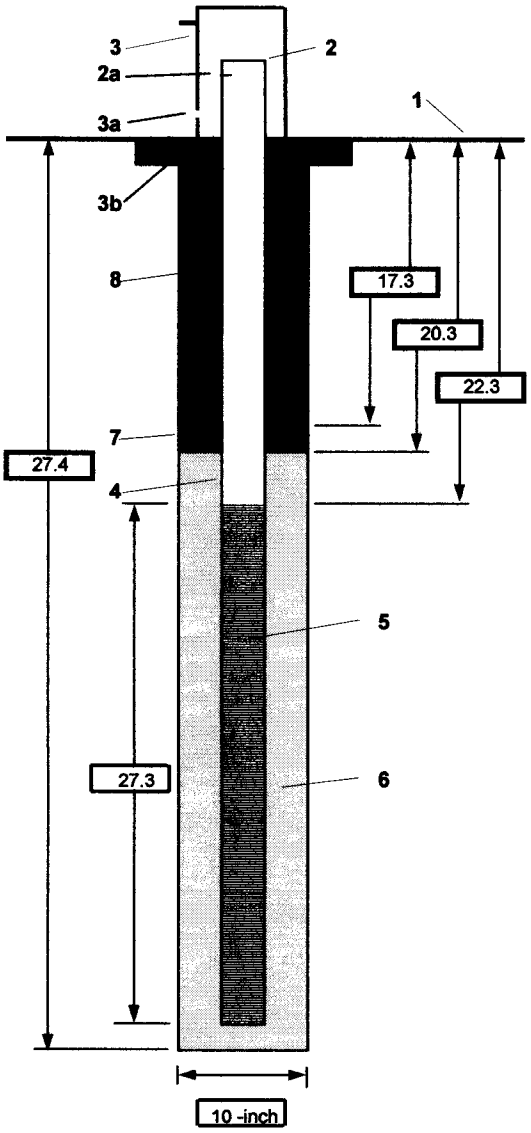
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.29 ft btoc START : 11/10/00 09:30 END : 11:24 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.0
2- Top of casing elevation	117.97
a) vent hole?	No
3- Wellhead protection cover type	4-inch Steel Sleeve above grade protector
a) weep hole?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter PVC
5- Type/slot size of screen	2-inch diameter PVC, 0.010-inch slot screen
6- Type screen filter	30/45 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	55 minutes
Estimated purge volume	17 gallons

Comments

Northing = 1537899.26

Easting = 549507.42

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-28B	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 13.05 ft btoc START : 11/20/00 09:23 END : 10:25 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: dry

TOTAL QUANTITY OF WATER DISCHARGED: 17 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Note: Well continuously purging dry every minute, even with lower flow rate. Well pumped dry over 7 times.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
9:25	0	13.05	>999	24.4	5.89	0.428	Dark Brown, Salinity = 0.01
10:04	12	No Reading	>999	33.2	6.44	0.635	Dark Brown, Salinity = 0.02 OVM = 24.6 ppm, Background = 4.9 ppm
10:09	15	No Reading	>999	31.3	6.76	0.606	Dark Brown, Salinity = 0.02
10:15	16	No Reading	>999	33.4	6.87	0.567	Dark Brown, Salinity = 0.02
10:35	—	16.00	—	—	—	—	

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-29B	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 117.63 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 12.75 ft btoc
START : 11/10/00 12:55
END : 14:30
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	18/24	SS-2"	3-3-4-5 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 17.6 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 88 °F
10	10 to 12	20/24	SS-2"	4-6-10-11 (16)	Top 2", Very Pale Brown (10 YR 8/3) to Gray (10 YR 5/1), damp, medium dense, medium sand (SP), well-sorted, subangular Bottom 18", Very Dark Grayish Brown (10 YR 3/2), damp to wet, medium dense, silty fine to medium sand (SP/SM), fairly well-sorted, subangular	Headspace = 10.0 ppm Background = 0.0 ppm Soil Temperature = 90 °F
15	15 to 17	14/24	SS-2"	3-2-1-2 (3)	Very Dark Grayish Brown (10 YR 3/2), damp to wet, very loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 25.3 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 91 °F
20	20 to 22	24/24	SS-2"	10-13-11-11 (24)	Same as above, but medium dense	Headspace = 6.1 ppm Background = 0.0 ppm Soil Temperature = 91 °F
25	25 to 27	24/24	SS-2"	NR	Same as above, increase in silt content with depth End of Boring at 25.0 ft	Headspace = 19.5 ppm Background = 0.0 ppm Soil Temperature = 92 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-29B	SHEET 1 OF 1

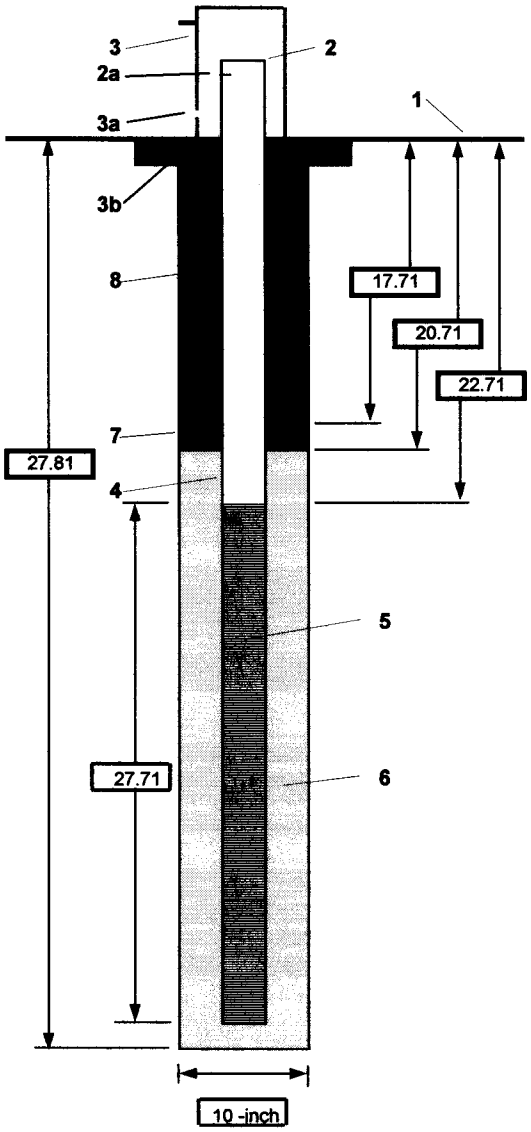
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 12.75 ft btoc START : 11/10/00 12:55 END : 14:30 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.0
2- Top of casing elevation	117.63
a) vent hole?	No
3- Wellhead protection cover type	4-inch Steel Sleeve above grade protector
a) weep hole?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter PVC
5- Type/slot size of screen	2-inch diameter PVC, 0.010-inch slot screen
6- Type screen filter	30/45 Standard Silica Sand
a) Quantity used	7 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	12.5 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	5 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	2 hours 14 minutes
Estimated purge volume	17 gallons

Comments

Northing = 1537906.11

Easting = 549502.66

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-29B	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 12.77 ft btoc START :11/17/00 09:20 END :11/20/00 10:30 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: dry

TOTAL QUANTITY OF WATER DISCHARGED: 45 gallons

DISPOSITION OF DISCHARGE WATER: Turbid, H_2S Odor

OVM readings taken above water purging out of well into 55-gallon drum.

****Pump not working efficiently, pulling air. Decided to continue another day.**

Note: Well continuously purging dry. Well pumped dry over 4 times.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
11/17/00** 9:22	0	15.40	>999	27.1	5.80	0.101	Dark Brown, Salinity = 0.00 OVM = 3.2 ppm, Background = 1.0 ppm
11/20/00 8:41	12	12.94	>999	27.3	5.61	0.323	Sulfur Odor Dark Brown, Salinity = 0.00
9:00	25	No Reading	>999	29.9	6.11	0.242	Sulfur Odor Dark Brown, Salinity = 0.00
10:26	40	No Reading	>999	27.3	6.53	0.252	Sulfur Odor Dark Brown, Salinity = 0.00
10:29	45	No Reading	>999	28.1	6.40	0.244	Sulfur Odor Dark Brown, Salinity = 0.00
10:39	—	19.75	—	—	—	—	

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-30C	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 117.94 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 16.18 ft btoc — START : 11/9/00 15:20 — END : 16:25 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
					Boring is located 2 ft Northwest of OLD-36-INJ-06 and 2 ft East of OLD-36-INJ-08. Refer to these soil boring logs for 0 - 20 ft bls stratigraphy	
5						
10						
15						
20						
25	25 to 27	22/24	SS-2"	5-9-15-12+ (24)	Top 16", Brown (10 YR 4/3), damp, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, mottled in color Bottom 6", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 32.9 ppm Background = 0.0 - 1.1 ppm Breathing zone, Above borehole = 0.5 ppm Soil Temperature = 82 °F

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-30C	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : T117.94 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 16.18 ft btoc
START : 11/9/00 15:20
END : 16:25
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	23/24	SS-2"	4-5-2-5 (7)	Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 17.6 ppm Background = 0.0 - 1.1 ppm Soil Temperature = 84 °F
35	35 to 37	22/24	SS-2"	1-2-3-3 (5)	Top 14", Very Dark Grayish Brown (10 YR 3/2), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Bottom 8", Light Yellowish Brown (10YR 6/4), wet, loose, silty fine to coarse sand (SP/SM), poorly sorted, subangular End of boring at 35.0 ft	Headspace = 17.6 ppm Background = 0.0 - 1.1 ppm Soil Temperature = 81 °F
40						
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-30C	SHEET 1 OF 1

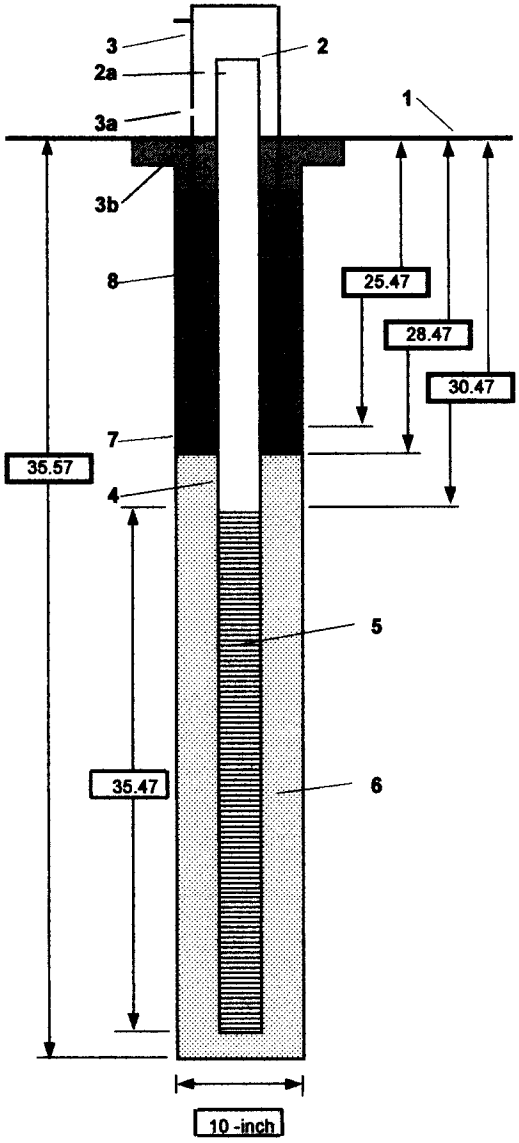
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 16.18 ft btoc START : 11/9/00 15:20 END : 16:25 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.2
2- Top of casing elevation	117.94
a) vent hole?	No
3- Wellhead protection cover type	4-inch Steel Sleeve above grade protector
a) weep hole?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter PVC
5- Type/slot size of screen	2-inch diameter PVC, 0.010-inch slot screen
6- Type screen filter	30/45 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	14 minutes
Estimated purge volume	110 gallons

Comments

Northing = 1537889.96

Easting = 549525.96

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-30C	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 16.69 ft btoc START : 11/20/00 12:39 END : 13:01 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.08 ft

TOTAL QUANTITY OF WATER DISCHARGED: 110 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
12:47	0	16.69	>999	25.0	5.23	0.271	Dark Brown, Salinity = 0.00
12:51	25	No Reading	>999	24.9	5.30	0.178	Dark Brown, Salinity = 0.00 OVM = 6.7 ppm, Background = 4.2 ppm
12:53	40	No Reading	>999	25.7	5.44	0.134	Dark Brown, Salinity = 0.00
12:56	70	No Reading	>999	26.0	5.44	0.118	Dark Brown, Salinity = 0.00
12:57	80	No Reading	>999	25.6	5.37	0.112	Dark Brown, Salinity = 0.00
12:59	90	No Reading	>999	26.3	5.39	0.102	Dark Brown, Salinity = 0.00
13:01	110	16.77	>999	25.9	5.38	0.100	Dark Brown, Salinity = 0.00

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-31C	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 117.80 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 14.59 ft btoc — START : 11/13/00 13:08 — END : 14:30 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	10/24	SS-2"	3-3-4-5 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 32.9 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 83 °F
10	10 to 12	20/24	SS-2"	3-10-17-10 (27)	Top 16", Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular, mottled in color Bottom 8", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 18.8 ppm Background = 0.0 ppm Soil Temperature = 83 °F
15	15 to 17	18/24	SS-2"	4-5-8-6 (13)	Top 10", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular, mottled in color Bottom 8", Very Dark Grayish Brown (10 YR 3/2), wet, medium dense, silty fine sand (SM), fairly well-sorted, subangular	Headspace = 30.0 ppm Background = 0.0 ppm Soil Temperature = 85 °F
20	20 to 22	22/24	SS-2"	5-7-10-15 (17)	Dark Grayish Brown (10 YR 4/3), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 14.9 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 85 °F
25	25 to 27	20/24	SS-2"	3-3-2-2 (5)	Dark Grayish Brown (10 YR 4/3), wet, loose, silty fine to medium sand, predominantly medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 15.5 ppm Background = 0.0 ppm Soil Temperature = 83 °F

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-31C	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 117.80 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 14.59 ft btoc — START : 11/13/00 13:08 — END : 14:30 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	24/24	SS-2"	6-5-7-6 (12)	Top 12", Dark Grayish Brown (10 YR 4/3), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular Bottom 12", Dark Yellowish Brown (10YR 4/4), wet, medium dense, silty fine to medium sand increase in silt content (SP/SM), fairly poorly sorted, subangular	Headspace = 19.0 ppm Background = 0.0 ppm Breathing zone, Above borehole = 0.0 ppm Soil Temperature = 89 °F
35	35 to 37	14/24	SS-2"	NR	Dark Yellowish Brown (10YR 4/4), wet, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	
					End of boring at 35.0 ft	
40						
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-31C	SHEET 1 OF 1

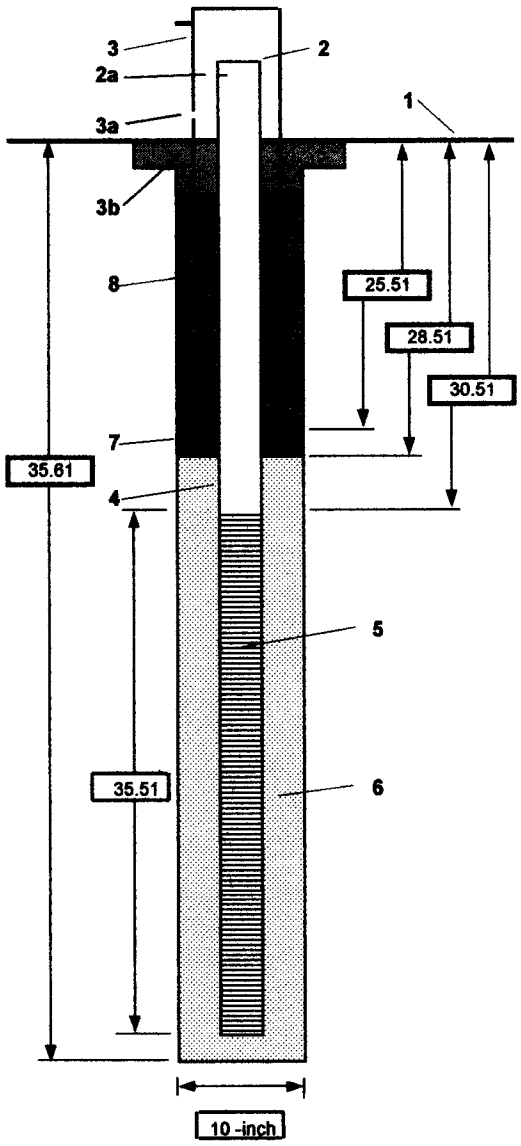
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.81 ft btoc START : 11/14/00 08:30 END : 10:04 LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.1
2- Top of casing elevation	117.8
a) vent hole?	No
3- Wellhead protection cover type	4-inch Steel Sleeve above grade protector
a) weep hole?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter PVC
5- Type/slot size of screen	2-inch diameter PVC, 0.010-inch slot screen
6- Type screen filter	30/45 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	19 minutes
Estimated purge volume	110 gallons

Comments

Northing = 1537893.95

Easting = 549520.86

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-31C	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 16.85 ft btoc START : 11/20/00 11:41 END : 12:00 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: No drawdown noted

TOTAL QUANTITY OF WATER DISCHARGED: 110 gallons

DISPOSITION OF DISCHARGE WATER: Turbid, Sulfur Odor

OVM readings taken above water purging out of well into 55-gallon drum.

Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
11:42	0	16.85	>999	25.0	5.23	0.155	Sulfur Odor Dark Brown, Salinity = 0.00
11:48	17	No Reading	>999	26.2	5.22	0.110	Sulfur Odor Dark Brown, Salinity = 0.00
11:50	34	No Reading	>999	25.3	5.39	0.097	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
11:55	70	No Reading	>999	25.7	5.28	0.086	Sulfur Odor Dark Brown, Salinity = 0.00
11:56	80	No Reading	>999	25.5	5.23	0.085	Sulfur Odor Dark Brown, Salinity = 0.00
11:58	95	No Reading	>999	25.9	5.19	0.081	Sulfur Odor Dark Brown, Salinity = 0.00
12:05	—	16.70	>999	—	—	—	

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	BORING NUMBER OLD-36-32C	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

ELEVATION : 117.97 TOC — DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.81 ft btoc — START : 11/14/00 08:30 — END : 10:04 — LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Headspace Analysis
5	5 to 7	16/24	SS-2"	3-3-4-5 (7)	Very Pale Brown (10 YR 8/3), dry, loose, medium sand (SP), well-sorted, subangular	Headspace = 17.6 ppm Background = 2.0 ppm Breathing zone, Above borehole = 2.0 ppm Soil Temperature = 74 °F
10	10 to 12	20/24	SS-2"	5-5-8-10 (13)	Top 12", Very Pale Brown (10 YR 8/3), dry, medium dense, medium sand (SP), well-sorted, subangular Bottom 8", Very Dark Grayish Brown (10 YR 3/2), damp, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 35.6 ppm Background = 2.0 ppm Soil Temperature = 76 °F
15	15 to 17	24/24	SS-2"	1-1-1-8 (2)	Top 12", Very Pale Brown (10 YR 8/3), dry, very loose, medium sand (SP), well-sorted, subangular Mid 8", Very Dark Grayish Brown (10 YR 3/2), wet, very loose, silty fine sand, some medium sand (SM), fairly poorly sorted, subangular Bottom 4", Grayish Brown (10 YR 5/2), wet, very loose, silty medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 25.4 ppm Background = 2.0 ppm Breathing zone, Above borehole = 2.0 ppm Soil Temperature = 76 °F
20	20 to 22	24/24	SS-2"	4-10-17-16 (27)	Dark Grayish Brown (10 YR 4/2), wet, medium dense, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular	Headspace = 39.3 ppm Background = 2.0 ppm Soil Temperature = 77 °F
25	25 to 27	24/24	SS-2"	8-25-25+ (50+)	Dark Grayish Brown (10 YR 4/2), wet, very dense, silty fine to medium sand, great increase in silt content in bottom 8" of spoon (SP/SM), fairly poorly sorted, subangular	Headspace = 88.1 ppm Background = 2.0 ppm Soil Temperature =78 °F

CH2MHILL

PROJECT NUMBER	BORING NUMBER	
152044.32.12.01.08	OLD-36-32C	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Naval Training Center, Orlando
LOCATION : SA-36
ELEVATION : 117.97 TOC
DRILLING CONTRACTOR : Groundwater Protection
DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler
WATER LEVELS : 13.81 ft btoc
START : 11/14/00 08:30
END : 10:04
LOGGER : Kim-Lee Murphy

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (IN)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION. OVM (ppm): Breathing Zone Headspace
30	30 to 32	24/24	SS-2"	2-2-4-5 (6)	Brown (10 YR 5/3), wet, loose, silty fine to medium sand (SP/SM), fairly poorly sorted, subangular, becoming plastic	Headspace = 114.8 ppm Background = 1.0 ppm (Re-calibrated MinieRae PID using Zero Gas Calibration) Soil Temperature = 79 °F
35	35 to 37	24/24	SS-2"	1-1-1-2 (2)	Same as above, but very loose with increase in silt and clay content with depth	Headspace = 57.2 ppm Background = 1.0 ppm Breathing zone, Above borehole = 1.2 ppm Soil Temperature = 75 °F
					End of boring at 35.0 ft	
40						
45						
50						

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-32C	SHEET 1	OF 1

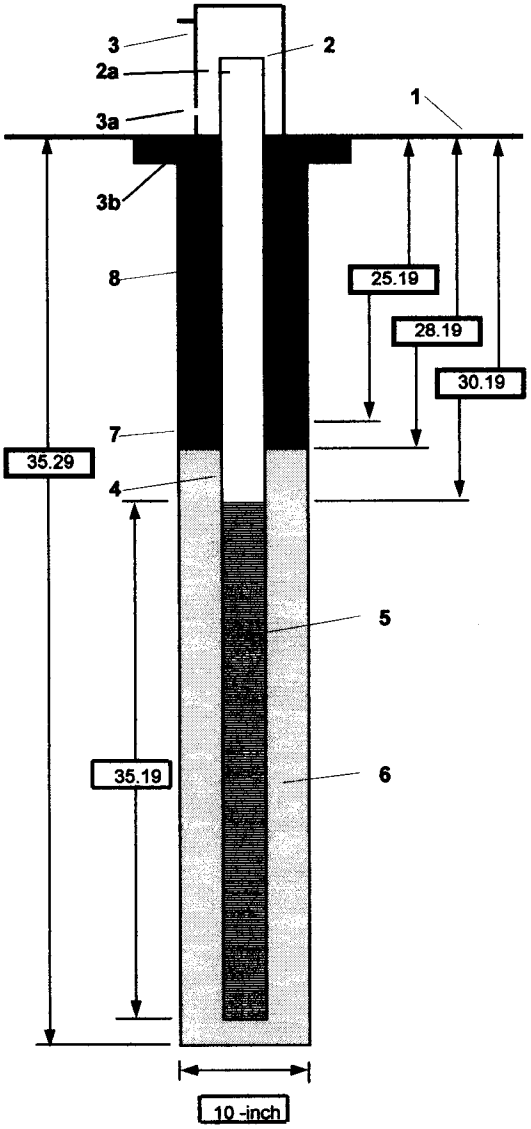
WELL COMPLETION DIAGRAM

PROJECT : Naval Training Center, Orlando — LOCATION : SA-36

DRILLING CONTRACTOR : Groundwater Protection

DRILLING METHOD AND EQUIPMENT USED : HSA with Dietrich 120 mobile rig, Manual hammer, Split barrel spoon sampler

WATER LEVELS : 13.81 ft btoc — START : 11/14/00 08:30 — END : 10:04 — LOGGER : Kim-Lee Murphy



1- Ground elevation at well	115.1
2- Top of casing elevation	117.97
a) vent hole?	No
3- Wellhead protection cover type	4-inch Steel Sleeve above grade protector
a) weep hole?	No
b) concrete pad dimensions	2-ft by 2-ft
4- Dia./type of well casing	2-inch diameter PVC
5- Type/slot size of screen	2-inch diameter PVC, 0.010-inch slot screen
6- Type screen filter	30/45 Standard Silica Sand
a) Quantity used	9 50-pound bags
7- Type of seal	Pre-hydrated Bentonite (Kwikgel)
a) Quantity used	25 pounds
	30/65 Standard Silica Sand
b) Quantity used	25 pounds
8- Grout	
a) Grout mix used	Holnam 1 Portland Cement with Kwikgel
b) Method of placement	Tremie Pipe
c) Vol. of well casing grout	6 92.6-pound bags
Development method	Swabbing with Surge Block and Pumping
Development time	40 minutes
Estimated purge volume	110 gallons

Comments

Northing = 1537917.64

Easting = 549492.02

CH2MHILL	PROJECT NUMBER 152044.32.12.01.08	WELL NUMBER OLD-36-32C	SHEET 1 OF 1

WELL DEVELOPMENT LOG

PROJECT : Naval Training Center, Orlando LOCATION : SA-36

DEVELOPMENT CONTRACTOR : Groundwater Protection

DEVELOPMENT METHOD AND EQUIP USED : Swabbing and Pumping; Pump from Dietrich 120 mobile drill rig (centrifugal), tremie pipe and surge block

START WATER LEVELS : 16.50 ft btoc START : 11/20/00 08:26 END : 09:06 LOGGER : Kim-Lee Murphy

MAXIMUM DRAWDOWN DURING PUMPING: 0.12 ft

TOTAL QUANTITY OF WATER DISCHARGED: 110 gallons

DISPOSITION OF DISCHARGE WATER: Turbid

OVM readings taken above water purging out of well into 55-gallon drum.

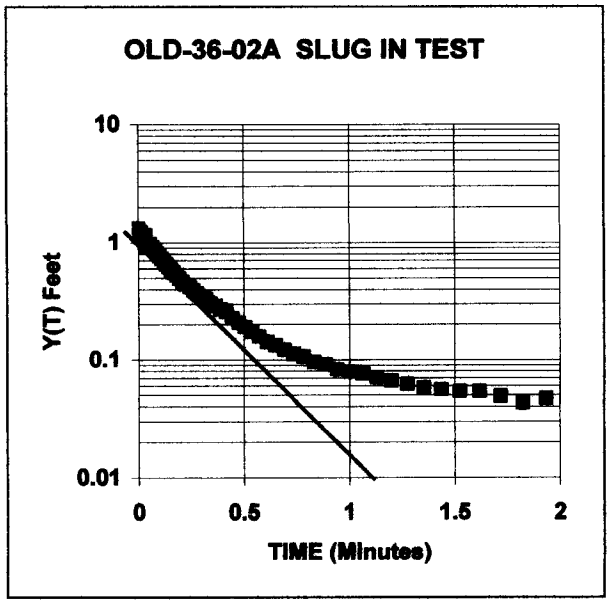
Time	Water Volume Discharged (gal)	Water Level (ft BTOC)	Turbidity (NTU)	Temperature (°C)	pH	Conductivity (mS/cm)	Remarks (color, odor, sheen, sediment, etc.)
8:27	0	16.50	931	26.4	5.65	0.101	Dark Brown, Salinity = 0.00 OVM =5.5 ppm, Background =4.7 ppm
8:34	25	No Reading	>999	26.6	5.59	0.137	Dark Brown, Salinity = 0.00
8:36	34	No Reading	>999	26.9	5.51	0.119	Dark Brown, Salinity = 0.00 OVM = 0.0 ppm, Background = 0.0 ppm
8:57	55	No Reading	>999	28.3	5.60	0.114	Dark Brown, Salinity = 0.00
8:59	65	No Reading	>999	27.2	5.54	0.103	Dark Brown, Salinity = 0.00 OVM = 4.7 ppm, Background = 3.5 ppm
9:03	80	No Reading	>999	27.1	5.45	0.098	Dark Brown, Salinity = 0.00
9:04	90	No Reading	>999	27.3	5.45	0.094	Dark Brown, Salinity = 0.00
9:05	100	No Reading	>999	27.4	5.44	0.095	Dark Brown, Salinity = 0.00
9:06	110	16.62	>999	27.2	5.43	0.095	Dark Brown, Salinity = 0.00

Appendix B

Hydraulic Conductivity Raw Data and Curves

CH2MHILL

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	8.49	1.33	0.364	9.53	0.29	1.824	9.78	0.04
0.011	8.59	1.23	0.389	9.55	0.27	1.935	9.77	0.05
0.022	8.74	1.08	0.416	9.56	0.26	2.054	9.78	0.04
0.033	8.66	1.16	0.444	9.59	0.23	2.179	9.78	0.04
0.044	8.89	0.93	0.473	9.61	0.21			
0.055	8.85	0.97	0.505	9.63	0.19			
0.066	8.90	0.92	0.538	9.65	0.17			
0.077	8.96	0.86	0.573	9.66	0.16			
0.088	9.01	0.81	0.610	9.68	0.14			
0.099	9.05	0.77	0.650	9.69	0.13			
0.110	9.09	0.73	0.692	9.70	0.12			
0.121	9.13	0.69	0.736	9.71	0.11			
0.132	9.17	0.65	0.783	9.71	0.11			
0.143	9.20	0.62	0.833	9.72	0.10			
0.155	9.23	0.59	0.885	9.73	0.09			
0.167	9.26	0.56	0.941	9.74	0.08			
0.180	9.29	0.53	1.000	9.74	0.08			
0.194	9.32	0.50	1.063	9.74	0.08			
0.209	9.36	0.47	1.129	9.75	0.07			
0.225	9.38	0.44	1.200	9.75	0.07			
0.242	9.40	0.42	1.274	9.76	0.06			
0.259	9.43	0.39	1.353	9.76	0.06			
0.278	9.45	0.37	1.437	9.76	0.06			
0.298	9.47	0.35	1.525	9.77	0.05			
0.319	9.49	0.33	1.619	9.77	0.05			
0.341	9.51	0.31	1.719	9.77	0.05			

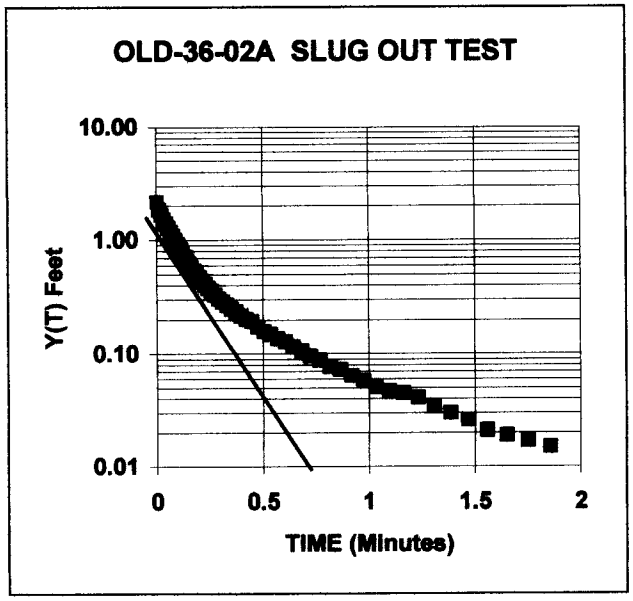


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.75 ft
Depth to Water (Dtw)=	9.82 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.18 ft
Lw (Wd-Dtw)=	9.93 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.20
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.80
Y(t1)=	1.08 ft
t1=	0.022 min
Y(t2)=	0.29 ft
t2=	0.3643 min
Hydraulic Cond. (K)=	**20.0 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.00	2.18	0.331	10.09	0.27	1.558	9.84	0.02
0.011	11.67	1.85	0.352	10.07	0.25	1.652	9.84	0.02
0.022	11.48	1.66	0.374	10.06	0.23	1.752	9.84	0.02
0.033	11.33	1.51	0.397	10.04	0.22	1.857	9.84	0.02
0.044	11.21	1.39	0.422	10.02	0.20			
0.055	11.10	1.28	0.449	10.02	0.20			
0.066	11.00	1.18	0.477	9.99	0.17			
0.077	10.90	1.08	0.506	9.98	0.16			
0.088	10.82	1.00	0.538	9.97	0.15			
0.099	10.74	0.92	0.571	9.96	0.14			
0.110	10.66	0.84	0.606	9.95	0.13			
0.121	10.60	0.78	0.643	9.94	0.12			
0.132	10.54	0.72	0.683	9.93	0.11			
0.143	10.49	0.67	0.725	9.92	0.10			
0.154	10.44	0.62	0.769	9.91	0.09			
0.165	10.40	0.58	0.816	9.90	0.08			
0.176	10.36	0.54	0.866	9.89	0.07			
0.188	10.32	0.50	0.918	9.88	0.06			
0.200	10.29	0.47	0.974	9.88	0.06			
0.213	10.26	0.44	1.033	9.87	0.05			
0.227	10.23	0.41	1.096	9.87	0.05			
0.242	10.20	0.38	1.162	9.87	0.04			
0.258	10.18	0.36	1.233	9.86	0.04			
0.275	10.15	0.33	1.307	9.85	0.03			
0.292	10.13	0.31	1.386	9.85	0.03			
0.311	10.11	0.29	1.470	9.85	0.03			

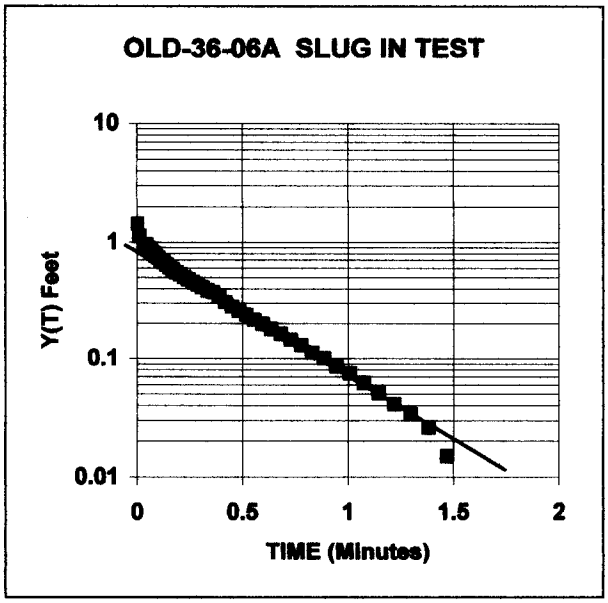


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.75 ft
Depth to Water (Dtw)=	9.82 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.18 ft
Lw (Wd-Dtw)=	9.93 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.20
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.80
Y(t1)=	1.66 ft
t1=	0.022 min
Y(t2)=	0.33 ft
t2=	0.2745 min
Hydraulic Cond. (K)=	**33.4 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	8.31	1.43	0.518	9.50	0.24			
0.011	8.61	1.13	0.555	9.52	0.22			
0.044	8.78	0.96	0.595	9.54	0.20			
0.055	8.85	0.89	0.637	9.56	0.18			
0.066	8.89	0.85	0.681	9.58	0.16			
0.077	8.93	0.81	0.728	9.59	0.15			
0.088	8.97	0.77	0.778	9.61	0.13			
0.100	9.00	0.74	0.830	9.63	0.11			
0.112	9.04	0.70	0.886	9.64	0.10			
0.125	9.07	0.67	0.945	9.65	0.09			
0.139	9.10	0.64	1.008	9.67	0.08			
0.154	9.13	0.61	1.074	9.68	0.06			
0.170	9.16	0.58	1.145	9.69	0.05			
0.187	9.19	0.55	1.219	9.70	0.04			
0.204	9.21	0.53	1.298	9.71	0.03			
0.223	9.24	0.50	1.382	9.71	0.03			
0.243	9.26	0.48	1.470	9.73	0.02			
0.264	9.28	0.46						
0.286	9.31	0.43						
0.309	9.33	0.41						
0.334	9.36	0.39						
0.361	9.37	0.37						
0.389	9.39	0.35						
0.418	9.43	0.31						
0.450	9.46	0.28						
0.483	9.48	0.26						

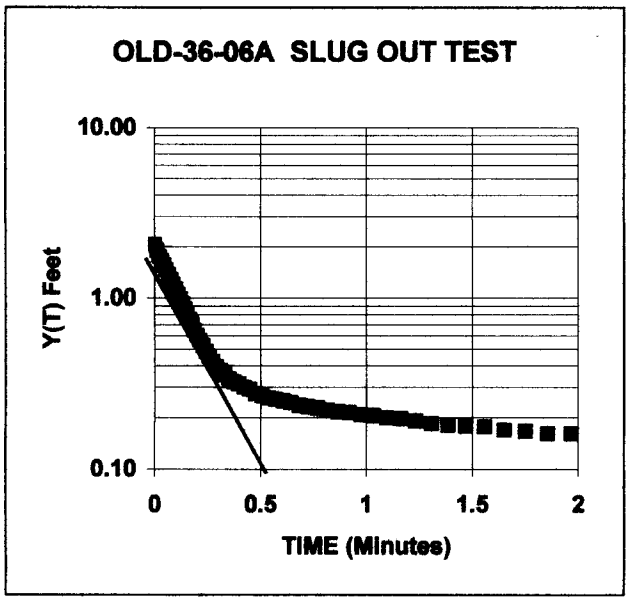


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2007	ft
Well Depth (Wd)=	16.53	ft
Depth to Water (Dtw)=	9.74	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	20.26	ft
Lw (Wd-Dtw)=	6.79	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.48	
Le/Rw=	24	
A=	2.45	
B=	0.80	
ln(Re/Rw)=	1.63	
Y(t1)=	0.96	ft
t1=	0.044	min
Y(t2)=	0.086	ft
t2=	0.9453	min
Hydraulic Cond. (K)=	**12.7**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	11.79	2.05	0.331	10.10	0.36	1.558	9.92	0.18
0.011	11.63	1.89	0.352	10.08	0.34	1.652	9.91	0.17
0.022	11.49	1.75	0.374	10.06	0.32	1.752	9.91	0.17
0.033	11.39	1.65	0.397	10.05	0.31	1.857	9.90	0.16
0.044	11.29	1.55	0.422	10.04	0.30	1.968	9.90	0.16
0.055	11.20	1.46	0.449	10.03	0.29	2.087	9.90	0.16
0.066	11.11	1.37	0.477	10.01	0.27	2.212	9.90	0.16
0.077	11.02	1.28	0.506	10.01	0.27	2.344	9.89	0.15
0.088	10.94	1.20	0.538	10.00	0.26	2.485	9.89	0.15
0.099	10.87	1.13	0.571	10.00	0.25	2.634	9.89	0.15
0.110	10.79	1.05	0.606	9.99	0.25	2.791	9.89	0.15
0.121	10.73	0.99	0.643	9.98	0.24	2.958	9.89	0.15
0.132	10.66	0.92	0.683	9.98	0.23	3.124	9.89	0.15
0.143	10.61	0.87	0.725	9.97	0.23	3.291	9.88	0.14
0.154	10.55	0.81	0.769	9.97	0.23	3.458	9.88	0.14
0.165	10.49	0.75	0.816	9.96	0.22	3.624	9.88	0.14
0.176	10.44	0.70	0.866	9.96	0.22	3.791	9.88	0.14
0.188	10.39	0.65	0.918	9.95	0.21	3.958	9.88	0.14
0.200	10.35	0.61	0.974	9.95	0.21			
0.213	10.31	0.57	1.033	9.95	0.21			
0.227	10.27	0.53	1.096	9.94	0.20			
0.242	10.23	0.49	1.162	9.94	0.20			
0.258	10.19	0.45	1.233	9.93	0.19			
0.275	10.17	0.43	1.307	9.92	0.18			
0.292	10.14	0.40	1.386	9.92	0.18			
0.311	10.12	0.38	1.470	9.92	0.18			

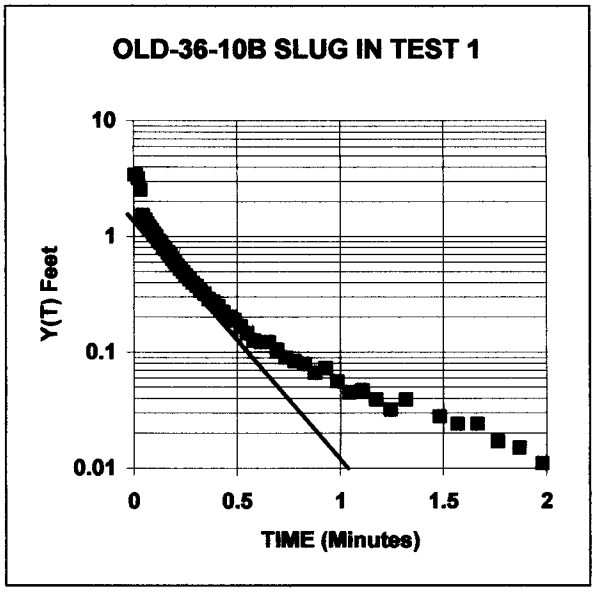


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	16.53 ft
Depth to Water (Dtw)=	9.74 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.26 ft
Lw (Wd-Dtw)=	6.79 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.48
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.63
Y(t1)=	2.05 ft
t1=	0 min
Y(t2)=	0.36 ft
t2=	0.3307 min
Hydraulic Cond. (K)=	**25.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	6.82	3.42	0.322	9.90	0.34	1.569	10.22	0.02
0.011	6.82	3.42	0.342	9.92	0.32	1.663	10.22	0.02
0.022	7.06	3.18	0.363	9.95	0.29	1.763	10.22	0.02
0.033	7.72	2.52	0.385	9.97	0.27	1.868	10.23	0.02
0.044	8.71	1.53	0.408	9.99	0.25	1.979	10.23	0.01
0.055	8.85	1.40	0.433	10.02	0.22			
0.066	8.94	1.30	0.460	10.04	0.20			
0.077	9.03	1.21	0.488	10.05	0.19			
0.088	9.11	1.13	0.517	10.07	0.17			
0.099	9.18	1.06	0.549	10.09	0.15			
0.110	9.24	1.00	0.582	10.11	0.13			
0.121	9.32	0.92	0.617	10.12	0.12			
0.132	9.36	0.88	0.654	10.12	0.12			
0.143	9.43	0.81	0.694	10.14	0.11			
0.154	9.46	0.78	0.736	10.15	0.09			
0.165	9.51	0.73	0.780	10.16	0.08			
0.176	9.56	0.68	0.827	10.16	0.08			
0.187	9.60	0.64	0.877	10.17	0.07			
0.199	9.64	0.60	0.929	10.17	0.07			
0.211	9.68	0.56	0.985	10.18	0.06			
0.224	9.71	0.53	1.044	10.20	0.04			
0.238	9.75	0.50	1.107	10.19	0.05			
0.253	9.78	0.46	1.173	10.20	0.04			
0.269	9.81	0.43	1.244	10.21	0.03			
0.286	9.84	0.40	1.318	10.20	0.04			
0.303	9.86	0.38	1.481	10.21	0.03			

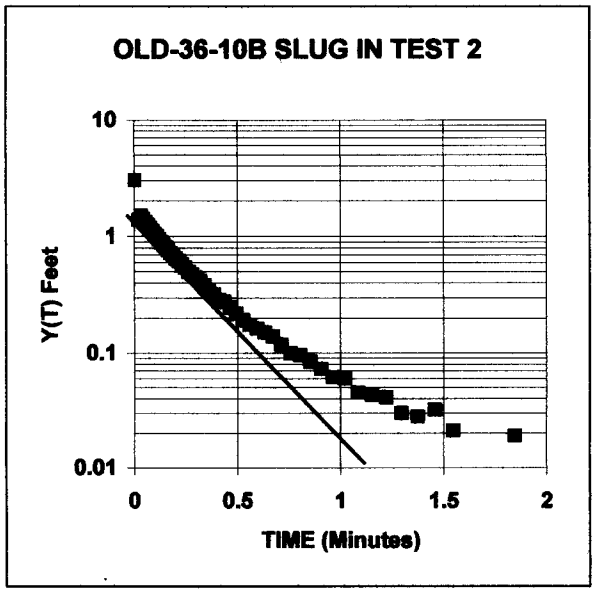


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.24 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.76 ft
Lw (Wd-Dtw)=	14.76 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.40 ft
t1=	0.055 min
Y(t2)=	0.189 ft
t2=	0.4875 min
Hydraulic Cond. (K)=	7.7 ft/day

CH2MHILL

[redacted]

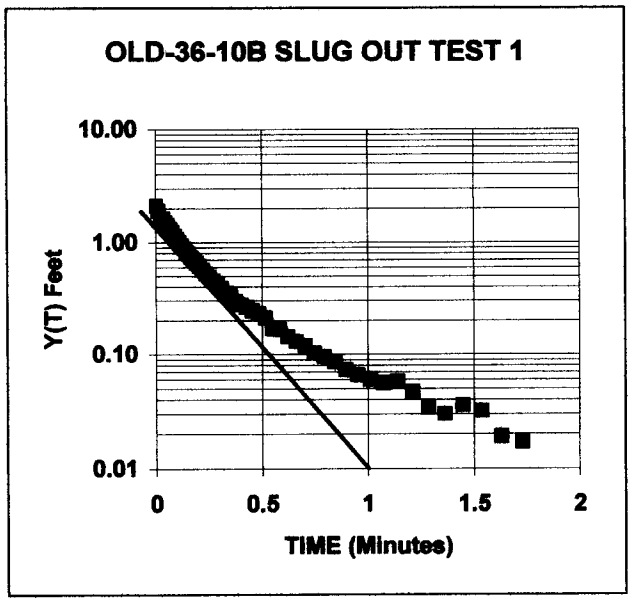
ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	7.23	3.01	0.363	9.90	0.35			
0.022	8.86	1.38	0.386	9.92	0.32			
0.033	8.74	1.50	0.411	9.95	0.29			
0.044	8.84	1.40	0.438	9.96	0.28			
0.055	8.92	1.32	0.466	9.99	0.25			
0.066	8.99	1.25	0.495	10.02	0.22			
0.077	9.06	1.18	0.527	10.05	0.19			
0.088	9.13	1.11	0.560	10.06	0.18			
0.099	9.18	1.06	0.595	10.08	0.16			
0.110	9.24	1.00	0.632	10.09	0.15			
0.121	9.30	0.95	0.672	10.10	0.14			
0.132	9.35	0.89	0.714	10.12	0.12			
0.143	9.39	0.85	0.758	10.14	0.10			
0.154	9.43	0.81	0.805	10.14	0.10			
0.165	9.48	0.76	0.855	10.16	0.08			
0.177	9.52	0.72	0.907	10.17	0.07			
0.189	9.55	0.69	0.963	10.18	0.06			
0.202	9.59	0.65	1.022	10.18	0.06			
0.216	9.63	0.62	1.085	10.20	0.04			
0.231	9.66	0.58	1.151	10.20	0.04			
0.247	9.70	0.54	1.222	10.20	0.04			
0.264	9.74	0.50	1.296	10.21	0.03			
0.281	9.76	0.48	1.375	10.21	0.03			
0.300	9.79	0.45	1.459	10.21	0.03			
0.320	9.82	0.42	1.547	10.22	0.02			
0.341	9.86	0.38	1.846	10.22	0.02			



Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.24 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.76 ft
Lw (Wd-Dtw)=	14.76 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.50 ft
t1=	0.033 min
Y(t2)=	0.249 ft
t2=	0.4655 min
Hydraulic Cond. (K)=	**6.9 ft/day**

CH2MHILL

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.36	2.12	0.352	10.58	0.34	1.730	10.26	0.02
0.011	12.16	1.92	0.375	10.54	0.30			
0.022	11.85	1.61	0.400	10.52	0.28			
0.033	11.88	1.64	0.427	10.50	0.26			
0.044	11.76	1.52	0.455	10.48	0.24			
0.055	11.66	1.42	0.484	10.47	0.23			
0.066	11.56	1.32	0.516	10.45	0.21			
0.077	11.47	1.23	0.549	10.41	0.17			
0.088	11.39	1.15	0.584	10.41	0.17			
0.099	11.32	1.08	0.621	10.38	0.14			
0.110	11.25	1.01	0.661	10.37	0.13			
0.121	11.18	0.94	0.703	10.36	0.12			
0.132	11.13	0.89	0.747	10.34	0.10			
0.143	11.06	0.82	0.794	10.34	0.10			
0.154	11.03	0.79	0.844	10.33	0.09			
0.166	10.98	0.73	0.896	10.31	0.07			
0.178	10.93	0.69	0.952	10.31	0.07			
0.191	10.89	0.65	1.011	10.30	0.06			
0.205	10.86	0.62	1.074	10.30	0.06			
0.220	10.81	0.57	1.140	10.30	0.06			
0.236	10.77	0.53	1.211	10.29	0.05			
0.253	10.73	0.49	1.285	10.27	0.03			
0.270	10.69	0.45	1.364	10.27	0.03			
0.289	10.66	0.42	1.448	10.28	0.04			
0.309	10.63	0.39	1.536	10.27	0.03			
0.330	10.59	0.35	1.630	10.26	0.02			

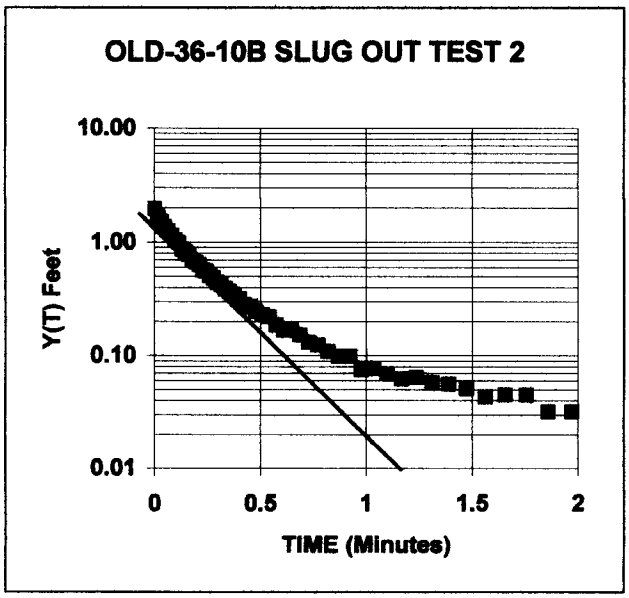


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.24 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.76 ft
Lw (Wd-Dtw)=	14.76 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.64 ft
t1=	0.033 min
Y(t2)=	0.26 ft
t2=	0.4265 min
Hydraulic Cond. (K)=	7.7 ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.21	1.97	0.480	10.49	0.25			
0.016	11.92	1.68	0.510	10.47	0.23			
0.033	11.76	1.52	0.541	10.46	0.22			
0.049	11.61	1.37	0.574	10.43	0.19			
0.065	11.50	1.26	0.609	10.41	0.17			
0.082	11.39	1.15	0.647	10.41	0.17			
0.098	11.29	1.05	0.686	10.39	0.15			
0.114	11.23	0.99	0.728	10.37	0.13			
0.131	11.11	0.87	0.772	10.36	0.12			
0.147	11.07	0.83	0.819	10.35	0.11			
0.163	11.01	0.77	0.869	10.34	0.10			
0.180	10.92	0.68	0.922	10.34	0.10			
0.196	10.90	0.66	0.978	10.32	0.07			
0.212	10.87	0.63	1.037	10.32	0.08			
0.229	10.81	0.57	1.100	10.31	0.07			
0.245	10.79	0.55	1.166	10.30	0.06			
0.261	10.75	0.51	1.236	10.30	0.06			
0.278	10.72	0.48	1.311	10.30	0.06			
0.296	10.68	0.44	1.390	10.30	0.06			
0.314	10.66	0.42	1.473	10.29	0.05			
0.334	10.63	0.39	1.562	10.28	0.04			
0.355	10.61	0.37	1.656	10.29	0.04			
0.377	10.58	0.34	1.755	10.29	0.04			
0.401	10.56	0.32	1.860	10.27	0.03			
0.426	10.52	0.28	1.972	10.27	0.03			
0.452	10.51	0.27	2.090	10.26	0.02			

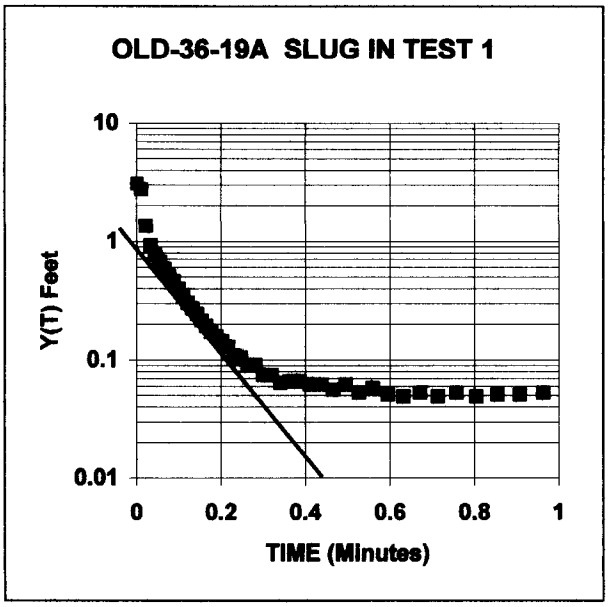


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.24 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.76 ft
Lw (Wd-Dtw)=	14.76 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.52 ft
t1=	0.0327 min
Y(t2)=	0.25 ft
t2=	0.48 min
Hydraulic Cond. (K)=	6.8 ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	9.97	3.05	0.341	12.96	0.06	1.641	12.98	0.04
0.011	10.29	2.73	0.363	12.95	0.07	1.741	12.98	0.04
0.022	11.67	1.35	0.386	12.95	0.07			
0.033	12.09	0.93	0.411	12.96	0.06			
0.044	12.25	0.77	0.438	12.96	0.06			
0.055	12.35	0.67	0.466	12.96	0.06			
0.066	12.44	0.58	0.495	12.96	0.06			
0.077	12.51	0.51	0.527	12.97	0.05			
0.088	12.56	0.46	0.560	12.96	0.06			
0.099	12.62	0.40	0.595	12.97	0.05			
0.110	12.67	0.35	0.632	12.97	0.05			
0.121	12.72	0.30	0.672	12.97	0.05			
0.132	12.75	0.27	0.714	12.97	0.05			
0.143	12.78	0.24	0.758	12.97	0.05			
0.154	12.80	0.22	0.805	12.97	0.05			
0.165	12.83	0.20	0.855	12.97	0.05			
0.177	12.85	0.17	0.907	12.97	0.05			
0.189	12.86	0.16	0.963	12.97	0.05			
0.202	12.88	0.15	1.022	12.97	0.05			
0.216	12.89	0.13	1.085	12.97	0.05			
0.231	12.91	0.11	1.151	12.97	0.05			
0.247	12.92	0.11	1.222	12.97	0.05			
0.264	12.93	0.09	1.296	12.97	0.05			
0.281	12.93	0.09	1.375	12.97	0.05			
0.300	12.95	0.07	1.459	12.97	0.05			
0.320	12.95	0.07	1.547	12.97	0.05			

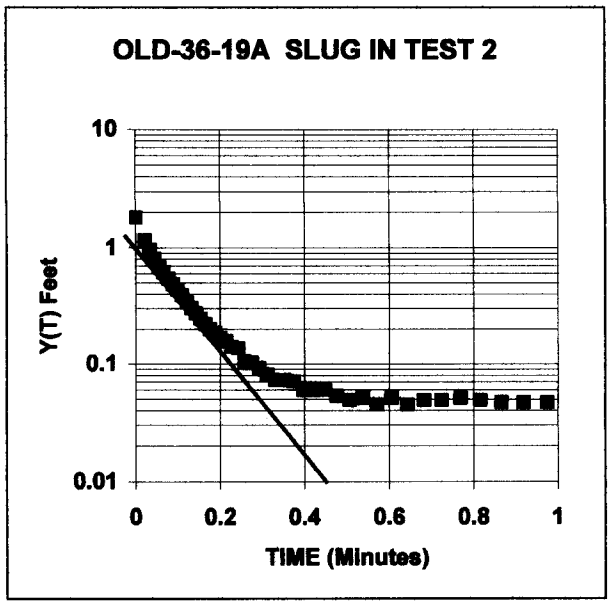


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2007	ft
Well Depth (Wd)=	19.86	ft
Depth to Water (Dtw)=	10.02	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.98	ft
Lw (Wd-Dtw)=	9.84	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.19	
Le/Rw=	24	
A=	2.45	
B=	0.80	
ln(Re/Rw)=	1.80	
Y(t1)=	0.93	ft
t1=	0.033	min
Y(t2)=	0.09	ft
t2=	0.2635	min
Hydraulic Cond. (K)=	**52.7**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	11.21	1.81	0.352	12.95	0.07			
0.022	11.86	1.16	0.374	12.95	0.07			
0.033	12.06	0.96	0.397	12.96	0.06			
0.044	12.21	0.81	0.422	12.96	0.06			
0.055	12.33	0.69	0.449	12.96	0.06			
0.066	12.41	0.61	0.477	12.97	0.05			
0.077	12.47	0.55	0.506	12.97	0.05			
0.088	12.53	0.49	0.538	12.97	0.05			
0.099	12.59	0.43	0.571	12.98	0.04			
0.110	12.63	0.39	0.606	12.97	0.05			
0.121	12.68	0.34	0.643	12.98	0.04			
0.132	12.72	0.30	0.683	12.97	0.05			
0.143	12.75	0.27	0.725	12.97	0.05			
0.154	12.77	0.25	0.769	12.97	0.05			
0.165	12.80	0.22	0.816	12.97	0.05			
0.176	12.82	0.20	0.866	12.97	0.05			
0.188	12.83	0.19	0.918	12.97	0.05			
0.200	12.85	0.17	0.974	12.97	0.05			
0.213	12.86	0.16	1.033	12.97	0.05			
0.227	12.88	0.14	1.096	12.98	0.04			
0.242	12.88	0.14						
0.258	12.92	0.11						
0.275	12.92	0.10						
0.292	12.93	0.09						
0.311	12.94	0.08						
0.331	12.95	0.07						

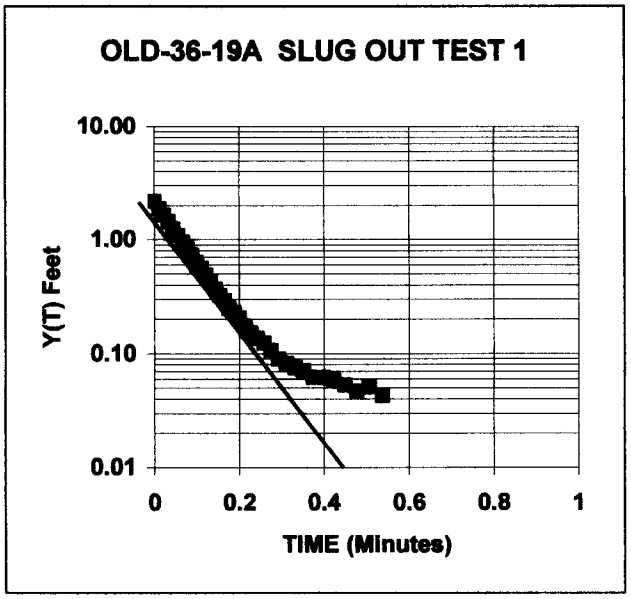


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.86 ft
Depth to Water (Dtw)=	10.02 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.98 ft
Lw (Wd-Dtw)=	9.84 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.19
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.80
Y(t1)=	1.16 ft
t1=	0.022 min
Y(t2)=	0.105 ft
t2=	0.2578 min
Hydraulic Cond. (K)=	**53.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.21	2.19	0.331	13.10	0.08			
0.011	14.89	1.87	0.352	13.09	0.07			
0.022	14.67	1.65	0.374	13.08	0.06			
0.033	14.46	1.44	0.397	13.08	0.06			
0.044	14.27	1.25	0.422	13.08	0.06			
0.055	14.11	1.09	0.449	13.07	0.05			
0.066	13.98	0.96	0.477	13.07	0.05			
0.077	13.86	0.84	0.506	13.07	0.05			
0.088	13.75	0.73	0.538	13.06	0.04			
0.099	13.65	0.63						
0.110	13.58	0.56						
0.121	13.51	0.49						
0.132	13.45	0.43						
0.143	13.39	0.37						
0.154	13.34	0.32						
0.165	13.31	0.29						
0.176	13.27	0.25						
0.188	13.25	0.23						
0.200	13.23	0.21						
0.213	13.20	0.18						
0.227	13.17	0.15						
0.242	13.16	0.14						
0.258	13.14	0.12						
0.275	13.13	0.11						
0.292	13.11	0.09						
0.311	13.10	0.08						

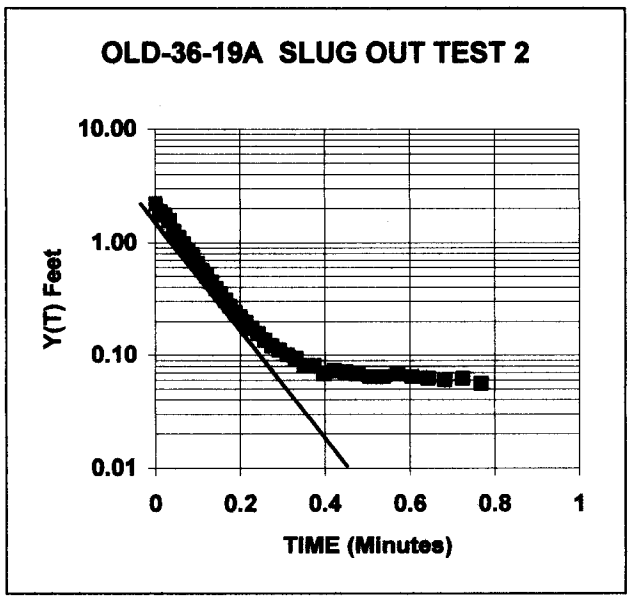


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.86 ft
Depth to Water (Dtw)=	10.02 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.98 ft
Lw (Wd-Dtw)=	9.84 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.19
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.80
Y(t1)=	2.19 ft
t1=	0 min
Y(t2)=	0.09 ft
t2=	0.2922 min
Hydraulic Cond. (K)=	**57.0 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.23	2.21	0.331	13.11	0.09			
0.011	14.90	1.88	0.352	13.10	0.08			
0.022	14.77	1.75	0.374	13.10	0.08			
0.033	14.58	1.56	0.397	13.09	0.07			
0.044	14.27	1.25	0.422	13.09	0.07			
0.055	14.14	1.12	0.449	13.09	0.07			
0.066	14.00	0.98	0.477	13.09	0.07			
0.077	13.88	0.86	0.506	13.08	0.06			
0.088	13.77	0.75	0.538	13.08	0.06			
0.099	13.67	0.65	0.571	13.09	0.07			
0.110	13.59	0.57	0.606	13.08	0.06			
0.121	13.52	0.50	0.643	13.08	0.06			
0.132	13.47	0.45	0.683	13.08	0.06			
0.143	13.41	0.39	0.725	13.08	0.06			
0.154	13.37	0.35	0.769	13.08	0.06			
0.165	13.33	0.31						
0.176	13.29	0.27						
0.188	13.26	0.24						
0.200	13.24	0.22						
0.213	13.22	0.20						
0.227	13.20	0.18						
0.242	13.18	0.16						
0.258	13.16	0.14						
0.275	13.14	0.12						
0.292	13.13	0.11						
0.311	13.12	0.10						

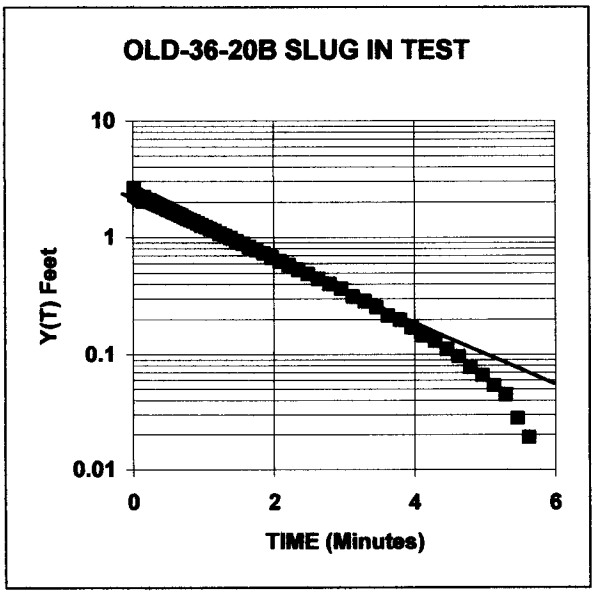


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.86 ft
Depth to Water (Dtw)=	10.02 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.98 ft
Lw (Wd-Dtw)=	9.84 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.19
Le/Rw=	24
A=	2.45
B=	0.80
ln(Rc/Rw)=	1.80
Y(t1)=	1.88 ft
t1=	0.011 min
Y(t2)=	0.16 ft
t2=	0.2422 min
Hydraulic Cond. (K)=	**56.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.79	2.48	0.422	11.45	1.82	1.968	12.59	0.68
0.011	10.64	2.63	0.449	11.47	1.80	2.087	12.64	0.63
0.022	10.95	2.32	0.477	11.51	1.76	2.212	12.69	0.58
0.033	10.96	2.31	0.506	11.55	1.73	2.344	12.74	0.53
0.044	10.99	2.29	0.538	11.58	1.69	2.485	12.78	0.49
0.055	11.02	2.26	0.571	11.62	1.65	2.634	12.82	0.45
0.066	11.04	2.23	0.606	11.65	1.62	2.791	12.87	0.40
0.077	11.08	2.20	0.643	11.70	1.57	2.958	12.90	0.37
0.088	11.10	2.17	0.683	11.74	1.54	3.124	12.96	0.31
0.099	11.13	2.14	0.725	11.78	1.49	3.291	12.98	0.29
0.110	11.15	2.12	0.769	11.83	1.44	3.458	13.02	0.25
0.121	11.18	2.09	0.816	11.86	1.41	3.624	13.05	0.22
0.132	11.20	2.07	0.866	11.90	1.37	3.791	13.07	0.20
0.143	11.24	2.03	0.918	11.95	1.32	3.958	13.10	0.17
0.154	11.06	2.21	0.974	12.00	1.27	4.124	13.12	0.15
0.176	11.21	2.06	1.033	12.04	1.23	4.291	13.14	0.13
0.227	11.26	2.01	1.096	12.09	1.18	4.458	13.16	0.11
0.242	11.19	2.08	1.162	12.14	1.13	4.624	13.17	0.10
0.258	11.25	2.02	1.233	12.19	1.08	4.791	13.19	0.08
0.275	11.27	2.00	1.307	12.24	1.04	4.958	13.20	0.07
0.292	11.29	1.98	1.386	12.28	0.99	5.124	13.22	0.05
0.311	11.32	1.95	1.470	12.34	0.93	5.291	13.23	0.04
0.331	11.34	1.93	1.558	12.39	0.88	5.458	13.24	0.03
0.352	11.37	1.90	1.652	12.44	0.83	5.624	13.25	0.02
0.374	11.39	1.88	1.752	12.49	0.78			
0.397	11.42	1.85	1.857	12.54	0.73			

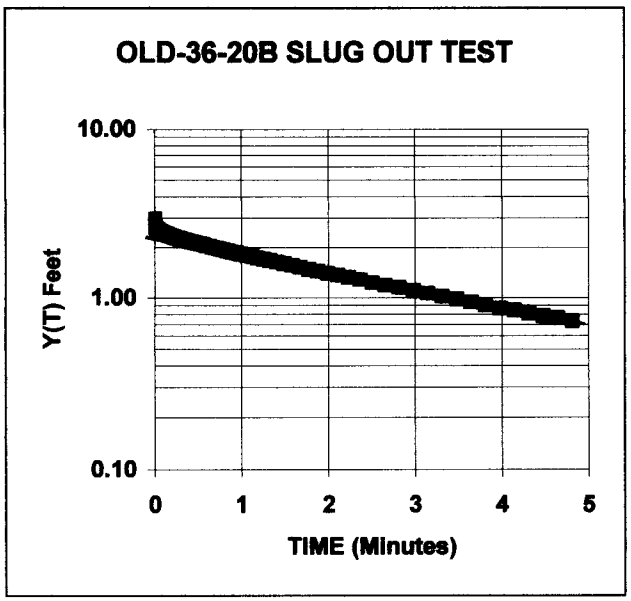


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	27.13 ft
Depth to Water (Dtw)=	10.27 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.73 ft
Lw (Wd-Dtw)=	16.86 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	1.93
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.78
Y(t1)=	1.80 ft
t1=	0.4485 min
Y(t2)=	0.313 ft
t2=	3.1243 min
Hydraulic Cond. (K)=	**1.2 ft/day**

CH2MHILL

[redacted]

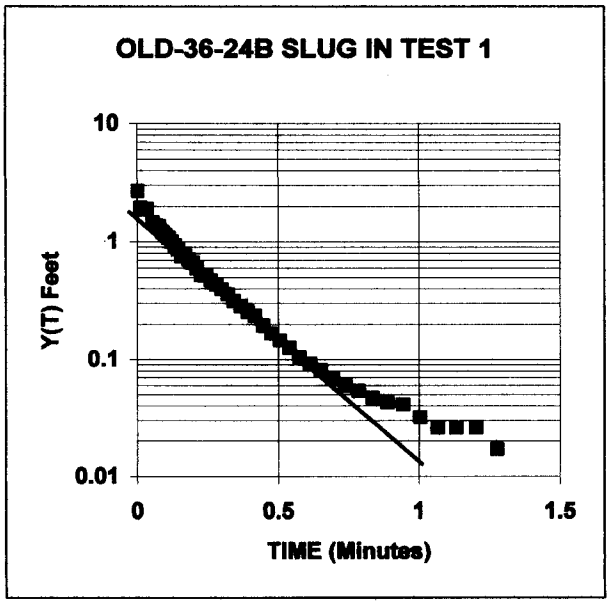
ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.36	2.12	0.352	10.58	0.34	1.730	10.26	0.02
0.011	12.16	1.92	0.375	10.54	0.30			
0.022	11.85	1.61	0.400	10.52	0.28			
0.033	11.88	1.64	0.427	10.50	0.26			
0.044	11.76	1.52	0.455	10.48	0.24			
0.055	11.66	1.42	0.484	10.47	0.23			
0.066	11.56	1.32	0.516	10.45	0.21			
0.077	11.47	1.23	0.549	10.41	0.17			
0.088	11.39	1.15	0.584	10.41	0.17			
0.099	11.32	1.08	0.621	10.38	0.14			
0.110	11.25	1.01	0.661	10.37	0.13			
0.121	11.18	0.94	0.703	10.36	0.12			
0.132	11.13	0.89	0.747	10.34	0.10			
0.143	11.06	0.82	0.794	10.34	0.10			
0.154	11.03	0.79	0.844	10.33	0.09			
0.166	10.98	0.73	0.896	10.31	0.07			
0.178	10.93	0.69	0.952	10.31	0.07			
0.191	10.89	0.65	1.011	10.30	0.06			
0.205	10.86	0.62	1.074	10.30	0.06			
0.220	10.81	0.57	1.140	10.30	0.06			
0.236	10.77	0.53	1.211	10.29	0.05			
0.253	10.73	0.49	1.285	10.27	0.03			
0.270	10.69	0.45	1.364	10.27	0.03			
0.289	10.66	0.42	1.448	10.28	0.04			
0.309	10.63	0.39	1.536	10.27	0.03			
0.330	10.59	0.35	1.630	10.26	0.02			



Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	27.13 ft
Depth to Water (Dtw)=	10.27 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.73 ft
Lw (Wd-Dtw)=	16.86 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	1.93
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.78
Y(t1)=	2.12 ft
t1=	0.4963 min
Y(t2)=	1.02 ft
t2=	3.3108 min
Hydraulic Cond. (K)=	0.5 ft/day

CH2MHILL

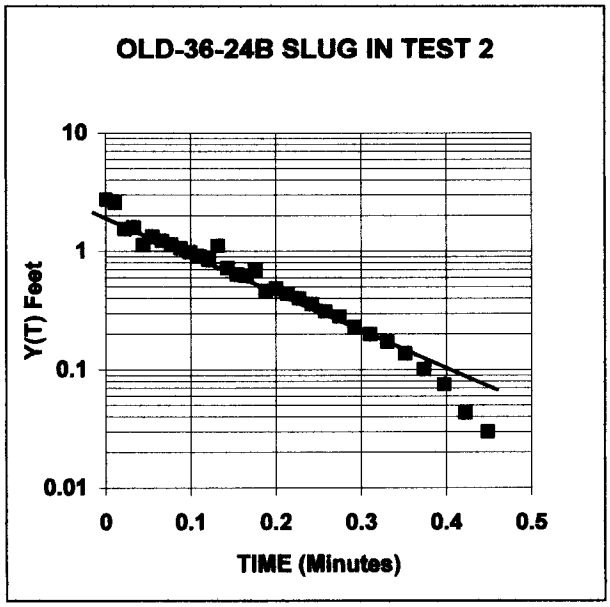
ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	7.64	2.69	0.391	10.08	0.26			
0.011	8.40	1.94	0.418	10.09	0.24			
0.022	8.44	1.89	0.446	10.14	0.20			
0.034	8.45	1.88	0.475	10.16	0.17			
0.056	8.87	1.46	0.507	10.18	0.15			
0.067	8.95	1.38	0.540	10.20	0.13			
0.078	8.97	1.36	0.575	10.23	0.11			
0.089	9.13	1.20	0.612	10.24	0.09			
0.101	9.20	1.13	0.652	10.25	0.08			
0.112	9.25	1.08	0.694	10.26	0.07			
0.123	9.33	1.00	0.738	10.27	0.06			
0.134	9.40	0.93	0.785	10.28	0.05			
0.145	9.46	0.87	0.835	10.28	0.05			
0.157	9.57	0.76	0.888	10.29	0.04			
0.169	9.56	0.77	0.943	10.29	0.04			
0.183	9.62	0.71	1.003	10.30	0.03			
0.197	9.66	0.67	1.065	10.30	0.03			
0.211	9.73	0.60	1.132	10.30	0.03			
0.227	9.80	0.53	1.202	10.30	0.03			
0.244	9.81	0.52	1.276	10.31	0.02			
0.261	9.86	0.47						
0.280	9.90	0.44						
0.300	9.93	0.40						
0.321	9.97	0.36						
0.343	10.02	0.32						
0.367	10.04	0.29						



Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	25	ft
Depth to Water (Dtw)=	10.33	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.67	ft
Lw (Wd-Dtw)=	14.67	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.48	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.67	
Y(t1)=	1.89	ft
t1=	0.0223	min
Y(t2)=	0.069	ft
t2=	0.6936	min
Hydraulic Cond. (K)=	**8.2**	**ft/day**

CH2MHILL

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	7.60	2.73	0.331	10.16	0.17			
0.011	7.76	2.57	0.352	10.19	0.14			
0.022	8.79	1.54	0.374	10.23	0.10			
0.033	8.73	1.60	0.397	10.26	0.07			
0.044	9.20	1.13	0.422	10.29	0.04			
0.055	9.00	1.34	0.449	10.30	0.03			
0.066	9.10	1.23						
0.077	9.19	1.14						
0.088	9.27	1.06						
0.099	9.35	0.98						
0.110	9.42	0.91						
0.121	9.48	0.85						
0.132	9.21	1.12						
0.143	9.61	0.72						
0.154	9.69	0.64						
0.165	9.71	0.62						
0.176	9.63	0.70						
0.188	9.87	0.46						
0.200	9.84	0.49						
0.213	9.89	0.44						
0.227	9.93	0.40						
0.242	9.97	0.36						
0.258	10.02	0.31						
0.275	10.05	0.28						
0.292	10.10	0.23						
0.311	10.13	0.20						

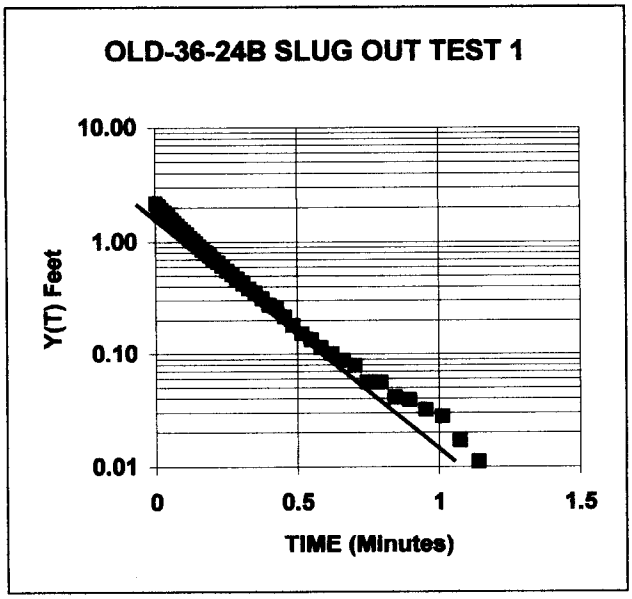


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	25	ft
Depth to Water (Dtw)=	10.33	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.67	ft
Lw (Wd-Dtw)=	14.67	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.48	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.67	
Y(t1)=	1.60	ft
t1=	0.033	min
Y(t2)=	0.137	ft
t2=	0.3517	min
Hydraulic Cond. (K)=	**12.8**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.52	2.19	0.352	10.68	0.35			
0.011	12.39	2.06	0.375	10.64	0.31			
0.022	12.23	1.90	0.400	10.60	0.27			
0.033	12.13	1.80	0.427	10.59	0.26			
0.044	12.01	1.68	0.455	10.54	0.21			
0.055	11.91	1.58	0.484	10.51	0.18			
0.066	11.81	1.48	0.516	10.48	0.15			
0.077	11.72	1.39	0.549	10.47	0.14			
0.088	11.64	1.31	0.584	10.44	0.11			
0.099	11.57	1.24	0.621	10.43	0.10			
0.110	11.50	1.17	0.661	10.42	0.09			
0.121	11.42	1.09	0.703	10.41	0.08			
0.132	11.36	1.03	0.747	10.39	0.06			
0.143	11.31	0.98	0.794	10.39	0.06			
0.154	11.24	0.91	0.844	10.37	0.04			
0.166	11.19	0.86	0.896	10.37	0.04			
0.178	11.14	0.81	0.952	10.36	0.03			
0.191	11.09	0.76	1.011	10.36	0.03			
0.205	11.03	0.70	1.074	10.35	0.02			
0.220	10.99	0.66	1.140	10.34	0.01			
0.236	10.94	0.61						
0.253	10.89	0.56						
0.270	10.84	0.51						
0.289	10.80	0.47						
0.309	10.75	0.42						
0.330	10.71	0.38						

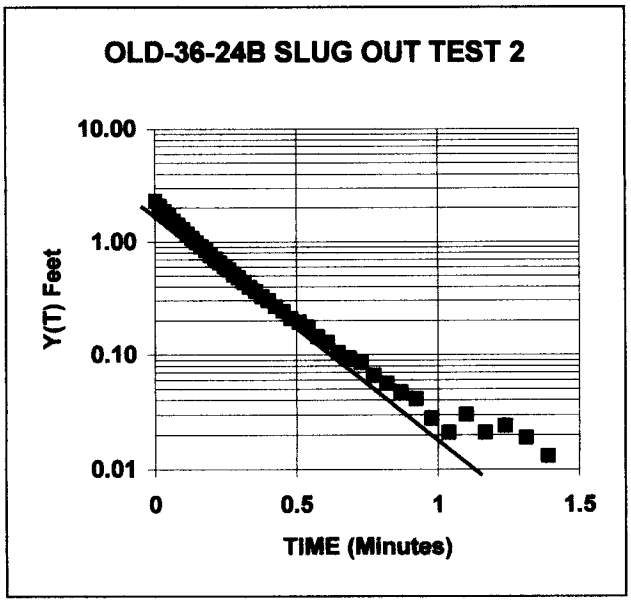


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.33 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.67 ft
Lw (Wd-Dtw)=	14.67 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.90 ft
t1=	0.022 min
Y(t2)=	0.056 ft
t2=	0.7468 min
Hydraulic Cond. (K)=	**8.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.64	2.31	0.480	10.54	0.21			
0.016	12.41	2.08	0.510	10.52	0.19			
0.033	12.19	1.86	0.541	10.51	0.18			
0.049	12.02	1.69	0.574	10.47	0.14			
0.065	11.87	1.54	0.609	10.46	0.13			
0.082	11.74	1.41	0.647	10.44	0.11			
0.098	11.62	1.29	0.686	10.42	0.09			
0.114	11.51	1.18	0.728	10.42	0.09			
0.131	11.41	1.08	0.772	10.40	0.07			
0.147	11.32	0.99	0.819	10.39	0.06			
0.163	11.24	0.91	0.869	10.38	0.05			
0.180	11.17	0.84	0.922	10.37	0.04			
0.196	11.09	0.76	0.978	10.36	0.03			
0.212	11.04	0.71	1.037	10.35	0.02			
0.229	10.98	0.65	1.100	10.36	0.03			
0.245	10.93	0.60	1.166	10.35	0.02			
0.261	10.90	0.57	1.236	10.35	0.02			
0.278	10.84	0.51	1.311	10.35	0.02			
0.296	10.81	0.48	1.390	10.34	0.01			
0.314	10.77	0.44						
0.334	10.72	0.39						
0.355	10.69	0.36						
0.377	10.66	0.33						
0.401	10.63	0.30						
0.426	10.60	0.27						
0.452	10.57	0.24						

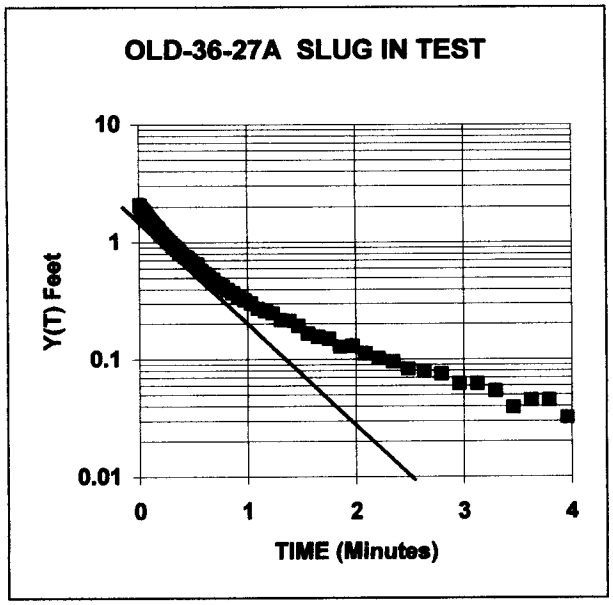


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25 ft
Depth to Water (Dtw)=	10.33 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.67 ft
Lw (Wd-Dtw)=	14.67 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.48
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.67
Y(t1)=	1.86 ft
t1=	0.0327 min
Y(t2)=	0.09 ft
t2=	0.6862 min
Hydraulic Cond. (K)=	7.6 ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	-2.09	2.09	0.331	-0.91	0.91	1.558	-0.17	0.17
0.011	-2.05	2.05	0.352	-0.87	0.87	1.652	-0.16	0.16
0.022	-1.95	1.95	0.374	-0.83	0.83	1.752	-0.15	0.15
0.033	-1.89	1.89	0.397	-0.79	0.79	1.857	-0.13	0.13
0.044	-1.83	1.83	0.422	-0.76	0.76	1.968	-0.13	0.13
0.055	-1.77	1.77	0.449	-0.74	0.74	2.087	-0.11	0.11
0.066	-1.70	1.70	0.477	-0.68	0.68	2.212	-0.10	0.10
0.077	-1.65	1.65	0.506	-0.65	0.65	2.344	-0.10	0.10
0.088	-1.60	1.60	0.538	-0.65	0.65	2.485	-0.08	0.08
0.099	-1.55	1.55	0.571	-0.57	0.57	2.634	-0.08	0.08
0.110	-1.51	1.51	0.606	-0.54	0.54	2.791	-0.08	0.08
0.121	-1.46	1.46	0.643	-0.51	0.51	2.958	-0.06	0.06
0.132	-1.42	1.42	0.683	-0.48	0.48	3.124	-0.06	0.06
0.143	-1.38	1.38	0.725	-0.45	0.45	3.291	-0.05	0.05
0.154	-1.34	1.34	0.769	-0.42	0.42	3.458	-0.04	0.04
0.165	-1.30	1.30	0.816	-0.39	0.39	3.624	-0.05	0.05
0.176	-1.31	1.31	0.866	-0.37	0.37	3.791	-0.05	0.05
0.188	-1.25	1.25	0.918	-0.35	0.35	3.958	-0.03	0.03
0.200	-1.19	1.19	0.974	-0.32	0.32			
0.213	-1.18	1.18	1.033	-0.30	0.30			
0.227	-1.12	1.12	1.096	-0.27	0.27			
0.242	-1.09	1.09	1.162	-0.26	0.26			
0.258	-1.06	1.06	1.233	-0.25	0.25			
0.275	-1.02	1.02	1.307	-0.22	0.22			
0.292	-0.98	0.98	1.386	-0.21	0.21			
0.311	-0.94	0.94	1.470	-0.19	0.19			

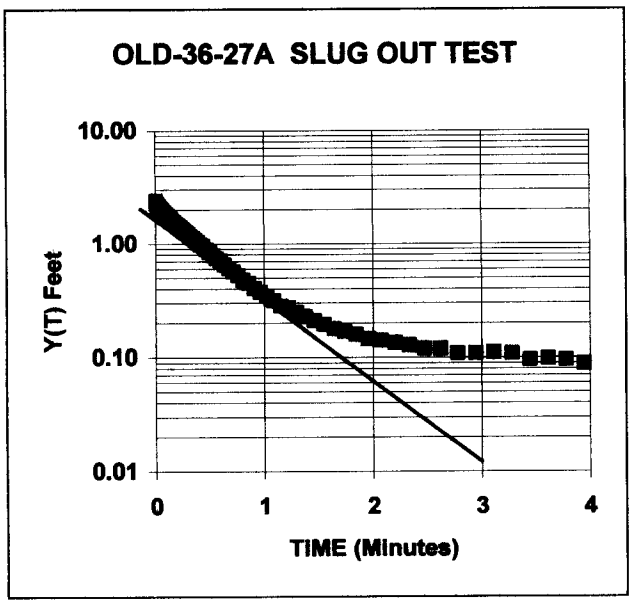


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	20.74 ft
Depth to Water (Dtw)=	9.86 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.14 ft
Lw (Wd-Dtw)=	10.88 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.10
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.84
Y(t1)=	2.09 ft
t1=	0 min
Y(t2)=	0.45 ft
t2=	0.7245 min
Hydraulic Cond. (K)=	**2.0 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	2.40	2.40	0.341	1.13	1.13	1.641	0.18	0.18
0.011	2.27	2.27	0.363	1.09	1.09	1.741	0.17	0.17
0.022	2.20	2.20	0.386	1.04	1.04	1.846	0.16	0.16
0.033	2.14	2.14	0.411	0.99	0.99	1.957	0.15	0.15
0.044	2.08	2.08	0.438	0.97	0.97	2.076	0.14	0.14
0.055	2.02	2.02	0.466	0.89	0.89	2.201	0.14	0.14
0.066	1.97	1.97	0.495	0.84	0.84	2.333	0.13	0.13
0.077	1.92	1.92	0.527	0.79	0.79	2.474	0.12	0.12
0.088	1.87	1.87	0.560	0.74	0.74	2.623	0.12	0.12
0.099	1.82	1.82	0.595	0.71	0.71	2.780	0.11	0.11
0.110	1.78	1.78	0.632	0.65	0.65	2.947	0.11	0.11
0.121	1.73	1.73	0.672	0.61	0.61	3.113	0.11	0.11
0.132	1.70	1.70	0.714	0.57	0.57	3.280	0.11	0.11
0.143	1.66	1.66	0.758	0.53	0.53	3.447	0.10	0.10
0.154	1.61	1.61	0.805	0.48	0.48	3.613	0.10	0.10
0.165	1.57	1.57	0.855	0.45	0.45	3.780	0.10	0.10
0.177	1.54	1.54	0.907	0.41	0.41	3.947	0.09	0.09
0.189	1.50	1.50	0.963	0.37	0.37			
0.202	1.47	1.47	1.022	0.35	0.35			
0.216	1.43	1.43	1.085	0.32	0.32			
0.231	1.39	1.39	1.151	0.28	0.28			
0.247	1.35	1.35	1.222	0.27	0.27			
0.264	1.31	1.31	1.296	0.25	0.25			
0.281	1.27	1.27	1.375	0.23	0.23			
0.300	1.23	1.23	1.459	0.21	0.21			
0.320	1.17	1.17	1.547	0.20	0.20			

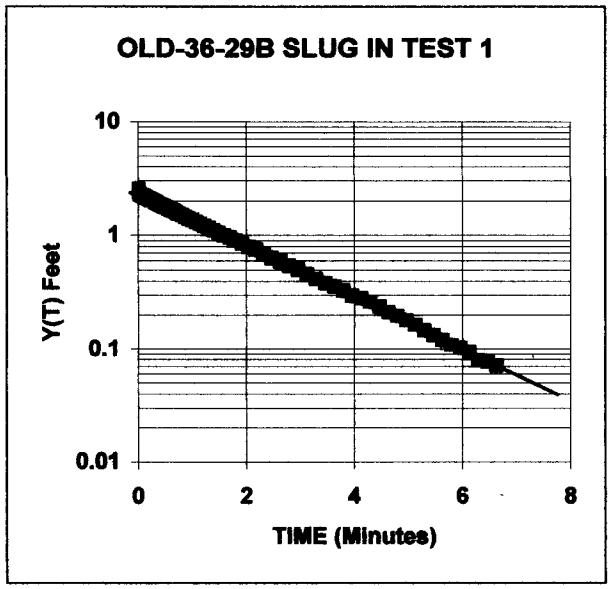


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	20.74 ft
Depth to Water (Dtw)=	9.86 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.14 ft
Lw (Wd-Dtw)=	10.88 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.10
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.84
Y(t1)=	2.40 ft
t1=	0 min
Y(t2)=	0.27 ft
t2=	1.2217 min
Hydraulic Cond. (K)=	**1.6 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.60	2.58	0.651	11.52	1.65	3.459	12.79	0.38
0.011	10.81	2.36	0.701	11.58	1.59	3.626	12.81	0.36
0.023	10.87	2.30	0.753	11.63	1.55	3.793	12.84	0.33
0.035	10.91	2.26	0.809	11.65	1.52	3.959	12.87	0.30
0.048	10.91	2.26	0.868	11.72	1.45	4.126	12.89	0.28
0.062	10.92	2.25	0.931	11.77	1.41	4.293	12.91	0.26
0.077	10.95	2.22	0.997	11.81	1.36	4.459	12.93	0.24
0.093	10.97	2.21	1.068	11.86	1.32	4.626	12.96	0.21
0.110	10.98	2.19	1.142	11.91	1.26	4.793	12.97	0.20
0.127	11.00	2.17	1.221	11.95	1.22	4.959	12.99	0.18
0.146	11.03	2.15	1.305	12.01	1.17	5.126	13.01	0.16
0.166	11.05	2.12	1.393	12.06	1.11	5.293	13.02	0.15
0.187	11.07	2.10	1.487	12.12	1.06	5.459	13.04	0.13
0.209	11.09	2.08	1.587	12.17	1.00	5.626	13.05	0.12
0.232	11.12	2.05	1.692	12.22	0.96	5.793	13.06	0.11
0.257	11.15	2.02	1.803	12.27	0.90	5.959	13.07	0.10
0.284	11.16	2.01	1.922	12.33	0.85	6.126	13.08	0.09
0.312	11.22	1.95	2.047	12.38	0.79	6.293	13.09	0.08
0.341	11.24	1.93	2.179	12.42	0.75	6.459	13.09	0.08
0.373	11.28	1.89	2.320	12.48	0.69	6.626	13.10	0.07
0.406	11.31	1.86	2.469	12.54	0.64			
0.441	11.34	1.83	2.626	12.58	0.59			
0.478	11.38	1.79	2.793	12.63	0.55			
0.518	11.42	1.75	2.959	12.67	0.50			
0.560	11.45	1.72	3.126	12.71	0.46			
0.604	11.51	1.67	3.293	12.75	0.42			

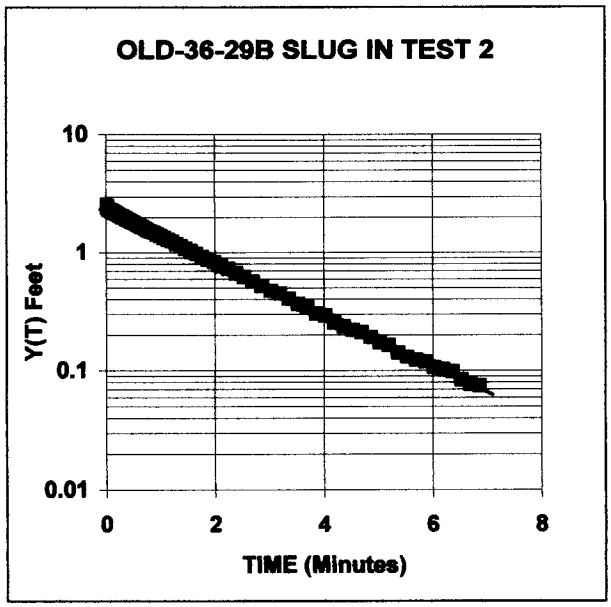


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	27.71	ft
Depth to Water (Dtw)=	10.65	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.35	ft
Lw (Wd-Dtw)=	17.06	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	1.70	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.82	
Y(t1)=	1.75	ft
t1=	0.5177	min
Y(t2)=	0.197	ft
t2=	4.7927	min
Hydraulic Cond. (K)=	**0.9**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.59	2.59	0.472	11.33	1.84	2.535	12.55	0.62
0.011	10.72	2.45	0.507	11.36	1.81	2.692	12.60	0.57
0.022	10.66	2.51	0.544	11.40	1.77	2.859	12.65	0.52
0.033	10.82	2.35	0.584	11.44	1.73	3.025	12.69	0.48
0.044	10.83	2.35	0.626	11.47	1.70	3.192	12.72	0.45
0.055	10.83	2.34	0.670	11.52	1.65	3.359	12.77	0.40
0.066	10.85	2.32	0.717	11.56	1.61	3.525	12.81	0.37
0.077	10.87	2.30	0.767	11.60	1.57	3.692	12.83	0.34
0.089	10.88	2.29	0.819	11.65	1.52	3.859	12.87	0.30
0.101	10.90	2.27	0.875	11.69	1.48	4.025	12.88	0.29
0.114	10.92	2.26	0.934	11.73	1.44	4.192	12.92	0.26
0.128	10.94	2.23	0.997	11.79	1.38	4.359	12.93	0.24
0.143	10.95	2.22	1.063	11.83	1.34	4.525	12.95	0.221
0.159	10.98	2.20	1.134	11.88	1.29	4.692	12.96	0.212
0.176	11.00	2.18	1.208	11.92	1.25	4.859	12.98	0.19
0.193	11.01	2.16	1.287	11.98	1.19	5.025	13.00	0.17
0.212	11.04	2.13	1.371	12.03	1.14	5.192	13.01	0.16
0.232	11.06	2.11	1.459	12.09	1.08	5.359	13.03	0.14
0.253	11.09	2.08	1.553	12.13	1.04	5.525	13.04	0.13
0.275	11.11	2.06	1.653	12.19	0.98	5.692	13.05	0.12
0.298	11.14	2.03	1.758	12.25	0.93	5.859	13.05	0.12
0.323	11.16	2.01	1.869	12.30	0.88	6.025	13.06	0.11
0.350	11.18	1.99	1.988	12.34	0.83	6.192	13.07	0.10
0.378	11.23	1.94	2.113	12.40	0.77	6.359	13.07	0.10
0.407	11.26	1.91	2.245	12.44	0.73	6.525	13.09	0.08
0.439	11.29	1.88	2.386	12.50	0.67	6.692	13.09	0.08

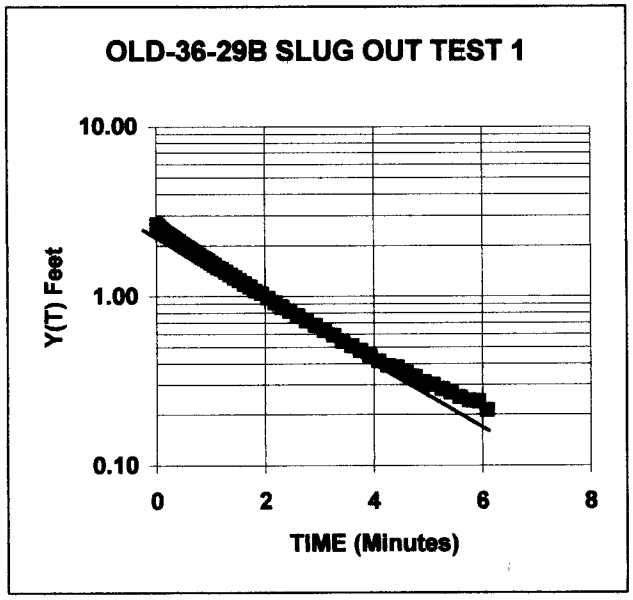


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	27.71	ft
Depth to Water (Dtw)=	10.65	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.35	ft
Lw (Wd-Dtw)=	17.06	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	1.70	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.82	
Y(t1)=	1.88	ft
t1=	0.4385	min
Y(t2)=	0.236	ft
t2=	4.3587	min
Hydraulic Cond. (K)=	**1.0**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.83	2.66	0.364	15.33	2.16	1.824	14.25	1.08
0.011	15.79	2.62	0.389	15.29	2.12	1.935	14.21	1.04
0.022	15.79	2.62	0.416	15.29	2.12	2.054	14.15	0.98
0.033	15.76	2.59	0.444	15.24	2.07	2.179	14.09	0.92
0.044	15.72	2.55	0.473	15.21	2.04	2.311	14.03	0.86
0.055	15.71	2.54	0.505	15.18	2.01	2.452	13.99	0.82
0.066	15.69	2.52	0.538	15.14	1.97	2.601	13.94	0.77
0.077	15.67	2.50	0.573	15.12	1.95	2.758	13.89	0.72
0.088	15.66	2.49	0.610	15.09	1.92	2.925	13.85	0.68
0.099	15.63	2.46	0.650	15.05	1.88	3.091	13.80	0.63
0.110	15.62	2.45	0.692	15.02	1.85	3.258	13.76	0.59
0.121	15.61	2.44	0.736	14.97	1.80	3.425	13.71	0.54
0.132	15.59	2.42	0.783	14.92	1.75	3.591	13.68	0.51
0.143	15.58	2.41	0.833	14.88	1.71	3.758	13.65	0.48
0.155	15.56	2.39	0.885	14.84	1.67	3.925	13.62	0.45
0.167	15.54	2.37	0.941	14.80	1.63	4.091	13.58	0.41
0.180	15.52	2.35	1.000	14.76	1.59	4.258	13.56	0.39
0.194	15.53	2.36	1.063	14.71	1.54	4.425	13.55	0.38
0.209	15.50	2.33	1.129	14.65	1.48	4.591	13.52	0.35
0.225	15.48	2.31	1.200	14.62	1.45	4.758	13.51	0.34
0.242	15.47	2.30	1.274	14.57	1.40	4.925	13.48	0.31
0.259	15.44	2.27	1.353	14.52	1.35	5.091	13.47	0.30
0.278	15.41	2.24	1.437	14.47	1.30	5.258	13.45	0.28
0.298	15.40	2.23	1.525	14.42	1.25	5.425	13.44	0.27
0.319	15.38	2.21	1.619	14.36	1.19	5.591	13.42	0.25
0.341	15.35	2.18	1.719	14.31	1.14	5.758	13.41	0.24

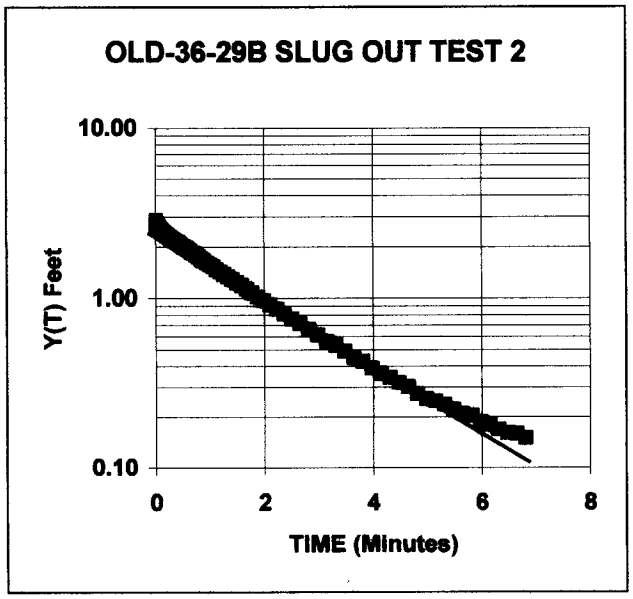


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	27.71 ft
Depth to Water (Dtw)=	10.65 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.35 ft
Lw (Wd-Dtw)=	17.06 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	1.70
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.82
Y(t1)=	2.18 ft
t1=	0.3408 min
Y(t2)=	0.448 ft
t2=	3.9247 min
Hydraulic Cond. (K)=	**0.8 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	16.03	2.86	0.468	15.22	2.05	2.106	14.09	0.92
0.016	15.91	2.74	0.496	15.19	2.02	2.232	14.04	0.87
0.033	15.89	2.72	0.526	15.16	1.99	2.364	13.98	0.81
0.049	15.82	2.65	0.557	15.15	1.98	2.505	13.93	0.76
0.065	15.78	2.61	0.591	15.10	1.93	2.653	13.88	0.71
0.082	15.72	2.55	0.626	15.07	1.90	2.811	13.83	0.66
0.098	15.69	2.52	0.663	15.02	1.85	2.978	13.78	0.61
0.114	15.66	2.49	0.703	15.00	1.83	3.144	13.73	0.56
0.131	15.62	2.45	0.744	14.96	1.79	3.311	13.70	0.53
0.147	15.60	2.43	0.789	14.92	1.75	3.478	13.66	0.49
0.163	15.57	2.40	0.836	14.86	1.69	3.644	13.62	0.45
0.180	15.54	2.37	0.886	14.83	1.66	3.811	13.60	0.43
0.196	15.54	2.37	0.938	14.79	1.62	3.978	13.56	0.39
0.212	15.51	2.34	0.994	14.74	1.57	4.144	13.53	0.36
0.229	15.49	2.32	1.053	14.70	1.53	4.311	13.51	0.34
0.245	15.47	2.30	1.116	14.65	1.48	4.478	13.49	0.32
0.261	15.44	2.27	1.182	14.60	1.43	4.644	13.47	0.30
0.278	15.42	2.25	1.253	14.56	1.39	4.811	13.45	0.28
0.294	15.40	2.23	1.327	14.51	1.34	4.978	13.43	0.26
0.312	15.38	2.21	1.406	14.46	1.29	5.144	13.42	0.25
0.331	15.36	2.19	1.490	14.40	1.23	5.311	13.41	0.24
0.351	15.33	2.16	1.578	14.36	1.19	5.478	13.39	0.22
0.372	15.32	2.15	1.672	14.30	1.13	5.644	13.38	0.21
0.394	15.31	2.14	1.771	14.24	1.07	5.811	13.37	0.20
0.417	15.28	2.11	1.877	14.19	1.02	5.978	13.36	0.19
0.442	15.25	2.08	1.988	14.14	0.97	6.144	13.35	0.18

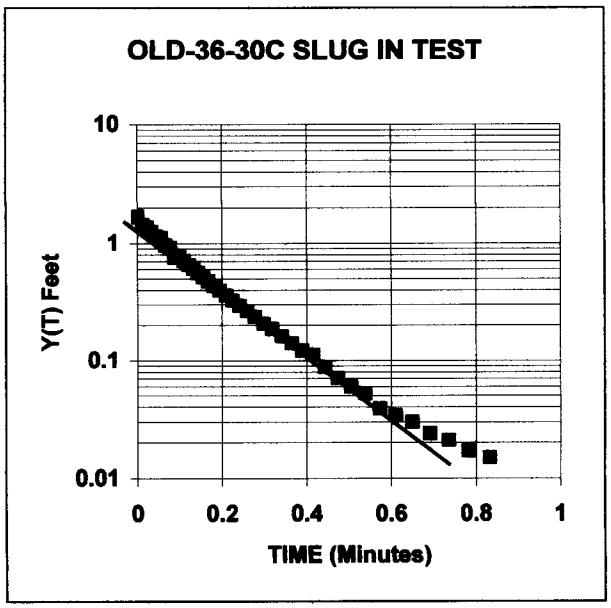


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	27.71 ft
Depth to Water (Dtw)=	10.65 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.35 ft
Lw (Wd-Dtw)=	17.06 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	1.70
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.82
Y(t1)=	2.08 ft
t1=	0.442 min
Y(t2)=	0.343 ft
t2=	4.3108 min
Hydraulic Cond. (K)=	**0.8 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.27	1.69	0.364	16.82	0.14			
0.011	15.52	1.44	0.389	16.84	0.12			
0.022	15.59	1.37	0.416	16.85	0.11			
0.033	15.71	1.25	0.444	16.87	0.09			
0.044	15.81	1.15	0.473	16.89	0.07			
0.055	15.84	1.12	0.505	16.90	0.06			
0.066	15.99	0.97	0.538	16.91	0.05			
0.077	16.04	0.92	0.573	16.92	0.04			
0.088	16.21	0.75	0.610	16.93	0.03			
0.099	16.19	0.77	0.650	16.93	0.03			
0.110	16.25	0.71	0.692	16.94	0.02			
0.121	16.31	0.65	0.736	16.94	0.02			
0.132	16.36	0.61	0.783	16.94	0.02			
0.143	16.40	0.56	0.833	16.95	0.02			
0.155	16.44	0.52						
0.167	16.49	0.48						
0.180	16.53	0.43						
0.194	16.56	0.40						
0.209	16.60	0.36						
0.225	16.63	0.33						
0.242	16.67	0.29						
0.259	16.70	0.26						
0.278	16.72	0.24						
0.298	16.75	0.21						
0.319	16.78	0.19						
0.341	16.80	0.16						

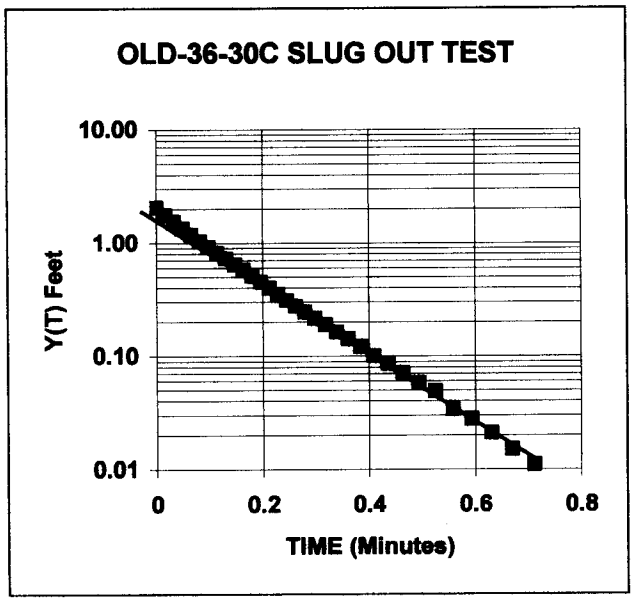


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	35.47 ft
Depth to Water (Dtw)=	14.34 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	25.66 ft
Lw (Wd-Dtw)=	21.13 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.39
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.77
Y(t1)=	1.37 ft
t1=	0.022 min
Y(t2)=	0.039 ft
t2=	0.5728 min
Hydraulic Cond. (K)=	**11.4 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	19.04	2.08	0.493	17.02	0.06			
0.016	18.73	1.77	0.525	17.01	0.05			
0.033	18.52	1.56	0.558	16.99	0.03			
0.049	18.31	1.35	0.593	16.99	0.03			
0.065	18.15	1.19	0.630	16.98	0.02			
0.082	18.01	1.05	0.670	16.98	0.02			
0.098	17.89	0.93	0.712	16.97	0.01			
0.114	17.78	0.82						
0.131	17.69	0.73						
0.147	17.60	0.64						
0.163	17.53	0.57						
0.180	17.47	0.51						
0.196	17.41	0.45						
0.212	17.36	0.40						
0.229	17.31	0.35						
0.245	17.27	0.31						
0.262	17.24	0.28						
0.279	17.21	0.24						
0.298	17.18	0.22						
0.318	17.15	0.19						
0.339	17.12	0.16						
0.361	17.10	0.14						
0.385	17.08	0.12						
0.409	17.06	0.10						
0.436	17.05	0.09						
0.464	17.03	0.07						

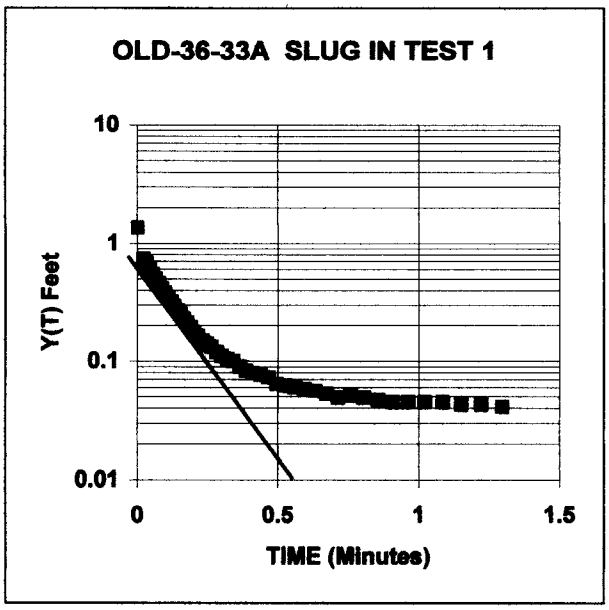


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	35.47 ft
Depth to Water (Dtw)=	14.34 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	25.66 ft
Lw (Wd-Dtw)=	21.13 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.39
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.77
Y(t1)=	1.56 ft
t1=	0.0326 min
Y(t2)=	0.02 ft
t2=	0.6698 min
Hydraulic Cond. (K)=	**12.9 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	11.64	1.36	0.363	12.91	0.09			
0.022	12.26	0.74	0.386	12.92	0.08			
0.033	12.33	0.67	0.411	12.92	0.08			
0.044	12.40	0.61	0.438	12.92	0.08			
0.055	12.45	0.55	0.466	12.93	0.07			
0.066	12.50	0.50	0.495	12.94	0.06			
0.077	12.54	0.46	0.527	12.94	0.06			
0.088	12.58	0.42	0.560	12.94	0.06			
0.099	12.62	0.38	0.595	12.94	0.06			
0.110	12.65	0.35	0.632	12.94	0.06			
0.121	12.68	0.32	0.672	12.95	0.05			
0.132	12.71	0.29	0.714	12.95	0.05			
0.143	12.73	0.27	0.758	12.95	0.05			
0.154	12.75	0.25	0.805	12.95	0.05			
0.165	12.77	0.23	0.855	12.95	0.05			
0.177	12.79	0.21	0.907	12.96	0.04			
0.189	12.81	0.20	0.963	12.96	0.04			
0.202	12.83	0.18	1.022	12.96	0.04			
0.216	12.84	0.16	1.085	12.96	0.04			
0.231	12.85	0.15	1.151	12.96	0.04			
0.247	12.86	0.14	1.222	12.96	0.04			
0.264	12.87	0.13	1.296	12.96	0.04			
0.281	12.88	0.12						
0.300	12.89	0.11						
0.320	12.90	0.11						
0.341	12.90	0.10						

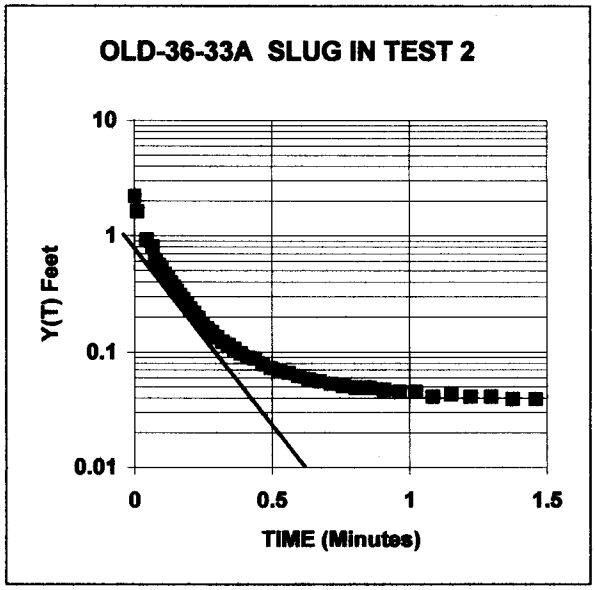


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2007	ft
Well Depth (Wd)=	18.02	ft
Depth to Water (Dtw)=	10.69	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.31	ft
Lw (Wd-Dtw)=	7.33	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.36	
Le/Rw=	24	
A=	2.45	
B=	0.80	
ln(Re/Rw)=	1.67	
Y(t1)=	0.74	ft
t1=	0.022	min
Y(t2)=	0.13	ft
t2=	0.2635	min
Hydraulic Cond. (K)=	**34.4**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.79	2.21	0.411	12.91	0.09			
0.011	11.37	1.63	0.438	12.91	0.09			
0.044	12.07	0.93	0.466	12.92	0.08			
0.066	12.19	0.81	0.495	12.93	0.07			
0.077	12.39	0.61	0.527	12.93	0.07			
0.088	12.44	0.56	0.560	12.93	0.07			
0.099	12.49	0.51	0.595	12.94	0.06			
0.110	12.53	0.47	0.632	12.94	0.06			
0.121	12.57	0.43	0.672	12.94	0.06			
0.132	12.61	0.39	0.714	12.95	0.05			
0.143	12.64	0.36	0.758	12.95	0.05			
0.154	12.67	0.33	0.805	12.95	0.05			
0.165	12.69	0.31	0.855	12.95	0.05			
0.177	12.72	0.29	0.907	12.95	0.05			
0.189	12.74	0.26	0.963	12.96	0.04			
0.202	12.76	0.24	1.022	12.96	0.04			
0.216	12.78	0.22	1.085	12.96	0.04			
0.231	12.80	0.20	1.151	12.96	0.04			
0.247	12.83	0.18	1.222	12.96	0.04			
0.264	12.84	0.16	1.296	12.96	0.04			
0.281	12.85	0.15	1.375	12.96	0.04			
0.300	12.87	0.14	1.459	12.96	0.04			
0.320	12.88	0.12						
0.341	12.88	0.12						
0.363	12.89	0.11						
0.386	12.90	0.10						

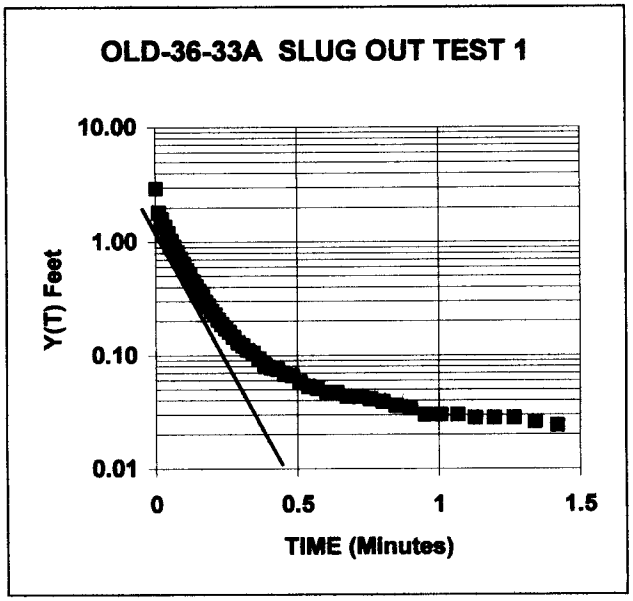


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2007	ft
Well Depth (Wd)=	18.02	ft
Depth to Water (Dtw)=	10.69	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.31	ft
Lw (Wd-Dtw)=	7.33	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.36	
Le/Rw=	24	
A=	2.45	
B=	0.80	
ln(Re/Rw)=	1.67	
Y(t1)=	0.61	ft
t1=	0.077	min
Y(t2)=	0.12	ft
t2=	0.3197	min
Hydraulic Cond. (K)=	**32.0**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.94	2.94	0.308	13.12	0.12	1.340	13.03	0.03
0.011	14.82	1.82	0.325	13.11	0.11	1.419	13.02	0.02
0.022	14.59	1.59	0.344	13.11	0.11	1.503	13.02	0.02
0.033	14.36	1.36	0.364	13.09	0.09			
0.044	14.20	1.20	0.385	13.08	0.08			
0.055	14.04	1.04	0.407	13.08	0.08			
0.066	13.91	0.91	0.430	13.08	0.07			
0.077	13.81	0.81	0.455	13.07	0.07			
0.088	13.71	0.71	0.482	13.07	0.07			
0.099	13.64	0.64	0.510	13.06	0.06			
0.110	13.57	0.57	0.539	13.05	0.05			
0.121	13.51	0.51	0.571	13.05	0.05			
0.132	13.45	0.45	0.604	13.05	0.05			
0.143	13.41	0.41	0.639	13.05	0.05			
0.154	13.37	0.37	0.676	13.04	0.04			
0.165	13.33	0.33	0.716	13.04	0.04			
0.176	13.30	0.30	0.758	13.04	0.04			
0.187	13.27	0.27	0.802	13.04	0.04			
0.198	13.25	0.25	0.849	13.04	0.04			
0.209	13.23	0.23	0.899	13.03	0.03			
0.221	13.21	0.21	0.951	13.03	0.03			
0.233	13.19	0.19	1.007	13.03	0.03			
0.246	13.17	0.17	1.066	13.03	0.03			
0.260	13.16	0.16	1.129	13.03	0.03			
0.275	13.15	0.15	1.195	13.03	0.03			
0.291	13.13	0.13	1.266	13.03	0.03			

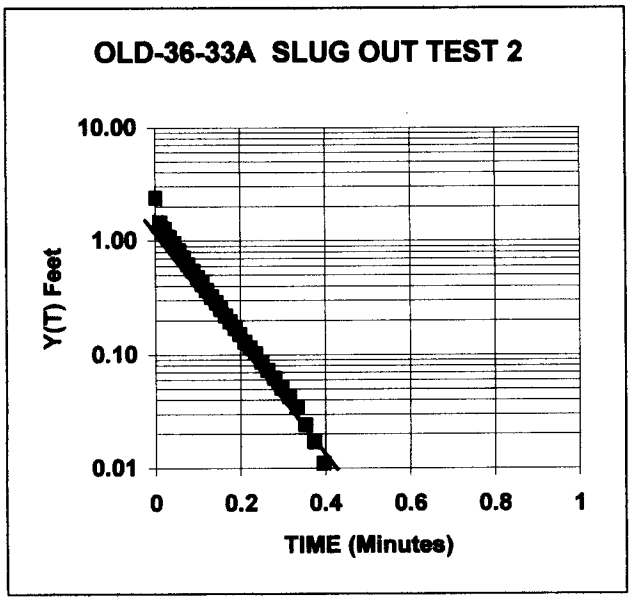


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	18.02 ft
Depth to Water (Dtw)=	10.69 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.31 ft
Lw (Wd-Dtw)=	7.33 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.36
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.67
Y(t1)=	1.82 ft
t1=	0.011 min
Y(t2)=	0.16 ft
t2=	0.2603 min
Hydraulic Cond. (K)=	47.3 ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.38	2.38	0.314	13.04	0.04			
0.011	14.45	1.45	0.333	13.03	0.03			
0.022	14.26	1.26	0.353	13.02	0.02			
0.033	14.08	1.08	0.374	13.02	0.02			
0.044	13.94	0.94	0.396	13.01	0.01			
0.055	13.82	0.82						
0.066	13.71	0.71						
0.077	13.62	0.62						
0.088	13.54	0.54						
0.099	13.48	0.48						
0.110	13.42	0.42						
0.121	13.37	0.37						
0.132	13.32	0.32						
0.143	13.29	0.29						
0.154	13.25	0.25						
0.165	13.22	0.22						
0.176	13.20	0.20						
0.187	13.17	0.17						
0.198	13.15	0.15						
0.210	13.13	0.13						
0.222	13.12	0.12						
0.235	13.10	0.10						
0.249	13.09	0.09						
0.264	13.07	0.07						
0.280	13.06	0.06						
0.297	13.05	0.05						

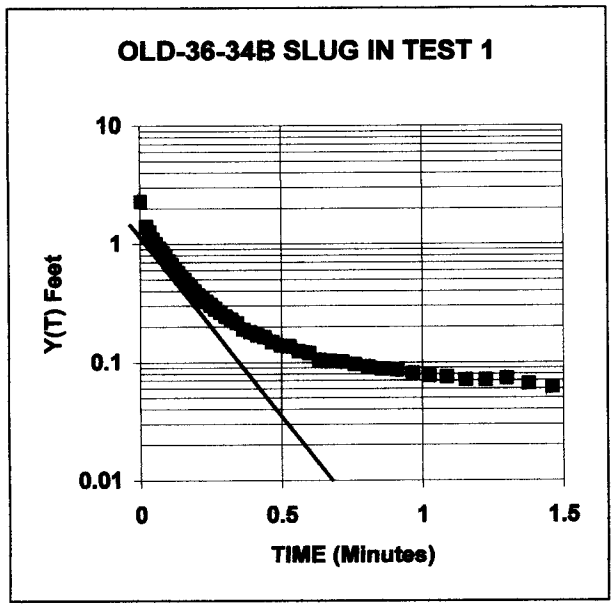


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.2007	ft
Well Depth (Wd)=	18.02	ft
Depth to Water (Dtw)=	10.69	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.31	ft
Lw (Wd-Dtw)=	7.33	ft
Le (screen length)=	10	ft
ln[(Hsat-Lw)/Rw]=	3.36	
Le/Rw=	24	
A=	2.45	
B=	0.80	
ln(Re/Rw)=	1.67	
Y(t1)=	1.45	ft
t1=	0.011	min
Y(t2)=	0.02	ft
t2=	0.3527	min
Hydraulic Cond. (K)=	**58.2**	**ft/day**

CH2MHILL

[redacted]

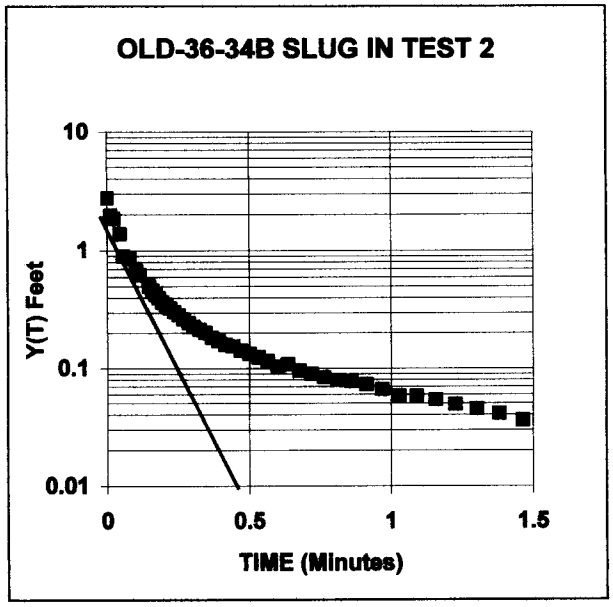
ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.70	2.29	0.365	12.80	0.19			
0.022	11.57	1.42	0.389	12.81	0.18			
0.034	11.72	1.27	0.414	12.82	0.17			
0.045	11.89	1.10	0.440	12.83	0.16			
0.056	11.99	1.00	0.468	12.84	0.15			
0.067	12.07	0.92	0.498	12.85	0.14			
0.078	12.15	0.84	0.529	12.85	0.14			
0.089	12.22	0.77	0.562	12.87	0.12			
0.101	12.28	0.71	0.597	12.87	0.12			
0.112	12.33	0.66	0.635	12.89	0.11			
0.123	12.38	0.61	0.674	12.89	0.10			
0.134	12.42	0.57	0.716	12.89	0.10			
0.145	12.47	0.52	0.760	12.89	0.10			
0.156	12.49	0.50	0.807	12.90	0.09			
0.168	12.53	0.46	0.857	12.90	0.09			
0.179	12.57	0.42	0.910	12.90	0.09			
0.192	12.59	0.40	0.966	12.91	0.08			
0.205	12.62	0.37	1.025	12.91	0.08			
0.219	12.64	0.35	1.088	12.92	0.08			
0.234	12.66	0.33	1.154	12.92	0.07			
0.249	12.69	0.30	1.224	12.92	0.07			
0.266	12.71	0.28	1.299	12.92	0.07			
0.284	12.73	0.26	1.378	12.92	0.07			
0.302	12.75	0.24	1.461	12.93	0.06			
0.322	12.76	0.23	1.550	12.93	0.06			
0.343	12.78	0.21						



Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	25.38	ft
Depth to Water (Dtw)=	10.37	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.63	ft
Lw (Wd-Dtw)=	15.01	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.41	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.68	
Y(t1)=	1.27	ft
t1=	0.0335	min
Y(t2)=	0.244	ft
t2=	0.3024	min
Hydraulic Cond. (K)=	**10.3**	**ft/day**

CH2MHILL

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	10.22	2.77	0.471	12.85	0.14			
0.011	11.03	1.96	0.500	12.86	0.13			
0.023	11.13	1.86	0.532	12.87	0.12			
0.045	11.61	1.38	0.565	12.87	0.12			
0.057	12.09	0.90	0.600	12.89	0.10			
0.079	12.13	0.86	0.637	12.88	0.11			
0.102	12.31	0.68	0.677	12.89	0.10			
0.113	12.37	0.62	0.719	12.90	0.09			
0.147	12.49	0.50	0.763	12.91	0.08			
0.159	12.53	0.47	0.810	12.91	0.08			
0.170	12.56	0.43	0.860	12.91	0.08			
0.182	12.59	0.40	0.912	12.92	0.07			
0.194	12.62	0.37	0.968	12.92	0.07			
0.207	12.64	0.35	1.027	12.93	0.06			
0.221	12.66	0.33	1.090	12.93	0.06			
0.236	12.69	0.30	1.156	12.94	0.05			
0.252	12.70	0.29	1.227	12.94	0.05			
0.269	12.73	0.26	1.301	12.95	0.04			
0.286	12.74	0.25	1.380	12.95	0.04			
0.305	12.76	0.23	1.464	12.95	0.04			
0.325	12.78	0.21	1.552	12.96	0.03			
0.346	12.79	0.20						
0.368	12.81	0.18						
0.391	12.82	0.17						
0.416	12.83	0.16						
0.443	12.84	0.15						

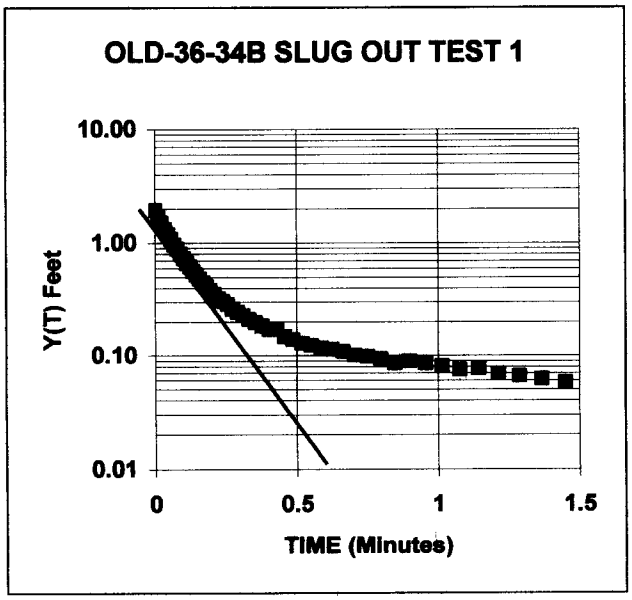


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	25.38	ft
Depth to Water (Dtw)=	10.37	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.63	ft
Lw (Wd-Dtw)=	15.01	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.41	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.68	
Y(t1)=	1.96	ft
t1=	0.0113	min
Y(t2)=	0.227	ft
t2=	0.3048	min
Hydraulic Cond. (K)=	**12.4**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	14.94	1.95	0.354	13.19	0.20			
0.011	14.70	1.71	0.378	13.17	0.18			
0.022	14.50	1.51	0.403	13.16	0.17			
0.034	14.32	1.33	0.429	13.16	0.17			
0.045	14.19	1.20	0.457	13.14	0.15			
0.056	14.07	1.08	0.487	13.13	0.14			
0.067	13.96	0.97	0.518	13.12	0.13			
0.078	13.88	0.89	0.551	13.11	0.12			
0.089	13.80	0.81	0.586	13.11	0.12			
0.101	13.72	0.73	0.624	13.10	0.11			
0.112	13.66	0.67	0.663	13.10	0.11			
0.123	13.61	0.62	0.705	13.09	0.10			
0.134	13.56	0.57	0.749	13.09	0.10			
0.145	13.52	0.53	0.796	13.08	0.09			
0.156	13.48	0.49	0.846	13.08	0.09			
0.168	13.44	0.45	0.899	13.08	0.09			
0.181	13.41	0.42	0.955	13.08	0.09			
0.194	13.37	0.38	1.014	13.07	0.08			
0.208	13.35	0.36	1.076	13.07	0.07			
0.223	13.32	0.33	1.143	13.07	0.08			
0.238	13.30	0.31	1.213	13.06	0.07			
0.255	13.28	0.29	1.288	13.06	0.07			
0.273	13.25	0.26	1.367	13.05	0.06			
0.291	13.23	0.24	1.450	13.05	0.06			
0.311	13.22	0.23	1.539	13.05	0.06			
0.332	13.20	0.21						

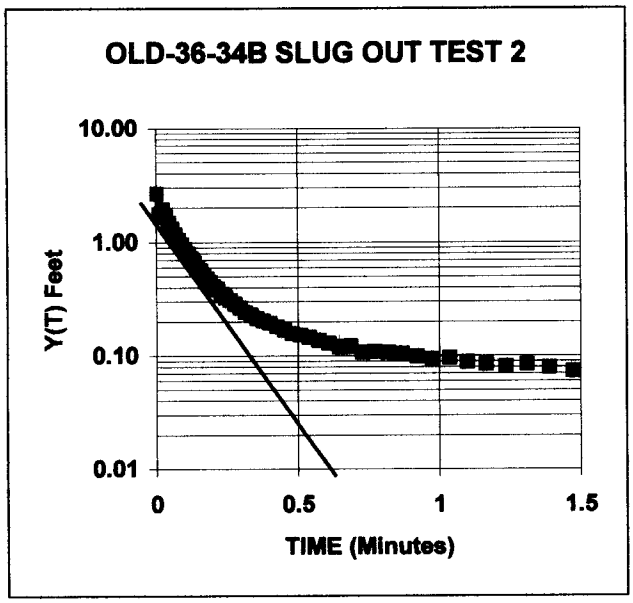


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	25.38	ft
Depth to Water (Dtw)=	10.37	ft
Confinement Depth(Dtc)=	30	ft
Hsat (Dtc-Dtw)=	19.63	ft
Lw (Wd-Dtw)=	15.01	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.41	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.68	
Y(t1)=	1.95	ft
t1=	0	min
Y(t2)=	0.29	ft
t2=	0.2548	min
Hydraulic Cond. (K)=	**12.7**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.65	2.66	0.333	13.22	0.23	1.561	13.06	0.07
0.011	14.75	1.76	0.354	13.20	0.21			
0.022	14.91	1.92	0.377	13.19	0.20			
0.034	14.67	1.68	0.400	13.19	0.20			
0.045	14.46	1.47	0.425	13.17	0.18			
0.056	14.30	1.31	0.451	13.16	0.17			
0.067	14.16	1.17	0.479	13.15	0.16			
0.078	14.04	1.05	0.509	13.14	0.15			
0.089	13.95	0.96	0.540	13.14	0.15			
0.101	13.86	0.87	0.573	13.13	0.14			
0.112	13.78	0.79	0.609	13.12	0.13			
0.123	13.71	0.72	0.646	13.11	0.12			
0.134	13.65	0.66	0.685	13.11	0.12			
0.145	13.59	0.60	0.727	13.10	0.11			
0.156	13.56	0.57	0.772	13.10	0.11			
0.168	13.51	0.52	0.819	13.10	0.11			
0.179	13.47	0.48	0.868	13.10	0.11			
0.190	13.43	0.44	0.921	13.09	0.10			
0.203	13.40	0.41	0.977	13.08	0.09			
0.216	13.38	0.39	1.036	13.09	0.10			
0.230	13.34	0.35	1.099	13.08	0.09			
0.245	13.32	0.33	1.165	13.07	0.08			
0.261	13.30	0.31	1.235	13.07	0.08			
0.277	13.28	0.29	1.310	13.07	0.08			
0.295	13.26	0.27	1.389	13.07	0.08			
0.314	13.23	0.24	1.473	13.06	0.07			

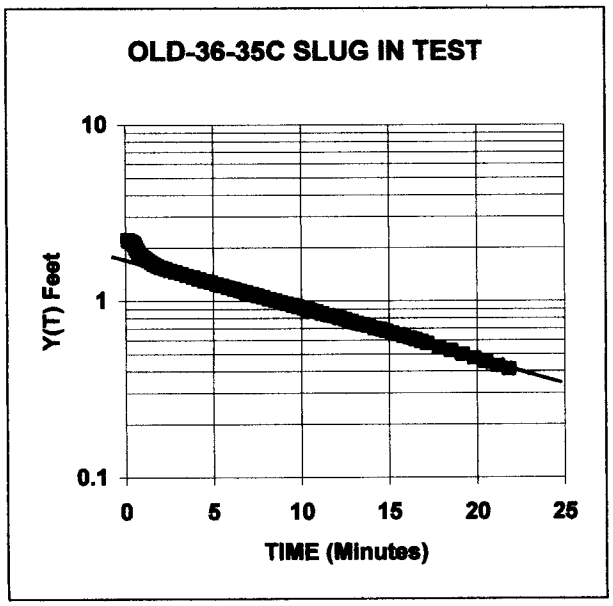


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	25.38 ft
Depth to Water (Dtw)=	10.37 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	19.63 ft
Lw (Wd-Dtw)=	15.01 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.41
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.68
Y(t1)=	1.76 ft
t1=	0.0111 min
Y(t2)=	0.33 ft
t2=	0.2448 min
Hydraulic Cond. (K)=	**12.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	15.27	1.69	0.364	16.82	0.14			
0.011	15.52	1.44	0.389	16.84	0.12			
0.022	15.59	1.37	0.416	16.85	0.11			
0.033	15.71	1.25	0.444	16.87	0.09			
0.044	15.81	1.15	0.473	16.89	0.07			
0.055	15.84	1.12	0.505	16.90	0.06			
0.066	15.99	0.97	0.538	16.91	0.05			
0.077	16.04	0.92	0.573	16.92	0.04			
0.088	16.21	0.75	0.610	16.93	0.03			
0.099	16.19	0.77	0.650	16.93	0.03			
0.110	16.25	0.71	0.692	16.94	0.02			
0.121	16.31	0.65	0.736	16.94	0.02			
0.132	16.36	0.61	0.783	16.94	0.02			
0.143	16.40	0.56	0.833	16.95	0.02			
0.155	16.44	0.52						
0.167	16.49	0.48						
0.180	16.53	0.43						
0.194	16.56	0.40						
0.209	16.60	0.36						
0.225	16.63	0.33						
0.242	16.67	0.29						
0.259	16.70	0.26						
0.278	16.72	0.24						
0.298	16.75	0.21						
0.319	16.78	0.19						
0.341	16.80	0.16						

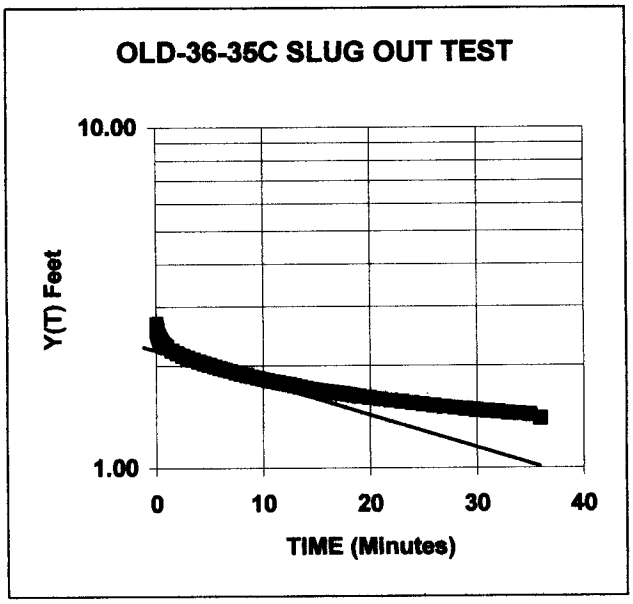


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	35.17	ft
Depth to Water (Dtw)=	14.22	ft
Confinement Depth(Dtc)=	40	ft
Hsat (Dtc-Dtw)=	25.78	ft
Lw (Wd-Dtw)=	20.95	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.45	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.75	
Y(t1)=	1.613	ft
t1=	1.6057	min
Y(t2)=	0.63	ft
t2=	15.8383	min
Hydraulic Cond. (K)=	**0.1**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	19.32	2.67	2.947	18.77	2.12	15.947	18.32	1.67
0.022	19.26	2.61	3.447	18.74	2.09	16.447	18.31	1.66
0.044	19.23	2.58	3.947	18.71	2.06	16.947	18.31	1.66
0.066	19.22	2.57	4.447	18.69	2.04	17.447	18.30	1.65
0.088	19.18	2.53	4.947	18.67	2.02	17.947	18.29	1.64
0.110	19.17	2.52	5.447	18.64	1.99	18.447	18.28	1.63
0.132	19.15	2.50	5.947	18.62	1.97	18.947	18.27	1.62
0.154	19.14	2.49	6.447	18.60	1.95	19.947	18.26	1.61
0.177	19.13	2.48	6.947	18.58	1.93	20.947	18.24	1.59
0.202	19.11	2.46	7.447	18.56	1.91	21.947	18.23	1.58
0.231	19.10	2.45	7.947	18.54	1.89	22.947	18.22	1.57
0.264	19.08	2.43	8.447	18.53	1.88	23.947	18.20	1.55
0.300	19.07	2.42	8.947	18.51	1.86	24.947	18.19	1.54
0.341	19.05	2.40	9.447	18.49	1.84	25.947	18.17	1.52
0.386	19.04	2.39	9.947	18.47	1.82	26.947	18.16	1.51
0.438	19.03	2.38	10.447	18.46	1.81	27.947	18.15	1.50
0.495	19.01	2.36	10.947	18.44	1.79	28.947	18.14	1.49
0.560	18.99	2.34	11.447	18.43	1.78	29.947	18.13	1.48
0.632	18.98	2.33	11.947	18.42	1.77	30.947	18.12	1.47
0.714	18.96	2.31	12.447	18.41	1.76	31.947	18.11	1.46
0.805	18.95	2.30	12.947	18.39	1.74	32.947	18.10	1.45
0.907	18.93	2.28	13.447	18.38	1.73	33.947	18.09	1.44
0.963	18.93	2.28	13.947	18.37	1.72	34.947	18.08	1.43
1.459	18.87	2.22	14.447	18.35	1.70	35.947	18.04	1.39
1.957	18.83	2.18	14.947	18.34	1.69			
2.474	18.79	2.14	15.447	18.33	1.68			

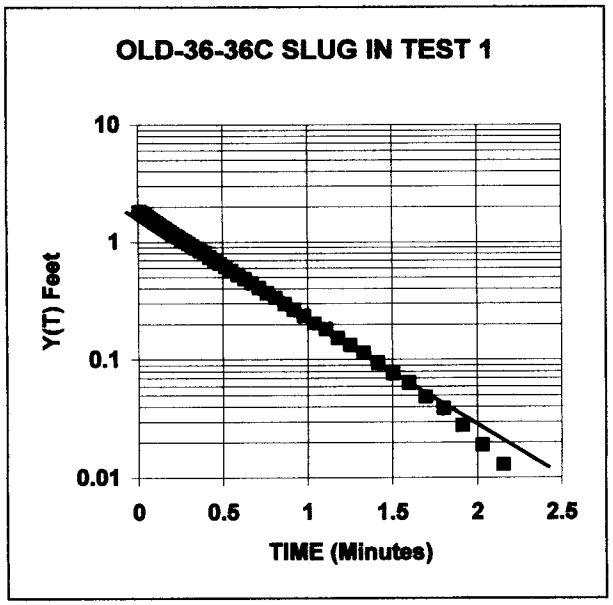


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	35.17 ft
Depth to Water (Dtw)=	14.22 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	25.78 ft
Lw (Wd-Dtw)=	20.95 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.45
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.75
Y(t1)=	2.28 ft
t1=	0.9632 min
Y(t2)=	1.809 ft
t2=	10.4467 min
Hydraulic Cond. (K)=	**0.04 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	11.17	1.83	0.394	12.19	0.81	2.032	12.98	0.02
0.011	11.18	1.82	0.422	12.25	0.75	2.157	12.99	0.01
0.022	11.22	1.78	0.451	12.30	0.70			
0.033	11.27	1.73	0.483	12.35	0.65			
0.044	11.31	1.69	0.516	12.39	0.61			
0.055	11.36	1.64	0.551	12.43	0.57			
0.066	11.40	1.60	0.588	12.48	0.53			
0.077	11.44	1.56	0.628	12.52	0.48			
0.088	11.48	1.52	0.670	12.56	0.44			
0.099	11.52	1.48	0.714	12.60	0.40			
0.110	11.56	1.44	0.761	12.63	0.37			
0.121	11.59	1.41	0.811	12.67	0.33			
0.133	11.63	1.37	0.863	12.70	0.30			
0.145	11.67	1.33	0.919	12.73	0.27			
0.158	11.70	1.30	0.978	12.76	0.24			
0.172	11.74	1.26	1.041	12.80	0.20			
0.187	11.78	1.22	1.107	12.82	0.18			
0.203	11.82	1.18	1.178	12.85	0.15			
0.220	11.86	1.14	1.252	12.87	0.13			
0.237	11.90	1.10	1.331	12.89	0.11			
0.256	11.94	1.06	1.415	12.91	0.09			
0.276	11.99	1.01	1.503	12.92	0.08			
0.297	12.03	0.97	1.597	12.94	0.06			
0.319	12.07	0.93	1.697	12.95	0.05			
0.342	12.12	0.88	1.802	12.96	0.04			
0.367	12.16	0.84	1.913	12.97	0.03			

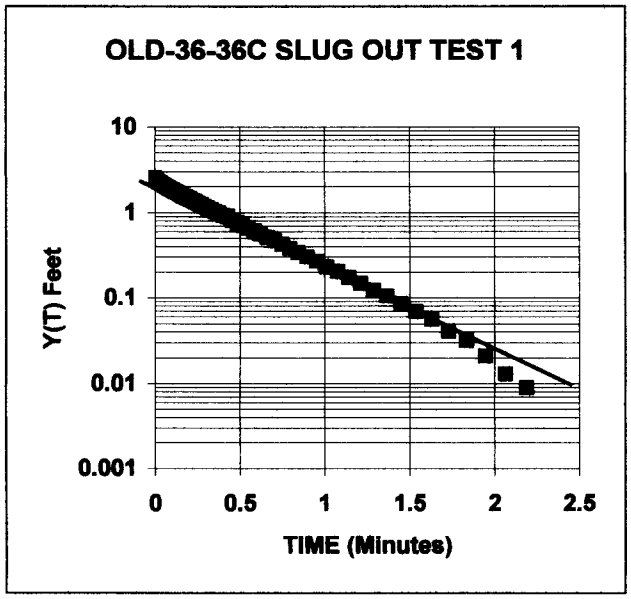


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	34.89	ft
Depth to Water (Dtw)=	15.49	ft
Confinement Depth(Dtc)=	40	ft
Hsat (Dtc-Dtw)=	24.51	ft
Lw (Wd-Dtw)=	19.4	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.51	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.73	
Y(t1)=	0.97	ft
t1=	0.2967	min
Y(t2)=	0.064	ft
t2=	1.5972	min
Hydraulic Cond. (K)=	**3.6**	**ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	20.63	2.57	0.352	19.09	1.03	1.730	18.10	0.04
0.011	20.41	2.35	0.375	19.05	0.99	1.835	18.09	0.03
0.022	20.32	2.26	0.400	18.99	0.93	1.946	18.08	0.02
0.033	20.26	2.20	0.427	18.97	0.91	2.065	18.07	0.01
0.044	20.18	2.12	0.455	18.88	0.82	2.190	18.07	0.01
0.055	20.12	2.06	0.484	18.82	0.76			
0.066	20.05	1.99	0.516	18.77	0.71			
0.077	19.99	1.93	0.549	18.72	0.66			
0.088	19.94	1.88	0.584	18.67	0.61			
0.099	19.90	1.84	0.621	18.62	0.56			
0.110	19.85	1.79	0.661	18.57	0.51			
0.121	19.80	1.74	0.703	18.53	0.47			
0.132	19.75	1.69	0.747	18.48	0.42			
0.143	19.71	1.65	0.794	18.44	0.38			
0.154	19.66	1.60	0.844	18.40	0.34			
0.166	19.62	1.56	0.896	18.36	0.30			
0.178	19.58	1.52	0.952	18.33	0.27			
0.191	19.54	1.48	1.011	18.29	0.23			
0.205	19.49	1.43	1.074	18.26	0.20			
0.220	19.44	1.38	1.140	18.23	0.17			
0.236	19.39	1.33	1.211	18.21	0.15			
0.253	19.35	1.29	1.285	18.18	0.12			
0.270	19.29	1.23	1.364	18.17	0.11			
0.289	19.25	1.19	1.448	18.15	0.09			
0.309	19.20	1.14	1.536	18.13	0.07			
0.330	19.14	1.08	1.630	18.12	0.06			

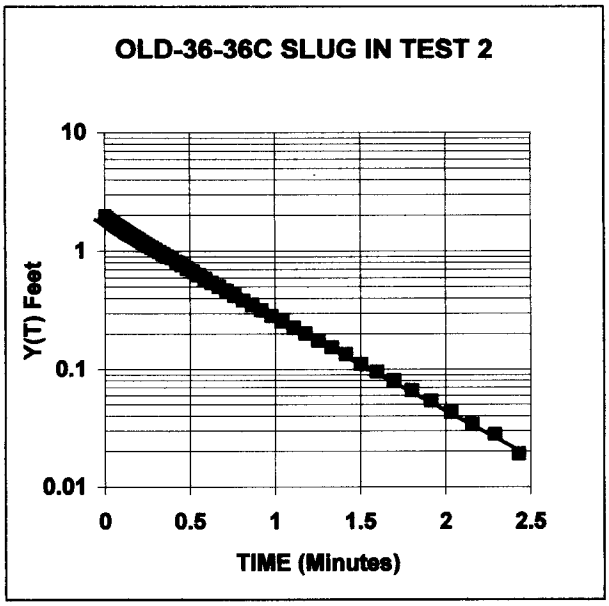


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	34.89	ft
Depth to Water (Dtw)=	15.49	ft
Confinement Depth(Dtc)=	40	ft
Hsat (Dtc-Dtw)=	24.51	ft
Lw (Wd-Dtw)=	19.4	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.51	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.73	
Y(t1)=	1.23	ft
t1=	0.2702	min
Y(t2)=	0.105	ft
t2=	1.3642	min
Hydraulic Cond. (K)=	3.9	ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	16.09	1.97	0.394	17.18	0.88	2.032	18.02	0.04
0.011	16.17	1.89	0.422	17.25	0.81	2.157	18.03	0.03
0.022	16.23	1.83	0.451	17.30	0.76	2.289	18.03	0.03
0.033	16.28	1.79	0.483	17.34	0.72	2.430	18.04	0.02
0.044	16.32	1.74	0.516	17.39	0.67	2.579	18.04	0.02
0.055	16.37	1.70	0.551	17.43	0.63	2.736	18.05	0.01
0.066	16.41	1.65	0.588	17.48	0.58			
0.077	16.45	1.61	0.628	17.52	0.54			
0.088	16.49	1.57	0.670	17.56	0.50			
0.099	16.53	1.53	0.714	17.60	0.46			
0.110	16.56	1.50	0.761	17.64	0.42			
0.121	16.60	1.46	0.811	17.67	0.39			
0.133	16.63	1.43	0.863	17.71	0.35			
0.145	16.67	1.39	0.919	17.74	0.32			
0.158	16.71	1.35	0.978	17.78	0.29			
0.172	16.74	1.32	1.041	17.80	0.26			
0.187	16.78	1.28	1.107	17.84	0.22			
0.203	16.82	1.24	1.178	17.86	0.20			
0.220	16.86	1.20	1.252	17.88	0.18			
0.237	16.91	1.16	1.331	17.91	0.15			
0.256	16.95	1.11	1.415	17.93	0.13			
0.276	16.99	1.07	1.503	17.95	0.11			
0.297	17.03	1.03	1.597	17.96	0.10			
0.319	17.07	0.99	1.697	17.98	0.08			
0.342	17.12	0.94	1.802	17.99	0.07			
0.367	17.16	0.90	1.913	18.01	0.05			

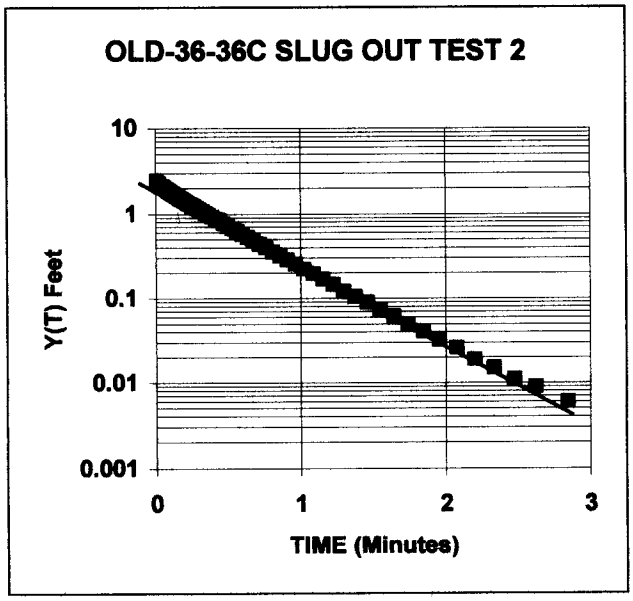


Well Radius (Rw)=	0.4167	ft
Casing Radius (Rc)=	0.0833	ft
Sand pack porosity=	0.2	
Adjusted Rc (if Lw<=Le)=	0.0833	ft
Well Depth (Wd)=	34.89	ft
Depth to Water (Dtw)=	15.49	ft
Confinement Depth(Dtc)=	40	ft
Hsat (Dtc-Dtw)=	24.51	ft
Lw (Wd-Dtw)=	19.4	ft
Le (screen length)=	5	ft
ln[(Hsat-Lw)/Rw]=	2.51	
Le/Rw=	12	
A=	2.00	
B=	0.60	
ln(Re/Rw)=	1.73	
Y(t1)=	1.03	ft
t1=	0.2967	min
Y(t2)=	0.034	ft
t2=	2.1567	min
Hydraulic Cond. (K)=	**3.2**	**ft/day**

CH2MHILL

[redacted]

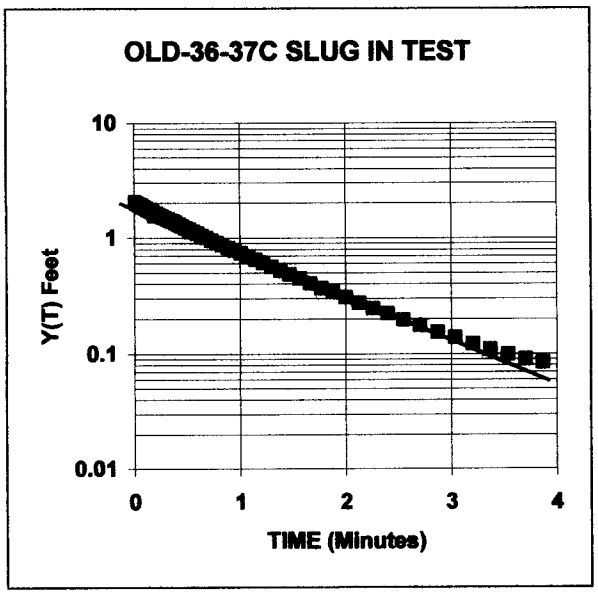
ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0	20.519	2.46	0.341	19.09	1.03	1.641	18.12	0.06
0.011	20.42	2.36	0.363	19.04	0.98	1.741	18.11	0.05
0.022	20.328	2.27	0.386	18.99	0.93	1.846	18.10	0.04
0.033	20.168	2.11	0.411	18.94	0.88	1.957	18.09	0.03
0.044	20.157	2.10	0.438	18.92	0.86	2.076	18.09	0.03
0.055	20.106	2.05	0.466	18.83	0.77	2.201	18.08	0.02
0.066	20.041	1.98	0.495	18.78	0.72	2.333	18.08	0.02
0.077	19.984	1.92	0.527	18.73	0.67	2.474	18.07	0.01
0.088	19.928	1.87	0.560	18.68	0.62	2.623	18.07	0.01
0.099	19.874	1.81	0.595	18.63	0.57	2.846	18.07	0.01
0.11	19.823	1.76	0.632	18.59	0.53			
0.121	19.774	1.71	0.672	18.54	0.48			
0.132	19.729	1.67	0.714	18.50	0.44			
0.143	19.684	1.62	0.758	18.46	0.40			
0.154	19.641	1.58	0.805	18.42	0.36			
0.165	19.594	1.53	0.855	18.38	0.32			
0.1767	19.553	1.49	0.907	18.35	0.29			
0.1892	19.508	1.45	0.963	18.32	0.26			
0.2023	19.465	1.41	1.022	18.28	0.22			
0.2163	19.42	1.36	1.085	18.26	0.20			
0.2312	19.375	1.32	1.151	18.23	0.17			
0.2468	19.328	1.27	1.222	18.21	0.15			
0.2635	19.281	1.22	1.296	18.18	0.12			
0.2812	19.232	1.17	1.375	18.17	0.11			
0.2998	19.183	1.12	1.459	18.15	0.09			
0.3197	19.135	1.08	1.547	18.13	0.07			



Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	34.89 ft
Depth to Water (Dtw)=	15.49 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	24.51 ft
Lw (Wd-Dtw)=	19.4 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.51
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.73
Y(t1)=	1.22 ft
t1=	0.2635 min
Y(t2)=	0.015 ft
t2=	2.3332 min
Hydraulic Cond. (K)=	3.7 ft/day

CH2MHILL

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	11.81	2.05	0.450	12.60	1.27	2.397	13.64	0.22
0.011	11.84	2.02	0.483	12.64	1.22	2.546	13.66	0.20
0.022	11.87	1.99	0.518	12.68	1.18	2.703	13.68	0.18
0.033	11.90	1.97	0.555	12.72	1.14	2.870	13.71	0.15
0.044	11.92	1.94	0.595	12.77	1.09	3.036	13.72	0.14
0.055	11.95	1.91	0.637	12.81	1.05	3.203	13.74	0.12
0.066	11.95	1.91	0.681	12.85	1.01	3.370	13.75	0.11
0.077	12.00	1.86	0.728	12.90	0.96	3.536	13.76	0.10
0.088	12.01	1.85	0.778	12.95	0.91	3.703	13.77	0.09
0.100	12.05	1.81	0.830	12.99	0.87	3.870	13.78	0.08
0.112	12.07	1.80	0.886	13.04	0.82			
0.125	12.11	1.76	0.945	13.08	0.78			
0.139	12.12	1.74	1.008	13.12	0.74			
0.154	12.15	1.71	1.074	13.17	0.69			
0.170	12.18	1.68	1.145	13.21	0.65			
0.187	12.31	1.56	1.219	13.25	0.61			
0.204	12.24	1.62	1.298	13.30	0.56			
0.223	12.27	1.59	1.382	13.34	0.52			
0.243	12.30	1.56	1.470	13.38	0.48			
0.264	12.34	1.52	1.564	13.42	0.44			
0.286	12.37	1.49	1.664	13.46	0.40			
0.309	12.40	1.46	1.769	13.49	0.37			
0.334	12.44	1.42	1.880	13.52	0.34			
0.361	12.46	1.40	1.999	13.55	0.31			
0.389	12.51	1.35	2.124	13.59	0.27			
0.418	12.56	1.30	2.256	13.61	0.25			

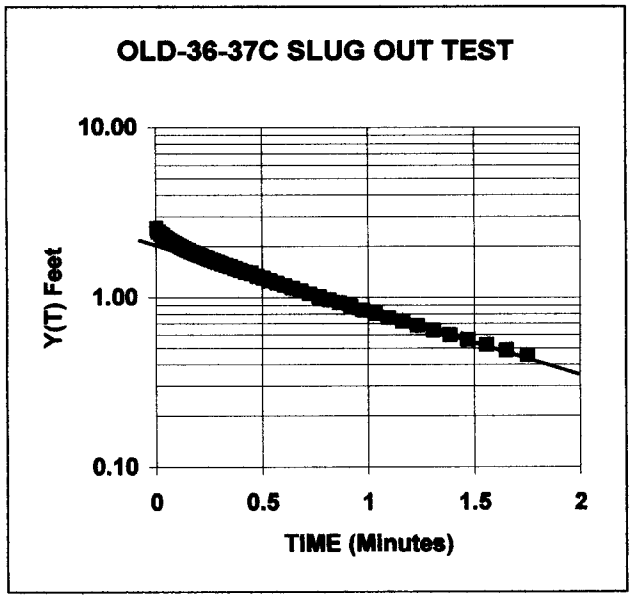


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	34.95 ft
Depth to Water (Dtw)=	13.86 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	26.14 ft
Lw (Wd-Dtw)=	21.09 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.49
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.75
Y(t1)=	1.30 ft
t1=	0.4182 min
Y(t2)=	0.139 ft
t2=	3.0363 min
Hydraulic Cond. (K)=	**1.5 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	16.42	2.56	0.331	15.41	1.55	1.558	14.39	0.53
0.011	16.31	2.45	0.352	15.37	1.51	1.652	14.35	0.49
0.022	16.23	2.37	0.374	15.34	1.48	1.752	14.32	0.46
0.033	16.19	2.33	0.397	15.31	1.45			
0.044	16.12	2.26	0.422	15.27	1.41			
0.055	16.08	2.22	0.449	15.25	1.39			
0.066	16.03	2.17	0.477	15.19	1.33			
0.077	15.99	2.13	0.506	15.16	1.30			
0.088	15.95	2.09	0.538	15.12	1.26			
0.099	15.91	2.05	0.571	15.08	1.22			
0.110	15.87	2.01	0.606	15.04	1.18			
0.121	15.84	1.98	0.643	15.00	1.14			
0.132	15.81	1.95	0.683	14.95	1.09			
0.143	15.77	1.91	0.725	14.92	1.06			
0.154	15.75	1.89	0.769	14.87	1.01			
0.165	15.72	1.86	0.816	14.83	0.97			
0.176	15.69	1.83	0.866	14.79	0.93			
0.188	15.66	1.80	0.918	14.75	0.89			
0.200	15.64	1.78	0.974	14.70	0.84			
0.213	15.61	1.75	1.033	14.66	0.80			
0.227	15.58	1.72	1.096	14.62	0.76			
0.242	15.55	1.69	1.162	14.58	0.72			
0.258	15.53	1.67	1.233	14.54	0.68			
0.275	15.50	1.64	1.307	14.50	0.64			
0.292	15.47	1.61	1.386	14.46	0.60			
0.311	15.44	1.58	1.470	14.42	0.56			

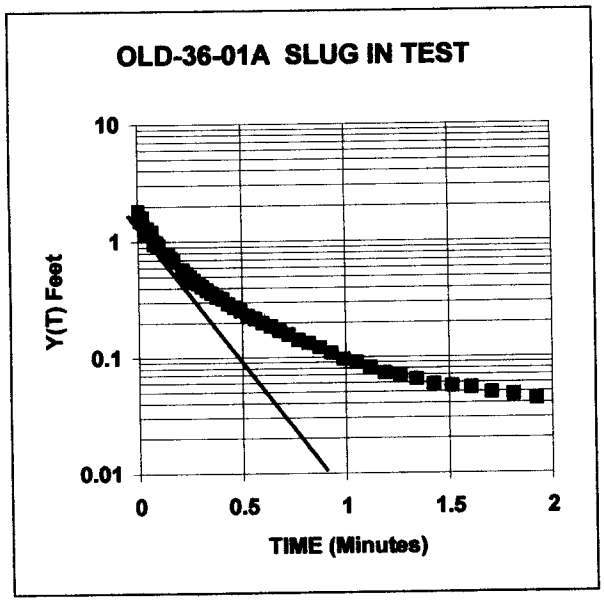


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.0833 ft
Well Depth (Wd)=	34.95 ft
Depth to Water (Dtw)=	13.86 ft
Confinement Depth(Dtc)=	40 ft
Hsat (Dtc-Dtw)=	26.14 ft
Lw (Wd-Dtw)=	21.09 ft
Le (screen length)=	5 ft
ln[(Hsat-Lw)/Rw]=	2.49
Le/Rw=	12
A=	2.00
B=	0.60
ln(Re/Rw)=	1.75
Y(t1)=	1.58 ft
t1=	0.3108 min
Y(t2)=	0.562 ft
t2=	1.4698 min
Hydraulic Cond. (K)=	1.6 ft/day

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	7.99	1.83	0.527	9.59	0.23	2.590	9.78	0.04
0.011	8.31	1.51	0.562	9.60	0.22	2.747	9.78	0.04
0.022	8.21	1.61	0.599	9.62	0.20	2.914	9.79	0.03
0.033	8.65	1.17	0.639	9.63	0.19			
0.044	8.52	1.30	0.681	9.65	0.17			
0.055	8.65	1.17	0.725	9.66	0.16			
0.066	8.61	1.21	0.772	9.68	0.14			
0.077	8.86	0.96	0.822	9.69	0.13			
0.088	8.84	0.98	0.874	9.70	0.12			
0.099	8.90	0.92	0.930	9.71	0.11			
0.144	9.05	0.77	0.989	9.72	0.10			
0.156	9.10	0.72	1.052	9.73	0.09			
0.169	9.14	0.68	1.118	9.74	0.08			
0.214	9.24	0.58	1.189	9.75	0.07			
0.231	9.29	0.53	1.263	9.75	0.07			
0.248	9.32	0.50	1.342	9.76	0.06			
0.267	9.35	0.47	1.426	9.76	0.06			
0.287	9.38	0.44	1.514	9.76	0.06			
0.308	9.41	0.41	1.608	9.77	0.05			
0.330	9.44	0.39	1.708	9.77	0.05			
0.353	9.46	0.36	1.813	9.77	0.05			
0.378	9.49	0.33	1.924	9.78	0.04			
0.405	9.50	0.32	2.043	9.78	0.04			
0.433	9.53	0.29	2.168	9.78	0.04			
0.462	9.55	0.27	2.300	9.78	0.04			
0.494	9.57	0.25	2.441	9.78	0.04			

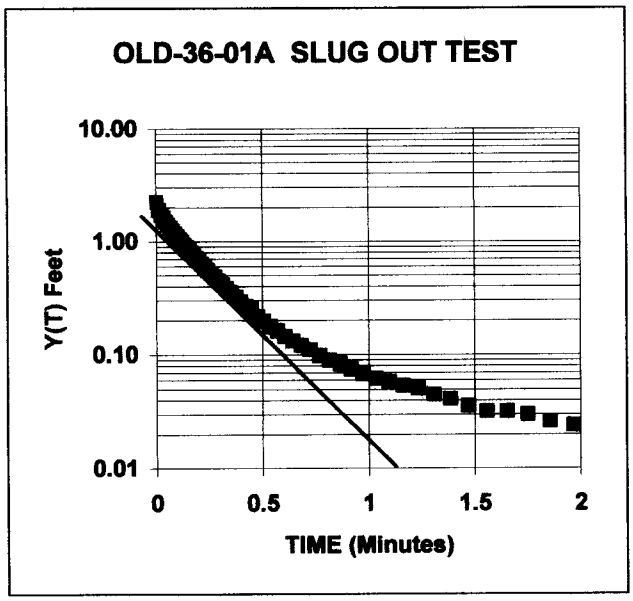


Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.78 ft
Depth to Water (Dtw)=	9.82 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	20.18 ft
Lw (Wd-Dtw)=	9.96 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.20
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.80
Y(t1)=	1.17 ft
t1=	0.033 min
Y(t2)=	0.44 ft
t2=	0.2867 min
Hydraulic Cond. (K)=	**20.1 ft/day**

CH2MHILL

[redacted]

ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)	ELAPSED TIME (min)	TRANSDUCER READING (ft)	Y(t) (ft)
0.000	12.26	2.24	0.331	10.40	0.38	1.558	10.05	0.03
0.011	11.92	1.90	0.352	10.37	0.35	1.652	10.05	0.03
0.022	11.74	1.72	0.374	10.34	0.32	1.752	10.05	0.03
0.033	11.65	1.63	0.397	10.31	0.29	1.857	10.05	0.03
0.044	11.53	1.51	0.422	10.29	0.27	1.968	10.04	0.02
0.055	11.43	1.41	0.449	10.27	0.25	2.087	10.04	0.02
0.066	11.35	1.33	0.477	10.24	0.22	2.212	10.04	0.02
0.077	11.27	1.25	0.506	10.22	0.20	2.344	10.04	0.02
0.088	11.20	1.18	0.538	10.20	0.18	2.485	10.04	0.02
0.099	11.13	1.11	0.571	10.18	0.16			
0.110	11.07	1.05	0.606	10.17	0.15			
0.121	11.01	0.99	0.643	10.15	0.13			
0.132	10.96	0.94	0.683	10.14	0.12			
0.143	10.91	0.89	0.725	10.13	0.11			
0.154	10.86	0.84	0.769	10.12	0.10			
0.165	10.81	0.79	0.816	10.11	0.09			
0.176	10.77	0.75	0.866	10.10	0.08			
0.188	10.73	0.71	0.918	10.10	0.08			
0.200	10.69	0.67	0.974	10.09	0.07			
0.213	10.66	0.64	1.033	10.08	0.06			
0.227	10.62	0.60	1.096	10.08	0.06			
0.242	10.58	0.56	1.162	10.07	0.05			
0.258	10.54	0.52	1.233	10.07	0.05			
0.275	10.51	0.49	1.307	10.07	0.04			
0.292	10.47	0.45	1.386	10.06	0.04			
0.311	10.44	0.42	1.470	10.06	0.04			



Well Radius (Rw)=	0.4167 ft
Casing Radius (Rc)=	0.0833 ft
Sand pack porosity=	0.2
Adjusted Rc (if Lw<=Le)=	0.2007 ft
Well Depth (Wd)=	19.78 ft
Depth to Water (Dtw)=	10.02 ft
Confinement Depth(Dtc)=	30 ft
Hsat (Dtc-Dtw)=	30 ft
Lw (Wd-Dtw)=	9.76 ft
Le (screen length)=	10 ft
ln[(Hsat-Lw)/Rw]=	3.88
Le/Rw=	24
A=	2.45
B=	0.80
ln(Re/Rw)=	1.72
Y(t1)=	1.63 ft
t1=	0.033 min
Y(t2)=	0.22 ft
t2=	0.4765 min
Hydraulic Cond. (K)=	**22.7 ft/day**

Appendix C

Analytical Laboratory Data
(CD Only)

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 26326
Client Project: CTO 17- NTC Orlando – Study Area 36 / 152044.32.12.01.08
Task Order Manager: Steve Tsangaris

CCI NAVY RAC PMO
JAN 16 2001

The following items were noted concerning this project:

1. The following samples were received by Accura Analytical Laboratory on 11/30/00 at 0920:

Client I.D.	Laboratory I.D.
017-OLD-36-30C-Q4-00	AC03938
017-OLD-36-TB1-Q4-00	AC03939

2. The sample cooler temperature was 4^0C upon receipt.

3. The pH for the VOC samples was noted to be < 2 prior to analysis.

4. The following analyses were performed by a subcontract laboratory:
   Anions - EPA-300.0
   TOC – SW-846-9060
   Methane, Ethane, Ethene – RSK-175M

5. The following samples were analyzed the listed amount of time outside the EPA recommended holding time; therefore, the results should be considered estimated:
   Anions - EPA-300.0
   017-OLD-36-30C-Q4-00 - Nitrate by IC (5 days)
   Nitrite by IC (5 days)

6. The J values noted for the VOC and FL-PRO analyses indicate estimated values where the compounds are present at concentrations that are less than the quantitation limits, but above the method detection limits.

7. The B flag applied to the FL-PRO sample result indicates that the analyte was detected in the Method Blank at a concentration above the method detection limit, and the concentration in the sample was less than ten times the concentration in the Method Blank. This result should be considered estimated due to Method Blank contamination.

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8. The following surrogates were outside the project specified limits:

FL-PRO	FL-PRO
o-Terphenyl	Nonatriacontane (C39)
017-OLD-36-30C-Q4-00	Matrix Spike
Method Blank	
Laboratory Control Sample	
Matrix Spike	
Matrix Spike Duplicate	

All recoveries were within established in-house limits; therefore the data was accepted.

9. The recovery for the Laboratory Control Sample associated with the FL-PRO analyses was outside the project specified limits, but within established in-house limits; therefore the data was accepted.

Quality Assurance

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ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia 30017, Phone (770)449-8800, FAX (770)449-5477

FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC03938 **Accura Project #: 26326**

Client: CH2M HILL - CCI Date Sampled: 11/29/2000

Client Contact: S. TSANGARIS Date Received: 11/30/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-30C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	41	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	0.80	2.00
Chloride by IC	9.40	2.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	9.0	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.30JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	140	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/03/2000 Date Analyzed: 12/03/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	6.21	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	37	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	14	
o-Terphenyl (Range 82-142)	93	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	86	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (84-108)	96	

Accura Analytical Laboratory, Inc.

ACCURA ANALYTICAL LABORATORY, INC.

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC03939 **Accura Project #: 26326**

Client: CH2M HILL - CCI Date Sampled: 11/29/2000

Client Contact: S. TSANGARIS Date Received: 11/30/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-TB1-Q4-00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5

Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	0.63J	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	81	
4-Bromofluorobenzene (86-112)	100	
Toluene-d8 (84-108)	96	

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC03940 **Accura Project #: 26326**

Client: CH2M HILL - CCI Date Sampled: 11/30/2000

Client Contact: S. TSANGARIS Date Received: 11/30/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: METHOD BLANK

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	<RDL	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	<RDL	1.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	<RDL	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/08/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.22J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/03/2000 Date Analyzed: 12/03/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	0.63J	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Client Sample ID: METHOD BLANK AALSample ID #: AC03940 Accura Project #: 26326

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO QC Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/08/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	5.1	
o-Terphenyl (Range 82-142)	101	

ANALYSIS: X VOC QC Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-114)	83	
4-Bromofluorobenzene (85-111)	94	
Toluene-d8 (88-106)	92	

Accura Analytical Laboratory, Inc.

CH2MHILL Constructors, Inc.
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
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Fax No: (770) 604-9282

CHAIN-OF-CUSTODY RECORD

AAL# 26326 AQ/4°C

[1] COC NUMBER: 152044-36-001

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
NTC ORLANDO	152044.32.12.01.08	ACCURA LABS / DAVID FULLER	STEVE TSANGARIS / CCT	4350 W. CYPRESS ST SUITE 600 TAMPA, FL 33607
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
STUDY AREA 36	CTO 017		JENNIFER OTTOSON / CH2M HILL	FAX 321 636-7522 205 INDIAN RIVER DRIVE OCOA FL 32922
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
STEVE TSANGARIS	(813)874-0777 3056(Fax)	(770) 449-8800		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	VOC's 8260B	Nitrate/Nitrite 300.1	Chloride/Bromide 300.1	TOC 9060	ALK. 310.1	M,E,E	TDS/Sodium 160.1	FLPRO - TPH			[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use) AC
1	017-OLD-36-30C-GA-00	GW SAMPLE AT WELL OLD-36-30C	GW	11/29/00	1400	LEVEL 3	14	3 40 mL	1 500 mL	1 500 mL	1 500 mL	1 500 mL	3 40 mL	1 500 mL	2 Ambers			FIELD GRAB		03938
2	017-OLD-36-TB1-GA-00	TRIP BLANK #1	WQ	—	—	↓	↓	2 40 mL										QC		03939
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use)
Fernando Ferreira / CH2M HILL	FEDEX - 8215 7530 6204	

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
Fernando Ferreira / [signature]	11/29/00	1700	FED EX		
Printed Name and Signature:			Printed Name and Signature:		
FED EX	11-30-00	0920	[signature]	11-30-00	0920
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 26367
Client Project: CTO 17 - NTC Orlando – Study Area 36 / 152044.32.12.01.08
Task Order Manager: Steve Tsangaris

The following items were noted concerning this project:

1. The following samples were received by Accura Analytical Laboratory on 12/02/00 at 1045:

Client I.D.	Laboratory I.D.
017-OLD-36-26A-Q4-00	AC04276
017-OLD-36-27A-Q4-00	AC04277
017-OLD-36-28B-Q4-00	AC04278
017-OLD-36-07A-Q4-00	AC04279
017-OLD-36-DUP1-Q4-00	AC04280
017-OLD-36-TB3-Q4-00	AC04281

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2. The sample cooler temperature was 3^0C upon receipt.

3. The pH for the VOC samples was noted to be < 2 prior to analysis.

4. The following analyses were performed by a subcontract laboratory:
   Anions - EPA-300.0
   TOC – SW-846-9060
   Methane, Ethane, Ethene – RSK-175M

5. The following analyses were performed the listed amount of time outside the EPA recommended holding time; therefore, the results should be considered estimated:
   Anions - EPA-300.0
   Nitrate by IC (3 days)
   Nitrite by IC (3 days)

6. The J values noted for the VOC and FL-PRO analyses indicate estimated values where the compounds are present at concentrations that are less than the quantitation limits, but above the method detection limits.

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7. The B flag applied to the FL-PRO sample results indicate that the analyte was detected in the Method Blank at a concentration above the method detection limit, and the concentrations in the samples were less than ten times the concentration in the Method Blank. These results should be considered estimated due to Method Blank contamination.

8. The following samples required dilution due to high analyte concentration, resulting in elevated detection limits:

   VOCs – SW-846-8260B

   Trichloroethene - 017-OLD-36-27A-Q4-00
   017-OLD-36-28B-Q4-00
   017-OLD-36-07A-Q4-00
   017-OLD-36-DUP1-Q4-00

9. The following sample required dilution due to matrix interference, resulting in an elevated detection limit:

   Metals – SW-846-6010B

   017-OLD-36-26A-Q4-00

10. The following surrogates were outside the project specified limits:

FL-PRO o-Terphenyl	FL-PRO Nonatriacontane (C39)
017-OLD-36-26A-Q4-00	017-OLD-36-26A-Q4-00
017-OLD-36-28B-Q4-00	017-OLD-36-27A-Q4-00
017-OLD-36-07A-Q4-00	017-OLD-36-28B-Q4-00
017-OLD-36-DUP1-Q4-00	017-OLD-36-07A-Q4-00
Matrix Spike	017-OLD-36-DUP1-Q4-00
	Method Blank
	Laboratory Control Sample
	Matrix Spike
	Matrix Spike Duplicate

All recoveries were within established in-house limits; therefore the data was accepted.

11. The recovery for the Laboratory Control Sample associated with the FL-PRO analyses was outside the project specified limits, but within established in-house limits; therefore the data was accepted.

12. The recovery for the following spike compound was outside the project specified limit due to laboratory contamination:

    VOC – SW-846-8260B

    Laboratory Control Sample - Methylene Chloride

    There was no Methylene Chloride detected in the samples, therefore the results were not affected.

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13. The recovery for the following spike compound was outside the project specified limit due to matrix interference:

    Metals – SW-846-6010B

    Matrix Spike - Sodium

14. The relative percent difference between the Matrix Spike and Matrix Spike Duplicate results was outside the project specified limit for the following analyte due to sample heterogeneity and matrix interference:

    Metals – SW-846-6010B

    Matrix Spike - Sodium

Quality Assurance

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04276 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/01/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-26A-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	26	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	0.50	1.00
Chloride by IC	6.50	1.00
Nitrate by IC	1.20	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	8.5	1.0

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.57JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	260	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	46.6	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	15	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	34	
o-Terphenyl (Range 82-142)	21	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	86	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	96	

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LABORATORY REPORT

Accura Sample ID #: AC04277 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/01/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-27A-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	160	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	6.70	1.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	7.3	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.49JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	230	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	8.36	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	1.1J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	79	25
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	21	
o-Terphenyl (Range 82-142)	85	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	88	
4-Bromofluorobenzene (86-112)	96	
Toluene-d8 (80-120)	95	

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LABORATORY REPORT

Accura Sample ID #: AC04278 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/1/00

Client Contact: S. TSANGARIS Date Received: 12/2/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/10/01

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-28B-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/4/00 Date Analyzed: 12/4/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	300	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/6/00 Date Analyzed: 12/6/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	8.70	1.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/6/00 Date Analyzed: 12/7/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	55	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/12/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.012	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.40JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/6/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	920	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/5/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	90.5	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/5/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	1.4J	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	0.54J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	85	25
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/9/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	15	
o-Terphenyl (Range 82-142)	36	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/5/00 Date Analyzed: 12/5/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	85	
4-Bromofluorobenzene (86-112)	96	
Toluene-d8 (80-120)	93	

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LABORATORY REPORT

Accura Sample ID #: AC04279 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/01/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-07A-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	16	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	6.20	1.00
Nitrate by IC	0.20	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	5.4	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.44JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	110	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	12.5	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	59	25
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	17	
o-Terphenyl (Range 82-142)	75	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	98	
4-Bromofluorobenzene (86-112)	99	
Toluene-d8 (80-120)	92	

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LABORATORY REPORT

Accura Sample ID #: AC04280 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/01/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-DUP1-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	150	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	8.80	1.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	66	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.012	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.42JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	1300	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	33.9	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	1.5	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	0.61J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	89	25
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/09/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	14	
o-Terphenyl (Range 82-142)	42	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	91	
4-Bromofluorobenzene (86-112)	102	
Toluene-d8 (80-120)	93	

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LABORATORY REPORT

Accura Sample ID #: AC04281 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/01/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-TB3-Q4-00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5

Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	87	
4-Bromofluorobenzene (86-112)	97	
Toluene-d8 (80-120)	93	

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04282 **Accura Project #: 26367**

Client: CH2M HILL - CCI Date Sampled: 12/02/2000

Client Contact: S. TSANGARIS Date Received: 12/02/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17 - NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: METHOD BLANK

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/04/2000 Date Analyzed: 12/04/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	<RDL	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	<RDL	1.00
Nitrate by IC	<RDL	0.10
Nitrite by IC	<RDL	0.10

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	<RDL	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/08/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.22J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits

Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5

Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO OC Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/08/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	5.1	
o-Terphenyl (Range 82-142)	101	

ANALYSIS: X VOC OC Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/05/2000 Date Analyzed: 12/05/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-114)	82	
4-Bromofluorobenzene (85-111)	96	
Toluene-d8 (84-108)	98	

Accura Analytical Laboratory, Inc.

Proj. 26367 Rcvd 12/2/00

CH2MHILL Constructors, Inc.

115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 604-9182
Fax No: (770) 604-9282

CHAIN-OF-CUSTODY RECORD

26367

[1] COC NUMBER: 152044-36-004

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
NTC ORL	152044.32.12.01.08	Accura Labs / Bonnie Hougue	STEVE TSANGARIS / CCI	4350 W. CYPRESS ST. SUITE 600 TAMPA FL 33607
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
STUDY AREA 36	CTO 017	2101	Jennifer OTTOSON / CH2M HILL	205 INDIAN RIVER DRIVE COCOA FL 32922
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
STEVE TSANGARIS	813 874-0777 813 874-3056	770 449-8800		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	VOCs 8260	M,E,E AM19GA - ASTM 1945	Nitrate/Nitrite 300.1	Chloride/Bromide 300.1	TOC 9060	ALK 310.1	TDS/Sodium 160.1				[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use) AC
1	017-OLD-36-26A-Q4-00	GW SAMPLE well OLD-36-26A	GW	12/1/00	0915	III	14	3 40 ML	3 40 ML	1 500 ml	1 500 ml	1 500 ml	1 500 ML	1 500 ML				Field Grab		04276
2	017-OLD-36-27A-Q4-00	OLD-36-27A			1100															04277
3	017-OLD-36-28B-Q4-00	OLD-36-28B			1330															04278
4	017-OLD-36-07A-Q4-00	OLD-36-07A			1530															04279
5	017-OLD-36-DUP1-Q4-00	DUPLICATE #1			—													Field Grab QC		04280
6	017-OLD-36-TB3-Q4-00	TRIP BLANK #3	WQ	—	—			2 40 ML										QC		04281
7																				~~04282~~
8																				~~042~~
9																				
10																				

[29] SAMPLER(S) AND COMPANY: (please print): FJF/TPP/GSB - CH2M HILL/CCI

[30] COURIER AND SHIPPING NUMBER: FEDEX 825060778660

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use): 3°C Good

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: FJ Ferreira / FJF	12/1/00	1700	Printed Name and Signature: fedex		
Printed Name and Signature:			Printed Name and Signature: Jigar Patel	12/2/00	10:45
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 26383
Client Project: CTO 17-NTC Orlando-Study Area 36 / 152044.32.12.01.08

The following items were noted concerning this project:

1. The following samples were received at Accura Analytical Laboratory on 12/05/00 at 0910.

Client I.D.	Laboratory I.D.
017-OLD-36-06A-Q4-00	AC04412
017-OLD-36-08B-Q4-00	AC04413
017-OLD-36-29B-Q4-00	AC04414
017-OLD-36-10B-Q4-00	AC04417
017-OLD-36-TB3-Q4-00	AC04418

2. The sample cooler temperature was noted to be 2^0C upon receipt.

3. The pH for the samples for the VOC analysis was noted at <2.0 prior to analysis.

4. The J values noted for the Metal-Sodium, FLA-PRO, and VOC analyses indicate estimated values where the compounds are present at concentrations that are less than the quantitation limits, but above the method detection limits.

5. The following analyses were performed by subcontract laboratories:

   Bromide/Chloride by IC – EPA 300.0 — Methane, Ethane, Ethene – RSK-175M

   Nitrate-Nitrite Nitrogen – EPA 353.2 — TOC – EPA 9060

6. The following samples required dilution due to high analyte concentration, resulting in elevated detection limits:

   VOC – SW-846-8260B
   017-OLD-36-08B-Q4-00 - (Trichloroethene)
   017-OLD-36-29B-Q4-00 - (Trichloroethene)

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7. The following surrogates were outside the method specified limits :

FL-PRO

Nonatriacontane (C39) -	017-OLD-36-06A-Q4-00
	017-OLD-36-29B-Q4-00
	017-OLD-36-10B-Q4-00
	Method Blank
	Laboratory Control Sample
	Matrix Spike
	Matrix Spike Duplicate
o-Terphenyl -	017-OLD-36-10B-Q4-00
	Matrix Spike
	Matrix Spike Duplicate

All recoveries were within established in-house limits; therefore the data was accepted.

8. The Laboratory Control Sample recovery was outside the project specified limit, but within established in-house limits for the following analysis:

FL-PRO

The results for this analysis should be considered estimated.

9. The following spike recovery was outside the subcontract laboratory's historical limit:

Chloride by IC – EPA – 300.0
MSD - Chloride

10. The following sample was analyzed 2 days outside the EPA recommended holding time:

TDS – EPA – 160.1
017-OLD-36-29B-QA-00

The result for this sample should be considered estimated.

11. Project Specified QC is reported for all analyses.

Quality Assurance

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LABORATORY REPORT

Accura Sample ID #: AC04412 **Accura Project #: 26383**

Client: CH2M HILL - CCI
Client Contact: S. TSANGARIS
Client Project Number: 152044.32.12.01.08
Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36
Client Sample ID: 017-OLD-36-06A-Q4-00

Date Sampled: 12/04/2000
Date Received: 12/05/2000
Date Reported: 12/21/2000
Sample Matrix: WATER

ANALYSIS: Alkalinity Method Ref: 310.1
Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	1.5	1.0

ANALYSIS: Anions Method Ref: 300.0
Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	4.20	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B
Date Ext/Dig/Prep: 12/08/2000 Date Analyzed: 12/12/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	4.1	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M
Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2
Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	0.330	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO
Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1
Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/08/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	110	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/09/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	10.7	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	14	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	31	
o-Terphenyl (Range 82-142)	82	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	83	
4-Bromofluorobenzene (86-112)	96	
Toluene-d8 (80-120)	96	

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LABORATORY REPORT

Accura Sample ID #: AC04413 **Accura Project #: 26383**

Client: CH2M HILL - CCI Date Sampled: 12/04/2000

Client Contact: S. TSANGARIS Date Received: 12/05/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-08B-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	24	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	7.00	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/08/2000 Date Analyzed: 12/12/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	7.8	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.090	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/08/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	100	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/09/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	3.55	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	0.80J	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	97	50
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	49	
o-Terphenyl (Range 82-142)	91	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	85	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	95	

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LABORATORY REPORT

Accura Sample ID #: AC04414 **Accura Project #: 26383**

Client: CH2M HILL - CCI Date Sampled: 12/04/2000

Client Contact: S. TSANGARIS Date Received: 12/05/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-29B-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/13/2000 Date Analyzed: 12/13/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	27	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	5.00
Chloride by IC	14.0	5.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/08/2000 Date Analyzed: 12/12/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	12	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/13/2000 Date Analyzed: 12/14/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	180	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/09/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	5.18	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	1.9J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	190	50
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	32	
o-Terphenyl (Range 82-142)	82	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/12/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	90	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	92	

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LABORATORY REPORT

Accura Sample ID #: AC04417 **Accura Project #: 26383**

Client: CH2M HILL - CCI Date Sampled: 12/04/2000

Client Contact: S. TSANGARIS Date Received: 12/05/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-10B-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	25	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/07/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	6.40	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/08/2000 Date Analyzed: 12/12/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	6.6	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/06/2000 Date Analyzed: 12/06/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/07/2000 Date Analyzed: 12/08/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	130	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/09/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	15.7	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	2.3J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	1.7J	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	4.5J	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/2000 Date Analyzed: 12/20/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	18	
o-Terphenyl (Range 82-142)	79	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	90	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	96	

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LABORATORY REPORT

Accura Sample ID #: AC04418 **Accura Project #: 26383**

Client: CH2M HILL - CCI Date Sampled: 12/04/2000

Client Contact: S. TSANGARIS Date Received: 12/05/2000

Client Project Number: 152044.32.12.01.08 Date Reported: 12/21/2000

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-TB3-Q4-00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5

Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	88	
4-Bromofluorobenzene (86-112)	94	
Toluene-d8 (80-120)	93	

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LABORATORY REPORT

Accura Sample ID #: AC04419 **Accura Project #: 26383**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/5/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/24/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: METHOD BLANK

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	<RDL	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	<RDL	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	0.063J	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/12/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/6/00 Date Analyzed: 12/6/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/17/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.38J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 9060

Date Ext/Dig/Prep: 12/09/2000 Date Analyzed: 12/09/2000 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/12/2000 Date Analyzed: 12/12/2000 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Client Sample ID: METHOD BLANK AALSample ID #: AC04419 Accura Project #: 26383

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO QC Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/17/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	4	
o-Terphenyl (Range 82-142)	92	

ANALYSIS: X VOC QC Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/12/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-114)	84	
4-Bromofluorobenzene (85-111)	99	
Toluene-d8 (84-108)	95	

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CHAIN-OF-CUSTODY RECORD

ABL/2C AA L# 26383

[1] COC NUMBER: 152044-36-006

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
NTC ORLANDO	152044.32.12.01.08	Accutra Labs / Bonnie Hoque	STEVE TSANGARIS / CCI	4750 W. CYPRESS ST. TAMPA FL 33607
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
STUDY AREA 36	CTO 017	2101	Jennifer OTTSON / CH2M HILL	205 INDIAN RIVER DRIVE COCOA FL 32922
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
STEVE TSANGARIS	813 874-0999 813 874 3056 (FAX)	770 449-8800		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	VOCs 8260	MEE AM19GA or ASTM 1945	Nitrite/Nitrate 300.1	CHLORIDE/BROMIDE 300.1	TOC 9060	ALK / TDS 310.1 160.1	SOD/K	FL-PRO			[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	017-OLD-36-06A-QA-00	GW Sample @ well 06A	GW	12.4.00	0830	III	14	3 40 mL	3 40 mL	1 500 ml	1 500 ml	1 500 ml	1 500 ml	1 500 ml	2 30 oz.			Field Grab		AC0441R
2	017-OLD-36-08B-QA-00	" " " " 08B			1030															04413
3	017-OLD-36-29B-QA-00	" " " " 29B			1345															04414
4	017-OLD-36-08BMS-QA-00	" " " " 08B			1030													Field Grab QC		04413 ~~04415~~
5	017-OLD-36-08BMSD-QA-00	" " " " 08B			1030														RPDAT 12/8/00	04413 ~~04416~~
6	017-OLD-36-10B-QA-00	" " " " 10B			1500													Field Grab		04417
7	017-OLD-36-TB3-QA-00	TRIP BLANK #3	WQ	—	—			2 40 mL										QC		04418
8																				
9																				
10																				

[29] SAMPLER(S) AND COMPANY: (please print): FJ Ferreira / G S Bonds / T P Plumlee

[30] COURIER AND SHIPPING NUMBER: Fedex - 825 060 778659

[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use):

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature: FJ Ferreira	12.4.00	1700	Printed Name and Signature: FED EX		
Printed Name and Signature: FED EX	12-5-00	0910	Printed Name and Signature: Armond B Light	12-5-00	0910
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CC1001, Rev 06/00

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 26397
Client Project: CTO 017- NTC Orlando – Study Area 36 / 152044.32.12.01.08
Task Order Manager: Steve Tsangaris

The following items were noted concerning this project:

1. The following samples were received by Accura Analytical Laboratory on 12/06/00 at 0920:

Client I.D.	Laboratory I.D.
017-OLD-36-09C-Q4-00	AC04474
017-OLD-36-31C-Q4-00	AC04475
017-OLD-36-12C-Q4-00	AC04476
017-OLD-36-DUP2-Q4-00	AC04477
017-OLD-36-TB4-Q4-00	AC04478

CCI NAVY RAC PMO
JAN 19 2001

2. The sample cooler temperature was 2^{0}C upon receipt.

3. The pH for the VOC samples was noted to be < 2 prior to analysis.

4. The following analyses were performed by a subcontract laboratory:
   Anions - EPA-300.0
   Nitrate-Nitrite Nitrogen – EPA 353.2
   TOC – SW-846-9060
   Methane, Ethane, Ethene – RSK-175M

5. The J values noted for the FL-PRO analyses indicate estimated values where the compounds are present at concentrations that are less than the quantitation limits, but above the method detection limits.

6. The B flags applied to the FL-PRO sample results indicate that the analyte was detected in the samples and Method Blank at a concentration above the method detection limit. These sample results should be considered estimated due to Method Blank contamination.

7. The following samples required dilution due to high analyte concentration, resulting in elevated detection limits:
   VOCs – SW-846-8260B
   Trichloroethene - 017-OLD-36-09C-Q4-00
   017-OLD-36-DUP2-Q4-00

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8. The following surrogates were outside the project specified limits:

FL-PRO	FL-PRO
o-Terphenyl	Nonatriacontane (C39)
017-OLD-36-12C-Q4-00	017-OLD-36-09C-Q4-00
Matrix Spike	017-OLD-36-12C-Q4-00
Matrix Spike Duplicate	017-OLD-36-DUP2-Q4-00
	Method Blank
	Laboratory Control Sample
	Matrix Spike
	Matrix Spike Duplicate

All recoveries were within established in-house limits; therefore the data was accepted.

9. The recovery for the Laboratory Control Sample associated with the FL-PRO analyses was outside the project specified limits, but within established in-house limits; therefore the data was accepted.

10. The following spike compound was outside the project specified limit due to possible matrix interference:

    Metals – SW-846-6010B
    Matrix Spike - Sodium

11. The relative percent difference between the matrix spike and matrix spike duplicate results was outside the project specified limit for the following analyte:

    Metals – SW-846-6010B
    Sodium

Quality Assurance

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04474 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-09C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	280	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	8.90	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/14/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	11	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.036	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.35JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	390	5.0

ANALYSIS: TOC (Total Organic Carbon) Method Ref: 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	19.8	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	0.50J	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	24	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	9.1	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	300	50
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	26	
o-Terphenyl (Range 82-142)	82	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	88	
4-Bromofluorobenzene (86-112)	99	
Toluene-d8 (80-120)	92	

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LABORATORY REPORT

Accura Sample ID #: AC04475 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-31C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	18	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	8.90	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/14/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	9.2	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.40JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	130	5.0

ANALYSIS: TOC (Total Organic Carbon) Method Ref: 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	6.41	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	0.97J	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	1.8	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	14	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	50	
o-Terphenyl (Range 82-142)	99	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	89	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	90	

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LABORATORY REPORT

Accura Sample ID #: AC04476 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-12C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	17	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	5.70	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/14/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	8.8	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.40JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	300	5.0

ANALYSIS: TOC (Total Organic Carbon) Method Ref: 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	22.7	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	0.54J	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	3.2J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	0.85J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	9.0	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	29	
o-Terphenyl (Range 82-142)	77	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	85	
4-Bromofluorobenzene (86-112)	98	
Toluene-d8 (80-120)	92	

Accura Analytical Laboratory, Inc.

ACCURA ANALYTICAL LABORATORY, INC.

6017 Financial Drive, Norcross, Georgia 30017, Phone (770)449-8800, FAX (770)449-5477

FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04477 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-DUP2-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	260	1.0

ANALYSIS: Anions Method Ref: 300.0

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	9.10	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/14/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	11	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.039	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.33JB	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	400	5.0

ANALYSIS: TOC (Total Organic Carbon) Method Ref: 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	20.6	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	24	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	0.83J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	290	50
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	27	
o-Terphenyl (Range 82-142)	91	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	86	
4-Bromofluorobenzene (86-112)	96	
Toluene-d8 (80-120)	91	

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LABORATORY REPORT

Accura Sample ID #: AC04478 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/5/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-TB4-Q4-00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5

Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	4.8	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-128)	82	
4-Bromofluorobenzene (86-112)	97	
Toluene-d8 (80-120)	93	

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LABORATORY REPORT

Accura Sample ID #: AC04479 **Accura Project #: 26397**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/6/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/18/01

Client Project Name: CTO 017-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: METHOD BLANK

ANALYSIS: Alkalinity Method Ref: 310.1
Date Ext/Dig/Prep: 12/7/00 Date Analyzed: 12/7/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	<RDL	1.0

ANALYSIS: Anions Method Ref: 300.0
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide by IC	<RDL	1.00
Chloride by IC	<RDL	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B
Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/14/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	<RDL	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M
Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO
Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/17/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.33J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1
Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: TOC (Total Organic Carbon) Method Ref: 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2

Client Sample ID: METHOD BLANK AALSample ID #: AC04479 Accura Project #: 26397

Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO QC Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/17/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	6.2	
o-Terphenyl (Range 82-142)	86	

ANALYSIS: X VOC QC Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (78-114)	82	
4-Bromofluorobenzene (85-111)	101	
Toluene-d8 (84-108)	95	

Accura Analytical Laboratory, Inc.

CH2MHILL Constructors, Inc.
115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 604-9182
Fax No: (770) 604-9282

CHAIN-OF-CUSTODY RECORD

AAL #26397 AGL/2°C

[1] COC NUMBER: 152044-36-008

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
NTC ORLANDO	152044.32.12.01.08	Accura LABS	STEVE TSANGARIS / CCI	4350 W. CYPRESS ST. SUITE 600, TAMPA, FL 33607
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
STUDY AREA 36	CTO 017	2101	Jennifer OTTOSON / CH2M HILL	205 Indian River Drive Cocoa FL 32922
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
STEVE TSANGARIS	813 874-0777 813	770 449-8800		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	VOCs 8260	MEE AMMONIA or 4500-NH3	NITRATE/NITRITE 300.1	CHLORIDE/BROMIDE 300.1	TOC 9060	ALK/TDS 310.1/160.1	SODIUM 320.2	FL-PRO			[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use) AC
1	017-OLD-36-09C-Q4-00	GW Sample @ well OLD-36-09C	GW	12/5/00	0900	III	14	3 40 ml	3 40 ml	1 500 ml	1 500 ml	1 500 ml	1 500 ml	1 500 ml	2 ~~300~~			Field Grab		12-6-00 ~~04474~~
2	017-OLD-36-31C-Q4-00	" " " " OLD-36-31C	↓	↓	1115	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓		04475
3	017-OLD-36-12C-Q4-00	" " " " OLD-36-12C	↓	↓	1500	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓		04476
4	017-OLD-36-DUP2-Q4-00	DUPLICATE #2	↓	↓	—	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			Field Grab QC		04477
5	017-OLD-36-TB4-Q4-00	TRIP BLANK #4	WQ	—	—	↓	↓	↓										QC		04478
6																				
7																				
8																				
9																				
10																				

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use)
FJ Ferreira / TP Plumlee / GS Bonds	FEDEX 825060778637	

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
FJ Ferreira / FJ F. CH2MHILL	12/5/00	1700	FED EX		
Printed Name and Signature:			Printed Name and Signature:		
FED EX	12-6-00	0920 ~~0910~~	Arnold B. Light	12-6-00	0920 ~~0910~~
Printed Name and Signature:			Printed Name and Signature:		
		AGL-12-6-00			AGL-12-6-00

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Form CCI001, Rev 06/00

ACCURA ANALYTICAL LABORATORY, INC.
6017 Financial Drive, Norcross, Georgia, 30071, Phone (770) 449-8800

CASE NARRATIVE for Project Number: 26413
Client Project: CTO 17- NTC Orlando – Study Area 36 / 152044.32.12.01.08
Task Order Manager: Steve Tsangaris

The following items were noted concerning this project:

1. The following samples were received by Accura Analytical Laboratory on 12/02/00 at 1045:

Client I.D.	Laboratory I.D.
017-OLD-36-32C-Q4-00	AC04566
017-OLD-36-EB1-Q4-00	AC04567
017-OLD-36-11C-Q4-00	AC04568
017-OLD-36-23C-Q4-00	AC04569
017-OLD-36-TB5-Q4-00	AC04570

2. The sample cooler temperature was 2^0C upon receipt.

3. The pH for the VOC samples was noted to be < 2 prior to analysis.

4. The following analyses were performed by a subcontract laboratory:
   Bromide – EPA 300
   Chloride – EPA 300
   Nitrate-Nitrite – EPA 353.2
   TOC – EPA 415.1
   Methane, Ethane, Ethene – RSK-175M

5. The J values noted for the VOC and FL-PRO analyses indicate estimated values where the compounds are present at concentrations that are less than the quantitation limits, but above the method detection limits.

6. The following samples had a large amount of sediment present in the water vials:
   RSK-175M
   017-OLD-36-32C-Q4-00
   017-OLD-36-23C-Q4-00

CCI NAVY RAC PMO
JAN 16 2001

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7. The following surrogates were outside the project specified limits:

FL-PRO	FL-PRO
o-Terphenyl	Nonatriacontane (C39)
017-OLD-36-32C-Q4-00	017-OLD-36-32C-Q4-00
017-OLD-36-23C-Q4-00	017-OLD-36-EB1-Q4-00
Method Blank	017-OLD-36-11C-Q4-00
Matrix Spike	017-OLD-36-23C-Q4-00
Matrix Spike Duplicate	Method Blank
	Laboratory Control Sample
	Matrix Spike
	Matrix Spike Duplicate

All recoveries were within established in-house limits; therefore the data was accepted.

8. The recovery for the Laboratory Control Sample associated with the FL-PRO analyses was outside the project specified limits, but within established in-house limits; therefore the data was accepted.

9. The following spike recovery was outside the project specified limit due to matrix interference:
   Metals – SW-846-6010B
   MSD - Sodium

Quality Assurance

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04566 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-32C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/13/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	83	1.0

ANALYSIS: Bromide Method Ref: EPA 300

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide	<RDL	1.00

ANALYSIS: Chloride Method Ref: EPA 300

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Chloride	7.90	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/15/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	16	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	620	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	18.5	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3

Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	0.85J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	17	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	24	
o-Terphenyl (Range 82-142)	71	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	89	
4-Bromofluorobenzene (80-120)	100	
Toluene-d8 (80-120)	94	

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LABORATORY REPORT

Accura Sample ID #: AC04567 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-EB1-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/13/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	5.0	1.0

ANALYSIS: Bromide Method Ref: EPA 300

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide	<RDL	1.00

ANALYSIS: Chloride Method Ref: EPA 300

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Chloride	<RDL	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B

Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/15/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	0.041J	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M

Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2

Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 415.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/11/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3

Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	0.75J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	11	
o-Terphenyl (Range 82-142)	86	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	86	
4-Bromofluorobenzene (80-120)	97	
Toluene-d8 (80-120)	94	

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LABORATORY REPORT

Accura Sample ID #: AC04568 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-11C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/13/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	14	1.0

ANALYSIS: Bromide Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide	<RDL	1.00

ANALYSIS: Chloride Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Chloride	6.30	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B
Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/15/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	4.7	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M
Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.34J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	85	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 415.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/11/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	8.77	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	0.70J	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	3.5J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3

Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	0.82J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	1.3J	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	6.4	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	20	
o-Terphenyl (Range 82-142)	91	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	93	
4-Bromofluorobenzene (80-120)	101	
Toluene-d8 (80-120)	93	

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LABORATORY REPORT

Accura Sample ID #: AC04569 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-23C-Q4-00

ANALYSIS: Alkalinity Method Ref: 310.1
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/13/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	25	1.0

ANALYSIS: Bromide Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide	<RDL	1.00

ANALYSIS: Chloride Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Chloride	3.70	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B
Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/15/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	8.8	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M
Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	0.037	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	0.28J	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	600	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 415.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/11/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	15.0	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	0.81J	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3

Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	14	7
Toluene	<RDL	5.5
Total Xylenes	1.8J	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	3.2J	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO Sample Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/20/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	25	
o-Terphenyl (Range 82-142)	73	

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	92	
4-Bromofluorobenzene (80-120)	99	
Toluene-d8 (80-120)	95	

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04570 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/6/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: 017-OLD-36-TB5-Q4-00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5

Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3
Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	1.2J	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	0.57J	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X VOC Sample Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	90	
4-Bromofluorobenzene (80-120)	98	
Toluene-d8 (80-120)	96	

Accura Analytical Laboratory, Inc.

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FL Certification # E87429 NC Certification # 483 SC Certification # 98015 USACE-MRD Approved

LABORATORY REPORT

Accura Sample ID #: AC04571 **Accura Project #: 26413**

Client: CH2M HILL - CCI Date Sampled: 12/7/00

Client Contact: S. TSANGARIS Date Received: 12/7/00

Client Project Number: 152044.32.12.01.08 Date Reported: 1/11/01

Client Project Name: CTO 17-NTC ORLANDO-STUDY AREA 36 Sample Matrix: WATER

Client Sample ID: METHOD BLANK

ANALYSIS: Alkalinity Method Ref: 310.1
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/13/00 Result Units: mg/L as CaCO3

Analyte Name	Analytical Results	Reported Detection Limits
Alkalinity	<RDL	1.0

ANALYSIS: Bromide Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Bromide	<RDL	1.00

ANALYSIS: Chloride Method Ref: EPA 300
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Chloride	<RDL	1.00

ANALYSIS: Metals Method Ref: 3010A/6010B
Date Ext/Dig/Prep: 12/12/00 Date Analyzed: 12/15/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Sodium	<RDL	0.20

ANALYSIS: Methane, Ethane, Ethene Method Ref: RSK-175M
Date Ext/Dig/Prep: 12/18/00 Date Analyzed: 12/18/00 Result Units: ug/ml

Analyte Name	Analytical Results	Reported Detection Limits
Ethane	<RDL	0.010
Ethene	<RDL	0.010
Methane	<RDL	0.010

ANALYSIS: Nitrate-Nitrite Nitrogen (353.2) Method Ref: 353.2
Date Ext/Dig/Prep: 12/8/00 Date Analyzed: 12/8/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Nitrate-Nitrite Nitrogen	<RDL	0.100

ANALYSIS: Petroleum Range Organics (PRO) Method Ref: FL-PRO
Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/19/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Petroleum Range Organics (PRO)	<RDL	1.0

ANALYSIS: TDS (Total Dissolved Solids) Method Ref: 160.1

Date Ext/Dig/Prep: 12/11/00 Date Analyzed: 12/12/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Dissolved Solids	<RDL	5.0

ANALYSIS: Total Organic Carbon (TOC) Method Ref: EPA 415.1

Date Ext/Dig/Prep: 12/9/00 Date Analyzed: 12/9/00 Result Units: mg/L

Analyte Name	Analytical Results	Reported Detection Limits
Total Organic Carbon	<RDL	1.00

ANALYSIS: VOC's Navy (25 ml purge) Method Ref: 8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: ug/L

Analyte Name	Analytical Results	Reported Detection Limits
1,1,1,2-Tetrachloroethane	<RDL	2.5
1,1,1-Trichloroethane	<RDL	4
1,1,2,2-Tetrachloroethane	<RDL	2
1,1,2-Trichloroethane	<RDL	5
1,1-Dichloroethane	<RDL	2
1,1-Dichloroethene	<RDL	6
1,2,3-Trichlorobenzene	<RDL	1.5
1,2,3-Trichloropropane	<RDL	16
1,2,4-Trichlorobenzene	<RDL	2
1,2,4-Trimethylbenzene	<RDL	6.5
1,2-Dibromo-3-chloropropane	<RDL	13
1,2-Dichlorobenzene	<RDL	1.5
1,2-Dichloroethane	<RDL	3
1,2-Dichloropropane	<RDL	2
1,2-Ethylene Dibromide	<RDL	3
1,3,5-Trimethylbenzene	<RDL	2.5
1,3-Dichlorobenzene	<RDL	6
1,3-Dichloropropane	<RDL	2
1,4-Dichlorobenzene	<RDL	1.5
2,2-Dichloropropane	<RDL	17.5
2-Chlorotoluene	<RDL	2
4-Chlorotoluene	<RDL	3
Benzene	<RDL	2
Bromobenzene	<RDL	1.5
Bromochloromethane	<RDL	2
Bromodichloromethane	<RDL	4
Bromoform	<RDL	6
Bromomethane	<RDL	5.5
Carbon tetrachloride	<RDL	10.5
Chlorobenzene	<RDL	2
Chloroethane	<RDL	5
Chloroform	<RDL	1.5
Chloromethane	<RDL	6.5
cis-1,2-Dichloroethene	<RDL	6
cis-1,3-Dichloropropene	<RDL	5
Dibromochloromethane	<RDL	2.5
Dibromomethane	<RDL	12
Dichlorodifluoromethane	<RDL	5
Ethylbenzene	<RDL	3

Hexachlorobutadiene	<RDL	5.5
Isopropylbenzene	<RDL	2.5
Methylene chloride	<RDL	1.5
n-Butylbenzene	<RDL	5.5
n-Propylbenzene	<RDL	2
Naphthalene	<RDL	2
p-Isopropyltoluene	<RDL	6
Sec-Butylbenzene	<RDL	6.5
Styrene	<RDL	2
Tert-Butylbenzene	<RDL	7
Tetrachloroethylene	<RDL	7
Toluene	<RDL	5.5
Total Xylenes	<RDL	5
trans-1,2-Dichloroethene	<RDL	3
trans-1,3-Dichloropropene	<RDL	5
Trichloroethylene	<RDL	5
Trichlorofluoromethane	<RDL	4
Vinyl chloride	<RDL	5.5

ANALYSIS: X PRO QC Surrogates (Water) Method Ref: FL-PRO

Date Ext/Dig/Prep: 12/13/00 Date Analyzed: 12/19/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
C(39) (Range 42-193)	9.0	
o-Terphenyl (Range 82-142)	62	

ANALYSIS: X VOC QC Surrogates-Waters Method Ref: 5030B/8260B

Date Ext/Dig/Prep: 12/14/00 Date Analyzed: 12/14/00 Result Units: %

Analyte Name	Analytical Results	Reported Detection Limits
1,2-Dichloroethane-d4 (80-120)	82	
4-Bromofluorobenzene (80-120)	101	
Toluene-d8 (80-120)	95	

Accura Analytical Laboratory, Inc.

AAL #26413 2 C/BCB

CH2MHILL Constructors, Inc.

115 Perimeter Center Place, Suite 700
Atlanta, GA 30346-1278
Tel No: (770) 604-9182
Fax No: (770) 604-9282

CHAIN-OF-CUSTODY RECORD

AAL # 26413

[1] COC NUMBER: 152044-36-010

[2] PROJECT NAME:	[5] PROJECT NUMBER:	[8] LAB NAME AND CONTACT:	[11] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 1 (Name and Company)	[14] RECIPIENT 1 (Address, Tel No. , and Fax No.):
NTC ORLANDO	152044.32.12.01.08	ACCURA LABS	STEVE TSANGARIS / CCI	4350 W. CYPRESS ST, SUITE 600 TAMPA, FL 33607
[3] PROJECT PHASE/SITE/TASK:	[6] CTO OR DO NUMBER:	[9] LAB PO NUMBER:	[12] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 2 (Name and Company)	[15] RECIPIENT 2 (Address, Tel No. , and Fax No.):
STUDY AREA 36	CTO 017	2101		
[4] PROJECT CONTACT:	[7] PROJECT TEL NO AND FAX NO:	[10] LAB TEL NO AND FAX NO:	[13] FAX AND MAIL REPORTS/EDD TO:: RECIPIENT 3 (Name and Company)	[16] RECIPIENT 3 (Address, Tel No. , and Fax No.):
STEVE TSANGARIS	813 874 0777 813 874 3056 (Fax)	(770) 449-8800		

[25] ANALYSES REQUIRED (Include Method Numbers)

[17] ITEM	[18] SAMPLE IDENTIFIER	[19] SAMPLE DESCRIPTION/LOCATION	[20] MATRIX (see codes on SOP)	[21] DATE COLLECTED	[22] TIME COLLECTED	[23] DATA PKG LEVEL (see codes on SOP)	[24] TAT (calendar days)	VOCs 8260	MEE ASTM D1945	Nitrate/Nitrite 300.1	Bromide/Chloride 300.1	Alk./TDS 310.1 / 160.1	TOC 9060	Sodium	TPH by FLPRO			[26] SAMPLE TYPE (see codes on SOP)	[27] COMMENTS/ SCREENING READINGS	[28] LAB ID (for lab's use)
1	017-OLD-36-32C-Q4-00	GW SAMPLE @ well OLD-36-32C	GW	12.6.00	0900	III	14	3 40 mL	3 40 mL	1 500 mL	1 500 mL	1 500 mL	1 500 mL	1 500 mL	2 liter			FIELD GRAB		AC04566
2	017-OLD-36-EB1-Q4-00	Equipment Blank #1	WQ	↓	0915	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			Field QC		04567
3	017-OLD-36-11C-Q4-00	GW SAMPLE @ well OLD-36-11C	GW	↓	1130	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			Field Grab		04568
4	017-OLD-36-23C-Q4-00	" " " " OLD-36-23C	↓	↓	1400	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓			↓		04569
5	017-OLD-36-TB5-Q4-00	TRIP BLANK #5	WQ	—	—	↓	↓	2 40mL										QC		04570
6																				
7																				
8																				
9																				
10																				

[29] SAMPLER(S) AND COMPANY: (please print)	[30] COURIER AND SHIPPING NUMBER:	[31] SAMPLES TEMPERATURE AND CONDITION UPON RECEIPT (for lab's use)
Ferreira (HILL) Plumlee/Banos (CCI)	Fedex 825060778615	

[32] RELINQUISHED BY	DATE	TIME	[33] RECEIVED BY	DATE	TIME
Printed Name and Signature:			Printed Name and Signature:		
F.J. Ferreira F. J. F	12/6/00	1600	FEDEX		
Printed Name and Signature:			Printed Name and Signature:		
FEDEX	12/7/00	0925	BRIAN BURNS / [signature]	12-07-00	0925
Printed Name and Signature:			Printed Name and Signature:		

Distribution: [ ] **Original** - Laboratory (To be returned with Analytical Report); [ ] **Copy 1** - Project File; [ ] **Copy 2** - PMO

Form CCI001, Rev 06/00

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 2
Order #: P0011195
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0011195-01	017-OLD-36-30C-Q4-00

Approved By: Rebecca Gotham

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0011195
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0011195-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-30C-Q4-00	Water	29 Nov. 00 14:00	30 Nov. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 6
Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0012030-01	017-OLD-36-26A-Q4-00
P0012030-02	017-OLD-36-27A-Q4-00
P0012030-03	017-OLD-36-28B-Q4-00
P0012030-04	017-OLD-36-07A-Q4-00
P0012030-05	017-OLD-36-DUP1-Q4-00

Approved By: Rebecca Gittens

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-26A-Q4-00	Water	01 Dec. 00 9:15	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-02

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-27A-Q4-00	Water	01 Dec. 00 11:00	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-03

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-28B-Q4-00	Water	01 Dec. 00 13:30	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-04

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-07A-Q4-00	Water	01 Dec. 00 15:30	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-05

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-DUP1-Q4-00	Water	01 Dec. 00 0:00	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 5
Order #: P0012055
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0012055-01	017-OLD-36-09C-Q4-00
P0012055-02	017-OLD-36-31C-Q4-00
P0012055-03	017-OLD-36-12C-Q4-00
P0012055-04	017-OLD-36-DUP2-Q4-00

Approved By: Rebecca J. Hans

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0012055
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012055-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-09C-Q4-00	Water	05 Dec. 00 9:00	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012055
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012055-02

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-31C-Q4-00	Water	05 Dec. 00 11:15	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012055
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012055-03

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-12C-Q4-00	Water	05 Dec. 00 15:00	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012055
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012055-04

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-DUP2-Q4-00	Water	05 Dec. 00 15:00	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 5
Order #: P0012061
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0012061-01	017-OLD-36-32C-Q4-00
P0012061-02	017-OLD-36-EB1-Q4-00
P0012061-03	017-OLD-36-11C-Q4-00
P0012061-04	017-OLD-36-23C-Q4-00

Approved By: Rebecca J. Adams

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0012061
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012061-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-32C-Q4-00	Water	06 Dec. 00 9:00	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012061
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012061-02

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-EB1-Q4-00	Water	06 Dec. 00 9:15	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012061
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012061-03

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-11C-Q4-00	Water	06 Dec. 00 11:30	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012061
Report Date: 12/20/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012061-04

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-23C-Q4-00	Water	06 Dec. 00 14:00	07 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 6
Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0012030-01	017-OLD-36-26A-Q4-00
P0012030-02	017-OLD-36-27A-Q4-00
P0012030-03	017-OLD-36-28B-Q4-00
P0012030-04	017-OLD-36-07A-Q4-00
P0012030-05	017-OLD-36-DUP1-Q4-00

Approved By: Rebecca J. Hano

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-26A-Q4-00	Water	01 Dec. 00 9:15	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-02

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-27A-Q4-00	Water	01 Dec. 00 11:00	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-03

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-28B-Q4-00	Water	01 Dec. 00 13:30	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-04

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-07A-Q4-00	Water	01 Dec. 00 15:30	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012030
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012030-05

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-DUP1-Q4-00	Water	01 Dec. 00 0:00	04 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

MICROSEEPS

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Page: Page 1 of 2
Order #: P0011195
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0011195-01	017-OLD-36-30C-Q4-00

Approved By: Rebecca J. Harris

220 William Pitt Way, Pittsburgh, PA 15238 • Phone (412) 826-5245, Fax (412) 826-3433

Order #: P0011195
Report Date: 12/12/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0011195-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-30C-Q4-00	Water	29 Nov. 00 14:00	30 Nov. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

QC Statistical Report

BatchID: M001213001
Department: SemiVolatiles
Prep Method: AM21G
Analysis Method: AM21G

Prep Analyst: RW
Prep Date: 12/13/00 0:00
Analyst: bw
Analysis Date: 12/11/00 10:33

Precision and Accuracy

P0012036-01A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	< 1.0	0.58	1.0		
Butyric acid	< 1.0	0.20	1.0		
Lactic Acid	< 25	17	25		
Propionic acid	< 1.0	0.21	1.0		
Pyruvic acid	< 10	4.4	10		

P0012036-02A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	< 1.0	0.58	1.0		
Butyric acid	< 1.0	0.20	1.0		
Lactic Acid	< 25	17	25		
Propionic acid	< 1.0	0.21	1.0		
Pyruvic acid	< 10	4.4	10		

P0012036-03A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	93	0.58	1.0		
Butyric acid	120	0.20	1.0		
Lactic Acid	81	17	25		
Propionic acid	110	0.21	1.0		
Pyruvic acid	110	4.4	10		

P0012036-04A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	93	0.58	1.0		
Butyric acid	120	0.20	1.0		
Lactic Acid	74	17	25		
Propionic acid	110	0.21	1.0		
Pyruvic acid	110	4.4	10		

P0012036-05A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	< 1.0	0.58	1.0		
Butyric acid	< 1.0	0.20	1.0		
Lactic Acid	< 25	17	25		
Propionic acid	< 1.0	0.21	1.0		
Pyruvic acid	< 10	4.4	10		

P0012036-06A

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	< 1.0	0.58	1.0		
Butyric acid	< 1.0	0.20	1.0		
Lactic Acid	< 25	17	25		
Propionic acid	< 1.0	0.21	1.0		
Pyruvic acid	< 10	4.4	10		

P0012036-02A-MS

P0012036-02A-MS

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits
Acetic Acid	93	0.58	1.0	93	70 - 130
Butyric acid	120	0.20	1.0	120	70 - 130
Lactic Acid	81	17	25	81	70 - 130
Propionic acid	110	0.21	1.0	110	70 - 130
Pyruvic acid	110	4.4	10	110	70 - 130

P0012036-02A-MSD

AnalyteName	Result	MDL	RDL	%Recovery	Ctl Limits	RPD	RPD Ctl Limits
Acetic Acid	93	0.58	1.0	93	70 - 130	0.00	0 - 20
Butyric acid	120	0.20	1.0	120	70 - 130	0.00	0 - 20
Lactic Acid	74	17	25	74	70 - 130	9.03	0 - 20
Propionic acid	110	0.21	1.0	110	70 - 130	0.00	0 - 20
Pyruvic acid	110	4.4	10	110	70 - 130	0.00	0 - 20

Results out of limits

BatchID: M001213001

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.

Tampa, FL 33607

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Sample Identification

Lab Sample #	Client Sample ID
P0012036-01	017-OLD-36-06A-Q4-00
P0012036-02	017-OLD-36-08B-Q4-00
P0012036-03	017-OLD-36-08BMS-Q4-00
P0012036-04	017-OLD-36-08BMSD-Q4-00
P0012036-05	017-OLD-36-29B-Q4-00
P0012036-06	017-OLD-36-10B-Q4-00

Approved By: Rebecca J. Hans

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-01

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-06A-Q4-00	Water	04 Dec. 00 8:30	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-02

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-08B-Q4-00	Water	04 Dec. 00 10:30	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-03

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-08BMS-Q4-00	Water	04 Dec. 00 10:30	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	93	1.0	mg/L	AM21G
Butyric acid	120	1.0	mg/L	
Lactic Acid	81	25	mg/L	
Propionic acid	110	1.0	mg/L	
Pyruvic acid	110	10	mg/L	

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-04

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-08BMSD-Q4-00	Water	04 Dec. 00 10:30	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	93	1.0	mg/L	AM21G
Butyric acid	120	1.0	mg/L	
Lactic Acid	74	25	mg/L	
Propionic acid	110	1.0	mg/L	
Pyruvic acid	110	10	mg/L	

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-05

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-29B-Q4-00	Water	04 Dec. 00 13:45	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Order #: P0012036
Report Date: 12/13/00
Client Proj Name: NTC Orlando
Client Proj #: 152044.32.12.01.08

Client Name: CH2M Hill
Contact: Steve Tsangaris
Address: 4350 West Cypress St.
Suite 600
Tampa, FL 33607

Lab Sample #: P0012036-06

Sample Description	Matrix	Sampled Date/Time	Received
017-OLD-36-10B-Q4-00	Water	04 Dec. 00 15:00	05 Dec. 00

Analyte(s)	Result	PQL	Units	Method #
OrganicsPrep				
Water				
Acetic Acid	< 1.0	1.0	mg/L	AM21G
Butyric acid	< 1.0	1.0	mg/L	
Lactic Acid	< 25	25	mg/L	
Propionic acid	< 1.0	1.0	mg/L	
Pyruvic acid	< 10	10	mg/L	

Appendix D

Monitoring Well Purging and Sampling Logs

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-06 SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 9.76				
WELL DEPTH (FT):	- 16.53	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 7.07	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 1.15	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 3.46	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 6.25

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	1.25	2.5	3.75	5	6.25	
pH (s.units)	5.46	5.33	5.36	5.40	5.41	
COND.(mS/cm)	70	69	71	70	70	
TEMP.(C)	26.76	26.82	26.91	26.88	26.88	
ORP (mV)	217.6	208.4	186.3	160.1	151.6	
DO (mg/L)	1.87	1.02	0.89	0.86	0.79	
Turbidity (NTU)	113	199	213	181	190	
Ferrous Iron (mg/L)	0.65	0.50	0.6	0.6	0.5	
Manganese (mg/L)	0.5	0	0	0	0	
Hydrogen Sulfide (mg/L)	0	0	0	0	0	
Sulfate (mg/L)	80	90	80	90	90	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-4-00 / @ 0830

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-07A SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 9.98				
WELL DEPTH (FT):	- 19.98	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 10.00	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 1.63	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 4.9	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 10

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	2	4	6	8	10	
pH (s.units)	5.52	5.47	5.50	5.52	5.50	
COND.(mS/cm)	110	111	110	112	110	
TEMP.(C)	28.05	26.01	25.89	25.84	25.86	
ORP (mV)	107.7	111.5	98	81	63	
DO (mg/L)	0.88	0.79	0.61	0.52	0.54	
Turbidity (NTU)	143	103	151	170	138	
Ferrous Iron (mg/L)	0.2	0.1	0.1	0.2	0.2	
Manganese (mg/L)	0	0	0	0	0	
Hydrogen Sulfide (mg/L)	0.1	0.1	0.1	0.2	0.1	
Sulfate (mg/L)	<50	<50	<50	<50	<50	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-1-00 / @ 1530

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-26A **SITE: SA-36**

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT): =	12.62				
WELL DEPTH (FT):	- 22.91	2 IN.	✓	0.1632	
WATER COLUMN (FT): =	10.29	4 IN.		0.6528	
GAL/FT OF CASING x	0.1632	6 IN.		1.4688	
CASING VOLUME (GAL) =	1.68	8 IN.		2.611	
NO. OF VOLUMES min.(3) x	3	10 IN.		4.0797	
PURGE VOLUME (GAL) =	5.0	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:
		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm): 0.25		REQUIRED PULLS:
VOL. PURGED (gals): 9		VOL. PURGED (gals):
		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	1.75	3.5	5.25	7	9	
pH (s.units)	7.16	5.99	5.89	5.84	5.86	
COND.(mS/cm)	98.0	71.0	84.0	88.0	90.0	
TEMP.(C)	24.12	23.86	23.90	24.01	23.97	
ORP (mV)	130	179.1	181.8	201.1	207.1	
DO (mg/L)	1.15	1.09	0.97	1.01	0.96	
Turbidity (NTU)	71000	71000	71000	71000	71000	
Ferrous Iron (mg/L)	1.0	1.0	0.9	0.9	1.0	
Manganese (mg/L)	0.1	0.2	0.2	0.1	0.2	
Hydrogen Sulfide (mg/L)	0.3	0.5	0.5	0.3	0.3	
Sulfate (mg/L)	7200	7200	7200	7200	7200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC, NO_2, NO_3, Cl, Br, Alk, TOC, Hydro, VFA, MEE, TDS

FILTERED METALS COLLECTED: Y / N, 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-1-00 1 @ 0915

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-27A | SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 12.96				
WELL DEPTH (FT):	- 23.19	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 10.23	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 1.67	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 5.0	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST. (circled)

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 5.3

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	6th	WITHIN10% Y / N
VOL. (gal)	1.25	3.5	5.25				
pH (s.units)	6.69	6.81	6.83				
COND.(mS/cm)	326	363	368				
TEMP.(C)	25.57	25.70	25.75				
ORP (mV)	195.4	141.6	136.1				
DO (mg/L)	1.61	1.00	0.98				
Turbidity (NTU)	26	4	0.9				
Ferrous Iron (mg/L)	0.1	0.1	0.1				
Manganese (mg/L)	0	0	0				
Hydrogen Sulfide (mg/L)	0.1	0.1	0				
Sulfate (mg/L)	<50	<50	<50				

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-1-00 1 @ 1100

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-08B SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 10.04				
WELL DEPTH (FT):	- 27.06	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 17.02	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 2.78	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 8.3	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 14

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	2.75	5.5	8.25	11	13.75	
pH (s.units)	5.32	5.69	5.70	5.71	5.68	
COND.(mS/cm)	112	125	131	128	133	
TEMP.(C)	27.4	27.26	27.57	27.49	27.52	
ORP (mV)	72.1	-22.6	-43.5	-61.9	-81.8	
DO (mg/L)	1.88	1.46	1.25	1.07	0.98	
Turbidity (NTU)	32	82	200	119	143	
Ferrous Iron (mg/L)	0.5	0.6	0.6	0.6	0.5	
Manganese (mg/L)	0	0.1	0.2	0.2	0.1	
Hydrogen Sulfide (mg/L)	0.3	1	1	1	1	
Sulfate (mg/L)	<50	100	70	70	80	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 10um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER : MS/MSD

Q.C. PARAMETERS: SAA

SAMPLE DATE/ TIME: 12-4-00 / @ 1030

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-10B SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 10.13				
WELL DEPTH (FT):	- 24.68	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 14.55	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 2.37	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.6797	
PURGE VOLUME (GAL)	= 7.1	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 7

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	1.5	3	4.5	6	7.5	
pH (s.units)	5.38	5.42	5.54	5.59	5.60	
COND.(mS/cm)	85	79	101	103	102	
TEMP.(C)	27.25	27.20	27.26	27.33	27.36	
ORP (mV)	93.4	53.9	23.1	10.6	16.9	
DO (mg/L)	1.39	1.05	1.12	1.16	1.08	
Turbidity (NTU)	225	719	690	609	508	
Ferrous Iron (mg/L)	0.2	0	0.2	0.1	0.2	
Manganese (mg/L)	0	0	0	0	0	
Hydrogen Sulfide (mg/L)	0.1	0.3	0.2	0.3	0.3	
Sulfate (mg/L)	150	7200	150	7200	7200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-4-00 / @ 1500

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OU-36-28B | SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT): =	13.83				
WELL DEPTH (FT):	- 29.96	2 IN.	✓	0.1632	
WATER COLUMN (FT): =	16.13	4 IN.		0.6528	
GAL/FT OF CASING x	0.1632	6 IN.		1.4688	
CASING VOLUME (GAL) =	2.63	8 IN.		2.611	
NO. OF VOLUMES min.(3) x	3	10 IN.		4.0797	
PURGE VOLUME (GAL) =	7.9	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST. | OTHER:

FLOW RATE (gpm): 0.25
VOL. PURGED (gals): 15

BAILER : TEFLON, SS ,OTHER:
BAILER VOL.. (gal) .25 / .33
REQUIRED PULLS:
VOL. PURGED (gals):
OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3	6	9	12	15	
pH (s.units)	5.70	6.18	6.13	6.15	6.13	
COND.(mS/cm)	232	332	320	328	333	
TEMP.(C)	25.96	25.94	25.90	25.95	25.94	
ORP (mV)	89.1	-1.5	-26.7	-38.9	-51.6	
DO (mg/L)	0.83	0.56	0.59	0.57	0.59	
Turbidity (NTU)	77	83	71000	71000	71000	
Ferrous Iron (mg/L)	1.8	2.8	2.2	2.4	2.5	
Manganese (mg/L)	0	0	0	0	0	
Hydrogen Sulfide (mg/L)	2.0	0.3	0.5	0.3	0.3	
Sulfate (mg/L)	150	7200	7200	7200	7200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS: SAA DUPI

SAMPLE DATE/ TIME: 12-1-00 1 @ 1330

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.06

WELL NUMBER: OLD-36-29B | SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 13.10				
WELL DEPTH (FT):	- 30.13	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 17.03	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 2.78	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 8.4	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST | OTHER: | BAILER : TEFLON, SS ,OTHER:

BAILER VOL. (gal) .25 / .33

FLOW RATE (gpm): 0.25

REQUIRED PULLS:

VOL. PURGED (gals): 14

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	2.75	5.5	8.25	11	13.75	
pH (s.units)	5.52	5.76	5.71	5.74	5.70	
COND.(mS/cm)	125	171	167	168	170	
TEMP.(C)	25.90	26.25	26.33	26.36	26.41	
ORP (mV)	132.6	47.7	40.5	43.9	40.9	
DO (mg/L)	1.36	1.01	0.81	0.69	0.65	
Turbidity (NTU)	102	80	52	36	42	
Ferrous Iron (mg/L)	1.0	1.2	1.8	1.8	2	
Manganese (mg/L)	0.2	0.1	0.1	0.1	0.1	
Hydrogen Sulfide (mg/L)	NM	NM	NM	NM	NM	
Sulfate (mg/L)	60.5	67.5	50	62.5	70.5	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-4-00 / @ 1345

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-09C **SITE:** SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 13.72				
WELL DEPTH (FT):	- 34.96	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 21.24	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.5	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10.4	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST. OTHER: BAILER : TEFLON, SS ,OTHER:

FLOW RATE (gpm): 0.25 BAILER VOL.. (gal) .25 / .33

VOL. PURGED (gals): 17.5 REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	5.39	5.77	5.62	5.68	5.71	
COND.(mS/cm)	1940	1344	960	898	909	
TEMP.(C)	25.24	25.46	25.52	25.48	25.55	
ORP (mV)	-147.6	-160.8	-171.7	-160.9	-178.1	
DO (mg/L)	0.86	1.04	1.16	0.85	0.71	
Turbidity (NTU)	43	44	95	88	95	
Ferrous Iron (mg/L)	0.4	0.3	0.4	0.4	0.3	
Manganese (mg/L)	0.1	0.3	0.3	0.2	0.3	
Hydrogen Sulfide (mg/L)	5	5	5	5	5	
Sulfate (mg/L)	<50	<50	<50	<50	<50	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS: SAA DUP2

SAMPLE DATE/ TIME: 12-5-00 1@ 0900

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-11C SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 13.65				
WELL DEPTH (FT):	- 33.89	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 20.45	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.4	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 17.5

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	5.30	5.35	5.32	5.30	5.33	
COND.(mS/cm)	78	85	89	88	90	
TEMP.(C)	26.08	25.92	26.01	26.59	26.61	
ORP (mV)	203.1	198.1	81.7	16.6	18.1	
DO (mg/L)	1.81	1.59	1.19	0.98	0.79	
Turbidity (NTU)	86	191	306	280	189	
Ferrous Iron (mg/L)	0.4	0.5	0.2	0.2	0.	
Manganese (mg/L)	0.2	0.1	0	0	0	
Hydrogen Sulfide (mg/L)	0.1	0.3	0.7	0.5	0.7	
Sulfate (mg/L)	<50	<50	100	80	100	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-6-00 / @ 1130

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-12C **SITE: SA-36**

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 13.35				
WELL DEPTH (FT):	- 34.10	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 20.75	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.4	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10.2	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	OTHER:	BAILER : TEFLON, SS ,OTHER:
		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm): 0.25		REQUIRED PULLS:
VOL. PURGED (gals): 17.5		VOL. PURGED (gals):
		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	5.26	5.40	5.29	5.35	5.36	
COND.(mS/cm)	73	82	89	91	87	
TEMP.(C)	26.26	26.06	26.12	26.19	26.22	
ORP (mV)	137.6	92.2	81	69.2	78.9	
DO (mg/L)	1.95	1.68	1.19	1.09	1.11	
Turbidity (NTU)	19	>1000	880	719	808	
Ferrous Iron (mg/L)	0.2	1.6	0.2	1.8	0.2	
Manganese (mg/L)	0	0	0	0	0	
Hydrogen Sulfide (mg/L)	0	0.1	0.1	0.1	0	
Sulfate (mg/L)	<50	>200	>200	>200	>200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-5-00 @ 1500

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-23C **SITE: SA-36**

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	=16.89				
WELL DEPTH (FT):	-37.27	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 20.38	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.3	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 9.9	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.	OTHER:	BAILER : TEFLON, SS ,OTHER:
		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm): 0.25		REQUIRED PULLS:
VOL. PURGED (gals): 17.5		VOL. PURGED (gals):
		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	5.46	5.58	5.58	5.60	5.61	
COND.(mS/cm)	71	74	77	81	78	
TEMP.(C)	26.72	25.69	25.62	25.58	25.60	
ORP (mV)	12.5	-14.4	-25.8	-31.8	-40.9	
DO (mg/L)	1.29	1.05	1.02	0.89	0.75	
Turbidity (NTU)	130	>1000	>1000	>1000	>1000	
Ferrous Iron (mg/L) / Manganese (mg/L)	1.4 / 0.3	1.6 / 0.2	1.2 / 0.1	1.0 / 0.3	1.2 / 0.1	
Hydrogen Sulfide (mg/L) / Sulfate (mg/L)	0.1 / <50	1 / >200	0.5 / >200	0.1 / >200	0.5 / >200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-6-00 / @ 1400

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-30C		**SITE: SA-36**			
FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee				(leave blank if on previous page)	
DEPTH TO WATER (FT):	= 16.78	CASING DIA.		GAL/FT OF CASING	
WELL DEPTH (FT):	- 37.99	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 21.21	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.46	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10.4	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. (PERIST.)	**OTHER:**	**BAILER** : TEFLON, SS ,OTHER:
		BAILER VOL.. (gal) .25 / .33
FLOW RATE (gpm): 0.25		REQUIRED PULLS:
VOL. PURGED (gals): 17.5		VOL. PURGED (gals):
		OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7.0	10.5	14	17.5	
pH (s.units)	5.86	5.92	5.87	5.75	5.21	
ORP (mV) ~~COND.(mS/cm)~~	-20.9	-17.5	-17.0	-28.0	-32.0	
TEMP.(C)	27.44	27.10	27.01	26.89	26.14	
Cond (ms/cm) ~~ORP (mV)~~	372	220	198	173	169	
DO (mg/L)	1.45	0.95	0.89	0.91	0.90	
Turbidity (NTU)	124	113	122	90	82	
Ferrous Iron (mg/L)	1.8	1.6	0.8	0.8	0.6	
Manganese (mg/L)	0.1	0	0.1	0	0	
Hydrogen Sulfide (mg/L)	0.7	0.9	1.0	0.8	1.0	
Sulfate (mg/L)	>200	>200	70	60	70	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOCs, NO_3, NO_2, Cl, Br, Alk, TOC, Fl Pro, VFA, MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. **SEE BACK OF SHT** Y N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 11-29-00 / @ 1400

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-31C | SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 16.78				
WELL DEPTH (FT):	- 37.90	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 21.12	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.4	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10.3	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 17.5

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL.. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	6.09	5.81	5.57	5.38	5.41	
COND.(mS/cm)	127	110	112	104	106	
TEMP.(C)	25.88	25.93	25.95	25.97	25.95	
ORP (mV)	-15.4	26.4	29.1	40.0	48.0	
DO (mg/L)	1.18	1.23	0.90	0.85	0.79	
Turbidity (NTU)	71000	301	172	95	80	
Ferrous Iron (mg/L) / Manganese (mg/L)	1.4 / 0.2	1.4 / 0.3	1.1 / 0.2	1.2 / 0.3	1.2 / 0.3	
Hydrogen Sulfide (mg/L) / Sulfate (mg/L)	0.3 / 125	0 / 80	0 / 70	95	0 / 60	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-5-00 @ 1115

CH2M HILL
WELL SAMPLING FIELD SHEET

PROJECT# 152044.32.12.01.08

WELL NUMBER: OLD-36-32C | SITE: SA-36

FIELD CREW: F.Ferreira, G.Bonds, T.Plumlee (leave blank if on previous page)

		CASING DIA.		GAL/FT OF CASING	
DEPTH TO WATER (FT):	= 16.88				
WELL DEPTH (FT):	- 37.86	2 IN.	✓	0.1632	
WATER COLUMN (FT):	= 21.02	4 IN.		0.6528	
GAL/FT OF CASING	x 0.1632	6 IN.		1.4688	
CASING VOLUME (GAL)	= 3.4	8 IN.		2.611	
NO. OF VOLUMES min.(3)	x 3	10 IN.		4.0797	
PURGE VOLUME (GAL)	= 10.3	12 IN.		5.8748	

METHOD OF PURGING (circle one)

PUMP: SUB. CENT. PERIST.

OTHER:

BAILER : TEFLON, SS ,OTHER:

BAILER VOL. (gal) .25 / .33

REQUIRED PULLS:

VOL. PURGED (gals):

OTHER:

FLOW RATE (gpm): 0.25

VOL. PURGED (gals): 17.5

FIELD PARAMETERS	FIELD MEASUREMENTS 1st	2nd	3rd	4th	5th	WITHIN10% Y / N 6th
VOL. (gal)	3.5	7	10.5	14	17.5	
pH (s.units)	6.99	6.63	6.44	6.46	6.51	
COND.(mS/cm)	348	267	227	231	248	
TEMP.(C)	26.58	26.45	26.61	26.59	26.63	
ORP (mV)	-28.6	-29.7	-26.8	-27.4	-26.1	
DO (mg/L)	0.95	0.88	0.79	0.75	0.78	
Turbidity (NTU)	463	184	168	140	188	
Ferrous Iron (mg/L)	0	0.2	0.2	0.1	0.1	
Manganese (mg/L)	0.2	0.1	0.1	0.2	0.1	
Hydrogen Sulfide (mg/L)	0.1	0.2	0.1	0.1	0.2	
Sulfate (mg/L)	>200	>200	>200	>200	>200	

SAMPLE PARAMETERS (GRAB OR COMPOSITE): VOC,NO3,NO2,Cl,Br,Alk,TOC,Fl-Pro,VFA,MEE

FILTERED METALS COLLECTED: Y / N 1.0um,0.45um, OTHER:

OBSERVATIONS

COLOR: CLEAR , AMBER , TAN , BROWN , GREY , MILKY WHITE , OTHER:

NONE , LOW , MEDIUM , HIGH , VERY STRONG , H2S , FUEL LIKE , CHEMICAL ?, UNKNOWN

TURBIDITY: NONE , LOW , MEDIUM , HIGH , VERY TURBID. HEAVY SILTS

COMMENTS:

OTHER: PLEASE USE BACK OF SHT.FOR SKETCHING MAPS ,WELL LOCATION NOTES ECT. SEE BACK OF SHT Y / N.

Q.C. SAMPLE TYPE: DUPLICATE , EQUIPMENT BLANK , OTHER :

Q.C. PARAMETERS:

SAMPLE DATE/ TIME: 12-6-00 / @ 0900