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NAS CECIL FIELD
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CONFIRMATORY SAMPLING RESULTS LETTER REPORT BUILDING 199 TANK 199 NAS CECIL FIELD FL

9/15/2004

TETRA TECH

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9/30/04
Rec'd

PITT-09-4-025

September 15, 2004

Project Number N4093

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Mr. Nick Ugolini (Mail Code ES24NU)
2155 Eagle Drive
North Charleston, South Carolina 29406

Reference: CLEAN Contract No. N62467-94-D0888
Contract Task Order No. 0209

Subject: Supplemental Groundwater Confirmatory Results
Building 199, Tank 199
Naval Air Station Cecil Field
Jacksonville, Florida

Dear Mr. Magwood:

Tetra Tech NUS, Inc. (TtNUS) is pleased to submit this Confirmatory Sampling Results Letter Report for the referenced Contract Task Order (CTO) for the Tank 199 site. This report was prepared for the U.S. Navy Southern Division Naval Facilities Engineering Command (NAVFAC EFD SOUTH) under the Comprehensive Long-term Environmental Action Navy (CLEAN) Contract Number N62467-94-D-0888. The objective of this task is to collect and analyze a confirmatory sample of the groundwater associated with Tank 199 (Figure 1) at the former Naval Air Station Cecil Field (NASCF), Jacksonville, Florida.

This work was performed based on the results of the most recent groundwater sampling in January 2004 that was part of a Monitoring Only Plan (MOP).

Field activities and groundwater analytical results are summarized in this report. The work was performed in general accordance with the Base-wide Generic Work Plan Volumes I and II (TtNUS, 1998).

FIELD OPERATIONS

Depth-to-water measurements were obtained at seven site-monitoring wells on May 10, 2004. Two well were found to have been damaged or destroyed and could not be measured. For brevity, these wells will be referred in an abbreviated form. For example, MW-1S will be used in this report instead of the unabbreviated CEF-199-1S. Water level depths in the wells ranged from 3.67 (MW-3S) to 7.78 (MW-1S) feet below top of casing (btoc). The levels in four wells are lower compared to the last event (January 2004) and the levels in three wells are higher compared to the last event. Groundwater elevation data is provided in Table 1.

In January 2004, well CEF-199-7S was found to have been destroyed during the demolition of Building 199. Well CEF-199-6S was discovered during this event to be severely damaged. Some minor damage was noted on Well CEF-199-8S during this event.

A groundwater elevation contour map generated from the data, shown as Figure 2, indicates a pattern that is similar to the January 2004 event, but very different compared to previous sampling events. Specifically, the groundwater flow direction in the vicinity of the tank is to the northeast, rather than to the southeast as observed in previous events. The change in the groundwater flow direction could be the result of recent dewatering activities about 900 feet to the north along Cecil Pines Street. In addition, dewatering is planned along McCarthy Way (also known as Poolside Avenue and formerly known as B Avenue) from Cecil Pines Street to Lake Newman St. and along Lake Newman Street from McCarthy to Aviation Avenue for Sanitary Sewer installation. This activity is about 400 feet from the site.

On May 10, 2004, TtNUS collected a groundwater sample from monitoring well MW-1S. Following collection, the groundwater sample was shipped to Accutest Laboratories in Orlando, Florida for analysis of volatile organic compounds (VOCs) by U. S. Environmental Protection Agency (EPA) Method SW846 8021B and for total recoverable petroleum hydrocarbons (TRPH) using the Florida-Petroleum Range Organics (FL-PRO) analytical method. The analytical results for this event are summarized in Table 2. A copy of the laboratory report is provided as Attachment A.

The benzene, ethylbenzene, and TRPH concentrations in the sample from MW-1S were slightly less than the results from the January 2004 samples. The analytical results for the previous events are also included in Table 2.

RESULTS AND DISCUSSION

The benzene concentration was 2.7 ug/L, the ethylbenzene concentration was 8.4 ug/L, and the TRPH concentration was 2.31 mg/L. The benzene concentration exceeds the GCTL, as in the case of the January 2004 event. The concentrations of ethylbenzene and TRPH are both less than their respective GCTLs.

The benzene concentration decreased significantly, by about 40% since the last event.

As noted above the groundwater flow direction is to the northeast, in contrast to the historic direction to the southeast. The reason for the change in flow direction is uncertain at this tie. Therefore, the groundwater flow direction should be considered when selecting locations for replacement of the damaged wells. An alternative location for the downgradient well will need to be considered.

CONCLUSIONS and RECOMMENDATIONS

TtNUS recommends the following:

- Benzene was the only contaminant with a significant increase in concentration. The concentration is similar to that of the early sampling events. The concentrations of the other COCs are below GCTLs. Thus, monitored natural attenuation is still an acceptable approach for the site. Sampling should continue on an annual basis and the current analyses should

continue to be performed. (This was also recommended in the 2004 Annual Monitoring report.)

- An additional monitoring well should be installed to the northeast of the source well (MW-1S) in the event that the groundwater flow direct remains consistently in this direction. Well CEF-199-7S should be replaced near its current location in the event that the historic groundwater flow direction is restored. Prior to well installation, the water levels in the existing wells should be measured again to confirm the groundwater flow direction so that downgradient locations can be selected.

- The final TRPH milestone in the next Monitoring Order should be revised from 4 mg/L to 5 mg/L to be in line with the GCTL. (This was also recommended in the 2004 Annual Monitoring report.)

If you have any questions with regard to this submittal, please contact me at (412) 921-7231.

Very truly yours,

For
Paul E. Calligan
Task Order Manager

Debra M. Humbert
Program Manager

JL/jwl

Attachments

cc: D. Brittain, USEPA
D. Grabka, FDEP (2 copies)
D. Humbert, TtNUS (w/o attachments)
M. Speranza, TtNUS
M. Perry, TtNUS (CTO 0209 File Copy)

TABLES

TABLE 1

GROUNDWATER ELEVATION DATA
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA
PAGE 1 OF 1

Monitoring Well Identification	Well Depth (feet, BTOC)	Top of Casing Elevation (feet, msl)	January 5, 2001		Top of Casing Elevation (feet, msl) Resurveyed 6/14/01	January 8, 2002		February 18, 2003		January 27, 2004		May 10, 2004	
			DTW	WLE		DTW	WLE	DTW	WLE	DTW	WLE	DTW	WLE
CEF-199-1S	11.36	77.93	4.85	73.08 [D]	76.78	4.58	72.20	1.85	74.93	6.87	69.91	7.78	69.00
CEF-199-3S	NA	75.98	3.74	72.24	74.64	3.59	71.05	2.70	71.94	4.32	70.32	3.67	70.97
CEF-199-4S	11.52	77.16	4.23	72.93 [D]	75.83	4.09	71.74	2.64	73.19	5.45	70.38	4.97	70.86
CEF-199-5S	NA	76.05	3.75	72.30	74.71	3.70	71.01	2.81	71.90	4.55	70.16	3.81	70.90
CEF-199-6S	NA	75.48	2.93	72.55	74.14	3.57	70.57	1.69	72.45	2.32	71.82	NM-D	NM-D
CEF-199-7S	13.24	77.14	4.11	73.03 [D]	75.80	3.69	72.11	2.08	73.72	NM-D	NM-D	NM-D	NM-D
CEF-199-8S	NA	77.42	4.90	72.52 [D]	76.08	4.62	71.46	2.78	73.30	6.42	69.66	7.21	68.87
CEF-199-9S	NA	77.07	4.58	72.49	75.73	4.30	71.43	2.43	73.30	6.07	69.66	6.86	68.87
CEF-199-10S	NA	77.66	4.96	72.70	76.32	4.69	71.63	3.17	73.15	6.56	69.76	7.25	69.07

Notes:
DTW = Depth to water, feet BTOC
WLE = Water level elevation, feet msl
msl = mean sea level.
BTOC = below top of casing.
D = data not used in figure.
NA = not available.
NM-D = Not measured, damaged well.

TABLE 2

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-1S (Source)								
		12/96 11.36	12/98 11.36	7/99 11.36	2/00 11.36	1/01 11.36	1/02 11.36	Duplicate 1/02 11.36	2/03 11.36	Duplicate 2/03 11.36
Volatile Organic Compounds (µg/L)										
BENZENE	1	**8.1**	**3.1**	**7.0**	**1.7**	0.53	**1.9**	**1.8**	1 U	1 U
ETHYLBENZENE	30	11	5	7	4.7	2.8	1.5	1.4	1 U	1 U
TOLUENE	40	4.5	ND	ND	ND	1 U	0.58J	0.54J	1 U	1 U
XYLENES	20	**52**	1	ND	ND	3 U	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	NA	NA	41	ND	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	NA	NA	7	ND	1 U	2.1	2.0	1 U	1 U
Semivolatile Organic Compounds (µg/L)										
NAPHTHALENE	20	NA	NA	**57**	**33**	4.2	10.3	6.4	2.2 U	2.2 U
1-METHYLNAPHTHALENE	20	NA	NA	**96**	**53**	4.3	17.8	13.0	2.2 U	2.2 U
2-METHYLNAPHTHALENE	20	NA	NA	**83**	**61**	2.5	15.2	10.6	2.2 U	2.2 U
FLUORENE	280	NA	NA	11	0.3	4 U	3.6J	2.7J	2.2 U	2.2 U
ANTHRACENE	2100	NA	NA	2.8	ND	4 U	2 U	2 U	2.2 U	2.2 U
BENZO(A)ANTHRACENE	0.2	NA	NA	**3**	ND	0.4 U	0.2 U	0.2 U	1.3 U	0.86 U
Total Petroleum Hydrocarbons (mg/L)										
TRPH (C8-C40)	5	NA	NA	**5.4**	3.7	**28.4**	1.59	1.58	3.19	1.34

Notes:

GCTL - Groundwater Cleanup Target Level.
Bold values are greater than GCTL.
µg/L - microgram per liter.
mg/L - milligram per liter.
NA - Not analyzed.
ND - Not detected.
U - Undetected at detection limit shown.
J - Estimated.

TABLE 2

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Location	FDEP	CEF-199-1S (continued)			
Duplicate, as noted	GCTL		Duplicate		
Sample Date	FAC 62-777	1/04	1/04	2/04	5/04
Well Depth, feet		11.36	11.36	11.36	11.36
Volatile Organic Compounds (µg/L)					
BENZENE	1	**5**	**4.7**	**4.8**	**2.7**
ETHYLBENZENE	30	6.5	6.1	10.8	8.4
TOLUENE	40	1 U	1 U	1 U	1 U
XYLENES	20	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	1 U	1 U	1 U	1 U
Semivolatile Organic Compounds (µg/L)					
NAPHTHALENE	20	4.7	4.6	NA	NA
1-METHYLNAPHTHALENE	20	2.1	1.7	NA	NA
2-METHYLNAPHTHALENE	20	2.2	1.8	NA	NA
FLUORENE	280	2.6	2.5	NA	NA
ANTHRACENE	2100	2.1 U	2.1 U	NA	NA
BENZO(A)ANTHRACENE	0.2	0.21 U	0.21 U	NA	NA
Total Petroleum Hydrocarbons (mg/L)					
TRPH (C8-C40)	5	4.52	1.56	4.02	2.31

Notes:

GCTL - Groundwater Cleanup Target Level.
Bold values are greater than GCTL.
µg/L - microgram per liter.
mg/L - milligram per liter.
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ND - Not detected.
U - Undetected at detection limit shown.
J - Estimated.

TABLE 2

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-4S (Perimeter)						
		12/98 11.52	7/99 11.52	2/00 11.52	1/01 11.52	1/02 11.52	2/03 11.52	1/04 11.52
Volatile Organic Compounds (µg/L)								
BENZENE	1	ND	ND	ND	1 U	1 U	1 U	1 U
ETHYLBENZENE	30	ND	ND	ND	1 U	1 U	1 U	1 U
TOLUENE	40	ND	ND	ND	1 U	1 U	1 U	1 U
XYLENES	20	ND	ND	ND	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	NA	ND	ND	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	NA	ND	ND	1 U	1 U	1 U	1 U
Semivolatile Organic Compounds (µg/L)								
NAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U	2.1 U
1-METHYLNAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U	2.1 U
2-METHYLNAPHTHALENE	20	NA	ND	ND	2 U	2 U	2 U	2.1 U
FLUORENE	280	NA	ND	ND	2 U	2 U	2 U	2.1 U
ANTHRACENE	2100	NA	ND	ND	2 U	2 U	2 U	2.1 U
BENZO(A)ANTHRACENE	0.2	NA	ND	ND	0.2 U	0.2 U	0.2 U	0.21 U
Total Petroleum Hydrocarbons (mg/L)								
TRPH (C8-C40)	5	NA	ND	ND	0.258	0.25 U	0.26 U	0.27 U

Notes:

GCTL - Groundwater Cleanup Target Level.
Bold values are greater than GCTL.
µg/L - microgram per liter.
mg/L - milligram per liter.
NA - Not analyzed.
ND - Not detected.
U - Undetected at detection limit shown.
J - Estimated.

TABLE 2

SUMMARY OF POSITIVE DETECTIONS IN GROUNDWATER
TANK 199
NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Location Duplicate, as noted Sample Date Well Depth, feet	FDEP GCTL FAC 62-777	CEF-199-7S (Perimeter)					199-6S
		7/99 13.24	2/00 13.24	1/01 13.24	1/02 13.24	2/03 13.24	1/04 13.00
Volatile Organic Compounds (µg/L)							
BENZENE	1	ND	ND	1 U	1 U	1 U	1 U
ETHYLBENZENE	30	ND	ND	1 U	1 U	1 U	1 U
TOLUENE	40	ND	ND	1 U	1 U	1 U	1 U
XYLENES	20	ND	ND	3 U	3 U	3 U	3 U
1,4-DICHLOROBENZENE	75	ND	ND	1 U	1 U	1 U	1 U
1,2-DICHLOROBENZENE	600	ND	ND	1 U	1 U	1 U	1 U
Semivolatile Organic Compounds (µg/L)							
NAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U	2.2 U
1-METHYLNAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U	2.2 U
2-METHYLNAPHTHALENE	20	ND	ND	2.2 U	2 U	2.1 U	2.2 U
FLUORENE	280	ND	ND	2.2 U	2 U	2.1 U	2.2 U
ANTHRACENE	2100	ND	ND	2.2 U	2 U	2.1 U	2.2 U
BENZO(A)ANTHRACENE	0.2	ND	ND	0.22 U	0.2 U	0.21 U	0.22 U
Total Petroleum Hydrocarbons (mg/L)							
TRPH (C8-C40)	5	ND	ND	0.480	0.28 U	0.26 U	0.27 U

Notes:

GCTL - Groundwater Cleanup Target Level.
Bold values are greater than GCTL.
µg/L - microgram per liter.
mg/L - milligram per liter.
NA - Not analyzed.
ND - Not detected.
U - Undetected at detection limit shown.
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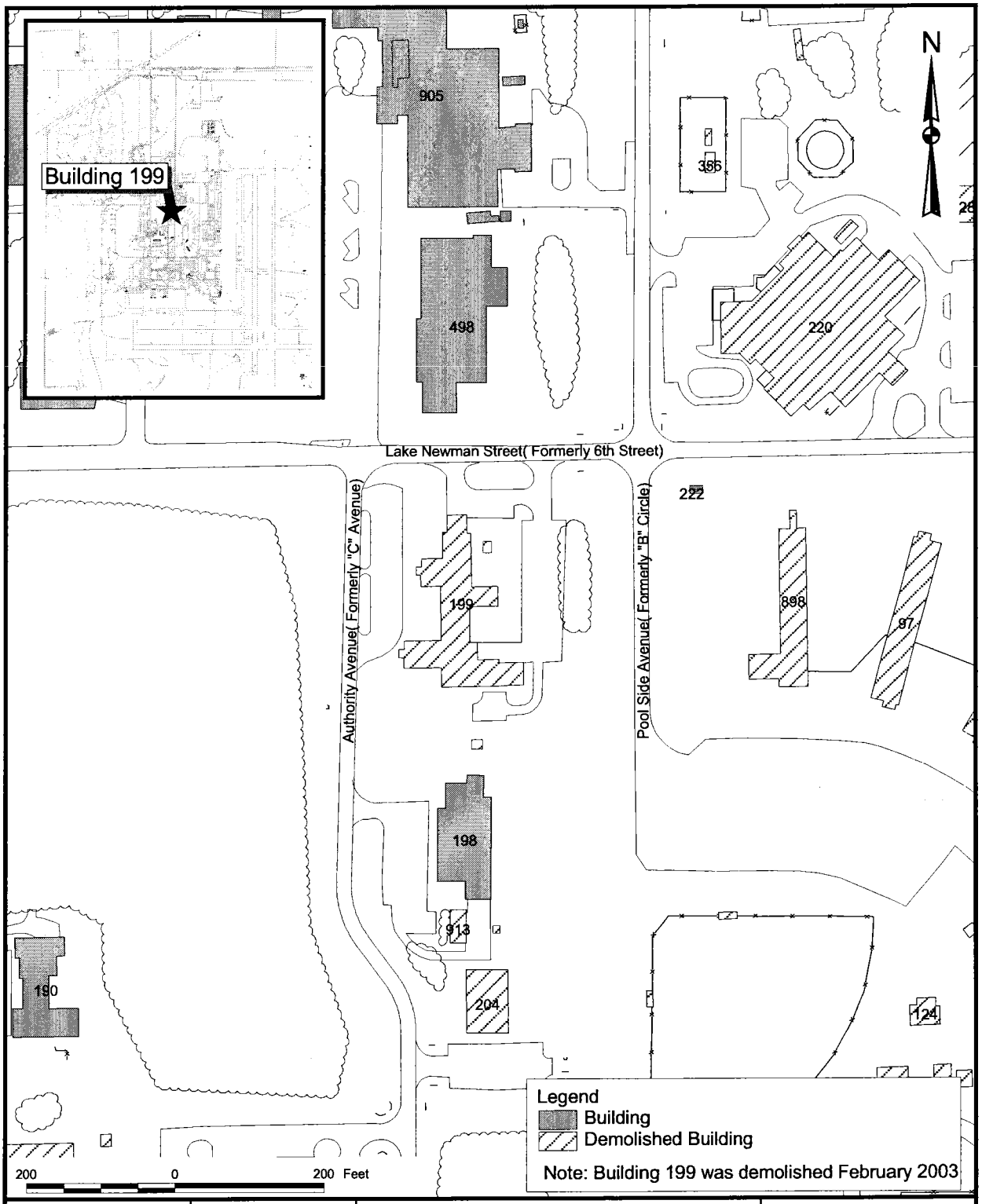
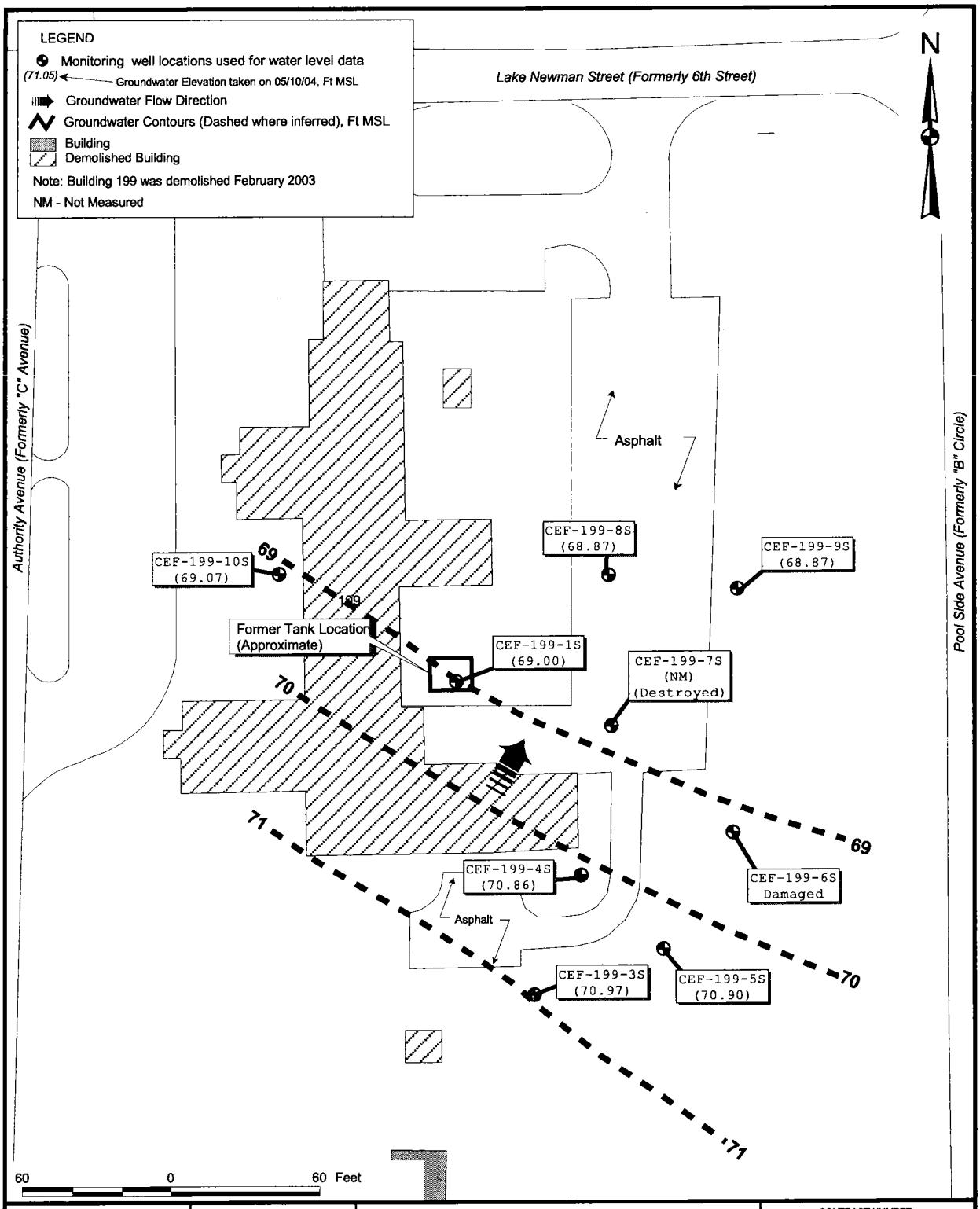
FIGURES



DRAWN BY MJJ	DATE 01Jun04	SITE LOCATION MAP BUILDING 199, TANK 199 NAVAL AIR STATION CECIL FIELD JACKSONVILLE, FLORIDA	CONTRACT NUMBER 4093
CHECKED BY	DATE		APPROVED BY DATE
COST/SCHEDULE-AREA			APPROVED BY DATE
SCALE AS NOTED			DRAWING NO. FIGURE 1 / REV 0

P:\GIS\NAS_CecilField\Bldg0199-6.apr 01Jun04 MJJ Site Location Layout



DRAWN BY	DATE		CONTRACT NUMBER 4093
MJJ	01Jun04	GROUNDWATER FLOW MAP	APPROVED BY / DATE
CHECKED BY	DATE	MAY 2004	APPROVED BY / DATE
COST/SCHEDULE-AREA		NAVAL AIR STATION CECIL FIELD	DRAWING NO. FIGURE 2 / REV 0
SCALE AS NOTED		JACKSONVILLE, FLORIDA	

P:\GIS\NAS_CecilField\Bldg0199-6.apr 01Jun04 MJJ GroundwaterPotentiometricLayout

ATTACHMENT A

GROUNDWATER ANALYTICAL REPORT

Report of Analysis

Client Sample ID:	CEF-199-GW-1S-S1		
Lab Sample ID:	F24102-1	Date Sampled:	05/10/04
Matrix:	AQ - Ground Water	Date Received:	05/12/04
Method:	SW846 8021B	Percent Solids:	n/a
Project:	Cecil Field-Tank 199		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	QR022539.D	1	05/19/04	RA	n/a	n/a	GQR978
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics, Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.7	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.50	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	8.4	1.0	0.50	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
1330-20-7	Xylenes (total)	ND	3.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
352-33-0	1-Chloro-4-fluorobenzene	100%		70-123%
563-58-6	1,1-Dichloropropene	98%		86-112%

(a) All hits confirmed by GC/MS.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	CEF-199-GW-1S-S1		
Lab Sample ID:	F24102-1	Date Sampled:	05/10/04
Matrix:	AQ - Ground Water	Date Received:	05/12/04
Method:	FLORIDA-PRO SW846 3510C	Percent Solids:	n/a
Project:	Cecil Field-Tank 199		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	OP38470.D	1	05/19/04	ME	05/15/04	OP10442	GOP1220
Run #2							

	Initial Volume	Final Volume
Run #1	850 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH (C8-C40)	2.31	0.29	0.20	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		50-125%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

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