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QUARTERLY GROUNDWATER SAMPLING STUDY AREA 52 WITH TRANSMITTAL LETTER
NTC ORLANDO FL
6/18/2003
TETRA TECH

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0603-A061

June 18, 2003

Commander, Southern Division
Naval Facilities Engineering Command
ATTN: Ms. Barbara Nwokike, Code ES33
P.O. Box 190010
2155 Eagle Drive
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888
Contract Task Order No. 0235

Subject: Quarterly Groundwater Sampling, March 2003 – OU 2 and SA 52
Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed are reports for the quarterly sampling conducted at OU 2 and SA 52 in March 2003. The two reports are provided in hardcopy and CD formats.

If you have any questions, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.
Task Order Manager

SBM:ckf

Enclosure

c: Ms. Barbara Nwokike, Southern Division (Orlando Office) (hardcopy and CD)
Ms. Hope Wilson, Southern Division (hardcopy and CD)
Mr. David Grabka, FDEP (hardcopy and CD)
Mr. Gregory Fraley, USEPA Region 4 (hardcopy and CD)
Mr. Steve Tsangaris, CH2M Hill (CD)
Mr. Mark Salvetti, MACTEC Engineering (CD)
Mr. Mike Campbell, Tetra Tech NUS (hardcopy)
Mr. J.E. Bentkowski, Gannett Fleming (hardcopy and CD)
Mr. Mark Perry, Tetra Tech NUS (unbound hardcopy)
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)
File/db

GROUNDWATER SAMPLING
at
STUDY AREA 52
MARCH 2003

Naval Training Center
Orlando, Florida

Southern Division
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888

Contract Task Order 0235

June 2003

TABLE OF CONTENTS

SECTION **PAGE**

1. INTRODUCTION 1

2. FIELD ACTIVITIES 1
2.1 WATER LEVEL SURVEY 1
2.2 SAMPLING 2
2.3 SAMPLE TURBIDITY 2
2.4 PROBLEMS ENCOUNTERED 3

3. RESULTS 3
3.1 WATER LEVEL SURVEY 3
3.2 DATA VALIDATION 3
3.3 ANALYTICAL RESULTS 3

4. REFERENCES 4

APPENDIX

A GROUNDWATER SAMPLE LOG SHEETS A-1

FIGURES

NUMBER

1 Groundwater Elevation Map, March 26, 2003
2 Groundwater Exceedances, March 2003

TABLES

NUMBER

1 Water-Level Elevations Summary
2 Detections in Groundwater – March 2003
3 Historical Detections in Groundwater
4 Validated Groundwater Analytical Results – March 2003

GROUNDWATER SAMPLING AT STUDY AREA 52
NAVAL TRAINING CENTER, ORLANDO

Prepared for:	Ms. Barbara Nwokike, SOUTHDIV	
Prepared by:	Janice Johnson	
Period of Performance:	March 19-27, 2003	
Field Team:	Jason Bourgeois Gary Braganza, FTL Brian Cole Jeff Fournier Chris Gleaton	Janice Johnson Ches Lyon Scott McGuire Jeff Zimmerly
TtNUS Task Order Manager:	Mr. Steven B. McCoy, P.E.	
Contract:	No. N62467-94-D-0888 Contract Task Order No. 0235	
Date:	June 18, 2003	

1. INTRODUCTION

Quarterly groundwater sampling was conducted at Study Area (SA) 52 in March 2003. The fieldwork was performed in accordance with the *Work Plan for Groundwater Sampling* (Tetra Tech NUS, 2002a), and the Project Operations Plan (POP) (ABB-ES, 1997).

2. FIELD ACTIVITIES

Tetra Tech NUS, Inc., mobilized to the field on March 19, 2003, to perform quarterly monitoring at SA 2, SA 52, Operable Unit (OU) 2, and OU 3. Work at SA 52 was performed on March 26, 2003, and included a water level survey and groundwater sampling.

2.1 Water Level Survey

Groundwater levels were measured in wells OLD-52-06, OLD-52-11, OLD-52-12, and OLD-52-13 on March 26, 2003. Well seals/caps were removed and each well allowed to equilibrate for a minimum of 0.5 hour prior to recording water level measurements. During previous events, a second round of water levels were recorded 0.5 hours after the initial round, and a third round was recorded if a difference of 0.05 foot was observed in any well. The initial round only was recorded during the March 2003 event.

2.2 Sampling

Groundwater sampling was conducted at SA 52 on March 26, 2003. Three wells (OLD-52-11, OLD-52-12, OLD-52-13) at SA 52 were purged and sampled with a peristaltic pump using the low-flow method described in the POP. Purging of the wells consisted of removing groundwater at a rate of approximately 100 ml/min until field parameters, which include temperature, pH, conductivity, turbidity, and dissolved oxygen had stabilized. Water levels in the wells were continuously monitored to limit drawdown to less than 0.3 feet. Groundwater sample log sheets are included in Appendix A.

All groundwater samples were collected using the vacuum trap method to ensure that the sample water did not contact the non-inert tubing in the pump head. Groundwater samples from SA 52 were analyzed for pesticides using U.S. Environmental Protection Agency (USEPA) Method 8081A. All samples were refrigerated in ice-chilled coolers and picked up by Accutest Laboratories in Orlando, Florida.

2.3 Sample Turbidity

The turbidity reading in wells OLD-52-11 and OLD-52-12 were 200 NTU and 96 NTU respectively, which did not meet the goal of less than 10 NTU. The turbidity readings for the last fourteen sampling events are shown below:

Sample Date	OLD-52-11	OLD-52-12	OLD-52-13
07/27/99	160 NTU	25 NTU	1.1 NTU
10/24/99	695 NTU	3.09 NTU	29.5 NTU
01/21/00	800 NTU	<1 NTU	50 NTU
04/12/00	616 NTU	8.63 NTU	11.2 NTU
07/16/00	230 NTU	0.35 NTU	75 NTU
10/25/00	240 NTU	0.65 NTU	77.5 NTU
01/28/01	603 NTU	3.42 NTU	43.2 NTU
04/29/01	200 NTU	3 NTU	29 NTU
07/16/01	290 NTU	1.98 NTU	36 NTU
03/24/02	728 NTU	0 NTU	26 NTU
06/25 & 26/02	140 NTU	1.42 NTU	9.8 NTU
09/13/02	160 NTU	0 NTU	9.4 NTU
12/15/02	168 NTU	3.6 NTU	37.8 NTU
03/26/03	200 NTU	96 NTU	0 NTU

As shown in the above data, turbidity has been excessively high in all samples collected from OLD-52-11 since July 1999.

2.4 Problems Encountered

Problems encountered during the March 2003 event and listed below.

- Turbidity remains problematic (Section 2.3).
- Only one round of water levels was recorded prior to sample collection.
- The sample collection times and purge volumes for wells OLD-52-12 and OLD-52-13 were switched on the groundwater sampling logs. This information was documented correctly in the field log book and on the sample labels, which are the basis for annotations made on the sample logs.

3. RESULTS

3.1 Water Level Survey

Groundwater elevation data at SA 52 are presented in Table 1 and Figure 1. Current water level data are consistent with the general northeasterly groundwater flow direction presented in the SA 52 *Environmental Site Screening Report* (HLA, 1999) and the previous quarterly sampling reports (Tetra Tech NUS, 2001a, 2001b, 2001c, 2001d, 2002b, 2002c, 2002d, and 2003).

3.2 Data Validation

A limited data validation was performed using the *USEPA Contract Laboratory Program: National Functional Guidelines for Organic Data Review* (USEPA, 1999). The data validation evaluated data completeness, holding time compliance, calibration compliance, laboratory blank contamination, and detection limits. Qualifiers resulting from the validation process are shown with the analyte concentrations in Tables 2, 3, and 4.

3.3 Analytical Results

Table 2 presents a summary of the analytes detected during the March 2003 sampling event at SA 52. The historical detections are compiled in Table 3, and the validated analytical data for the March 2003 sampling event are included in Table 4. Shaded cells indicate concentrations equal to or greater than Florida Groundwater Cleanup Target Levels (GCTLs). The distribution of pesticides detected above the GCTLs is shown on Figure 2.

Pesticides have never been detected above GCTLs in OLD-52-11. Pesticides have not been detected in well OLD-52-12 since July 1999. The sample from OLD-52-13 and its duplicate contained dieldrin at a concentrations of 0.015 µg/L and 0.011 µg/L, respectively. Both exceed the GCTL of 0.005 µg/L.

4. REFERENCES

ABB Environmental Services, Inc., 1997. *Project Operations Plan for Site Investigations and Remedial Investigations*. Naval Training Center, Orlando, Florida, Unit Identification Code N65928, Navy CLEAN District 1, Contract No. N62467-89-D-0317, August.

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TtNUS (Tetra Tech NUS, Inc), 2001a. *Groundwater Sampling at Study Area 52*. Document No. 470101008, January.

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TtNUS, 2001c. *Groundwater Sampling at Study Area 52*. Document No. 470501007, August.

TtNUS, 2001d. *Groundwater Sampling at Study Area 52*. Document No. 470901002, October.

TtNUS, 2002a. *Work Plan for Groundwater Sampling, Rev. 4*. Document No. 4707995, March.

TtNUS, 2002b. *Groundwater Sampling at Study Area 52*. Document No. 470602004, June.

TtNUS, 2002c. *Groundwater Sampling at Study Area 52, June 2002*. Document No. 470802018, September.

TtNUS, 2002d. *Groundwater Sampling at Study Area 52, September 2002*. Document No. 471202005, December.

TtNUS, 2003. *Groundwater Sampling at Study Area 52, December 2002*. Document No. 470303003, March.

USEPA, 1999. Contract Laboratory Program: *National Functional Guidelines for Organic Data Review*. EPA/540/R-99/008, Office of Solid Waste and Emergency Response, Washington, D.C., October.

TABLES

No.

1 Water-Level Elevations Summary

2 Detections in Groundwater – March 2003

3 Historical Detections in Groundwater

4 Validated Groundwater Analytical Results – March 2003

TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Screen Interval (BGS)	TOC Elevation (AMSL)	7/27/99		10/24/99		1/21/00		4/12/00		7/16/00	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-52-06	0.5" well	6 - 10	94.22	NM	NM	NM	NM	6.39	87.83	7.50	86.72	6.47	87.75
OLD-52-11	2" well	4 - 14	93.14	NM	NM	4.07	89.07	5.70	87.44	6.70	86.44	5.50	87.64
OLD-52-12	2" well	3 - 13	91.73	2.89	88.84	2.92	88.81	4.42	87.31	5.40	86.33	4.10	87.63
OLD-52-13	2" well	3 - 13	91.36	3.35	88.01	2.37	88.99	3.95	87.41	4.95	86.41	3.77	87.59

TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Screen Interval (BGS)	TOC Elevation (AMSL)	10/25/00		1/28/01		4/29/01		7/16/01		3/20/02	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-52-06	0.5" well	6 - 10	94.22	NM	NM	NM	NM	6.77	87.45	3.33	90.89	6.78	87.44
OLD-52-11	2" well	4 - 14	93.14	5.90	#REF!	6.66	86.48	6.03	87.11	2.58	90.56	6.02	87.12
OLD-52-12	2" well	3 - 13	91.73	4.58	#REF!	5.35	86.38	4.70	87.03	1.48	90.25	4.74	86.99
OLD-52-13	2" well	3 - 13	91.36	4.14	#REF!	4.89	86.47	4.27	87.09	0.89	90.47	4.29	87.07

TABLE 1

WATER-LEVEL ELEVATIONS SUMMARY
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well	Well Type	Screen Interval (BGS)	TOC Elevation (AMSL)	6/21/02		9/13/02		12/15/02		3/26/03	
				Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)	Depth to Water (BTOC)	Groundwater Elevation (AMSL)
OLD-52-06	0.5" well	6 - 10	94.22	3.76	90.46	4.51	89.71	3.57	90.65	4.85	89.37
OLD-52-11	2" well	4 - 14	93.14	2.82	90.32	3.77	89.37	2.77	90.37	4.02	89.12
OLD-52-12	2" well	3 - 13	91.73	1.73	90.00	2.57	89.16	1.66	90.07	2.94	88.79
OLD-52-13	2" well	3 - 13	91.36	0.95	90.41	2.03	89.33	1.1	90.26	2.32	89.04

Notes:
*All measurements are in units of feet.
AMSL - Above mean sea level
BGS - Below ground surface
BTOC - Below top of casing
NM - Not measured
TOC - Top of casing

TABLE 2

DETECTIONS IN GROUNDWATER - MARCH 2003
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-11	OLD-52-12	OLD-52-13	
Sample ID		Florida GCTL[a]	NTC52G01123	NTC52G01223	NTC52G01323	NTC52G01323-D
Sample Date			3/26/03	3/26/03	3/26/03	3/26/03
Pesticides (mg/L)						
Alpha-Chlordane[b]	5103-71-9	2			0.0026 J	0.0026 J
Dieldrin	60-57-1	0.005			0.015	0.011

Notes:

[a] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].

[b] GCTL substitution: Chlordane for alpha-Chlordane.

"J" qualifier indicates an estimated value.

Values in shaded cells are equal to or exceed the GCTL.

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-11							
Sample ID		Florida GCTL[a]	52G01101	52G01102	NTC52G01110	NTC52G1111	NTC52G01112	NTC52G01113	NTC52G01114	NTC52G01115
Sample Date			10/16/97	2/5/98	7/27/99	10/24/99	1/21/00	4/12/00	7/16/00	10/25/00
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1								
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005								
alpha-Chlordane[b]	5103-71-9	2								
Dieldrin	60-57-1	0.005								
Endosulfan I[b]	959-98-8	42								
Endrin Aldehyde	7421-93-4	*			0.03J					
Endrin Ketone	53494-70-5	*								
gamma-Chlordane[b]	5103-74-2	2								
Heptachlor	76-44-8	0.4								
Heptachlor Epoxide	1024-57-3	0.2								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-11						
Sample ID		Florida GCTL[a]	NTC52G01116	NTC52G01117	NTC52G01118	NTC52G01119	NTC52G01120	NTC52G01121	NTC52G01121-F[c]
Sample Date			1/28/01	4/29/01	7/16/01	3/24/02	6/25/02	9/13/02	9/13/02
Pesticides (µg/L)									
4,4'-DDD	72-54-8	0.1							
4,4'-DDE	72-55-9	0.1			0.012J				
Aldrin	309-00-2	0.005							
alpha-Chlordane[b]	5103-71-9	2							
Dieldrin	60-57-1	0.005							
Endosulfan I[b]	959-98-8	42							
Endrin Aldehyde	7421-93-4	*							
Endrin Ketone	53494-70-5	*							
gamma-Chlordane[b]	5103-74-2	2							
Heptachlor	76-44-8	0.4							
Heptachlor Epoxide	1024-57-3	0.2							

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-11		OLD-52-12					
Sample ID		Florida GCTL[a]	NTC52G01122	NTC52G01123	52G01201	52G01202	NTC52G01210	NTC52G01210-D	NTC52G1211	NTC52G01212
Sample Date			12/15/02	3/26/03	10/16/97	2/5/98	7/27/99	7/27/99	10/24/99	1/21/00
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1								
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005								
alpha-Chlordane[b]	5103-71-9	2								
Dieldrin	60-57-1	0.005					0.081	0.069		
Endosulfan I[b]	959-98-8	42								
Endrin Aldehyde	7421-93-4	*						0.018J		
Endrin Ketone	53494-70-5	*								
gamma-Chlordane[b]	5103-74-2	2					0.011J	0.007J		
Heptachlor	76-44-8	0.4	0.010							
Heptachlor Epoxide	1024-57-3	0.2								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-12							
Sample ID		Florida GCTL[a]	NTC52G01213	NTC52G01213-D	NTC52G01214	NTC52G01215	NTC52G01216	NTC52G01217	NTC52G01218	NTC52G01219
Sample Date			4/12/00	4/12/00	7/16/00	10/25/00	1/28/01	4/29/01	7/16/01	3/24/02
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1								
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005								
alpha-Chlordane[b]	5103-71-9	2								
Dieldrin	60-57-1	0.005								
Endosulfan I[b]	959-98-8	42								
Endrin Aldehyde	7421-93-4	*								
Endrin Ketone	53494-70-5	*								
gamma-Chlordane[b]	5103-74-2	2								
Heptachlor	76-44-8	0.4								
Heptachlor Epoxide	1024-57-3	0.2								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-12					OLD-52-13		
Sample ID		Florida GCTL[a]	NTC52G01220	NTC52G01221	NTC52G01221-F[c]	NTC52G01221	NTC52G01223	52G01301	52G01302	NTC52G01310
Sample Date			6/25/02	9/13/02	9/13/02	12/15/02	3/26/03	10/16/97	2/5/98	7/27/99
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1								
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005								
alpha-Chlordane[b]	5103-71-9	2								
Dieldrin	60-57-1	0.005						5.6 J	0.2	
Endosulfan I[b]	959-98-8	42								
Endrin Aldehyde	7421-93-4	*								
Endrin Ketone	53494-70-5	*								
gamma-Chlordane[b]	5103-74-2	2								
Heptachlor	76-44-8	0.4								
Heptachlor Epoxide	1024-57-3	0.2								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-13							
Sample ID		Florida GCTL[a]	NTC52G1311	NTC52G01312	NTC52G01313	NTC52G01314	NTC52G01314-D	NTC52G01315	NTC52G01316	NTC52G01316-D
Sample Date			10/24/99	1/21/00	4/12/00	7/16/00	7/16/00	10/25/00	1/28/01	1/28/01
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1		0.28 J						
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005		0.021 J					0.066	0.067
alpha-Chlordane[b]	5103-71-9	2		0.044 J					0.092	0.092 J
Dieldrin	60-57-1	0.005	0.027 J	0.19	0.43 J	0.072 J	0.068 J	0.14	0.24	0.28
Endosulfan I[b]	959-98-8	42		0.032 J						
Endrin Aldehyde	7421-93-4	*								
Endrin Ketone	53494-70-5	*							0.052 J	
gamma-Chlordane[b]	5103-74-2	2								
Heptachlor	76-44-8	0.4								
Heptachlor Epoxide	1024-57-3	0.2		0.044 J						

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-13							
Sample ID		Florida GCTL[a]	NTC52G01317	NTC52G01318	NTC52G01319	NTC52G01319-D	NTC52G01320	NTC52G01320-D	NTC52G01321	NTC52G01321-F[c]
Sample Date			4/29/01	7/16/01	3/24/02	3/24/02	6/26/02	6/26/02	9/13/02	9/13/02
Pesticides (µg/L)										
4,4'-DDD	72-54-8	0.1								
4,4'-DDE	72-55-9	0.1								
Aldrin	309-00-2	0.005								
alpha-Chlordane[b]	5103-71-9	2			0.2	0.27	0.052			
Dieldrin	60-57-1	0.005	0.88	0.013J	1.8	2.2	1.7 J	1.1 J		
Endosulfan I[b]	959-98-8	42								
Endrin Aldehyde	7421-93-4	*								
Endrin Ketone	53494-70-5	*	0.08 J		0.17	0.21				
gamma-Chlordane[b]	5103-74-2	2								
Heptachlor	76-44-8	0.4								
Heptachlor Epoxide	1024-57-3	0.2								

TABLE 3

HISTORICAL DETECTIONS IN GROUNDWATER
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-13					
Sample ID		Florida GCTL[a]	NTC52G01321-D	NTC52G01321-D-F[c]	NTC52G01322	NTC52G01322-D	NTC52G01323	NTC52G01323-D
Sample Date			9/13/02	9/13/02	12/15/02	12/15/02	3/26/03	3/26/03
Pesticides (µg/L)								
4,4'-DDD	72-54-8	0.1						
4,4'-DDE	72-55-9	0.1						
Aldrin	309-00-2	0.005						
alpha-Chlordane[b]	5103-71-9	2					0.0026 J	0.0026 J
Dieldrin	60-57-1	0.005			0.010 J	0.010 J	0.015	0.011
Endosulfan I[b]	959-98-8	42						
Endrin Aldehyde	7421-93-4	*						
Endrin Ketone	53494-70-5	*						
gamma-Chlordane[b]	5103-74-2	2						
Heptachlor	76-44-8	0.4				0.010		
Heptachlor Epoxide	1024-57-3	0.2						

Notes:

[a] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].

[b] GCTL substitution: Chlordane for alpha- and gamma-Chlordane and Endosulfan for Endosulfan I.

[c] "F" in Sample ID indicates sample filtered in the field.

* Indicates that the GCTL is not available.

Empty cells indicate non-detects.

"J" qualifier indicates an estimated value.

Only chemicals detected in at least one sample are shown.

Values in shaded cells are equal to or exceed the GCTL.

TABLE 4

VALIDATED GROUNDWATER ANALYTICAL RESULTS - MARCH 2003
STUDY AREA 52

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

Well Designation	CAS NUMBER	Screening Criteria	OLD-52-11	OLD-52-12	OLD-52-13	
Sample ID		Florida	NTC52G01123	NTC52G01223	NTC52G01323	NTC52G01323-D
Sample Date		GCTL[a]	3/26/03	3/26/03	3/26/03	3/26/03
Pesticides (µg/L)						
4,4'-DDD	72-54-8	0.1	0.0042 U	0.0041 U	0.0041 U	0.0041 U
4,4'-DDE	72-55-9	0.1	0.0042 U	0.0041 U	0.0041 U	0.0041 U
4,4'-DDT	50-29-3	0.1	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Aldrin	309-00-2	0.005	0.0021 U	0.0021 U	0.0021 U	0.0021 U
alpha-BHC	319-84-6	0.006	0.0021 U	0.0021 U	0.0021 U	0.0021 U
alpha-Chlordane[b]	5103-71-9	2	0.0021 U	0.0021 U	0.0026 J	0.0026 J
beta-BHC	319-85-7	0.02	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Chlordane (Technical)	12789-03-6		0.052 U	0.052 U	0.052 U	0.052 U
delta-BHC	319-86-8	2.1	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Dieldrin	60-57-1	0.005	0.0021 U	0.0021 U	**0.015**	**0.011**
Endosulfan I[b]	959-98-8	42	0.0021 U	0.0021 U	0.0021 U	0.0021 U
Endosulfan II[b]	33213-65-9	42	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Endosulfan Sulfate	1031-07-8	*	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Endrin	72-20-8	2	0.0042 U	0.0041 U	0.0041 U	0.0041 U
Endrin Aldehyde	7421-93-4	*	0.0083 U	0.0082 U	0.0082 U	0.0082 U
Endrin Ketone	53494-70-5	*	0.0042 U	0.0041 U	0.0041 U	0.0041 U
gamma-BHC (Lindane)	58-89-9	0.2	0.0021 U	0.0021 U	0.0021 U	0.0021 U
gamma-Chlordane[b]	5013-74-2	2	0.0021 U	0.0021 U	0.0021 U	0.0021 U
Heptachlor	76-44-8	0.4	0.0021 U	0.0021 U	0.0021 U	0.0021 U
Heptachlor Epoxide	1024-57-3	0.2	0.0021 U	0.0021 U	0.0021 U	0.0021 U
Methoxychlor	72-43-5	40	0.0083 U	0.0082 U	0.0082 U	0.0082 U
Toxaphene	8001-35-2	3	0.26 U	0.26 U	0.26 U	0.26 U

Notes:

[a] Groundwater Cleanup Target Level [Development of Soil Cleanup Target Levels (SCTLs) for Chapter 62-777, F.A.C., May 26, 1999].
[b] GCTL substitutions: Chlordane for alpha-Chlordane and gamma-Chlordane; and Endosulfan for Endosulfan I and Endosulfan II.
* Indicates that the GCTL is not available.
"J" qualifier indicates an estimated value.
"U" qualifier indicates analyte not detected.
Values in shaded cells are equal to or exceed the GCTL.

FIGURES

No.

1 Groundwater Elevation Map, March 26, 2003

2 Groundwater Exceedances, March 2003

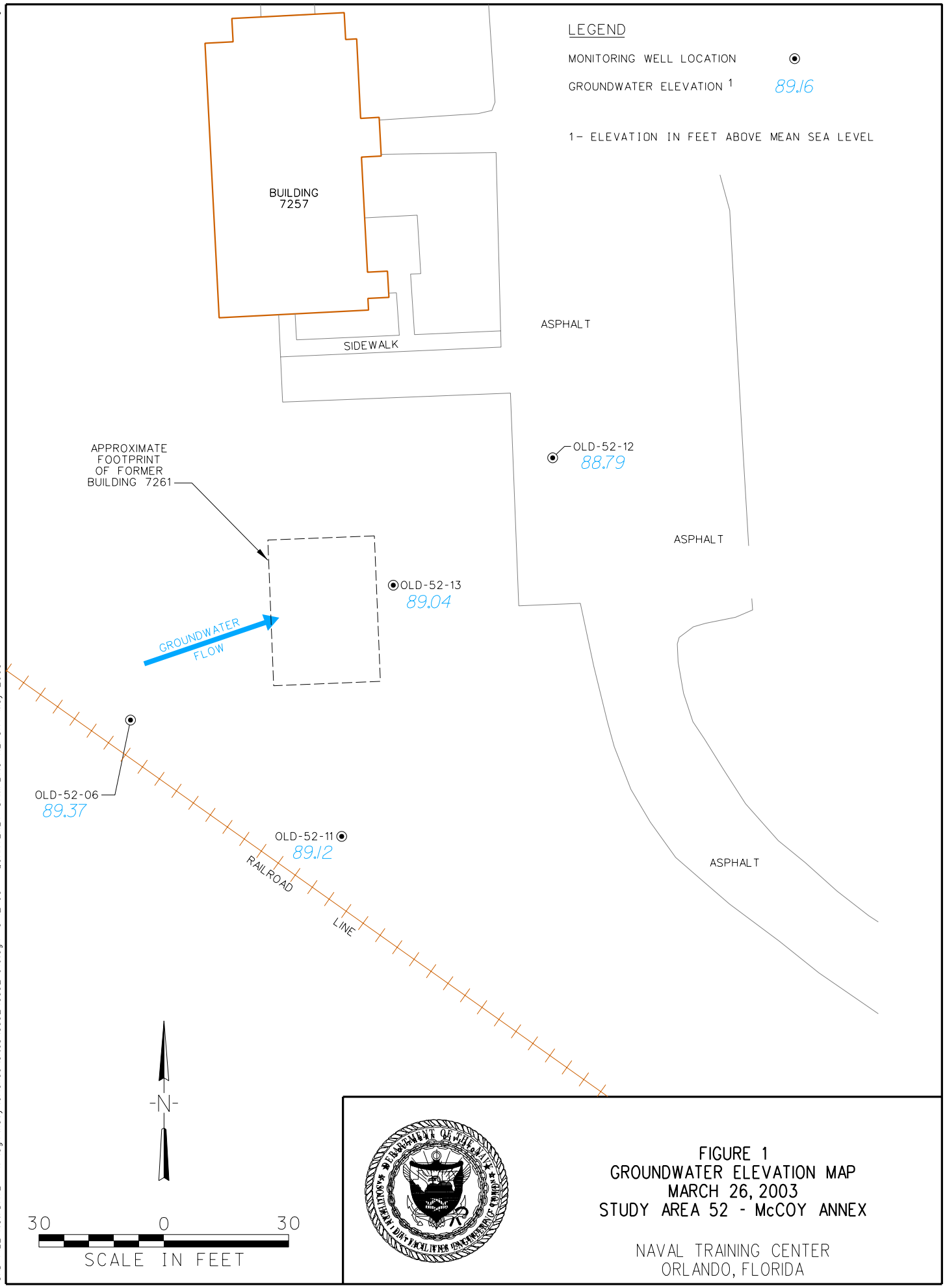
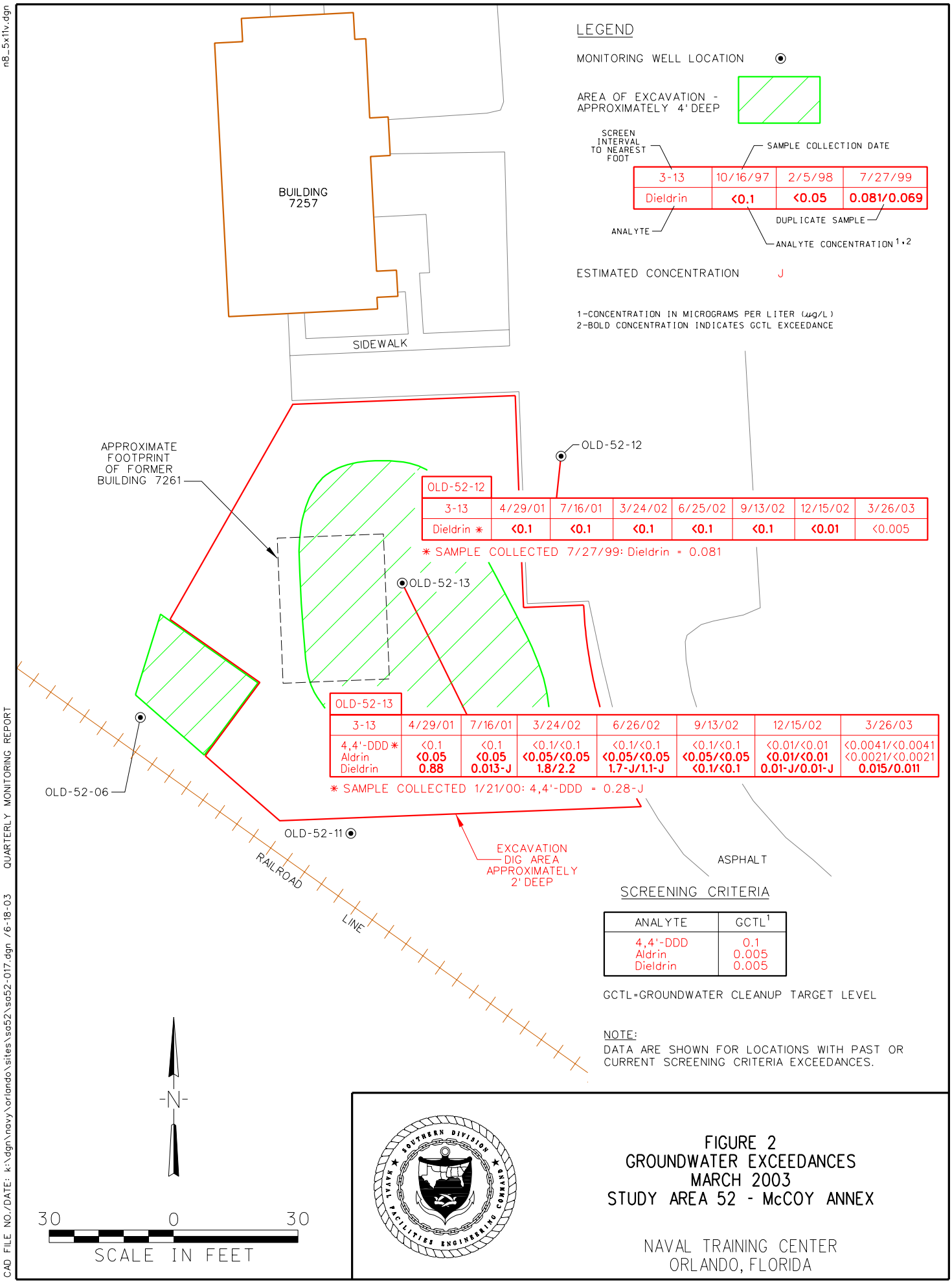


FIGURE 1
GROUNDWATER ELEVATION MAP
MARCH 26, 2003
STUDY AREA 52 - McCOY ANNEX

NAVAL TRAINING CENTER
ORLANDO, FLORIDA

CAD FILE NO./DATE: k:\dgn\navy\orlando\sites\sa52\sa52-016.dgn 5-12-03 QUARTERLY SAMPLING REPORT May 2003

n8_5x11v.dgn


LEGEND
MONITORING WELL LOCATION
AREA OF EXCAVATION - APPROXIMATELY 4' DEEP
SCREEN INTERVAL TO NEAREST FOOT
SAMPLE COLLECTION DATE
3-13 | 10/16/97 | 2/5/98 | 7/27/99
Dieldrin | <0.1 | <0.05 | 0.081/0.069
ANALYTE
DUPLICATE SAMPLE
ANALYTE CONCENTRATION 1,2
ESTIMATED CONCENTRATION J
1-CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
2-BOLD CONCENTRATION INDICATES GCTL EXCEEDANCE
BUILDING 7257
SIDEWALK
APPROXIMATE FOOTPRINT OF FORMER BUILDING 7261
OLD-52-12
OLD-52-12
3-13 | 4/29/01 | 7/16/01 | 3/24/02 | 6/25/02 | 9/13/02 | 12/15/02 | 3/26/03
Dieldrin * | <0.1 | <0.1 | <0.1 | <0.1 | <0.1 | <0.01 | <0.005
* SAMPLE COLLECTED 7/27/99: Dieldrin = 0.081
OLD-52-13
OLD-52-13
3-13 | 4/29/01 | 7/16/01 | 3/24/02 | 6/26/02 | 9/13/02 | 12/15/02 | 3/26/03
4,4'-DDD * | <0.1 | <0.1 | <0.1/<0.1 | <0.1/<0.1 | <0.1/<0.1 | <0.01/<0.01 | <0.0041/<0.0041
Aldrin | <0.05 | <0.05 | <0.05/<0.05 | <0.05/<0.05 | <0.05/<0.05 | <0.01/<0.01 | <0.0021/<0.0021
Dieldrin | 0.88 | 0.013-J | 1.8/2.2 | 1.7-J/1.1-J | <0.1/<0.1 | 0.01-J/0.01-J | 0.015/0.011
* SAMPLE COLLECTED 1/21/00: 4,4'-DDD = 0.28-J
OLD-52-06
OLD-52-11
EXCAVATION DIG AREA APPROXIMATELY 2' DEEP
ASPHALT
RAILROAD LINE
SCREENING CRITERIA
ANALYTE | GCTL[1]
4,4'-DDD | 0.1
Aldrin | 0.005
Dieldrin | 0.005
GCTL=GROUNDWATER CLEANUP TARGET LEVEL
NOTE:
DATA ARE SHOWN FOR LOCATIONS WITH PAST OR CURRENT SCREENING CRITERIA EXCEEDANCES.
-N-
30 0 30
SCALE IN FEET
SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
FIGURE 2
GROUNDWATER EXCEEDANCES
MARCH 2003
STUDY AREA 52 - McCOY ANNEX
NAVAL TRAINING CENTER
ORLANDO, FLORIDA
CAD FILE NO./DATE: k:\dgn\navy\orlando\sites\sa52\sa52-017.dgn /6-18-03
QUARTERLY MONITORING REPORT
n8_5x11v.dgn

APPENDIX A

GROUNDWATER SAMPLE LOG SHEETS

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 3/26/03

Project Site Name: NTC Orlando
Project No.: N4207/MG005A140

Sample Location: OLD-52-11

[ ] Domestic Well Data

[X] Monitoring Well Data

[ ] Other Well Type: _____

Flow-Thru Cell Make\Model: Horiba U-22

Serial Nos.: 922001

Sample ID No.: NTC52G011 23

Sampled By: SRM

C-O-C No.: _____

PURGING DATA

Casing Size (in.)	Gals. / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1725	5.48	0.085	23.4	340	5.18	92	4.29	100
1	0.041 / 0.155	1730	5.43	0.087	23.2	268	5.40	103	4.29	100
2	0.163 / 0.617	1735	5.37	0.087	23.2	198	5.38	107	4.29	100
4	0.653 / 2.47	1740	5.34	0.088	23.3	120	5.35	111	4.29	100
6	1.469 / 5.56	1745	5.37	0.086	23.5	130	5.32	113	4.29	100
8	2.611 / 9.88	1750	5.38	0.085	23.8	160	5.31	114	4.29	100
10	4.08 / 15.44	1755	5.41	0.085	23.6	190	5.23	109	4.29	100
	[1 gal. = 3.785 L]	1800	5.47	0.083	23.4	200	5.18	102	4.29	100

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 13.75
Static Water Level: 4.02
Tube Intake Depth: 8.88
Well Volume: 6.00 L
Tubing/Cell Volume: 494 ml

Start Purge (hr): 1720
End Purge (hr): 1800
Total Purge Time (min): 40
Total Vol. Purged: 4.0 L

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date 3/26/03									
Time 1805	lt tan	5.47	0.083	23.4	200	5.18	102	4.29	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	2	1-liter	amber glass	✓
Herbicides	8151	None	2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	

ADDITIONAL INFORMATION

Comments:
Tubing = 7 ml/ft = 119 ml
Flow Thru Cell = 375 ml

Method:
[X] Peristaltic Pump
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[X] Vacuum Jug Assembly purge + trap
[ ] Bailer

Tubing Type:
[X] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD:

Duplicate ID No.:

Signature(s): Scott R. McG

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 3/26/03

Page 1 of 1

Project Site Name: NTC Orlando
Project No. N4207/MG005A140

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Flow-Thru Cell Horiba
Make\Model: U-22
Serial Nos.: 922001

Sample Location: OLD-52-12
Sample ID No.: NTC52G01223
Sampled By: SRM
C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1615	5.29	0.029	25.2	80	5.34	150	2.45	100
1	0.041 / 0.155	1618	5.11	0.026	25.4	80	5.86	166	2.45	100
2	0.163 / 0.617	1621	5.13	0.026	25.4	95	5.25	167	2.45	100
4	0.653 / 2.47	1625	5.12	0.027	25.4	95	5.13	171	2.45	100
6	1.469 / 5.56	1630	5.10	0.027	25.2	96	4.98	196	2.45	100
8	2.611 / 9.88	1635	5.10	0.026	25.2	96	4.80	189	2.45	100
10	4.08 / 15.44	1640	5.08	0.026	25.2	96	4.68	183	2.45	100
	[1 gal. = 3.785 L]									

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 13.35
Static Water Level: 2.32
Tube Intake Depth: 8.35
Well Volume: 6.80 L
Tubing/Cell Volume: 487 ml

Start Purge (hr): ~~1610~~ 1520
End Purge (hr): ~~1640~~ 1545
Total Purge Time (min): ~~30~~ 25
Total Vol. Purged: ~~3.0 L~~ 2.5 L

Shif Barton
6/13/03

WATER QUALITY SAMPLE PARAMETERS

	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Date 3/26/03									
Time ~~1645~~ 1550	Lt yellow	5.08	0.026	25.2	96	4.68	183	2.45	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	2	1-liter	amber glass	✓
Herbicides	8151	None	2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	

SB 6/13/03

ADDITIONAL INFORMATION

Comments:
Tubing = 7 ml/ft = 112 ml
Flow Thru Cell = 375 ml

Method:
[X] Peristaltic Pump #409
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[X] Vacuum Jug Assembly purge + trap
[ ] Bailer

Tubing Type:
[X] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD: ✓

Duplicate ID No.: ~~NTC52GD1C0023~~

Signature(s): Scott R. McCoy

Shif Barton
6/13/03

Tetra Tech NUS
Groundwater Purging and Sampling Log

Date 3/26/03

Page 1 of 1

Project Site Name: NTC Orlando
Project No. N4207MG005A140

[ ] Domestic Well Data
[X] Monitoring Well Data
[ ] Other Well Type:

Flow-Thru Cell Horiba
Make\Model: U-22
Serial Nos.:

Sample Location: OLD-52-13
Sample ID No.: NTC52G01323
Sampled By:
C-O-C No.:

PURGING DATA

Casing Size (in.)	Gals / Liters per ft. of Water	Time Hr:Min	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
0.5	0.01 / 0.038	1525	6.08	0.192	25.6	3.5	2.20	-87	2.95	100
1	0.041 / 0.155	1530	5.94	0.191	25.6	1.0	1.38	-100	2.95	100
2	0.163 / 0.617	1534	6.00	0.189	25.7	0	0.98	-115	2.95	100
4	0.653 / 2.47	1540	6.02	0.188	25.8	0	0.97	-121	2.95	100
6	1.469 / 5.56	1545	6.04	0.185	25.9	0	0.85	-130	2.95	100
8	2.611 / 9.88									
10	4.08 / 15.44									
	[1 gal. = 3.785 L]									

PID Reading (ppm): 0

Well Casing Diameter: 2"
Total Well Depth: 13.45
Static Water Level: 2.94
Tube Intake Depth: 8.45
Well Volume: 6.48L
Tubing/Cell Volume: 494ml

Start Purge (hr): ~~1520~~ 1610
End Purge (hr): ~~1545~~ 1640
Total Purge Time (min): ~~25~~ 30
Total Vol. Purged: ~~2.5 L~~ 3.0L

Skip Barton 6/13/03

WATER QUALITY SAMPLE PARAMETERS

SD 6/13/03

Date 3/26/03	Color Description	pH pH units	S.C. mS/cm	Temp. °C	Turbidity NTU	DO mg/L	ORP mV	DTW ft BTOC	Flow Rate ml/min
Time ~~1550~~ 1645	clear	6.04	0.185	25.9	0	0.85	-130	2.95	100

ANALYSES INFORMATION

Analysis		Preservative	Container Requirements			Collected
TCL VOCs	8260B	HCl	3	40 ml	glass vials	
SVOCs/PAHs	8270C/8310	None	2	1-liter	amber glass	
Pesticides	8081A	None	2	1-liter	amber glass	✓
Herbicides	8151	None	2	1-liter	amber glass	
TAL Metals	6000/7000	HNO_3	1	1-liter	HDPE	

ADDITIONAL INFORMATION

Comments:
Tubing = 7ml/ft = 119 ml
Flow Thru Cell = 375 ml

Method:
[X] Peristaltic Pump #407
[ ] Centrifugal Pump
[ ] Bladder Pump
[ ] Tube Evacuation
[X] Vacuum Jug Assembly purge + trap
[ ] Bailer

Tubing Type:
[X] Polyethylene
[ ] Teflon
[ ] Teflon-lined Polyethylene

QA\QC SAMPLES

MS/MSD: ✓ collected

Duplicate ID No.: NTC52GD100023

Signature(s): Scott R. McG

Skip Barton 6/13/03