N00204.AR.005266
NAS PENSACOLA
5090.3a

CONTAMINATION ASSESSMENT REPORT SITE 1162 OUTLYING LANDING FIELD BRONSON NAS PENSACOLA FL

12/1/1996

NAVY PUBLIC WORKS CENTER

CONTAMINATION ASSESSMENT REPORT

U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON
SITE 1162
PENSACOLA, FLORIDA

PREPARED BY:

NAVY PUBLIC WORKS CENTER
BUILDING 3887
PENSACOLA, FLORIDA 32508-6500

AUTHOR: GREG CAMPBELL, P.E.

DECEMBER 1996

PREPARED FOR:

SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 190010
NORTH CHARLESTON, SOUTH CAROLINA 29418

BYAS GLOVER, CODE 18410, ENGINEER-IN-CHARGE

CONTAMINATION ASSESSMENT REPORT

U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON
SITE 1162
PENSACOLA, FLORIDA

PREPARED BY:

NAVY PUBLIC WORKS CENTER
BUILDING 3887
PENSACOLA, FLORIDA 32508-6500

AUTHOR: GREG CAMPBELL, P.E.

DECEMBER 1996

PREPARED FOR:

SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
2155 EAGLE DR., P.O. BOX 190010
NORTH CHARLESTON, SOUTH CAROLINA 29418

BYAS GLOVER, CODE 18410, ENGINEER-IN-CHARGE

Contamination Assessment Report

U.S. Navy Outlying Landing Field (OLF) Bronson
Site 1162
Pensacola, Florida

TABLE OF CONTENTS

Section	Title	Page No.
1.0	**INTRODUCTION**	
	1.1 Purpose	1
	1.2 Site Location and Area of Investigation	1
	1.3 Site History and Operations	7
	1.4 Initial Remedial Action	7
	1.5 Results of Previous Investigations	7
	1.6 Regional Geology and Hydrogeology	10
	1.7 Well Survey	28
2.0	**SITE ASSESSMENT**	
	2.1 Soil Boring and Monitoring Well Construction Details	28
	2.2 Groundwater Flow Direction	30
	2.3 Groundwater Flow Rate	30
	2.4 Site Specific Hydrogeology	30
	2.5 Soil Assessment	34
	2.6 Surface Water Assessment	34
	2.7 Groundwater Quality Assessment	34
3.0	**CONCLUSIONS AND RECOMMENDATIONS**	
	3.1 Conclusions	49
	3.2 Recommendations	52
4.0	**PROFESSIONAL REVIEW CERTIFICATION**	53
5.0	**REFERENCES**	54

APPENDICES

LIST OF FIGURES

Contamination Assessment Report

U.S. Navy Outlying Landing Field (OLF) Bronson
Site 1162
Pensacola, Florida

Figure	Title	Page No.
1-1	OLF Bronson Vicinity Map	2
1-2	OLF Bronson Topographic Map	3
1-3	OLF Bronson Basin Map	4
1-4	OLF Bronson Approximate Average Annual Runoff	5
1-5	OLF Bronson Flood Plain Area	6
1-6	OLF Bronson Base Map	8
1-7	OLF Bronson Site 1162	9
1-8	OLF Bronson Soil Map	20
1-9	Cross Sections and Wells Used in Report	22
1-10	Geologic Cross Section B-B', Section Parallels the Regional Dip	23
1-11	Geologic Section Q-Q', Showing Formations along the Gulf Coast of Western Florida	24
1-12	Geologic Section C-C' Across Escambia & Santa Rosa Counties	25
1-13	Representative Geologic Sequence Based on Log of Oil Test Well Located Near Pensacola	26
1-14	Geologic Section Across Escambia & Santa Rosa Counties Showing Aquifers & Aquicludes Along Section B-B'	27
2-1	Soil Boring Location Map	31

LIST OF FIGURES (Cont.)

Figure	Title	Page No.
2-2	Groundwater Flow Direction Map	33
2-3	Monitoring Well Location Map	35
2-4	Soil Contamination Map	41
2-5	Benzene Contamination Distribution Map	44
2-6	Total BTEX Contamination Distribution Map	45
2-7	PAH Contamination Distribution Map (5-15-96)	47
2-8	PAH Contamination Distribution Map (5-22-96)	48
2-9	TPH Contamination Distribution Map	51

LIST OF TABLES

U.S. Navy Outlying Landing Field (OLF) Bronson
Site 1162
Pensacola, Florida

Table	Title	Page No.
1-1	Summary of Volatile and Semi-Volatile Organics Analytical Results for Soil Samples Sites at B1162	11
1-2	Summary of Volatile and Semi-Volatile Organics Analytical Results for Soil Samples Site at B1162 Center and Backfill	13
1-3	Summary of BNA Extractables Analytical Results for Soil Samples Backfill-N and Backfill-S	15
1-4	Summary of Volatile and Semi-Volatile Organics Analytical Results for Drinking Water ECUA Well	18
1-5	Construction Details of Water-Supply Wells	29
2-1	Top of Casing and Groundwater Elevations Monitoring Wells MW-1 thru MW-5	32
2-2	Summary of Volatile Organic Compounds Analytical Results for Groundwater Samples Monitoring Wells MW-1 thru MW-5	36
2-3	Summary of Volatile Organic Compounds Analytical Results for Groundwater Samples Monitoring Wells MW-1 thru DMW-6	43
2-4	Summary of PAH's Analytical Results for Groundwater Samples Monitoring Wells MW-1 thru DMW-6	46

LIST OF TABLES (Cont.)

Table	Title	Page No.
2-5	Summary of TPH's, EDB, and Lead Analytical Results for Groundwater Samples Monitoring Wells MW-1 thru DMW-6	50

LIST OF APPENDICES

U.S. Navy Outlying Landing Field (OLF) Bronson
Site 1162
Pensacola, Florida

Appendices	Title	Page No.
APPENDIX A:	Monitoring Well Construction Diagrams	
APPENDIX B:	Slug Test Data, Graphs and Calculations	
APPENDIX C:	Lithologic Logs	
APPENDIX D:	Soil and Groundwater Analytical Results	
APPENDIX E:	PWC Memo to File	

1.0 INTRODUCTION

1.1 PURPOSE

The Navy Public Works Center, Naval Air Station, Pensacola, Florida, was retained by Southern Division Navy Facilities Engineering Command (SOUTHNAVFACENGCOM) to conduct a contamination assessment and remediation plan (if warranted) at the U.S. Navy Outlying Landing Field (OLF) Bronson, Site 1162, Pensacola Naval Air Station, Pensacola, Florida.

Petroleum contamination was discovered at the site on July 27, 1994, during the removal of one (l) underground tank (50 gallon capacity). The underground tank, approximately 50 years old, was used to store gasoline. The Closure Assessment of the tank indicated that the concentration of petroleum hydrocarbon vapor levels in the soils were greater than 500 ppm for gasoline. A discharge reporting form from the Commanding Officer, Naval Air Station Pensacola, was submitted to Mr. W. E. Grimsley, Environmental Health Services, Pensacola, Florida on January 16, 1996.

The findings and conclusions of the field investigation for the Contamination Assessment for OLF Bronson Site 1162 are presented herein.

1.2 SITE LOCATION AND AREA OF INVESTIGATION

Site 1162 is located within the confines of OLF Bronson which consists of approximately 950 acres of mostly grass and forest. OLF Bronson is located in northwest Florida, on the east side of Perdido Bay, approximately 5 miles west of Pensacola, Florida and about one mile from the Alabama border. Located on OLF Bronson are four abandoned airstrips and the remains of old support buildings for the air field. OLF Bronson is now known as Blue Angel Recreation Park and is used for recreational purposes. Figure 1-1 shows the facility in relation to surrounding area. Most runoff from the property is toward the southwest through a network of culverts that lead to Perdido Bay. Figures 1-2 thru 1-5 show topographic and local surface drainage features.

The area surrounding OLF Bronson is sparsely populated. Two small communities, Paradise Beach and Perdido Heights, are located about a mile to the north of the old airfield. A few houses are located around the perimeter of the old airfield, but most of the surrounding area is either wetland, forest, or the waters of Perdido Bay. The areas north, south, and east of OLF Bronson are characterized by scattered residential structures, mobile homes, farm buildings, stores, and churches. Perdido Bay is located west of OLF Bronson.

Specifically, Site 1162 is located at latitude 30°23'16" N, longitude 87°25'09" W. The 50 gallon underground gasoline tank was removed from the site on July 24, 1996 by PWC personnel. The site is located north of the previous location of a 200,000 gallon elevated water tank (1162). Site 1162 is easily identified by a locked fence which surrounds a potable water well operated by

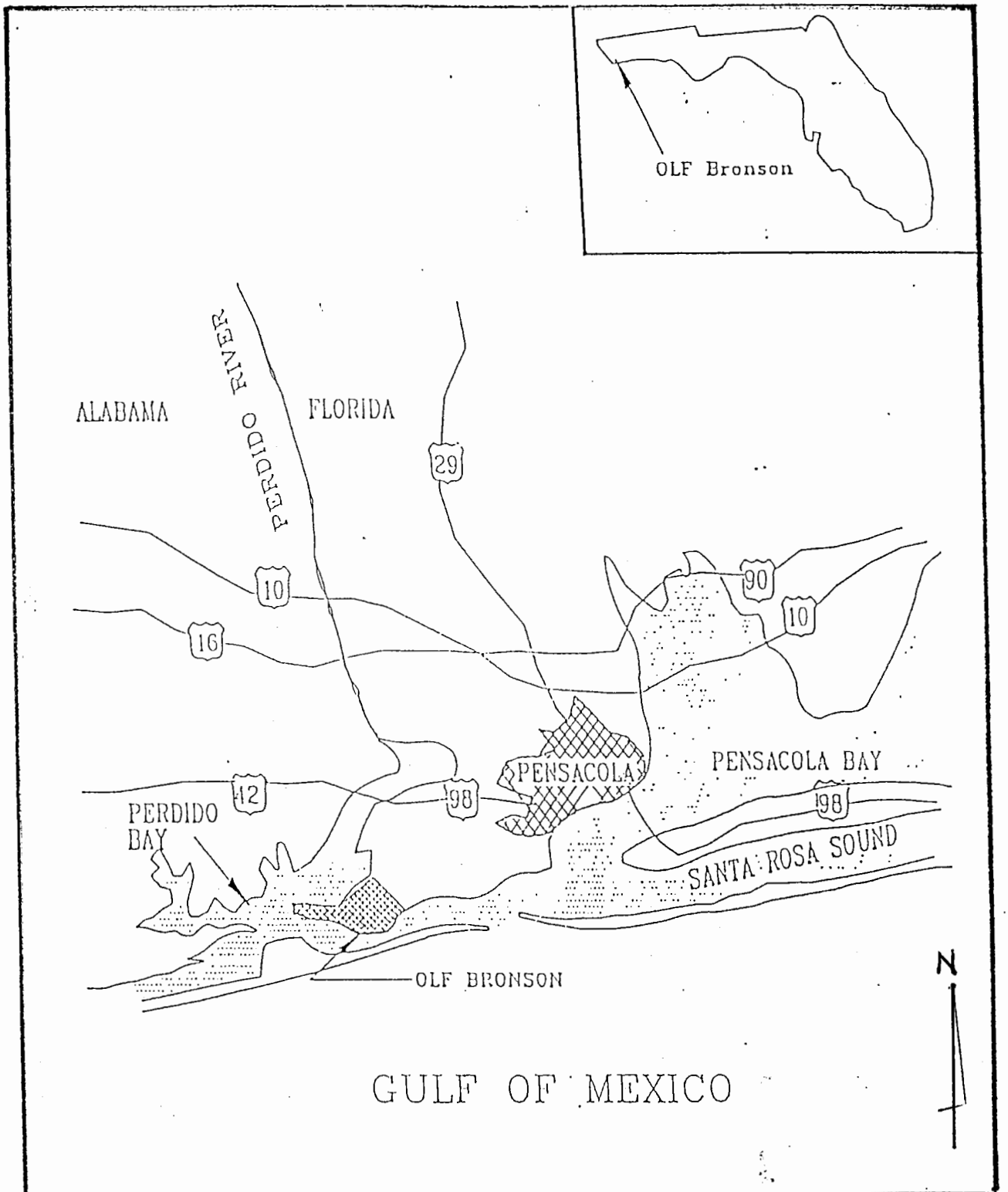


FIGURE 1-1.
OLF Bronson
VICINITY MAP

Key:

Highway

Water Way

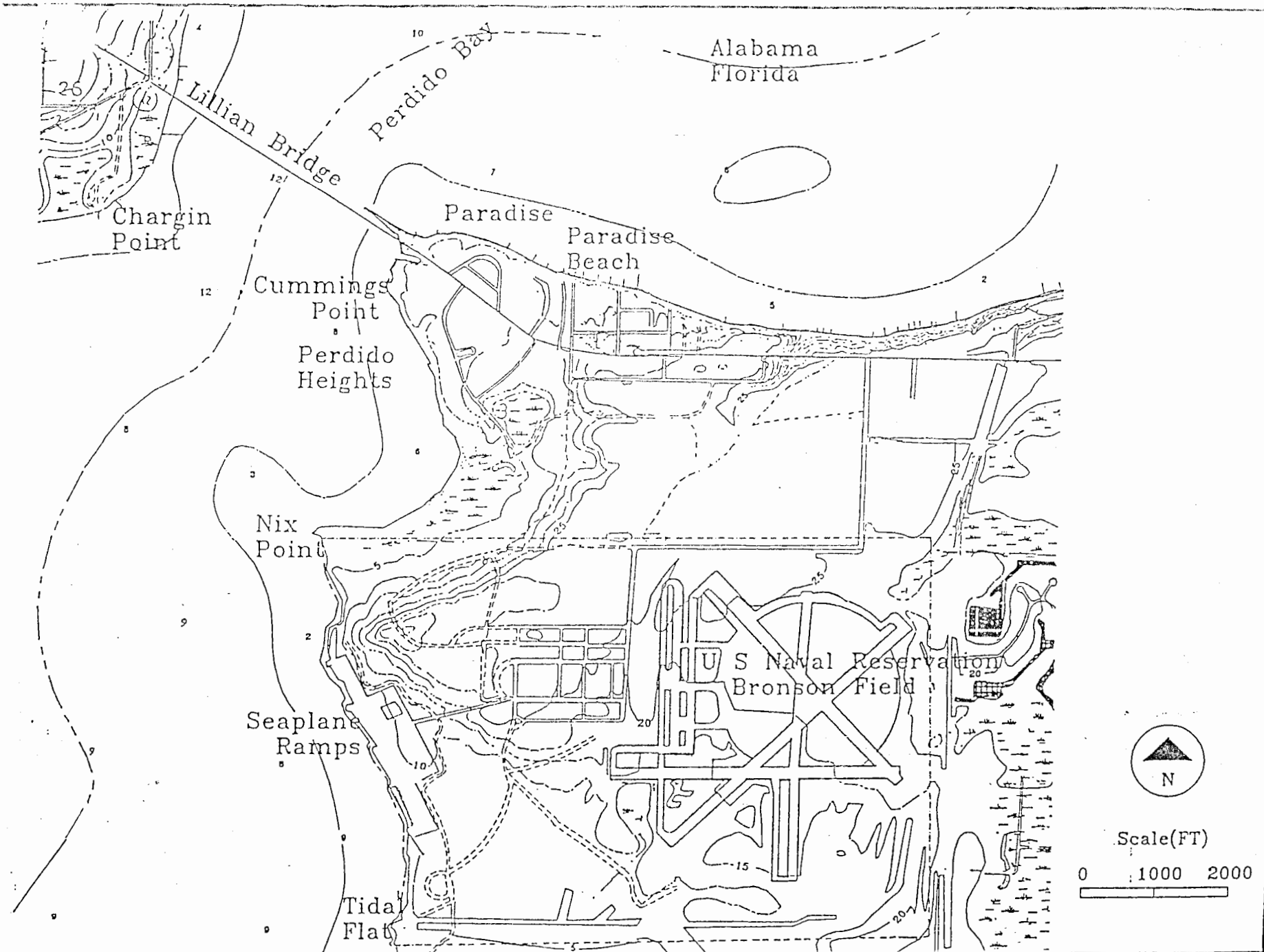


Figure 1-2
OLF Bronson
Topographic Map

Key:
Base Border ----------

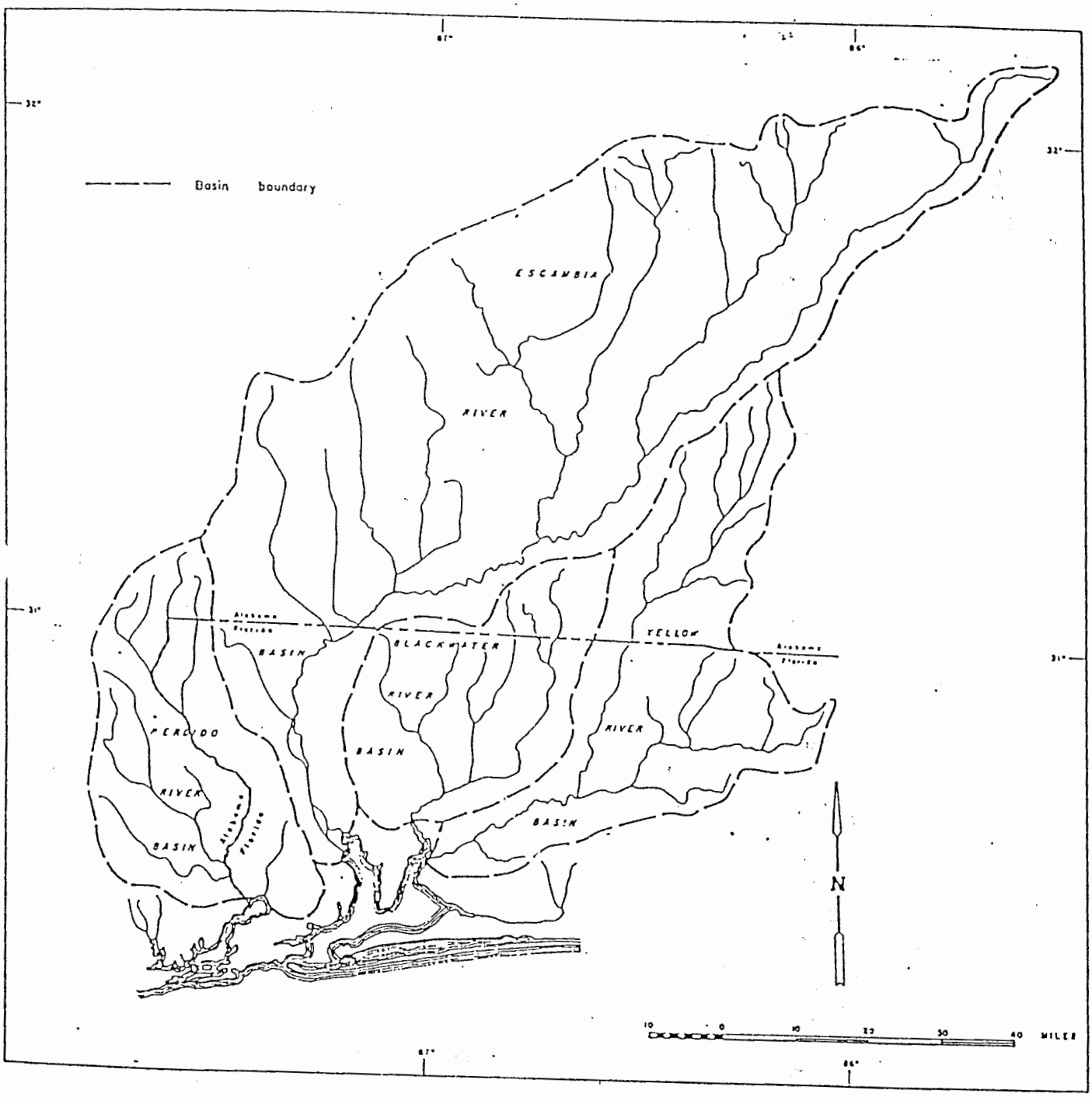


Figure 1-3
OLF BRONSON

Key: Basin Map of Perdido, Escambia, Blackwater, & Yellow Rivers (Modified After Musgrove ET. AL., 1965).

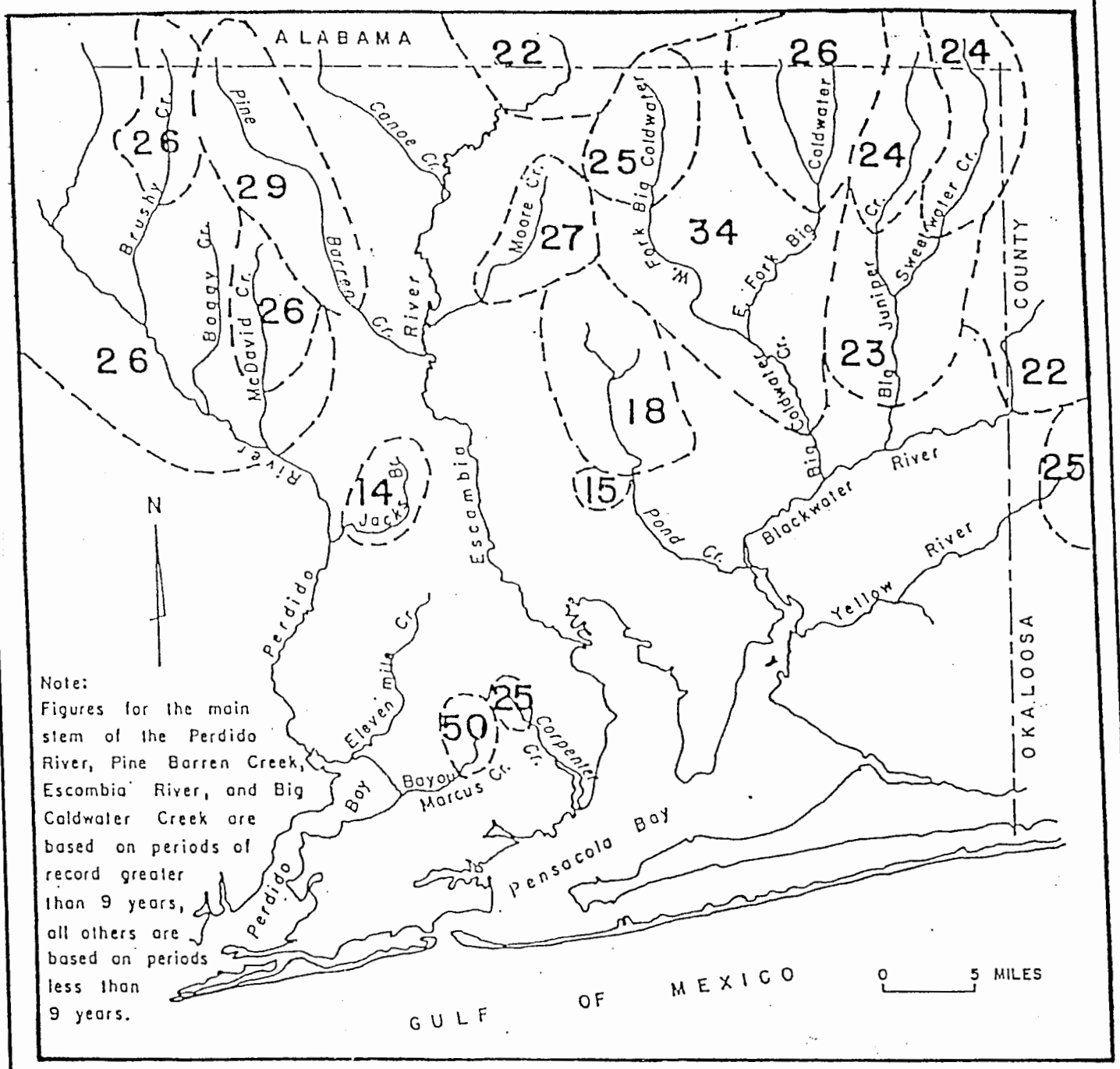


Figure 1-4
OLF BRONSON

Key: Approximate Average Annual Runoff (Inches) From Areas Within Escambia & Santa Rosa Counties (Modified After Musgrove ET. AL.,1965).

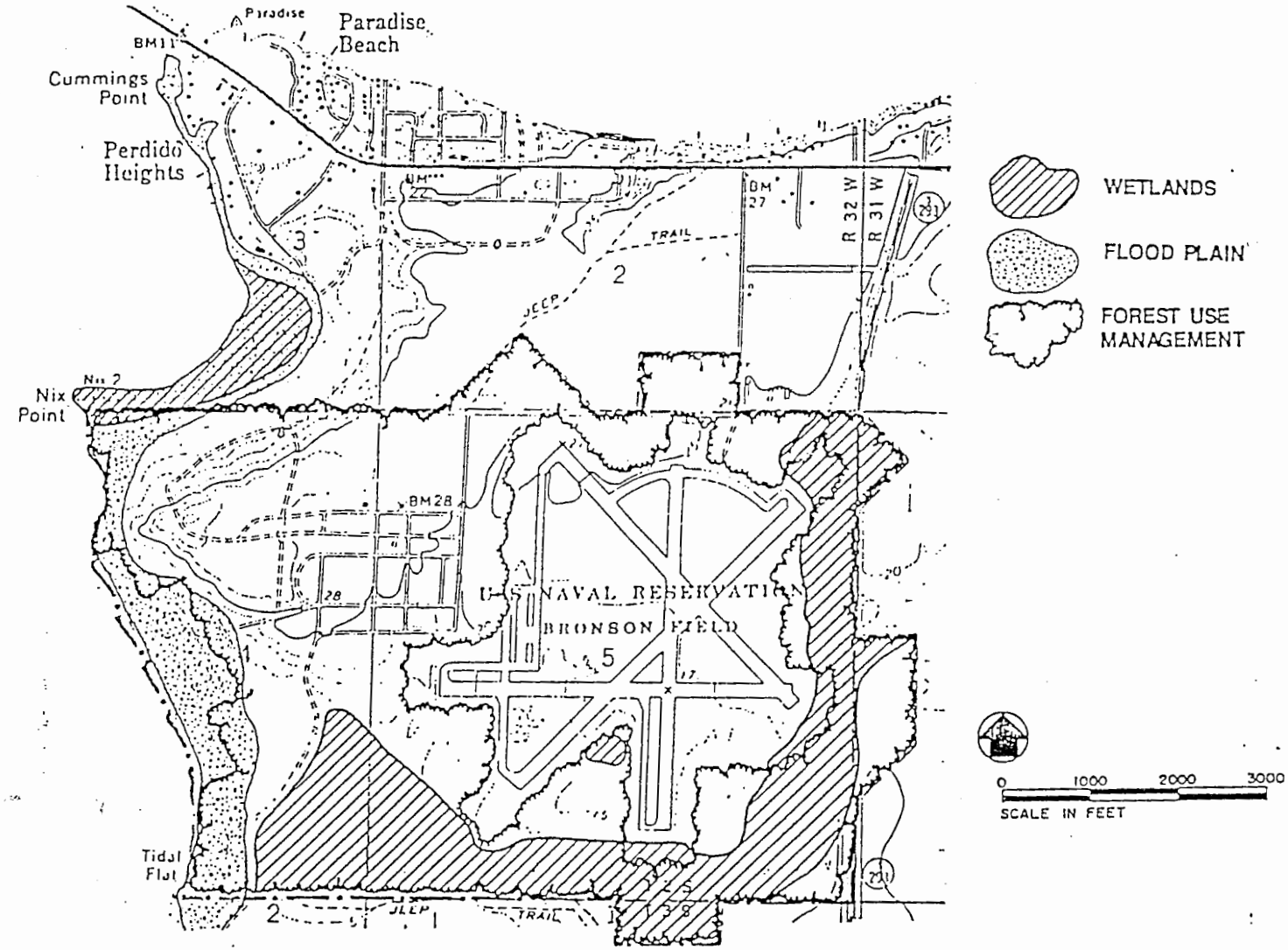


Figure 1-5
OLF Bronson
Flood Plain Area

Escambia County Utilities Authority (ECUA). A closure assessment performed during the removal of the underground tank indicated the presence of petroleum contamination in the soil. The amount of diesel fuel released at the site is unknown. The small underground gasoline tank removed from the site was located approximately 8 feet west of the potable water well. The areas north, east, and west of the fenced area are woodlands. To the south is a small dirt access road running east to west. Site location maps are included in Figures 1-6 and 1-7 to show locations of buildings, facility boundaries, and tank.

1.3 SITE HISTORY AND OPERATIONS

OLF Bronson was used as an Outlying Landing Field for NAS Pensacola from 1942-1950. When first opened in 1942, the 950-acre airfield was originally called Tarkiln Field, but in 1944 the name was changed to OLF Bronson. During that time the base used large amounts of aviation gasoline, oil products, and solvents. OLF Bronson was closed as an active airfield in late 1950. Presently, all the runways are inactive. Helicopters from Combat Support Squadron 16 used the area for occasional training until the squadron was dismantled in 1995. All buildings at OLF Bronson have been dismantled and parts of the base have been sold to private parties. Maps of OLF Bronson show Site 1162 as the former location of a 200,000 gallon elevated water tank (steel). The only current employees at Bronson are Morale Recreation and Welfare (MWR) personnel. Duties of MWR personnel at OLF Bronson include operating the campground, minor maintenance of the facility, and teaching sailing and windsurfing.

In 1990, Southern Division Naval Facilities Engineering Command contracted the engineering services of E.C. Jordon Consultants to develop a petroleum underground storage tank program for OLF Bronson. Under that contract all but 35 underground storage tanks (UST) and the piping associated with the tanks were removed. In September 1993, the Navy Public Works Center was retained by the Southern Division Naval Facilities Engineering Command to remove the remaining 35 underground storage tanks.

1.4 INITIAL REMEDIAL ACTION

On July 27, 1994, Navy Public Works Center personnel found contamination at Site 1162 during the removal of the gasoline storage tank located at the site. The initial OVA readings were below the state target levels. Soil samples taken from below the limits of excavation revealed higher levels of contamination. A Discharge Reporting Form (DRF) was submitted to FDEP on August 8, 1994. Approximately 50 CY of excessively contaminated soil was removed from the excavation area. The soil was stockpiled on-site for future remediation.

1.5 RESULTS OF PREVIOUS INVESTIGATIONS

A closure assessment was performed during the removal of the underground gasoline tank which consisted of collecting and analyzing seven soil samples and one drinking water sample. All seven soil samples were analyzed for priority pollutant volatiles using EPA Method 8260 and two of those soil samples were analyzed for BNA extractables using EPA method 8270A. The

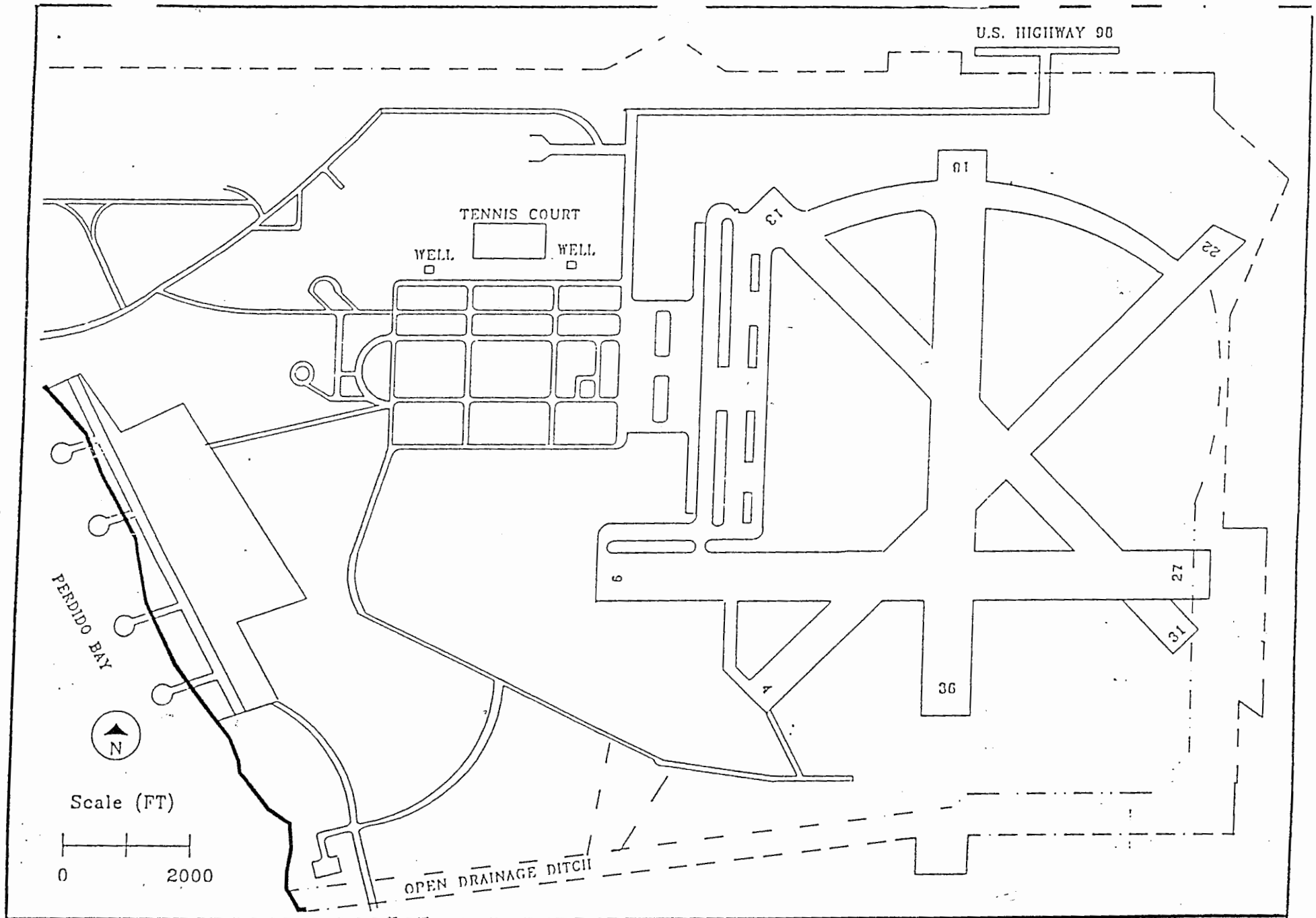


FIGURE 1-6
OLF BRONSON BASE MAP

KEY
— — OPEN DRAINAGE DITCH
—·— NAVAL PROPERTY LINE

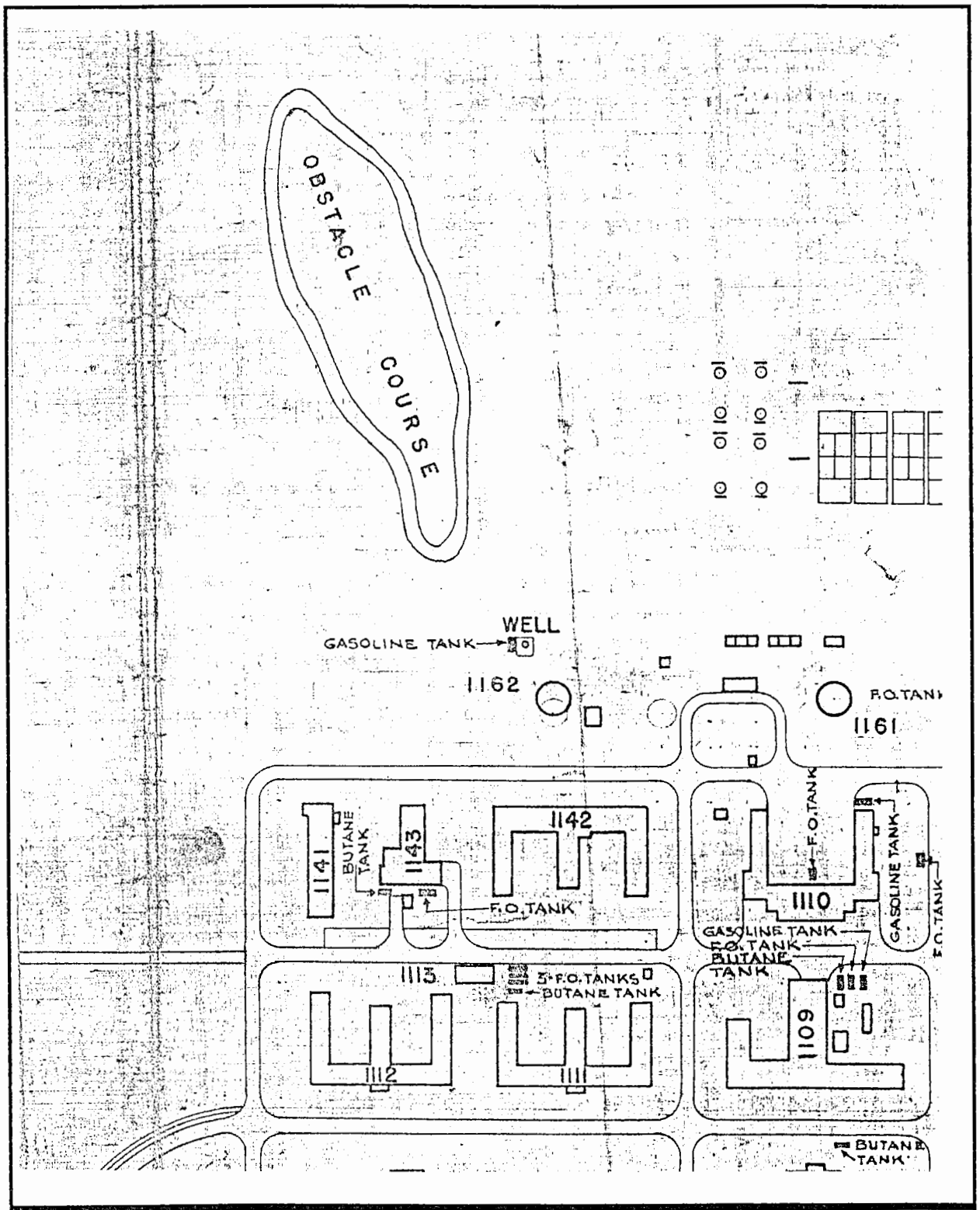


Figure 1-7
OLF Bronson
Site 1162

N

drinking water was analyzed for volatiles using EPA Method 524.2.

On July 27, 1994, soil samples collected from Site 1162 East, West, North, and South of the excavation were analyzed for volatiles by EPA Method 8260. All contamination levels were below FDEP allowable regulatory levels (Table 1-1).

On July 27, 1994, soil samples collected from 1162 Center, 1162 Back Fill-N, and 1162 Back Fill-S were analyzed for volatiles by EPA Method 8260. Only the soil sample collected from B-1162 Center exceeded the FDEP allowable regulatory limits for total volatile organic aromatics (VOA's) of 500 ppb which is considered to be excessively contaminated soil with gasoline. Laboratory results indicated that the highest level of contamination was Site 1162 Center with levels of benzene, n-butylbenzene, sec-butylbenzene, tert-butylbenzene, ethylbenzene, isopropylbenzene, p-isopropyltoluene, naphthalene, n-propylbenzene, toluene, 1,1,3-trichloroethane, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 0-xylene, and m,p-xylene in amounts of 55000 ppb, 6000 ppb, 5000 ppb, 14000 ppb, 89000 ppb, 11000 ppb, 5000 ppb, 10000 ppb, 22000 ppb, 340000 ppb, 41000 ppb, 100000 ppb, 45000 ppb, 115000 ppb, and 290000 ppb, respectfully. A summary of the analytical results is found in Table 1-2.

On July 27, 1994, soil samples were taken at B-1162 Back Fill-N and 1162 Back Fill-S and analyzed for BNA Extractables by EPA Method 8270A. Laboratory analyses of B-1162 Back Fill-N indicated contamination levels of bis(2-ethylhexyl)phthalate and dimethylphthalate at levels of 870 ppb and 590 ppb, respectfully. Laboratory analyses of Site 1162 Back Fill-S indicated contamination levels of acenaphthylene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, benzo(a)pyrene, bis(2-ethylhexyl)phthalate, chrysene, dimethylphthalate, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene at levels of 360 ppb, 2750 ppb, 1000 ppb, 600 ppb, 1100 ppb, 940 ppb, 290 ppb, 1130 ppb, 270 ppb, 730 ppb 780 ppb, and 310 ppb, respectfully. A summary of the analytical results is found in Table 1-3.

On August 5, 1994, a drinking water sample was collected and analyzed for volatiles by EPA Method 524.2. Tetrachloroethene was detected at levels of 0.8 ppb. All other volatiles in the drinking water sample were found to be below detection limits. A summary of the analytical results for the drinking water is shown in Table 1-4.

1.6 REGIONAL GEOLOGY AND HYDROGEOLOGY

Figure 1-8 displays the soil configuration map as of 1991. Surface sediments in the Bronson Field area are classified with the Croatan, Foxworth, Hurricane, Lakeland, Leon, Pickney, Pottsburg, and Urban Land associations (NEESA, 1991).

OLF Bronson resides along the western edge of the Florida Panhandle within the Coastal Plain Province. The Coastal Plain, a major physiographic division of the United States, extends eastward from Texas and northward as far as New York. It consists of cretaceous to recent age beds of sand, silt, limestone, and clay that dip gently seaward. Most of these sediments were deposited during higher stands of the sea as the Mississippi River system transported eroded

TABLE 1-1
SUMMARY OF VOLATILE AND SEMI-VOLATILE ORGANICS ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE EXCAVATION SITE U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER: VOLATILES BY GCMS	B1162 EAST	B1162 WEST	B1162 NORTH	B1162 SOUTH
Benzene	BDL	BDL	BDL	BDL
Bromobenzene	BDL	BDL	BDL	BDL
Bromochloromethane	BDL	BDL	BDL	BDL
Bromodichloromethane	BDL	BDL	BDL	BDL
Bromoform	BDL	BDL	BDL	BDL
Bromomethane	BDL	BDL	BDL	BDL
n-Butylbenzene	BDL	BDL	BDL	BDL
sec-Butylbenzene	BDL	BDL	BDL	BDL
tert-Butylbenzene	BDL	BDL	BDL	BDL
Carbon Tetrachloride	BDL	BDL	BDL	BDL
Chlorobenzene	BDL	BDL	BDL	BDL
Chloroethane	BDL	BDL	BDL	BDL
Chloroform	BDL	BDL	BDL	BDL
Chloromethane	BDL	BDL	BDL	BDL
2-Chlorotoluene	BDL	BDL	BDL	BDL
4-Chlorotoluene	BDL	BDL	BDL	BDL
Dibromochloromethane	BDL	BDL	BDL	BDL
1,2-Dibromo-3-chloropropane	BDL	BDL	BDL	BDL
1,2-Dibromoethane	BDL	BDL	BDL	BDL
Dibromomethane	BDL	BDL	BDL	BDL
1,2-Dichlorobenzene	BDL	BDL	BDL	BDL
1,3-Dichlorobenzene	BDL	BDL	BDL	BDL
1,4-Dichlorobenzene	BDL	BDL	BDL	BDL
Dichlorodifluoromethane	BDL	BDL	BDL	BDL
1,1-Dichloroethane	BDL	BDL	BDL	BDL
1,2-Dichloroethane	BDL	BDL	BDL	BDL
1,1-Dichloroethene	BDL	BDL	BDL	BDL
cis-1,2-Dichloroethene	BDL	BDL	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-1 (Cont.)

PARAMETER: VOLATILES BY GCMS	B1162 EAST	B1162 WEST	B1162 NORTH	B1162 SOUTH
trans-1,2-Dichloroethene	BDL	BDL	BDL	BDL
1,2-Dichloropropane	BDL	BDL	BDL	BDL
1,3-Dichloropropane	BDL	BDL	BDL	BDL
2,2-Dichloropropane	BDL	BDL	BDL	BDL
1,1-Dichloropropene	BDL	BDL	BDL	BDL
Ethylbenzene	BDL	BDL	BDL	BDL
Hexachlorobutadiene	BDL	BDL	BDL	BDL
Isopropylbenzene	BDL	BDL	BDL	BDL
p-Isopropyltoluene	BDL	BDL	BDL	BDL
Methylene chloride	BDL	BDL	BDL	BDL
Naphthalene	BDL	BDL	BDL	BDL
n-Propylbenzene	BDL	BDL	BDL	BDL
Styrene	BDL	BDL	BDL	BDL
1,1,1,2-Tetrachloroethane	BDL	BDL	BDL	BDL
1,1,2,2-Tetrachloroethane	BDL	BDL	BDL	BDL
Tetrachloroethene	BDL	BDL	BDL	BDL
Toluene	BDL	BDL	BDL	1
1,2,3-Trichlorobenzene	BDL	BDL	BDL	BDL
1,2,4-Trichlorobenzene	BDL	BDL	BDL	BDL
1,1,1-Trichloroethane	BDL	BDL	BDL	BDL
1,1,2-Trichloroethane	BDL	BDL	BDL	BDL
Trichloroethene	BDL	BDL	BDL	BDL
Trichorofluoromethane	BDL	BDL	BDL	BDL
1,2,3-Trichloropropane	BDL	BDL	BDL	BDL
1,2,4-Trimethylbenzene	BDL	BDL	BDL	BDL
1,3,5-Trimethylbenzene	BDL	BDL	BDL	BDL
Vinyl Chloride	BDL	BDL	BDL	BDL
o-Xylene	BDL	2	BDL	BDL
m,p-Xylene	BDL	BDL	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-2
SUMMARY OF VOLATILE AND SEMI-VOLATILE ORGANICS ANALYTICAL RESULTS FOR SOIL SAMPLES COLLECTED FROM THE EXCAVATION SITE U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER: VOLATILES BY GCMS	B1162 CENTER	B1162 BACK FILL - N	B1162 BACK FILL - S
Benzene	55000	30	12
Bromobenzene	BDL	BDL	BDL
Bromochloromethane	BDL	BDL	BDL
Bromodichloromethane	BDL	BDL	BDL
Bromoform	BDL	BDL	BDL
Bromomethane	BDL	BDL	BDL
n-Butylbenzene	6000	125	BDL
sec-Butylbenzene	5000	85	BDL
tert-Butylbenzene	14000	100	BDL
Carbon Tetrachloride	BDL	BDL	BDL
Chlorobenzene	BDL	BDL	BDL
Chloroethane	BDL	BDL	BDL
Chloroform	BDL	BDL	BDL
Chloromethane	BDL	BDL	BDL
2-Chlorotoluene	BDL	BDL	BDL
4-Chlorotoluene	BDL	BDL	BDL
Dibromochloromethane	BDL	BDL	BDL
1,2-Dibromo-3-chloropropane	BDL	BDL	BDL
1,2-Dibromoethane	BDL	BDL	BDL
Dibromomethane	BDL	BDL	BDL
1,2-Dichlorobenzene	BDL	BDL	BDL
1,3-Dichlorobenzene	BDL	BDL	BDL
1,4-Dichlorobenzene	BDL	BDL	BDL
Dichlorodifluoromethane	BDL	BDL	BDL
1,1-Dichloroethane	BDL	BDL	BDL
1,2-Dichloroethane	BDL	BDL	BDL
1,1-Dichloroethene	BDL	BDL	BDL
cis-1,2-Dichloroethene	BDL	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-2 (Cont.)

PARAMETER: VOLATILES BY GCMS	B1162 CENTER	B1162 BACKFILL -N	B1162 BACKFILL - S
trans-1,2-Dichloroethene	BDL	BDL	BDL
1,2-Dichloropropane	BDL	BDL	BDL
1,3-Dichloropropane	BDL	BDL	BDL
2,2-Dichloropropane	BDL	BDL	BDL
1,1-Dichloropropene	BDL	BDL	BDL
Ethylbenzene	89000	380	24
Hexachlorobutadiene	BDL	BDL	BDL
Isopropylbenzene	11000	110	4
p-Isopropyltoluene	5000	BDL	BDL
Methylene chloride	BDL	BDL	BDL
Naphthalene	10000	270	3
n-Propylbenzene	22000	260	8
Styrene	BDL	BDL	BDL
1,1,1,2-Tetrachloroethane	BDL	BDL	BDL
1,1,2,2-Tetrachloroethane	BDL	BDL	BDL
Tetrachloroethene	BDL	BDL	BDL
Toluene	340000	370	70
1,2,3-Trichlorobenzene	BDL	BDL	BDL
1,2,4-Trichlorobenzene	BDL	BDL	BDL
1,1,1-Trichloroethane	BDL	BDL	BDL
1,1,2-Trichloroethane	41000	630	BDL
Trichloroethene	BDL	BDL	BDL
Trichorofluoromethane	BDL	BDL	BDL
1,2,3-Trichloropropane	BDL	BDL	BDL
1,2,4-Trimethylbenzene	100000	1600	40
1,3,5-Trimethylbenzene	45000	700	18
Vinyl Chloride	BDL	BDL	BDL
o-Xylene	115000	1000	35
m,p-Xylene	290000	1900	90

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-3
SUMMARY OF BNA EXTRACTABLES
ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED FROM BACKFILL-N AND BACKFILL-S
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER: BNA Extr.	B1162 BACKFILL-N	B1162 BACKFILL-S
Acenaphthene	BDL	BDL
Acenaphthylene	BDL	360
Acetophenone	BDL	BDL
2-Acetylaminofluorene	BDL	BDL
Aldrin	BDL	BDL
4-Aminobiphenyl	BDL	BDL
Aniline	BDL	BDL
Anthracene	BDL	BDL
Aramite	BDL	BDL
Benzidine	BDL	BDL
Benzoic Acid	BDL	BDL
Benz(a)anthracene	BDL	BDL
Benzo(b)fluoranthene	BDL	2750
Benzo(k)fluoranthene	BDL	1000
Benzo(g,h,i)perylene	BDL	600
Benzo(a)pyrene	BDL	1100
p-Benzoquinone	BDL	BDL
Benzyl alcohol	BDL	BDL
alpha-BHC	BDL	BDL
beta-BHC	BDL	BDL
delta-BHC	BDL	BDL
gamma-BHC (Lindane)	BDL	BDL
Bis(2-chloroethoxy)methane	BDL	BDL
Bis(2-chloroethyl)ether	BDL	BDL
Bis(2-chloroisopropyl)ether	BDL	BDL
Bis(2-ethylhexyl)phthalate	870	940
4-Bromophenyl phenyl ether	BDL	BDL
Butyl benzyl phthalate	BDL	BDL
4-Chloroaniline	BDL	BDL
Chlorobenzilate	BDL	BDL
4-Chloro-3-methylphenol	BDL	BDL
2-Chloronaphthalene	BDL	BDL
2-Chlorophenol	BDL	BDL
4-Chlorophenyl phenyl ether	BDL	BDL
Chrysene	BDL	290
4,4'-DDD	BDL	BDL
4,4'-DDE	BDL	BDL
4,4'-DDT	BDL	BDL
Dibenzo(a,h)anthracene	BDL	BDL
Dibenzofuran	BDL	BDL
Di-n-butyl phthalate	BDL	BDL
1,2-Dichlorobenzene	BDL	BDL
1,3-Dichlorobenzene	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-3 (Cont.)

PARAMETER: BNA Extr.	B1162 BACKFILL-N	B1162 BACKFILL-S
1,4-Dichlorobenzene	BDL	BDL
3,3-Dichlorobenzidine	BDL	BDL
2,4-Dichlorophenol	BDL	BDL
2,6-Dichlorophenol	BDL	BDL
Dieldrin	BDL	BDL
Diethyl phthalate	BDL	BDL
Dimethoate	BDL	BDL
Dimethylaminazobenzene	BDL	BDL
7,12-Dimethylbenz(a)anthracene	BDL	BDL
3,3'-Dimethylbenzidine	BDL	BDL
a,a,-Dimethylphenethylamine	BDL	BDL
2,4-Dimethylphenol	BDL	BDL
Dimethyl phthalate	590	1130
4,6-Dinitro-o-cresol	BDL	BDL
2,4-Dinitrophenol	BDL	BDL
2,4-Dinitrotoluene	BDL	BDL
2,6-Dinitrotoluene	BDL	BDL
1,2-Diphenylhydrazine	BDL	BDL
Di-n-octyl phthalate	BDL	BDL
Endosulfan-I	BDL	BDL
Endosulfan-II	BDL	BDL
Endosulfan Sulfate	BDL	BDL
Endrin	BDL	BDL
Endrin aldehyde	BDL	BDL
Endrin ketone	BDL	BDL
Ethyl methanesulfonate	BDL	BDL
Fluoranthene	BDL	270
Fluorene	BDL	BDL
Heptachlor	BDL	BDL
Heptachlor epoxide	BDL	BDL
Hexachlorobenzene	BDL	BDL
Hexachlorobutadiene	BDL	BDL
Hexachlorocyclopentadiene	BDL	BDL
Hexachloroethane	BDL	BDL
Indeno(1,2,3-cd)pyrene	BDL	730
Isodrin	BDL	BDL
Isophorone	BDL	BDL
3-Methylcholanthrene	BDL	BDL
Methyl methanesulfonate	BDL	BDL
2-Methylnaphthalene	BDL	BDL
o-Cresol	BDL	BDL
m,p-Cresols	BDL	BDL
Naphthalene	BDL	BDL
1,4-Naphthoquinone	BDL	BDL
1-Naphthylamine	BDL	BDL
2-Naphthylamine	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-3 (Cont.)

PARAMETER: BNA Extr.	B1162 BACKFILL-N	B1162 BACKFILL-S
2-Nitroaniline	BDL	BDL
3-Nitroaniline	BDL	BDL
4-Nitroaniline	BDL	BDL
Nitrobenzene	BDL	BDL
2-Nitrophenol	BDL	BDL
4-Nitrophenol	BDL	BDL
5-Nitro-o-toluidine	BDL	BDL
N-nitrosodibutylamine	BDL	BDL
N-nitrosodiethylamine	BDL	BDL
N-nitrosodimethylamine	BDL	BDL
N-nitrosomethylethylamine	BDL	BDL
N-nitrosodiphenylamine	BDL	BDL
N-nitrosodi-n-propylamine	BDL	BDL
N-nitrosomorpholine	BDL	BDL
N-nitrosopiperidine	BDL	BDL
N-nitrosopyrrolidine	BDL	BDL
Pentachlorobenzene	BDL	BDL
Pentachloronitrobenzene	BDL	BDL
Pentachlorophenol	BDL	BDL
Phenacetin	BDL	BDL
Phenanthrene	BDL	780
Phenol	BDL	BDL
1,4-Phenylenediamine	BDL	BDL
Phorate	BDL	BDL
2-Picoline	BDL	BDL
Pronamide	BDL	BDL
Pyrene	BDL	310
Pyridine	BDL	BDL
Safrole	BDL	BDL
2,3,4,6-Tetrachlorophenol	BDL	BDL
Thionazine	BDL	BDL
o-Toluidine	BDL	BDL
1,2,4-Trichlorobenzene	BDL	BDL
2,4,5-Trichlorophenol	BDL	BDL
2,4,6-Trichlorophenol	BDL	BDL
1,3,5-Trinitrobenzene	BDL	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on July 27, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-4
SUMMARY OF VOLATILE AND SEMI-VOLATILE ORGANICS ANALYTICAL RESULTS FOR DRINKING WATER COLLECTED FROM THE ECUA WELL U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

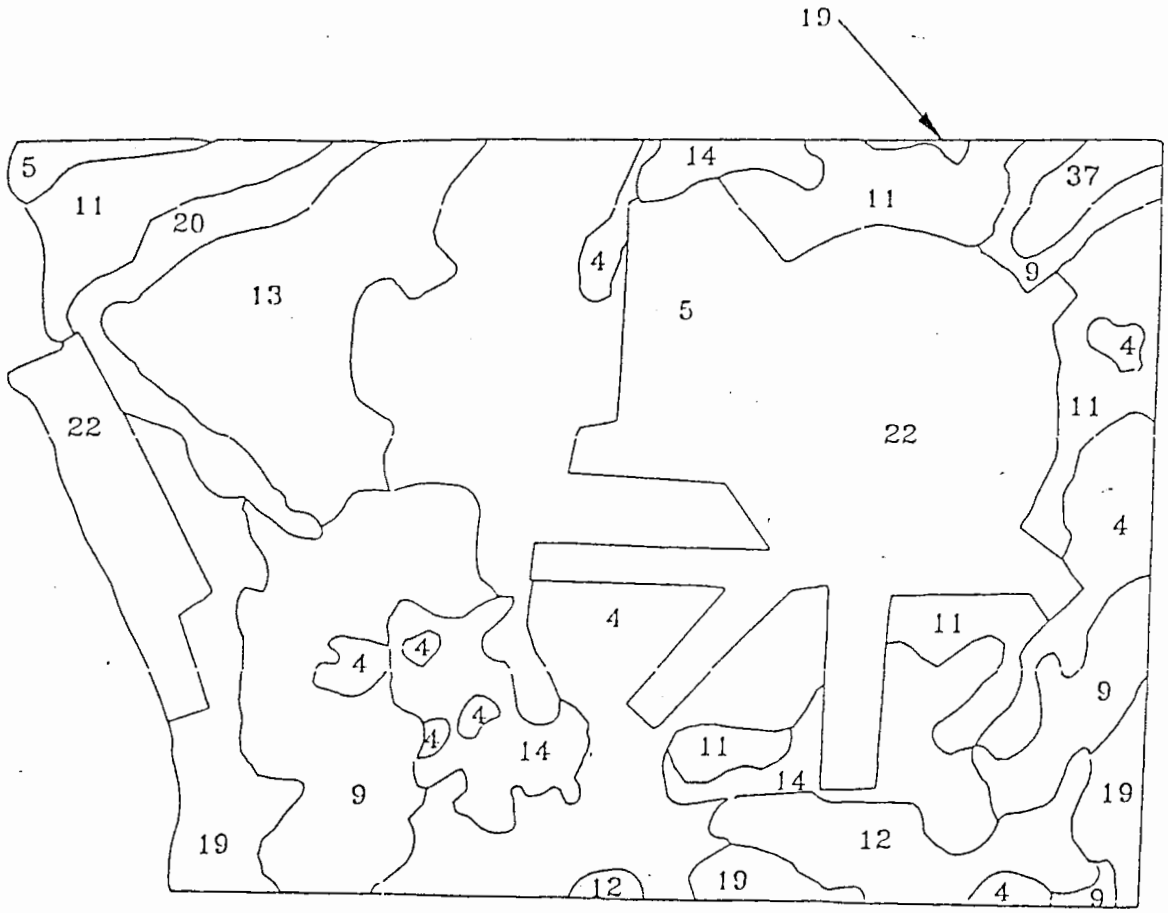
PARAMETER: VOLATILES BY GCMS	B1162 ECUA WELL
Benzene	BDL
Bromobenzene	BDL
Bromochloromethane	BDL
Bromodichloromethane	BDL
Bromoform	BDL
Bromomethane	BDL
n-Butylbenzene	BDL
sec-Butylbenzene	BDL
tert-Butylbenzene	BDL
Carbon Tetrachloride	BDL
Chlorobenzene	BDL
Chloroethane	BDL
Chloroform	BDL
Chloromethane	BDL
2-Chlorotoluene	BDL
4-Chlorotoluene	BDL
Dibromochloromethane	BDL
1,2-Dibromo-3-chloropropane	BDL
1,2-Dibromoethane	BDL
Dibromomethane	BDL
1,2-Dichlorobenzene	BDL
1,3-Dichlorobenzene	BDL
1,4-Dichlorobenzene	BDL
Dichlorodifluoromethane	BDL
1,1-Dichloroethane	BDL
1,2-Dichloroethane	BDL
1,1-Dichloroethene	BDL
cis-1,2-Dichloroethene	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on August 5, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.

TABLE 1-4 (Cont.)

PARAMETER: VOLATILES BY GCMS	B1162 ECUA WELL
trans-1,2-Dichloroethene	BDL
1,2-Dichloropropane	BDL
1,3-Dichloropropane	BDL
2,2-Dichloropropane	BDL
1,1-Dichloropropene	BDL
Ethylbenzene	BDL
Hexachlorobutadiene	BDL
Isopropylbenzene	BDL
p-Isopropyltoluene	BDL
Methylene chloride	BDL
Naphthalene	BDL
n-Propylbenzene	BDL
Styrene	BDL
1,1,1,2-Tetrachloroethane	BDL
1,1,2,2-Tetrachloroethane	BDL
Tetrachloroethene	0.8
Toluene	BDL
1,2,3-Trichlorobenzene	BDL
1,2,4-Trichlorobenzene	BDL
1,1,1-Trichloroethane	BDL
1,1,2-Trichloroethane	BDL
Trichloroethene	BDL
Trichorofluoromethane	BDL
1,2,3-Trichloropropane	BDL
1,2,4-Trimethylbenzene	BDL
1,3,5-Trimethylbenzene	BDL
Vinyl Chloride	BDL
o-Xylene	BDL
m,p-Xylene	BDL

NOTES: BDL = Below detection limits.
Soil samples were collected on August 5, 1994.
All results are reported in parts per billion (ppb) unless otherwise noted.



4 Pickney Sand

5 Croatan & Pickney Soils, Depressional

9 Leon Sand

11 Hurrricane Sand

12 Croatab Muck Depressional

13 Lakeland Sand, Level

14 Pottsburg Sand

19 Foxworth Sand

20 Lakeland Sand Gentle Slope

22 Urban Land

37 Pickney Mucky Sand Depressional

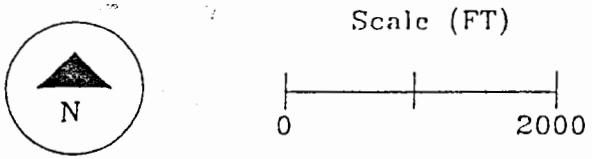


Figure 1-8
OLF Bronson
Soil Map
(Modified Ater U.S.D.A 1991)

debris southward. The Gulf Coast region of the United States is the landward side of the most active geosyncline in North America. The formations which make up the landward side of the geosyncline are all wedge-shaped, thickening rapidly from the outcrop gulfward to the south.

More precisely, OLF Bronson resides with the Coastal Lowland topographic subdivision of the Coastal Plain which consists of relatively undissected, nearly level plains lying less than 100 feet above sea level (Marsh, 1966). It is situated along the north flank of the Mississippi Embayment, which accounts for the characteristic southwestward dip of cretaceous and younger strata (Figures 1-9 thru Figure 1-12).

Figure 1-13 describes the geologic sequence by a representative log of an oil test well near Pensacola. For the region of study, a thick sequence of sand, gravel, and clay extends from the surface to as much as 1000 feet deep. Nearly all wells in this area tap permeable sediments within this sequence - collectively referred to as the sand-and-gravel aquifer. In the southern part (where OLF Bronson resides), the two aquifers are separated by a thick clay unit of Miocene age, which serves to confine the water that is present in the upper limestone of the Floridan Aquifer (Figure 1-14). An extensive clay bed, the Bucatunna Clay Member of the Byram Formation, underlies the upper limestone of the Floridan Aquifer and forms an aquiclude throughout the area. The lower limestone of the Floridan Aquifer underlies the Bucatunna and rests upon relatively impermeable clay and shale. Within the area, no freshwater aquifers occur below the lower limestone of the Floridan Aquifer. More than 99 percent of groundwater utilized for drinking and industrial purposes in the region is obtained from the sand-and-gravel aquifer.

Parts of the sand-and-gravel aquifer have a rather high average porosity and permeability and are thus excellent reservoirs for groundwater. The aquifer primarily consists of relatively insoluble quartz grains, which accounts for the low mineral content and softness of this water. The groundwater conditions are complicated by great lithologic variability due to facies changes during deposition. Groundwater is under artesian pressure where lenses and layers of clay, sandy clay, or hardpan overlie a saturate permeable bed. Groundwater is under non-artesian conditions where such clays or hardpan are absent or where the permeability is not completely saturated. It is common for a well to tap both artesian and non-artesian sources. Groundwater in the sand-and-gravel aquifer is derived almost entirely from rain falling in the area. Recharge is greatest where land is relatively flat. The aquifer is discharged by pumping, evapotranspiration, and seepage into streams, swamps, bays and the Gulf of Mexico.

The gradient along the potentiometric surface in the shallow beds of the sand-and-gravel aquifer generally indicates movement of groundwater toward nearby streams. The seepage of this groundwater supplies more than half of the entire flow of the smaller streams in Escambia and neighboring Santa Rosa counties. Average velocity of groundwater was previously computed to be approximately 100 feet per year in the Pensacola area. The water table tends to be highest under the broad, relatively level lands that are at a higher elevation than the surrounding lands.

The artesian pressure head of water in the lower permeable beds of the sand-and-gravel aquifer does not conform to the topography of the land as much as the water table. The artesian pressure

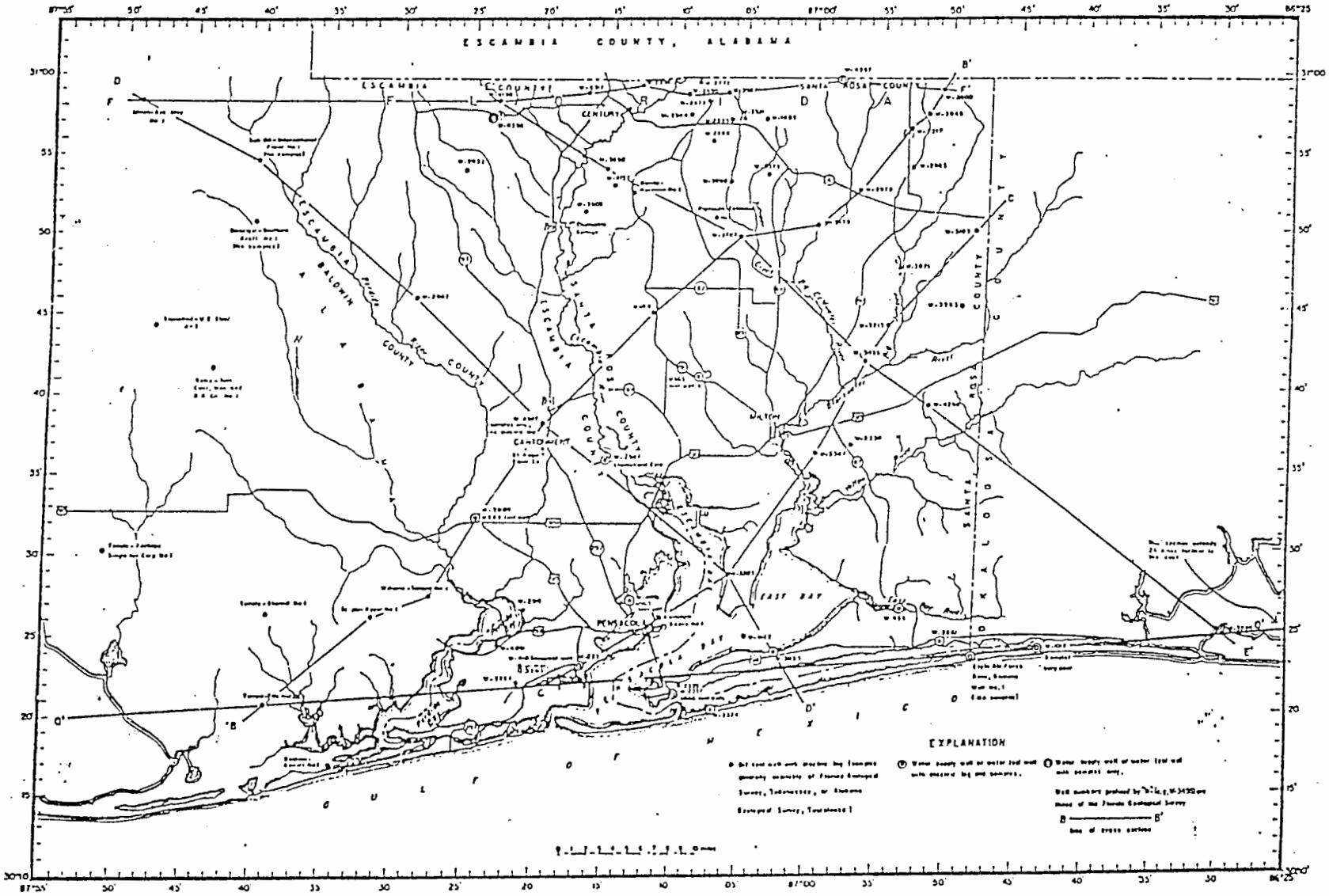


Figure 1-9
OLF Bronson

Key: Map of Westernmost Florida & Southwestern Alabama Showing Locations of Cross Sections & Wells Used in This Report (Modified After Marsh, 1966).

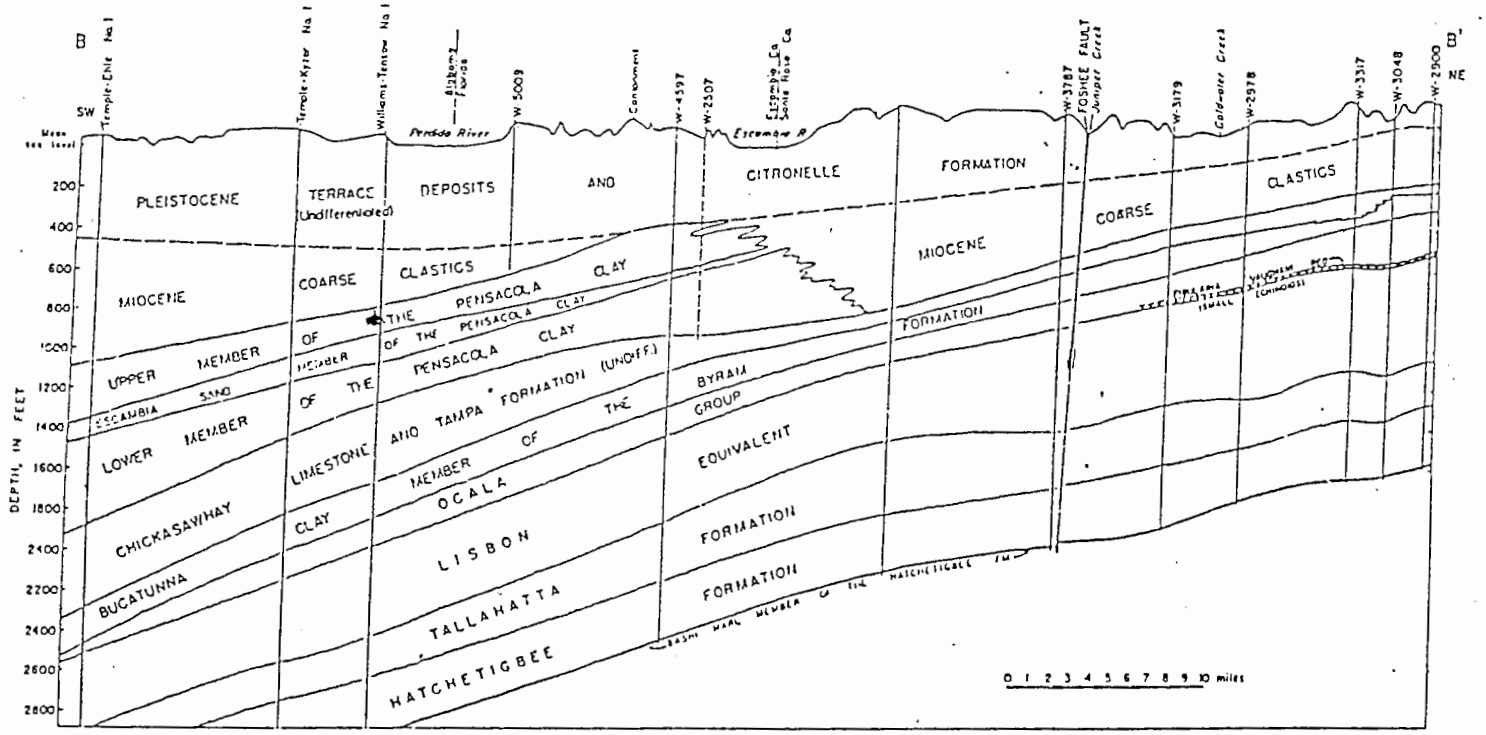


Figure 1-10
OLF Bronson

Key: Geologic Cross Section B–B' Across Escabia & Santa Rosa Couties (Modified After Marsh, 1966). Section Parallels the Regional Dip.

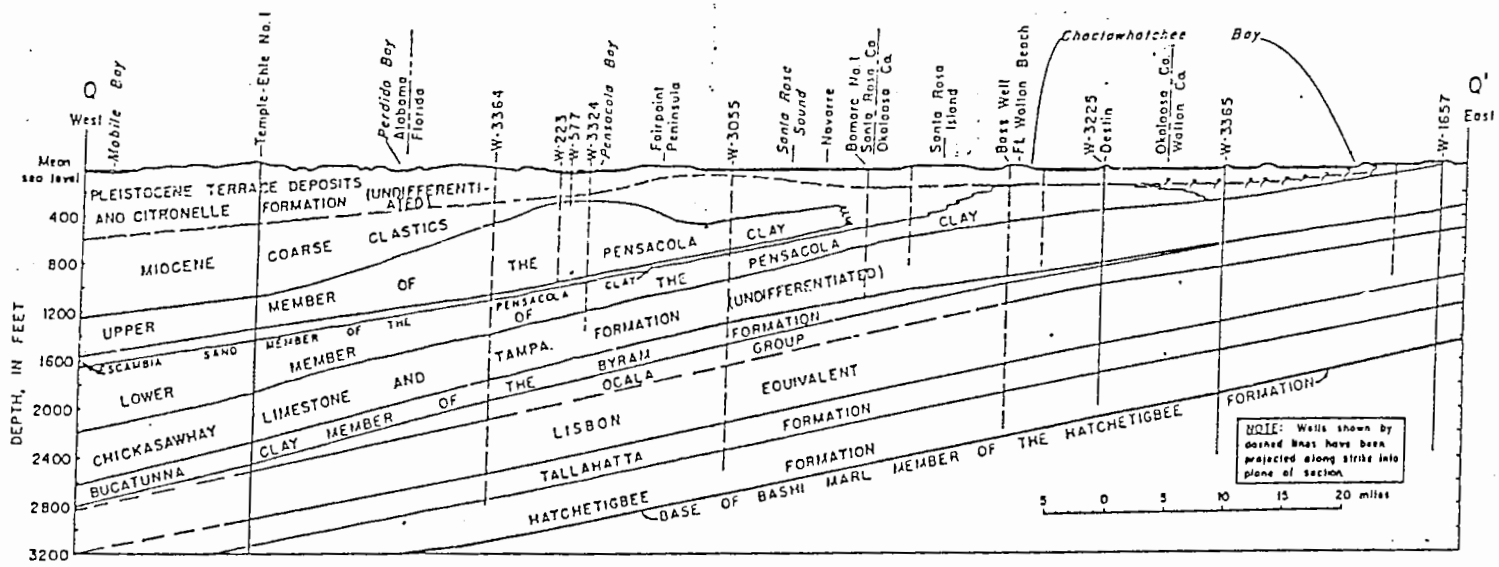


Figure 1-11
OLF Bronson

Key: Geologic Section Q–Q' From Mobile Bay to the Choctawhatchee River (115 Miles) Showing Formations along the Gulf Coast of Western Florida (Modified After Marsh, 1966).

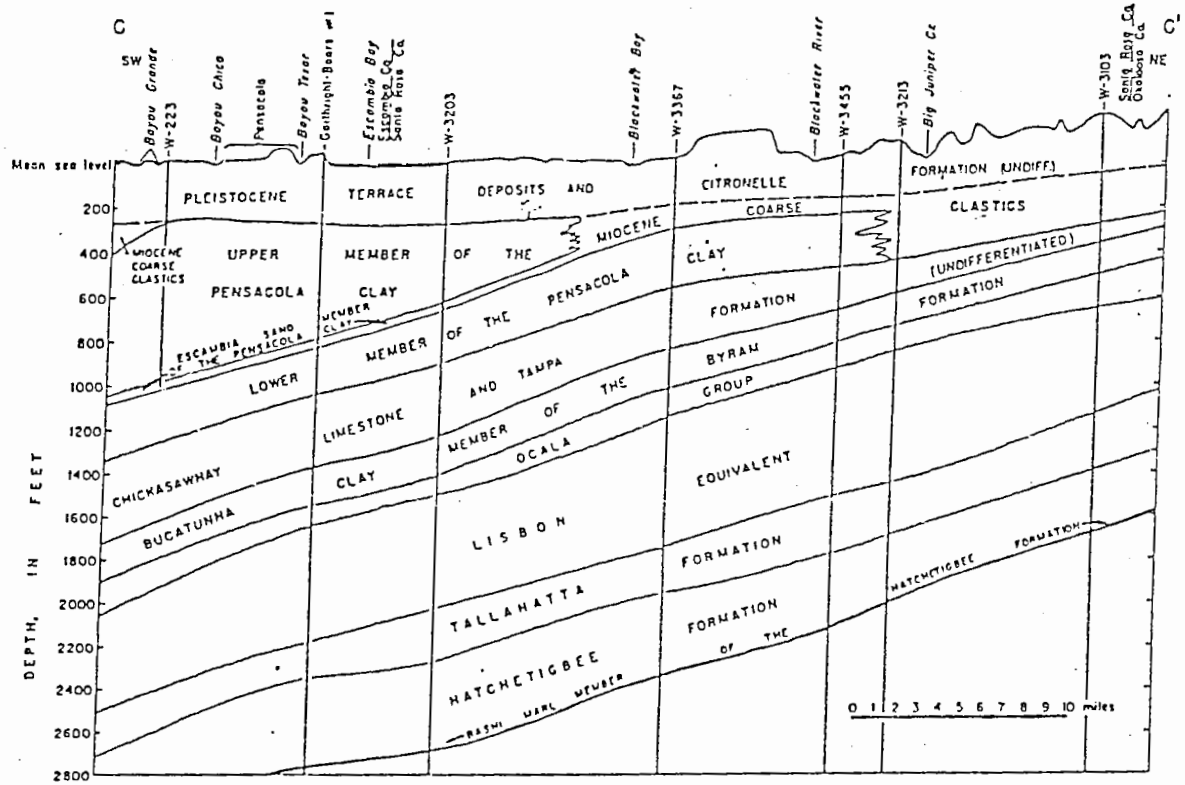
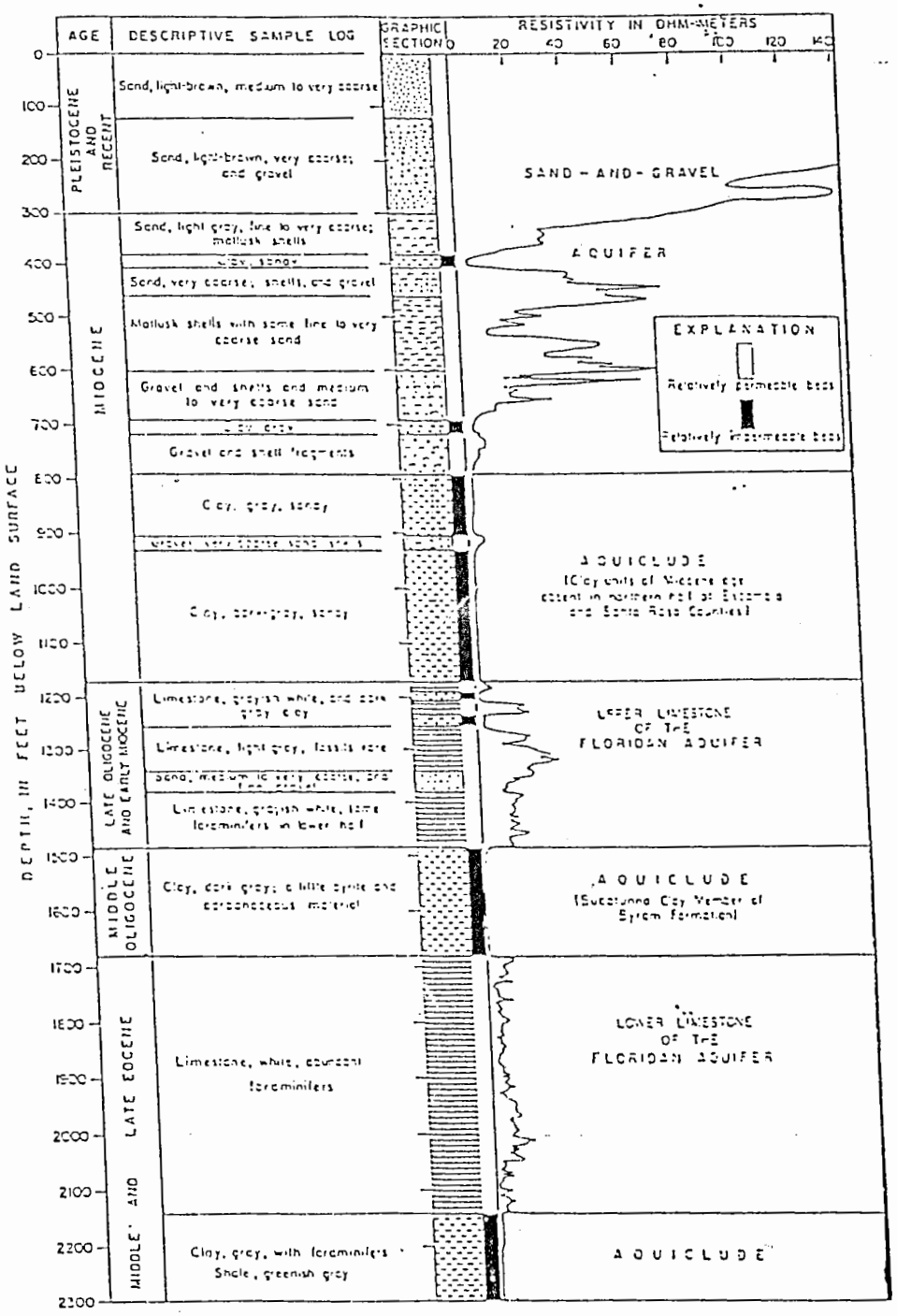


Figure 1-12
OLF Bronson

Key: Geologic Section C–C' Across Escambia & Santa Rosa Counties (ModifiedAfter Marsh, 1966). Section is Parallel to Regional Dip.



gure 1-13
OLF Bronson

Key: Representative Geologic Sequence Based on Log of Oil Test Well Located Near Pensacola (After Marsh, 1966).

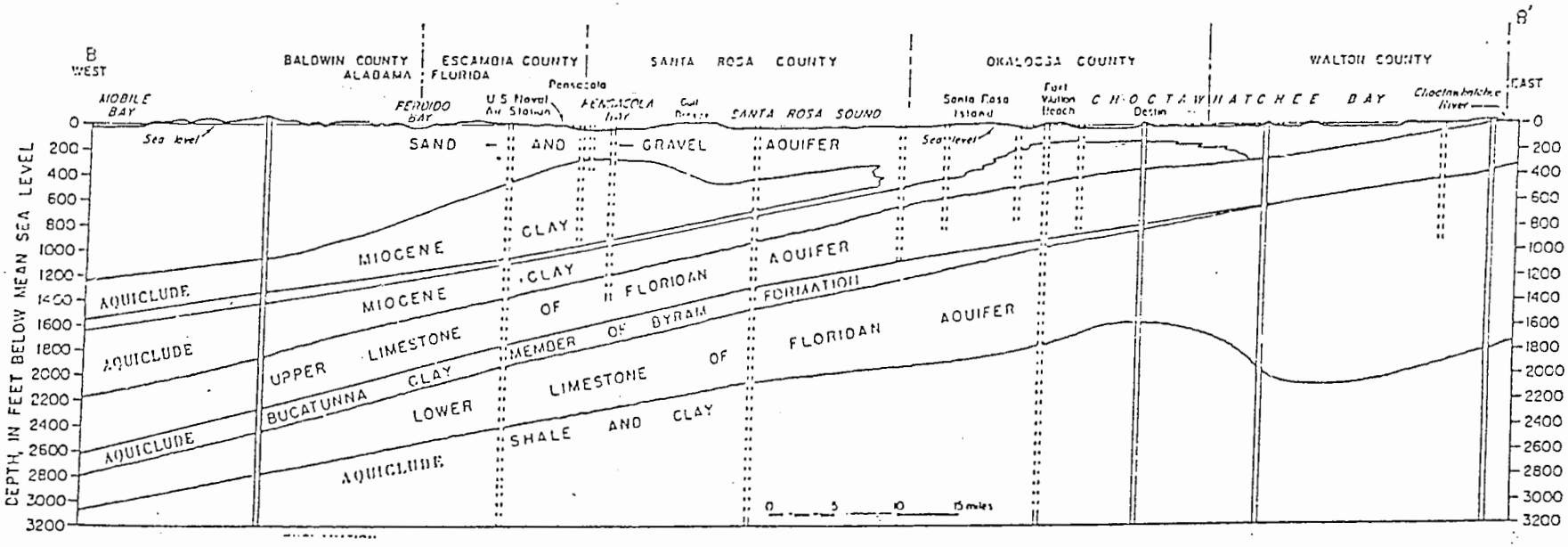


Figure 1-14
OLF Bronson

Key: Geologic Section Across Escambia & Santa Rosa Counties Showing Aquifers & Aquicludes Along Section B–B' in Figure 8 (Modified After musgrove ET. AL., 1965).

head of water from the lower beds indicates a general movement of water to the south. The head of water in the northern part of Escambia and Santa Rosa counties is usually more than 100 feet above sea level and at some places exceeds 150 feet. In the central part of the counties, the artesian pressure head is about 30 to 80 feet above sea level except near the large rivers. Upward leakage of groundwater probably occurs, which lowers the pressure head of the groundwater. The artesian pressure head of water under the lands adjacent to the bays is usually less than 20 feet above sea level and is often less than 10 feet above sea level.

Pumping tests on nearby wells screened within the sand-and-gravel aquifer indicate specific capacity values that range from 30 to 80 gallons per minute per foot of drawdown. Aquifer tests performed on wells penetrating the sand-and-gravel aquifer owned by the City of Pensacola, the U. S. Navy (at NTTC Station), and Newport Industries indicate transmissivities ranging from 58,800 to 94,000 gallons per day per foot.

With few exceptions, the sum of the mineral constituents in the groundwater of the sand-and-gravel aquifer is very low, ranging from 12 to 36 ppm. Water in this aquifer is exceptionally soft, generally containing 4 to 30 ppm of calcium and magnesium carbonates. The fluoride content of this water is usually less than 0.2 ppm. Iron content of water from this aquifer ranges from 0.06 to 4.9 ppm, although it is generally less than 0.15 ppm. Copious amounts of carbon dioxide render much of the water acidic. In some areas water contains hydrogen sulfide in solution. Carbon dioxide measurements in waters beneath NAS Pensacola have been as high as 100 mg/l. However, elsewhere in the area, Carbon dioxide concentrations are generally less than 30 mg/l. In Bronson Field groundwater reserves, chloride is the major anion and is generally accompanied by a predominant sodium cation.

1.7 WELL SURVEY

There are two potable water wells located at OLF Bronson that are operated by Escambia County Utilities Authority (ECUA) and permitted by the Northwest Florida Water Management District. Potable water to the base is supplied by the potable wells located at OLF Bronson. Both wells are located within a half-mile radius of the site. Construction details of the two wells are shown in Table 1-5.

2.0 SITE ASSESSMENT

2.1 SOIL BORING AND MONITORING WELL CONSTRUCTION DETAILS

PWC personnel initiated the investigation with the installation of 13 soil borings to a depth of 16 feet below land surface (BLS). These borings were installed by W.E.S., Inc. on January 12, 1996. The soil borings were installed using a hollow stem auger. The augers were decontaminated between borings. Soil samples were collected from each borehole at 1, 4, 7, 10, 13 and 16 feet BLS and analyzed for volatile organic vapors using an organic vapor analyzer (OVA) with a flame ionization detector. Soil boring cuttings were placed back into the boreholes upon completion of installation. A location map showing the borehole locations is shown in

TABLE 1-5
CONSTRUCTION DETAILS OF WATER-SUPPLY WELLS

OLF BRONSON WELL NUMBER	#1	#2
Year Drilled	1942	1943
Depth Drilled	245ft	248ft
Length, outside casing	126ft 9in	120ft
Diameter, outside casing	24in	24in
Material, outside casing	Black Steel	Black Steel
Depth to static water level	26ft	23ft 4in
Normal suction lift (wkng. level)	53ft	43ft
Normal yield, GPM	800	800
Test yield, GPM	1007	1012
Type of grout	Type 1 Portland	Type 1 Portland
Drilling method	Reverse Flow	Reverse Flow
Type of strainer	Shutter Bronze	Shutter Bronze
Depth to top of strainer	135ft	144ft
Protection from surface water?	Yes	Yes
Is inundation of well possible?	No	No
Sale intrusion noted in past?	No	No
Has the well ever been contaminated?	No	No
Pump manufacturers' name	Layne Bowler	Layne Bowler
Model number	11 8MH	11 8MH
Capacity GPM	750	800
Check valve present in line?	Yes	Yes
Date of last servicing	4/26/94	5/11/95
Maintenance schedule (day/mo.)	Daily	Daily

Notes: uk=unknown
s.s.=stainless

Figure 2-1.

2.2 GROUNDWATER FLOW DIRECTION

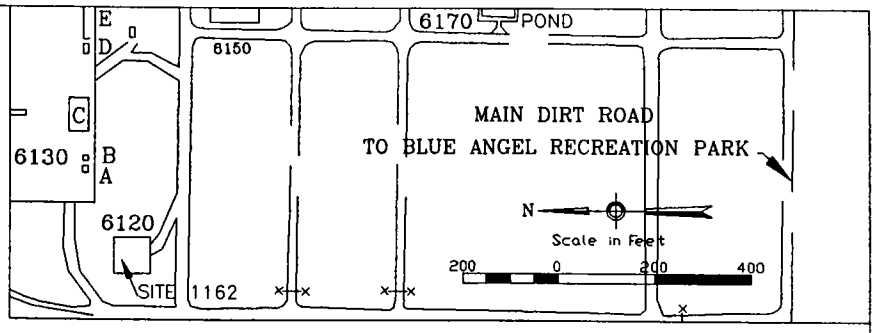
The top of casing (TOC) elevations for shallow monitoring wells MW-1 thru MW-5 were surveyed by Charlotte Engineering and Surveying, Inc. on March 18, 1996. No survey bench marks were located near the site and therefore the top of casing elevations were based on an assumed benchmark elevation of 50.00 feet above mean sea level (MSL) at the northwest corner of the existing concrete slab. Groundwater elevations for the groundwater level measurements taken on March 15, 1996 are shown in Table 2-1. A groundwater flow direction map for the groundwater level measurements taken on March 15, 1996 is shown in Figure 2-2. The groundwater flow direction map indicates the groundwater flow at the site is toward the southwest.

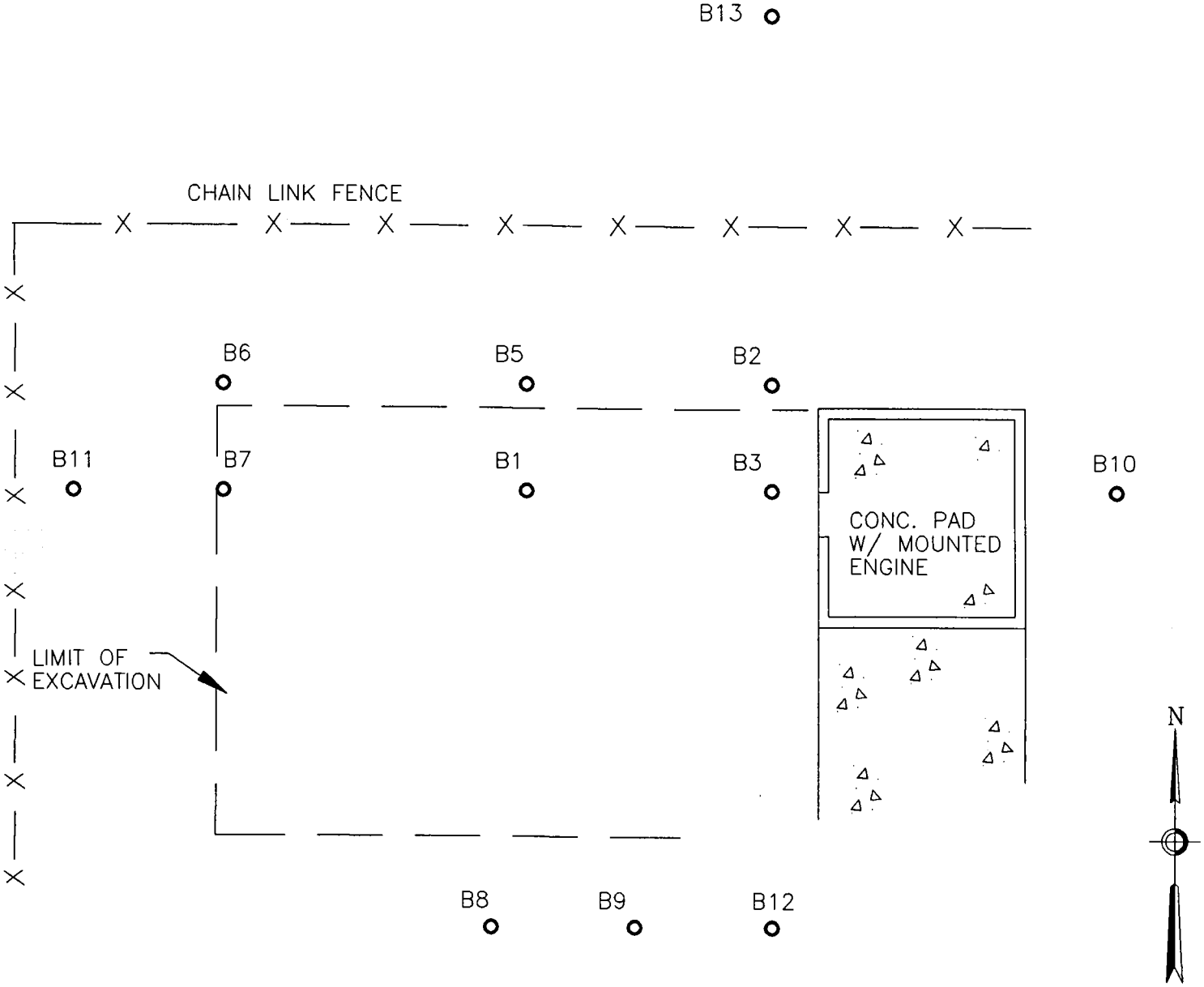
2.3 GROUNDWATER FLOW RATE

There are currently nine sites at Bronson Field at which contamination assessment reports are being conducted. Because the hydrogeology at the site was generally found consistent at each of the nine sites at Bronson Field, slug tests were performed at only 3 of the sites (Sites 1140NE, 1122 and 1116). A rising head slug test was performed at each of the 3 sites by W.E.S., Inc. to assess the hydraulic conductivity of the surficial zone of the sand-and-gravel aquifer. Procedures for conducting the slug tests, slug test data graphs and calculations are attached in Appendix B. The slug test results indicate the estimated horizontal hydraulic (k) at sites 1140NE, 1122 and 1116 to be 0.9719 ft/day, 0.1771 ft/day and 0.6899 ft/day, respectively. Therefore, the average estimated hydraulic conductivity at the site is 0.6130 ft/day. The calculated linear groundwater flow velocity at sites 1140NE, 1122 and 1116 was estimated to be 0.0152 ft/day (5.5337 ft/yr), 0.0043 ft/day (1.5514 ft/yr) and 0.0069 ft/day (2.5181 ft/yr), respectively. Therefore, the average estimated linear groundwater flow velocity of the sites is 0.0088 ft/day (3.201 ft/yr).

2.4 SITE SPECIFIC HYDROGEOLOGY

The principal aquifer of concern at the site is the surficial zone of the sand-and-gravel aquifer. The surficial zone was penetrated to a depth of 35 feet during this investigation. The lithology at the site was found to be consistent and is generally composed of: (1) fine to medium grained silty sand, orange to tan in color, from 0 to 12 feet BLS; (2) fine to medium grained silty sand, frosted grained, light tan in color, from 12 to 20 feet BLS; and (3) fine to medium grained silty sand, frosted grained, white to beige in color, 20 to 27.5 feet BLS. The lithology found at deep vertical extent monitoring well was somewhat inconsistent with that found at shallow monitoring wells MW-1 thru MW-5 and was composed of: (1) fine sand, tan/brown in color, from 0 to 9 feet BLS; (2) fine to medium grained silty sand, tan/brown in color from 9 to 18 feet BLS; (3) fine to medium grained sand with 40% clay stringers, beige in color, from 18 to 29 feet BLS; and (4) medium to coarse grained sand with 5% shell fragments, white in color, moderately sorted, from 29 to 35 feet BLS. The groundwater table at the site was encountered at approximately 20 feet BLS. Lithological logs describing the soils encountered at various depth, the approximate





0' 5' 10' 15'

SCALE FEET

LEGEND

— X — FENCE

MONITORING WELL NUMBER

B12 ○ BORING HOLE NUMBER NUMBER

NAVY PUBLIC WORKS CENTER PENSACOLA, FLORIDA		
SCALE:	FIGURE 2-1	DRAWN BY: DWG. NO: REVISED BY:
SOIL BORING LOCATION MAP SITE 1162, BRONSON FIELD		
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA		

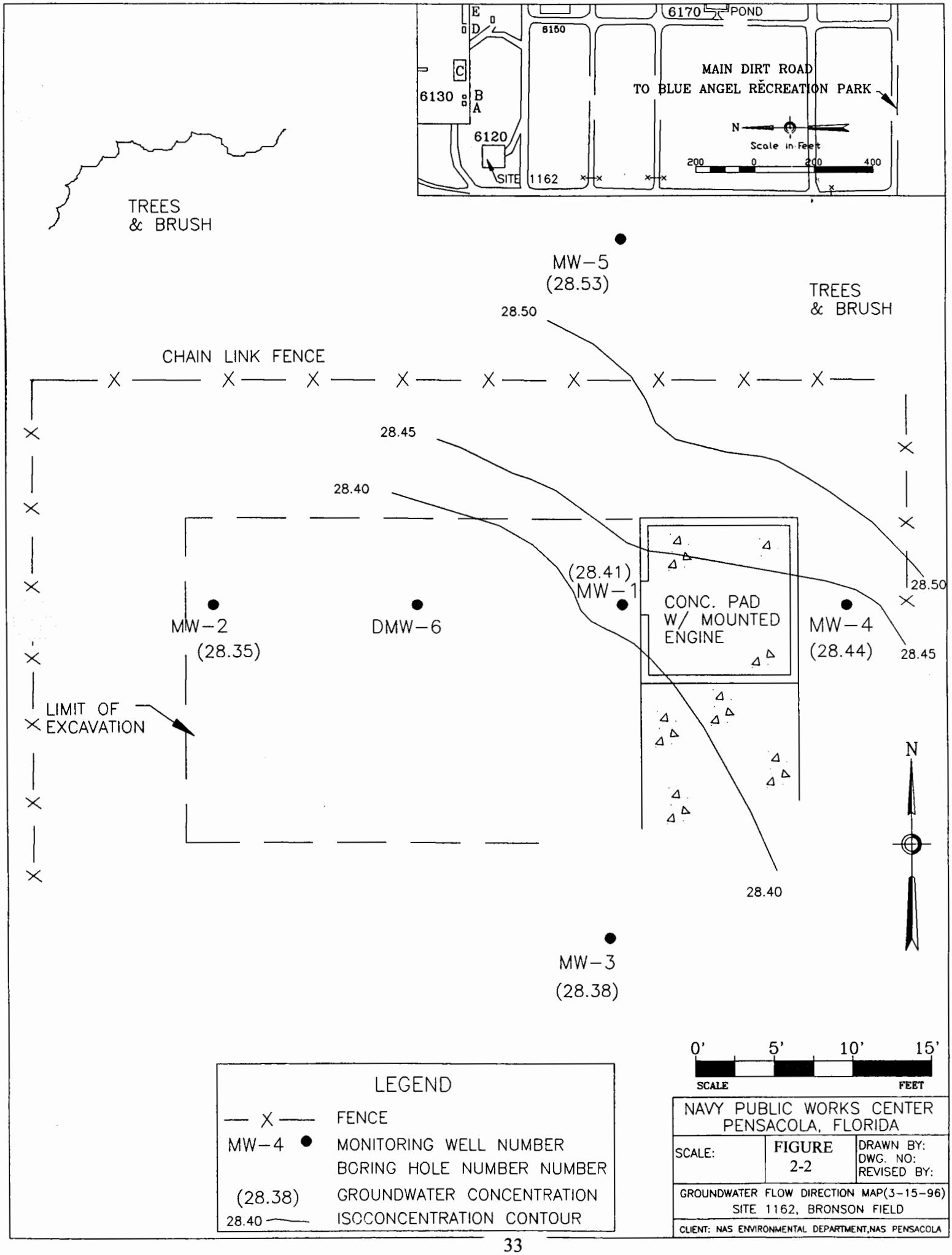
TABLE 2-1

TOP OF CASING AND GROUNDWATER ELEVATIONS
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

WELL NUMBER	TOC FT. M.S.L.	DTW (FT) 3/15/96	GROUNDWATER ELEVATION 3/15/96
MW-1	49.00	20.59	28.41
MW-2	47.27	20.92	26.35
MW-3	48.72	20.34	28.38
MW-4	48.66	20.22	28.44
MW-5	48.86	20.53	28.33

NOTES: TOC = Top of Casing
DTW = Depth to Water

Benchmark assumes elevation of 50.00 ft. at the northwest corner of existing concrete slab, the remnant of former building 1162, Bronson Field, Florida.


6170
POND
6150
E
D
C
6130
B
A
6120
SITE
1162
MAIN DIRT ROAD
TO BLUE ANGEL RECREATION PARK
N
Scale in Feet
200
0
200
400
TREES
& BRUSH
MW-5
(28.53)
TREES
& BRUSH
28.50
CHAIN LINK FENCE
28.45
28.40
(28.41)
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
28.50
MW-2
(28.35)
DMW-6
MW-4
(28.44)
28.45
LIMIT OF
EXCAVATION
N
28.40
MW-3
(28.38)
0'
5'
10'
15'
SCALE
FEET
LEGEND
FENCE
MW-4
MONITORING WELL NUMBER
BORING HOLE NUMBER NUMBER
(28.38)
GROUNDWATER CONCENTRATION
28.40
ISOCONCENTRATION CONTOUR
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-2
DRAWN BY:
DWG. NO:
REVISED BY:
GROUNDWATER FLOW DIRECTION MAP(3-15-96)
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

groundwater level, and OVA screening results for the soil borings installed during the monitoring well installation are shown in Appendix C.

2.5 SOIL ASSESSMENT

The extent of soil contamination at the site was determined by OVA screening. Thirteen soil borings (B1 thru B13) were installed by W.E.S., Inc. on January 12, 1996 using a hollow stem auger (See Figure 2-1 for locations). Soil samples were collected from each borehole at intervals of 1, 4, 7, 10, 13, and 16 feet BLS. The groundwater at the site was generally found at approximately 17-20 feet BLS. The soil borings were installed at and around the former tank location. Soil samples were also collected from the boreholes during the installation of monitoring wells MW-1 thru MW-5 at 1, 4, 7, 10, 13, 16 and 19 feet intervals BLS and analyzed with an OVA for volatile organic compounds (See Figure 2-3 for locations). In addition, a soil sample was collected at approximately 1' above the water table at each monitoring well and analyzed for total petroleum hydrocarbons by FLPRO/PETRO method (EPA method 8015). Total petroleum hydrocarbons were not detected in any of the soil samples collected during monitoring well installation. Laboratory results are shown in Appendix D.

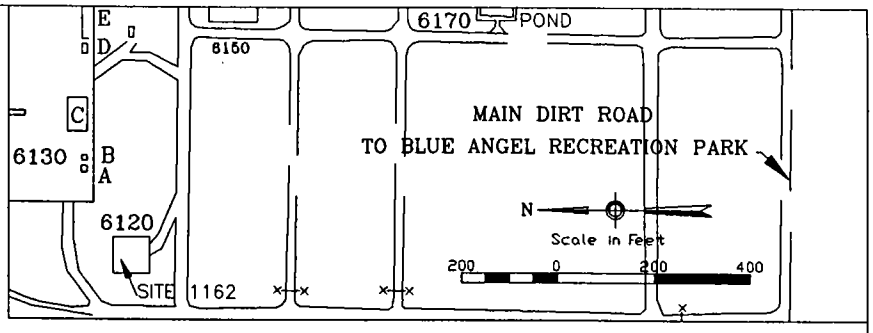
The soil boring/monitoring well designations and their respective OVA screening results are shown in Table 2-2. No VOC's were detected in the soil samples collected from boreholes B1, B2, B4 thru B13 and MW-3 thru MW-5. VOC's were detected in a soil sample collected from borehole B3 at a concentration of 160 ppm which exceeded the FDEP 50 ppm level for excessively contaminated soil by a kerosene product. The soil sample was collected at approximately 16 feet BLS. No VOC's were detected in any of the other soil samples collected from borehole B3. VOC's were detected in the soil samples collected from boreholes MW-1 and MW-2; however, the concentrations detected were significantly below the FDEP 50 ppm level for excessively contaminated soil by a kerosene product. A soil contamination map is shown in Figure 2-4. Because the excessively contaminated soil is limited to 16 feet BLS at borehole B3, it appears the excessive soil contamination is limited to the soil vadose zone and does not pose an environmental or health risk at the site.

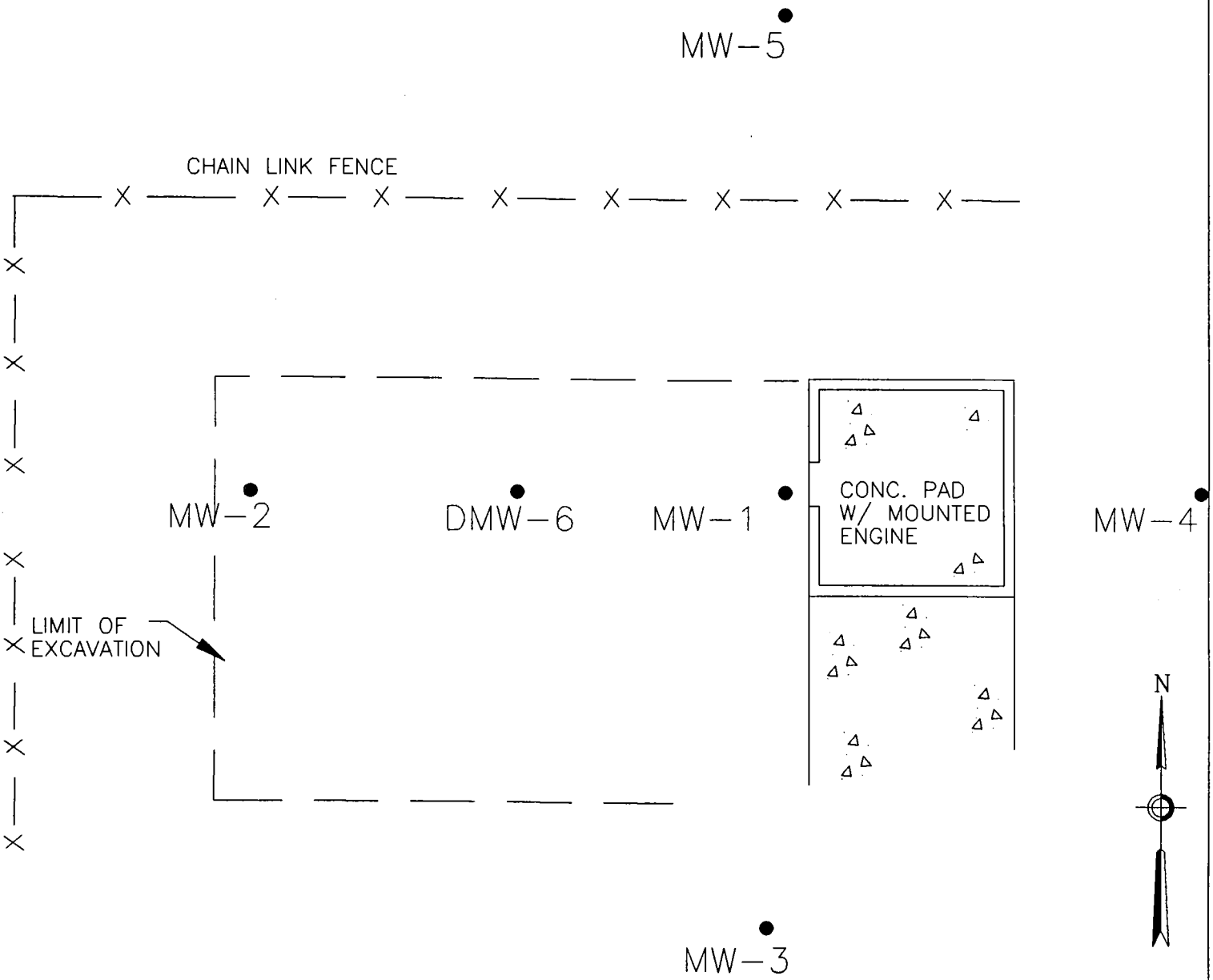
2.6 SURFACE WATER ASSESSMENT

No surface water was observed at the site and therefore no surface water assessment was performed for this project.

2.7 GROUNDWATER QUALITY ASSESSMENT

Groundwater samples were extracted from shallow groundwater monitoring wells MW-1 thru MW-5 and deep vertical extent monitoring well DMW-6 by W.E.S., Inc. using the methods and procedures outlined in W.E.S., Inc. Comprehensive Quality Assurance Plan No. 900465G. Monitoring wells MW-1 thru MW-5 were originally sampled on March 15, 1996 and analyzed for the kerosene analytical group (with the exception of lead) outlined in FDEP Rule 62-770. Monitoring well MW-1 was resampled on May 22, 1996 and vertical extent monitoring well





0' 5' 10' 15'

SCALE FEET

LEGEND

— X — FENCE

MW-4 ● MONITORING WELL NUMBER
BORING HOLE NUMBER NUMBER

NAVY PUBLIC WORKS CENTER PENSACOLA, FLORIDA		
SCALE:	FIGURE 2-3	DRAWN BY: DWG. NO: REVISED BY:
MONITORING WELL LOCATION MAP SITE 1162, BRONSON FIELD		
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA		

TABLE 2-2

VOLATILE ORGANIC COMPOUNDS (VOC's)
CONCENTRATION IN SOIL

SOIL BORING B-1 THRU MW-5
JANUARY 12 AND FEBRUARY 7, 1996

SITE 1162
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

Boring Designation	Depth (Feet BLS)	VOC's Concentration (ppm)[1]
B1	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B2	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B3	1	0
	4	0
	7	0
	10	0
	13	0
	16	160

[1] VOC's concentration assessed by organic vapor analyzer headspace techniques. Results are total VOC's less methane.

Notes: BLS = below land surface
NS = not sampled
ppm = parts per million
Soil samples analyzed and VOC results reported by NPWC, Pensacola, FL

TABLE 2-2 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOC's Concentration (ppm)[1]**
B4	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B5	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B6	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B7	1	0
	4	0
	7	0
	10	0
	13	0
	16	0

[1] VOC's concentration assessed by organic vapor analyzer headspace techniques. Results are total VOC's less methane.

Notes: BLS = below land surface
NS = not sampled
ppm = parts per million
Soil samples analyzed and VOC results reported by NPWC, Pensacola, FL

TABLE 2-2 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOC's Concentration (ppm)[1]**
B8	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B9	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B10	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B11	1	0
	4	0
	7	0
	10	0
	13	0
	16	0

[1] VOC's concentration assessed by organic vapor analyzer headspace techniques. Results are total VOC's less methane.

Notes: BLS = below land surface
NS = not sampled
ppm = parts per million
Soil samples analyzed and VOC results reported by NPWC, Pensacola, FL

TABLE 2-2 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOC's Concentration (ppm)[1]**
B12	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
B13	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
MW-1	1	0
	4	0
	7	0
	10	0
	13	0
	16	4
	19	9
MW-2	1	2
	4	0
	7	1
	10	2
	13	2
	16	2
	19	2

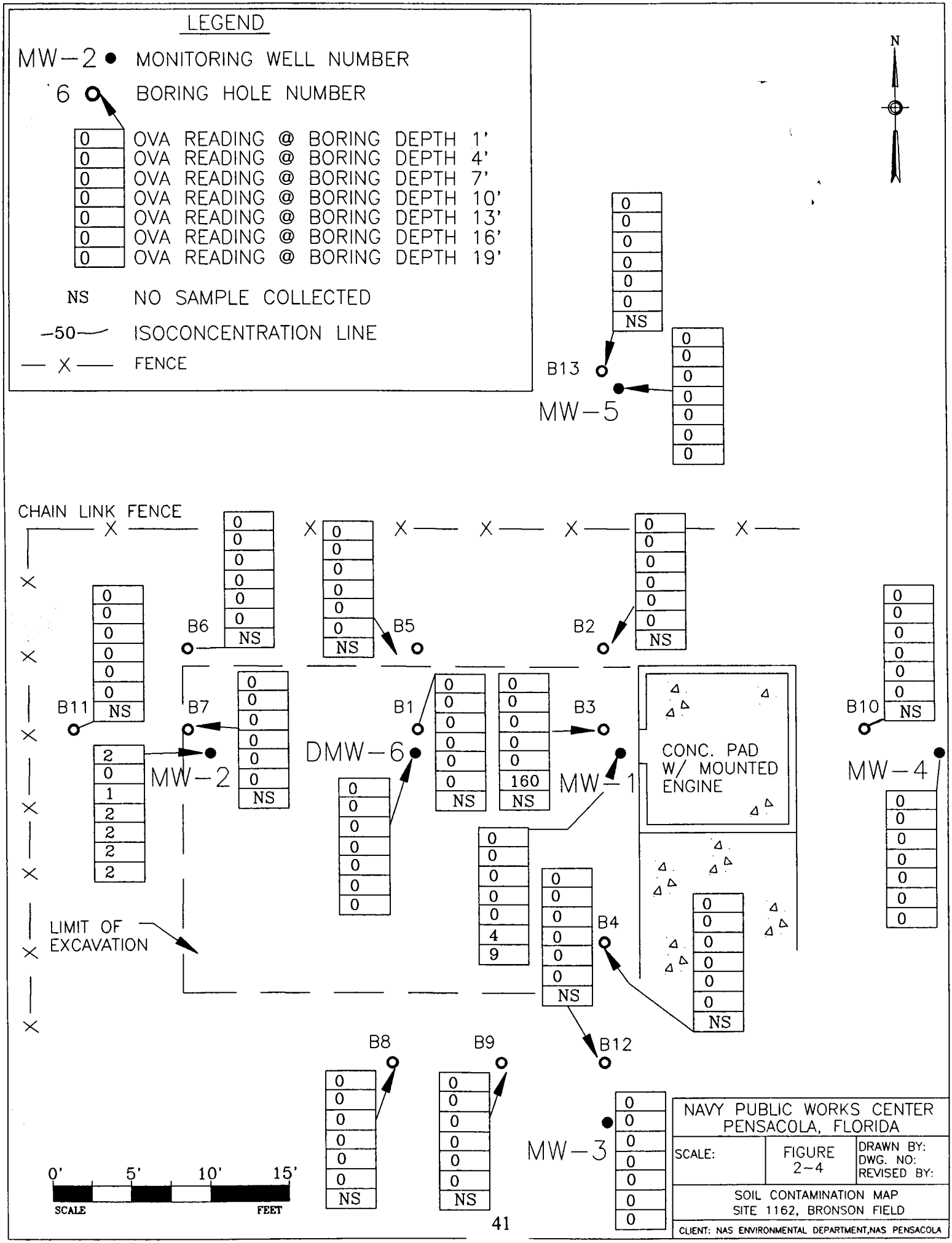
[1] VOC's concentration assessed by organic vapor analyzer headspace techniques. Results are total VOC's less methane.

Notes: BLS = below land surface
NS = not sampled
ppm = parts per million
Soil samples analyzed and VOC results reported by NPWC, Pensacola, FL

TABLE 2-2 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOC's Concentration (ppm)[1]**
MW-3	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
	19	0
MW-4	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
	19	0
MW-5	1	0
	4	0
	7	0
	10	0
	13	0
	16	0
	19	0

[1] VOC's concentration assessed by organic vapor analyzer headspace techniques. Results are total VOC's less methane.

Notes: BLS = below land surface
NS = not sampled
ppm = parts per million
Soil samples analyzed and VOC results reported by NPWC, Pensacola, FL


LEGEND
MW-2 MONITORING WELL NUMBER
6 BORING HOLE NUMBER
0 OVA READING @ BORING DEPTH 1'
0 OVA READING @ BORING DEPTH 4'
0 OVA READING @ BORING DEPTH 7'
0 OVA READING @ BORING DEPTH 10'
0 OVA READING @ BORING DEPTH 13'
0 OVA READING @ BORING DEPTH 16'
0 OVA READING @ BORING DEPTH 19'
NS NO SAMPLE COLLECTED
-50- ISOCONCENTRATION LINE
— X — FENCE
N
B13
MW-5
CHAIN LINK FENCE
B6
B5
B2
B11
B7
B1
B3
B10
MW-2
DMW-6
MW-1
CONC. PAD W/ MOUNTED ENGINE
MW-4
LIMIT OF EXCAVATION
B4
B8
B9
B12
MW-3
0' 5' 10' 15'
SCALE FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE 2-4
DRAWN BY:
DWG. NO:
REVISED BY:
SOIL CONTAMINATION MAP
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

DMW-6 was sampled on June 3, 1996 and analyzed for the kerosene analytical group. Monitoring wells MW-1 thru MW-5 were sampled on May 16, 1996 using the quiescent sampling technique and analyzed for total lead. The kerosene analytical group included analysis of groundwater samples for volatile organic aromatics (VOA's), polynuclear aromatic hydrocarbons (PAH's), ethylene dibromide (EDB), total petroleum hydrocarbons (TPH's) and total lead utilizing EPA Methods 8260, 8270A, 504, FLPRO and SW6010, respectively.

No kerosene analytical group parameters were detected in the groundwater samples collected from monitoring wells MW-2 thru MW-5. Chloroform was detected in the groundwater sample collected from vertical extent monitoring well DMW-6 at a concentration of 5 ppb. No other kerosene analytical group parameters were detected in the groundwater samples collected from vertical extent monitoring well DMW-6. Monitoring well MW-1 was the only monitoring well to detect petroleum contaminants.

Benzene was detected in the groundwater samples collected from monitoring well MW-1 on March 15 and May 22, 1996 at concentrations of 6 ppb and 11 ppb, respectively. The concentrations exceeded the FDEP target level of 1 ppb for benzene. Total BTEX (benzene, toluene, ethylbenzene, xylene) was detected in the groundwater samples collected from monitoring well MW-1 on March 15 and May 22, 1996 at concentrations of 353 ppb and 1611 ppb, respectively. The concentrations exceeded the FDEP target level of 50 ppb for BTEX. A summary table of the volatile organic aromatics (VOA's) detected in the monitoring wells is shown in Table 2-3. A benzene and total BTEX contamination distribution map for the March 15 and May 22 sampling events is shown in Figures 2-5 and 2-6, respectively.

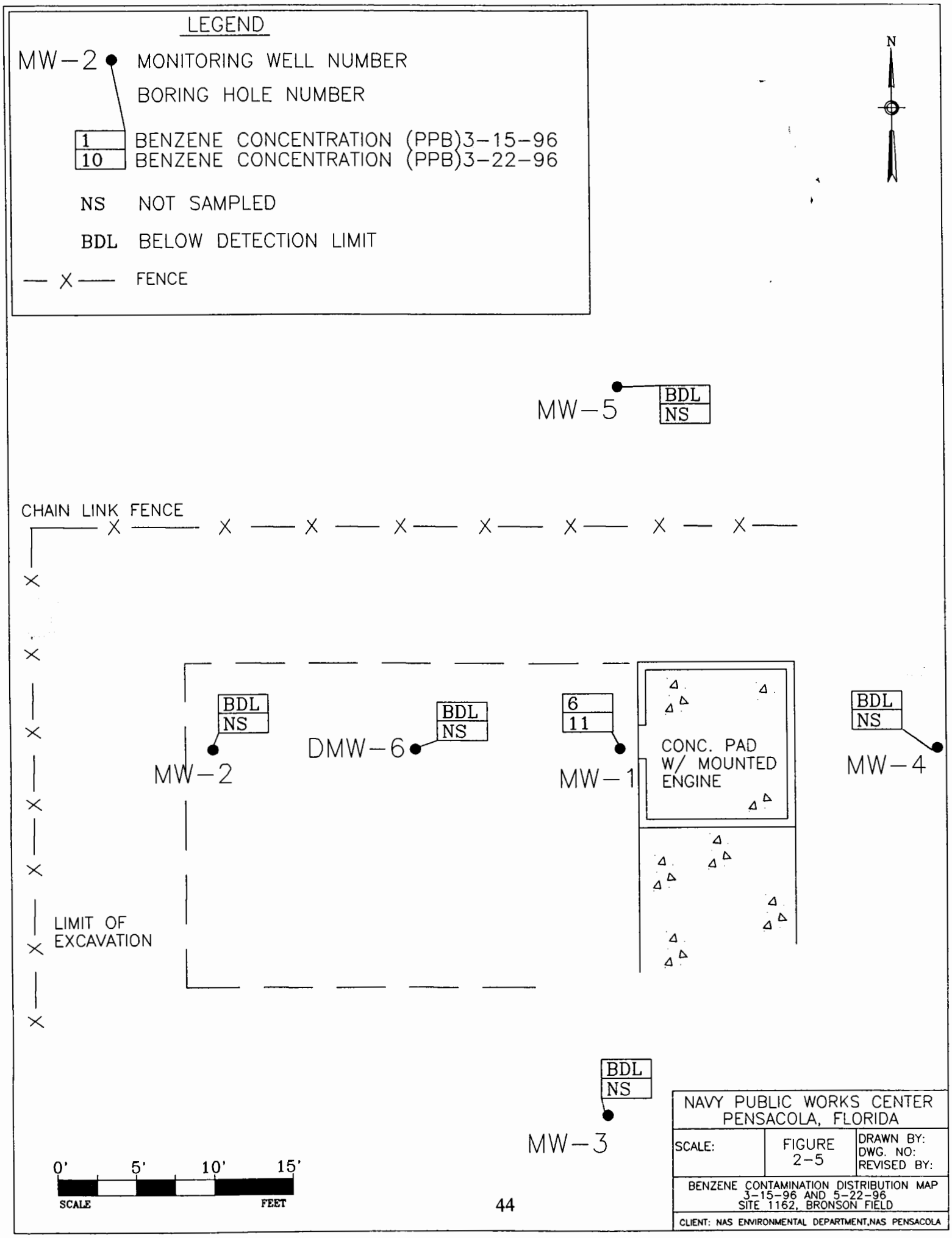
Naphthalene was detected in the groundwater sample collected from monitoring well MW-1 on March 15, 1996 at a concentration of 8 ppb which exceeded the FDEP target level of detection limit for individual PAH's. Total naphthalene was detected in the groundwater sample collected from monitoring well MW-1 on March 15, 1996 at a concentration of 8 ppb which is below the FDEP target level of 100 ppb for total naphthalene. Naphthalene, 1-methylnaphthalene and 2-methylnaphthalene were detected in the groundwater sample collected from monitoring well MW-1 on May 22, 1996 at concentrations of 24 ppb, 5 ppb and 7 ppb, respectively, which exceeded the FDEP target level of detection limit for individual naphthalenes. Total naphthalene was detected in the groundwater sample collected from monitoring well MW-1 on May 22, 1996 at a concentration of 36 ppb which was below the FDEP target level of 100 ppb. A summary table of the polynuclear aromatic hydrocarbons (PAH's) detected in the monitoring wells is shown in Table 2-4. A PAH contamination distribution map for the March 15 and May 22, 1996 sampling events is shown in Figures 2-7 and 2-8, respectively.

Total petroleum hydrocarbons (TPH's) were detected in the groundwater samples collected from monitoring wells MW-1 on March 15 and May 22, 1996 at concentrations of 180 ppb and 4,000 ppb, respectively. The levels of TPH's detected in monitoring well MW-1 were below the FDEP target level of 5,000 ppb. Lead was detected in the groundwater sample collected from monitoring well MW-1 on May 16, 1996 at a concentration of 110 ppb. The level of lead detected in monitoring well MW-1 was above the FDEP target level of 50 ppb. Ethylene

TABLE 2-3
SUMMARY OF VOLATILE ORGANIC COMPOUNDS ANALYTICAL RESULTS OF GROUNDWATER SAMPLES COLLECTED FROM MONITORING WELLS MW-1 THRU DMW-6 U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER	MONITORING WELL NUMBER						
	MW-1 3/15/96	MW-1 5/22/96	MW-2	MW-3	MW-4	MW-5	DMW-6 6/3/96
Benzene	6	11	BDL	BDL	BDL	BDL	BDL
Chloroform	BDL	BDL	BDL	BDL	BDL	BDL	5
Ethylbenzene	7	100	BDL	BDL	BDL	BDL	BDL
Toluene	140	500	BDL	BDL	BDL	BDL	BDL
Xylenes (Total)	200	1000	BDL	BDL	BDL	BDL	BDL
Total BTEX	353	1611	BDL	BDL	BDL	BDL	BDL

NOTES: All results reported in parts per billion (ppb) unless otherwise noted.
BDL = Below detection limits.
Total BTEX = Summation of benzene, toluene, ethylbenzene and xylenes (total).
Groundwater monitoring analyses for March 15, 1996 sampling event unless otherwise noted.


LEGEND
MW-2 MONITORING WELL NUMBER
BORING HOLE NUMBER
1 BENZENE CONCENTRATION (PPB)3-15-96
10 BENZENE CONCENTRATION (PPB)3-22-96
NS NOT SAMPLED
BDL BELOW DETECTION LIMIT
FENCE
N
MW-5
BDL
NS
CHAIN LINK FENCE
BDL
NS
MW-2
DMW-6
BDL
NS
6
11
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
BDL
NS
MW-4
LIMIT OF
EXCAVATION
BDL
NS
MW-3
0' 5' 10' 15'
SCALE FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-5
DRAWN BY:
DWG. NO:
REVISED BY:
BENZENE CONTAMINATION DISTRIBUTION MAP
3-15-96 AND 5-22-96
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

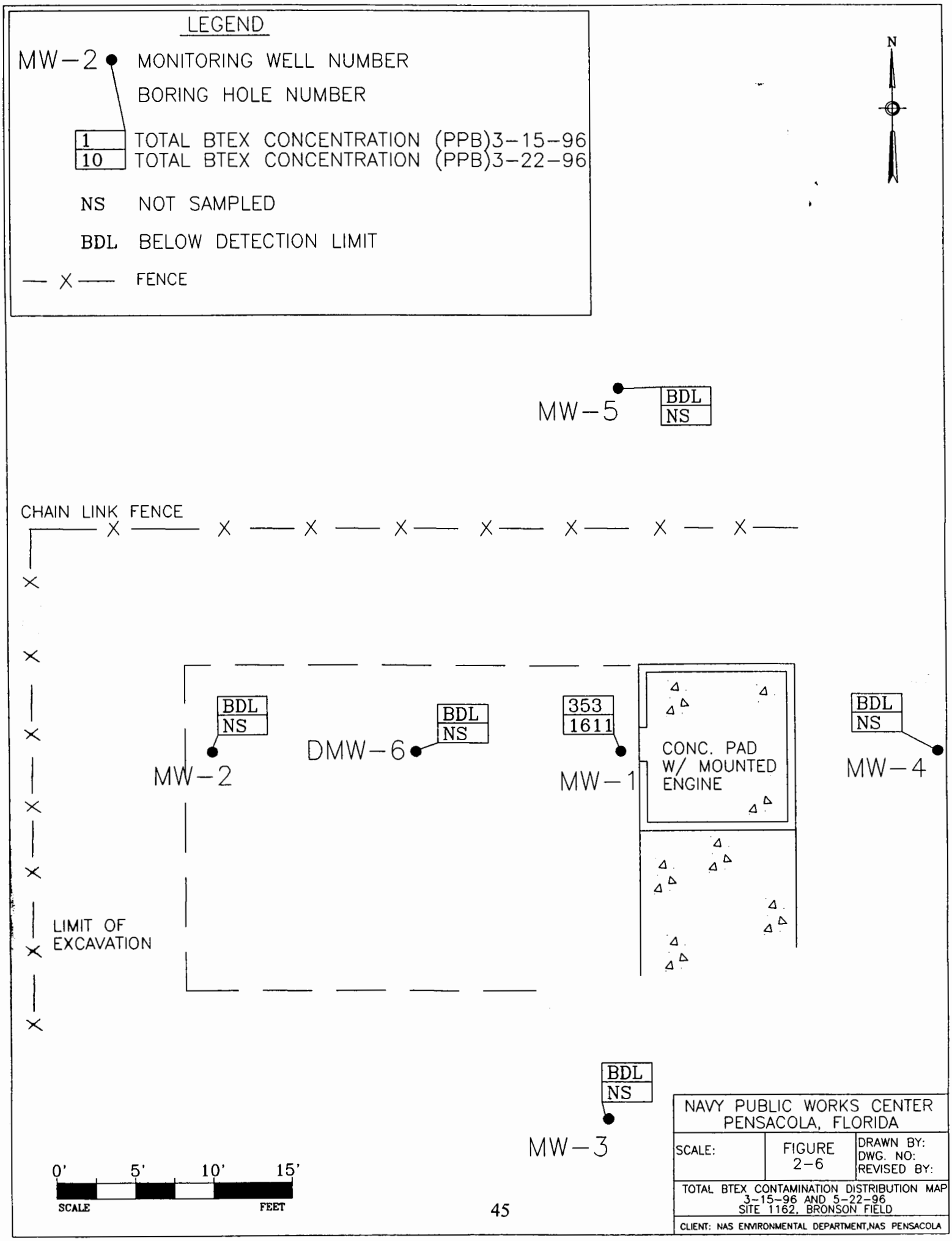
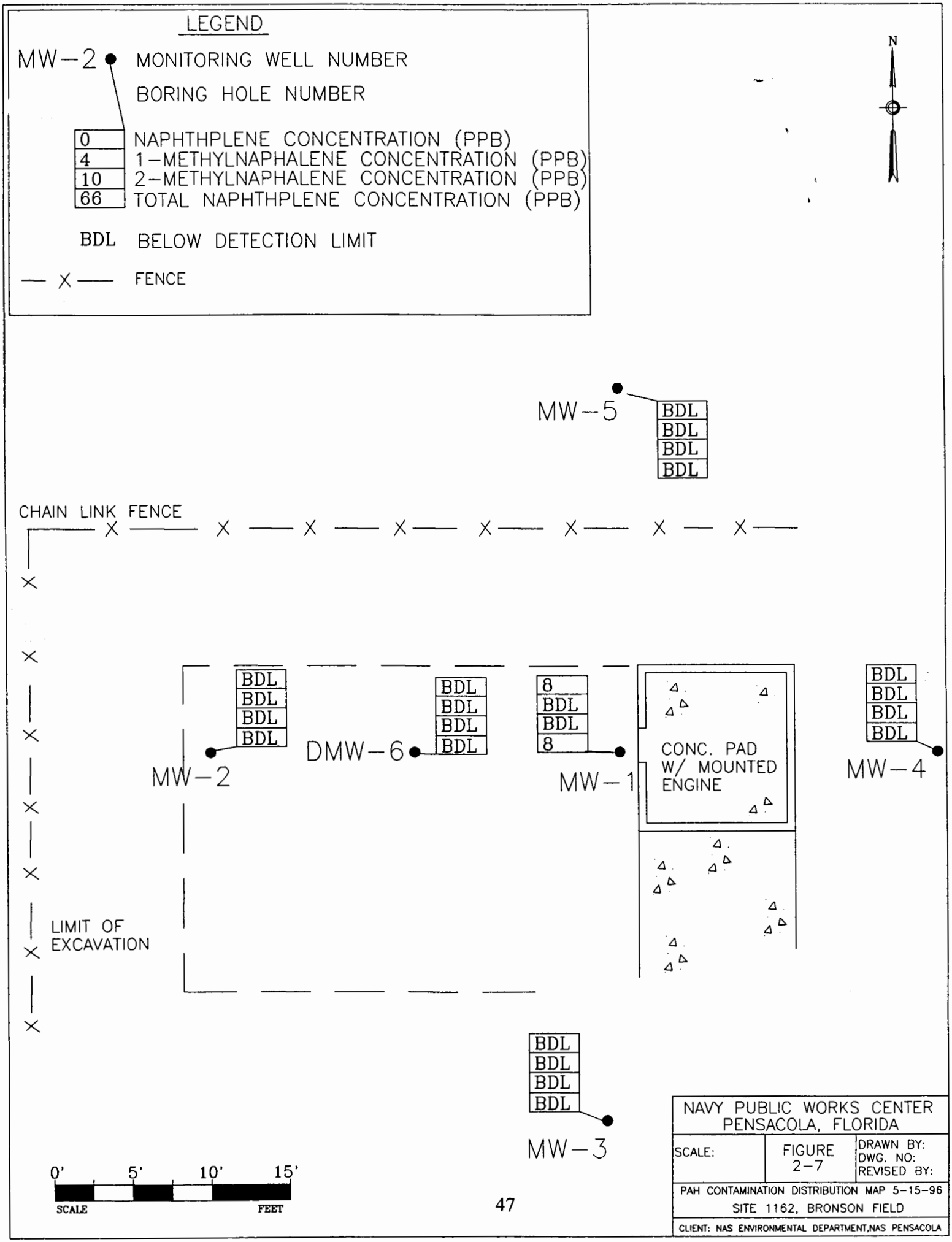

LEGEND
MW-2 MONITORING WELL NUMBER
BORING HOLE NUMBER
1 TOTAL BTEX CONCENTRATION (PPB)3-15-96
10 TOTAL BTEX CONCENTRATION (PPB)3-22-96
NS NOT SAMPLED
BDL BELOW DETECTION LIMIT
FENCE
N
MW-5
BDL
NS
CHAIN LINK FENCE
BDL
NS
MW-2
DMW-6
BDL
NS
353
1611
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
BDL
NS
MW-4
LIMIT OF
EXCAVATION
BDL
NS
MW-3
0' 5' 10' 15'
SCALE FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-6
DRAWN BY:
DWG. NO:
REVISED BY:
TOTAL BTEX CONTAMINATION DISTRIBUTION MAP
3-15-96 AND 5-22-96
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

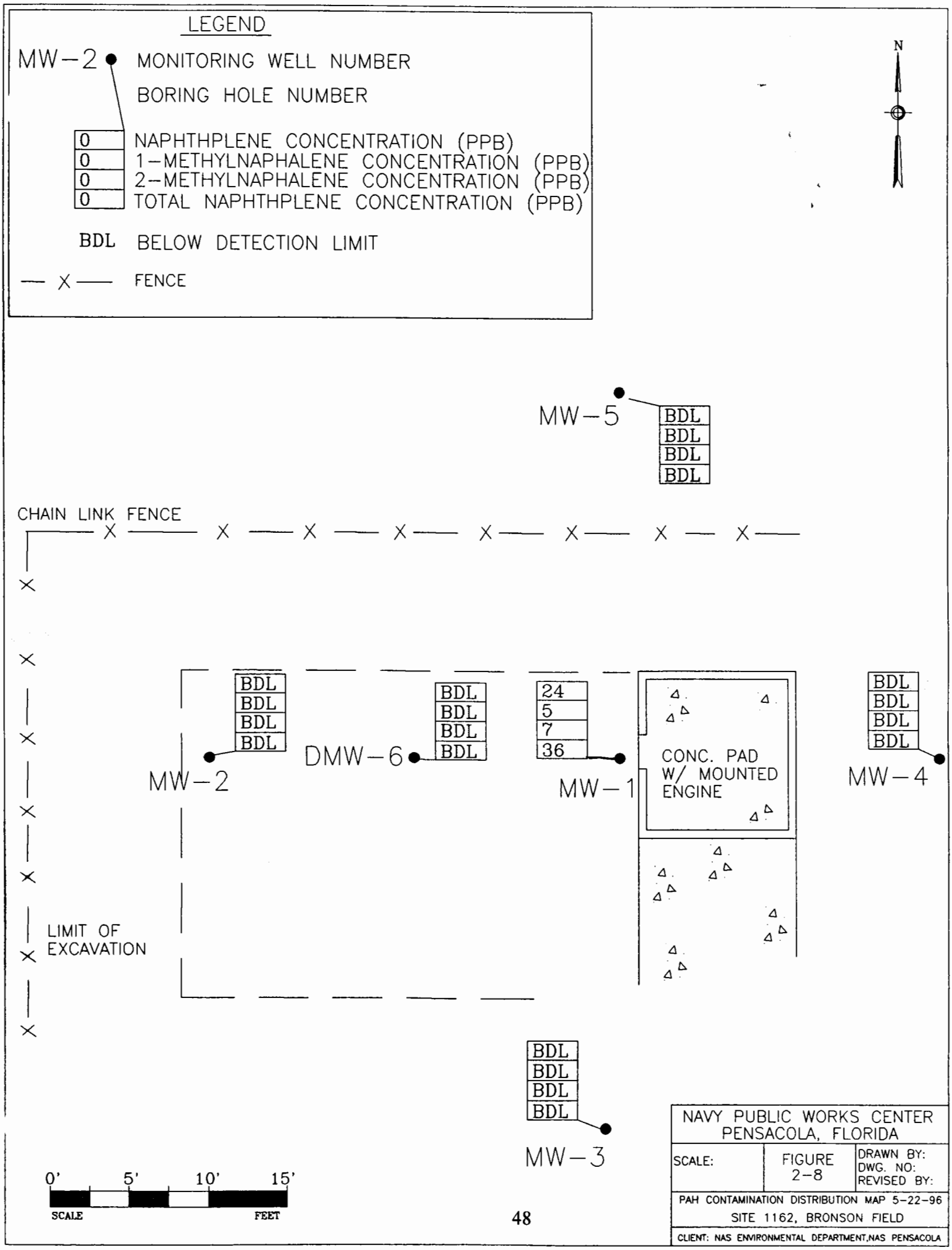
TABLE 2-4

SUMMARY OF PAH's
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELLS MW-1 THRU DMW-6
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER	MONITORING WELL NUMBER						
	MW-1 3/15/96	MW-1 5/22/96	MW-2	MW-3	MW-4	MW-5	DMW-6 6/3/96
Naphthalene	8	24	BDL	BDL	BDL	BDL	BDL
1-Methylnaphthalene	BDL	5	BDL	BDL	BDL	BDL	BDL
2-Methylnaphthlalene	BDL	7	BDL	BDL	BDL	BDL	BDL
TOTAL NAPHTHALENE	8	36	BDL	BDL	BDL	BDL	BDL

NOTES: BDL = Below detection limits.
All results reported in parts per billion (ppb) unless otherwise noted.
Groundwater monitoring analyses for March 15, 1996 sampling event unless otherwise noted.


LEGEND
MW-2
MONITORING WELL NUMBER
BORING HOLE NUMBER
0
4
10
66
NAPHTHPLENE CONCENTRATION (PPB)
1-METHYLNAPHALENE CONCENTRATION (PPB)
2-METHYLNAPHALENE CONCENTRATION (PPB)
TOTAL NAPHTHPLENE CONCENTRATION (PPB)
BDL
BELOW DETECTION LIMIT
FENCE
N
MW-5
BDL
BDL
BDL
BDL
CHAIN LINK FENCE
BDL
BDL
BDL
BDL
MW-2
BDL
BDL
BDL
BDL
DMW-6
8
BDL
BDL
8
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
BDL
BDL
BDL
BDL
MW-4
LIMIT OF
EXCAVATION
BDL
BDL
BDL
BDL
MW-3
0'
5'
10'
15'
SCALE
FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-7
DRAWN BY:
DWG. NO:
REVISED BY:
PAH CONTAMINATION DISTRIBUTION MAP 5-15-96
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA


LEGEND
MW-2
MONITORING WELL NUMBER
BORING HOLE NUMBER
0
0
0
0
NAPHTHPLENE CONCENTRATION (PPB)
1-METHYLNAPHALENE CONCENTRATION (PPB)
2-METHYLNAPHALENE CONCENTRATION (PPB)
TOTAL NAPHTHPLENE CONCENTRATION (PPB)
BDL
BELOW DETECTION LIMIT
FENCE
N
MW-5
BDL
BDL
BDL
BDL
CHAIN LINK FENCE
BDL
BDL
BDL
BDL
MW-2
DMW-6
BDL
BDL
BDL
BDL
24
5
7
36
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
BDL
BDL
BDL
BDL
MW-4
LIMIT OF
EXCAVATION
BDL
BDL
BDL
BDL
MW-3
0'
5'
10'
15'
SCALE
FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-8
DRAWN BY:
DWG. NO:
REVISED BY:
PAH CONTAMINATION DISTRIBUTION MAP 5-22-96
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

dibromide (EDB) was not detected in the groundwater samples collected from monitoring wells MW-1 thru MW-5 and vertical extent monitoring well DMW-6. A summary table of the TPH's, lead and EDB results is shown in Table 2-5. A TPH contamination distribution map is shown in Figure 2-9.

Mr. Jack Walters, Escambia County Utilities Authority (ECUA) chemist, was contacted on December 6, 1996 to inquire if any groundwater samples were collected from Bronson Field potable water wells designated east (Bldg 1162) and west (Bldg 1161) and analyzed for VOA's. He noted that potable water well east was sampled monthly and analyzed for VOA's since 1987. He noted that this potable water well was removed from service on June 1995. He noted that the only contaminant detected during this period was tetrachloroehtylene which ranged in concentration from 0.06 ppb to 1.19 ppb. Mr. Walters noted that Bronson Field potable water well west has been sampled monthly since 1987 and the samples were analyzed for VOA's. He noted that the only VOA's detected in the samples collected from this potable water well was also tetrachloroethylene which ranged in concentration from 0.7 ppb to 2 ppb. The maximum concentrations of tetrachloroethylene detected in both potable water wells at Bronson Field did not exceed the FDEP Groundwater Guidance Concentration of 3 ppb for tetrachloroehtylene. A copy of the memo summarizing the telephone conversation between Mr. Walters (ECUA) and Mr. Greg Campbell (PWC Environmental Department) is shown in Appendix E.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSIONS

- The source of the discharge has been eliminated and the approximate gallons of diesel fuel released is unknown.

- Initial remedial actions include the removal and proper disposal of approximately 50 cubic yards of contaminated soil.

- A total of 18 soil borings were installed to the groundwater table in order to delineate the extent of soil contamination. Soil samples were collected from each borehole at various depths and analyzed for VOC's using an OVA. The soil sample collected from borehole B3 at a depth of approximately 16' BLS was the only soil sample found to have a VOC concentration (160 ppm) above the FDEP target level of 50 ppm.

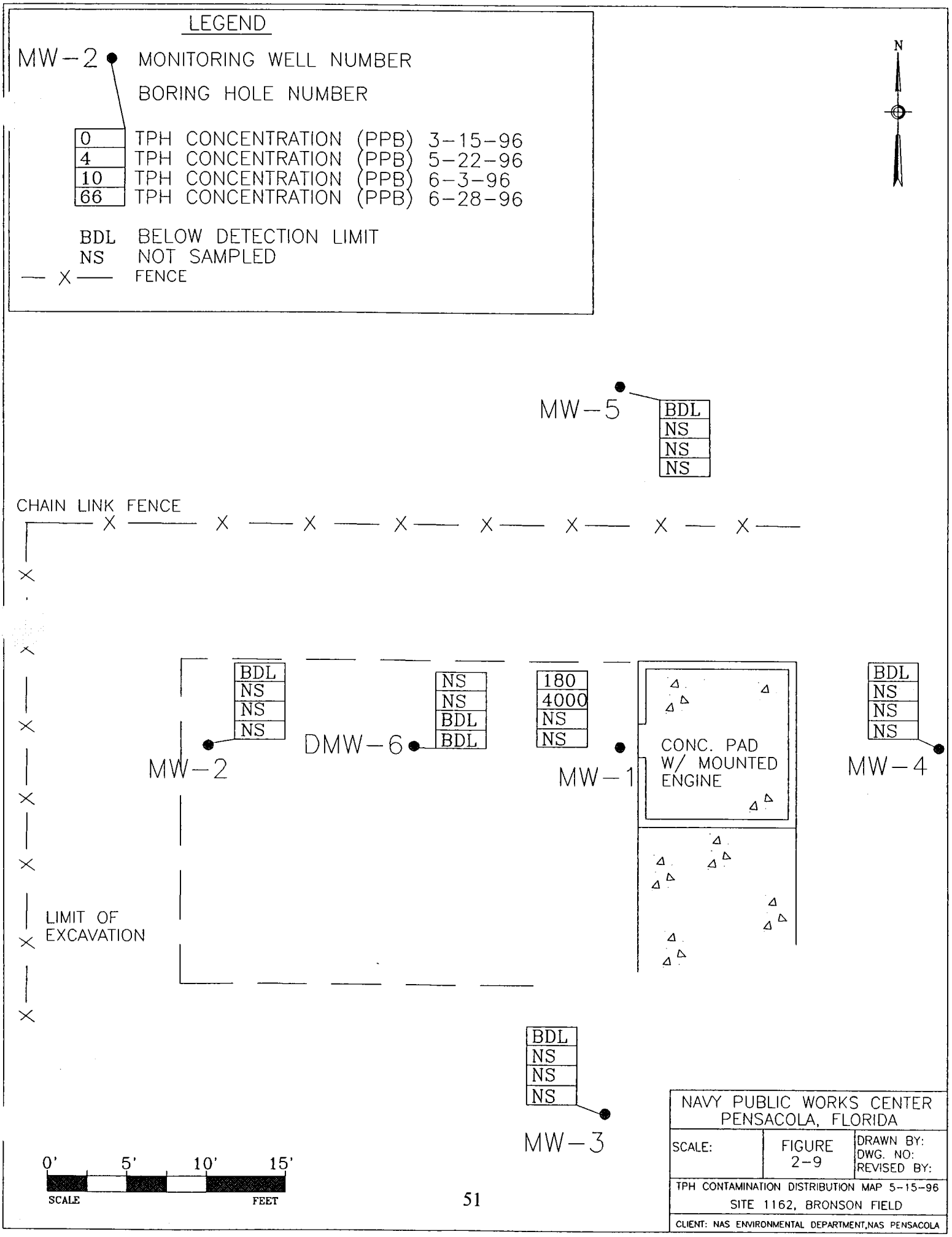
- Five shallow groundwater monitoring wells (MW-1 thru MW-5) and one vertical extent groundwater monitoring well (DMW-6) were installed at the site and groundwater samples were collected from each well and analyzed for the kerosene analytical group listed in FDEP Rule 62-770.600(8)(b).

- No free-phase petroleum hydrocarbons were detected in any of the monitoring wells.

TABLE 2-5
SUMMARY OF TPH's, LEAD, AND EDB
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELLS MW-1 THRU DMW-6
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1162

PARAMETER	DATE	MONITORING WELL NUMBER					
		MW-1	MW-2	MW-3	MW-4	MW-5	DMW-6
TPH	3/15/96	180	BDL	BDL	BDL	BDL	NS
TPH	5/22/96	4000	NS	NS	NS	NS	NS
TPH	6/3/96	NS	NS	NS	NS	NS	BDL
TPH	6/28/96	NS	NS	NS	NS	NS	BDL
Lead	5/16/96	110	BDL	BDL	BDL	BDL	BDL
EDB	3/15/96	BDL	BDL	BDL	BDL	BDL	NS
EDB	6/3/96	NS	NS	NS	NS	NS	BDL

NOTES: All results reported in parts per billion (ppb) unless otherwise noted.
Groundwater monitoring analyses for sampling events on dates noted.
BDL = Below detection limits.
NS = Not Sampled
TPH = Total Petroleum Hydrocarbons.


LEGEND
MW-2 MONITORING WELL NUMBER
BORING HOLE NUMBER
0 TPH CONCENTRATION (PPB) 3-15-96
4 TPH CONCENTRATION (PPB) 5-22-96
10 TPH CONCENTRATION (PPB) 6-3-96
66 TPH CONCENTRATION (PPB) 6-28-96
BDL BELOW DETECTION LIMIT
NS NOT SAMPLED
FENCE
N
MW-5
BDL
NS
NS
NS
CHAIN LINK FENCE
BDL
NS
NS
NS
MW-2
NS
NS
BDL
BDL
DMW-6
180
4000
NS
NS
MW-1
CONC. PAD
W/ MOUNTED
ENGINE
BDL
NS
NS
NS
MW-4
LIMIT OF
EXCAVATION
BDL
NS
NS
NS
MW-3
0' 5' 10' 15'
SCALE FEET
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE
2-9
DRAWN BY:
DWG. NO:
REVISED BY:
TPH CONTAMINATION DISTRIBUTION MAP 5-15-96
SITE 1162, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

- Groundwater depths measured in monitoring wells MW-1 thru MW-5 on March 15, 1996 indicate the groundwater flow direction at the site to be toward the southwest.

- The average estimated horizontal hydraulic conductivity at the site is 0.6130 ft/day.

- The average estimated linear groundwater flow velocity at the site is 0.0 088 ft/day (3.201ft/yr).

- Two potable water wells are located within a quarter mile radius of the site. Tetrachloroethlene was detected in the groundwater samples collected monthly since 1987 at concentrations below the FDEP Groundwater Guidance Concentration for tetrachloroethylene (3 ppb).

- No kerosene analytical group parameters identified in FDEP Rule 62-770.600(8)(b) were detected in the groundwater samples collected from monitoring wells MW-2 thru MW-5.

- Chloroform was the only parameter detected in vertical extent monitoring well DMW-6.

- Monitoring well MW-1 exceeded the FDEP target levels for benzene, total BTEX, individual PAH's, total naphthalenes and lead.

3.2 RECOMMENDATIONS

Based upon the findings and conclusions of this contamination assessment a No Further Action (NFA) proposal is recommended for the soil and a Monitoring Only (MO) plan is recommended for the groundwater. The MO plan for the groundwater is proposed as follows:

(1) Monitoring wells MW-1, MW-2 and MW-4 be sampled and analyzed for VOA's by EPA method 602 and PAH's by EPA method 610, quarterly for one year.

(2) Monitoring well MW-1, which had the only petroleum hydrocarbon concentration, is considered the source monitoring well. Monitoring well MW-4 and MW-2 are considered the upgradient and downgradient monitoring wells, respectively.

4.0 PROFESSIONAL REVIEW CERTIFICATION

The Contamination Assessment contained in this report was prepared using sound, hydrogeologic principles and judgement. This assessment is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are determined to exist that differ from those described, the undersigned engineer should be notified to evaluate the effects of any additional information on the assessment described in this report. This Contamination Assessment Report was developed for U.S. Navy Outlying Landing Field (OLF) Bronson, Site 1162, Pensacola, Florida, and should not be construed to apply to any other site.

Gregory Allen Campbell

G. A. Campbell
Professional Engineer
P.E. No. 38572

12/16/96
Date

5.0 REFERENCES

Naval Energy and Environmental Support Activity, Port Hueneme, California, Preliminary Assessment Report of Outlying Landing Field (OLF) Bronson, Escambia County, Florida, January 1991.

APPENDICES

APPENDIX A

MONITORING WELL CONSTRUCTION DIAGRAMS

W.E.S., Inc.
Environmental Division

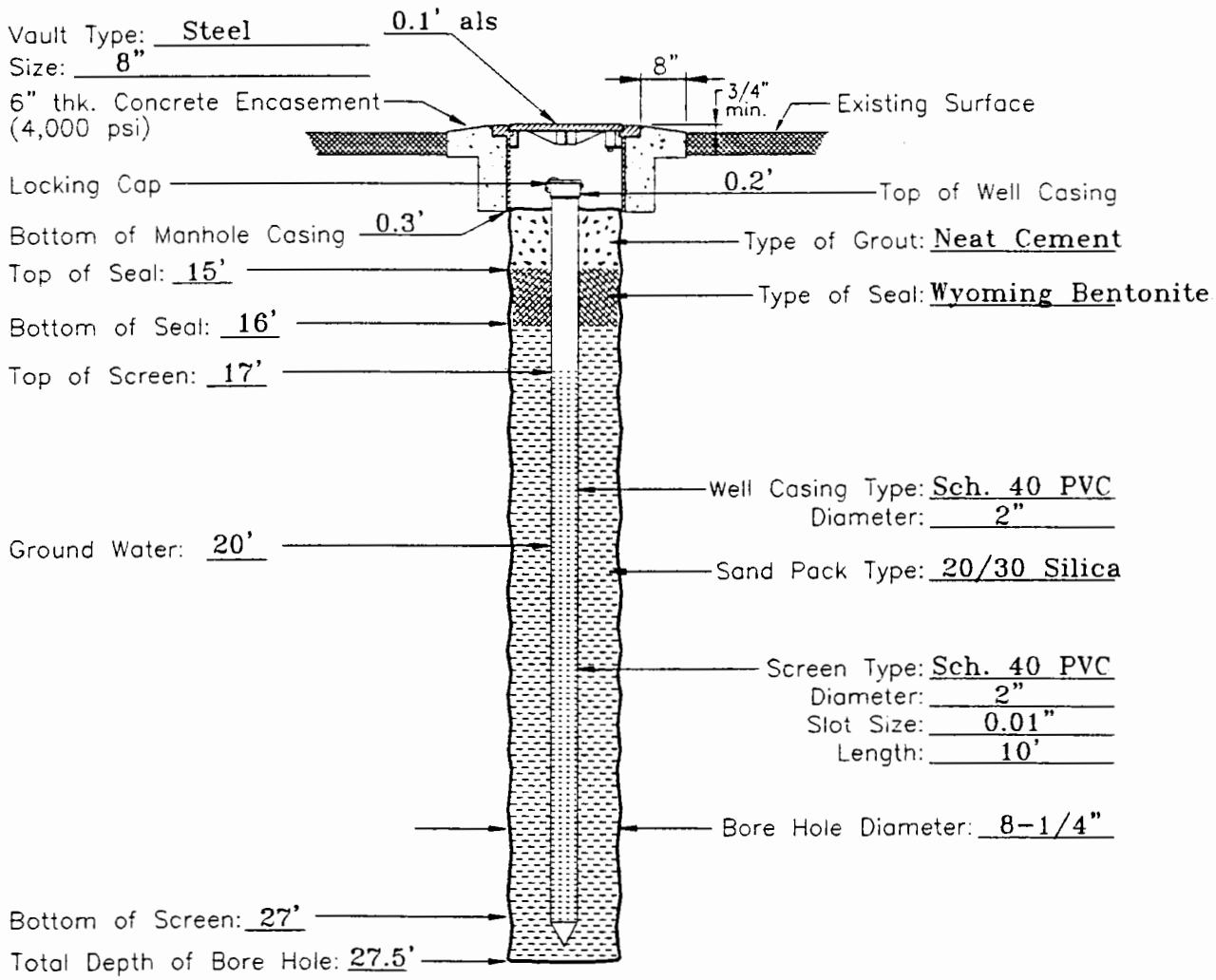
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Cloyd Griffey
WELL NUMBER: MW-1

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/7/96 Finish: 3/7/96
TIME Start: 0815 Finish: 0900

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

W.E.S., Inc.
Environmental Division

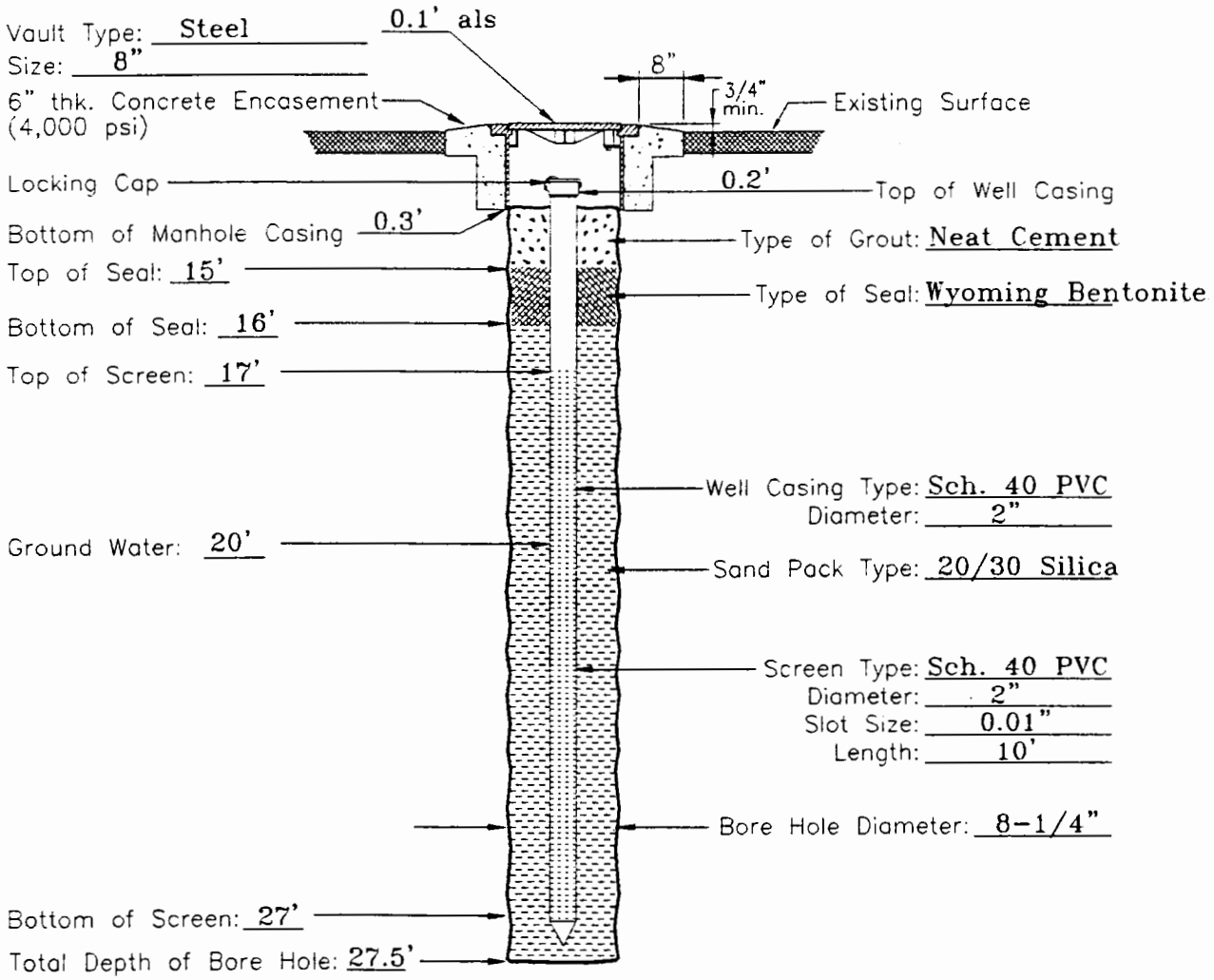
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Cloyd Griffey
WELL NUMBER: MW-2

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/7/96 Finish: 3/7/96
TIME Start: 0900 Finish: 0945

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951126.1143

W.E.S., Inc.
Environmental Division

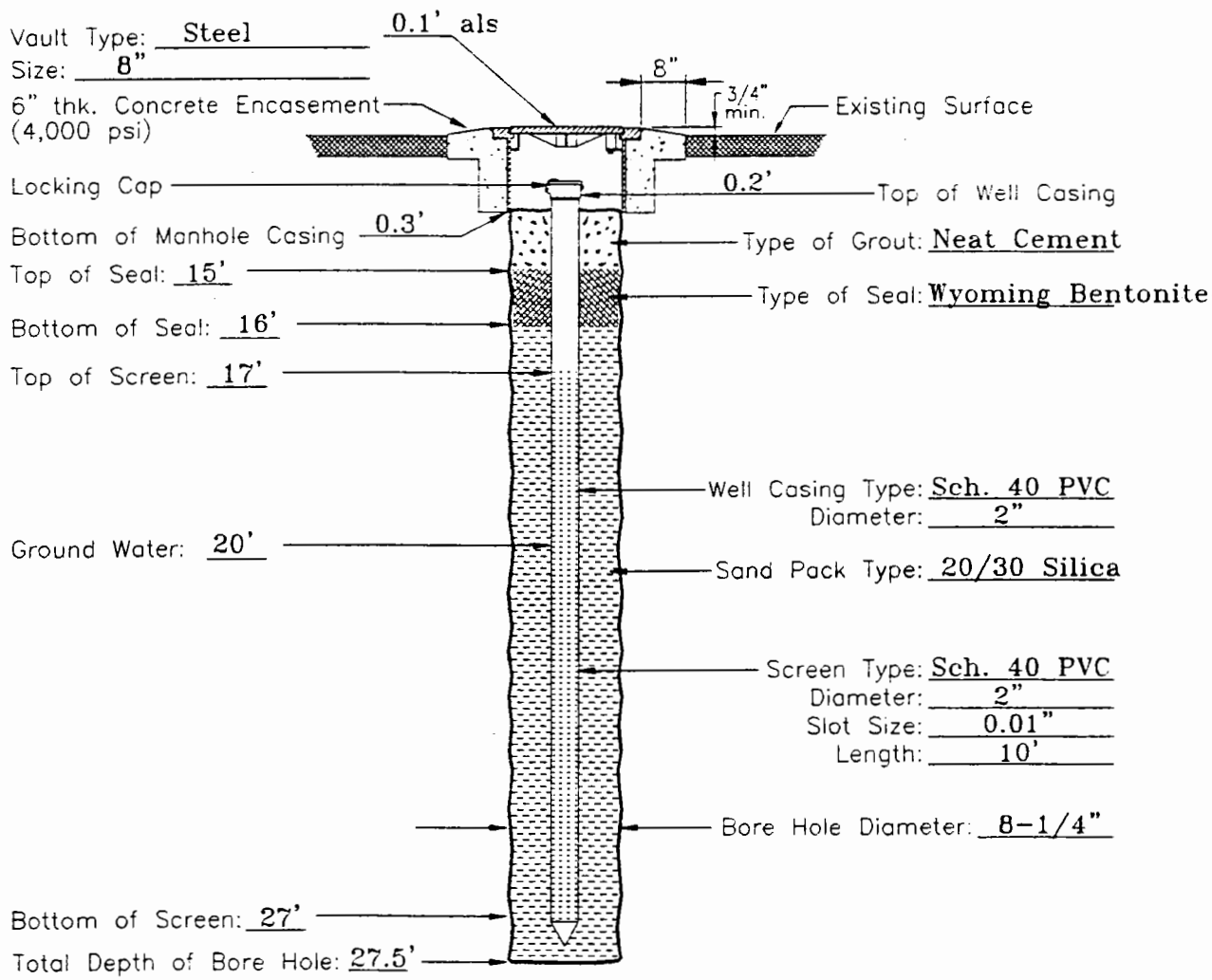
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Cloyd Griffey
WELL NUMBER: MW-3

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/7/96 Finish: 3/7/96
TIME Start: 0945 Finish: 1030

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

W.E.S., Inc.
Environmental Division

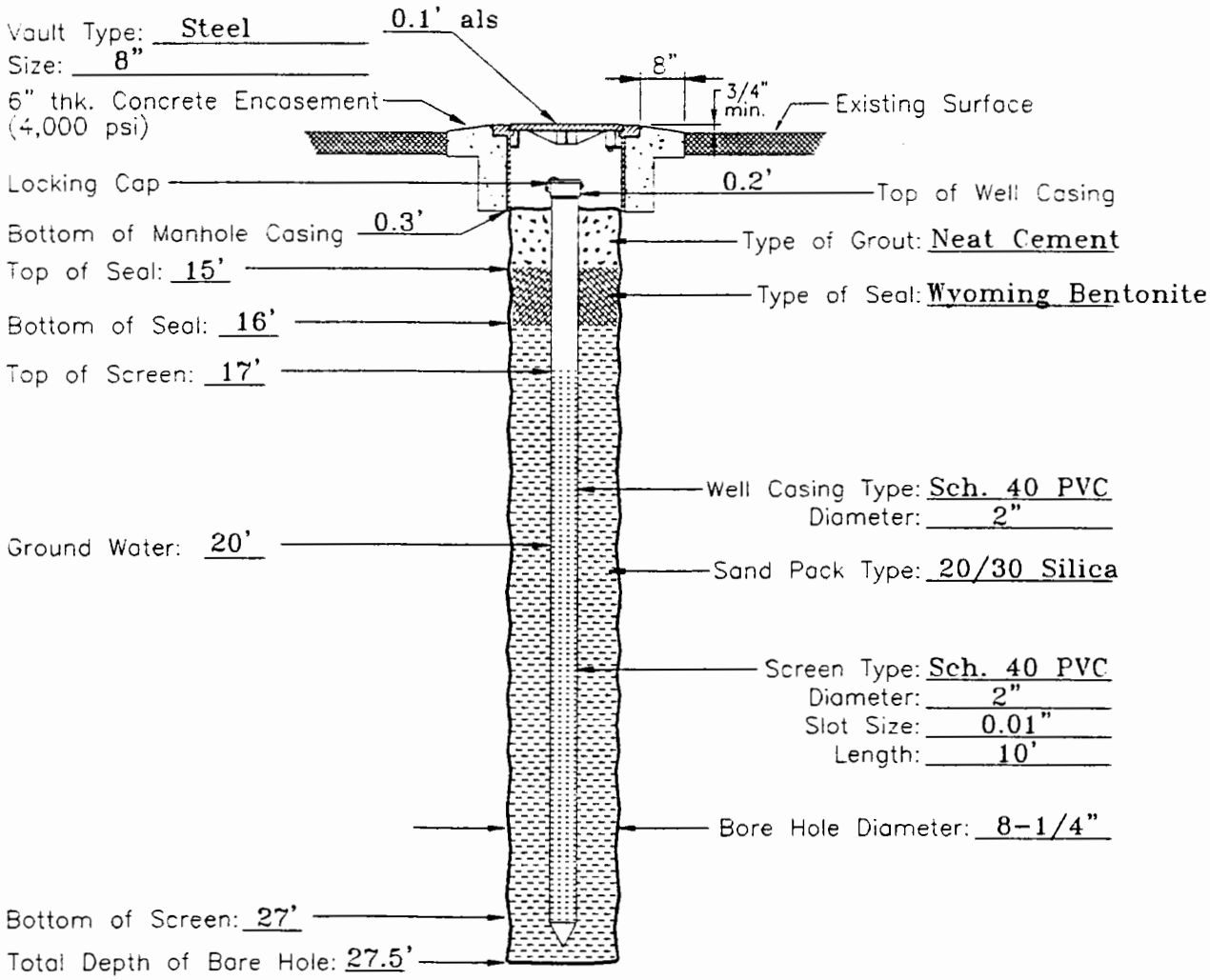
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Cloyd Griffey
WELL NUMBER: MW-4

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/7/96 Finish: 3/7/96
TIME Start: 1130 Finish: 1215

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

W.E.S., Inc.
Environmental Division

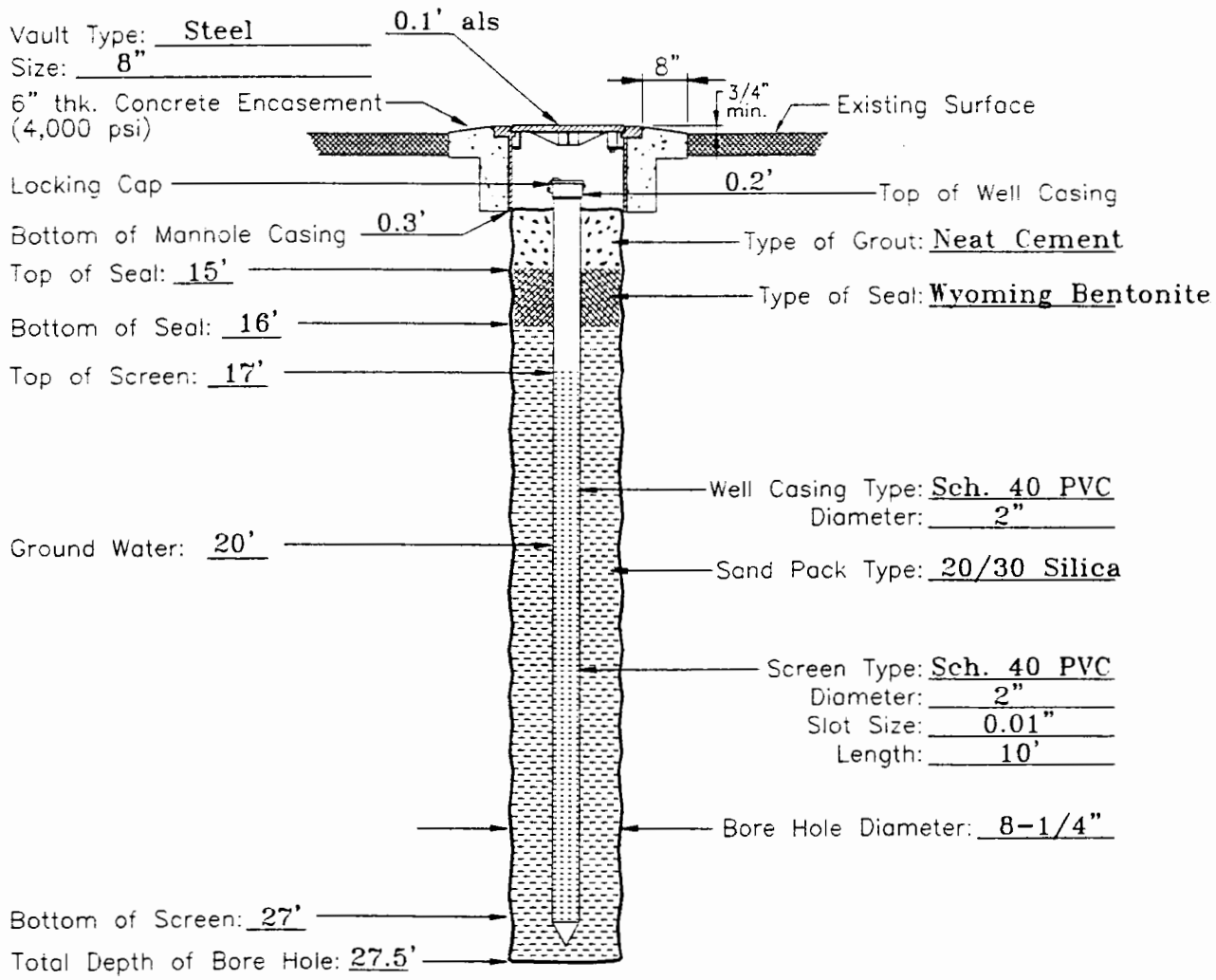
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Cloyd Griffey
WELL NUMBER: MW-5

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/7/96 Finish: 3/7/96
TIME Start: 1215 Finish: 1300

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

W.E.S., Inc.
Environmental Division

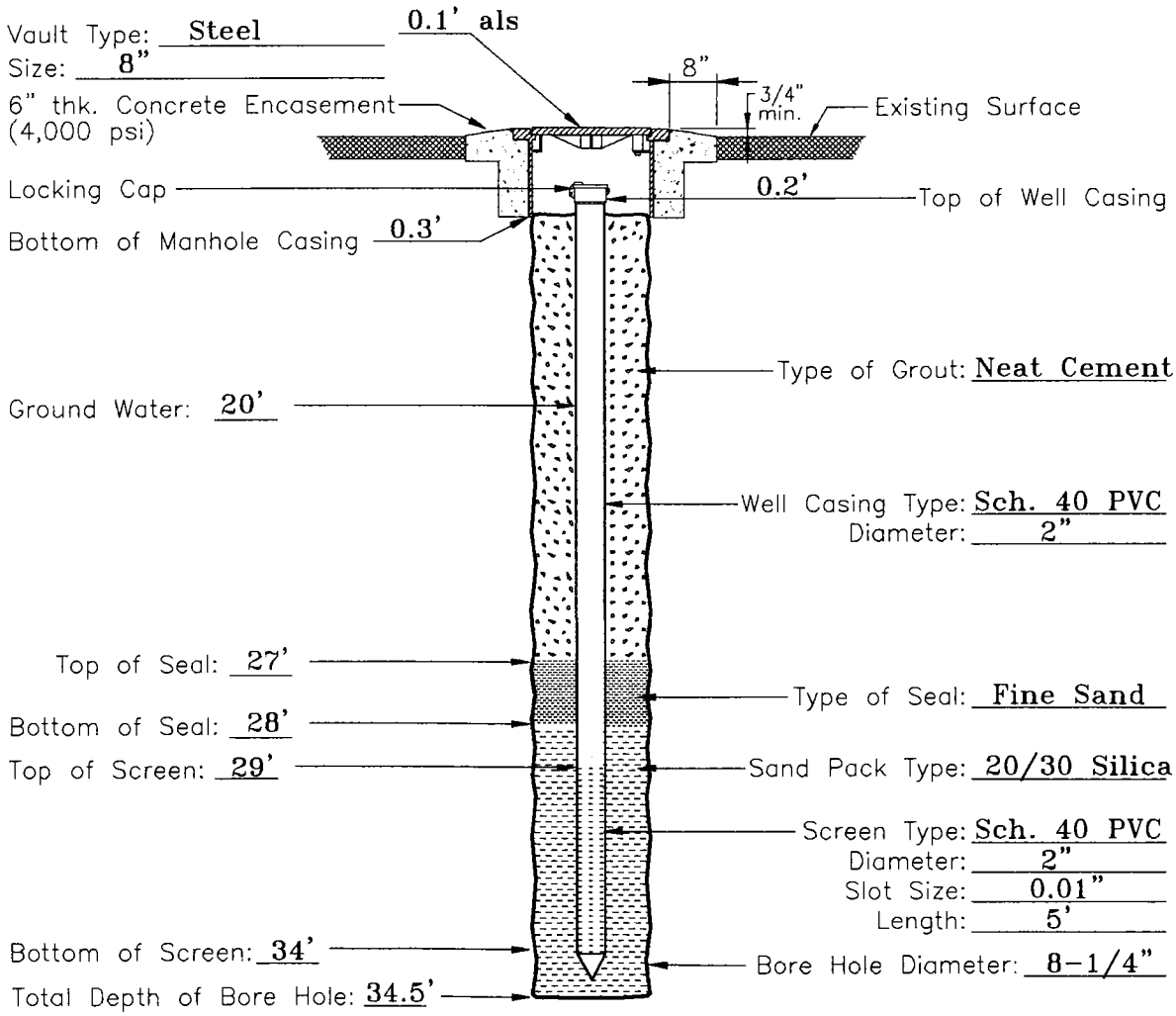
VERTICAL EXTENT
MONITOR WELL CONSTRUCTION DETAIL

6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

LOGGED BY: Patrick J. Brown
DRILLING CONTRACTOR: S. FL Test & Dr.
DRILLER'S NAME: Craig Griffey
WELL NUMBER: DMW-6

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1162, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 5/09/96 Finish: 5/09/96
TIME Start: 1045 Finish: 1215

COMMENTS: (Lost circulation interval, Water level changes, Hole collapse interval, etc.):



NOTE: DEPTHS SHOWN ARE BELOW LAND SURFACE (B.L.S.)

DRAWING ABOVE IS NOT TO SCALE

CAD FILE @STA3> C:\ACADR13\MW-DETL1.DWG STA3-19951128.1143

APPENDIX B

SLUG TEST DATA, GRAPHS, AND CALCULATIONS

W.E.S., Inc.

October 31, 1996

Slug Test/Aquifer Parameter Evaluation
Bronson Field, Site 1116
as performed on September 11, 1996.
Contract No. N65114-95-D-2126
Delivery Order No. 0027

A single well recovery test (slug test) was performed on Monitor Well No. 3 of Site 1116, located at Bronson Field, in Pensacola, Florida. Single well recovery tests involve the displacement of a known volume of water in a well and measuring the resulting change in hydraulic head over time until the water stabilized to its initial level. The water level measurements were made with a pressure transducer and recorded on a Thor Environmental Data Logger.

The calculation of hydraulic conductivity was based on the assumptions presented by Bouwer and Rice (1976). The well is assumed to be partially penetrating (That is, the saturated aquifer thickness is greater than the saturated monitor well screen length).

The movement of contaminants in a groundwater system depends, in part, on the flow characteristics of the aquifer beneath the site. In order to evaluate the flow characteristics, the following parameters were calculated: 1) hydraulic conductivity, 2) average linear flow velocity, and 3) transmissivity (effective soil porosity).

The relative ability of a porous medium to transmit fluid is measured by the hydraulic conductivity, a function of both the aquifer material and the fluid (Freeze and Cheery, 1979). Hydraulic Conductivity (K) values for the shallow saturated deposits were estimated from the single well recovery test (slug test) conducted on MW-3. The hydraulic conductivity calculations and field data from the single well slug test are presented following the text portion of this report. The hydraulic conductivity (K) in MW-3 at Bronson Field's Site No. 1116 Well No. 3 is calculated at 0.0004791 ft/min., or 0.6899 ft/day.

The average hydraulic gradient for this site was calculated at 0.0025 ft/ft. This value was derived utilizing existing groundwater elevation data from the site.

Therefore, using a hydraulic gradient of 0.0025, the hydraulic conductivity value obtained from the single well slug test (0.6899 ft/day) and an assumed effective porosity of 0.25, the average linear groundwater flow velocity was estimated to be 0.0069 ft/day (2.5181 ft per year), using the following formula:

$$V = \frac{Ki}{n}$$

where:
V = average linear flow velocity
K = hydraulic conductivity
i = gradient
n = effective soil porosity

These values should be viewed as an approximation only. The slug tests provide hydraulic conductivity values only for the materials immediately adjacent to the tested well screen. Although the calculated

• Corporate Headquarters •
6389 Tower Lane • Sarasota, Florida 34240 • (941) 371-7617 • Fax (941) 378-5218
• Web Site: http://www.wesinc.com/water

groundwater flow velocity may be used as an approximation of the rate of contaminant migration in water, the method does not account for hydrodynamic dispersion, chemical sorption, or degradation, which are factors affecting contaminant velocity.

Sincerely,

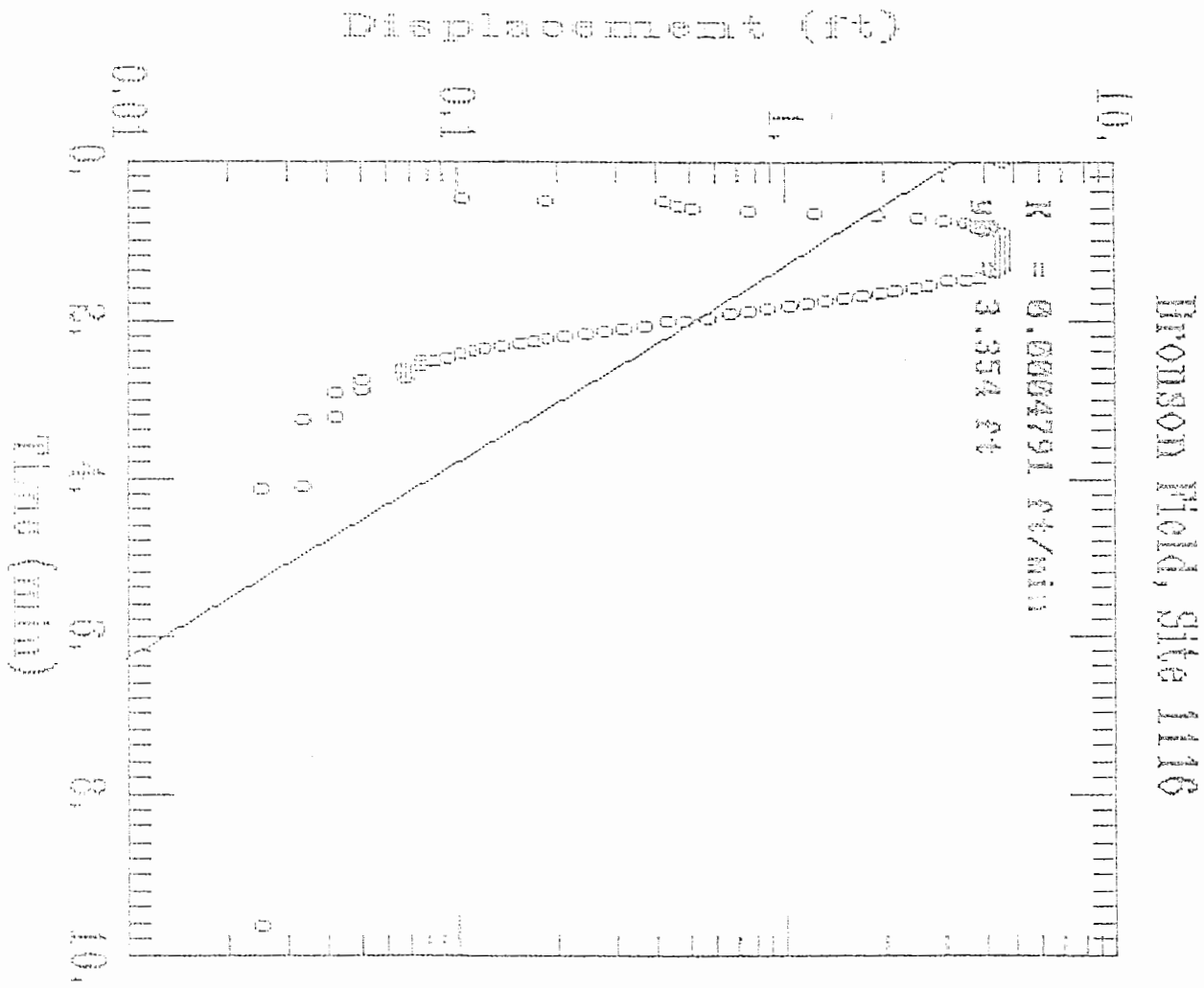
W.E.S., Inc.
Environmental Division

Patrick J. Brown
Staff Geologist

Michael J. Walsh, P.G.
Project Administrator

cc: File

g:\clients\nas-pen\slgtst\ty150.doc


Displacement (ft)
0.01
0.1
1
10
Time (min)
0
2
4
6
8
10
K = 0.0004791 ft/min
3.354 ft
Bronson Field, Site 1116

S/N SDEE-03A-SN-3098 Block 1

Program: STEP TEST
Readings: 290
Start Time: 13:22:04
Start Date: 09/11
Range: 0013 PSI
Channels: 1
Units: Ft-H2O

Step 1
Interval 00:00:02
Readings 300

Time	Chnl 1						
0.00	+6.4552	1.13	+1.8926	2.27	+6.2663	3.40	+6.4214
0.03	+6.4552	1.17	+1.8926	2.30	+6.3032	3.43	+6.4214
0.07	+6.4552	1.20	+1.8842	2.33	+6.3200	3.47	+6.4214
0.10	+6.4552	1.23	+1.8926	2.37	+6.3369	3.50	+6.4214
0.13	+6.4552	1.27	+1.9010	2.40	+6.3454	3.53	+6.4214
0.17	+6.4552	1.30	+1.8926	2.43	+6.3538	3.57	+6.4214
0.20	+6.4552	1.33	+1.9010	2.47	+6.3623	3.60	+6.4214
0.23	+6.4552	1.37	+1.9010	2.50	+6.3707	3.63	+6.4214
0.27	+6.4552	1.40	+1.9686	2.53	+6.3792	3.67	+6.4214
0.30	+6.4552	1.43	+2.1630	2.57	+6.3792	3.70	+6.4214
0.33	+6.4552	1.47	+2.5263	2.60	+6.3876	3.73	+6.4214
0.37	+6.4552	1.50	+2.9572	2.63	+6.3876	3.77	+6.4214
0.40	+6.4552	1.53	+3.3290	2.67	+6.3961	3.80	+6.4214
0.43	+6.4552	1.57	+3.7008	2.70	+6.3961	3.83	+6.4214
0.47	+6.3538	1.60	+3.9965	2.73	+6.3961	3.87	+6.4214
0.50	+6.2694	1.63	+4.2838	2.77	+6.4045	3.90	+6.4214
0.53	+6.0328	1.67	+4.5288	2.80	+6.4045	3.93	+6.4214
0.57	+5.9905	1.70	+4.7316	2.83	+6.4045	3.97	+6.4214
0.60	+5.9314	1.73	+4.9597	2.87	+6.4045	4.00	+6.4214
0.63	+5.6948	1.77	+5.1371	2.90	+6.4045	4.03	+6.4214
0.67	+5.2385	1.80	+5.2977	2.93	+6.4130	4.07	+6.4214
0.70	+4.5795	1.83	+5.4329	2.97	+6.4130	4.10	+6.4214
0.73	+3.9373	1.87	+5.5765	3.00	+6.4130	4.13	+6.4299
0.77	+3.4557	1.90	+5.6863	3.03	+6.4130	4.17	+6.4299
0.80	+2.9857	1.93	+5.7877	3.07	+6.4130	4.20	+6.4299
0.83	+2.7544	1.97	+5.8807	3.10	+6.4130	4.23	+6.4299
0.87	+2.6023	2.00	+5.9567	3.13	+6.4130	4.27	+6.4299
0.90	+2.2844	2.03	+6.0243	3.17	+6.4130	4.30	+6.4299
0.93	+1.8842	2.07	+6.0835	3.20	+6.4130	4.33	+6.4299
0.97	+1.8842	2.10	+6.1342	3.23	+6.4130	4.37	+6.4299
1.00	+1.8842	2.13	+6.1764	3.27	+6.4214	4.40	+6.4299
1.03	+1.8842	2.17	+6.2102	3.30	+6.4214	4.43	+6.4299
1.07	+1.8926	2.20	+6.2440	3.33	+6.4214	4.47	+6.4299
1.10	+1.9010	2.23	+6.2694	3.37	+6.4214	4.50	+6.4299

S/N SDEE-03A-SN-3098 Block 1

Program: STEP TEST
Readings: 290
Start Time: 13:22:04
Start Date: 09/11
Range: 0015 PSI
Channels: 1
Units: Ft-H2O

Step 1
Interval 00:00:02
Readings 300

Time	Chnl 1						
4.53	+6.4299	5.67	+6.4299	6.80	+6.4299	7.93	+6.4299
4.57	+6.4299	5.70	+6.4299	6.83	+6.4299	7.97	+6.4299
4.60	+6.4299	5.73	+6.4299	6.87	+6.4299	8.00	+6.4299
4.63	+6.4299	5.77	+6.4299	6.90	+6.4299	8.03	+6.4299
4.67	+6.4299	5.80	+6.4299	6.93	+6.4299	8.07	+6.4299
4.70	+6.4299	5.83	+6.4299	6.97	+6.4299	8.10	+6.4299
4.73	+6.4299	5.87	+6.4299	7.00	+6.4299	8.13	+6.4299
4.77	+6.4299	5.90	+6.4299	7.03	+6.4299	8.17	+6.4299
4.80	+6.4299	5.93	+6.4299	7.07	+6.4299	8.20	+6.4299
4.83	+6.4299	5.97	+6.4299	7.10	+6.4299	8.23	+6.4299
4.87	+6.4299	6.00	+6.4299	7.13	+6.4299	8.27	+6.4299
4.90	+6.4299	6.03	+6.4299	7.17	+6.4299	8.30	+6.4299
4.93	+6.4299	6.07	+6.4299	7.20	+6.4299	8.33	+6.4299
4.97	+6.4299	6.10	+6.4299	7.23	+6.4299	8.37	+6.4299
5.00	+6.4299	6.13	+6.4299	7.27	+6.4299	8.40	+6.4299
5.03	+6.4299	6.17	+6.4299	7.30	+6.4299	8.43	+6.4299
5.07	+6.4299	6.20	+6.4299	7.33	+6.4299	8.47	+6.4299
5.10	+6.4299	6.23	+6.4299	7.37	+6.4299	8.50	+6.4299
5.13	+6.4299	6.27	+6.4299	7.40	+6.4299	8.53	+6.4299
5.17	+6.4299	6.30	+6.4299	7.43	+6.4299	8.57	+6.4299
5.20	+6.4299	6.33	+6.4299	7.47	+6.4299	8.60	+6.4299
5.23	+6.4299	6.37	+6.4299	7.50	+6.4299	8.63	+6.4299
5.27	+6.4299	6.40	+6.4299	7.53	+6.4299	8.67	+6.4299
5.30	+6.4299	6.43	+6.4299	7.57	+6.4299	8.70	+6.4299
5.33	+6.4299	6.47	+6.4299	7.60	+6.4299	8.73	+6.4299
5.37	+6.4299	6.50	+6.4299	7.63	+6.4299	8.77	+6.4299
5.40	+6.4299	6.53	+6.4299	7.67	+6.4299	8.80	+6.4299
5.43	+6.4299	6.57	+6.4299	7.70	+6.4299	8.83	+6.4299
5.47	+6.4299	6.60	+6.4299	7.73	+6.4299	8.87	+6.4299
5.50	+6.4299	6.63	+6.4299	7.77	+6.4299	8.90	+6.4299
5.53	+6.4299	6.67	+6.4299	7.80	+6.4299	8.93	+6.4299
5.57	+6.4299	6.70	+6.4299	7.83	+6.4299	8.97	+6.4299
5.60	+6.4299	6.73	+6.4299	7.87	+6.4299	9.00	+6.4299
5.63	+6.4299	6.77	+6.4299	7.90	+6.4299	9.03	+6.4299

S/N SDEE-03A-SN-3098 Block 1

Program: STEP TEST
Readings: 290
Start Time: 13:22:04
Start Date: 09/11
Range: 0015 PSI
Channels: 1
Units: Ft-H2O

Step 1
Interval 00:00:02
Readings 300

Time	Chnl 1				
7.97	+6.4299	9.10	+6.4299	9.60	+6.4299
8.00	+6.4299	8.50	+6.4299	9.63	+6.4299
8.03	+6.4299	8.53	+6.4299	test 1 aborted at Step 1	
8.07	+6.4299	8.57	+6.4299		
8.10	+6.4299	8.60	+6.4299		
8.13	+6.4299	8.63	+6.4299		
8.17	+6.4299	8.67	+6.4299		
8.20	+6.4299	8.70	+6.4299		
8.23	+6.4299	8.73	+6.4299		
8.27	+6.4299	8.77	+6.4299		
8.30	+6.4299	8.80	+6.4299		
8.33	+6.4299	8.83	+6.4299		
8.37	+6.4299	8.87	+6.4299		
8.40	+6.4299	8.90	+6.4299		
8.43	+6.4299	8.93	+6.4299		
8.47	+6.4299	8.97	+6.4299		
8.50	+6.4299	9.00	+6.4299		
8.53	+6.4299	9.03	+6.4299		
8.57	+6.4299	9.07	+6.4299		
8.60	+6.4299	9.10	+6.4299		
8.63	+6.4299	9.13	+6.4299		
8.67	+6.4299	9.17	+6.4299		
8.70	+6.4299	9.20	+6.4299		
8.73	+6.4299	9.23	+6.4299		
8.77	+6.4299	9.27	+6.4299		
8.80	+6.4299	9.30	+6.4299		
8.83	+6.4299	9.33	+6.4299		
8.87	+6.4299	9.37	+6.4299		
8.90	+6.4299	9.40	+6.4299		
8.93	+6.4299	9.43	+6.4299		
8.97	+6.4299	9.47	+6.4299		
9.00	+6.4299	9.50	+6.4299		
9.03	+6.4299	9.53	+6.4299		
9.07	+6.4299	9.57	+6.4299		

W.E.S., Inc.

October 31, 1996

Slug Test/Aquifer Parameter Evaluation
Bronson Field, Site 1122
as performed on September 11, 1996.
Contract No. N65114-95-D-2126
Delivery Order No. 0027

A single well recovery test (slug test) was performed on Monitor Well No. 5 of Site 1122, located at Bronson Field, in Pensacola, Florida. Single well recovery tests involve the displacement of a known volume of water in a well and measuring the resulting change in hydraulic head over time until the water stabilized to its initial level. The water level measurements were made with a pressure transducer and recorded on a Thor Environmental Data Logger.

The calculation of hydraulic conductivity was based on the assumptions presented by Bouwer and Rice (1976). The well is assumed to be partially penetrating (That is, the saturated aquifer thickness is greater than the saturated monitor well screen length).

The movement of contaminants in a groundwater system depends, in part, on the flow characteristics of the aquifer beneath the site. In order to evaluate the flow characteristics, the following parameters were calculated: 1) hydraulic conductivity, 2) average linear flow velocity, and 3) transmissivity (effective soil porosity).

The relative ability of a porous medium to transmit fluid is measured by the hydraulic conductivity, a function of both the aquifer material and the fluid (Freeze and Cheery, 1979). Hydraulic Conductivity (K) values for the shallow saturated deposits were estimated from the single well recovery test (slug test) conducted on MW-5. The hydraulic conductivity calculations and field data from the single well slug test are presented following the text portion of this report. The hydraulic conductivity (K) in MW-5 at Bronson Field's Site No. 1122 Well No. 5 is calculated at 0.000123 ft/min., or 0.1771 ft/day.

The average hydraulic gradient for this site was calculated at 0.0060 ft/ft. This value was derived utilizing existing groundwater elevation data from the site.

Therefore, using a hydraulic gradient of 0.0060, the hydraulic conductivity value obtained from the single well slug test (0.1771 ft/day) and an assumed effective porosity of 0.25, the average linear groundwater flow velocity was estimated to be 0.0043 ft/day (1.5514 ft per year), using the following formula:

$$V = \frac{Ki}{n}$$

where:
V = average linear flow velocity
K = hydraulic conductivity
i = gradient
n = effective soil porosity

These values should be viewed as an approximation only. The slug tests provide hydraulic conductivity values only for the materials immediately adjacent to the tested well screen. Although the calculated

• Corporate Headquarters •
6389 Tower Lane • Sarasota, Florida 34240 • (941) 371-7617 • Fax (941) 378-5218
• Web Site: http://www.wesinc.com/water

groundwater flow velocity may be used as an approximation of the rate of contaminant migration in water, the method does not account for hydrodynamic dispersion, chemical sorption, or degradation, which are factors affecting contaminant velocity.

Sincerely,

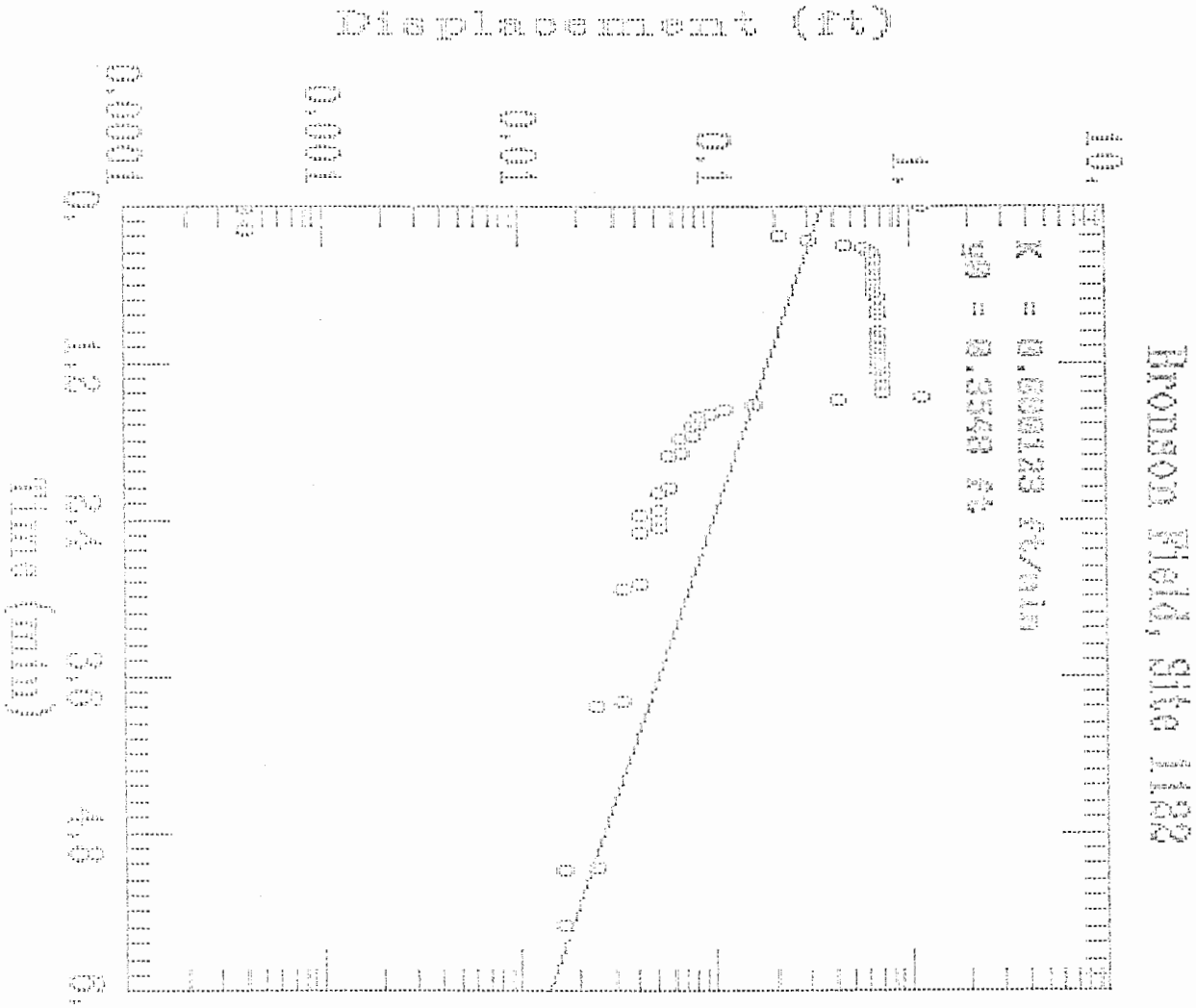
W.E.S., Inc.
Environmental Division

Patrick J. Brown
Staff Geologist

Michael J. Walsh, P.G.
Project Administrator

cc: File

g:\clients\nas-pen\slgtst\ty150.doc


Displacement (ft)
0.0001
0.001
0.01
0.1
1.
10.
Time (min)
0.
1.2
2.4
3.6
4.8
6.
K = 0.000123 ft/min
y0 = 0.3548 ft
Bronson Field, Site 1132

S/N SDEE-03A-SN-3093 Block 1

Program: STEP TEST

Readings: 166

Start Time: 15:43:04

Start Date: 09/11

Range: 0015 PSI

Channels: 1

Units: Ft-H2O

Step 1

Interval 00:00:02

Readings 300

Time	Chnl 1						
0.00	+7.1481	1.13	+6.4637	2.27	+7.0974	3.40	+7.1143
0.03	+7.1481	1.17	+6.4552	2.30	+7.0974	3.43	+7.1143
0.07	+7.1481	1.20	+6.4552	2.33	+7.0974	3.47	+7.1143
0.10	+7.1481	1.23	+6.4468	2.37	+7.1058	3.50	+7.1143
0.13	+7.1481	1.27	+6.4552	2.40	+7.0974	3.53	+7.1143
0.17	+7.1481	1.30	+6.4468	2.43	+7.0974	3.57	+7.1143
0.20	+7.1565	1.33	+6.4468	2.47	+7.0974	3.60	+7.1143
0.23	+6.9839	1.37	+6.4383	2.50	+7.1058	3.63	+7.1143
0.27	+6.8524	1.40	+6.4383	2.53	+7.1058	3.67	+7.1143
0.30	+6.6834	1.43	+6.4383	2.57	+7.1058	3.70	+7.1143
0.33	+6.5736	1.47	+6.0074	2.60	+7.1058	3.73	+7.1143
0.37	+6.5228	1.50	+6.7256	2.63	+7.1058	3.77	+7.1143
0.40	+6.5038	1.53	+6.9075	2.67	+7.1058	3.80	+7.1143
0.43	+6.4975	1.57	+7.0382	2.70	+7.1058	3.83	+7.1227
0.47	+6.4975	1.60	+7.0551	2.73	+7.1058	3.87	+7.1227
0.50	+6.4890	1.63	+7.0636	2.77	+7.1058	3.90	+7.1227
0.53	+6.4890	1.67	+7.0636	2.80	+7.1058	3.93	+7.1227
0.57	+6.4890	1.70	+7.0720	2.83	+7.1058	3.97	+7.1227
0.60	+6.4806	1.73	+7.0720	2.87	+7.1058	4.00	+7.1227
0.63	+6.4806	1.77	+7.0720	2.90	+7.1058	4.03	+7.1227
0.67	+6.4806	1.80	+7.0805	2.93	+7.1143	4.07	+7.1227
0.70	+6.4721	1.83	+7.0805	2.97	+7.1143	4.10	+7.1227
0.73	+6.4721	1.87	+7.0805	3.00	+7.1143	4.13	+7.1227
0.77	+6.4721	1.90	+7.0805	3.03	+7.1143	4.17	+7.1227
0.80	+6.4721	1.93	+7.0889	3.07	+7.1143	4.20	+7.1227
0.83	+6.4637	1.97	+7.0889	3.10	+7.1143	4.23	+7.1227
0.87	+6.4637	2.00	+7.0889	3.13	+7.1143	4.27	+7.1227
0.90	+6.4637	2.03	+7.0889	3.17	+7.1143	4.30	+7.1227
0.93	+6.4637	2.07	+7.0889	3.20	+7.1143	4.33	+7.1227
0.97	+6.4637	2.10	+7.0889	3.23	+7.1143	4.37	+7.1227
1.00	+6.4552	2.13	+7.0889	3.27	+7.1143	4.40	+7.1227
1.03	+6.4552	2.17	+7.0889	3.30	+7.1143	4.43	+7.1227
1.07	+6.4637	2.20	+7.0974	3.33	+7.1143	4.47	+7.1227
1.10	+6.4637	2.23	+7.0974	3.37	+7.1143	4.50	+7.1227

S/N SDEE-03A-SN-3098 Block 1

Program: STEP TEST
Readings: 168
Start Time: 15:43:04
Start Date: 09/11
Range: 0015 PSI
Channels: 1
Units: Ft-H2O

Step 1
Interval 00:00:02
Readings 300

Time	Chnl 1
4.53	+7.1227
4.57	+7.1227
4.60	+7.1227
4.63	+7.1227
4.67	+7.1227
4.70	+7.1227
4.73	+7.1227
4.77	+7.1227
4.80	+7.1227
4.83	+7.1227
4.87	+7.1227
4.90	+7.1227
4.93	+7.1227
4.97	+7.1227
5.00	+7.1227
5.03	+7.1227
5.07	+7.1227
5.10	+7.1312
5.13	+7.1312
5.17	+7.1312
5.20	+7.1312
5.23	+7.1312
5.27	+7.1312
5.30	+7.1312
5.33	+7.1312
5.37	+7.1312
5.40	+7.1312
5.43	+7.1312
5.47	+7.1312
5.50	+7.1312

Test 1 aborted at Step 1

W.E.S., Inc.

October 31, 1996

Slug Test/Aquifer Parameter Evaluation
Bronson Field, Site 1140NE
as performed on September 11, 1996.
Contract No. N65114-95-D-2126
Delivery Order No. 0027

A single well recovery test (slug test) was performed on Monitor Well No. 4 of Site 1140NE, located at Bronson Field, in Pensacola, Florida. Single well recovery tests involve the displacement of a known volume of water in a well and measuring the resulting change in hydraulic head over time until the water stabilized to its initial level. The water level measurements were made with a pressure transducer and recorded on a Thor Environmental Data Logger.

The calculation of hydraulic conductivity was based on the assumptions presented by Bouwer and Rice (1976). The well is assumed to be partially penetrating (That is, the saturated aquifer thickness is greater than the saturated monitor well screen length).

The movement of contaminants in a groundwater system depends, in part, on the flow characteristics of the aquifer beneath the site. In order to evaluate the flow characteristics, the following parameters were calculated: 1) hydraulic conductivity, 2) average linear flow velocity, and 3) transmissivity (effective soil porosity).

The relative ability of a porous medium to transmit fluid is measured by the hydraulic conductivity, a function of both the aquifer material and the fluid (Freeze and Cheery, 1979). Hydraulic Conductivity (K) values for the shallow saturated deposits were estimated from the single well recovery test (slug test) conducted on MW-4. The hydraulic conductivity calculations and field data from the single well slug test are presented following the text portion of this report. The hydraulic conductivity (K) in MW-4 at Bronson Field's Site No. 1140NE Well No. 4 is calculated at 0.0006749 ft/min., or 0.9719 ft/day.

The average hydraulic gradient for this site was calculated at 0.0089 ft/ft. This value was derived utilizing existing groundwater elevation data from the site.

Therefore, using a hydraulic gradient of 0.0089, the hydraulic conductivity value obtained from the single well slug test (0.9719 ft/day) and an assumed effective porosity of 0.25, the average linear groundwater flow velocity was estimated to be 0.0152 ft/day (5.5537 ft per year), using the following formula:

$$V = \frac{Ki}{n}$$

where:
V = average linear flow velocity
K = hydraulic conductivity
i = gradient
n = effective soil porosity

These values should be viewed as an approximation only. The slug tests provide hydraulic conductivity values only for the materials immediately adjacent to the tested well screen. Although the calculated

• Corporate Headquarters •
6389 Tower Lane • Sarasota, Florida 34240 • (941) 371-7617 • Fax (941) 378-5218
• Web Site: http://www.wesinc.com/water

groundwater flow velocity may be used as an approximation of the rate of contaminant migration in water, the method does not account for hydrodynamic dispersion, chemical sorption, or degradation, which are factors affecting contaminant velocity.

Sincerely,

W.E.S., Inc.
Environmental Division

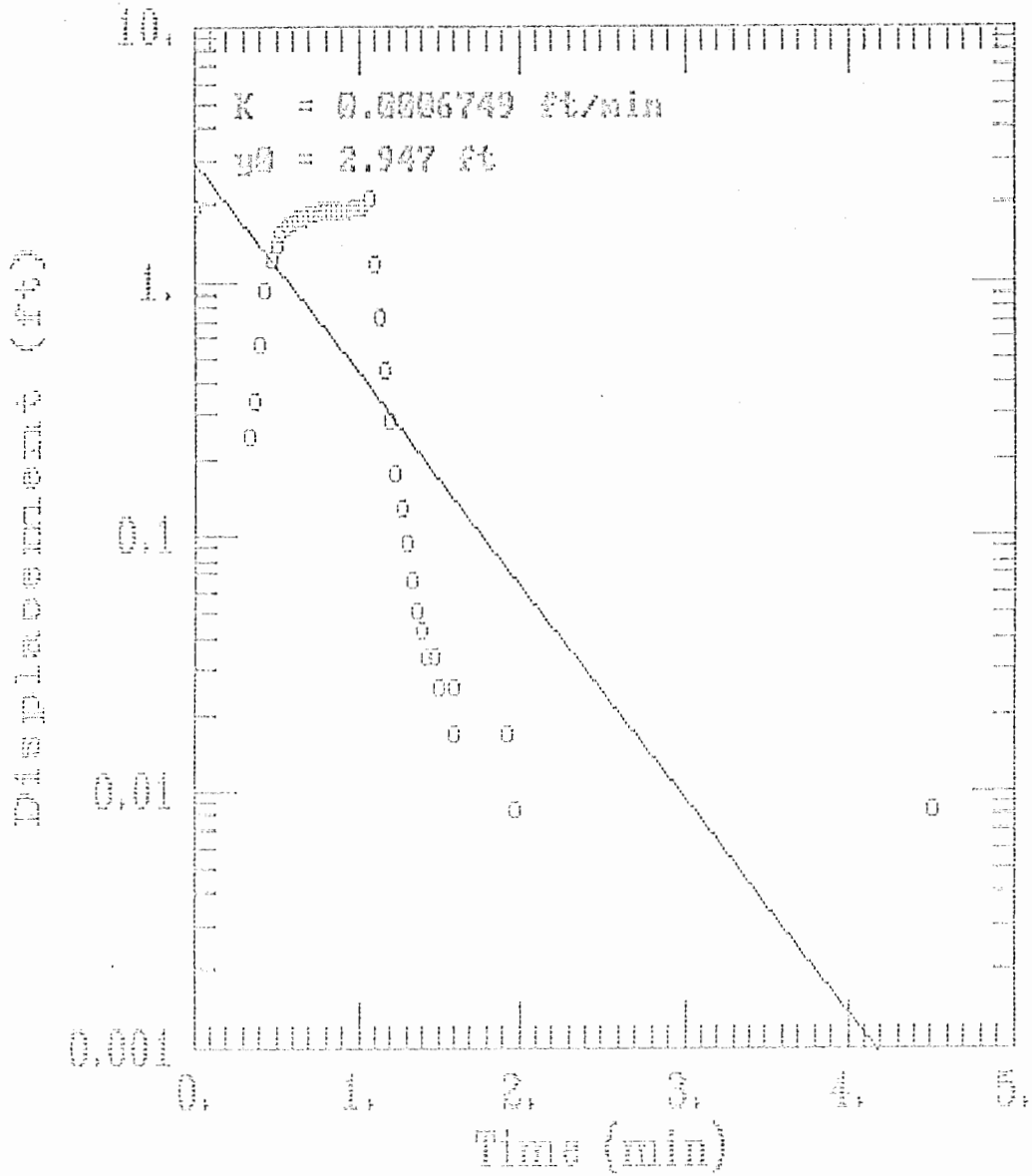
Patrick J. Brown
Staff Geologist

Michael J. Walsh, P.G.
Project Administrator

cc: File

g:\clients\nas-pen\slgtst\bf1140ne.doc

Bronson Field, Site 1140 NE



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

S/N SDEE-03A-SN-3096 Block 1

Program: STEP TEST
Readings: 199
Start Time: 14:43:37
Start Date: 09/11
Range: 0015 PSI
Channels: 1
Units: Ft-H2O

Step 1
Interval 00:00:02
Readings 300

Time	Chnl 1						
0.00	+5.9145	1.13	+5.2047	2.27	+5.9060	3.40	+5.9060
0.03	+5.9145	1.17	+5.4761	2.30	+5.9060	3.43	+5.9060
0.07	+5.9145	1.20	+5.6357	2.33	+5.9060	3.47	+5.9060
0.10	+5.9145	1.23	+5.7370	2.37	+5.9060	3.50	+5.9060
0.13	+5.9145	1.27	+5.7877	2.40	+5.9060	3.53	+5.9060
0.17	+5.9145	1.30	+5.8215	2.43	+5.9060	3.57	+5.9060
0.20	+5.9145	1.33	+5.8468	2.47	+5.9060	3.60	+5.9060
0.23	+5.9145	1.37	+5.8538	2.50	+5.9060	3.63	+5.9060
0.27	+5.9145	1.40	+5.8722	2.53	+5.9060	3.67	+5.9060
0.30	+5.9145	1.43	+5.8807	2.57	+5.9060	3.70	+5.9060
0.33	+5.8895	1.47	+5.8807	2.60	+5.9060	3.73	+5.9060
0.37	+5.5786	1.50	+5.8891	2.63	+5.9060	3.77	+5.9060
0.40	+5.3399	1.53	+5.8891	2.67	+5.9060	3.80	+5.9060
0.43	+4.9935	1.57	+5.8891	2.70	+5.9060	3.83	+5.9060
0.47	+4.7147	1.60	+5.8976	2.73	+5.9060	3.87	+5.9060
0.50	+4.5203	1.63	+5.8976	2.77	+5.9060	3.90	+5.9060
0.53	+4.3767	1.67	+5.8976	2.80	+5.9060	3.93	+5.9060
0.57	+4.2669	1.70	+5.8976	2.83	+5.9060	3.97	+5.9060
0.60	+4.1993	1.73	+5.8976	2.87	+5.9060	4.00	+5.9060
0.63	+4.1486	1.77	+5.8976	2.90	+5.9060	4.03	+5.9060
0.67	+4.1232	1.80	+5.8976	2.93	+5.9060	4.07	+5.9060
0.70	+4.0894	1.83	+5.8976	2.97	+5.9060	4.10	+5.9060
0.73	+4.0641	1.87	+5.8976	3.00	+5.9060	4.13	+5.9060
0.77	+4.0472	1.90	+5.8976	3.03	+5.9060	4.17	+5.9060
0.80	+4.0303	1.93	+5.8976	3.07	+5.9060	4.20	+5.9060
0.83	+4.0218	1.97	+5.9060	3.10	+5.9060	4.23	+5.9060
0.87	+4.0049	2.00	+5.9060	3.13	+5.9060	4.27	+5.9060
0.90	+3.9965	2.03	+5.9060	3.17	+5.9060	4.30	+5.9060
0.93	+3.9880	2.07	+5.9060	3.20	+5.9060	4.33	+5.9060
0.97	+3.9796	2.10	+5.9060	3.23	+5.9060	4.37	+5.9060
1.00	+3.9711	2.13	+5.9060	3.27	+5.9060	4.40	+5.9060
1.03	+3.9627	2.17	+5.9060	3.30	+5.9060	4.43	+5.9060
1.07	+3.9103	2.20	+5.9060	3.33	+5.9060	4.47	+5.9060
1.10	+4.7400	2.23	+5.9060	3.37	+5.9060	4.50	+5.9060

S/N SDEE-03A-SN-3098 Block 1

Program: STEP TEST

Readings: 139

Start Time: 14:43:37

Start Date: 09/11

Range: 0015 PSI

Channels: 1

Units: Ft-H2O

Step 1

Interval 00:00:02

Readings 300

Time	Chnl 1
4.53	+5.9060
4.57	+5.9060
4.60	+5.9060

Test 1 aborted at Step 1

APPENDIX C

LITHOLOGIC LOGS

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1
Bronson Field	Contractor: WES, Inc.	Dr. Method: HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig: Mobile
	Start Date: 03/07/96	Completed: 03/07/96
MONITOR WELL NO.: MW-1	Start Time: 0815	Finish Time: 0900
Delivery Order 0009	Contract No. N65114-95-D-2126	CONTAMINATION DATA

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NET	NOTES
POST HOLE HSA HA				100%	0	0'-12'; Orange-Tan, Fine to Medium Grained, Silty Sand.	0	NR	0	
				100%	4		0	NR	0	
				100%	8		0	NR	0	
							0	NR	0	
				100%	12	12'-20'; Becoming Lighter Tan Fine to Medium, Frosted-Grained, Silty Sand.	0	NR	0	
				100%	16		4	NR	4	
			Water Table @ approx. 20' bls				9	NR	9	
				100%	20	20'-27.5'; White to Biege, Fine to Medium, Frosted-Grained, Silty Fine Sand. Aeolian Deposit.				
				100%	24	Becomes Wetter & Lighter w/ Depth.				
				100%	28	End of Boring @ 27.5' bls				

I Certify that this lthological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael J. Walsh, P.G.
Florida Professional Geologist No. 0001181

Date 03/08/96

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1
Bronson Field	Contractor: WES, Inc.	Dr. Method: HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig: Mobile
	Start Date: 03/07/96	Completed: 03/07/96
MONITOR WELL NO.: MW-2	Start Time: 0900	Finish Time: 0945
Delivery Order 0009	Contract No. N65114-95-D-2126	CONTAMINATION DATA

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NOTES NET
POST HOLE HSA HA				100%	0	0'-3': Humus Soils, Motar Building Remnants.	6	5	1
				100%	4	3'-12'; Orange-Tan, Fine to Medium Grained, Silty Sand.	3	3	0
				100%	8		2	1	1
							2	NR	2
				100%	12	12'-20'; Becoming Lighter Tan Fine to Medium, Frosted-Grained, Silty Sand.	2	NR	2
				100%	16		2	NR	2
			Water Table @ approx. 20' bls				2	NR	2
				100%	20	20'-27.5'; White to Biege, Fine to Medium, Frosted-Grained, Silty Fine Sand. Aeolian Deposit.			
				100%	24	Becomes Wetter & Lighter w/ Depth.			
				100%	28	End of Boring @ 27.5' bls			

I Certify that this lthological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael D. Walsh, P.G.
Florida Professional Geologist No. 0001181

Date 03/08/96

MICHAEL D. WALSH
PROVISIONAL LICENSE
No. 0001181
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1
Bronson Field	Contractor: WES, Inc.	Dr. Method: HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig: Mobile
	Start Date: 03/07/96	Completed: 03/07/96
MONITOR WELL NO.: MW-3	Start Time: 0945	Finish Time: 1030
Delivery Order 0009	Contract No. N65114-95-D-2126	CONTAMINATION DATA

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NOTES NET
POST HOLE HSA HA				100%	0	0'-12': Orange-Tan, Fine to Medium Grained, Silty Sand.	0	NR	0
				100%	4		0	NR	0
							0	NR	0
				100%	8				
							0	NR	0
				100%	12	12'-20'; Becoming Lighter Tan Fine to Medium, Frosted-Grained, Silty Sand.	0	NR	0
				100%	16		0	NR	0
			Water Table @ approx. 20' bls				0	NR	0
				100%	20	20'-27.5'; White to Biege, Fine to Medium, Frosted-Grained, Silty Fine Sand. Aeolian Deposit.			
				100%	24	Becomes Wetter & Lighter w/ Depth.			
				100%					
					28	End of Boring @ 27.5' bls			

I Certify that this lthological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael J. Walsh, P.G.
Florida Professional Geologist No. 0001181

Date 03/08/96

MICHAEL J. WALSH
PROFESSIONAL LICENSE
No. PG0001181
STATE OF
FLORIDA
PROFESSIONAL GEOLOGIST

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1
Bronson Field	Contractor: WES, Inc.	Dr. Method: HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig: Mobile
	Start Date: 03/07/96	Completed: 03/07/96
MONITOR WELL NO.: MW-4	Start Time: 1130	Finish Time: 1215
Delivery Order 0009	Contract No. N65114-95-D-2126	CONTAMINATION DATA

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NOTES NET
POST HOLE HSA HA				100%	0	0'-12': Orange-Tan, Fine to Medium Grained, Silty Sand.	0	NR	0
				100%	4		0	NR	0
				100%	8		0	NR	0
							0	NR	0
				100%	12	12'-20'; Becoming Lighter Tan Fine to Medium, Frosted-Grained, Silty Sand.	0	NR	0
				100%	16		0	NR	0
			Water Table @ approx. 20' bls				0	NR	0
				100%	20	20'-27.5'; White to Biege, Fine to Medium, Frosted-Grained, Silty Fine Sand. Aeolian Deposit.			
				100%	24	Becomes Wetter & Lighter w/ Depth.			
				100%	28	End of Boring @ 27.5' bls			

I Certify that this lithological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael J. Walsh, P.G.
Florida Professional Geologist No. 0001181

Date 03/08/96

MICHAEL J. WALSH
PROVISIONAL LICENSE
No. PG0001181
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1
Bronson Field	Contractor: WES, Inc.	Dr. Method: HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig: Mobile
	Start Date: 03/07/96	Completed: 03/07/96
MONITOR WELL NO.: MW-5	Start Time: 1215	Finish Time: 1300
Delivery Order 0009	Contract No. N65114-95-D-2126	CONTAMINATION DATA

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NET	NOTES
POST HOLE HSA HA				100%	0	0'-12': Orange-Tan, Fine to Medium Grained, Silty Sand.	0	NR	0	
				100%	4		0	NR	0	
				100%	8		0	NR	0	
							0	NR	0	
				100%	12	12'-20'; Becoming Lighter Tan Fine to Medium, Frosted-Grained, Silty Sand.	0	NR	0	
				100%	16		0	NR	0	
			Water Table @ approx. 20' bls				0	NR	0	
				100%	20	20'-27.5'; White to Biege, Fine to Medium, Frosted-Grained, Silty Fine Sand. Aeolian Deposit.				
				100%	24	Becomes Wetter & Lighter w/ Depth.				
				100%						
					28	End of Boring @ 27.5' bls				

I Certify that this lthological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael J. Walsh, P.G.
Florida Professional Geologist No. 0001181

MICHAEL J. WALSH
PROFESSIONAL LICENSE
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST

Date 03/08/96

Site 1162	LOGGED BY: Patrick J. Brown	SHEET 1 OF 1	
Bronson Field	Contractor: WES, Inc.	Dr. Method:	HSA
Pensacola, Florida	Driller: South Florida Testing & Drilling	Dr. Rig:	Mobil
	Start Date: 05/09/96	Completed:	05/09/96
MONITOR WELL NO.: DMW-6	Start Time: 1045	Finish Time:	1215
Delivery Order 0015	Contract No. N65114-95-D-2126	CONTAMINATION DATA	

TYPE	NUMB	BLOW	SAMP. INTV. (FT.)	SAMP. RECV. (IN)	DEPTH	DESCRIPTION OF MATERIALS AND CONDITIONS	OVA RESULTS (PPM) CARBON FILTER W/O	WITH	NOTES NET
P. H.				100%			0	NR	0
					4	0'-9'; Tan/Brown, Fine Sand (FILL).	0	NR	0
HOLLOW STEM AUGUR				100%	8		0	NR	0
					12		0	NR	0
				100%		9'-18'; Tan/Brown, Silty Fine to Medium Grained, Sand.	0	NR	0
					16		0	NR	0
			Water Table @ Approx. 20' bls	100%	20		0	NR	0
					24	18'-29'; Beige, Clayey Fine to Medium, Sand. 40% clay stringers.			
				100%	28	29'-35'; White, Coarse to Medium, Sand. 5% Shell Fragments. Sub-rounded, Frosted. Some Dark Accessory Minerals. Moderately Sorted.			
				100%	32				
					36	End of Boring @ 35' bls.			

I Certify that this lthological log, including geological and hydrogeological interpretations, has been prepared under my direct supervision and meets the minimal technical requirements as set forth in Chapter 492 of the Florida Statues.

Reviewed by: Michael J. Walsh, P.G.
Florida Professional Geologist No. 0001181
05/15/96
Date

MICHAEL J. WALSH
PROFESSIONAL LICENSE
No. PG0001181
STATE OF FLORIDA
PROFESSIONAL GEOLOGIST

APPENDIX D

SOIL AND GROUNDWATER ANALYTICAL RESULTS

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
AS Pensacola, Fl. 32508-6500
ione 904-452-3642/4758
Autovon 922-3642

Laboratory Report
Volatiles by Method 8260

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, Fl 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 A
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson Field
Job Order #: 170 6647

Sample ID#	Lab	1- 5248			2- 5249			3- 5250			4- 5251		
Sample Name	Requester	B 1162 East			B 1162 West			B 1162 North			B 1162 South		
Collector Name		M. Chambers			M. Chambers			M. Chambers			M. Chambers		
Date/Time	Comp start												
Collected	Comp stop												
(Military)	Grab	27 Jul 94 @ 1042			27 Jul 94 @ 1032			27 Jul 94 @ 1030			27 Jul 94 @ 1044		
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		J. W. Moore			J. W. Moore			J. W. Moore			J. W. Moore		
Date of Analysis		28 Jul 94			28 Jul 94			28 Jul 94			28 Jul 94		
Sample Matrix		Soil			Soil			Soil			Soil		
Dilution		Dilution X 1			Dilution X 1			Dilution X 1			Dilution X 1		
PARAMETER		ID#			ID#			ID#			ID#		
Volatiles by GCMS (Capillary)	METHOD #	1- 5248	units	Det. Limit	2- 5249	units	Det. Limit	3- 5250	units	Det. Limit	4- 5251	units	Det. Limit
Benzene	EPA 8260	BDL	ug/kg	1	1	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Bromobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Bromochloromethane	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
Bromodichloromethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Bromoform	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Bromomethane	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
n-Butylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
sec-Butylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
tert-Butylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Carbon Tetrachloride	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Chlorobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Chloroethane	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
hloroform	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
nloromethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
2-Chlorotoluene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
4-Chlorotoluene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Dibromochloromethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2-Dibromo-3-chloropropane	EPA 8260	BDL	ug/kg	5	BDL	ug/kg	5	BDL	ug/kg	5	BDL	ug/kg	5
1,2-Dibromoethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Dibromomethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2-Dichlorobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,3-Dichlorobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,4-Dichlorobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Dichlorodifluoromethane	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
1,1-Dichloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2-Dichloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,1-Dichloroethene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
cis-1,2-Dichloroethene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
trans-1,2-Dichloroethene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2-Dichloropropane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,3-Dichloropropane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
2,2-Dichloropropane	EPA 8260	BDL	ug/kg	4	BDL	ug/kg	4	BDL	ug/kg	4	BDL	ug/kg	4
1,1-Dichloropropene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Ethylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Hexachlorobutadiene	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
Isopropylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
p-Isopropyltoluene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Methylene chloride	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
S Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
Volatiles by Method 8260

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, Fl 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 A
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson Field
Job Order #: 170 6647

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Volatiles by GCMS (Capillary)	METHOD #	1- 5248	units	Limit	2- 5249	units	Limit	3- 5250	units	Limit	4- 5251	units	Limit
Naphthalene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
n-Propylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Styrene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,1,1,2-Tetrachloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,1,2,2-Tetrachloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Tetrachloroethene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Toluene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1		1 ug/kg	1
1,2,3-Trichlorobenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2,4-Trichlorobenzene	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2
1,1,1-Trichloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,1,2-Trichloroethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Trichloroethene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Trichlorofluoromethane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2,3-Trichloropropane	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,2,4-Trimethylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
1,3,5-Trimethylbenzene	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
Vinyl Chloride	EPA 8260	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
o-Xylene	EPA 8260	BDL	ug/kg	1		2 ug/kg	1	BDL	ug/kg	1	BDL	ug/kg	1
m,p-Xylene	EPA 8260	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2	BDL	ug/kg	2

Surrogate Recoveries Compound	Acceptance Limits				
1,2-Dichloroethane-d4	70-121	98	98	99	99
Toluene-d8	84-138	92	100	99	101
Bromofluorobenzene	59-113	99	96	97	95

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.

Approved by: Joe Moore, Chemist for Jerry Deas
Jerry Deas, Laboratory Director
Date: 18-Aug-94 @ 11:22

PWC 5090/14

End of Report

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
3 Pensacola, FL 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
Volatiles by Method 8260

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 B
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson Field
Job Order #: 170 6647

Sample ID#	Lab	1- 5252	2- 5253	3- 5254	4-
Sample Name	Requester	B-1162 Center	B-1162 Back Fill - N	B-1162 Back Fill - S	
Collector Name		M. Chambers	M. Chambers	M. Chambers	
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	27 Jul 94 @ 1040	27 Jul 94 @ 1033	27 Jul 94 @ 1035	
Sample Type	Comp/Grab	Grab	Grab	Grab	
Analyst		J. W. Moore	J. W. Moore	J. W. Moore	
Date of Analysis		28 Jul 94	29 Jul 94	28 Jul 94	
Sample Matrix		Soil	Soil	Soil	
Dilution		Dilution X 100	Dilution X 1	Dilution X 1	Dilution X 1

PARAMETER		ID#			ID#			ID#			ID#		
Volatiles by GCMS (Capillary)	METHOD #	1- 5252	units	Det. Limit	2- 5253	units	Det. Limit	3- 5254	units	Det. Limit	4-	units	Det. Limit
Benzene	EPA 8260	55000	ug/kg	1000	30	ug/kg	1	12	ug/kg	1		ug/kg	1
Bromobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Bromochloromethane	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
Bromodichloromethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Bromoform	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Bromomethane	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
n-Butylbenzene	EPA 8260	6000	ug/kg	1000	125	ug/kg	1	BDL	ug/kg	1		ug/kg	1
sec-Butylbenzene	EPA 8260	5000	ug/kg	1000	85	ug/kg	1	BDL	ug/kg	1		ug/kg	1
tert-Butylbenzene	EPA 8260	14000	ug/kg	1000	100	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Carbon Tetrachloride	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Chlorobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Chloroethane	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
Chloroform	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Chloromethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
2-Chlorotoluene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
4-Chlorotoluene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Dibromochloromethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2-Dibromo-3-chloropropane	EPA 8260	BDL	ug/kg	500	BDL	ug/kg	5	BDL	ug/kg	5		ug/kg	5
1,2-Dibromoethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Dibromomethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2-Dichlorobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,3-Dichlorobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,4-Dichlorobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Dichlorodifluoromethane	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
1,1-Dichloroethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2-Dichloroethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,1-Dichloroethene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
cis-1,2-Dichloroethene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
trans-1,2-Dichloroethene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2-Dichloropropane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,3-Dichloropropane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
2,2-Dichloropropane	EPA 8260	BDL	ug/kg	400	BDL	ug/kg	4	BDL	ug/kg	4		ug/kg	4
1,1-Dichloropropene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Ethylbenzene	EPA 8260	89000	ug/kg	1000	380	ug/kg	1	24	ug/kg	1		ug/kg	1
Hexachlorobutadiene	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
Isopropylbenzene	EPA 8260	11000	ug/kg	1000	110	ug/kg	1	4	ug/kg	1		ug/kg	1
p-Isopropyltoluene	EPA 8260	5000	ug/kg	1000	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Methylene chloride	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1

Navy Public Works Center
Environmental Laboratory

Laboratory Report
Volatiles by Method 8260

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 B
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson Field
Job Order #: 170 6647

PARAMETER Volatiles by GCMS (Capillary)	METHOD #	ID# 1- 5252	units	Det. Limit	ID# 2- 5253	units	Det. Limit	ID# 3- 5254	units	Det. Limit	ID# 4-	units	Det. Limit
Naphthalene	EPA 8260	10000	ug/kg	1000	270	ug/kg	1	3	ug/kg	1		ug/kg	1
n-Propylbenzene	EPA 8260	22000	ug/kg	1000	260	ug/kg	1	8	ug/kg	1		ug/kg	1
Styrene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,1,1,2-Tetrachloroethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,1,2,2-Tetrachloroethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Tetrachloroethene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Toluene	EPA 8260	340000	ug/kg	1000	370	ug/kg	1	70	ug/kg	1		ug/kg	1
1,2,3-Trichlorobenzene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2,4-Trichlorobenzene	EPA 8260	BDL	ug/kg	200	BDL	ug/kg	2	BDL	ug/kg	2		ug/kg	2
1,1,1-Trichloroethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,1,2-Trichloroethane	EPA 8260	41000	ug/kg	1000	630	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Trichloroethene	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
Trichlorofluoromethane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2,3-Trichloropropane	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
1,2,4-Trimethylbenzene	EPA 8260	100000	ug/kg	1000	1600	ug/kg	1	40	ug/kg	1		ug/kg	1
1,3,5-Trimethylbenzene	EPA 8260	45000	ug/kg	1000	700	ug/kg	1	18	ug/kg	1		ug/kg	1
Vinyl Chloride	EPA 8260	BDL	ug/kg	100	BDL	ug/kg	1	BDL	ug/kg	1		ug/kg	1
o-Xylene	EPA 8260	115000	ug/kg	1000	1000	ug/kg	1	35	ug/kg	1		ug/kg	1
m,p-Xylene	EPA 8260	290000	ug/kg	2000	1900	ug/kg	2	90	ug/kg	2		ug/kg	2

Surrogate Recoveries Compound	Acceptance Limits				
1,2-Dichloroethane-d4	70-121	93	102	99	
Toluene-d8	84-138	108	108	106	
Bromofluorobenzene	59-113	104	96	102	

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.

Approved by: Jerry Dees, Laboratory Director

Date: 18-Aug-94 @ 13:04

PWC509014

End of Report

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
BNA Extractables by 8270A

Requester: NPWC Environmental
Address: Bldg. 3691
NAS pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 C
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson field
Job Order #: 170 6647

Sample ID#	Lab	1- 5253	2- 5254	3-	4-
Sample Name	Requester	B-1162 Back Fill - N	B-1162 Back Fill - S		
Collector Name		M. chambers	M. chambers		
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	27 Jul 94 @ 1033	27 Jul 94 @ 1035		
Sample Type	Comp/Grab	Grab	Grab		
Analyst		M. Chambers	M. Chambers		
Date of Analysis		28 Jul 94	28 Jul 94		
Sample Matrix		Soil	Soil		
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1

PARAMETER		ID#			ID#			ID#			ID#		
BNA Extr.:	METHOD #	1- 5253	units	Det. Limit	2- 5254	units	Det. Limit	3-	units	Det. Limit	4-	units	Det. Limit
Acenaphthene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Acenaphthylene	EPA 8270A	BDL	ug/kg	165	360	ug/kg	165		ug/kg	165		ug/kg	165
Acetophenone	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Acetylaminofluorene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Aldrin	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4-Aminobiphenyl	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Aniline	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Anthracene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Aramite	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
Benzidine	EPA 8270A	BDL	ug/kg	1650	BDL	ug/kg	1650		ug/kg	1650		ug/kg	1650
Benzoic Acid	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Benz(a)anthracene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Benzo(b)fluoranthene	EPA 8270A	BDL	ug/kg	165	2750	ug/kg	165		ug/kg	165		ug/kg	165
Benzo(k)fluoranthene	EPA 8270A	BDL	ug/kg	165	1000	ug/kg	165		ug/kg	165		ug/kg	165
Benzo(g,h,i)perylene	EPA 8270A	BDL	ug/kg	165	600	ug/kg	165		ug/kg	165		ug/kg	165
Benzo(a)pyrene	EPA 8270A	BDL	ug/kg	165	1100	ug/kg	165		ug/kg	165		ug/kg	165
p-Benzoquinone	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Benzyl alcohol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
alpha-BHC	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
beta-BHC	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
delta-BHC	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
gamma-BHC (Lindane)	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Bis(2-chloroethoxy)methane	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Bis(2-chloroethyl)ether	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Bis(2-chloroisopropyl)ether	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Bis(2-ethylhexyl)phthalate	EPA 8270A	870	ug/kg	330	940	ug/kg	330		ug/kg	330		ug/kg	330
4-Bromophenyl phenyl ether	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Butyl benzyl phthalate	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4-Chloroaniline	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Chlorobenzilate	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4-Chloro-3-methylphenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Chloronaphthalene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Chlorophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4-Chlorophenyl phenyl ether	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Chrysene	EPA 8270A	BDL	ug/kg	165	290	ug/kg	165		ug/kg	165		ug/kg	165
4,4'-DDD	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4,4'-DDE	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4,4'-DDT	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Dibenzo(a,h)anthracene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Dibenzofuran	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Di-n-butyl phthalate	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
1,2-Dichlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1,3-Dichlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
BNA Extractables by 8270A

Requester: NPWC Environmental
Address: Bldg. 3691
NAS pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 C
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson field
Job Order #: 170 6647

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
BNA Extr.:	METHOD #	1- 5253	units	Limit	2- 5254	units	Limit	3-	units	Limit	4-	units	Limit
1,4-Dichlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
3,3-Dichlorobenzidine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2,4-Dichlorophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2,6-Dichlorophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Dieldrin	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Diethyl phthalate	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Dimethoate	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
Dimethylaminazobenzene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
7,12-Dimethylbenz(a)anthracene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
3,3'-Dimethylbenzidine	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
a,a,-Dimethylphenethylamine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2,4-Dimethylphenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Dimethyl phthalate	EPA 8270A	590	ug/kg	330	1130	ug/kg	330		ug/kg	330		ug/kg	330
4,6-Dinitro-o-cresol	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
2,4-Dinitrophenol	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
2,4-Dinitrotoluene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
2,6-Dinitrotoluene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
1,2-Diphenylhydrazine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Di-n-octyl phthalate	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Endosulfan-I	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Endosulfan-II	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Endosulfan Sulfate	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Endrin	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Endrin aldehyde	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Endrin ketone	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Ethyl methanesulfonate	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Fluoranthene	EPA 8270A	BDL	ug/kg	165	270	ug/kg	165		ug/kg	165		ug/kg	165
Fluorene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Heptachlor	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Heptachlor epoxide	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Hexachlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Hexachlorobutadiene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Hexachlorocyclopentadiene	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
Hexachloroethane	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Indeno(1,2,3-cd)pyrene	EPA 8270A	BDL	ug/kg	165	730	ug/kg	165		ug/kg	165		ug/kg	165
Isodrin	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
Isophorone	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
3-Methylcholanthrene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Methyl methanesulfonate	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Methylnaphthalene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
o-Cresol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
m,p-Cresols	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Naphthalene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1,4-Naphthoquinone	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1-Naphthylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
2-Naphthylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
2-Nitroaniline	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
3-Nitroaniline	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
4-Nitroaniline	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Nitrobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Nitrophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
4-Nitrophenol	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
BNA Extractables by 8270A

Requester: NPWC Environmental
Address: Bldg. 3691
NAS pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408258 C
Sample Date: 27 Jul 94
Received Date: 27 Jul 94
Sample Site: Bronson field
Job Order #: 170 6647

PARAMETER BNA Extr.:	METHOD #	ID# 1- 5253	units	Det. Limit	ID# 2- 5254	units	Det. Limit	ID# 3-	units	Det. Limit	ID# 4-	units	Det. Limit
5-Nitro-o-toluidine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
N-nitrosodibutylamine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
N-nitrosodiethylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosodimethylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosomethylethylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosodiphenylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosodi-n-propylamine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosomorpholine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosopiperidine	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
N-nitrosopyrrolidine	EPA 8270A	BDL	ug/kg	660	BDL	ug/kg	660		ug/kg	660		ug/kg	660
Pentachlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Pentachloronitrobenzene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Pentachlorophenol	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Phenacetin	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Phenanthrene	EPA 8270A	BDL	ug/kg	165	780	ug/kg	165		ug/kg	165		ug/kg	165
Phenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1,4-Phenylenediamine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Phorate	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2-Picoline	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Pronamide	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
Pyrene	EPA 8270A	BDL	ug/kg	165	310	ug/kg	165		ug/kg	165		ug/kg	165
Pyridine	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
Safrole	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
2,3,4,6-Tetrachlorophenol	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330
Thionazine	EPA 8270A	BDL	ug/kg	825	BDL	ug/kg	825		ug/kg	825		ug/kg	825
o-Toluidine	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1,2,4-Trichlorobenzene	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2,4,5-Trichlorophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
2,4,6-Trichlorophenol	EPA 8270A	BDL	ug/kg	165	BDL	ug/kg	165		ug/kg	165		ug/kg	165
1,3,5-Trinitrobenzene	EPA 8270A	BDL	ug/kg	330	BDL	ug/kg	330		ug/kg	330		ug/kg	330

SURROGATE RECOVERIES Compound	Acceptance Limits				
Nitrobenzene-d5	23-120	81	79		
2-Fluorobiphenyl	30-115	78	79		
Terphenyl-d14	18-137	102	94		
Phenol-d5	24-125	104	107		
2-Fluorophenol	25-121	128*	127*		
2,4,6-Tribromophenol	19-122	113	115		

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.
* - Surrogate recovery out of range.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 18-Aug-94 @ 12:45

PWC309014

 End of Report

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
Volatiles by Method 524.2

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408255
Sample Date: 5 Aug 94
Received Date: 5 Aug 94
Sample Site: Bronson Field
Job Order #: 170 6647

Sample ID#	Lab	1- 5446	2-	3-	4-
Sample Name	Requester	B-1162 ECUA Well			
Collector Name		J. W. Moore			
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	5 Aug 94 @ 1340			
Sample Type	Comp/Grab	Grab			
Analyst		Joe Moore			
Date of Analysis		8 Aug 94			
Sample Matrix		Drinking Water			
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1

PARAMETER Volatiles by GCMS (Capillary)	METHOD #	ID# 1- 5446	units	Det. Limit	ID# 2-	units	Det. Limit	ID# 3-	units	Det. Limit	ID# 4-	units	Det. Limit
Benzene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
Bromobenzene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
Bromochloromethane	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
Bromodichloromethane	EPA 524.2	BDL	ug/l	0.7		ug/l	0.7		ug/l	0.7		ug/l	0.7
Bromoform	EPA 524.2	BDL	ug/l	0.8		ug/l	0.8		ug/l	0.8		ug/l	0.8
Bromomethane	EPA 524.2	BDL	ug/l	1.0		ug/l	1.0		ug/l	1.0		ug/l	1.0
n-Butylbenzene	EPA 524.2	BDL	ug/l	1.2		ug/l	1.2		ug/l	1.2		ug/l	1.2
sec-Butylbenzene	EPA 524.2	BDL	ug/l	1.0		ug/l	1.0		ug/l	1.0		ug/l	1.0
tert-Butylbenzene	EPA 524.2	BDL	ug/l	0.8		ug/l	0.8		ug/l	0.8		ug/l	0.8
Carbon Tetrachloride	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
Chlorobenzene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
Chloroethane	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
Chloroform	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
Chloromethane	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
2-Chlorotoluene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
4-Chlorotoluene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
Dibromochloromethane	EPA 524.2	BDL	ug/l	0.6		ug/l	0.6		ug/l	0.6		ug/l	0.6
1,2-Dibromo-3-chloropropane	EPA 524.2	BDL	ug/l	0.9		ug/l	0.9		ug/l	0.9		ug/l	0.9
1,2-Dibromoethane	EPA 524.2	BDL	ug/l	0.7		ug/l	0.7		ug/l	0.7		ug/l	0.7
Dibromomethane	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
1,2-Dichlorobenzene	EPA 524.2	BDL	ug/l	0.7		ug/l	0.7		ug/l	0.7		ug/l	0.7
1,3-Dichlorobenzene	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
1,4-Dichlorobenzene	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
Dichlorodifluoromethane	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,1-Dichloroethane	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,2-Dichloroethane	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
1,1-Dichloroethene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
cis-1,2-Dichloroethene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
trans-1,2-Dichloroethene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,2-Dichloropropane	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
1,3-Dichloropropane	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
2,2-Dichloropropane	EPA 524.2	BDL	ug/l	1.1		ug/l	1.1		ug/l	1.1		ug/l	1.1
1,1-Dichloropropene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
cis-1,3-Dichloropropene	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
trans-1,3-Dichloropropene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
Ethylbenzene	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
Hexachlorobutadiene	EPA 524.2	BDL	ug/l	1.6		ug/l	1.6		ug/l	1.6		ug/l	1.6
Isopropylbenzene	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
4-Isopropyltoluene	EPA 524.2	BDL	ug/l	0.9		ug/l	0.9		ug/l	0.9		ug/l	0.9
Methylene chloride	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2

Navy Public Works Center
Environmental Laboratory

Laboratory Report
Volatiles by Method 524.2

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Requester: NPWC Environmental
Address: Bldg. 3691
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 9408255
Sample Date: 5 Aug 94
Received Date: 5 Aug 94
Sample Site: Bronson Field
Job Order #: 170 6647

PARAMETER Volatiles by GCMS (Capillary)	METHOD #	ID# 1- 5446	units	Det. Limit	ID# 2-	units	Det. Limit	ID# 3-	units	Det. Limit	ID# 4-	units	Det. Limit
Naphthalene	EPA 524.2	BDL	ug/l	0.9		ug/l	0.9		ug/l	0.9		ug/l	0.9
n-Propylbenzene	EPA 524.2	BDL	ug/l	0.5		ug/l	0.5		ug/l	0.5		ug/l	0.5
Styrene	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
1,1,1,2-Tetrachloroethane	EPA 524.2	BDL	ug/l	0.4		ug/l	0.4		ug/l	0.4		ug/l	0.4
1,1,2,2-Tetrachloroethane	EPA 524.2	BDL	ug/l	1.3		ug/l	1.3		ug/l	1.3		ug/l	1.3
Tetrachloroethene	EPA 524.2	0.8	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
Toluene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,2,3-Trichlorobenzene	EPA 524.2	BDL	ug/l	1.2		ug/l	1.2		ug/l	1.2		ug/l	1.2
1,2,4-Trichlorobenzene	EPA 524.2	BDL	ug/l	1.1		ug/l	1.1		ug/l	1.1		ug/l	1.1
1,1,1-Trichloroethane	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,1,2-Trichloroethane	EPA 524.2	BDL	ug/l	0.6		ug/l	0.6		ug/l	0.6		ug/l	0.6
Trichloroethene	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
Trichlorofluoromethane	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
1,2,3-Trichloropropane	EPA 524.2	BDL	ug/l	0.6		ug/l	0.6		ug/l	0.6		ug/l	0.6
1,2,4-Trimethylbenzene	EPA 524.2	BDL	ug/l	0.6		ug/l	0.6		ug/l	0.6		ug/l	0.6
1,3,5-Trimethylbenzene	EPA 524.2	BDL	ug/l	0.6		ug/l	0.6		ug/l	0.6		ug/l	0.6
Vinyl Chloride	EPA 524.2	BDL	ug/l	0.2		ug/l	0.2		ug/l	0.2		ug/l	0.2
o-Xylene	EPA 524.2	BDL	ug/l	0.3		ug/l	0.3		ug/l	0.3		ug/l	0.3
m-Xylene	EPA 524.2	BDL	ug/l	0.8		ug/l	0.8		ug/l	0.8		ug/l	0.8
p-Xylene	EPA 524.2	BDL	ug/l	0.8		ug/l	0.8		ug/l	0.8		ug/l	0.8

Surrogate Recoveries Compound	Acceptance Limits				
1,2-Dichloroethane-d4	76-114	94			
Toluene-d8	88-110	103			
4-Bromofluorobenzene	86-115	100			

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.
Please note that this lab is not currently certified for this analysis. Analysis by a certified commercial laboratory indicated the presence of tetrachloroethene @ 0.75 ug/l.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 19-Aug-94 @ 14:08

PWC 5090/14

 End of Report

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	603232
Client:	NAS, CO, PWC
Project Number:	CALL #9024
Project Name:	PETROLEUM HYDROCARBONS BY FL PRO
Project Location:	BRONSON 1162
Department:	SEMI-VOLATILE FUELS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: SOIL
QC Level: I

Lab Id: 006 Sample Date/Time: 07-MAR-96 0900
Client Sample Id: 60941 BRONSON MW1 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 95 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.6	
NONATRIACONTANE	%REC/SURR	26*	60-118	
ORTHO TER PHENYL	%REC/SURR	83	62-109	
ANALYST	INITIALS	BV		

Comments:
*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
DUE TO MATRIX INTERFERENCE.

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: SOIL
QC Level: I

Lab Id: 007 Sample Date/Time: 07-MAR-96 0945
Client Sample Id: 60942 BRONSON MW2 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 96 Analysis Date: 20-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.6	
NONATRIACONTANE	%REC/SURR	21*	60-118	
ORTHO TER PHENYL	%REC/SURR	104	62-109	
ANALYST	INITIALS	BV		

Comments:
*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
DUE TO MATRIX INTERFERENCE.

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: SOIL
QC Level: I

Lab Id: 008 Sample Date/Time: 07-MAR-96 1030
Client Sample Id: 60943 BRONSON MW3 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 96 Analysis Date: 20-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.6	
NONATRIACONTANE	%REC/SURR	56*	60-118	
ORTHO TER PHENYL	%REC/SURR	83	62-109	
ANALYST	INITIALS	BV		

Comments:
*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
DUE TO MATRIX INTERFERENCE.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: SOIL
QC Level: I

Lab Id: 009 Sample Date/Time: 07-MAR-96 1215
Client Sample Id: 60944 BRONSON MW4 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 97 Analysis Date: 20-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.6	
NONATRIACONTANE	%REC/SURR	32*	60-118	
ORTHO TER PHENYL	%REC/SURR	81	62-109	
ANALYST	INITIALS	BV		

Comments:
*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
DUE TO MATRIX INTERFERENCE.

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: SOIL
QC Level: I

Lab Id: 010 Sample Date/Time: 07-MAR-96 1300
Client Sample Id: 60945 BRONSON MW5 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 96 Analysis Date: 20-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.6	
NONATRIACONTANE	%REC/SURR	28*	60-118	
ORTHO TER PHENYL	%REC/SURR	78	62-109	
ANALYST	INITIALS	BV		

Comments:
*SURROGATE RECOVERY OUTSIDE ACCEPTANCE LIMITS
DUE TO MATRIX INTERFERENCE.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	603232
Client:	NAS, CO, PWC
Project Number:	CALL #9024
Project Name:	PETROLEUM HYDROCARBONS BY FL PRO
Project Location:	BRONSON 1162
Department:	SEMI-VOLATILE FUELS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Date 05-Apr-96

"QC Report"

Title: Soil Blank
Batch: FPS013
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992

Blank Id: A Date Analyzed: 19-MAR-96 Date Extracted: 15-MAR-96

Parameters:	Units:	Results:	Reporting Limits:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.5
ORTHO TER PHENYL	%REC/SURR	110	82-142
ANALYST	INITIALS	KS	
C-39	%REC/SURR	68	42-193

Comments:

Common notation for Organic reporting

../S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG = MICROGRAMS
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/M3 = MILLIGRAM PER CUBIC METER.
PPMV = PART PER MILLION BY VOLUME.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

ND = NOT DETECTED ABOVE REPORTING LIMIT.

RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

ATI/GC/FID
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

ATI/GC/FIX
ATI GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

'I/GC/FPD
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

ATI/GC/PID
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

ATI/GC/TCD
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

LJT = LISA THOMASON
SW = STEVE WILHITE
KW = KAREN WADSWORTH
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY KUST
DWB = DAVID W. BOWERS
RP = ROB PEREZ

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Soil Reagent
Batch: FPS013
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3550 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992

RS Date Analyzed: 19-MAR-96
RSD Date Analyzed: 19-MAR-96

RS Date Extracted: 15-MAR-96
RSD Date Extracted: 15-MAR-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
TOTAL PETROLEUM HYDROCARBON	294	<2.5	200	68	235	80	16	42	55-133
Surrogates:									
ORTHO TER PHENYL				124		124			82-142
C-39				125		133			42-193

Comments:

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
MG/KG = PARTS PER MILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, Fl. 32508
Phone (904) 452-4728
Autovon 922-4728
FAX (904) 452-2387/2799

Laboratory Report

601/602 Volatiles by Method 8260

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603068 A
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#		1- 61091			2- 61092			3- 61093			4- 61094		
Sample Name		MW-1			MW-2			MW-3			MW-4		
Collector Name		P. J. B.			P. J. B.			P. J. B.			P. J. B.		
Date/Time	Comp start												
Collected	Comp stop												
(Military)	Grab	15 Mar 96 @ 1400			15 Mar 96 @ 1300			15 Mar 96 @ 1200			15 Mar 96 @ 1100		
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		M. Chambers			M. Chambers			M. Chambers			M. Chambers		
Date of Analysis		18 Mar 96			18 Mar 96			18 Mar 96			19 Mar 96		
Sample Matrix		Groundwater			Groundwater			Groundwater			Groundwater		
Dilution		Dilution X 1			Dilution X 1			Dilution X 1			Dilution X 1		
PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Volatiles by GCMS (Capillary)	METHOD #	1- 61091	units	Limit	2- 61092	units	Limit	3- 61093	units	Limit	4- 61094	units	Limit
Benzene	SW 8260	6	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromodichloromethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromoform	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromomethane	SW 8260	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Carbon Tetrachloride	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chlorobenzene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chloroethane	SW 8260	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
2-Chloroethylvinyl ether	SW 8260	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Chloroform	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chloromethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Dibromochloromethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichlorobenzene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,3-Dichlorobenzene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,4-Dichlorobenzene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Dichlorodifluoromethane	SW 8260	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
1,1-Dichloroethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichloroethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1-Dichloroethene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
trans-1,2-Dichloroethene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichloropropane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
cis-1,3-Dichloropropene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
trans-1,3-Dichloropropene	SW 8260	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Ethylbenzene	SW 8260	7	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Methylene chloride	SW 8260	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Methyl-tert-butyl Ether (MTBE)	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,2,2-Tetrachloroethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Tetrachloroethene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Toluene	SW 8260	140	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,1-Trichloroethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,2-Trichloroethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Trichloroethene	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Trichlorofluoromethane	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Vinyl Chloride	SW 8260	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Xylenes (Total)	SW 8260	200	ug/l	20	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2

Navy Public Works Center
Environmental Laboratory

Laboratory Report
601/602 Volatiles by Method 8260

Bldg 3887, Code 920
NAS Pensacola, Fl. 32508
Phone (904) 452-4728
Autovon 922-4728
FAX (904) 452-2387/2799

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603069 A
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#		1- 61095			2- 61096			3- 61097			4- 61098		
Sample Name		MW-5			Duplicate			Eq. Blank			Trip Blank		
Collector Name		P. J. B.			P. J. B.			P. J. B.			P. J. B.		
Date/Time	Comp start												
Collected	Comp stop												
(Military)	Grab	15 Mar 96	@	1000	15 Mar 96	@	N/S	15 Mar 96	@	0930	15 Mar 96	@	A.M.
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		M. Chambers			M. Chambers			M. Chambers			M. Chambers		
Date of Analysis		18 Mar 96			18 Mar 96			18 Mar 96			18 Mar 96		
Sample Matrix		Groundwater			Groundwater			Deionized water			Deionized water		
Dilution		Dilution	X	1	Dilution	X	1	Dilution	X	1	Dilution	X	1
PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Volatiles by GCMS (Capillary)	**METHOD #**	1- **61095**	units	Limit	2- **61096**	units	Limit	3- **61097**	units	Limit	4- **61098**	units	Limit
Benzene	SW 8260	**BDL**	ug/l	1	**10**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Bromodichloromethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Bromoform	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Bromomethane	SW 8260	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2
Carbon Tetrachloride	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Chlorobenzene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Chloroethane	SW 8260	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2
2-Chloroethylvinyl ether	SW 8260	**BDL**	ug/l	3	**BDL**	ug/l	3	**BDL**	ug/l	3	**BDL**	ug/l	3
Chloroform	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Chloromethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Dibromochloromethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,2-Dichlorobenzene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,3-Dichlorobenzene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,4-Dichlorobenzene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Dichlorodifluoromethane	SW 8260	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2
1,1-Dichloroethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,2-Dichloroethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,1-Dichloroethene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
trans-1,2-Dichloroethene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,2-Dichloropropane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
cis-1,3-Dichloropropene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
trans-1,3-Dichloropropene	SW 8260	**BDL**	ug/l	4	**BDL**	ug/l	4	**BDL**	ug/l	4	**BDL**	ug/l	4
Ethylbenzene	SW 8260	**BDL**	ug/l	1	**15**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Methylene chloride	SW 8260	**BDL**	ug/l	5	**BDL**	ug/l	5	**BDL**	ug/l	5	**BDL**	ug/l	5
Methyl-tert-butyl Ether (MTBE)	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,1,2,2-Tetrachloroethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Tetrachloroethene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Toluene	SW 8260	**BDL**	ug/l	1	**62**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,1,1-Trichloroethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
1,1,2-Trichloroethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Trichloroethene	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Trichlorofluoromethane	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Vinyl Chloride	SW 8260	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1	**BDL**	ug/l	1
Xylenes (Total)	SW 8260	**BDL**	ug/l	2	**160**	ug/l	2	**BDL**	ug/l	2	**BDL**	ug/l	2

Navy Public Works Center
Environmental Laboratory

Laboratory Report
Total PAH's by Method 8270A

Bldg. 3887, Code 920
NAS Pensacola, FL 32508-5303
Phone (904) 452-4728
DSN 922-4728

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603068 B
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#	Lab	1- 61091	2- 61092	3- 61093	4- 61094
Sample Name	Requester	MW-1	MW-2	MW-3	MW-4
Collector Name		P. J. B.	P. J. B.	P. J. B.	P. J. B.
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	15 Mar 96 @ 1400	15 Mar 96 @ 1300	15 Mar 96 @ 1200	15 Mar 96 @ 1100
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab
Analyst		M. Chambers	M. Chambers	M. Chambers	M. Chambers
Date of Analysis		20 Mar 96	20 Mar 96	20 Mar 96	20 Mar 96
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1

PARAMETER	ANALYSIS	ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Polynuclear Aromatics (PAH's)	METHOD #	1- 61091	units	Limit	2- 61092	units	Limit	3- 61093	units	Limit	4- 61094	units	Limit
Acenaphthene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Acenaphthylene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Anthracene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Benzo(a)anthracene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Benzo(a)pyrene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Benzo(b)fluoranthene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Benzo(g,h,i)perylene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Benzo(k)fluoranthene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Chrysene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Dibenzo(a,h)anthracene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Fluoranthene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Fluorene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Indeno(1,2,3-cd)pyrene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Naphthalene	SW846 8270	8	ug/l	7	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7
Phenanthrene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Pyrene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
1-Methylnaphthalene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
2-Methylnaphthalene	SW846 8270	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7

SURROGATE RECOVERIES Compound	Acceptance Limits				
Nitrobenzene-d5	35-114	71	64	65	65
2-Fluorobiphenyl	43-116	67	62	63	61
Terphenyl-d14	33-141	80	69	90	72

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.

Approved by: Jim Taylor QC Officer
Jerry Dees, Laboratory Director

Date/Time: 29-Mar-96 @ 10:32
Report Generated

End of Report

PWC 5090/14

Navy Public Works Center
Environmental Laboratory

Laboratory Report
Total PAH's by Method 8270A

Bldg. 3887, Code 920
NAS Pensacola, FL 32508-5303
Phone (904) 452-4728
DSN 922-4728

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603069 B
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#	Lab	1- 61095	2- 61096	3- 61097	4-
Sample Name	Requester	MW-5	Duplicate	Equipment Blank	
Collector Name		P. J. B.	P. J. B.	P. J. B.	
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	15 Mar 96 @ 1000	15 Mar 96 @ N/S	15 Mar 96 @ 0930	
Sample Type	Comp/Grab	Grab	Grab	Grab	
Analyst		M. Chambers	M. Chambers	M. Chambers	
Date of Analysis		20 Mar 96	20 Mar 96	20 Mar 96	
Sample Matrix		Groundwater	Groundwater	Deionized Water	
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1

PARAMETER	ANALYSIS	ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Polynuclear Aromatics (PAH's)	METHOD #	1- 61095	units	Limit	2- 61096	units	Limit	3- 61097	units	Limit	4-	units	Limit
Acenaphthene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5		ug/l	5
Acenaphthylene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5		ug/l	5
Anthracene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2		ug/l	2
Benzo(a)anthracene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
Benzo(a)pyrene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2		ug/l	2
Benzo(b)fluoranthene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4		ug/l	4
Benzo(g,h,i)perylene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
Benzo(k)fluoranthene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4		ug/l	4
Chrysene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
Dibenzo(a,h)anthracene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
Fluoranthene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2		ug/l	2
Fluorene	SW846 8270	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4		ug/l	4
Indeno(1,2,3-cd)pyrene	SW846 8270	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2		ug/l	2
Naphthalene	SW846 8270	BDL	ug/l	7	7	ug/l	7	BDL	ug/l	7		ug/l	7
Phenanthrene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
Pyrene	SW846 8270	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3		ug/l	3
1-Methylnaphthalene	SW846 8270	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5		ug/l	5
2-Methylnaphthalene	SW846 8270	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7		ug/l	7

SURROGATE RECOVERIES Compound	Acceptance Limits				
Nitrobenzene-d5	35-114	69	78	71	
2-Fluorobiphenyl	43-116	62	70	64	
Terphenyl-d14	33-141	90	88	91	

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.
N/S=Not Submitted.

Approved by: Jim Taylor Q.C. Officer
Jerry Dees, Laboratory Director

Date/Time: 25-Mar-96 @ 13:24
Report Generated

End of Report

PWC 5090/14

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, Fl. 32508
Phone (904) 452-4728/3642
Autovon 922-4728/3642

Laboratory Report
EDB by Method 504

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603068 C
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#	Lab	1- 61091			2- 61092			3- 61093			4- 61094		
Sample Name	Requester	MW-1			MW-2			MW-3			MW-4		
Collector Name		P. J. B.			P. J. B.			P. J. B.			P. J. B.		
Date/Time	Comp start												
Collected	Comp stop												
(Military)	Grab	15 Mar 96	@	1400	15 Mar 96	@	1300	15 Mar 96	@	1200	15 Mar 96	@	1100
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		B. Jacquart			B. Jacquart			B. Jacquart			B. Jacquart		
Date of Analysis		22 Mar 96			22 Mar 96			22 Mar 96			22 Mar 96		
Sample Matrix		Groundwater			Groundwater			Groundwater			Groundwater		
Dilution		Dilution	X	1	Dilution	X	1	Dilution	X	1	Dilution	X	1
PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.
Volatiles by GCMS (Capillary)	METHOD #	1- 61091	units	Limit	2- 61092	units	Limit	3- 61093	units	Limit	4- 61094	units	Limit
Ethylene Dibromide	EPA 504	BDL	ug/l	0.02	BDL	ug/l	0.02	BDL	ug/l	0.02	BDL	ug/l	0.02

SURROGATE RECOVERIES Compound	Acceptance Limits				
2,4,5,6-Tetrachloro-m-xylene	60-140	101	101	96	96

Comments: ug/l=micrograms per liter. BDL=Below Detection Limit.

Approved by: Jim Taylor Q.C. Officer
Jerry Dees, Laboratory Director

Date/Time: 29-Mar-96 @ 10:02
Report Generated

PWC 5090/14

End of Report

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, Fl. 32508
Phone (904) 452-4728/3642
Autovon 922-4728/3642

Laboratory Report
EDB by Method 504

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9603069 C
Sample Date: 15 Mar 96
Received Date: 15 Mar 96
Sample Site: Bronson Field, Bldg. 1162
Job Order #: 130 5001

Sample ID#	Lab	1- 61095	2- 61096	3- 61097	4-
Sample Name	Requester	MW-5	Duplicate	Eq. Blank	
Collector Name		P. J. B.	P. J. B.	P. J. B.	
Date/Time	Comp start				
Collected	Comp stop				
(Military)	Grab	15 Mar 96 @ 1000	15 Mar 96 @ N/S	15 Mar 96 @ 0930	
Sample Type	Comp/Grab	Grab	Grab	Grab	
Analyst		B. Jacquart	B. Jacquart	B. Jacquart	
Date of Analysis		22 Mar 96	22 Mar 96	22 Mar 96	
Sample Matrix		Groundwater	Groundwater	Deionized water	
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1
PARAMETER		ID#	ID#	ID#	ID#
Volatiles by GCMS (Capillary)	METHOD #	1- 61095 units Det. Limit	2- 61096 units Det. Limit	3- 61097 units Det. Limit	4- units Det. Limit
Ethylene Dibromide	EPA 504	BDL ug/l 0.02	BDL ug/l 0.02	BDL ug/l 0.02	ug/l 0.02

SURROGATE RECOVERIES Compound	Acceptance Limits				
2,4,5,6-Tetrachloro-m-xylene	60-140	121	92	96	

Comments: ug/l=micrograms per liter. BDL=Below Detection Limit.
N/S = Not Submitted.

Approved by: Jim Taylor Q.C. Officer
Jerry Dees, Laboratory Director

Date/Time: 29-Mar-96 @ 10:30
Report Generated

PWC 5090/14

End of Report

AnalyticalTechnologies,Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

April 8, 1996

INVOICE NUMBER 809700
LAB CODE 160

NAS, CO, PWC

DEFENSE FINANCE & ACCOUNTING SERVICE, OP
OAKLAND , CA 94623-3870

FILE COPY
Original Sent to Oakland, CA

Accession #: 603407
Client Name: NAS, CO, PWC
Office: NAS PENSACOLA, FLORIDA
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Num: CALL #9026
Project Location: BRONSON SITE 1162
Report Sent To: JERRY DEES
P. O. Number: STUB #6081-6162
Billing Client: 514002

Samples	Test	Matrix	Description	Actual Price	Extended Price
7	FLPRO	AQ	FLPRO\PETRO. HYDROCARBON RANGE C8-C40	150.00	1,050.00
				Total:	$1,050.00

CALL #9026
STUB #6081-6162
JOB #1305001
ITEM #005

NET 30 DAYS
1 1/2 % Finance Charge on Balance Due over 30 Days

****
* REMIT PAYMENT TO: *
* American Environmental Network (FL) Inc. *
* P.O. Box 5418 *
* Boston, MA 02206 *
****

INVOICE ORIGINAL COPY

AnalyticalTechnologies, Inc. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

SIGNATURE PAGE

Reviewed by: _____
ATI Project Manager

Client:	NAS, CO, PWC NAS PENSACOLA, FLORIDA
Project Name:	PETROLEUM HYDROCARBONS FL PRO
Project Number:	CALL #9026
Project Location:	BRONSON SITE 1162
Accession Number:	603407
Project Manager:	JERRY DEES
Sampled By:	P.J.B.

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Analysis Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	603407
Client:	NAS, CO, PWC
Project Number:	CALL #9026
Project Name:	PETROLEUM HYDROCARBONS FL PRO
Project Location:	BRONSON SITE 1162
Department:	SEMI-VOLATILE FUELS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 001
Client Sample Id: 61091 BRONSON MW1
Sample Date/Time: 15-MAR-96 1400
Received Date: 22-MAR-96

Batch: FPW026
Blank: A
Dry Weight %: N/A
Extraction Date: 26-MAR-96
Analysis Date: 01-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	180	100	
NONATRIACONTANE	%REC/SURR	69	42-193	
ORTHO TER PHENYL	%REC/SURR	111	82-142	
ANALYST	INITIALS	KS		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 002 Sample Date/Time: 15-MAR-96 1300
Client Sample Id: 61092 BRONSON MW2 Received Date: 22-MAR-96

Batch: FPW026 Extraction Date: 26-MAR-96
Blank: A Dry Weight %: N/A Analysis Date: 01-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	67	42-193	
ORTHO TER PHENYL	%REC/SURR	101	82-142	
ANALYST	INITIALS	KS		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 003 Sample Date/Time: 15-MAR-96 1200
Client Sample Id: 61093 BRONSON MW3 Received Date: 22-MAR-96

Batch: FPW026 Extraction Date: 26-MAR-96
Blank: A Dry Weight %: N/A Analysis Date: 01-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	135	42-193	
ORTHO TER PHENYL	%REC/SURR	110	82-142	
ANALYST	INITIALS	KS		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 004
Client Sample Id: 61094 BRONSON MW4
Sample Date/Time: 15-MAR-96 1100
Received Date: 22-MAR-96

Batch: FPW026
Blank: A
Dry Weight %: N/A
Extraction Date: 26-MAR-96
Analysis Date: 01-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	78	42-193	
ORTHO TER PHENYL	%REC/SURR	86	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 005 Sample Date/Time: 15-MAR-96 1000
Client Sample Id: 61095 BRONSON MW5 Received Date: 22-MAR-96

Batch: FPW026 Extraction Date: 26-MAR-96
Blank: A Dry Weight %: N/A Analysis Date: 02-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	131	42-193	
ORTHO TER PHENYL	%REC/SURR	104	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 006 Sample Date/Time: 15-MAR-96 N/S
Client Sample Id: 61096 BRONSON DUP Received Date: 22-MAR-96

Batch: FPW026 Extraction Date: 26-MAR-96
Blank: A Dry Weight %: N/A Analysis Date: 02-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	100	100	
NONATRIACONTANE	%REC/SURR	121	42-193	
ORTHO TER PHENYL	%REC/SURR	99	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: WATER
QC Level: I

Lab Id: 007 Sample Date/Time: 15-MAR-96 0930
Client Sample Id: 61097 BRONSON EQ BLNK Received Date: 22-MAR-96

Batch: FPW026 Extraction Date: 26-MAR-96
Blank: A Dry Weight %: N/A Analysis Date: 02-APR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	65	42-193	
ORTHO TER PHENYL	%REC/SURR	97	82-142	
ANALYST	INITIALS	KS		

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"Method Report Summary"

Accession Number: 603407
Client: NAS, CO, PWC
Project Number: CALL #9026
Project Name: PETROLEUM HYDROCARBONS FL PRO
Project Location: BRONSON SITE 1162
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Client Sample Id:	Parameter:	Unit:	Result:
61091 BRONSON MW1	TOTAL PETROLEUM HYDROCARBON	UG/L	180
61096 BRONSON DUP	TOTAL PETROLEUM HYDROCARBON	UG/L	100

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Quality Control Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	603407
Client:	NAS, CO, PWC
Project Number:	CALL #9026
Project Name:	PETROLEUM HYDROCARBONS FL PRO
Project Location:	BRONSON SITE 1162
Department:	SEMI-VOLATILE FUELS

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

Date 05-Apr-96

"QC Report"

Title: Water Blank
Batch: FPW026
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992

Blank Id: A Date Analyzed: 28-MAR-96 Date Extracted: 26-MAR-96

Parameters:	Units:	Results:	Reporting Limits:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100
ORTHO TER PHENYL	%REC/SURR	101	82-142
ANALYST	INITIALS	KS	
C-39	%REC/SURR	77	42-193

Comments:

ANALYTICAL TECHNOLOGIES, INC. 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"QC Report"

Title: Water Reagent
Batch: FPW026
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992

RS Date Analyzed: 29-MAR-96 RS Date Extracted: 26-MAR-96
RSD Date Analyzed: 29-MAR-96 RSD Date Extracted: 26-MAR-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
TOTAL PETROLEUM HYDROCARBON	294	<100	263	89	252	86	3	30	57-122
Surrogates:									
ORTHO TER PHENYL				**		**			82-142
C-39				**		**			42-193

Comments:
** = SURROGATE NOT ADDED TO REAGENT SPIKE/REAGENT SPIKE DUPLICATE.

Notes:
N/S = NOT SUBMITTED N/A = NOT APPLICABLE D = DILUTED OUT
UG/L = PARTS PER BILLION. < = LESS THAN REPORTING LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS.
SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

Common notation for Organic reporting

N/S = NOT SUBMITTED
N/A = NOT APPLICABLE
D = DILUTED OUT
UG = MICROGRAMS
UG/L = PARTS PER BILLION.
UG/KG = PARTS PER BILLION.
MG/M3 = MILLIGRAM PER CUBIC METER.
PPMV = PART PER MILLION BY VOLUME.
MG/KG = PARTS PER MILLION.
MG/L = PARTS PER MILLION.
< = LESS THAN DETECTION LIMIT.
* = VALUES OUTSIDE OF QUALITY CONTROL LIMITS

SOURCES FOR CONTROL LIMITS ARE INTERNAL LABORATORY QUALITY ASSURANCE PROGRAM AND REFERENCED METHOD.

ORGANIC SOILS ARE REPORTED ON A DRYWEIGHT BASIS.

ND = NOT DETECTED ABOVE REPORTING LIMIT.

RPT LIMIT = REPORTING LIMITS BASED ON METHOD DETECTION LIMIT STUDIES.

RPD = RELATIVE PERCENT DIFFERENCE (OR DEVIATION)

ATI/GC/FID
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME IONIZATION DETECTOR (FID).

ATI/GC/FIX
ATI GAS CHROMATOGRAPHIC METHOD FOR ANALYSIS OF FIXED GASES EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD) AND FLAME IONIZATION DETECTOR (FID).

ATI/GC/FPD
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH FLAME PHOTOMETRIC DETECTOR (FPD) IN SULFUR-SPECIFIC MODE.

ATI/GC/PID
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH PHOTOIONIZATION DETECTOR (PID).

ATI/GC/TCD
ATI GAS CHROMATOGRAPHIC METHOD EMPLOYING DIRECT INJECTION ON COLUMN WITH THERMAL CONDUCTIVITY DETECTOR (TCD).

LJT = LISA THOMASON
SW = STEVE WILHITE
KW = KAREN WADSWORTH
PL = PAUL LESCHENSKY
RW = ROBERT WOLFE
BV = BEN VAUGHN
BC = BETH COLEMAN
KS = KENDALL SMITH
KK = KERRY KUST
DWB = DAVID W. BOWERS
RP = ROB PEREZ

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, Fl. 32508-6500
Phone (904) 452-4728
Autovon 922-4728
FAX (904) 452-2387/2799

Laboratory Report
Total Lead

Requester:	NPWC Environmental	Report Number:	9603068 D
Address:	Bldg. 3887	Sample Date:	15 Mar 96
	NAS Pensacola, Fl 32508	Received Date:	15 Mar 96
Phone #:	452-4728	Sample Site:	Bronson Field, Bldg. 1162
Contact:	Greg Campbell	Job Order #:	130 5001

Sample ID#	Lab	1- 61091	2- 61092	3- 61093	4- 61094	Analyst(s):
Sample Name	Requester	MW-1	MW-2	MW-3	MW-4	ICP – Brian Nelson
Collector Name		P. J. B.	P. J. B.	P. J. B.	P. J. B.	
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	15 Mar 96 @ 1400	15 Mar 96 @ 1300	15 Mar 96 @ 1200	15 Mar 96 @ 1100	ICP – 1 Apr 96
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab	
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater	

PARAMETER		ID#			Det.	ID#			Det.	ID#			Det.	ID#			Det.	
Metals:	METHOD #	1-	61091	units	Limit	2-	61092	units	Limit	3-	61093	units	Limit	4-	61094	units	Limit	Preservative(s)
Lead(Pb)	SW 6010	X	0.19	mg/l	0.05	X	0.12	mg/l	0.05	X	0.14	mg/l	0.05	X	0.22	mg/l	0.05	None

Comments: mg/kg=milligrams per kilogram. mg/l=milligrams per liter. BDL=Below Detection Limit.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 02-Apr-96 10:27

End of Report

PWC 5090/14

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, Fl. 32508-6500
Phone (904) 452-4728
Autovon 922-4728
FAX (904) 452-2387/2799

Laboratory Report
Total Lead

Requester:	NPWC Environmental	Report Number:	9603069 D
Address:	Bldg. 3887	Sample Date:	15 Mar 96
	NAS Pensacola, Fl 32508	Received Date:	15 Mar 96
Phone #:	452-4728	Sample Site:	Bronson Field, Bldg. 1162
Contact:	Greg Campbell	Job Order #:	130 5001

Sample ID#	Lab	1- 61095	2- 61096	3- 61097	4-	Analyst(s):
Sample Name	Requester	MW-5	Duplicate	Eq. Blank		ICP - Brian Nelson
Collector Name		P. J. B.	P. J. B.	P. J. B.		
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	15 Mar 96 @ 1000	15 Mar 96 @ N/S	15 Mar 96 @ 0930		ICP -1 Apr 96
Sample Type	Comp/Grab	Grab	Grab	Grab		
Sample Matrix		Groundwater	Groundwater	Deionized water		

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.	
Metals:	METHOD #	1- 61095	units	Limit	2- 61096	units	Limit	3- 61097	units	Limit	4-	units	Limit	Preservative(s)
Lead(Pb)	SW 6010	X 0.12	mg/l	0.05	X 0.16	mg/l	0.05	X BDL	mg/l	0.05		mg/l	0.05	None

Comments: mg/kg=milligrams per kilogram. mg/l=milligrams per liter. BDL=Below Detection Limit.
N/S = Not Submitted.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 02-Apr-96 10:28

End of Report

PWC 5090/14

Analytical Technologies, Inc.
11 East Olive Road • Pensacola, Florida 32514 • (904) 474-1001

CHAIN OF CUSTODY

PART 1 - Bottle Shipment Information — **ATI ACCESSION #:** 603407

CLIENT: NPWC ENV. LAB CODE 920 — **CLIENT PROJECT NUMBER:** STUB #6081-6162

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS								D.I. Trip Blank	NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz.	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm		
7																✓								

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information — **PARAMETERS AND PRESERVATIVES REQUESTED**

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	PETROLEUM HYDROCARBONS FL PRO											TOTAL # OF BOTTLES
61091 BRONSON MW1	3/15/96	1400	GW			✓								1	1
61092 MW2		1500				✓								2	1
61093 MW3		1200				✓								3	1
61094 MW4		1100				✓								4	1
61095 MW5		1000				✓								5	1
61096 DUP		—				✓								6	1
61097 EQ BLK		0950	DI			✓								7	1

Total Number of Bottles/Containers: 7

Relinquished By	Date	Time	Received By	Date	Time
Kathy Jones	3/22/96	1240	Kathy Lynn Lindsey	3-22-96	1240

Client NPWC ENV. LAB CODE 920			Purchase Order Number STUB #6081-6162
Address BLDG 5297 NAS			Project Number CALL #9026
City PENSACOLA	State FL	Zip 32508	Project Name PETROLEUM HYDROCARBONS FL PRO
Phone Number (904) 452-5642	Fax Number (452-2799		Project Location BRONSON SITE 1162
Project Manager JERRY DEES			Sampled By R.J.S.

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days	✓	STUB #6081-6162 LEGAL DUE 3/29/96
RUSH (must be approved in advance)		CALL #9026 WRITTEN DUE 4/5/96
<- 48 hours - 2x standard price		TO #150500 1
3-7 days - 1.5x standard price		ITEM # 205
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed _____

HAZARDOUS WASTE CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

NPWC Environmental Laboratory
Bldg. 3881, Code 920
NAS Pensacola, FL 32508-6500
Ph# -(904)452-4728/8587
Fax# - (904) 452-2799/2387
Autovon 922 prefix

Requester: NPWC Environmental Dept.
Address: Bldg. 3887, Code 910
NAS Pensacola, FL 32508
Phone #: (904) 452-4728
Contact: Grey Campbell
Job Order #: 1305001

Report Required? Yes No DEP? Yes No
Lab ID Number:
Sample Date: 3.15.96
Received Date: 3.15.96
Sample Site: 1162 BRONSON Field
Lab Due Date:

Sample ID #	Lab	#1- 61091	#2- 61092	#3- 61093	#4- 61094
Sample Name or Location	----------	MW-1	MW-2	MW-3	MW-4
Sampled by	----------	PJB	PJB	PJB	PJB
Composite Date/Time Collected	Begin				
	Frequency	3.15.96	3.15.96	3.15.96	3.15.96
	End				
Grab Time	----------	1400	1300	1200	1100
Sample Matrix	----------	GW	GW	GW	GW

Notes: KAG

SINGLE PARAMETER by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required (L/S)	Preservative(s) Used (Liquids)
Gas Chromatography	EPA SW 8000									5	40 ml x 2/4 oz.	HCl to pH<2/4°C
Halo. Vol. Org./GC	EPA SW 8010									5	40 ml x 2/4 oz.	HCl to pH<2/4°C
EDB & DBCP/GC	EPA SW 8011	X	1 EDB	X	1	X	1	X	1	3	40 ml x 2/4 oz.	HCl to pH<2/4°C
Non-Halo. Vol. Org./GC	EPA SW 8015/MOD									5	1L (A) x 2/4 oz.	4°C
Arom. Vol. Org./GC	EPA SW 8020									3	40 ml x 2/4 oz.	HCl to pH<2/4°C
Halo./Arom. Vol. Org./GC	EPA 8010/8020	X	3 601/602	X	3	X	3	X	3	7	40 ml x 2/4 oz.	HCl to pH<2/4°C
Organochlor. Pest./PCB/GC	EPA SW 8080A									8	1Lx2/4 oz.	4°C
Chlor. Herb./GC	EPA SW 8150A									9	40 ml x 2/4 oz.	4°C
VOC/GCMS-Cap.	EPA SW 8260									9	40 ml x 2/4 oz.	HCl to pH<2/4°C
Semivol. Org./GCMS-Cap.	EPA SW 8270A									18	1Lx3/4 oz.	4°C

GROUP PARAMETERS by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required (L/S)	Preservative(s) Used (Liquids)
HW Characterization (complete)	EPA SW-846									60	See below	See below
Ignitability (Flashpoint)	EPA SW 1010									1	250ml/4 oz.	4°C
Reactivity (Cyanide & Sulfide)	SW 846									4	1L/4 oz.	4°C
Corrosivity (pH)	SW 9040 or 9045									1	250ml/4 oz.	4°C
Toxicity (TCLP) complete	EPA SW-846									55	See below	See below
Non Volatile TCLP Extraction	EPA SW 1311									5	40 mlx3/4 oz.	4°C
ZHE TCLP Extraction	EPA SW 1311									6	1Lx4/32 oz.	HCl to pH<2/4°C
TCLP Acid Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
TCLP B/N Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
TCLP Pesticides	EPA SW 8080A									8	1L/4 oz.	4°C
TCLP Herbicides	EPA SW 8150A									9	1L/4 oz.	4°C
TCLP Volatiles	EPA SW 8260									9	40 mlx3/4 oz.	HCl to pH<2/4°C
TCLP Metals (8)	EPA SW-846									6	500 ml/4 oz.	HNO_3 to pH<2
Priority Pollutants (complete)	EPA SW-846									42	See below	See below
PP Acid Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
PP B/N Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
PP Pesticides	EPA SW 8080A									8	1L/4 oz.	4°C
PP Volatiles	EPA SW 8260									9	40 mlx3/4 oz.	HCl to pH<2/4°C
PP Metals (13)	EPA SW-846									9	500 ml/4 oz.	HNO_3 to pH<2
PP Cyanide & Phenol	EPA 600									4	1Lx2/4 oz.	NaOH/H_2SO_4/None
F001 - F005 Solvents	EPA SW-846									28	1Lx2&40mlx3/16 oz.	HNO_3 to pH<2
RCRA Metals (8)	EPA SW-846									7	500 ml/4 oz.	HNO_3 to pH<2
PCBs in Oil	EPA SW 8080A									3	40 ml	4°C
Other:												
PB metals		X	1	X	1	X	1	X	1			
BH4 & TP4		X	3	X	3	X	3	X	3			

Comments:

Relinquished by: [signature]
Date/Time: 3.15.96 / 1525

Received by: Kathy Powell
Date/Time: 3.15.96 / 1525

PWC 9510/6

HAZARDOUS WASTE CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

NPWC Environmental Laboratory
Bldg. 3891, Code 920
NAS Pensacola, FL 32508-6500
Ph# -(904)452-4728/8587
Fax# - (904) 452-2799/2387
Autovon 922 prefix

Requester: NPWC Environmental Dept.
Address: Bldg. 3887, Code 910
NAS Pensacola, FL 32508
Phone #: (904) 452-4728
Contact: Grey Campbell
Job Order #: 1305001

Report Required? Yes No DEP? Yes No
Lab ID Number:
Sample Date: 3.15.96
Received Date: 3.15.96
Sample Site: 1162 Brouson Field
Lab Due Date:

Sample ID #	Lab	#1- 61095	#2- 61096	#3- 61097	#4- 61098
Sample Name or Location	----------	MW-5.	Duplicate	EQ. Blank	Trip Blank
Sampled by	----------	PJB	PJB	PJB	CAB
Composite Date/Time Collected	Begin				
	Frequency	3.15.96	3.15.96	3.15.96	3.15.96
	End				
Grab Time	----------	1060	—	0930	AM
Sample Matrix	----------	GW	GW	DI	DI

Notes: KAG

SINGLE PARAMETER by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required (L/S)	Preservative(s) Used (Liquids)
Gas Chromatography	EPA SW 8000									5	40 ml x 2/4 oz.	HCl to pH<2/4° C
Halo. Vol. Org./GC	EPA SW 8010									5	40 ml x 2/4 oz.	HCl to pH<2/4° C
EDB & DBCP/GC	EPA SW 8011	X	1 EDB	X	1	X	1	~~X~~	~~1 PJB~~	3	40 ml x 2/4 oz.	HCl to pH<2/4° C
Non-Halo. Vol. Org./GC	EPA SW 8015/MOD)									5	1L (A) x 2/4 oz.	4°C
Arom. Vol. Org./GC	EPA SW 8020									3	40 ml x 2/4 oz.	HCl to pH<2/4° C
Halo./Arom. Vol. Org./GC	EPA 8010/8020	X	3 601/602	X	3	X	3	X	3	7	40 ml x 2/4 oz.	HCl to pH<2/4° C
Organochlor. Pest./PCB/GC	EPA SW 8080A									8	1Lx2/4 oz.	4°C
Chlor. Herb./GC	EPA SW 8150A									9	40 ml x 2/4 oz.	4°C
VOC/GCMS-Cap.	EPA SW 8260									9	40 ml x 2/4 oz.	HCl to pH<2/4° C
Semivol. Org./GCMS-Cap.	EPA SW 8270A									18	1Lx3/4 oz.	4°C

GROUP PARAMETERS by Method Name	METHOD #	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required (L/S)	Preservative(s) Used (Liquids)
[illegible]N Characterization (complete)	EPA SW-846									60	See below	See below
[illegible]ntability (Flashpoint)	EPA SW 1010									1	250ml/4 oz.	4°C
Reactivity (Cyanide & Sulfide)	SW 846									4	1L/4 oz.	4°C
Corrosivity (pH)	SW 9040 or 9045									1	250ml/4 oz.	4°C
Toxicity (TCLP) complete	EPA SW-846									55	See below	See below
Non Volatile TCLP Extraction	EPA SW 1311									5	40 mlx3/4 oz.	4°C
ZHE TCLP Extraction	EPA SW 1311									6	1Lx4/32 oz.	HCl to pH<2/4° C
TCLP Acid Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
TCLP B/N Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
TCLP Pesticides	EPA SW 8080A									8	1L/4 oz.	4°C
TCLP Herbicides	EPA SW 8150A									9	1L/4 oz.	4°C
TCLP Volatiles	EPA SW 8260									9	40 mlx3/4 oz.	HCl to pH<2/4° C
TCLP Metals (8)	EPA SW-846									6	500 ml/4 oz.	HNO_3 to pH<2
Priority Pollutants (complete)	EPA SW-846									42	See below	See below
PP Acid Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
PP B/N Extractables	EPA SW 8270A									10	1L/4 oz.	4°C
PP Pesticides	EPA SW 8080A									8	1L/4 oz.	4°C
PP Volatiles	EPA SW 8260									9	40 mlx3/4 oz.	HCl to pH<2/4° C
PP Metals (13)	EPA SW-846									9	500 ml/4 oz.	HNO_3 to pH<2
PP Cyanide & Phenol	EPA 600									4	1Lx2/4 oz.	NaOH/H_2SO_4/None
F001 - F005 Solvents	EPA SW-846									28	1Lx2&40mlx3/16 oz.	HNO_3 to pH<2
RCRA Metals (8)	EPA SW-846									7	500 ml/4 oz.	HNO_3 to pH<2
PCBs in Oil	EPA SW 8080A									3	40 ml	4°C
Other:												
Pb metals		X	1	X	1	X	1					
BNA + TPH		X	x3 PJB	X	x3 PJB	X	x3 PJB					

Comments:

Relinquished by: [signature]
Date/Time: 3.15.96 / 1525

Received by: [signature]
Date/Time: 3.15.96 / 1525

PWC 9510/8

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, FL 32508-5303
Phone (904) 452-4728
DSN 922-4728
FAX (904) 452-2387/2799

Laboratory Report
Total Lead

Requester:	NPWC Environmental	**Report Number:**	9606054
Address:	Bldg. 3887	**Sample Date:**	16 May 96
	NAS Pensacola, FL 32508	**Received Date:**	21 May 96
Phone #:	452-4728	**Sample Site:**	Bronson Field Site 1162
Contact:	Greg Campbell	**Job Order #:**	130 5001

Sample ID#	Lab	1- 62222	2- 62223	3- 62224	4- 62225	**Analyst(s):**
Sample Name	Requester	MW-3	MW-2	MW-6	MW-4	ICP - Brian Nelson
Collector Name		RDH	RDH	RDH	RDH	
Date/Time	Comp start					
Collected	Comp stop					**Date(s) of analysis:**
(Military)	Grab	16 May 96 @ 1510	16 May 96 @ 1521	16 May 96 @ 1644	16 May 96 @ 1618	ICP - 12 Jun 96
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab	
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater	

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.	
Metals:	**METHOD #**	1- 62222	units	Limit	2- 62223	units	Limit	3- 62224	units	Limit	4- 62225	units	Limit	**Preservative(s)**
Lead(Pb)	SW 6010A	X BDL	mg/l	0.05	BDL	mg/l	0.05	BDL	mg/l	0.05	BDL	mg/l	0.05	None

Comments: mg/kg=milligrams per kilogram. mg/l=milligrams per liter. BDL=Below Detection Limit.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 18-Jun-96 13:05

End of Report

PWC 5090/14

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, FL 32508-5303
Phone (904) 452-4728
DSN 922-4728
FAX (904) 452-2387/2799

Laboratory Report
Total Lead

Requester: NPWC Environmental
Address: Bldg. 3887, NAS Pensacola, FL 32508
Phone #: 452-4728
Contact: Greg Campbell

Report Number: 9606055
Sample Date: 16 May 96
Received Date: 21 May 96
Sample Site: Bronson Field Site 1162
Job Order #: 130 5001

Sample ID#	Lab	1- 62226	2- 62227	3-	4-	Analyst(s):
Sample Name	Requester	MW-1	MW-5			ICP - Brian Nelson
Collector Name		RDH	RDH			
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	16 May 96 @ 1723	16 May 96 @ 1735			ICP - 12 Jun 96
Sample Type	Comp/Grab	Grab	Grab			
Sample Matrix		Groundwater	Groundwater			

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.	
Metals:	METHOD #	1- 62226	units	Limit	2- 62227	units	Limit	3-	units	Limit	4-	units	Limit	Preservative(s)
Lead(Pb)	SW 6010A	X 0.11	mg/l	0.05	BDL	mg/l	0.05		mg/l	0.05		mg/l	0.05	None

Comments: mg/kg=milligrams per kilogram. mg/l=milligrams per liter. BDL=Below Detection Limit.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 18-Jun-96 13:07

End of Report

PWC 5090/14

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 62324
Sample Date: 05/22/96
Received Date: 05/23/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62324
Sample Name / Location	MW-1 BF1162
Collector's Name	RDH
Date & Time Collected	5/22/96 @ 1850
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	05/24/96 / JM
Date of Analysis	05/2/496
Sample Matrix	GW
Dilution	X 1

Compound Name	1- 62324	units	Det. Limit	Flags
Benzene	11	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	5	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodiflouromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	100	ug/L	1	
Methylene Chloride	BDL	ug/L	5	
Methyl-tert-butyl ether (MTBE)	BDL	ug/l	5	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	500	ug/L	5	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichloroflouromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	1000	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	113
Toluene-d8	86-119	106
Bromoflourobenzene	85-116	108

COMMENTS :

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

Approved by : Jerry Dees, Laboratory Director

Date: 6/23/96
Report Generated

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 62325
Sample Date: 05/22/96
Received Date: 05/23/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62325			
Sample Name / Location	Eq. Blk BF 1162			
Collector's Name	RDH			
Date & Time Collected	5/22/96 @ 1845			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	05/24/96 / JM			
Date of Analysis	05/2/496			
Sample Matrix	GW			
Dilution	X 1			
Compound Name	**1- 62325**	**units**	**Det. Limit**	**Flags**
Benzene	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	5	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodiflouromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	5	
Methyl-tert-butyl ether (MTBE)	BDL	ug/l	5	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichloroflouromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	110
Toluene-d8	86-119	108
Bromoflourobenzene	85-116	108

COMMENTS :

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

Approved by : Jerry Dees, Laboratory Director

Date: 6/23/96
Report Generated

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
^N 922-4728/3642

Client: NPWC Environmental
Addres Bldg 3887
NAS Pensacola, Fl 32508
Phone 452-4728
Contac Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62324
Sample Date: 05/22/96
Received Date: 05/23/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- **62324**		
Sample Name / Location	MW-1 BF1162		
Collector's Name	RDH		
Date & Time Collected	5/22/96 @ 1850		
Sample Type (composite or grab)	Grab		
Analyst	M. Chambers		
Date of Extraction / Initials	5/24/96; JJ		
Date of Analysis	6/6/96		
Sample Matrix	GW		
Dilution	X 1		
COMPOUND NAME	1- **62324**	units	Det. Limit
Acenaphthene	BDL	UG/L	5
Acenaphthylene	BDL	UG/L	5
Anthracene	BDL	UG/L	2
Benzo(a)anthracene	BDL	UG/L	3
Benzo(a)pyrene	BDL	UG/L	2
Benzo(b)flouranthene	BDL	UG/L	4
Benzo(g,h,i)perylene	BDL	UG/L	3
Benzo(k)flouranthene	BDL	UG/L	4
Chrysene	BDL	UG/L	3
Dibenz(a,h)anthracene	BDL	UG/L	3
Flouranthene	BDL	UG/L	2
Flourene	BDL	UG/L	4
Indeno(1,2,3-cd)pyrene	BDL	UG/L	2
1-Methylnaphthalene	5	UG/L	5
2-Methylnaphthalene	7	UG/L	7
Naphthalene	24	UG/L	7
Phenanthrene	BDL	UG/L	3
Pyrene	BDL	UG/L	3

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
Nitrobenzene- d5	35-114	76
2-Flourobiphenyl	43-116	79
Terphenyl -d14	33-141	89

COMMENTS :

BDL = Below detection limit. UG/L = Microgram per liter. * = FL HRS certification pending

Approved by : Date/Time : 6/24/96 1100

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
N 922-4728/3642

Client: NPWC Environmental
Addres Bldg 3887
NAS Pensacola, Fl 32508
Phone 452-4728
Contac Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62325
Sample Date: 05/22/96
Received Date: 05/23/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- **62325**
Sample Name / Location	Eq. Blk BF 1162
Collector's Name	RDH
Date & Time Collected	5/22/96 @ 1845
Sample Type (composite or grab)	Grab
Analyst	M. Chambers
Date of Extraction / Initials	5/24/96; JJ
Date of Analysis	6/6/96
Sample Matrix	GW
Dilution	X 1

COMPOUND NAME	1- **62325**	units	Det. Limit
Acenaphthene	BDL	UG/L	5
Acenaphthylene	BDL	UG/L	5
Anthracene	BDL	UG/L	2
Benzo(a)anthracene	BDL	UG/L	3
Benzo(a)pyrene	BDL	UG/L	2
Benzo(b)flouranthene	BDL	UG/L	4
Benzo(g,h,i)perylene	BDL	UG/L	3
Benzo(k)flouranthene	BDL	UG/L	4
Chrysene	BDL	UG/L	3
Dibenz(a,h)anthracene	BDL	UG/L	3
ouranthene	BDL	UG/L	2
Flourene	BDL	UG/L	4
Indeno(1,2,3-cd)pyrene	BDL	UG/L	2
1-Methylnaphthalene	BDL	UG/L	7
2-Methylnaphthalene	BDL	UG/L	5
Naphthalene	BDL	UG/L	7
Phenanthrene	BDL	UG/L	3
Pyrene	BDL	UG/L	3

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
Nitrobenzene- d5	35-114	69
2-Flourobiphenyl	43-116	78
Terphenyl -d14	33-141	83

COMMENTS :

BDL = Below detection limit. UG/L = Microgram per liter. * = FL HRS certification pending

Approved by : Date/Time : 6/24/96 1100

AMERICAN ENVIRONMENTAL NETWORK 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 605504
Client: NAS, CO, PWC
Project Number: CALL #9038
Project Name: J.N. #13005001
Project Location: BRONSON FIELD
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: GROUNDWATER
QC Level: I

Lab Id: 002 Sample Date/Time: 22-MAY-96 1850
Client Sample Id: MW-1 1162 Received Date: 23-MAY-96

Batch: FPW043 Extraction Date: 23-MAY-96
Blank: A Dry Weight %: N/A Analysis Date: 04-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	4000	100	
NONATRIACONTANE	%REC/SURR	55	42-193	
ORTHO TER PHENYL	%REC/SURR	101	82-142	
ANALYST	INITIALS	KS		

Comments:

AMERICAN ENVIRONMENTAL NETWORK 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession: 605504
Client: NAS, CO, PWC
Project Number: CALL #9038
Project Name: J.N. #13005001
Project Location: BRONSON FIELD
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method: PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method: 3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix: WATER
QC Level: I

Lab Id: 003 Sample Date/Time: 22-MAY-96 1845
Client Sample Id: EQUIPMENT BLANK Received Date: 23-MAY-96

Batch: FPW043 Extraction Date: 23-MAY-96
Blank: A Dry Weight %: N/A Analysis Date: 04-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	57	42-193	
ORTHO TER PHENYL	%REC/SURR	84	82-142	
ANALYST	INITIALS	KS		

Comments:

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 62477
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62477
Sample Name / Location	DMW-6 BF-1162
Collector's Name	LMG/SC
Date & Time Collected	6/3/96 @ 1440
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	06/11/96 / JM
Date of Analysis	06/11/96
Sample Matrix	GW
Dilution	X 1

Compound Name	1- 62477	units	Det. Limit	Flags
Benzene	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	5	
Chloroform	5	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodiflouromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	5	
Methyl-tert-butyl ether (MTBE) *	BDL	ug/l	5	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichloroflouromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	97
Toluene-d8	86-119	105
Bromoflourobenzene	85-116	101

COMMENTS :

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

Approved by : Jerry Dees, Laboratory Director

Date: 6/24/96
Report Generated

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Addres Bldg 3887
NAS Pensacola, Fl 32508
Phone 452-4728
Contac Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62477
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- **62477**		
Sample Name / Location	DMW-6 BF-1162		
Collector's Name	LMG/SC		
Date & Time Collected	6/3/96 @ 1440		
Sample Type (composite or grab)	Grab		
Analyst	M. Chambers		
Date of Extraction / Initials	6/6/96; JJ		
Date of Analysis	6/10/96		
Sample Matrix	GW		
Dilution	X 1.11		
COMPOUND NAME	1- **62477**	units	Det. Limit
Acenaphthene	BDL	UG/L	6
Acenaphthylene	BDL	UG/L	6
Anthracene	BDL	UG/L	2
Benzo(a)anthracene	BDL	UG/L	3
Benzo(a)pyrene	BDL	UG/L	2
Benzo(b)flouranthene	BDL	UG/L	4
Benzo(g,h,i)perylene	BDL	UG/L	3
Benzo(k)flouranthene	BDL	UG/L	4
Chrysene	BDL	UG/L	3
Dibenz(a,h)anthracene	BDL	UG/L	3
Flouranthene	BDL	UG/L	2
Flourene	BDL	UG/L	4
Indeno(1,2,3-cd)pyrene	BDL	UG/L	2
1-Methylnaphthalene *	BDL	UG/L	6
2-Methylnaphthalene	BDL	UG/L	8
Naphthalene	BDL	UG/L	8
Phenanthrene	BDL	UG/L	3
Pyrene	BDL	UG/L	3

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
Nitrobenzene- d5	35-114	74
2-Flourobiphenyl	43-116	79
Terphenyl -d14	33-141	90

COMMENTS :

BDL = Below detection limit. UG/L = Microgram per liter. * = FL HRS certification pending

Approved by : Date/Time : 6/24/96 1555

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Analytical Report

Ethylene Dibromide by Method 504

Client:	NPWC Environmental
Address:	Bldg 3887
	NAS Pensacola, Fl 32508
Phone #:	452-4728
Contact:	Greg Campbell

Lab Report Number:	62477 A
Sample Date:	06/3/96
Received Date:	06/4/96
Sample Site:	Bronson Field
Job Order No.:	130 5001

LAB Sample ID#	1- 62477			
Sample Name / Location	DMW-6 BF-1162			
Collector's Name	LMG/SC			
Date & Time Collected	6/3/96 @ 1440			
Sample Type (composite or grab)	Grab			
Analyst	B. Jacquart			
Date of Extraction / Initials	06/12/96 -BJ			
Date of Analysis	06/12/96			
Sample Matrix	GW			
Dilution			X	1
Compound Name	**1- 62477**	**units**	**Det. Limit**	**Flags**
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Tetra-Chloro-m-Xylene	54-140	111 %

COMMENTS :

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

Approved by : Jerry Dees, Laboratory Director

Date: 6/24/96
Report Generated

 End of Report

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 62478
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62478
Sample Name / Location	Equipment Blank BF - 1162
Collector's Name	LMG/SC
Date & Time Collected	6/3/96 @ 1425
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	06/12/96 / JM
Date of Analysis	06/12/96
Sample Matrix	DI Water
Dilution	X 1

Compound Name	1- 62478	units	Det. Limit	Flags
Benzene	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	5	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodiflouromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	5	
Methyl-tert-butyl ether (MTBE) *	BDL	ug/l	5	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichloroflouromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	100
Toluene-d8	86-119	103
Bromoflourobenzene	85-116	99

COMMENTS :

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

Approved by : Jerry Deese, Laboratory Director

Date: 6/24/96
Report Generated

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Addres Bldg 3887
NAS Pensacola, Fl 32508
Phone 452-4728
Contac Greg Campbell

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62478
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- **62478**		
Sample Name / Location	Equipment Blank BF - 1162		
Collector's Name	LMG/SC		
Date & Time Collected	6/3/96 @ 1425		
Sample Type (composite or grab)	Grab		
Analyst	M. Chambers		
Date of Extraction / Initials	6/6/96; JJ		
Date of Analysis	6/10/96		
Sample Matrix	DI Water		
Dilution	X 1		
COMPOUND NAME	1- **62478**	units	Det. Limit
Acenaphthene	BDL	UG/L	5
Acenaphthylene	BDL	UG/L	5
Anthracene	BDL	UG/L	2
Benzo(a)anthracene	BDL	UG/L	3
Benzo(a)pyrene	BDL	UG/L	2
Benzo(b)flouranthene	BDL	UG/L	4
Benzo(g,h,i)perylene	BDL	UG/L	3
Benzo(k)flouranthene	BDL	UG/L	4
Chrysene	BDL	UG/L	3
Dibenz(a,h)anthracene	BDL	UG/L	3
Flouranthene	BDL	UG/L	2
Flourene	BDL	UG/L	4
Indeno(1,2,3-cd)pyrene	BDL	UG/L	2
1-Methylnaphthalene *	BDL	UG/L	5
2-Methylnaphthalene	BDL	UG/L	7
Naphthalene	BDL	UG/L	7
Phenanthrene	BDL	UG/L	3
Pyrene	BDL	UG/L	3

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
Nitrobenzene- d5	35-114	79
2-Flourobiphenyl	43-116	79
Terphenyl -d14	33-141	88

COMMENTS :

BDL = Below detection limit. UG/L = Microgram per liter. * = FL HRS certification pending

Approved by: Date/Time : 6/24/96

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Analytical Report

Ethylene Dibromide by Method 504

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Lab Report Number: 62478 A
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62478			
Sample Name / Location	Equipment Blank BF - 1162			
Collector's Name	LMG/SC			
Date & Time Collected	6/3/96 @ 1425			
Sample Type (composite or grab)	Grab			
Analyst	B. Jacquart			
Date of Extraction / Initials	06/12/96 -BJ			
Date of Analysis	06/12/96			
Sample Matrix	DI Water			
Dilution	X 1			
Compound Name	**1- 62478**	**units**	**Det. Limit**	**Flags**
Ethylene Dibromide (EDB)	BDL	ug/L	0.02	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	Percent Recovery
Tetra-Chloro-m-Xylene	54-140	114 %

COMMENTS :

BDL = Below Detection Limit. ug/L = Microgram per liter. ug/Kg = Microgram per kilogram.

Approved by : Jerry Dees, Laboratory Director

Date: 6/24/96
Report Generated

 End of Report

Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 922-4728/3642

Client: NPWC Environmental
Address: Bldg 3887
NAS Pensacola, Fl 32508
Phone #: 452-4728
Contact: Greg Campbell

Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 62479
Sample Date: 06/3/96
Received Date: 06/4/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62479
Sample Name / Location	Trip Blank BF - 1162
Collector's Name	LMG/SC
Date & Time Collected	6/3/96
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	06/12/96 / JM
Date of Analysis	06/12/96
Sample Matrix	DI Water
Dilution	X 1

Compound Name	1- 62479	units	Det. Limit	Flags
Benzene	BDL	ug/L	1	
Bromodichloromethane	BDL	ug/L	1	
Bromoform	BDL	ug/L	2	
Bromomethane	BDL	ug/L	3	
Carbon Tetrachloride	BDL	ug/L	1	
Chlorobenzene	BDL	ug/L	1	
Chloroethane	BDL	ug/L	1	
2-Chloroethylvinyl ether	BDL	ug/L	5	
Chloroform	BDL	ug/L	1	
Chloromethane	BDL	ug/L	1	
Dibromochloromethane	BDL	ug/L	1	
1,2-Dichlorobenzene	BDL	ug/L	1	
1,3-Dichlorobenzene	BDL	ug/L	1	
1,4-Dichlorobenzene	BDL	ug/L	1	
Dichlorodiflouromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	5	
Methyl-tert-butyl ether (MTBE)	BDL	ug/l	5	
1,1,2,2-Tetrachloroethane	BDL	ug/L	1	
Tetrachloroethene	BDL	ug/L	1	
Toluene	BDL	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichloroflouromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	100
Toluene-d8	86-119	106
Bromoflourobenzene	85-116	104

COMMENTS :

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

Approved by : Jerry Dees, Laboratory Director

Date: 6/23/96
Report Generated

AMERICAN ENVIRONMENTAL NETWORK 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession:	606092
Client:	NAS, CO, PWC
Project Number:	CALL #9044
Project Name:	FLPRO
Project Location:	BRONSON SITE 1101
Test:	FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method:	PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method:	3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix:	GROUNDWATER
QC Level:	I

Lab Id:	001	Sample Date/Time:	03-JUN-96 1440
Client Sample Id:	62477 BF SITE 1162 (DMW-6)	Received Date:	06-JUN-96
Batch: FPW049		Extraction Date:	07-JUN-96
Blank: A	Dry Weight %: N/A	Analysis Date:	12-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	57	42-193	
ORTHO TER PHENYL	%REC/SURR	99	82-142	
ANALYST	INITIALS	KS		

Comments:

AMERICAN ENVIRONMENTAL NETWORK 11 East Olive Road Pensacola, Florida 32514 (904) 474-1001

"FINAL REPORT FORMAT - SINGLE"

Accession:	606092
Client:	NAS, CO, PWC
Project Number:	CALL #9044
Project Name:	FLPRO
Project Location:	BRONSON SITE 1101
Test:	FLPRO\PETRO. HYDROCARBON RANGE C8-C40
Analysis Method:	PRO / 8015 - SW 846, EPA UST Work Group Nov. 1990, Mod. 8015
Extraction Method:	3510 / SW-846, 3rd Edition, September 1986 and Revision 1, July 1992
Matrix:	GROUNDWATER
QC Level:	I

Lab Id: 002
Client Sample Id: 62478 BF SITE 1162 (EQ. BLK DMW-6)
Sample Date/Time: 03-JUN-96 1425
Received Date: 06-JUN-96

Batch: FPW049
Blank: A
Dry Weight %: N/A
Extraction Date: 07-JUN-96
Analysis Date: 12-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	60	42-193	
ORTHO TER PHENYL	%REC/SURR	88	82-142	
ANALYST	INITIALS	KS		

Comments:

Analytical**Technologies**, Inc.
11 East Olive Road • Pensacola, Florida 32514 • (904) 474-1001

CHAIN OF CUSTODY

PART 1 - Bottle Shipment Information — **ATI ACCESSION #:** 606092

CLIENT: NPWC ENV LAB — **CLIENT PROJECT NUMBER:** 6150-9285

QUANTITY OF SAMPLE CONTAINERS SHIPPED	PRESERVATIVE							PLASTIC CONTAINERS							GLASS CONTAINERS									NOTES
	H_2SO_4	HNO3	HCL	Zn Acetate	$Na_2S_2O_3$	Unpreserved	NaOH	8 oz.	16 oz.	32 oz.	½ gallon	1 gallon	Whirl-pak	100-ML Cup	120 ml (A)	1 liter (A)	1 liter (C)	40 ml Vial	4 oz. wm	8 oz. wm	16 oz. wm	32 oz. wm	D.I. Trip Blank	
7																✓								

Relinquished By:	Time	Date	Received By:	Time	Date

PART 2 - Sample/Project Information

SAMPLE MATRIX CODES

DW DRINKING WATER — AI AIR — SW SURFACE WATER
WW WASTEWATER — SO SOIL — SL SLUDGE
GW GROUNDWATER — OI OIL — ST STORMWATER

	SAMPLE I.D. SITE	SAMPLE DATE	SAMPLE TIME	MATRIX		TOTAL # OF BOTTLES
DMW-6	62477 BF 1142 HOT	6/3/96	GW	1440	1	1
EQ. HX	62478 1142	↓	↓	1425	2	2
DMW-6	62480 1101			1525	3	2
BIK	62481 ✓ 1101	✓	✓	1510	4	2

Total Number of Bottles/Containers: 7

Relinquished By	Date	Time	Received By	Date	Time
Kathy Bengle	6/6/96	1130	[illegible]	6/6/96	1130
[illegible]	6/6/96	1230			

Client NPWC ENV LAB CODE 920			Purchase Order Number 6150-9285
Address BLDG 3297			Project Number CALL #9044
City PENSACOLA	State FL	Zip 32508	Project Name FL PRD
Phone Number 904 452-3642	Fax Number 904 452-2797		Project Location BRONSON SITE 1101
Project Manager			Sampled By PJB

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days	✓	JOB 1305001
RUSH (must be approved in advance)		ITEM # 012
<- 48 hours - 2x standard price		Verbal due 6/13/96
3-7 days - 1.5x standard price		Written due 6/20/96
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed 1

Navy Public Works Center
Environmental Laboratory

Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500
Phone 904-452-3642/4758
Autovon 922-3642

Laboratory Report
Lead in Water

Requester:	PWC Environmental	**Lab ID Number:**	9607110 A
Address:	Bldg. 3887	**Sample Date:**	28 Jun 96
	NAS Pensacola, FL 32508	**Received Date:**	08 Jul 96
Phone #:	452-4728	**Sample Site:**	Bronson Field Site 1162
Contact:	Greg Campbell	**Job Order #:**	130 5001

Sample ID#	Lab	1- 62884	2-	3-	4-	Analyst(s):
Sample Name	Requester	Site 1162 DMW-6				ICP- Brian Nelson
Collector Name		T.H.				
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	28 Jun 96 @ 1730				ICP- 22 Jul 96
Sample Type	Comp/Grab	Grab				
Sample Matrix		Groundwater				

PARAMETER		ID#		Det.	ID#		Det.	ID#		Det.	ID#		Det.	
Metals:	**METHOD #**	1- 62884	units	Limit	2-	units	Limit	3-	units	Limit	4-	units	Limit	**Preservative(s)**
Lead(Pb)	SW 6010	X BDL	mg/l	0.05		mg/l	0.05		mg/l	0.05		mg/l	0.05	N/S

Comments: **mg/l=milligrams per liter. N/S=Not Submitted.**

Approved by: J W Moore, Chemist **Date/Time:** 25-Jul-96 12:53

for Jerry Dees, Laboratory Director

PWC 5090/14

End of Report

APPENDIX E

PWC MEMO TO FILE

OPNAV 5216/144A (Rev. 8-81)

S/N 0107-LF-052-2320

DEPARTMENT OF THE NAVY

Memorandum

DATE: December 6, 1996

FROM: Greg Campbell (Code 911.4)

TO: File

SUBJ: VOA Sampling of ECUA Wells East and West, Bronson Field

REF: (a) Phoncon between Mr. Jack Walters (ECUA) and Mr. Greg Campbell (PWC) on December 6, 1996

1. I asked Mr. Walters, ECUA analytical chemist, whether he had collected groundwater samples from the 2 subject wells and analyzed for VOAs. He said they had taken samples from each well monthly since 1987. He noted that the west well had been taken out of service in June 1995. He noted that the only VOA detected in the groundwater samples collected from the west well was tetrachloroethylene at a maximum concentration of 2 ppb in 1987. He noted that the concentration had decreased to 0.7 ppb in 1995. He also noted that the only VOA detected in the groundwater samples collected from the east well was tetrachloroethylene at a maximum concentration of 1.19 ppb in 1988. The concentration had decreased to 0.06 ppb in 1996. He noted the concentration decrease from 1987 to present may or may not be due to the amount of pumping.

Greg Campbell , P.E.