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CONTAMINATION ASSESSMENT REPORT FOR SITE 1116 OUTLYING LANDING FIELD BRONSON NAS PENSACOLA FL

03/14/1997

NAVY PUBLIC WORKS CENTER

CONTAMINATION ASSESSMENT REPORT

U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON
SITE 1116
PENSACOLA, FLORIDA

PREPARED BY:

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

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MARCH 1997

PREPARED FOR:

SOUTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND
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BYAS GLOVER, CODE 18410, ENGINEER-IN-CHARGE

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

IN REPLY REFER TO:

5090
Code 911.4
Ser 1774
14 March 1997

Mr. John Mitchell
Remedial Project Manager
Florida Dept. Of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Re: CONTAMINATION ASSESSMENT REPORT (CAR) - SITE 1116, U.S. NAVY OUTLYING LANDING FIELD (OLF) BRONSON, PENSACOLA, FLORIDA

Dear Mr. Mitchell:

Enclosed are two copies of the reference report for your action. If you have any questions, please contact Mr. Greg Campbell of my staff at (904) 452-3180 or 452-4728.

Sincerely,

FRANK STUART
Director, Environmental
Engineering Division
By direction of
the Commanding Officer

Enclosure: (2 copies)
(1) Contamination Assessment Report (CAR)
Site 1116, U.S. Navy Outlying Field (OLF)
Bronson, Pensacola, Florida

Copy to:
SOUTHNAVFACENGCOM (Code 18410,
Byes Glover)
NAS Envir. Dept. (Dean Spencer,
Code 00500)

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Contamination Assessment Report

U.S. Navy Outlying Landing Field (OLF) Bronson
Site 1116
Pensacola, Florida

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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 1116, Pensacola Naval Air Station, Pensacola, Florida.

Petroleum contamination was discovered at the site on June 22, 1994, during the removal of five (5) underground tanks. Below is a breakdown of the tanks' number, size, and use:

Number	Capacity (gal)	Use
1116-A	1,500	Heating Fuel Oil
1116-B	1,500	Heating Fuel Oil
1116-C	1,500	Heating Fuel Oil
1116-D	3,000	Heating Fuel Oil
1116-E	240	Butane

The underground tanks, approximately 50 years old, were used to store heating fuel oil and butane (see above for breakdown). The Closure Assessment on the tanks indicated that the concentration of petroleum hydrocarbon vapor levels in the soils was greater than 50 ppm for diesel/kerosene. 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 1116, are presented herein.

1.2 SITE LOCATION AND AREA OF INVESTIGATION

Site 1116 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 the 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

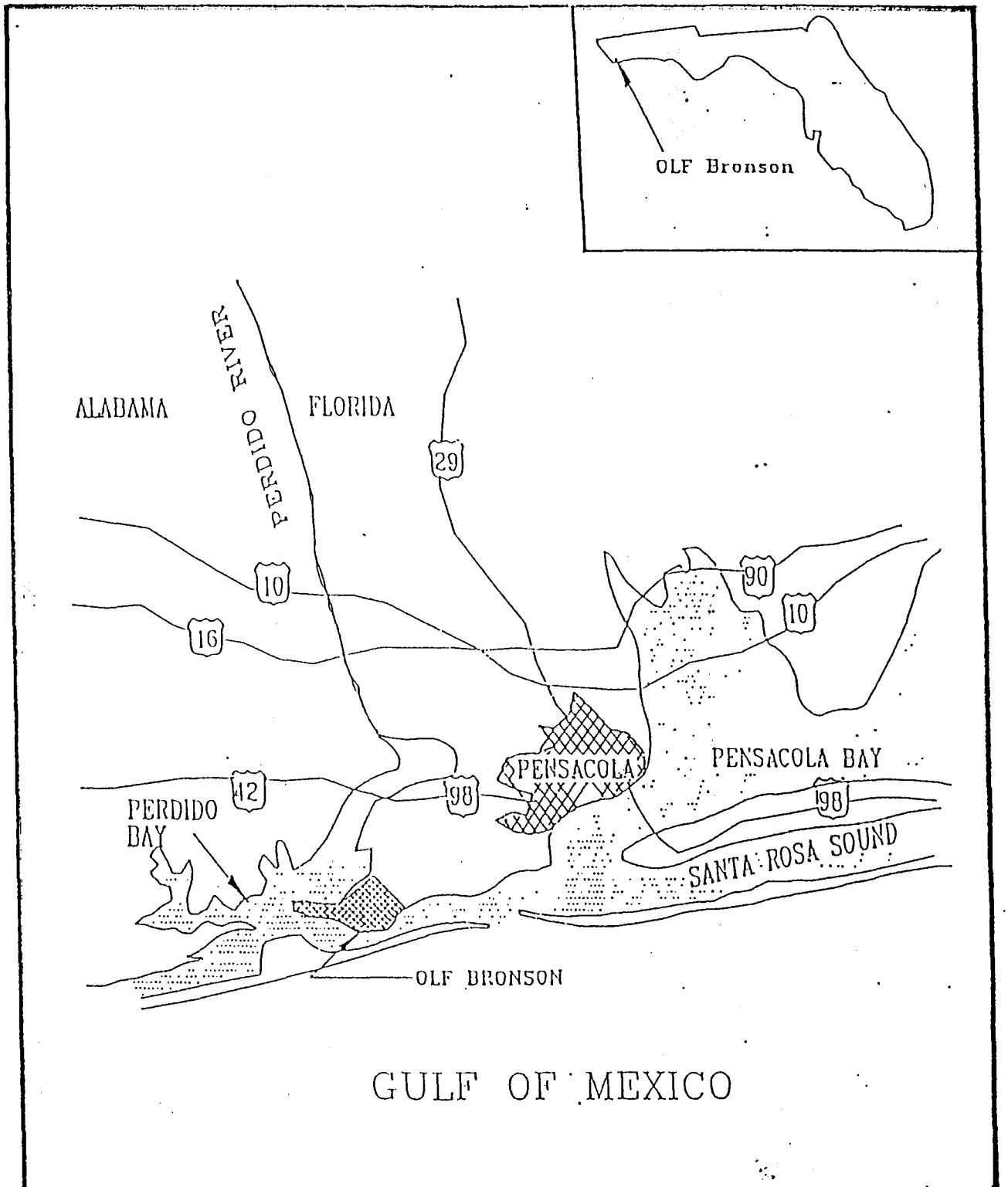


FIGURE 1-1.
OLF Bronson
VICINITY MAP

Key:

Highway

Water Way

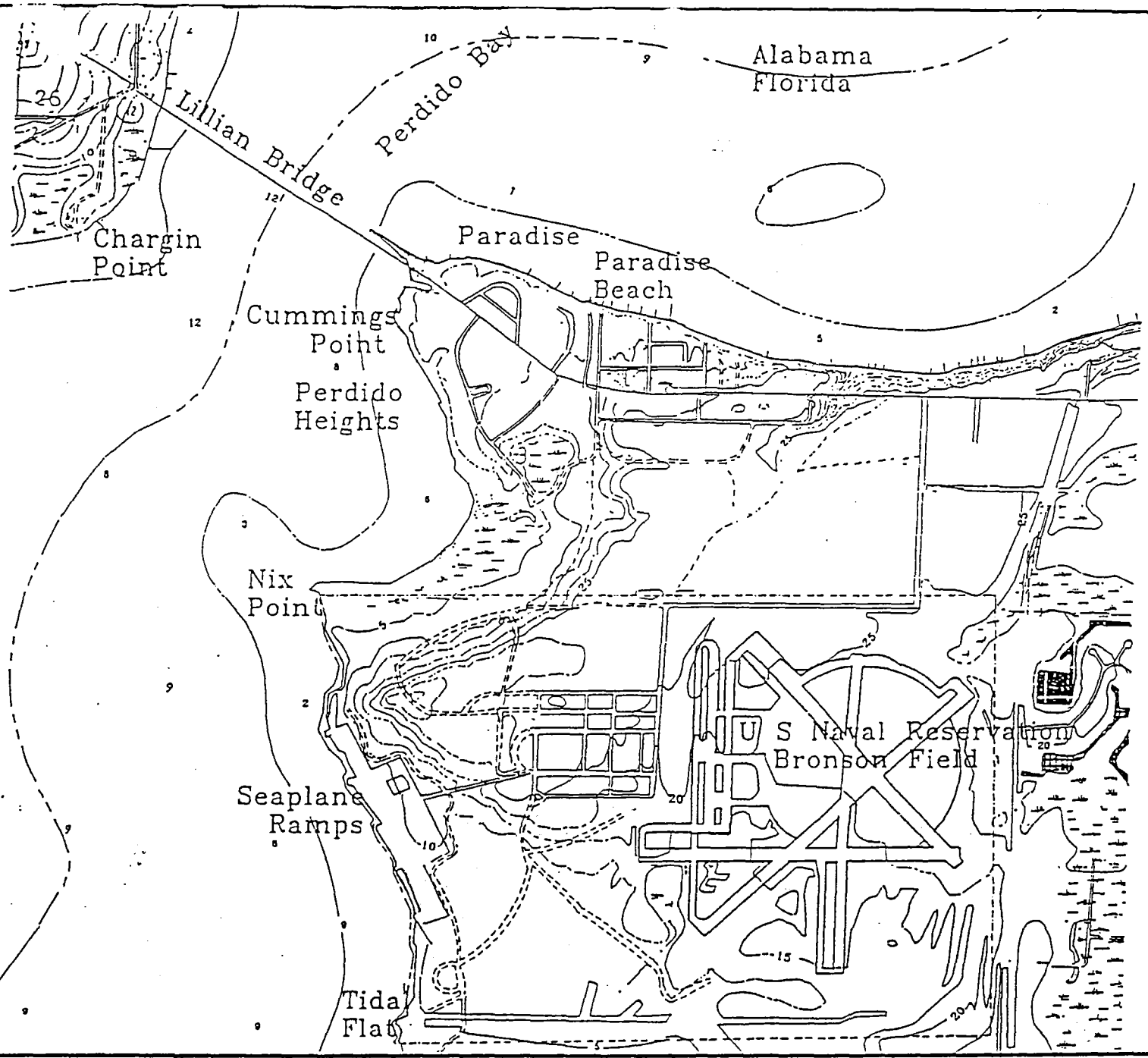


Figure 1-2
OLF Bronson
Topographic Map

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

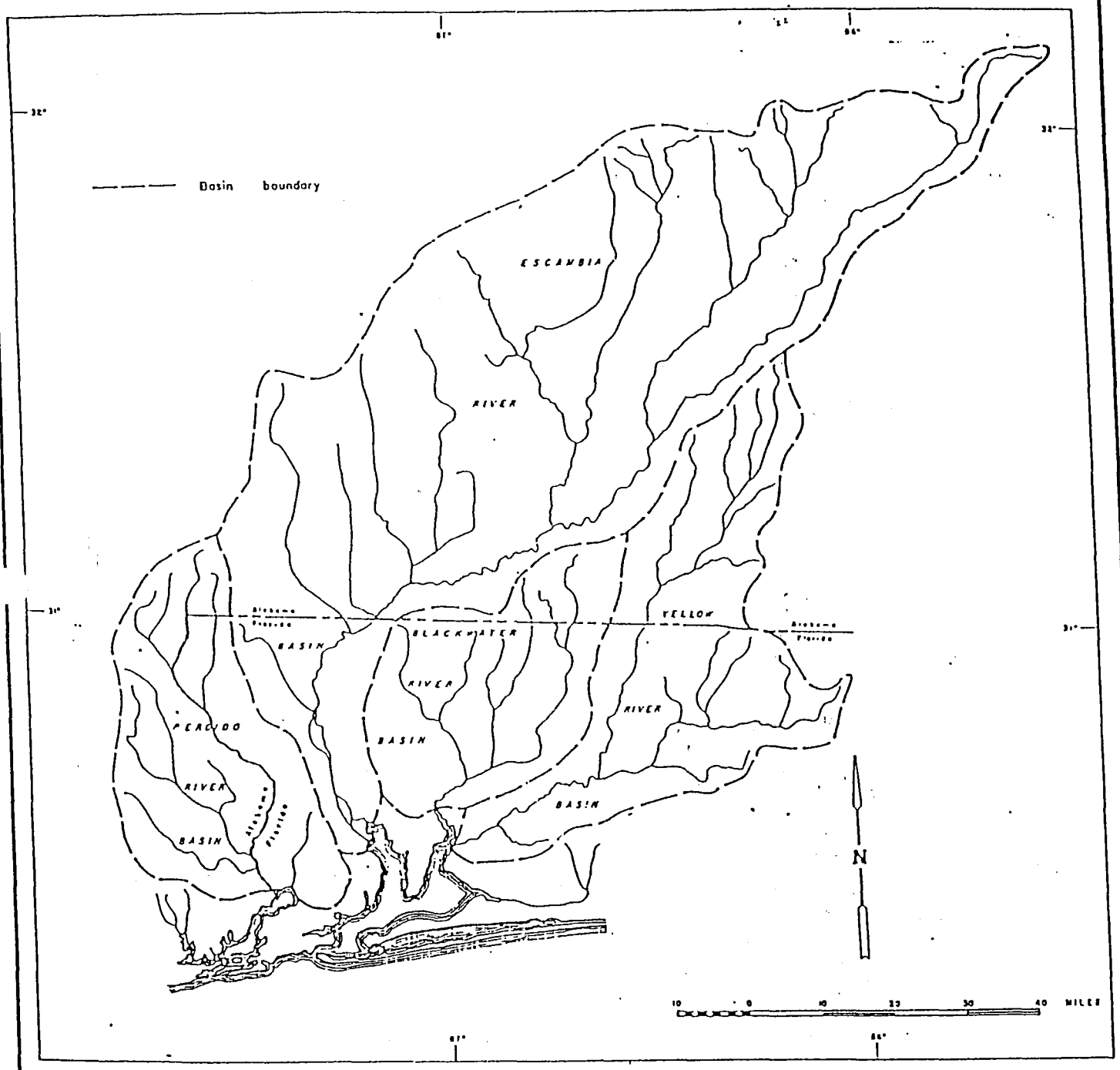


Figure 1-3
OLF BRONSON

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

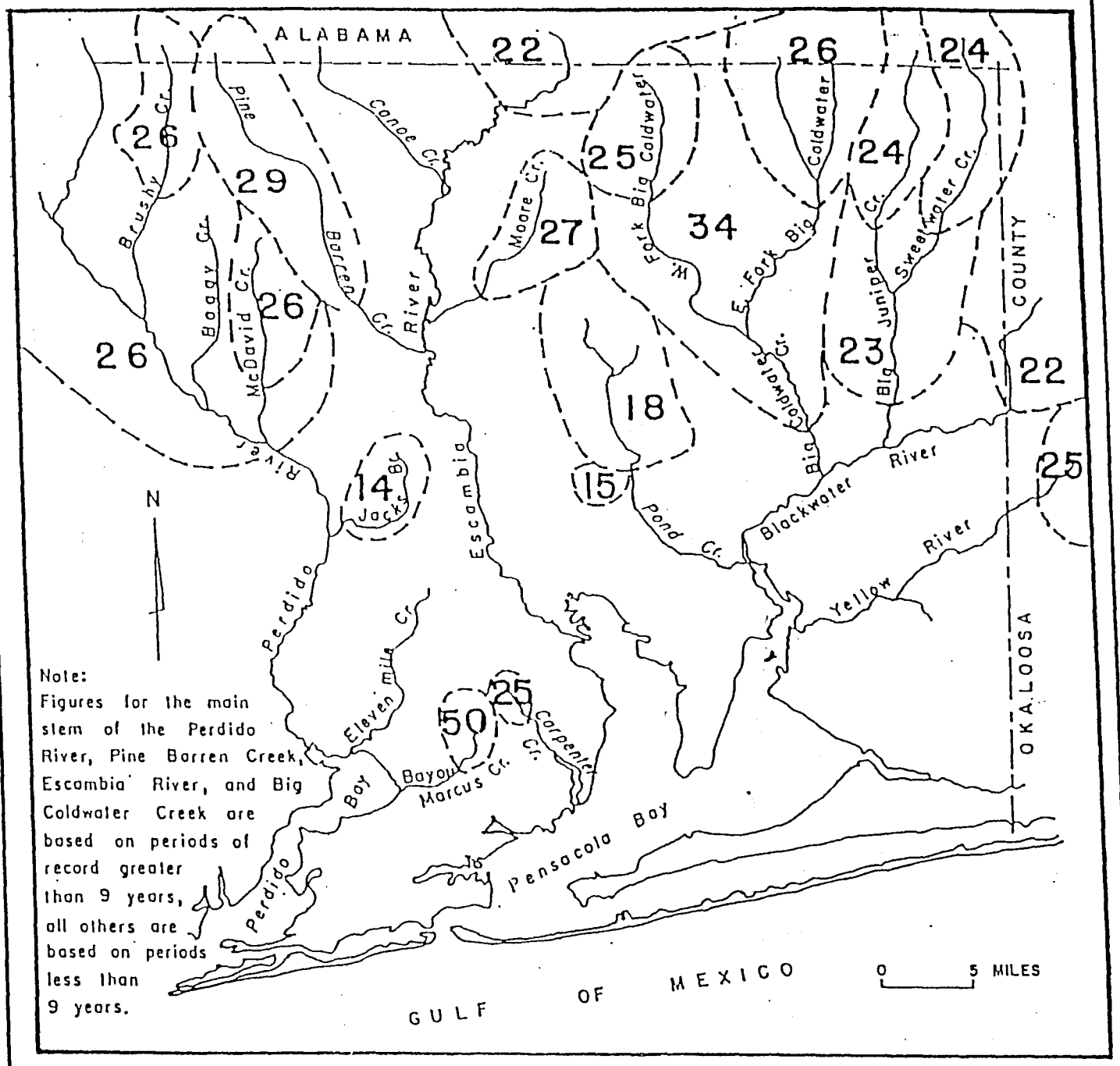


Figure 1-4
OLF BRONSON

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

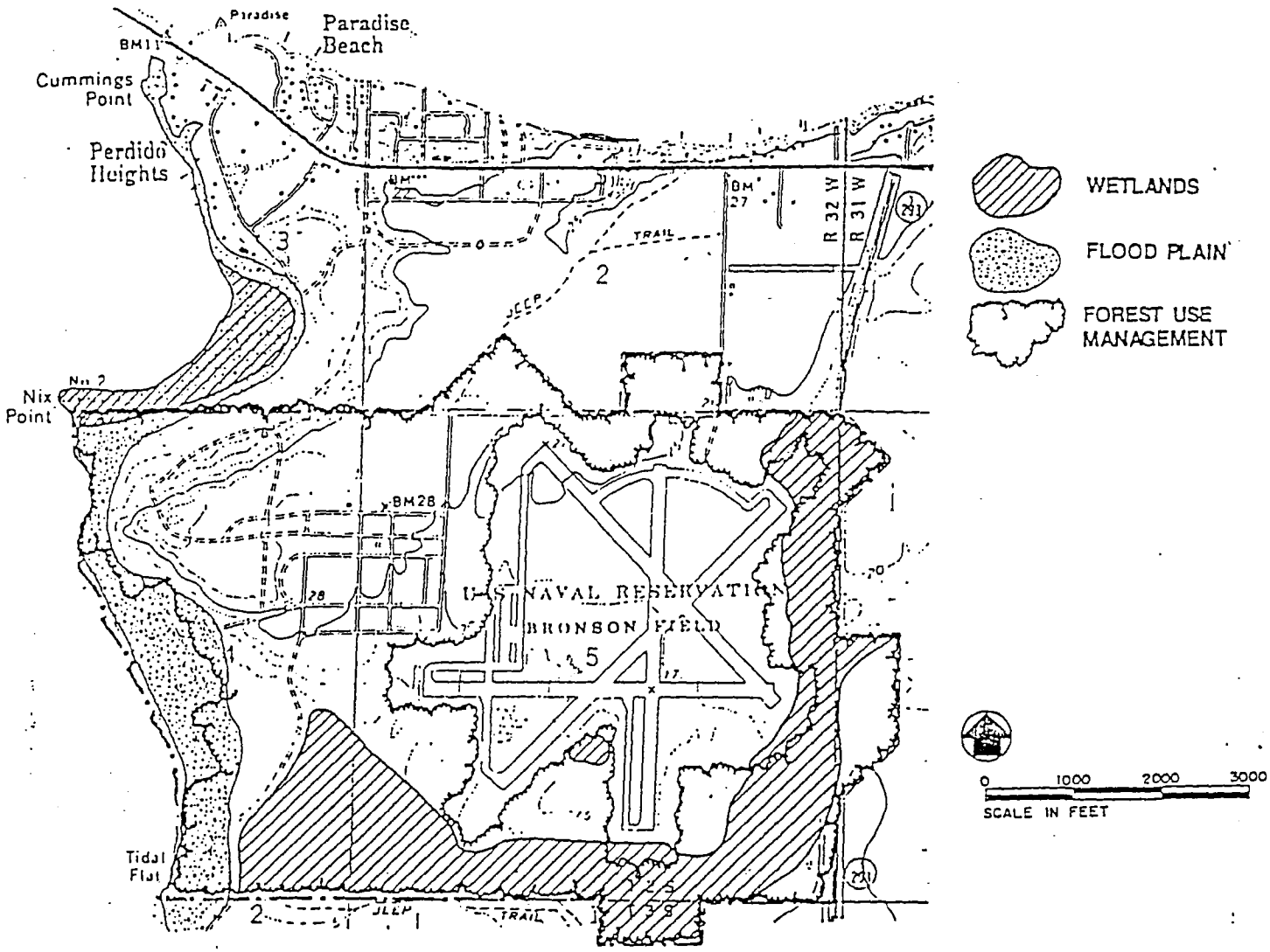


Figure 1-5
OLF Bronson
Flood Plain Area

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 1116 is located at latitude 30°23'03" N, longitude 87°25'01"W. The five (5) underground storage tanks (three 1,500 gallon underground fuel oil tanks, one 3,000 gallon underground fuel oil tank, and one underground butane tank) were removed from the site on June 22, 1994 by PWC personnel. A closure assessment, performed during the removal of the underground tanks, indicated the presence of petroleum contamination in the soil. The amount of heating fuel oil released at the site is unknown. The underground tanks were located on the west side of a concrete slab, the remains of building 1116. To the north, east, and west of the site are dense woods, and to the south is a main road running east to west past building 1116. East of building 1116 and south of the main road is a large rock pile. Site location maps are included in Figures 1-6 and 1-7 which show locations of buildings, facility boundaries, and tanks.

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 building 1116 as the former location of a boiler house. 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 June 22, 1994, Navy Public Works Center personnel discovered petroleum soil contamination at site 1116 during the removal of four (4) underground fuel oil storage tanks and one (1) butane tank located at the site. The contaminated soil (approximately 200 CY) was completely removed, stockpiled on-site, and eventually disposed of in a permitted thermal treatment facility. Clean soil was used to fill the excavation. A Discharge Reporting Form (DRF) was submitted to FDEP on June 24, 1994.

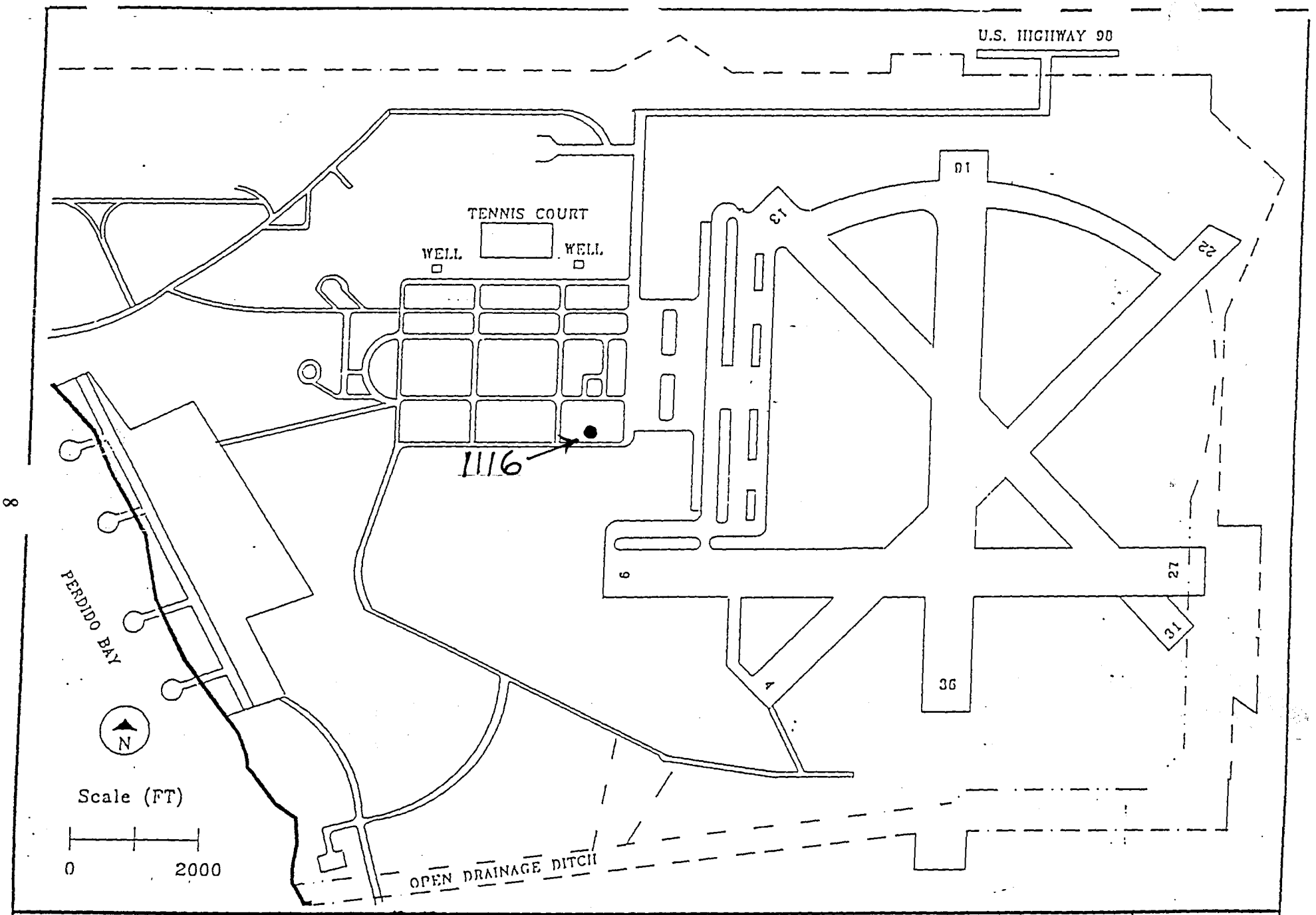


FIGURE 1-6
OLF BRONSON BASE MAP

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

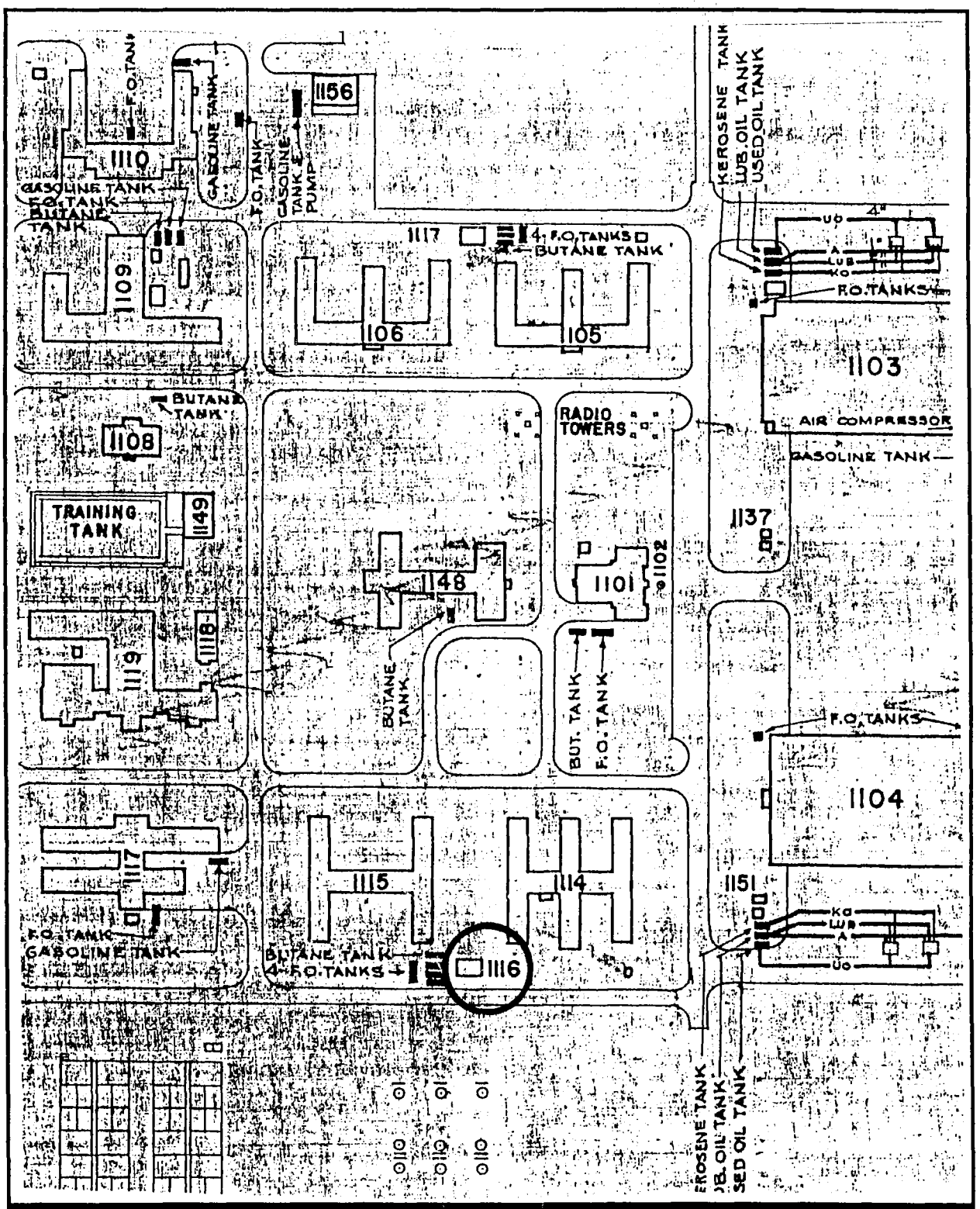


Figure 1-7
OLF Bronson
Site 1116

1.5 RESULTS OF PREVIOUS INVESTIGATIONS

A closure assessment was performed during the removal of the underground tanks which indicated that petroleum hydrocarbon vapor levels in the soil were greater than 50 parts per million for diesel/kerosene. No groundwater samples were collected and analyzed at the site during the closure assessment.

1.6 REGIONAL GEOLOGY AND HYDROGEOLOGY

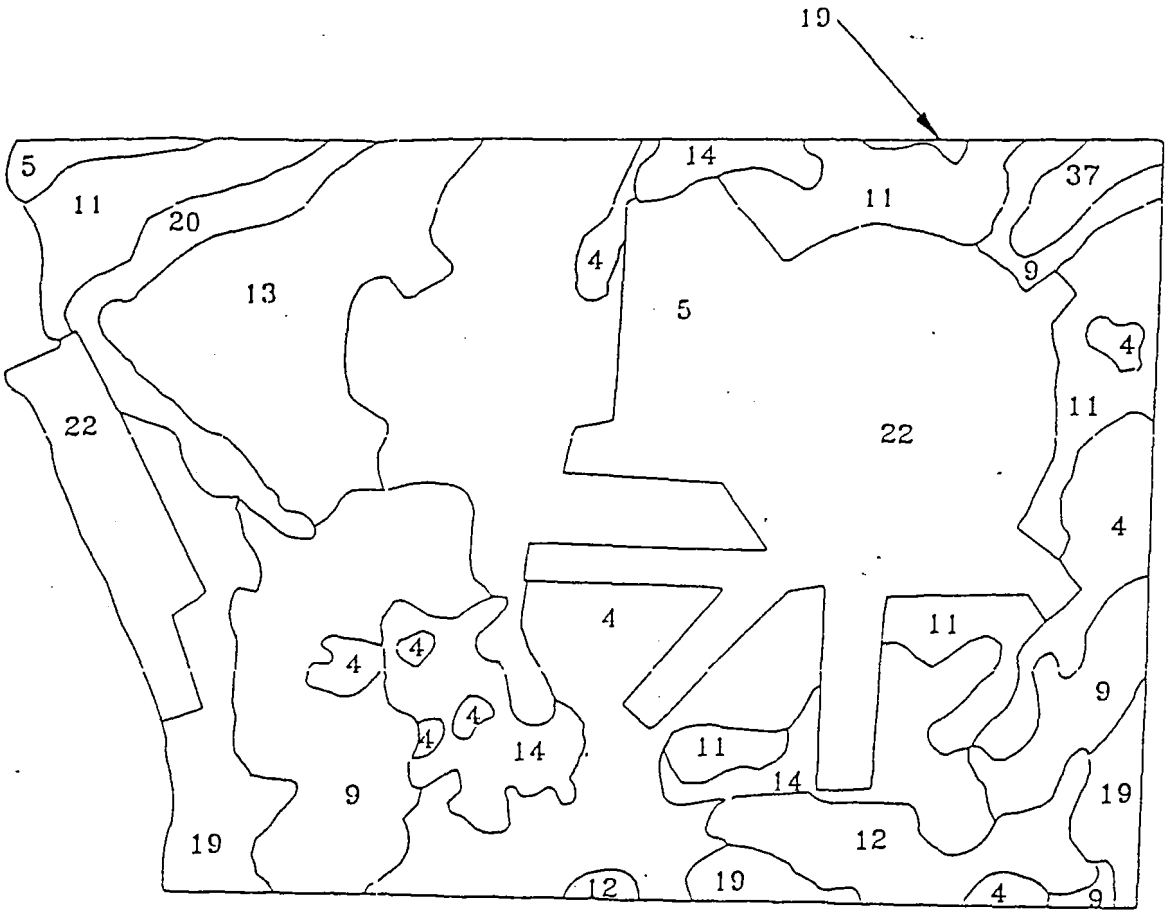
Figure 1-8 displays the soil configuration map as of 1991. Surface sediments in the Bronson Field area are classified with the Croatan, Foxworth, Hurricane, Lakeland, Leon, Pickney, Pottsburg, and Urban Land associations (NEESA, 1991).

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 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 (Figure 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.



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

N

Scale (FT)

0 2000

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

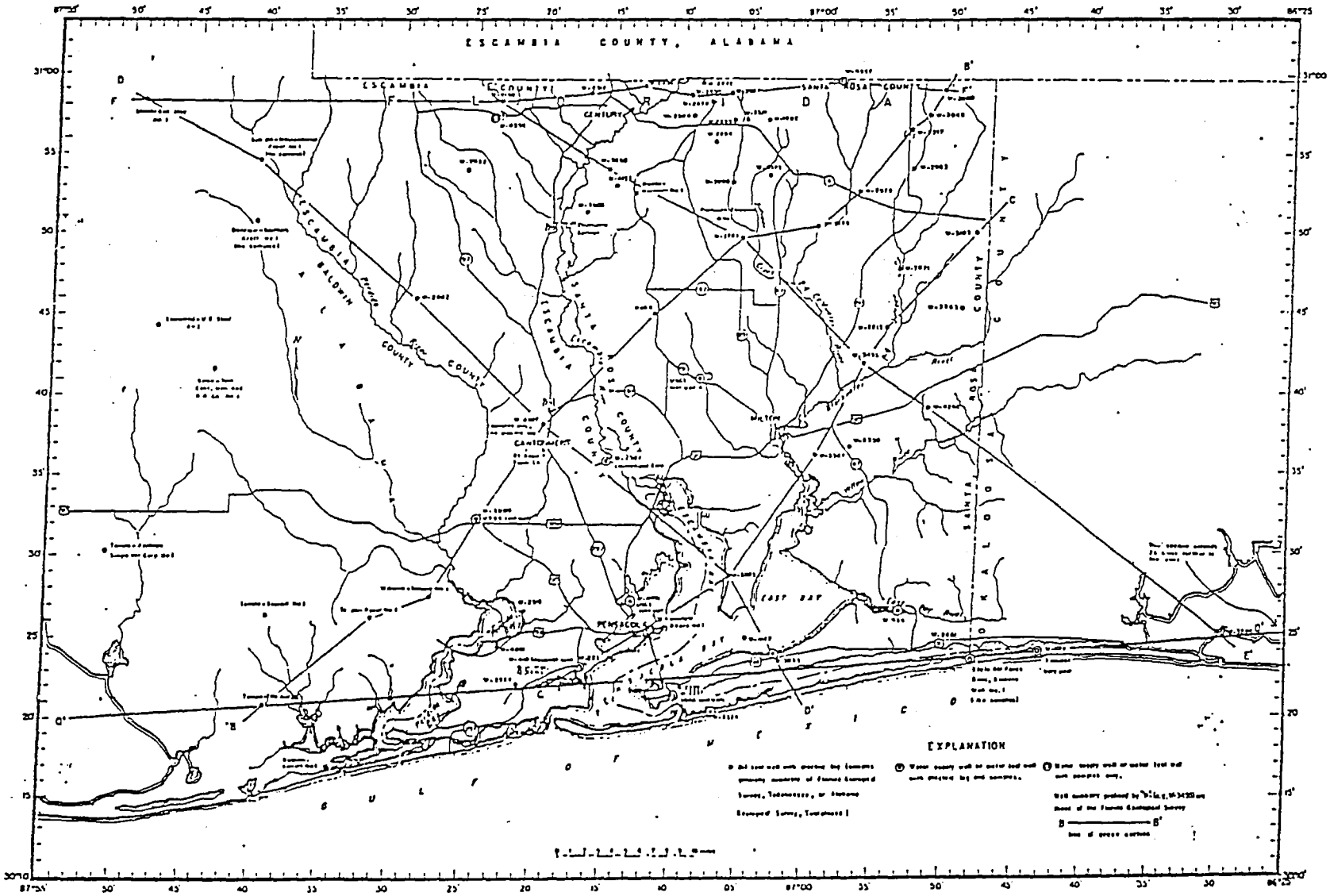


Figure 1-9
OLF Bronson

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

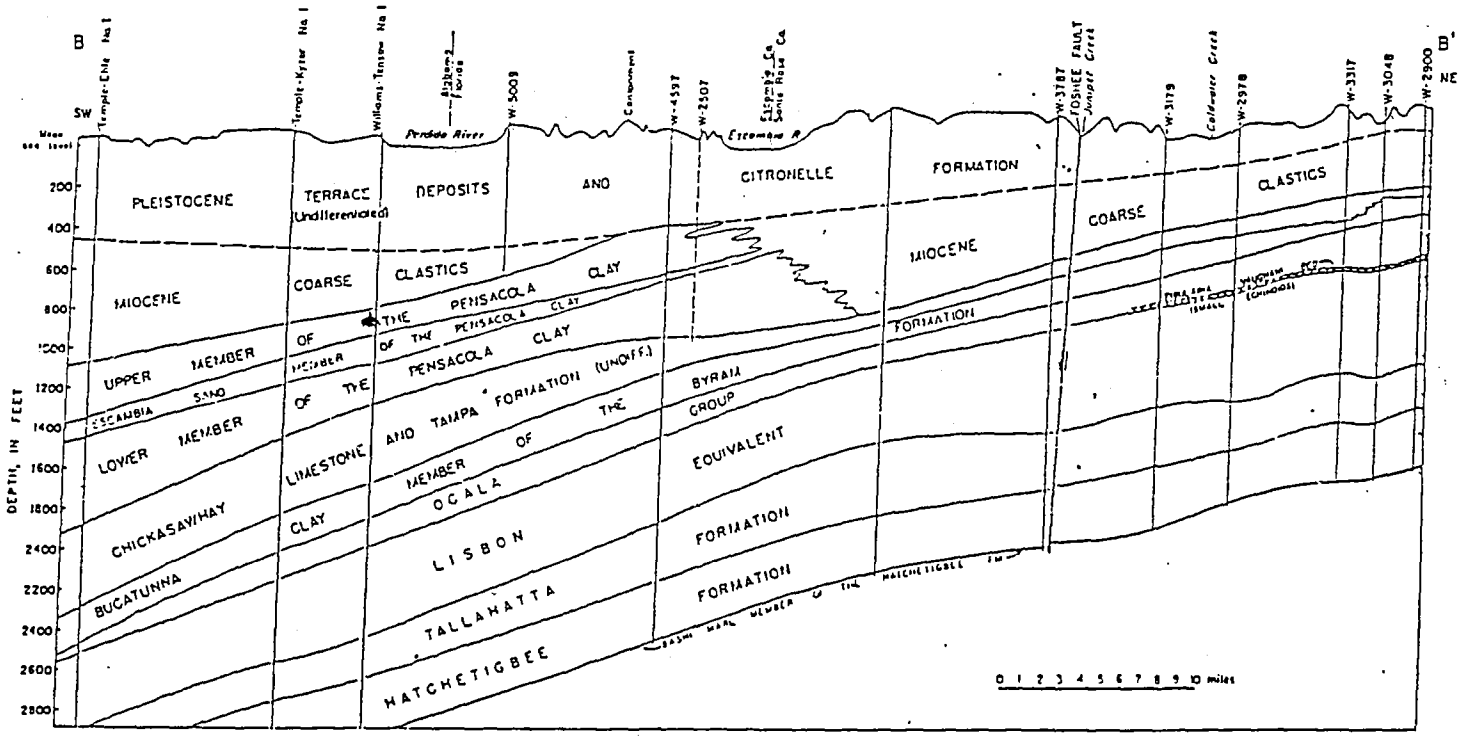


Figure 1-10
OLF Bronson

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

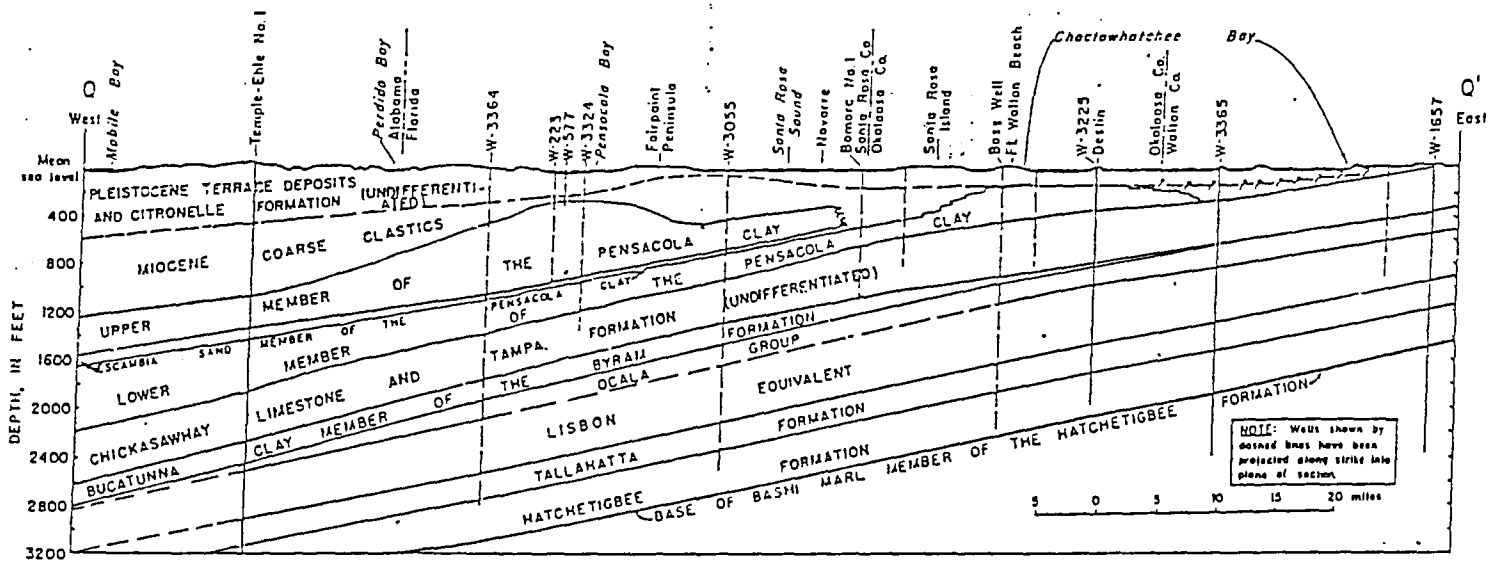


Figure 1-11
OLF Bronson

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).

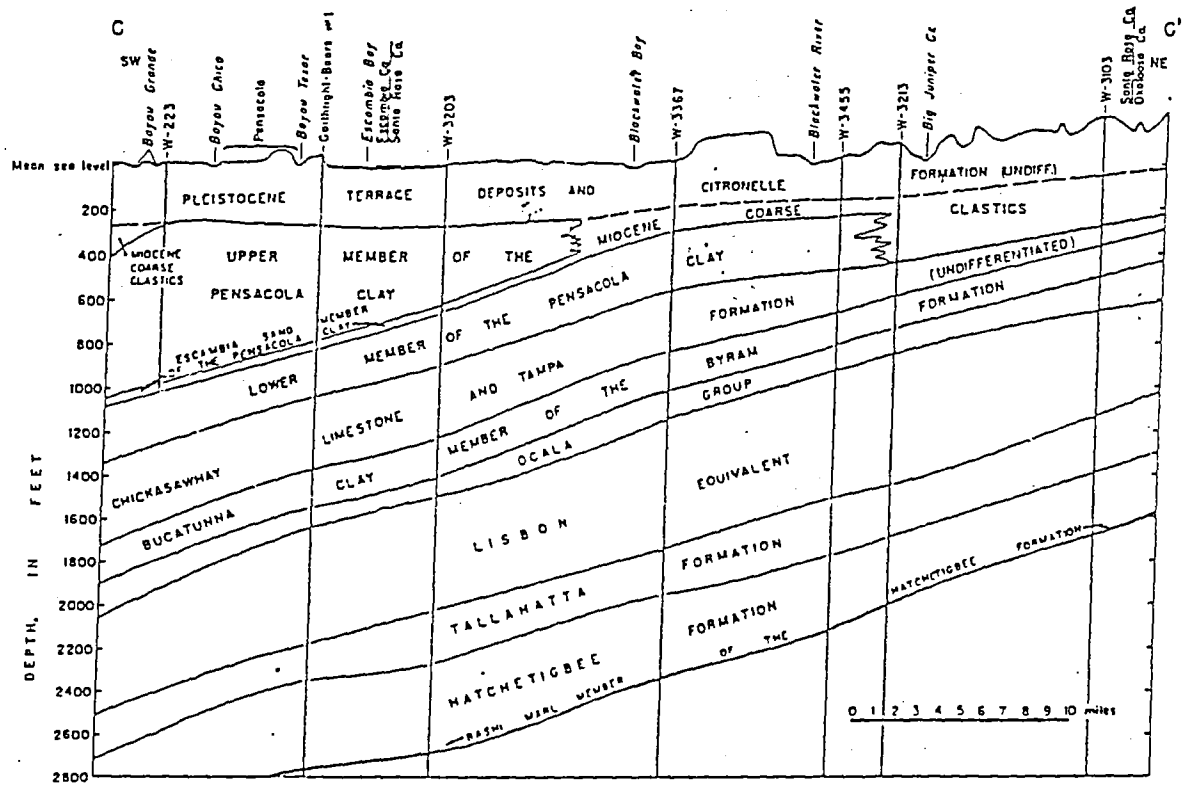


Figure 1-12
OLF Bronson

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

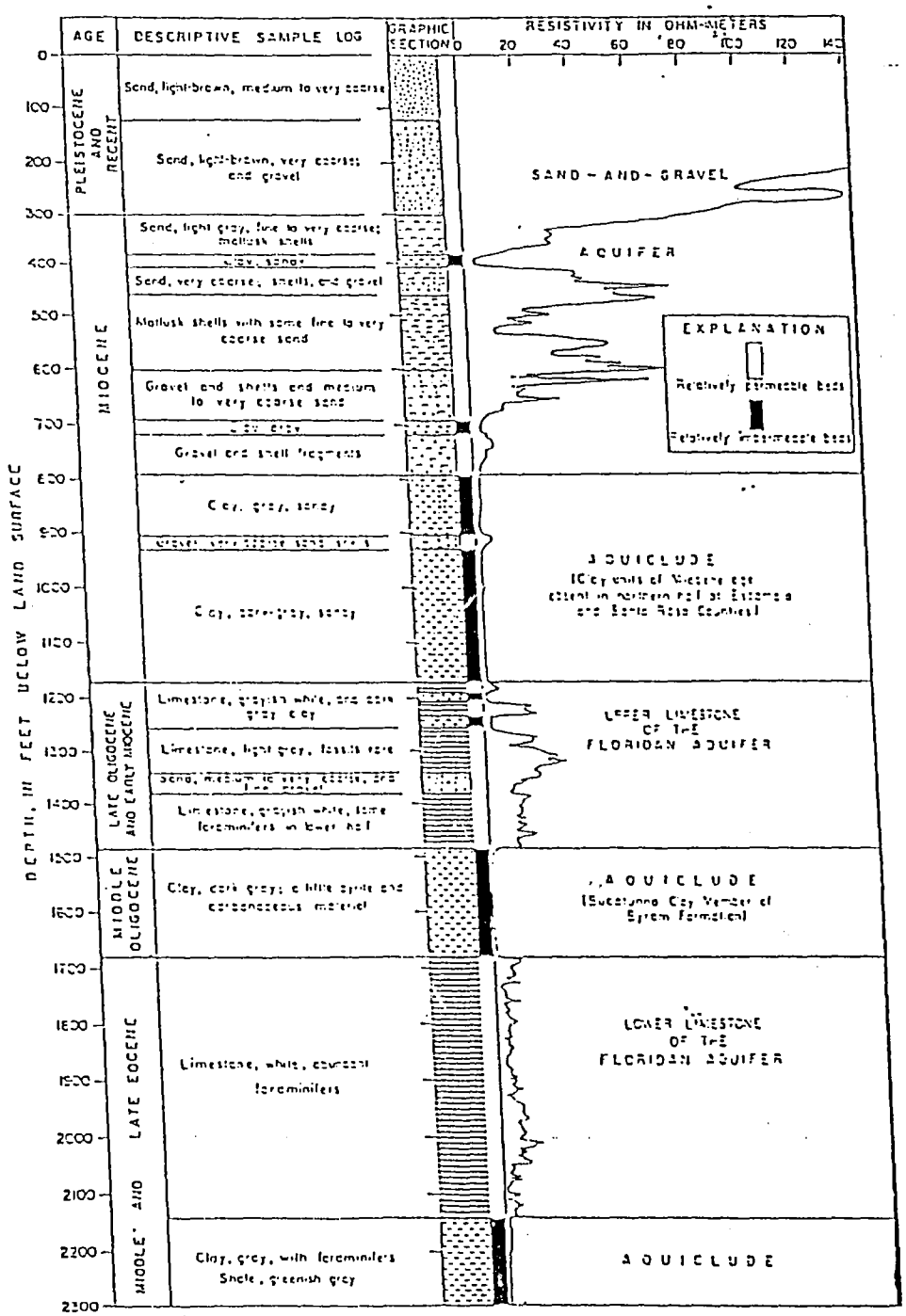


Figure 1-13
'F Bronson

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

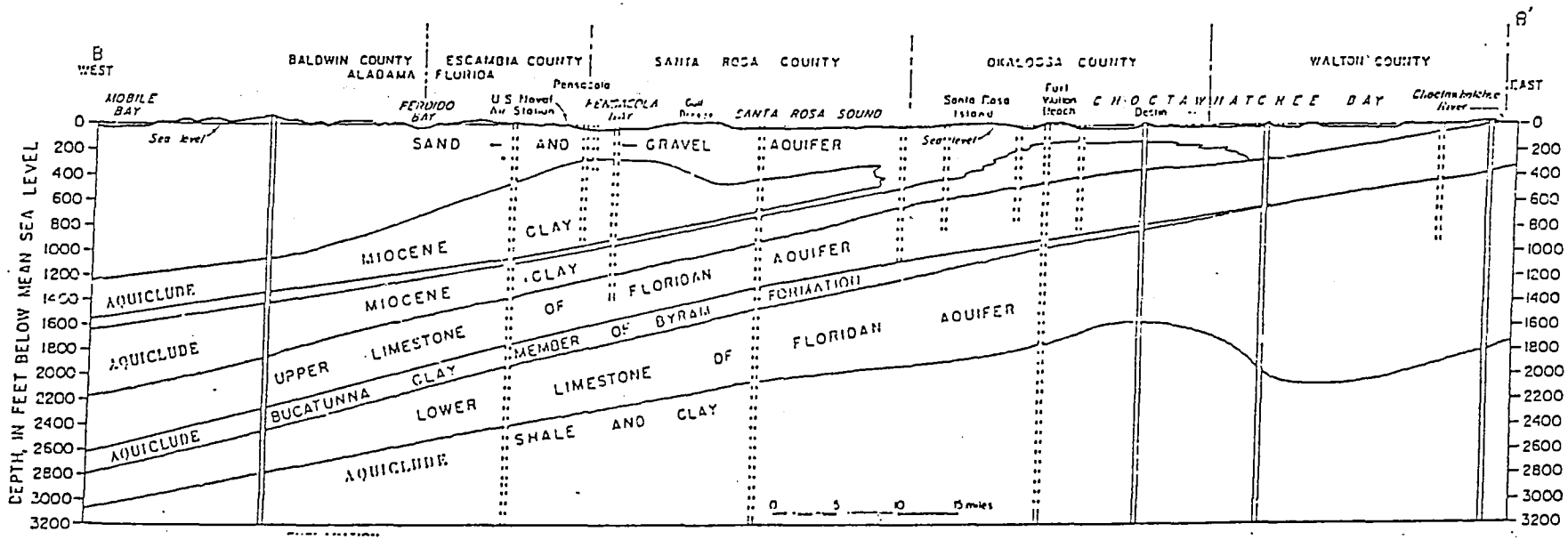


Figure 1-14
OLF Bronson

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

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 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

Escambia County Utilities Authority (ECUA) operates two potable water wells (#1 and #2) located at OLF Bronson. The wells are permitted by the Northwest Florida Water Management District and are used to supply potable water to the base and to ECUA customers in the Perdido Key community. Potable water wells #1 and #2 are within a half-mile but beyond a quarter-mile radius of the site. Construction details of the two wells are shown in Table 1-1. Potable water well #2 was taken out of service in June 1995.

2.0 SITE ASSESSMENT

2.1 SOIL BORING AND MONITORING WELL CONSTRUCTION DETAILS

PWC personnel initiated the investigation with the installation of 23 soil borings to a depth of 12 feet below land surface (BLS). These borings were installed by W.E.S., Inc. on January 17, 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, and 12 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 Figure 2-1. Soil samples were also collected at 1, 4, 7, 10, and 11 feet BLS during the construction of MW-1 thru MW-5 and analyzed for volatile organic vapors using an organic vapor analyzer (OVA) with a flame ionization detector.

Shallow groundwater monitoring wells MW-1 thru MW-5 and vertical extent monitoring well DMW-6 were installed by W.E.S., Inc. on March 12, 1996 and May 9, 1996, respectfully. The shallow groundwater monitoring wells were installed to a depth of 19 feet below land surface (BLS). The monitoring wells were installed using a hollow stem auger with an inside diameter of 4-inches. The monitoring wells consist of 2-inch diameter by 10 feet of 0.010-inch slotted Schedule 40 PVC screen, threaded to 9 feet of solid schedule 40 PVC riser casing. The filter sand pack for monitoring wells MW-1 thru MW-5 consisted of course silica sand with a mesh size of 20-30 and was placed in the annular space between the outside of the well screen and borehole from the bottom of the borehole to approximately one foot above the top of the well screen. A one foot bentonite seal was placed above the sand pack and the remaining annular space was filled with neat cement grout. A flush mounted manhole was installed around the top of the monitoring well with an 8-inch diameter steel manhole cover.

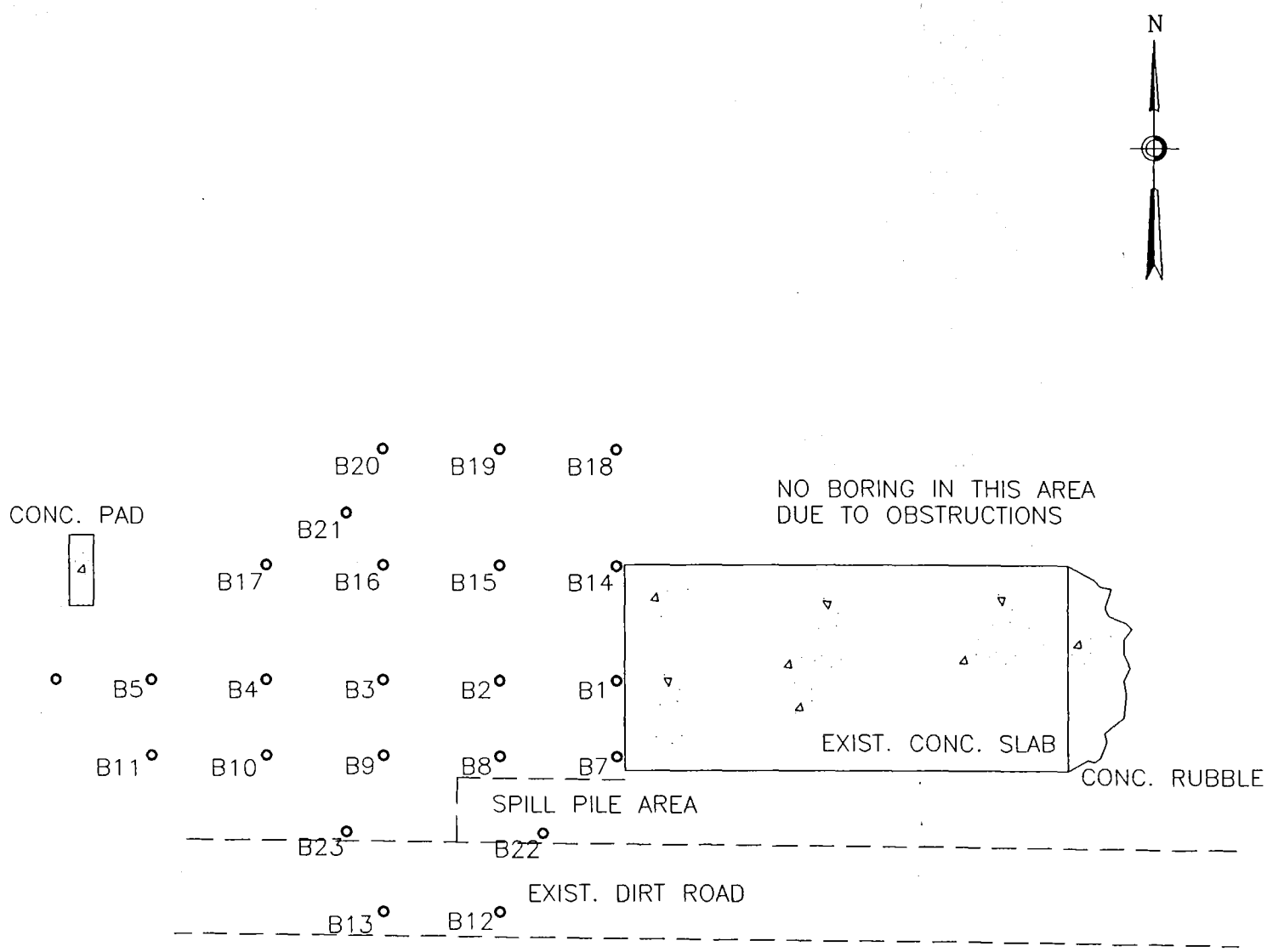
Vertical extent groundwater monitoring well DMW-6 was installed by W.E.S., Inc. on May 9, 1996. The monitoring well was set at 35 feet BLS with 5 feet of 2-inch diameter, 0.010-inch slotted schedule 40 PVC screen and 29 feet of schedule 40 PVC riser casing. A filter sand pack was placed in the annular space between the outside of the well screen and edge of borehole from the bottom of the borehole to 1 foot above the well screen. A one foot fine sand seal was placed approximately 1 foot above the sand filter pack with the remaining annular space filled with net cement grout. A steel manhole with an 8" diameter manhole cover was placed in the borehole around the PVC riser and set with neat cement grout. A

TABLE 1-1

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



LEGEND

— X — FENCE

o B9 BORING HOLE NUMBER

NAVY PUBLIC WORKS CENTER PENSACOLA, FLORIDA		
SCALE:	FIGURE 2-1	DRAWN BY: DWG. NO: REVISED BY:
SOIL BORING LOCATION MAP SITE 1116, BRONSON FIELD		
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA		

locking cap placed at the top of the monitoring well completed the monitoring well construction.

The groundwater extracted during well development of MW-1 thru MW-5 and DMW-6 was placed into steel 55 gallon drums and properly labeled for disposal. Plastic was placed under and on top of drill cuttings. Monitoring well locations for MW-1 thru MW-5 and DMW-6 are shown in Figure 2-2. Monitoring well construction diagrams for MW-1 thru MW-5 and DMW-6 are shown in Appendix A. Lithological logs for monitoring wells MW-1 thru MW-5 and DMW-6 are shown in Appendix B.

2.2 GROUNDWATER FLOW DIRECTION

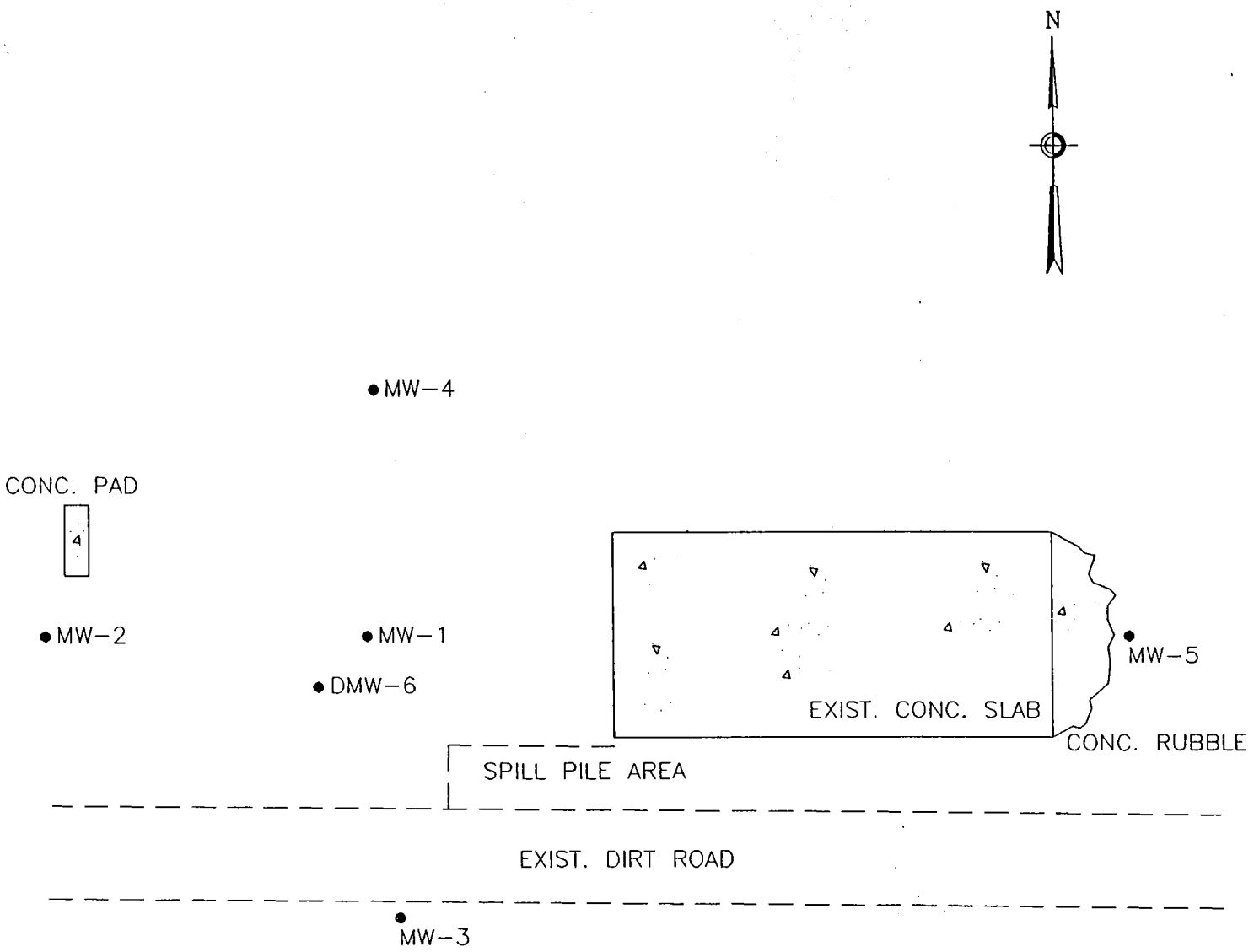
The top of casing (TOC) elevations for shallow monitoring wells MW-1 thru MW-5 were surveyed by W.E.S., Inc. on March 19, 1996. No survey bench marks were located near the site and therefore the top of casing elevations were based on an assumed benchmark elevation of 50.00 feet above mean sea level (MSL) at the southwest corner of existing concrete slab. The concrete slab is the remnant of building 1116, Bronson Field, Pensacola, Florida. Groundwater elevations for the groundwater level measurements taken on March 19, 1996 are shown in Table 2-2. A groundwater flow direction map for the groundwater level measurements taken on March 19, 1996 is shown in Figure 2-3. The groundwater flow direction map indicates the groundwater flow at the site is toward the southwest.

2.3 GROUNDWATER FLOW RATE

A rising head slug test was performed at site 1116 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 test, slug test data graph, and calculations are attached in Appendix C. The slug test results indicate the estimated horizontal hydraulic (k) at site 1116 to be 0.6899 ft/day. The calculated linear groundwater flow velocity at site 1116 was estimated to be 0.0069 ft/day (2.5181 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, w/organics, orange-tan in color, from 0 to 3 feet BLS; (2) fine to medium grained silty sand, frosted grained, tan in color, from 3 to 11 feet BLS; and (3) fine to medium grained silty sand, frosted grained, aeolian deposit, tan to beige in color, 11 to 19.5 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 grained sand (fill), brown in color, from 0 to 11 feet BLS; (2) fine grained silty sand, dark brown to charcoal grey in color, heavy petroleum staining, from 11 to 17 feet BLS; (3) fine to medium grained clayey sand, exceedingly wet, beige in color, from 17 feet to 30 feet; and (4) very fine to fine grained silty sand, occasional dark minerals and moderately sorted, white in color, 30 to 35 feet BLS. The groundwater table at the site was



0' 5' 10' 20' 30'
SCALE FEET

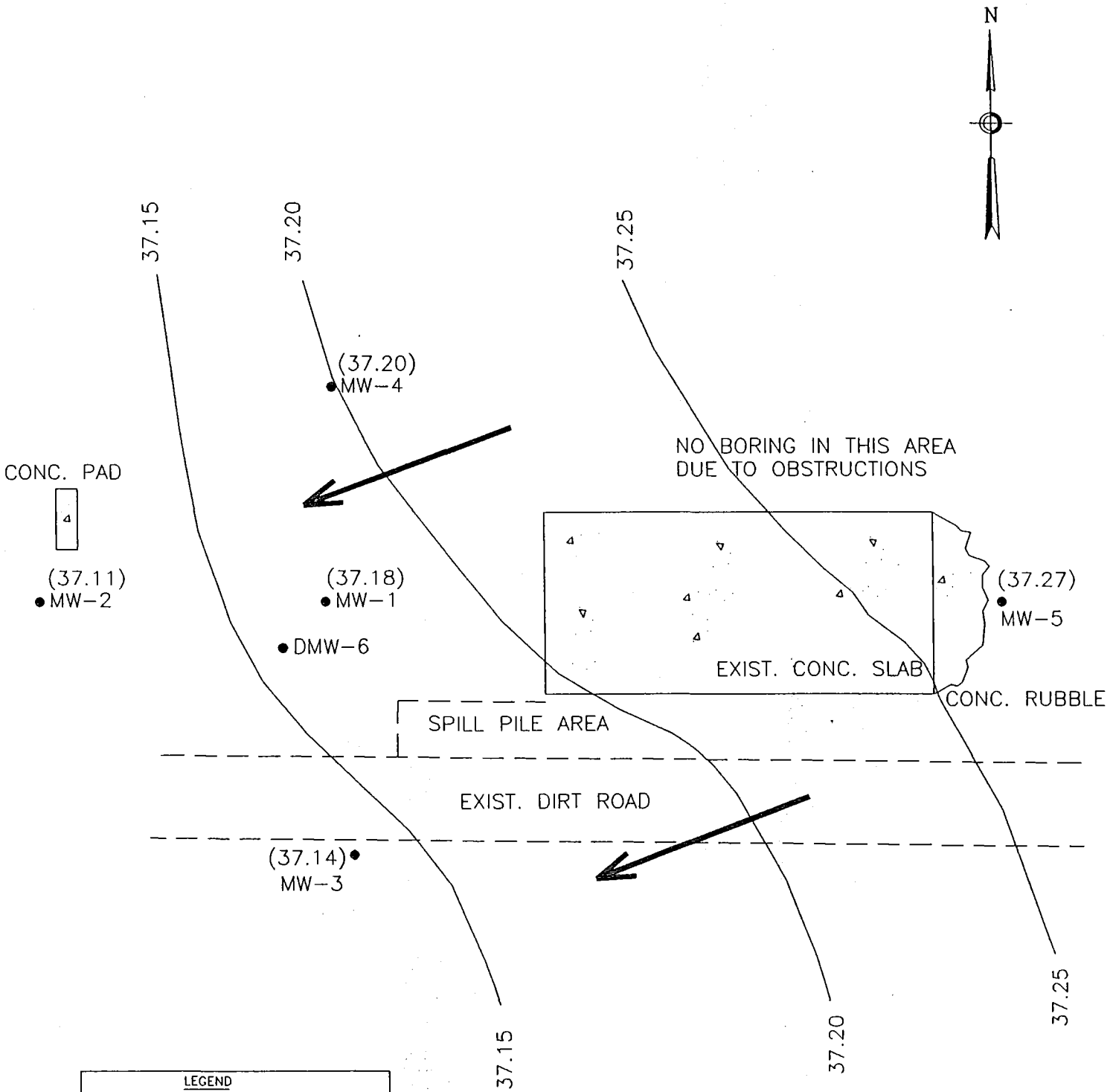
LEGEND
— X — FENCE
● MW-4 MONITORING WELL NUMBER

NAVY PUBLIC WORKS CENTER PENSACOLA, FLORIDA		
SCALE:	FIGURE 2-2	DRAWN BY: DWG. NO: REVISED BY:
MONITORING WELL LOCATION MAP SITE 1116, BRONSON FIELD		
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA		

TABLE 2-2
TOP OF CASING AND GROUNDWATER ELEVATIONS
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1116

WELL NUMBER	TOC FT. M.S.L.	DTW (FT) 3/19/96	GROUNDWATER ELEVATION 3/19/96
MW-1	48.95	11.77	37.18
MW-2	48.64	11.53	37.11
MW-3	47.73	10.59	37.14
MW-4	48.75	11.55	37.20
MW-5	48.48	11.21	37.27

NOTES: TOC = Top of Casing
DTW = Depth to Water
Benchmark assumes elevation of 50 ft. at the southwest corner of existing concrete slab, the remnant of former building 1116, Bronson Field, Florida.



LEGEND

— X —	FENCE
➡	GROUNDWATER FLOW DIRECTION
● MW-4	MONITORING WELL NUMBER
(13.50)	GROUNDWATER ELEVATION
—37.20	GROUNDWATER ELEVATION CONTOUR

0' 5' 10' 20' 30'
SCALE FEET

NAVY PUBLIC WORKS CENTER PENSACOLA, FLORIDA		
SCALE:	FIGURE 2-3	DRAWN BY: DWG. NO: REVISED BY:
GROUNDWATER FLOW DIRECTION MAP(3-19-96) SITE 1116, BRONSON FIELD		
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA		

encountered at approximately 13 feet BLS. Lithological logs describing the soils encountered at various depth, the approximate groundwater level, and OVA screening results for the soil borings installed during the monitoring well installation are shown in Appendix B.

2.5 SOIL ASSESSMENT

The extent of soil contamination at the site was determined by OVA screening. Twenty-three soil borings (B1 thru B23) were installed by W.E.S., Inc. on January 17, 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, and 12 feet BLS. The groundwater at the site was generally found at approximately 13 feet BLS. The soil borings were installed at and around the sites where the 5 underground tanks were removed. Soil samples were also collected from the boreholes during the installation of monitoring wells MW-1 thru MW-5 at 1, 4, 7, 10, and 11 feet intervals BLS and analyzed with an OVA for volatile organic compounds (See Figure 2-2 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 (TPHs) by FLPRO/PETRO method (EPA method 8015). TPHs were detected in soil samples from monitoring well MW-1 at concentration levels of 110000 ppb which exceeds the FDEP target level of 5000 ppb for TPH. No TPHs were detected in soil samples collected from MW-2 thru MW-5. A summary of the TPH results is found in Table 2-3. Laboratory results are shown in Appendix D.

The soil boring/monitoring well designations and their respective OVA screening results are shown in Table 2-4 and a VOC contamination map is found in Figure 2-4. VOCs were detected in the soil samples collected from boreholes B1 thru B4, B8, B9, and B14 thru B16, and monitoring wells MW-1 and MW-5. VOCs were detected in the soil samples collected from boreholes B1, B2, B3, B4, B8, B9, B14, B15, B16 at concentrations of >1000 ppm, 520 ppm, 420 ppm, 240 ppm, 80 ppm, 740 ppm, 880 ppm, 820 ppm, and 360 ppm, respectfully, which exceeded the FDEP 50 ppm level for excessively contaminated soil by a kerosene product. The VOCs were only detected in the soil samples collected at a depth of approximately 10-12 feet BLS. No VOCs were detected in soil borings from B5, B6, B7, B11, B12, B13, B17, B18, B19, B20, B21, B22, or B23. VOCs were detected in the soil samples collected from boreholes MW-1 and MW-5. VOCs were detected in the soil sample collected from MW-1 (11 ft BLS) at a concentration of 150 ppm which exceeded the FDEP 50 ppm level for excessively contaminated soil by a kerosene product; however, VOCs were detected in the soil sample collected from MW-5 (11 ft BLS) at a concentration of 24 ppm which was below the FDEP 50 ppm level for excessively contaminated soil by a kerosene product. The excessive soil contamination appears to be restricted to the water table level and 2 feet above the groundwater table or capillary fringe of the groundwater table (see Figure 2-4). Assuming a 2-foot vertical column of contaminated soil, the volume of excessively contaminated soil is approximately 247.5 cubic yards.

2.6 SURFACE WATER ASSESSMENT

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

TABLE 2-3
SUMMARY OF TPH
ANALYTICAL RESULTS FOR SOIL SAMPLES
COLLECTED FROM MONITORING WELLS MW-1 THRU MW-5
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1116

PARAMETER	DATE	MONITORING WELL NUMBER				
		MW-1	MW-2	MW-3	MW-4	MW-5
TPH	3/12/96	110000	BDL	BDL	BDL	BDL

NOTES: All results reported in parts per billion (ppb) unless otherwise noted
BDL = Below detection limits
EDB = 1,2 Dibromoethane
NS = Not sampled
TPH = Total Petroleum Hydrocarbons

TABLE 2-4

VOLATILE ORGANIC COMPOUNDS (VOCs)
CONCENTRATION IN SOIL

SOIL BORING B1 THRU B23 & MW-1 THRU MW-5
JANUARY 17 AND MARCH 12, 1996

SITE 1116
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1116

Boring Designation	Depth (Feet BLS)	VOCs Concentration (ppm)[1]
B1	1	0
	4	0
	7	0
	10	>1000
	12	>1000
B2	1	0
	4	0
	7	0
	10	0
	12	520
B3	1	0
	4	0
	7	0
	10	0
	12	420
B4	1	0
	4	0
	7	0
	10	0
	12	240

[1] VOCs concentration assessed by organic vapor analyzer headspace techniques. Results are total VOCs 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 2-4 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOCs Concentration (ppm)[1]**
B5	1	0
	4	0
	7	0
	10	0
	12	0
B6	1	0
	4	0
	7	0
	10	0
	12	0
B7	1	0
	4	0
	7	0
	10	0
	12	0
B8	1	0
	4	0
	7	0
	10	0
	12	80
B9	1	0
	4	0
	7	0
	10	0
	12	740
B10	1	0
	4	0
	7	0
	10	0
	12	0

[1] VOCs concentration assessed by organic vapor analyzer headspace techniques. Results are total VOCs 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 2-4 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOCs Concentration (ppm)[1]**
B11	1	0
	4	0
	7	0
	10	0
	12	0
B12	1	0
	4	0
	7	0
	10	0
	12	0
B13	1	0
	4	0
	7	0
	10	0
	12	0
B14	1	0
	4	0
	7	0
	10	0
	12	880
B15	1	0
	4	0
	7	0
	10	0
	12	820
B16	1	0
	4	0
	7	0
	10	0
	12	360

[1] VOCs concentration assessed by organic vapor analyzer headspace techniques. Results are total VOCs 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 2-4 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOCs Concentration (ppm)[1]**
B17	1	0
	4	0
	7	0
	10	0
	12	0
B18	1	0
	4	0
	7	0
	10	0
	12	0
B19	1	0
	4	0
	7	0
	10	0
	12	0
B20	1	0
	4	0
	7	0
	10	0
	12	0
B21	1	0
	4	0
	7	0
	10	0
	12	0
B22	1	0
	4	0
	7	0
	10	0
	12	0

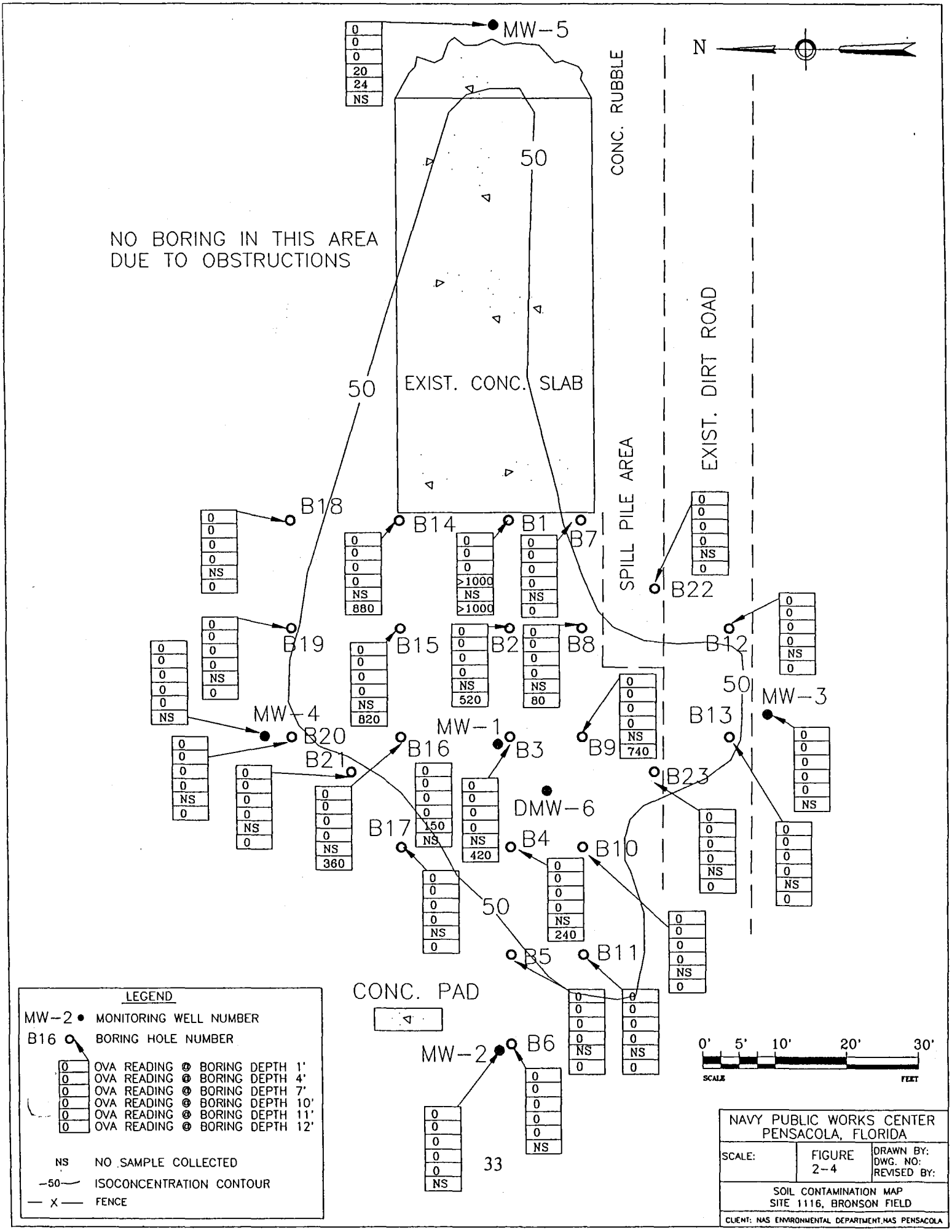
[1] VOCs concentration assessed by organic vapor analyzer headspace techniques. Results are total VOCs less methane.

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

TABLE 2-4 (Cont.)		
Boring Designation	**Depth (Feet BLS)**	**VOCs Concentration (ppm)[1]**
B23	1	0
	4	0
	7	0
	10	0
	12	0
MW-1	1	0
	4	0
	7	0
	10	0
	11	150
MW-2	1	0
	4	0
	7	0
	10	0
	11	0
MW-3	1	0
	4	0
	7	0
	10	0
	11	0
MW-4	1	0
	4	0
	7	0
	10	0
	11	0
MW-5	1	0
	4	0
	7	0
	10	20
	11	24

[1] VOCs concentration assessed by organic vapor analyzer headspace techniques. Results are total VOCs 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


MW-5
0 0 0 20 24 NS
N
CONC. RUBBLE
50
NO BORING IN THIS AREA
DUE TO OBSTRUCTIONS
EXIST. DIRT ROAD
EXIST. CONC. SLAB
50
SPILL PILE AREA
B18
0 0 0 0 NS 0
B14
0 0 0 0 NS 880
B1
0 0 0 >1000 NS >1000
B7
0 0 0 0 NS 0
B22
0 0 0 0 NS 0
B19
0 0 0 0 NS 0
B15
0 0 0 0 NS 820
B2
0 0 0 0 NS 520
B8
0 0 0 0 NS 80
B12
0 0 0 0 NS 0
0 0 0 0 0 NS
MW-4
B20
0 0 0 0 NS 0
B21
0 0 0 0 NS 0
0 0 0 0 NS 360
B16
0 0 0 0 150 NS
MW-1
B3
0 0 0 0 NS 420
B9
0 0 0 0 NS 740
50
B13
MW-3
0 0 0 0 0 NS
B23
0 0 0 0 NS 0
0 0 0 0 0 NS 0
DMW-6
B17
0 0 0 0 NS 0
B4
0 0 0 0 NS 240
B10
0 0 0 0 NS 0
50
B5
B11
0 0 0 0 NS 0
0 0 0 0 NS 0
CONC. PAD
MW-2
B6
0 0 0 0 0 NS
0 0 0 0 0 NS
0' 5' 10' 20' 30'
SCALE
FEET
LEGEND
MW-2 MONITORING WELL NUMBER
B16 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 11'
0 OVA READING @ BORING DEPTH 12'
NS NO SAMPLE COLLECTED
—50— ISOCONCENTRATION CONTOUR
— X — FENCE
NAVY PUBLIC WORKS CENTER
PENSACOLA, FLORIDA
SCALE:
FIGURE 2-4
DRAWN BY:
DWG. NO:
REVISED BY:
SOIL CONTAMINATION MAP
SITE 1116, BRONSON FIELD
CLIENT: NAS ENVIRONMENTAL DEPARTMENT,NAS PENSACOLA

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. Shallow monitoring wells MW-1 thru MW-5 and deep monitoring well DMW-6 were sampled and analyzed for the kerosene analytical group outlined in FDEP Rule 62-770. Monitoring wells MW-1 thru MW-5 were sampled using the quiescent sampling technique. Groundwater samples were collected from monitoring wells MW-2 thru MW-5 on March 19, 1996. Groundwater samples were collected from monitoring well MW-1 on March 20, 1996. Groundwater samples were collected from deep monitoring well DMW-6 on June 5, 1996. The kerosene analytical group included analysis of groundwater samples for volatile organic aromatics (VOAs), polynuclear aromatic hydrocarbons (PAHs), ethylene dibromide (EDB), total petroleum hydrocarbons (TPHs) and total lead utilizing EPA methods 8260, 8270A, 504, FLPRO and SW6010, respectively. Deep vertical extent monitoring well DMW-6 was not analyzed for total lead. Summary tables of analysis are shown in Tables 2-5, 2-6, and 2-7.

No kerosene analytical group parameters were detected in the groundwater samples collected from monitoring wells MW-2 thru DMW-6. Monitoring well MW-1 was the only monitoring well to detect petroleum contaminants.

Xylene was detected in the groundwater sample collected from monitoring well MW-1 at a concentration of 12 ppb. The BTEX concentration in monitoring well MW-1 was found to be 12 ppb which is well below the FDEP target level of 50 ppb for BTEX (benzene, toluene, ethylbenzene, xylene). A summary table of the volatile organic aromatics (VOAs) detected in the monitoring wells is shown in Table 2-5.

No PAHs were detected in monitoring wells MW-2 thru MW-6 and DMW-6.

Naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene were detected in the groundwater sample collected from monitoring well MW-1 at concentrations of 210 ppb, 170 ppb, and 270 ppb, respectively. Total naphthalene was detected in the groundwater sample collected from monitoring well MW-1 at a concentration of 650 ppb which exceeded the FDEP target level of 100 ppb for total naphthalene. A summary table of the polynuclear aromatic hydrocarbons (PAHs) detected in the monitoring wells is shown in Table 2-6.

Total petroleum hydrocarbons (TPHs) were detected in the groundwater samples collected from monitoring wells MW-1 and MW-2 at concentrations of 2800 ppb and 170 ppb, respectively, which were below the FDEP target level of 5000 ppb. Lead was not detected in the groundwater samples collected from monitoring wells MW-1, MW-2, and MW-4 on May 20, 1996 and from monitoring wells MW-3 and MW-5 on May 22, 1996 which indicated lead levels BDL. Ethylene dibromide (EDB) was not detected in the groundwater samples collected from monitoring wells MW-2 thru MW-5 and vertical extent monitoring well DMW-6. Groundwater samples collected from monitoring well MW-1 were inadvertently not analyzed for ethylene dibromide (EDB). A summary table of the TPHs, lead, and EDB results is shown in Table 2-7.

TABLE 2-5
SUMMARY OF VOAs
ANALYTICAL RESULTS OF GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELL MW-1 THRU DMW-6
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1116

PARAMETER	MONITORING WELL NUMBER					
	MW-1 5/20/96	MW-2 3/19/96	MW-3 3/19/96	MW-4 3/19/96	MW-5 3/19/96	DMW-6 6/5/96
Xylenes (Total)	12	BDL	BDL	BDL	BDL	BDL
Total BTEX	12	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).

TABLE 2-6

SUMMARY OF PAHs
ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM MONITORING WELLS MW-1 THRU DMW-6
U.S. NAVY OUTLYING LANDING FIELD BRONSON, SITE 1116

PARAMETER	MONITORING WELL NUMBER					
	MW-1 5/20/96	MW-2 3/19/96	MW-3 3/19/96	MW-4 3/19/96	MW-5 3/19/96	DMW-6 6/5/96
Acenaphthene	5	BDL	BDL	BDL	BDL	BDL
Phenanthrene	8	BDL	BDL	BDL	BDL	BDL
Fluorene	6	BDL	BDL	BDL	BDL	BDL
Naphthalene	210	BDL	BDL	BDL	BDL	BDL
1-Methylnaphthalene	170	BDL	BDL	BDL	BDL	BDL
2-Methylnaphthalene	270	BDL	BDL	BDL	BDL	BDL
TOTAL NAPHTHALENE	650	BDL	BDL	BDL	BDL	BDL

NOTES: BDL = Below detection limits.
All results reported in parts per billion (ppb) unless otherwise noted.

TABLE 2-7
SUMMARY OF TPH, 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 1116

PARAMETER	DATE	MONITORING WELL NUMBER					
		MW-1	MW-2	MW-3	MW-4	MW-5	DMW-6
TPH	5/20/96	2800	NS	NS	NS	NS	NS
TPH	5/22/96	NS	170	BDL	BDL	BDL	NS
TPH	6/5/96	NS	NS	NS	NS	NS	BDL
Lead	5/20/96	BDL	BDL	NS	BDL	NS	NS
Lead	5/22/96	NS	NS	BDL	NS	BDL	NS
EDB	3/19/96	NS	BDL	BDL	BDL	BDL	NS
EDB	6/5/96	NS	NS	NS	NS	NS	BDL

NOTES: All results reported in parts per billion (ppb) unless otherwise noted
BDL = Below detection limits
EDB = 1,2 Dibromoethane
NS = Not sampled
TPH = Total Petroleum Hydrocarbons

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 well #1 and #2. He noted that potable water wells #1 and #2 were sampled monthly and analyzed for VOAs since 1987. He noted that potable water well #1 is currently operating. He noted that the only contaminant detected in potable water well #1 during this period was tetrachloroethylene which ranged in concentration from 0.06 ppb to 1.19 ppb. Mr. Walters noted that Bronson Field potable water well #2, which was taken out of service in June 1995, has been sampled from March 1987 to June 1995 and the samples were analyzed for VOAs. He noted that the only VOAs detected in the samples collected from this potable water well was also tetrachloroethylene which ranged in concentration from 0.03 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 tetrachloroethylene.

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 200 cubic yards of contaminated soil.

- A total of 23 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 VOCs using an OVA. Soil samples collected from boreholes B1, B2, B3, B4, B8, B9, B14, B15, and B16 at a depth of approximately 12' BLS were found to have a VOC concentration above the FDEP target level of 50 ppm. Soil contamination is limited to soil at or just above the groundwater table (capillary fringe).

- 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.

- Groundwater depths measured in monitoring wells MW-1 thru MW-5 on March 19, 1996 indicate the groundwater flow direction at the site to be toward the southwest.

- The estimated horizontal hydraulic conductivity at the site is 0.6899 ft/day.

- The calculated linear groundwater flow velocity at the site is estimated to be 0.0069 ft/day (2.5181 ft/yr).

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

- Monitoring well MW-1 exceeded the FDEP target levels for BTEX and total naphthalenes.

- Total VOAs were only detected in the groundwater sample collected from monitoring well MW-1 (12 ppb) which was below the FDEP target level of 50 ppb for total VOAs. VOAs were not detected in monitoring wells MW-2 thru DMW-6.

- A total naphthalene concentration of 650 ppb was detected in the groundwater sample collected from monitoring well MW-1 which exceeded the FDEP target level of 100 ppb for total naphthalene. No total naphthalenes were detected in the groundwater samples collected from monitoring well MW-2 thru DMW-6.

- TPH concentrations detected in groundwater samples collected from monitoring well MW-1 (2800 ppb) and MW-2 (170 ppb) were below the FDEP target level of 5000 ppb for TPHs. No TPHs were detected in monitoring wells MW-3 thru DMW-6.

- No lead was detected in the groundwater samples collected from monitoring wells MW-1, MW-2, MW-3, MW-4, and MW-5. DMW-6 was inadvertently not tested for lead.

- No EDBs were detected monitoring wells MW-2 thru DMW-6. Monitoring well MW-1 was inadvertently not tested for EDBs.

- The areal extent of the soil and groundwater contamination at the site appears to be limited to a small area and the levels of contamination are minimal.

3.2 RECOMMENDATIONS

PWC Pensacola recommends, based upon the findings and conclusions contained in this report, "no further action" be required for the soil and that a groundwater Monitoring Only Plan be implemented for the groundwater at Site 1116 located at U.S. Navy Outlying Landing Field Bronson, NAS Pensacola, Pensacola, Florida as follows:

(1) Monitoring wells MW-1, MW-2, and MW-5 be sampled and analyzed for TPH by FLPRO and PAHs by EPA method 610, quarterly for one year.

(2) Monitoring well MW-1, which had the highest petroleum contamination, is considered the source monitoring well. Monitoring wells MW-5 and MW-2 are considered the upgradient and downgradient 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 1116, 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

3/17/97

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.

APPENDIX A

MONITORING WELL CONSTRUCTION DIAGRAMS

W.E.S., Inc.
Environmental Division

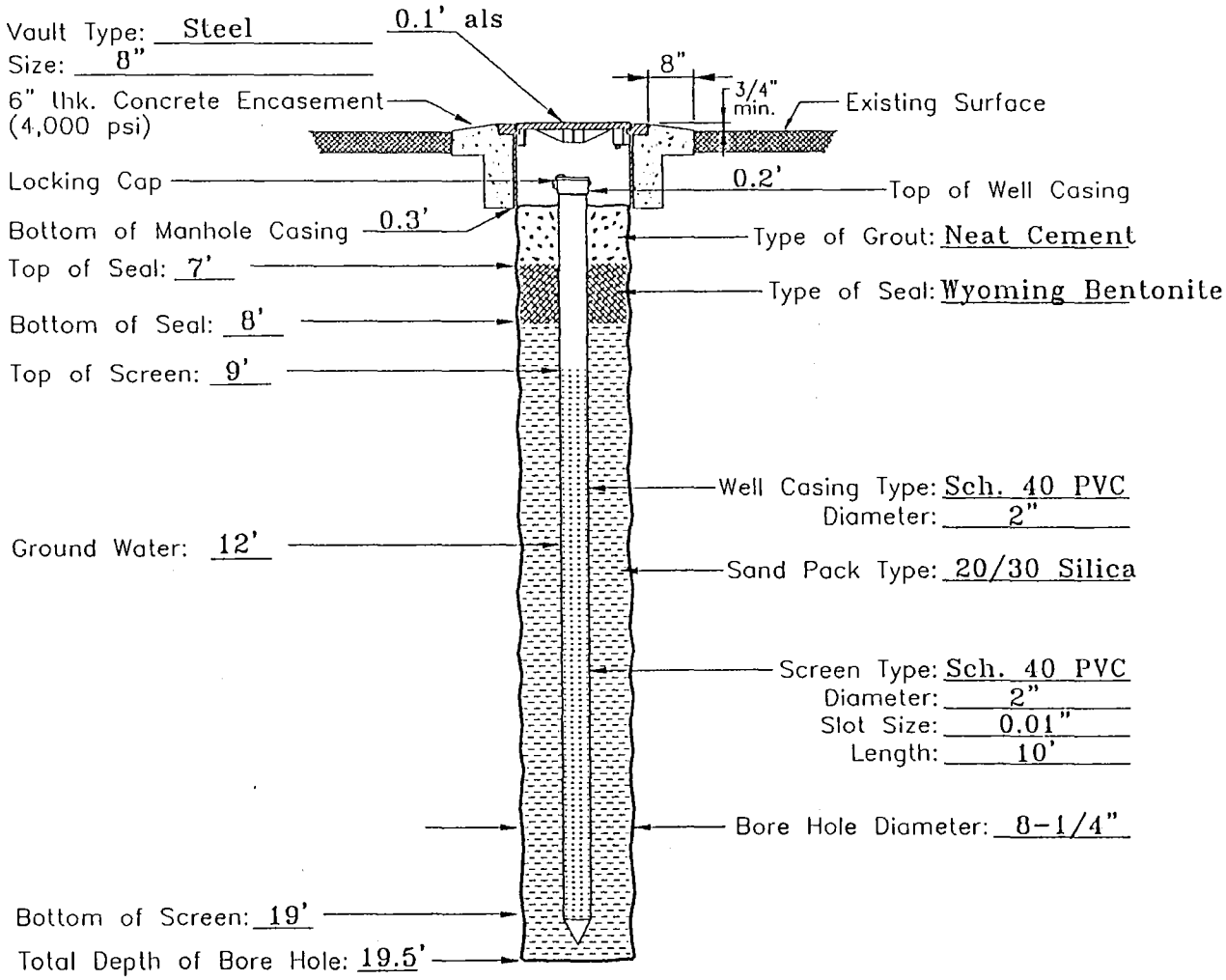
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

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

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/12/96 Finish: 3/12/96
TIME Start: 0945 Finish: 1015

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

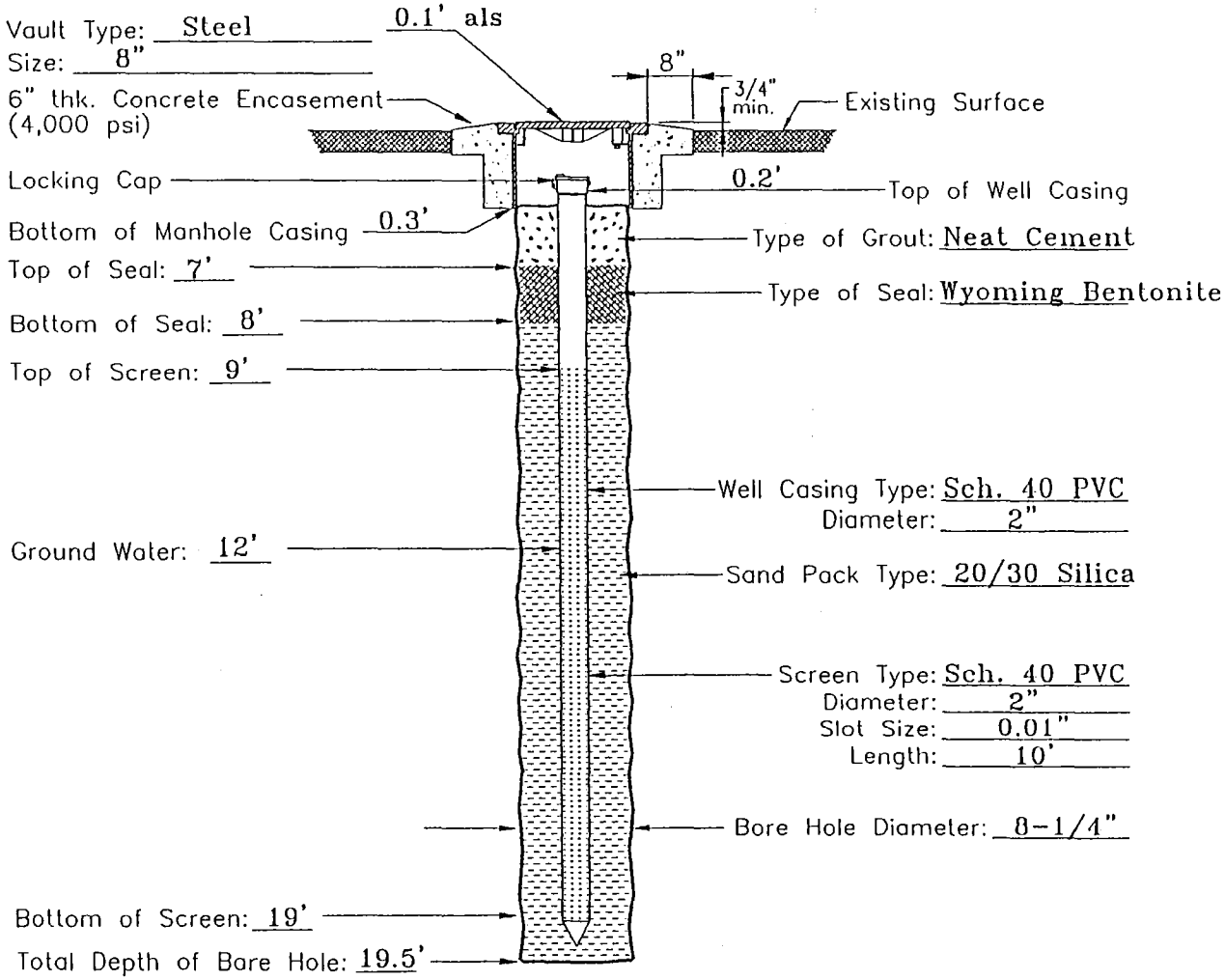
6389 Tower Lane
Sarasota, FL 34240-6810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

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

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/12/96 Finish: 3/12/96
TIME Start: 1015 Finish: 1045

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

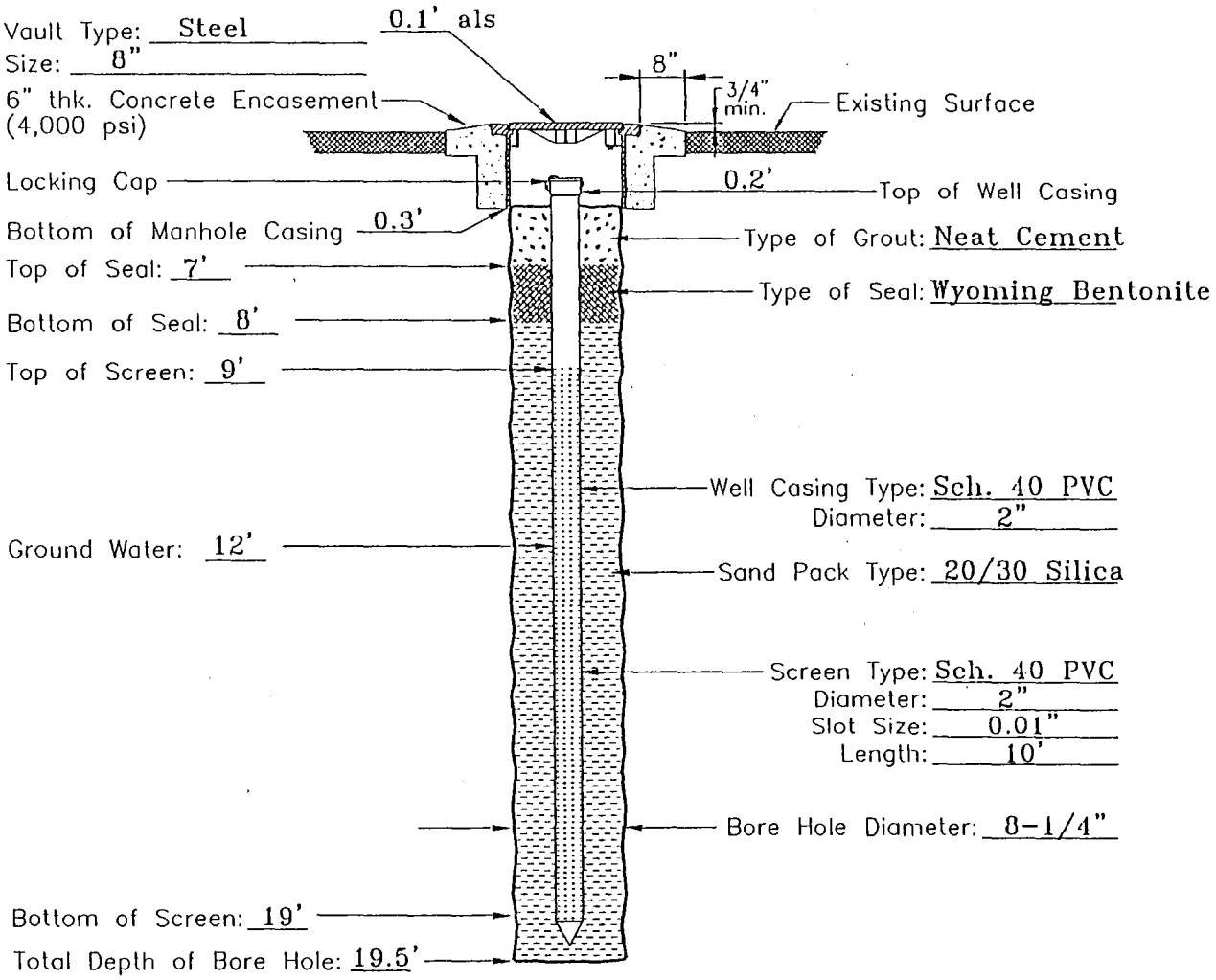
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

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

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/12/96 Finish: 3/12/96
TIME Start: 1045 Finish: 1115

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

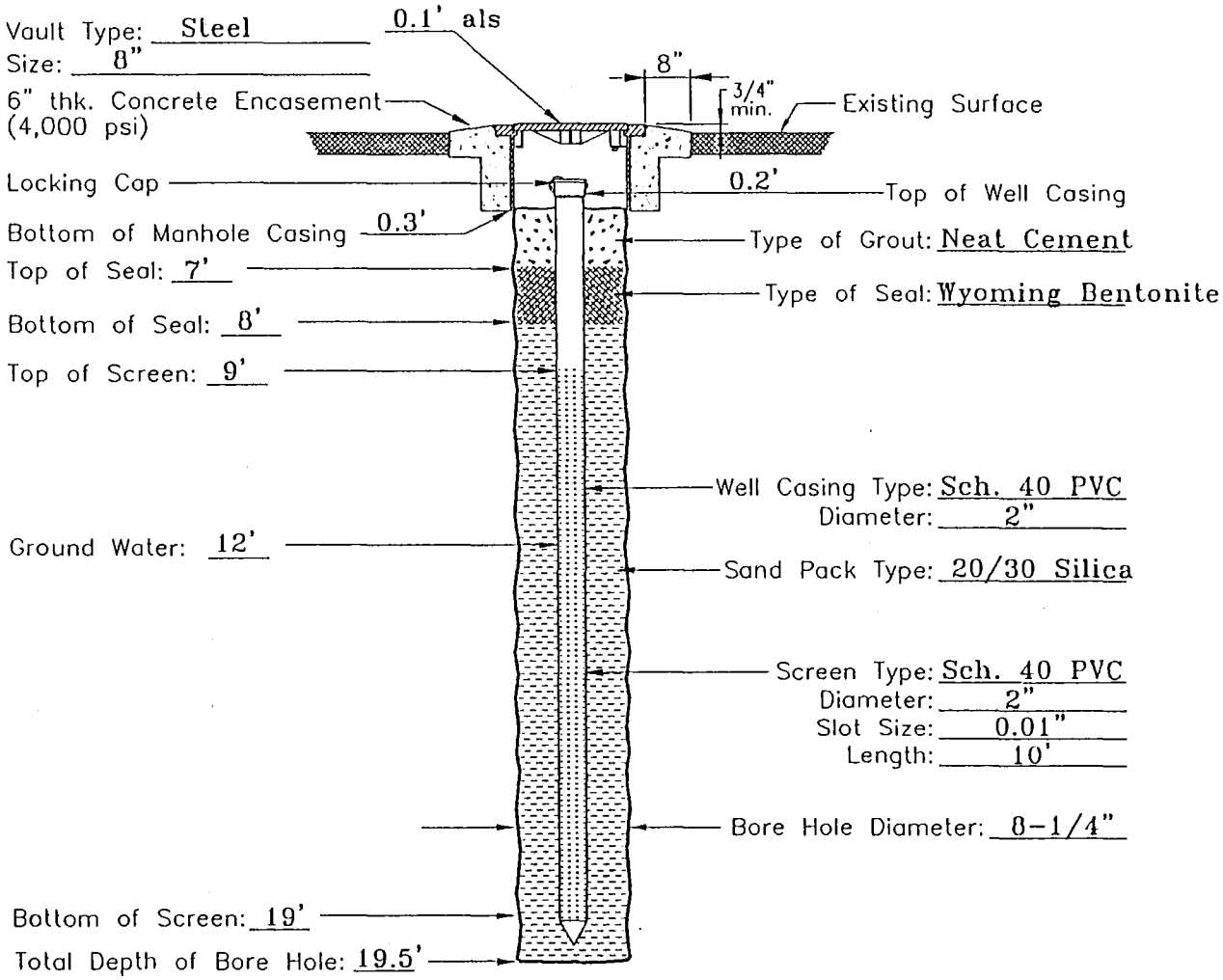
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

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

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/12/96 Finish: 3/12/96
TIME Start: 1115 Finish: 1145

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

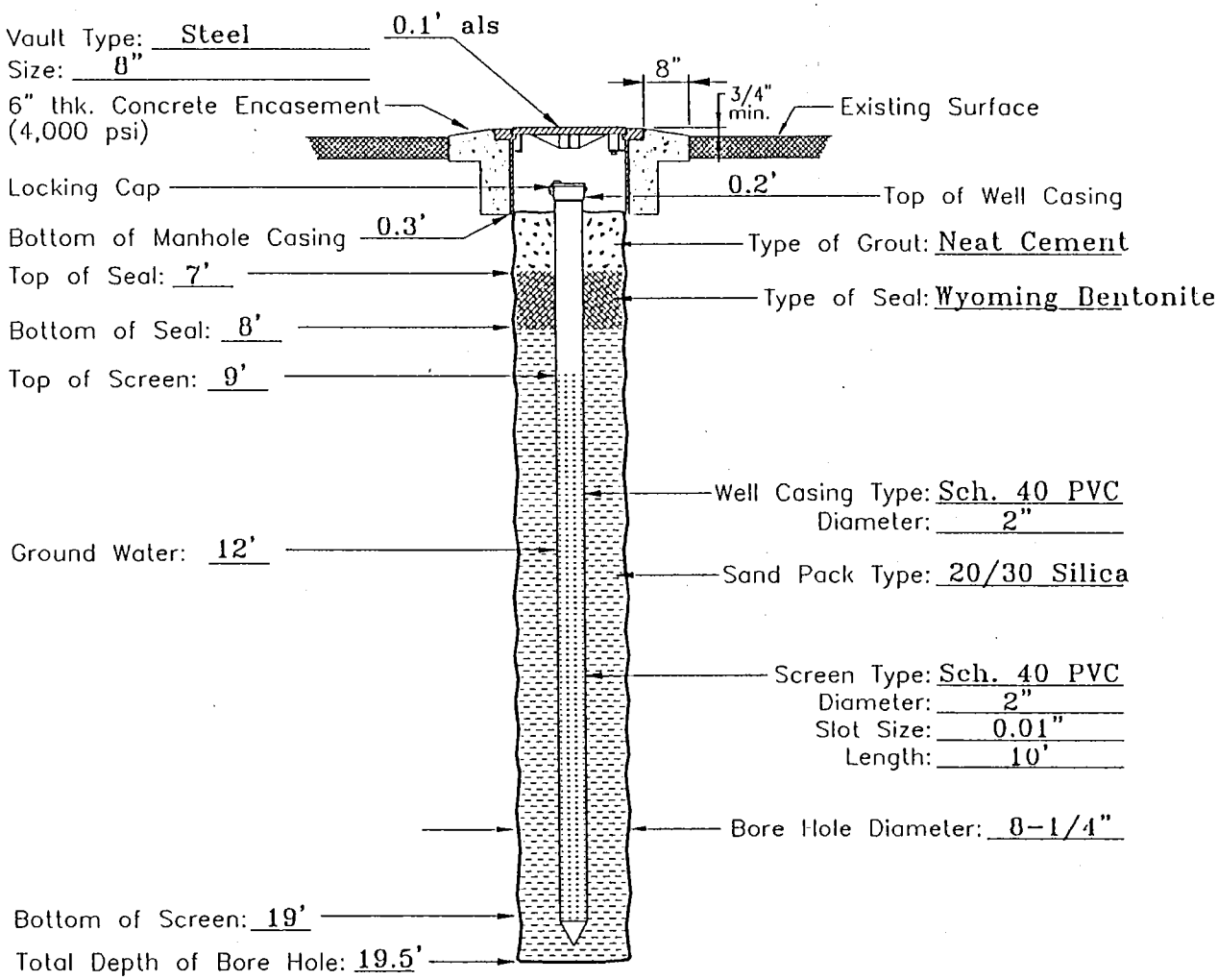
6389 Tower Lane
Sarasota, FL 34240-6810
(941) 371-7617
(941) 378-5218 Fax

MONITOR WELL CONSTRUCTION DETAIL

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

CLIENT: NPWC, ROICC, NAS Pensacola, FL
LOCATION: Site 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 3/12/96 Finish: 3/12/96
TIME Start: 1315 Finish: 1400

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

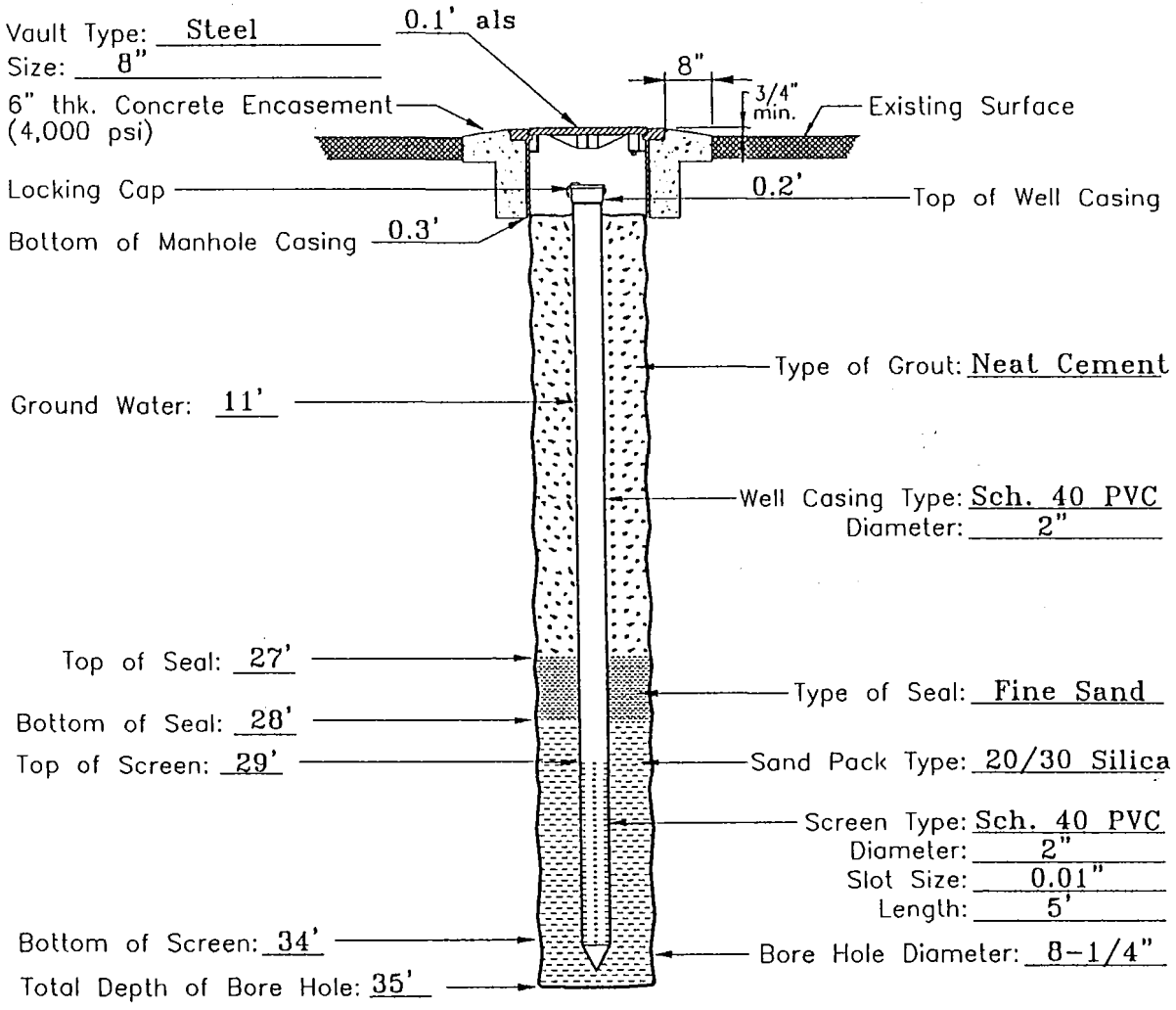
W.E.S., Inc.
Environmental Division
6389 Tower Lane
Sarasota, FL 34240-8810
(941) 371-7617
(941) 378-5218 Fax

VERTICAL EXTENT
MONITOR WELL CONSTRUCTION DETAIL

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 1116, Bronson Field
JOB NUMBER: N65114-95-D-2126
DATE Start: 5/09/96 Finish: 5/09/96
TIME Start: 1300 Finish: 1430

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

LITHOLOGIC LOG

Site 1116	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: 03/12/96	Completed: 03/12/96
MONITOR WELL NO.: MW-1	Start Time: 0945	Finish Time: 1015
Delivery Order 00010	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				100%	1	0'-3'; Orange-Tan, Fine to Medium Grained, Silty Sand, w/ Organics.	0	NR	0
				100%	4	3'-11': Tan, Fine to Medium, Silty Sand. Frosted Grained.	0	NR	0
				100%	7		0	NR	0
				100%	10		0	NR	0
				100%	11	11'-19.5'; Becoming Lighter Tan to Biege, Fine to Medium, Frosted, Silty Sand. Aeolian Deposit. HEAVY PETRO. ODOR / STAINING.	150	NR	150
HA			Water Table @ approx. 12' bls						
				100%	17				
				100%	19				
				100%		End of Boring @ 19.5' bls			
				100%	21				

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 03/13/96

Site 1116	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: 03/12/96	Completed: 03/12/96
MONITOR WELL NO.: MW-2	Start Time: 1015	Finish Time: 1045
Delivery Order 00010	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				100%	1	0'-3'; Orange-Tan, Fine to Medium Grained, Silty Sand, w/ Organics.	0	NR	0	
HOLE				100%	4	3'-11': Tan, Fine to Medium, Silty Sand. Frosted Grained.	0	NR	0	
				100%	7		0	NR	0	
HSA				100%	10		0	NR	0	
				100%	11	11'-19.5'; Becoming Lighter Tan to Biege, Fine to Medium, Frosted, Silty Sand. Aeolian Deposit.	0	NR	0	
HA			Water Table @ approx. 12' bls							
				100%	17					
				100%	19					
				100%		End of Boring @ 19.5' bls				
				100%	21					

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 03/13/96

Site 1116	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: 03/12/96	Completed: 03/12/96
MONITOR WELL NO.: MW-3	Start Time: 1045	Finish Time: 1115
Delivery Order 00010	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%	1	0'-3'; Orange-Tan, Fine to Medium Grained, Silty Sand, w/ Organics.	0	NR	0
				100%	4	3'-11': Tan, Fine to Medium, Silty Sand. Frosted Grained.	0	NR	0
				100%	7		0	NR	0
				100%	10		0	NR	0
				100%	11	11'-19.5'; Becoming Lighter Tan to Biege, Fine to Medium, Frosted, Silty Sand. Aeolian Deposit.	0	NR	0
			Water Table @ approx. 12' bls						
				100%	17				
				100%	19				
				100%		End of Boring @ 19.5' bls			
				100%	21				

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 03/13/96

Site 1116	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: 03/12/96	Completed: 03/12/96
MONITOR WELL NO.: MW-4	Start Time: 1115	Finish Time: 1145
Delivery Order 00010	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				100%	1	0'-3'; Orange-Tan, Fine to Medium Grained, Silty Sand, w/ Organics.	0	NR	0
				100%	4	3'-11': Tan, Fine to Medium, Silty Sand. Frosted Grained.	0	NR	0
				100%	7		0	NR	0
				100%	10		0	NR	0
				100%	11	11'-19.5'; Becoming Lighter Tan to Biege, Fine to Medium, Frosted, Silty Sand. Aeolian Deposit.	0	NR	0
HA			Water Table @ approx. 12' bls						
				100%	17				
				100%	19				
				100%		End of Boring @ 19.5' bls			
				100%	21				

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 03/13/96

Site 1116	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: 03/12/96	Completed: 03/12/96
MONITOR WELL NO.: MW-5	Start Time: 1315	Finish Time: 1400
Delivery Order 00010	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				100%	1	0'-0.2'; Concrete Remnant.	0	NR	0	
				100%	4	0.2'-3'; Orange-Tan, Fine to Medium Grained, Silty Sand, w/ Organics.	0	NR	0	
				100%	7	3'-11': Tan, Fine to Medium, Silty Sand. Frosted Grained.	0	NR	0	
				100%	10		20	NR	20	
				100%	11	11'-19.5'; Becoming Lighter Tan to Biege, Fine to Medium, Frosted, Silty Sand. Aeolian Deposit.	24	NR	24	
HA			Water Table @ approx. 12' bls							
				100%	17					
				100%	19					
				100%		End of Boring @ 19.5' bls				
				100%	21					

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 03/13/96

Site 1116	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: 1300	Finish Time:	1430
Delivery Order 0016	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'-11'; Brown, Fine Sand (FILL).	0	NR	0
HOLLOW STEM AUGUR				100%	8		0	NR	0
			Water Table @ Approx. 10' bls				0	NR	0
					12	11'-17'; Dark Brown to Charcoal Grey, Silty Fine Sand. Heavy Petroleum Staining.			
				100%	16				
				100%	20	17'-30'; Beige, Clayey, Fine to Medium, Sand. Ex. Wet.			
				100%	24				
					28	30'-35'; White, Very Fine to Fine, Sand. Occasional Dark Minerals. Moderately Sorted.			
				100%	32				
					36	End of Boring @ 35' 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
05/15/96
Date

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

APPENDIX C

SLUG TEST DATA, GRAPHS, AND CALCULATIONS

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,

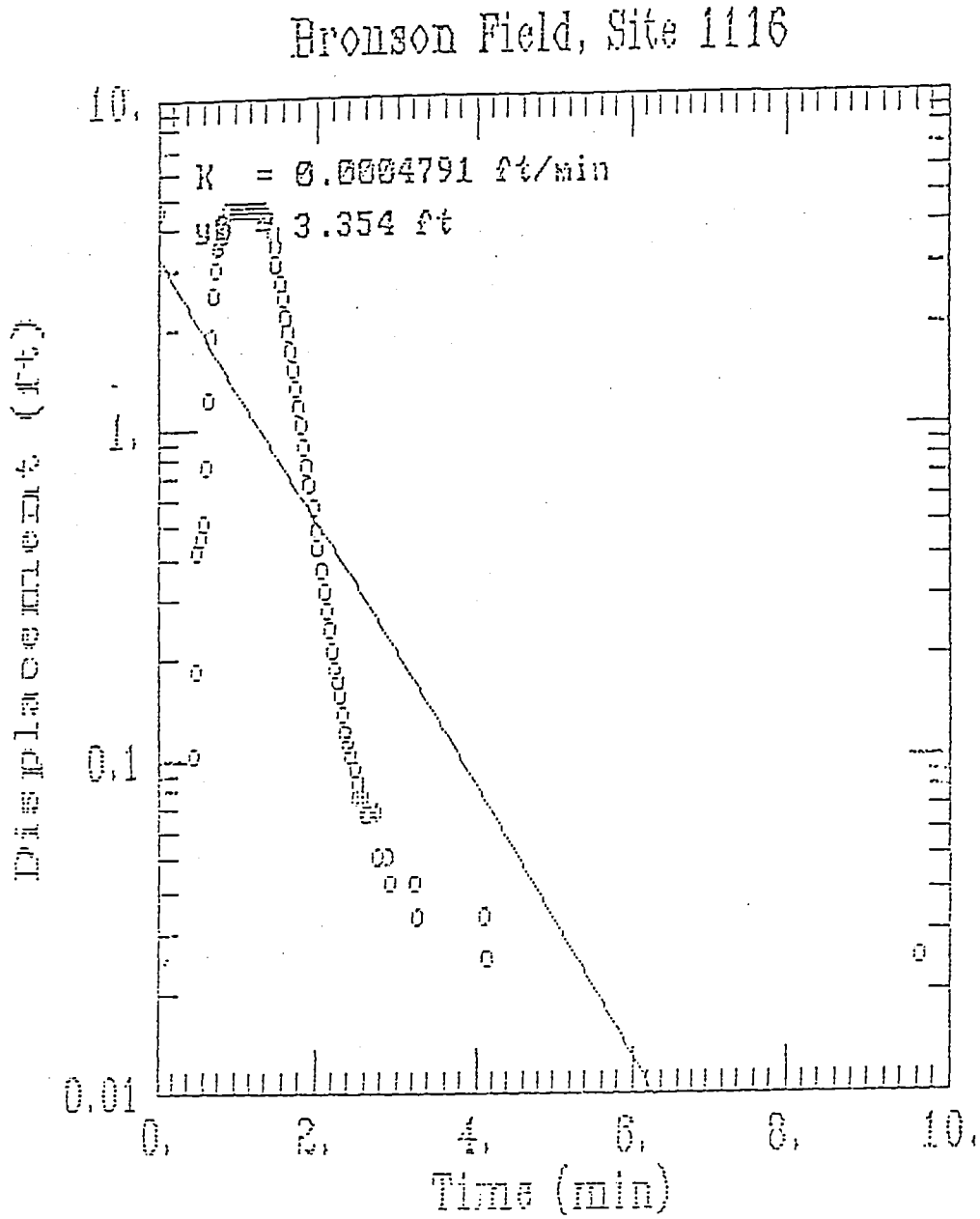
W.E.S., Inc.
Environmental Division

Patrick J. Brown
Staff Geologist

Michael J. Walsh, P.G.
Project Administrator

cc: File

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


Bronson Field, Site 1116
K = 0.0004791 ft/min
y0 = 3.354 ft
Displacement (ft)
10.
1.
0.1
0.01
0.
2.
4.
6.
8.
10.
Time (min)

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						
0.00	+6.4552	1.13	+1.8926	2.27	+6.2863	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	+2.9657	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	+2.2644	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		

APPENDIX D

SOIL AND GROUNDWATER ANALYTICAL RESULTS

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
601/602 Volatiles by Method 8260

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

Report Number: 9603078 A
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#		1- 61163			2- 61164			3- 61165			4- 61166		
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	19 Mar 96	@	1500	19 Mar 96	@	1400	19 Mar 96	@	1445	19 Mar 96	@	1415
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		J. Moore			J. Moore			J. Moore			J. Moore		
Date of Analysis					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#			ID#			ID#			ID#		
Volatiles by GCMS (Capillary)	METHOD #	1- 61163	units	Det. Limit	2- 61164	units	Det. Limit	3- 61165	units	Det. Limit	4- 61166	units	Det. Limit
Benzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromodichloromethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromoform	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Bromomethane	SW 8260	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Carbon Tetrachloride	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chlorobenzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chloroethane	SW 8260	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
2-Chloroethylvinyl ether	SW 8260	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Chloroform	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Chloromethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Dibromochloromethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichlorobenzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,3-Dichlorobenzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,4-Dichlorobenzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Dichlorodifluoromethane	SW 8260	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
1,1-Dichloroethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichloroethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1-Dichloroethene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
trans-1,2-Dichloroethene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,2-Dichloropropane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
cis-1,3-Dichloropropene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
trans-1,3-Dichloropropene	SW 8260	N/A	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Ethylbenzene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Methylene chloride	SW 8260	N/A	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Methyl-tert-butyl Ether (MTBE)	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,2,2-Tetrachloroethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Tetrachloroethene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Toluene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,1-Trichloroethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
1,1,2-Trichloroethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Trichloroethene	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Trichlorofluoromethane	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Vinyl Chloride	SW 8260	N/A	ug/l	1	BDL	ug/l	1	BDL	ug/l	1	BDL	ug/l	1
Xylenes (Total)	SW 8260	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2

Surrogate Recoveries Compound	Acceptance Limits				
1,2-Dichloroethane-d4	76-114		103	105	103
Toluene-d8	88-110		100	98	99
Bromofluorobenzene	86-115		99	97	99

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.
N/A = Not Applicable. Insufficient volume in well to collect sample.

Approved by: Jerry Daes, Laboratory Director

Date/Time: 04-Apr-96 @ 14:46
Report Generated

PWC 5090/14

End of Report

D-1

Navy Public Works Center
Environmental Laboratory

Bldg 3887, Code 920
NAS Pensacola, Fl. 32508
Phone (904) 452-4728
Autovon 922-4728
FAX (904) 452-2307/2799

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: 9603079 A
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#		1- 61167			2- 61168			3- 61169			4- 61170		
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	19 Mar 96	@	1430	19 Mar 96	@	N/S	19 Mar 96	@	1330	19 Mar 96	@	1000
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		J. Moore			J. Moore			J. Moore			J. Moore		
Date of Analysis		22 Mar 96			22 Mar 96			22 Mar 96			22 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- 61167	units	Limit	2- 61168	units	Limit	3- 61169	units	Limit	4- 61170	units	Limit
Benzene	SW 8260	BDL	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	BDL	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	BDL	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	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2

Surrogate Recoveries Compound	Acceptance Limits				
1,2-Dichloroethane-d4	76-114	102	101	104	105
Toluene-d8	88-110	100	98	100	101
Bromofluorobenzene	86-115	99	99	100	101

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

Approved by: Jerry Dees, Laboratory Director

Date/Time: 04-Apr-96 @ 14:48
Report Generated

PWC 5090/14

End of Report

D-2

Navy Public Works Center
Environmental Laboratory

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

Laboratory Report
Total PAH's by Method 8270A

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

Report Number: 9603078 B
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 61163	2- 61164	3- 61165	4- 61166
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	19 Mar 96 @ 1500	19 Mar 96 @ 1400	19 Mar 96 @ 1445	19 Mar 96 @ 1415
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab
Analyst		M. Chambers	M. Chambers	M. Chambers	M. Chambers
Date of Analysis		N/A	23 Mar 96	23 Mar 96	23 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- 61163	units	Limit	2- 61164	units	Limit	3- 61165	units	Limit	4- 61166	units	Limit
Acenaphthene	SW846 8270	N/A	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Acenaphthylene	SW846 8270	N/A	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
Anthracene	SW846 8270	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Benzo(a)anthracene	SW846 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Benzo(a)pyrene	SW846 8270	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Benzo(b)fluoranthene	SW846 8270	N/A	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Benzo(g,h,i)perylene	SW846 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Benzo(k)fluoranthene	SW846 8270	N/A	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Chrysene	SW646 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Dibenzo(a,h)anthracene	SW846 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Fluoranthene	SW846 8270	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Fluorene	SW846 8270	N/A	ug/l	4	BDL	ug/l	4	BDL	ug/l	4	BDL	ug/l	4
Indeno(1,2,3-cd)pyrene	SW846 8270	N/A	ug/l	2	BDL	ug/l	2	BDL	ug/l	2	BDL	ug/l	2
Naphthalene	SW846 8270	N/A	ug/l	7	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7
Phenanthrene	SW846 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
Pyrene	SW846 8270	N/A	ug/l	3	BDL	ug/l	3	BDL	ug/l	3	BDL	ug/l	3
1-Methylnaphthalene	SW846 8270	N/A	ug/l	5	BDL	ug/l	5	BDL	ug/l	5	BDL	ug/l	5
2-Methylnaphthalene	SW846 8270	N/A	ug/l	7	BDL	ug/l	7	BDL	ug/l	7	BDL	ug/l	7

SURROGATE RECOVERIES Compound	Acceptance Limits				
Nitrobenzene-d5	35-114		79	79	71
2-Fluorobiphenyl	43-116		74	74	72
Terphenyl-d14	33-141		83	85	82

Comments: ug/l=micrograms per liter. ug/kg=micrograms per kilogram. BDL=Below Detection Limit.
N/A = Not Applicable. Insufficient volume in well to collect sample.

Approved by: Jerry Dees, Laboratory Director

Date/Time: 04-Apr-96 @ 14:31
Report Generated

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

Laboratory Report
Total PAH's by Method 8270A

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

Report Number: 9603079 B
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 61167			2- 61168			3- 61169			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	19 Mar 96 @ 1430			19 Mar 96 @ N/S			19 Mar 96 @ 1330					
Sample Type	Comp/Grab	Grab			Grab			Grab					
Analyst		J. Moore			J. Moore			M. Chambers					
Date of Analysis		23 Mar 96			23 Mar 96			23 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- 61167	units	Limit	2- 61168	units	Limit	3- 61169	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	BDL	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	79	80	71	
2-Fluorobiphenyl	43-116	77	78	73	
Terphenyl-d14	33-141	86	86	91	

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

Approved by: Jerry Dees, Laboratory Director

Date/Time: 04-Apr-96 @ 14:34
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: 9603078 C
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 61163			2- 61164			3- 61165			4- 61166		
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	19 Mar 96 @ 1500			19 Mar 96 @ 1400			19 Mar 96 @ 1445			19 Mar 96 @ 1415		
Sample Type	Comp/Grab	Grab			Grab			Grab			Grab		
Analyst		B. Jacquart			B. Jacquart			B. Jacquart			B. Jacquart		
Date of Analysis		N/A			23 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- 61163	units	Limit	2- 61164	units	Limit	3- 61165	units	Limit	4- 61166	units	Limit
Ethylene Dibromide	EPA 504	N/A	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		96	95	81

Comments: ug/l=micrograms per liter. BDL=Below Detection Limit.
N/A = Not Applicable. Insufficient volume in well to collect sample.

Approved by: Jerry Dees/Laboratory Director

Date/Time: 02-Apr-96 @ 13:14
Report Generated

PWC 5090/14

Page 1 of 1

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

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

Laboratory Report
EDB by Method 504

Report Number: 9603079 C
Sample Date: 19 Mar 96
Received Date: 20 Mar 96
Sample Site: Bronson Field, Bldg. 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 61167			2- 61168			3- 61169			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	19 Mar 96 @ 1430			19 Mar 96 @ N/S			19 Mar 96 @ 1330					
Sample Type	Comp/Grab	Grab			Grab			Grab					
Analyst		B. Jacquart			B. Jacquart			B. Jacquart					
Date of Analysis		23 Mar 96			23 Mar 96			23 Mar 96					
Sample Matrix		Groundwater			Groundwater			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- 61167	units	Limit	2- 61168	units	Limit	3- 61169	units	Limit	4-	units	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	92	69	128	

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

Approved by: Jerry Dees, Laboratory Director

Date/Time: 02-Apr-96 @ 13:15
Report Generated

PWC 5090/14

Page 1 of 1

End of Report

UST CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

C Environmental Laboratory
Bldg 3297, Code 820
NAS Pensacola, FL 32508-5500

Ph # - (904) 452-4728
Autovon - 922-4728

Requester: NPWC Environmental Dept.
Address: Bldg. 3691, Code 910
NAS Pensacola, FL 32508
Phone #: (904) 452-3180
Contact: Greg Campbell
Job Order #:

Report Required? Yes No DEP? Yes No
Lab ID Number:
Sample Date: 3.19.96
Received Date: 3.20.96
Sample Site: SITE 1116, Bronson Field
Lab Due Date:

Sample ID #	Lab	#1-6-1163	#2-6-1164	#3-6-1165	#4-6-1166
Sample Name or Location	----------	MW-1	MW-2	MW-3	MW-4
Sampled by	----------	PJB	PJB	PJB	PJB
Composite Date/Time Collected	Begin				
	Frequency	3.19.96	3.19.96	3.19.96	3.19.96
	End				
Grab Time	----------	1500	1400	1445	1415
Sample Matrix	----------	GW	GW	GW	GW

Notes: XAG Complete Kerosene Analytical Group

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	Preservative(s) Used
Ethylene Dibromide (EDB)	EPA 504			X	2 EDB	X	2 EDB	X	2 EDB	3	120ml A VOA/4 oz.	None/4° C
Purg. Halocarbons/GC	EPA 601									4	40 ml VOA Vial x 2	HCl/4° C
Purg. Aromatics/GC	EPA 602									3	40 ml VOA Vial x 2	HCl/4° C
Purg. Halo. & Aro./GC	EPA 601/602			X	3 VOA	X	3 VOA	X	3 VOA	6	40 ml VOA Vial x 2	HCl/4° C
Polynuclear Aromatics/HPLC	EPA 610									7	1L Amber x 2	4° C
Purgeables/GCMS	EPA 624									8	40 ml VOA Vial x 2	HCl/4° C
Base/Neutrals & Acids/GCMS	EPA 625			X	3 BNA & TPH	X	3 BNA & TPH	X	3 BNA & TPH	15	1L Amber x 2	4° C
Gas Chromatography	EPA SW 8000									5	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Halo. Vol. Org./GC	EPA SW 8010									4	40ml VOAx2/4 oz.	HCl/4° C/None
Non-Halo. Vol. Org./GC	EPA SW 8015(MOD)									4	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Arom. Vol. Org./GC	EPA SW 8020									3	40ml VOAx2/4 oz.	HCl/4° C/None
Halo./Arom. Vol. Org./GC	EPA SW 8010/8020									6	40ml VOAx2/4 oz.	HCl/4° C/None
Polynuclear Aromatics/GC	EPA SW 8100									6	1Lx2/4 oz.	4° C/None
VOC/GCMS	EPA SW 8240A									8	40ml VOAx2/4 oz.	HCl/4° C/None
VOC/GCMS - Cap.	EPA SW 8260									8	40ml VOAx2/4 oz.	HCl/4° C/None
Semivol. Org./GCMS - Cap.	EPA SW 8270A									18	1Lx3/4 oz.	4° C/None
Polynuclear Aromatics (PAH's)	EPA SW 8310										1Lx2/4 oz.	4° C/None

PARAMETER by Group Name	METHOD SOURCE	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	X	Bottle ID #'s	Billing Units	Containers Required	Preservative(s) Used
Gasoline Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Kerosene Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Mixed Product Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	EPA 418.1										Consult Lab	Consult Lab
RCRA Metals (8)	EPA Various										Consult Lab	Consult Lab
TCLP Metals (8) w/extraction	EPA SW-846										Consult Lab	Consult Lab
Lead (Pb)	EPA 239.2			X	1 Pb	X	1 Pb	X	1 Pb		250ml/4 oz.	HNO/None
Other:												

Comments:

Relinquished by: [signature]
Date/Time: 3.20.96 / 0915

Received by: [signature]
Date/Time: 3.20.96 / 0915

PWC 8510/8

UST CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

Environmental Laboratory
1297, Code 820
S Pensacola, FL 32506-6500

Ph#-(904)452-4728
Autovon-922-4728

Requester: NPWC Environmental Dept.
Address: Bldg. 3691, Code 910
NAS Pensacola, FL 32508
Phone #: (904) 452-3180
Contact: Greg Campbell
Job Order #:

Report Required? Yes No DEP? Yes No
Lab ID Number:
Sample Date: 3·19·96
Received Date: 3·20·96
Sample Site: SITE 1116, BRONSON Field
Lab Due Date:

Sample ID #	Lab	#1-6-1167	#2-6-1168	#3-1169	#4-6-1170
Sample Name or Location	----------	MW-5	Duplicate	EQ. BLANK	TRIP BLANK
Sampled by	----------	PJB	PJB	PJB	PJB
Composite Date/Time Collected	Begin				
	Frequency	3·19·96	3·19·96	3·19·96	3·19·96
	End				
Grab Time	----------	1430	—	1330	1000
Sample Matrix	----------	GW	GW	DI	DI

Notes: KAG complete Kerosene Analytical Group

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	Preservative(s) Used
Ethylene Dibromide (EDB)	EPA 504 (1)	X	2 EDB	X	2 EDB	X	2 EDB	~~X~~	~~2 EDB~~ PJB	3	120ml A VOA/4 oz.	None/4° C
Purg. Halocarbons/GC	EPA 601									4	40 ml VOA Vial x 2	HCl/4° C
Purg. Aromatics/GC	EPA 602									3	40 ml VOA Vial x 2	HCl/4° C
Purg. Halo. & Aro./GC	EPA 601/602	X	3 VOA	X	3 VOA	X	3 VOA	X	3 VOA	6	40 ml VOA Vial x 2	HCl/4° C
Polynuclear Aromatics/HPLC	EPA 610									7	1L Amber x 2	4° C
Purgeables/GCMS	EPA 624									8	40 ml VOA Vial x 2	HCl/4° C
Base/Neutrals & Acids/GCMS	EPA 625	X	3 BNA & TPH	X	3 BNA & TPH	X	3 BNA & TPH	X	~~3 BNA & TPH~~ PJB	15	1L Amber x 2	4° C
Gas Chromatography	EPA SW 8000									5	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Halo. Vol. Org./GC	EPA SW 8010									4	40ml VOAx2/4 oz.	HCl/4° C/None
Non-Halo. Vol. Org./GC	EPA SW 8015(MOD)									4	40mlx2/1Lx2/4 oz.	HCl/4° C/None
Arom. Vol. Org./GC	EPA SW 8020									3	40ml VOAx2/4 oz.	HCl/4° C/None
Halo./Arom. Vol. Org./GC	EPA SW 8010/8020									6	40ml VOAx2/4 oz.	HCl/4° C/None
Polynuclear Aromatics/GC	EPA SW 8100									6	1Lx2/4 oz.	4° C/None
VOC/GCMS	EPA SW 8240A									8	40ml VOAx2/4 oz.	HCl/4° C/None
VOC/GCMS-Cap.	EPA SW 8260									8	40ml VOAx2/4 oz.	HCl/4° C/None
Semivol. Org./GCMS-Cap.	EPA SW 8270A									18	1Lx3/4 oz.	4° C/None
Polynuclear Aromatics (PAH's)	EPA SW 8310										1Lx3/4 oz.	4° C/None
PARAMETER by Group Name	**METHOD SOURCE**	**X**	**Bottle ID #'s**	**X**	**Bottle ID #'s**	**X**	**Bottle ID #'s**	**X**	**Bottle ID #'s**	**Billing Units**	**Containers Required**	**Preservative(s) Used**
Gasoline Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Kerosene Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Mixed Product Analytical Group	EPA SW-846										Consult Lab	Consult Lab
Total Petroleum Hydrocarbons	EPA 418.1										Consult Lab	Consult Lab
RCRA Metals (8)	EPA Various										Consult Lab	Consult Lab
TCLP Metals (8) w/extraction	EPA SW-846										Consult Lab	Consult Lab
Lead (Pb)	EPA 239.2	X	1 Pb	X	1 Pb	X	Pb	X	Pb PJB		250ml/4 oz.	HNO3/None
Other:												

Comments:

Relinquished by: [signature]
Date/Time: 3·20·96 / 0915

Received by: [signature]
Date/Time: 3·20·96 / 0915

PWC 8510/8

AMERICAN ENVIRONMENTAL NETWORK 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 1116
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: 001 Sample Date/Time: 12-MAR-96 1015
Client Sample Id: 61021 BRONSON MW1 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 92 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	110	27	
NONATRIACONTANE	%REC/SURR	D	60-118	
ORTHO TER PHENYL	%REC/SURR	D	62-109	
ANALYST	INITIALS	BV		

Comments:
D = DILUTED OUT.

"FINAL REPORT FORMAT - SINGLE"

Accession: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1116
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: 002 Sample Date/Time: 12-MAR-96 1045
Client Sample Id: 61022 BRONSON MW2 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 91 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.7	
NONATRIACONTANE	%REC/SURR	51*	60-118	
ORTHO TER PHENYL	%REC/SURR	74	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 1116
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: 003 Sample Date/Time: 12-MAR-96 1115
Client Sample Id: 61023 BRONSON MW3 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 93 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.7	
NONATRIACONTANE	%REC/SURR	49*	60-118	
ORTHO TER PHENYL	%REC/SURR	106	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 1116
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: 004 Sample Date/Time: 12-MAR-96 1145
Client Sample Id: 61024 BRONSON MW4 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 91 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.7	
NONATRIACONTANE	%REC/SURR	48*	60-118	
ORTHO TER PHENYL	%REC/SURR	100	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 1116
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: 005 Sample Date/Time: 12-MAR-96 1400
Client Sample Id: 61025 BRONSON MW5 Received Date: 14-MAR-96

Batch: FPS013 Extraction Date: 15-MAR-96
Blank: A Dry Weight %: 94 Analysis Date: 19-MAR-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	MG/KG	ND	2.7	
NONATRIACONTANE	%REC/SURR	67	60-118	
ORTHO TER PHENYL	%REC/SURR	88	62-109	
ANALYST	INITIALS	BV		

Comments:

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

"Method Report Summary"

Accession Number: 603232
Client: NAS, CO, PWC
Project Number: CALL #9024
Project Name: PETROLEUM HYDROCARBONS BY FL PRO
Project Location: BRONSON 1116
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Client Sample Id:	Parameter:	Unit:	Result:
61021 BRONSON MW1	TOTAL PETROLEUM HYDROCARBON	MG/KG	110

AMERICAN ENVIRONMENTAL NETWORK 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 1116
Department:	SEMI-VOLATILE FUELS

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

"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:

AMERICAN ENVIRONMENTAL NETWORK 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.

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).

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

Navy . ublic 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 Repc
Total Lead

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

Report Number: 9606067
Sample Date: 20 May 96
Received Date: 21 May 96
Sample Site: Bronson Field Site 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 62265	2- 62266	3- 62268	4- 62270	Analyst(s):
Sample Name	Requester	MW-2	MW-4	MW-1	Equipment Blank	ICP – Brian Nelson
Collector Name		RDH	RDH	RDH	RDH	
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	20 May 96 @ 1815	20 May 96 @ 1756	20 May 96 @ 1910	20 May 96 @ 1900	ICP – 13 Jun 96
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab	
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater	

PARAMETER		ID#			ID#			ID#			ID#			
Metals:	METHOD #	1- 62265	units	Det. Limit	2- 62266	units	Det. Limit	3- 62268	units	Det. Limit	4- 622670	units	Det. 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: 20-Jun-96 13:41

End of Report

PWC 5090/14

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Navy Public Works Center
Environmental Laboratory
Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4720/3642
DSN 922-4720/3642

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: 62268
Sample Date: 05/20/96
Received Date: 05/21/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62268
Sample Name / Location	MW-1 BF1116
Collector's Name	RDH
Date & Time Collected	5/20/96 @ 1910
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	05/25/96 / JM
Date of Analysis	05/25/96
Sample Matrix	GW
Dilution	X 1

Compound Name	1- 62268	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	
Dichlorodifluoromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	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)	12	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	125
Toluene-d8	86-119	105
Bromoflourobenzene	85-116	110

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

 End of Report

D-20

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phc (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: 62268
Sample Date: 05/20/96
Received Date: 05/21/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62268		
Sample Name / Location	MW-1 BF1116		
Collector's Name	RDH		
Date & Time Collected	5/20/96 @ 1910		
Sample Type (composite or grab)	Grab		
Analyst	M. Chambers		
Date of Extraction / Initials	5/24/96; JJ		
Date of Analysis	6/5/96		
Sample Matrix	GW		
Dilution	X 1		
COMPOUND NAME	1- 62268	units	Det. Limit
Acenaphthene	5	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
Fluoranthene	BDL	UG/L	2
Fluorene	6	UG/L	4
Indeno(1,2,3-cd)pyrene	BDL	UG/L	2
1-Methylnaphthalene	170	UG/L	50
2-Methylnaphthalene	270	UG/L	70
Naphthalene	210	UG/L	70
Phenanthrene	8	UG/L	3
Pyrene	BDL	UG/L	3

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
Nitrobenzene- d5	35-114	71
2-Flourobiphenyl	43-116	74
Terphenyl -d14	33-141	76

COMMENTS :

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

Approved by [signature] Date/Time : 6/21/96 1500

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: 62270
Sample Date: 05/20/96
Received Date: 05/21/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62270
Sample Name / Location	Eq. Blk BF1116
Collector's Name	RDH
Date & Time Collected	5/20/96 @ 1900
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	05/24/96 / JM
Date of Analysis	05/24/96
Sample Matrix	GW
Dilution	X 1

Compound Name	1- 62270	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	
Dichlorodifluoromethane	BDL	ug/L	1	
1,1-Dichloroethane	BDL	ug/L	1	
1,2-Dichloroethane	BDL	ug/L	1	
1,1-Dichloroethene	BDL	ug/L	1	
trans-1,2-Dichloroethene	BDL	ug/L	1	
1,2-Dichloropropane	BDL	ug/L	1	
cis-1,3-Dichloropropene	BDL	ug/L	1	
trans-1,3-Dichloropropene	BDL	ug/L	1	
Ethylbenzene	BDL	ug/L	1	
Methylene Chloride	BDL	ug/L	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	2	ug/L	1	
1,1,1-Trichloroethane	BDL	ug/L	1	
1,1,2-Trichloroethane	BDL	ug/L	1	
Trichloroethene	BDL	ug/L	1	
Trichlorofluoromethane	BDL	ug/L	1	
Vinyl Chloride	BDL	ug/L	1	
Xylenes (Total)	BDL	ug/L	1	

SURROGATE SPIKE RECOVERIES

	Acceptance Limits	
1,2-Dichloroethane-d4	75-133	105
Toluene-d8	86-119	107
Bromofluorobenzene	85-116	106

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
Page 1 of 1 End of Report

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Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSI 2-4728/3642

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: 62270
Sample Date: 05/20/96
Received Date: 05/21/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAb Sample ID#	1- 62270		
Sample Name / Location	Eq. Blk BF1116		
Collector's Name	RDH		
Date & Time Collected	5/20/96 @ 1900		
Sample Type (composite or grab)	Grab		
Analyst	M. Chambers		
Date of Extraction / Initials	5/24/96; JJ		
Date of Analysis	6/5/96		
Sample Matrix	GW		
Dilution	X 1		
COMPOUND NAME	1- 62270	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
Flc thene	BDL	UG/L	2
Fl ne	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	81
2-Flourobiphenyl	43-116	84
Terphenyl -d14	33-141	94

COMMENTS : Volatile analysis was repeated with the same result.

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

Approved by : Date/Time : 6/24/96 1500

Navy Public Works Center
Environmental Laboratory

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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: 9606051
Sample Date: 22 May 96
Received Date: 23 May 96
Sample Site: Bronson Field Site 1116
Job Order #: 130 5001

Sample ID#	Lab	1- 62320	2- 62321	3-	4-	Analyst(s):
Sample Name	Requester	MW-3	MW-5			ICP - Brian Nelson
Collector Name		RDH	RDH			
Date/Time	Comp start					
Collected	Comp stop					Date(s) of analysis:
(Military)	Grab	22 May 96 @ 1650	22 May 96 @ 1655			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- 62320	units	Limit	2- 62321	units	Limit	3-	units	Limit	4-	units	Limit	Preservative(s)
Lead(Pb)	SW 6010A	X BDL	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 Bees, Laboratory Director

Date/Time: 18-Jun-96 12:33

End of Report

PWC 5090/14

D-24

CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

PWC Environmental Laboratory
Bldg.3297, Code 920
NAS Pensacola, Fl. 32508-6500

Ph# -(904)452-3642/4758
Autovon-922-3642

Requester:
Address:
Phone #: 452-2170
Contact: GREG CAMPBLE
Job Order #: 1305001

Report Required? (Yes) No
DER? Yes (No)
Lab ID Number:
Sample Date: 5-22-96
Received Date: 5/23/96
Sample Site: BILOXSON FIELD 1116.
Lab Due Date:

Sample ID #	Lab	#1- 62320	#2- 62321	~~#3- 62322~~	#4-	#5-	#6-	#7-	Notes:
Sample Name	----------	MW-3	MW-5	EQUIP. BLANK					
or Location	----------	1116	1116	1116					
Sampled by	----------	RDH	RDH	RDH					
Composite	Begin								
Date/Time	Frequency	5-22-96	5-22-96	5-22-96					
Collected	End								
Grab Time	----------	1650	1655	1600					
Sample Matrix	----------	GW	GW	WATER					
PARAMETER	METHOD #								Preservative(s) Used
Field:									
Cl, Residual	EPA 330.5								Field
pH	EPA 150.1								Field
Temperature	EPA 170.1								Field
Lab:									
Alkalinity	EPA 310.1								Iced/4° C.
Ammonia(as N)	EPA 350.1								H_2SO_4-pH<2
Ammonia(union)	DER Draft 00619								Iced/4° C.
BOD.	EPA 405.1								Iced/4° C.
CBOD.	EPA 405.1								Iced/4° C.
Chloride(Cl^-)	EPA 325.2								Iced/4° C.
COD	EPA 410.4								H_2SO_4-pH<2
Coliform(fecal)	SM 9222D								Iced/$Na_2S_2O_3$
Coliform(total)	SM 9222B								Iced/$Na_2S_2O_3$
Conductivity	EPA 120.1								Iced/4° C.
Cyanide(total)	EPA 335.2 or 335.3								NaOH-pH>10
Detergents	EPA 425.1								Iced/4° C.
Fluoride(F^-)	EPA 340.2								None
Hardness	EPA 130.2								HNO_3-pH<2
NO_2NO_3	EPA 353.2								H_2SO_4-pH<2
Oil & Grease	EPA 413.1								HCl-pH<2
pH	EPA 150.1								Iced/4° C.
Phenols(total)	EPA 420.1								H_2SO_4-pH<2
Phosphate(T)	EPA 365.1								H_2SO_4-pH<2
Solids(TS)	EPA 160.3								Iced/4° C.
Solids(TVS)	EPA 160.4								Iced/4° C.
Solids(TSS)	EPA 160.2								Iced/4° C.
Solids(TDS)	EPA 160.0								Iced/4° C.
Solids(SS)	EPA 160.5								Iced/4° C.
Sulfide($S^=$)	EPA 376.1								ZnAc+NaOH
TKN	EPA 351.2								H_2SO_4-pH<2
Turbidity	EPA 180.1								Iced/4° C.
Metals:									
Arsenic(As)	EPA 206.2								HNO_3-pH<2
Barium(Ba)	EPA 208.1								HNO_3-pH<2
Cadmium(Cd)	EPA 213.2								HNO_3-pH<2
Chromium(Cr)	EPA 218.1								HNO_3-pH<2
Copper(Cu)	EPA 220.2								HNO_3-pH<2
Iron(Fe)	EPA 236.1								HNO_3-pH<2
Lead(Pb)	EPA 239.2	✓	✓	✓					HNO_3-pH<2
Mercury(Hg)	EPA 245.2								HNO_3-pH<2
Nickel(Ni)	EPA 249.1								HNO_3-pH<2
Selenium(Se)	EPA 270.2								HNO_3-pH<2
Silver(Ag)	EPA 272.2								HNO_3-pH<2
Zinc(Zn)	EPA 289.1								HNO_3-pH<2
Other:									

Comments:

Relinquished by: Vicky Hagerdorf
Date/Time: 5-22-96

Received by: [illegible]
Date/Time: 5/23/96 0805

PWC 9510/6

American Environmental Network, Inc.

11 East Olive Road • Pensacola, FL 32514 • (904) 474-1001

June 5, 1996

INVOICE NUMBER 810997
LAB CODE 160

NAS, CO, PWC

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

FILE COPY
Original Sent to Oakland, CA

Accession #: 605505
Client Name: NAS, CO, PWC
Office: NAS PENSACOLA, FLORIDA
Project Name: N/S
Project Num: N/S
Project Location: N/S
Report Sent To: JERRY DEES
P. O. Number: N/S
Billing Client: 514002

amples	Test	Matrix	Description	Actual Price	Extended Price
4	FLPRO	AQ	FLPRO\PETRO. HYDROCARBON RANGE C8-C40	150.00	600.00
			Total:		$600.00

ET 30 DAYS

Page 1

1 % 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

D-26

American Environmental Network, Inc.

11 East Olive Road • Pensacola, FL 32514 • (904) 474-1001

SIGNATURE PAGE

Reviewed by: _____
AEN Project Manager

Client:	NAS, CO, PWC NAS PENSACOLA, FLORIDA
Project Name:	N/S
Project Number:	N/S
Project Location:	N/S
Accession Number:	605505
Project Manager:	JERRY DEES
Sampled By:	RICKY HAGENDORFER/BARRY HICKS

D-27

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

Analysis Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	605505
Client:	NAS, CO, PWC
Project Number:	N/S
Project Name:	N/S
Project Location:	N/S
Department:	SEMI-VOLATILE FUELS

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

"FINAL REPORT FORMAT - SINGLE"

Accession: 605505
Client: NAS, CO, PWC
Project Number: N/S
Project Name: N/S
Project Location: N/S
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: 22-MAY-96 1650
Client Sample Id: MW-3 1116 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	51	42-193	
ORTHO TER PHENYL	%REC/SURR	112	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession:	605505
Client:	NAS, CO, PWC
Project Number:	N/S
Project Name:	N/S
Project Location:	N/S
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 1655
Client Sample Id:	MW-5 1116	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	48	42-193	
ORTHO TER PHENYL	%REC/SURR	107	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 605505
Client: NAS, CO, PWC
Project Number: N/S
Project Name: N/S
Project Location: N/S
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
Client Sample Id: MW-4 1116

Sample Date/Time: 22-MAY-96 1735
Received Date: 23-MAY-96

Batch: FPW043
Blank: A Dry Weight %: N/A

Extraction Date: 23-MAY-96
Analysis Date: 04-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	47	42-193	
ORTHO TER PHENYL	%REC/SURR	96	82-142	
ANALYST	INITIALS	KS		

Comments:

"FINAL REPORT FORMAT - SINGLE"

Accession: 605505
Client: NAS, CO, PWC
Project Number: N/S
Project Name: N/S
Project Location: N/S
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 Sample Date/Time: 22-MAY-96 1730
Client Sample Id: MW-2 1116 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	170	100	
NONATRIACONTANE	%REC/SURR	44	42-193	
ORTHO TER PHENYL	%REC/SURR	108	82-142	
ANALYST	INITIALS	KS		

Comments:

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

"Method Report Summary"

Accession Number: 605505
Client: NAS, CO, PWC
Project Number: N/S
Project Name: N/S
Project Location: N/S
Test: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Client Sample Id:	Parameter:	Unit:	Result:
MW-2 1116	TOTAL PETROLEUM HYDROCARBON	UG/L	170

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

Quality Control Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	605505
Client:	NAS, CO, PWC
Project Number:	N/S
Project Name:	N/S
Project Location:	N/S
Department:	SEMI-VOLATILE FUELS

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

"QC Report"

Title: Water Blank
Batch: FPW043
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: 03-JUN-96 Date Extracted: 23-MAY-96

Parameters:	Units:	Results:	Reporting Limits:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100
ORTHO TER PHENYL	%REC/SURR	88	82-142
ANALYST	INITIALS	KS	
C-39	%REC/SURR	64	42-193

Comments:

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

"QC Report"

Title: Water Reagent
Batch: FPW043
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: 03-JUN-96
RSD Date Analyzed: 03-JUN-96
RS Date Extracted: 23-MAY-96
RSD Date Extracted: 23-MAY-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
TOTAL PETROLEUM HYDROCARBON	4998	<100	5100	102	5459	109	7	30	57-122
Surrogates:									
ORTHO TER PHENYL				109		93			82-142
C-39				46		62			42-193

Comments:

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

[illegible] = 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).

[illegible]/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

American Environmental Network, Inc.

11 East Olive Road • Pensacola, FL 32514 • (904) 474-1001

CHAIN OF CUSTODY

AEN ACCESSION #: 6055505

PART 1 - Bottle Shipment Information

CLIENT:

CLIENT PROJECT NUMBER:

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	

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

PARAMETERS AND PRESERVATIVES REQUESTED

SAMPLE I.D.	SAMPLE DATE	SAMPLE TIME	MATRIX	FL PRO	TOTAL # OF BOTTLES
MW-3 1116	5-22-96	1650	GW	✓	2
MW-5 1116	5-22-96	1655	GW	✓	2
MW-4 1116	5-22-96	1735	GW	✓	2
MW-2 1116	5-22-96	1730	GW	✓	2
				Total Number of Bottles/Containers:	8

Relinquished By	Date	Time	Received By	Date	Time
[illegible]	5-22-96	0930	Linda L. Kitt	5/23/96	0930

Client NAS			Purchase Order Number
Address			Project Number
City	State	Zip	Project Name
Phone Number ( ) 452-3642	Fax Number ( )		Project Location
Project Manager JERRY DEES			Sampled By RICK HAGENDORFER / BARRY HICKS

TURNAROUND TIMES	check below	SPECIAL INSTRUCTIONS
Standard - 14-21 days		
RUSH (must be approved in advance)		
<- 48 hours - 2x standard price		
3-7 days - 1.5x standard price		
TCLP - 1 week rush 1.5x standard price		
QC Level none I II III IV (circle one)		Copies of report needed _____

FORM # 12694

D-38

WHITE — LAB CANARY — REPORT PINK — CLIENT

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

"FINAL REPORT FORMAT - SINGLE"

Accession: 605505
Client: NAS, CO, PWC
Project Number: N/S
Project Name: N/S
Project Location: N/S
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: MW-3 1116
Sample Date/Time: 22-MAY-96 1650
Received Date: 23-MAY-96

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

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	51	42-193	
ORTHO TER PHENYL	%REC/SURR	112	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

Analytical Report

601/602 Volatiles by Method 8260

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

Lab Report Number:	62539
Sample Date:	06/5/96
Received Date:	06/6/96
Sample Site:	Bronson Field
Job Order No.:	130 5001

LAB Sample ID#	1- 62539			
Sample Name / Location	DMW-6 BF-1116			
Collector's Name	SC			
Date & Time Collected	6/5/96 @ 1400			
Sample Type (composite or grab)	Grab			
Analyst	J. Moore			
Date of Extraction / Initials	06/7/96 / JM			
Date of Analysis	06/7/96			
Sample Matrix	GW			
Dilution	X 1			
Compound Name	1- 62539	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	79
Toluene-d8	86-119	102
Bromoflourobenzene	85-116	93

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

Page 1 of 1 End of Report

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

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

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62539
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62539
Sample Name / Location	DMW-6 BF-1116
Collector's Name	SC
Date & Time Collected	6/5/96 @ 1400
Sample Type (composite or grab)	Grab
Analyst	M. Chambers
Date of Extraction / Initials	6/10/96; JJ
Date of Analysis	6/13/96
Sample Matrix	GW
Dilution	X 1

COMPOUND NAME	1- 62539	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
Fl[illegible]thene	BDL	UG/L	2
Fl[illegible]ne	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	63
2-Flourobiphenyl	43-116	63
Terphenyl -d14	33-141	81

COMMENTS :

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

Approved by : Date/Time : 6/24/96 1545

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: 62539 A
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62539			
Sample Name / Location	DMW-6 BF-1116			
Collector's Name	SC			
Date & Time Collected	6/5/96 @ 1400			
Sample Type (composite or grab)	Grab			
Analyst	B. Jacquart			
Date of Extraction / Initials	06/11/96 -BJ			
Date of Analysis	06/11/96			
Sample Matrix	GW			
Dilution	X 1			
Compound Name	1- 62539	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	96 %

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

Page 1 of 1 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: 62540
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62540
Sample Name / Location	Equipment Blank BF-1116
Collector's Name	SC
Date & Time Collected	6/5/96 @ 1345
Sample Type (composite or grab)	Grab
Analyst	J Moore
Date of Extraction / Initials	06/7/96 / JM
Date of Analysis	06/7/96
Sample Matrix	DI Water
Dilution	X 1

Compound Name	1- 62540	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	105

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

D-43

Navy Public Works Center
Environmental Laboratory

Bldg. 3887, Code 920
NAS Pensacola, FL 32508 - 6500
Phone (904) 452-4728/3642
DSN 2-4728/3642

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

Analytical Report
610 PAH's by Method 8270

Lab Report Number: 62540
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62540
Sample Name / Location	Equipment Blank BF-1116
Collector's Name	SC
Date & Time Collected	6/5/96 @ 1345
Sample Type (composite or grab)	Grab
Analyst	M. Chambers
Date of Extraction / Initials	6/10/96; JJ
Date of Analysis	6/13/96
Sample Matrix	DI Water
Dilution	X 1.1

COMPOUND NAME	1- 62540	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
Flo thene	BDL	UG/L	2
Fl ne	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	62
2-Flourobiphenyl	43-116	62
Terphenyl -d14	33-141	81

COMMENTS :

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

Approved by : Date/Time : 6/24/96 1545

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: 62540 A
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62540			
Sample Name / Location	Equipment Blank BF-1116			
Collector's Name	SC			
Date & Time Collected	6/5/96 @ 1345			
Sample Type (composite or grab)	Grab			
Analyst	B. Jacquart			
Date of Extraction / Initials	06/11/96 -BJ			
Date of Analysis	06/11/96			
Sample Matrix	DI Water			
Dilution	X 1			
Compound Name	1- 62540	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	107 %

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
Page 1 of 1 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: 62541
Sample Date: 06/5/96
Received Date: 06/6/96
Sample Site: Bronson Field
Job Order No.: 130 5001

LAB Sample ID#	1- 62541
Sample Name / Location	Trip Blank BF-1116
Collector's Name	PJB
Date & Time Collected	6/5/96 @ AM
Sample Type (composite or grab)	Grab
Analyst	J. Moore
Date of Extraction / Initials	06/7/96 / JM
Date of Analysis	06/7/96
Sample Matrix	DI Water
Dilution	X 1

Compound Name	1- 62541	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	99
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: 6/24/96
Report Generated

 End of Report

D-46

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

"FINAL REPORT FORMAT - SINGLE"

Accession:	606186
Client:	NAS, CO, PWC
Project Number:	CALL #9048
Project Name:	FL PRO
Project Location:	BRONSON SITE #1140 NW & 1116
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:	009 BF 1116	Sample Date/Time:	05-JUN-96 1400
Client Sample Id:	62539 (OMW-6)	Received Date:	11-JUN-96
Batch: FPW051		Extraction Date:	11-JUN-96
Blank: A	Dry Weight %: N/A	Analysis Date:	16-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	45	42-193	
ORTHO TER PHENYL	%REC/SURR	90	82-142	
ANALYST	INITIALS	KS		

Comments:

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

"FINAL REPORT FORMAT - SINGLE"

Accession: 606186
Client: NAS, CO, PWC
Project Number: CALL #9048
Project Name: FL PRO
Project Location: BRONSON SITE #1140 NW & 1116
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: 008 BF 1116 Sample Date/Time: 05-JUN-96 1345
Client Sample Id: 62540 (EQ. BLK, DMW-6) Received Date: 11-JUN-96

Batch: FPW051 Extraction Date: 11-JUN-96
Blank: A Dry Weight %: N/A Analysis Date: 16-JUN-96

Parameter:	Units:	Results:	Rpt Lmts:	Q:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100	
NONATRIACONTANE	%REC/SURR	49	42-193	-
ORTHO TER PHENYL	%REC/SURR	95	82-142	
ANALYST	INITIALS	KS		

Comments:

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

Quality Control Report

Analysis: FLPRO\PETRO. HYDROCARBON RANGE C8-C40

Accession:	606186
Client:	NAS, CO, PWC
Project Number:	CALL #9048
Project Name:	FL PRO
Project Location:	BRONSON SITE #1140 NW & 1116
Department:	SEMI-VOLATILE FUELS

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

"QC Report"

Title: Water Blank
Batch: FPW051
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: 15-JUN-96 Date Extracted: 11-JUN-96

Parameters:	Units:	Results:	Reporting Limits:
TOTAL PETROLEUM HYDROCARBON	UG/L	ND	100
ORTHO TER PHENYL	%REC/SURR	88	82-142
ANALYST	INITIALS	KS	
C-39	%REC/SURR	47	42-193

Comments:

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

"QC Report"

Title: Water Reagent
Batch: FPW051
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: 15-JUN-96
RSD Date Analyzed: 15-JUN-96
RS Date Extracted: 11-JUN-96
RSD Date Extracted: 11-JUN-96

Parameters:	Spike Added	Sample Conc	RS Conc	RS %Rec	RSD Conc	RSD %Rec	RPD	RPD Lmts	Rec Lmts
TOTAL PETROLEUM HYDROCARBON	4998	<100	4498	90	4441	89	1	30	57-122
Surrogates:									
ORTHO TER PHENYL				83		87			82-142
C-39				62		59			42-193

Comments:

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, = 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).

AT[illegible]/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