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CONTAMINATION ASSESSMENT REPORT ADDENDUM SITE 3221SW NAVAL AVIATION
DEPOT NAS PENSACOLA FL
7/1/1994
ABB ENVIRONMENTAL SERVICES, INC

CONTAMINATION ASSESSMENT REPORT ADDENDUM

**Site 3221SW
Naval Aviation Depot
Naval Air Station Pensacola
Pensacola, Florida**

Unit Identification Code: N00204

Contract No. N62467-89-D-0317

Prepared by:

**ABB Environmental Services, Inc.
2590 Executive Center Circle, East
Tallahassee, Florida 32301**

Author:

Roger Durham

Prepared for:

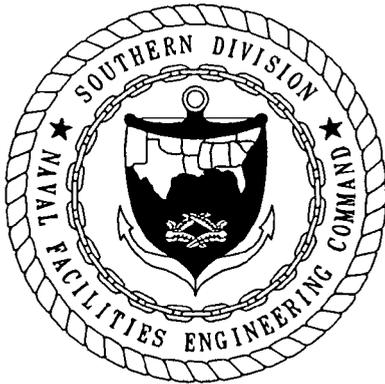
**Department of the Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina 29418**

Luis Vazquez, Code 1843, Engineer-in-Charge

July 1994

DISTRIBUTION

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FOREWORD

Subtitle I of the Hazardous and Solid Waste Amendments (HSWA) of 1984 to the Solid Waste Disposal Act (SWDA) of 1965 established a national regulatory program for managing underground storage tanks (USTs) containing hazardous materials, especially petroleum products. Hazardous wastes stored in USTs were already regulated under the Resource Conservation and Recovery Act (RCRA) of 1976, which is also an amendment to SWDA. Subtitle I requires that the U.S. Environmental Protection Agency (USEPA) promulgate UST regulations. The program was designed to be administered by the individual States, who were allowed to develop more stringent standards, but not less stringent standards. Local governments were permitted to establish regulatory programs and standards that are more stringent, but not less stringent than either State or Federal regulations. The USEPA UST regulations are found in the Code of Federal Regulations (CFR), Title 40, Part 280 (40 CFR 280) (*Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks*) and Title 40 CFR 281 (*Approval of State Underground Storage Tank Programs*). Title 40 CFR 280 was revised and published on September 23, 1988, and became effective December 22, 1988.

The Navy's UST program policy is to comply with all Federal, State, and local regulations pertaining to USTs. This report was prepared to satisfy the requirements of Chapter 17-770, Florida Administrative Code (FAC) (*State Underground Petroleum Environmental Response*) regulations on petroleum contamination in Florida's environment as a result of spills or leaking tanks or piping.

Questions regarding this report should be addressed to the Environmental Coordinator, Naval Aviation Depot (NADEP) Pensacola, Pensacola, Florida, at 904-452-2320 or to Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), Code 1843, at DSN 563-0613 or 803-743-0613.

EXECUTIVE SUMMARY

Site 3221SW is the former location of an underground storage tank (UST) used to store waste oil and petroleum distillate 680 (PD-680) at the Naval Aviation Depot, Naval Air Station, Pensacola, Florida. During a tank removal and installation program implemented in 1989 and 1990, the tank was removed, and a replacement UST was installed at the former UST location.

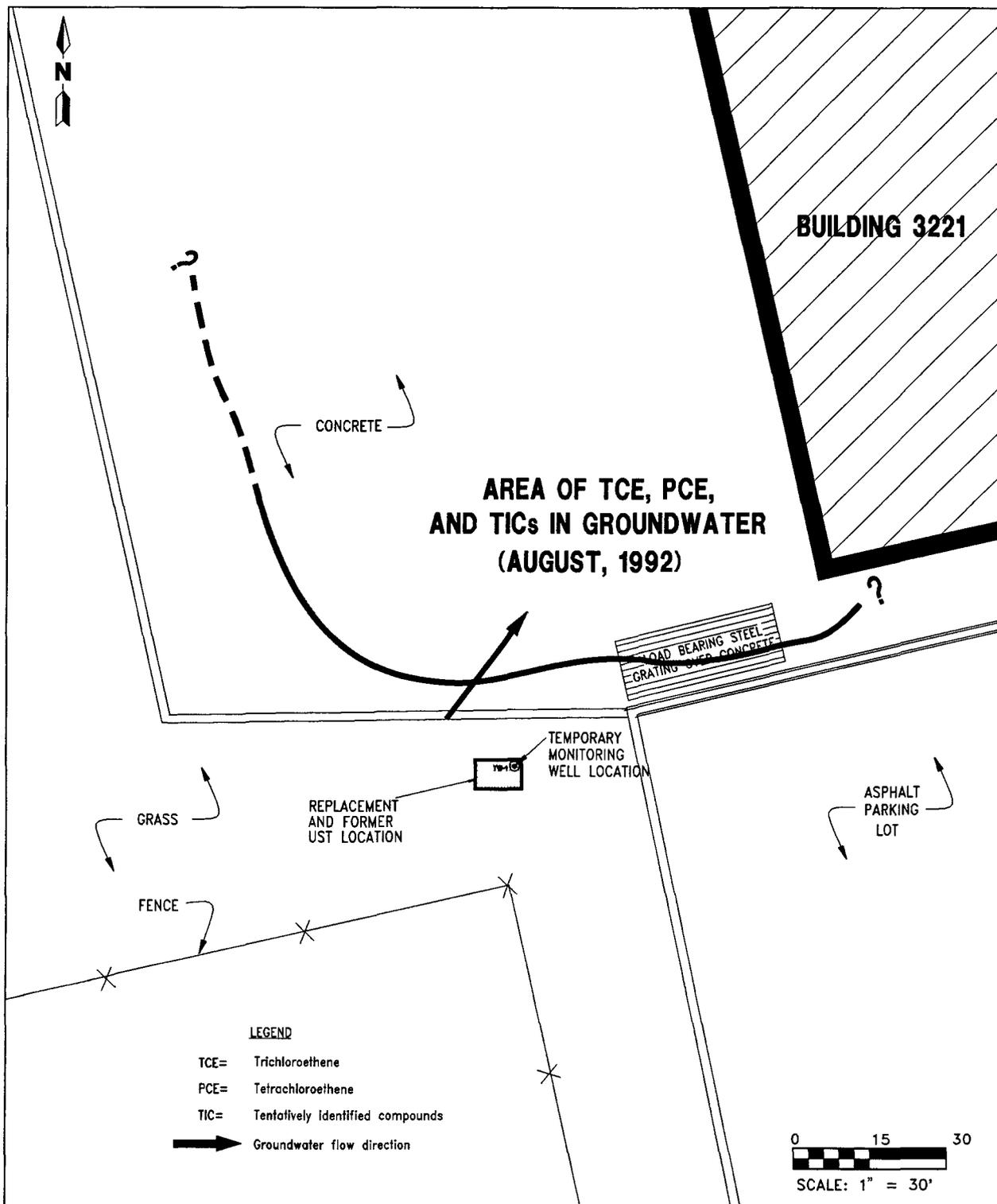
A contamination assessment (CA) was conducted by ABB Environmental Services, Inc, (ABB-ES) from January to December 1992. The CA indicated that soil and groundwater contamination near the replacement UST is minimal; however, trichloroethene (TCE), tetrachloroethene (PCE), and several tentatively identified compounds (TICs) were detected in groundwater samples collected downgradient of the replacement UST in August 1992 (see Executive Summary Figure). Because TCE and PCE are not regulated under petroleum guidelines (Chapter 17-770, FAC), the extent of TCE and PCE in groundwater was not fully assessed.

A contamination assessment report (CAR) was submitted to the Florida Department of Environmental Protection (FDEP) in February 1993. A *No Further Action Proposal (NFAP)* was submitted for the former UST. Further site investigation to assess the extent of TCE and PCE contamination in groundwater was recommended.

Upon review of the CAR, FDEP requested that a supplemental CA be conducted near the replacement UST to assess if the source of TICs in groundwater downgradient of the UST is the former UST. The supplemental CA was conducted concurrently with and subsequent to UST closure activities performed under the Navy's Base Realignment and Closure Initiative. Supplemental CA activities included removal of the replacement UST, confirmatory water table elevation measurements, and soil and groundwater assessment at the former UST location.

Findings and Conclusions

- Groundwater flow direction in the UST vicinity is to the northeast.
- Soil at the site is typically very fine-grained to fine-grained, unconsolidated quartz sand. Petroleum-contaminated soil was not identified during UST closure activities.
- A temporary monitoring well was installed and sampled at the former UST location after tank removal activities. Cadmium, chromium, and lead are the only analytes detected in groundwater samples from this well. Cadmium and chromium concentrations do not exceed State maximum contaminant levels (MCLs). Lead concentrations slightly exceed the State MCL.
- Metals were not detected in filtered metals samples from the initial CA, which suggest that the presence of metals in groundwater is the result of suspended, metal-bearing particulates in groundwater. Filtration, resulting in the removal of suspended particles in groundwater, is typically observed in unconsolidated, porous sediments. Therefore, transportation of particulates in groundwater is expected to be very localized.



EXECUTIVE SUMMARY FIGURE



**CONTAMINATION ASSESSMENT
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- TICs were not detected in the sample from the temporary monitoring well, the upgradient extent of TICs in groundwater appears to be downgradient of the former UST. The source of TICs in downgradient monitoring wells cannot be attributed to the former or replacement UST.

Recommendations

A *NFAP* is hereby resubmitted for the UST at Site 3221SW. It is ABB-ES' understanding that TCE, PCE, and TICs in groundwater downgradient of the UST are currently being investigated under the Navy's Installation Restoration program guidelines.

ACKNOWLEDGMENTS

In preparing this report, The Underground Storage Tank Section of the Comprehensive Long-Term Environmental Action, Navy (CLEAN) Group at ABB Environmental Services (ABB-ES), Inc., commends the support, assistance, and cooperation provided by the personnel of the Naval Aviation Depot (NADEP) Pensacola, Florida, and Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM).

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
bls	below land surface
CA	contamination assessment
CAR	contamination assessment report
CTO	Contract Task Order Number
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDER	Florida Department of Environmental Regulation
ID	inside diameter
HSWA	Hazardous and Solid Waste Amendments
MCL	maximum contaminant level
msl	mean sea level
MTBE	methyl tert-butyl ether
NADEP	Naval Aviation Depot
NAS	Naval Air Station
ND	not detected
NFAP	No Further Action Proposal
OVA	organic vapor analyzer
PCE	tetrachloroethene
PD-680	petroleum distillate 680
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
SOUTHNAV- FACENCOM	Southern Division, Naval Facilities Engineering Command
SWDA	Solid Waste Disposal Act
TCE	trichloroethene
TIC	tentatively identified compounds
TRPH	total recoverable petroleum hydrocarbons
USC&GS	U.S. Coastal and Geodetic Survey
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), was contracted by Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) to perform a contamination assessment (CA) and submit a contamination assessment report (CAR) for Site 3221SW at the Naval Aviation Depot (NADEP), Naval Air Station (NAS), Pensacola, Florida. A CAR was submitted to the Florida Department of Environmental Protection (FDEP) in February 1993 (ABB-ES, 1993). (Note: prior to July 1, 1993, FDEP was known as the Florida Department of Environmental Regulation [FDER]). Upon review of the CAR, FDEP requested a supplemental assessment at the site. This report is an addendum to the original CAR, and presents the findings and conclusions of the supplemental assessment.

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION. The site is located near the southwest corner of Building 3221. Building 3221 is located near the eastern edge of the Forrest Sherman Field runway near the Naval Aviation Museum (Figure 2-1). Building 3221 is used as an aircraft maintenance and repair facility. The eastern half of the facility is currently used for aircraft restoration. Restoration activities include the use of paint and paint products. A large, 18-inch-thick concrete apron surrounds the north, east, and west sides of Building 3221.

Site 3221SW is the former location of a 1,000-gallon underground storage tank (UST) used to store waste oil and petroleum distillate 680 (PD-680). The former UST location is in a grassy area approximately 75 feet southwest of the southwest corner of Building 3221 (Figure 2-2). The concreted area north of the UST is used to store various aircraft parts. An asphalt parking lot is located east of the UST area. Metal and wood disposal containers are located in the fenced area south of the site. A vehicular traffic route passes over the steel grating near the southwest corner of Building 3221.

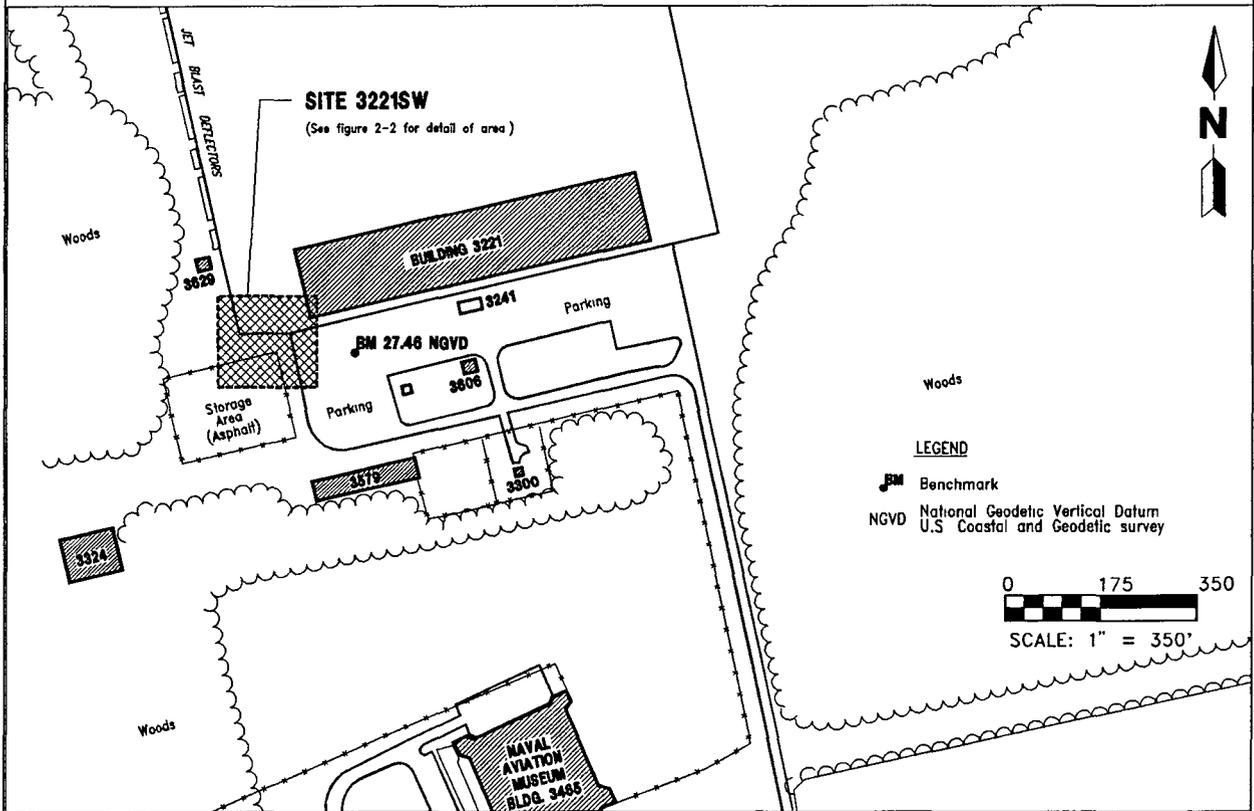
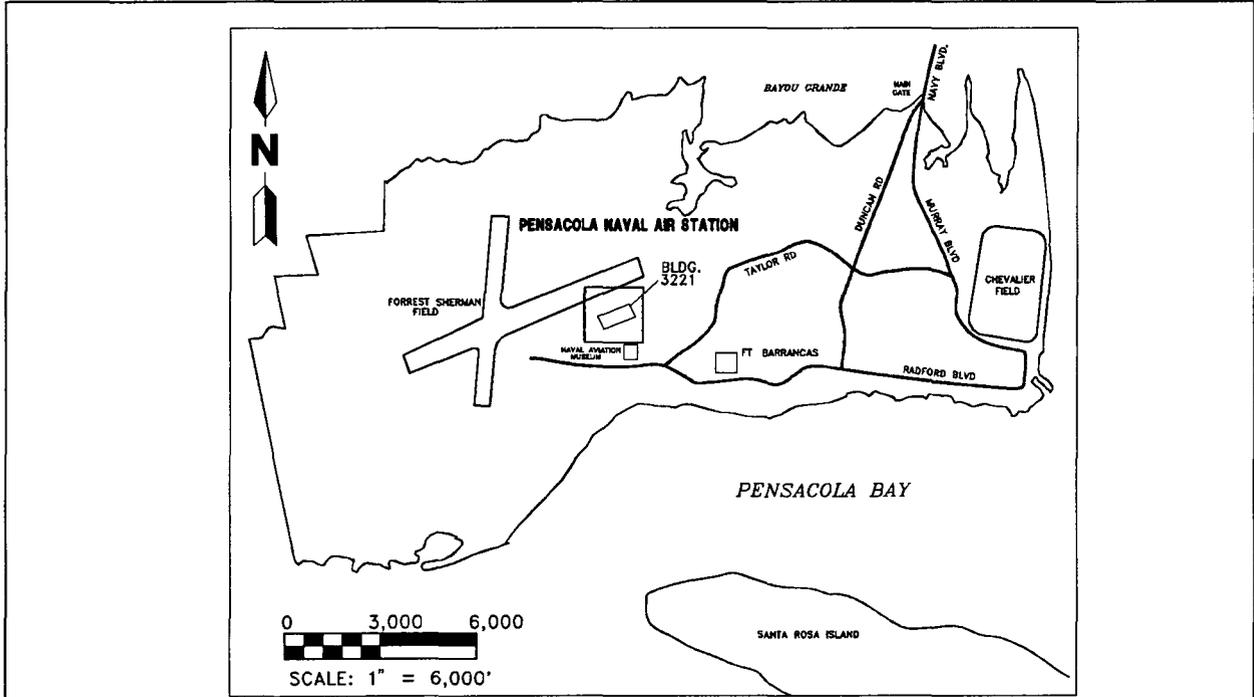
The ground surface at the site is relatively flat in the immediate UST vicinity. Ground elevations are approximately 26 to 28 feet above mean sea level (msl) at the site. Ground elevations are higher in the wooded area west of the site (Figure 2-1).

2.2 SITE HISTORY. The UST was removed from the site during a tank removal and installation program conducted by the Navy in 1989 and 1990. A 500-gallon replacement UST was installed at the same location. Because excessively petroleum-contaminated soil was detected during tank removal activities, a CA was conducted to investigate the extent of excessive soil contamination and possible groundwater contamination (ABB-ES, 1993).

2.2.1 Initial Assessment The CA was conducted in three phases from January through December 1992. The results of the CA are discussed in detail by ABB-ES (1993) and are summarized below.

2.2.1.1 Soil Assessment Seventeen soil borings (SB-1 through SB-17) were advanced (Figure 2-3). Soil encountered at the site is typically very fine-grained to fine-grained, unconsolidated quartz sand. Soil samples were collected from each soil borings and analyzed for volatile organic compounds (VOCs) by organic vapor analyzer (OVA) headspace techniques and for arsenic, cadmium, chromium, and lead. (Note: metals analyses were not performed for samples collected from SB-5, and SB-14 through SB-17). The soil sample collected from SB-14, located near the replacement UST, was analyzed for total recoverable petroleum hydrocarbons (TRPH).

VOCs and metals concentrations in soil are below State target levels for clean soil (FDEP, 1994). The TRPH concentration of 11 parts per million (ppm) in the sample from SB-14 slightly exceeds the clean soil standard of 10 ppm (FDEP, 1994).



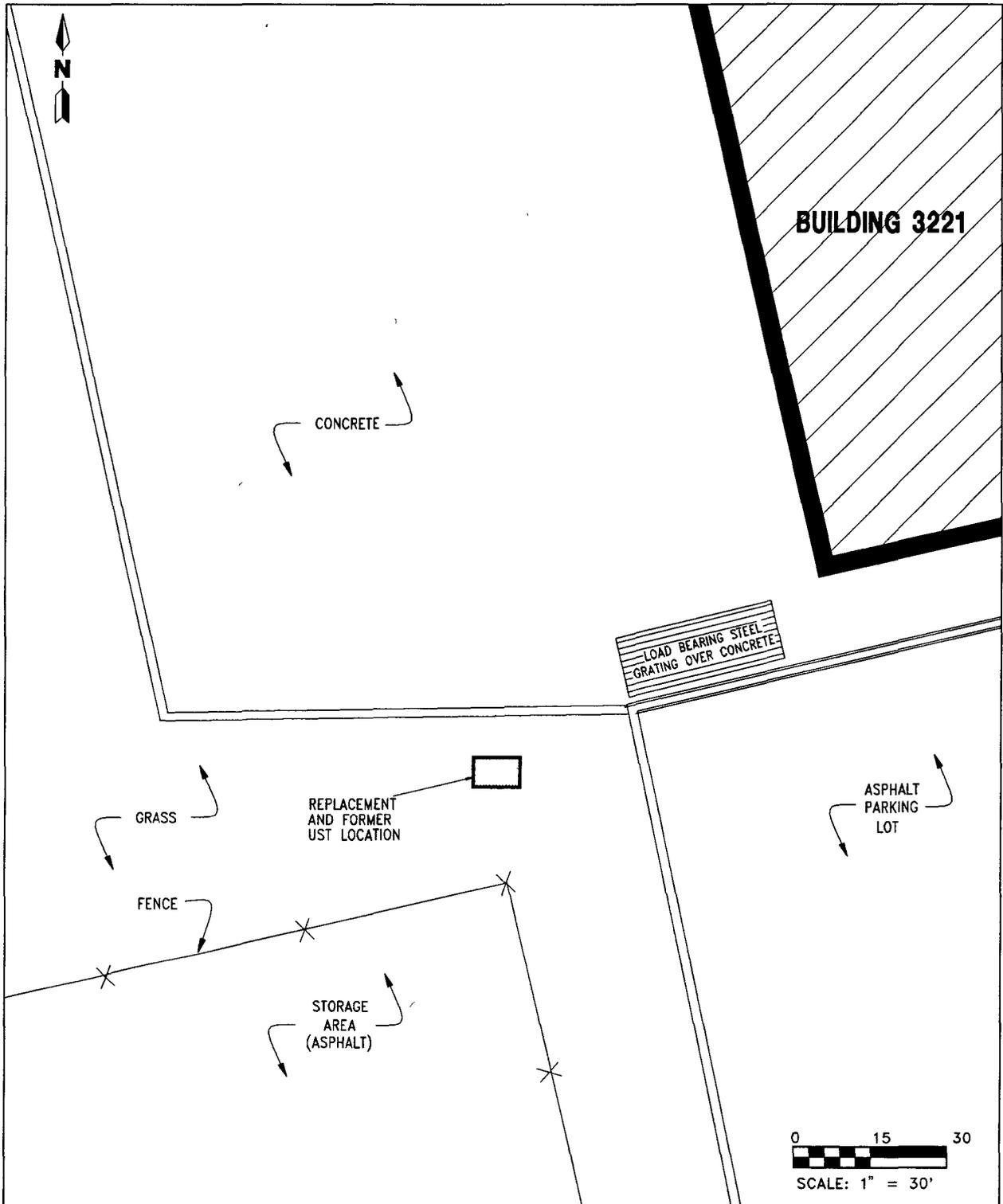
**FIGURE 2-1
SITE LOCATION MAP**



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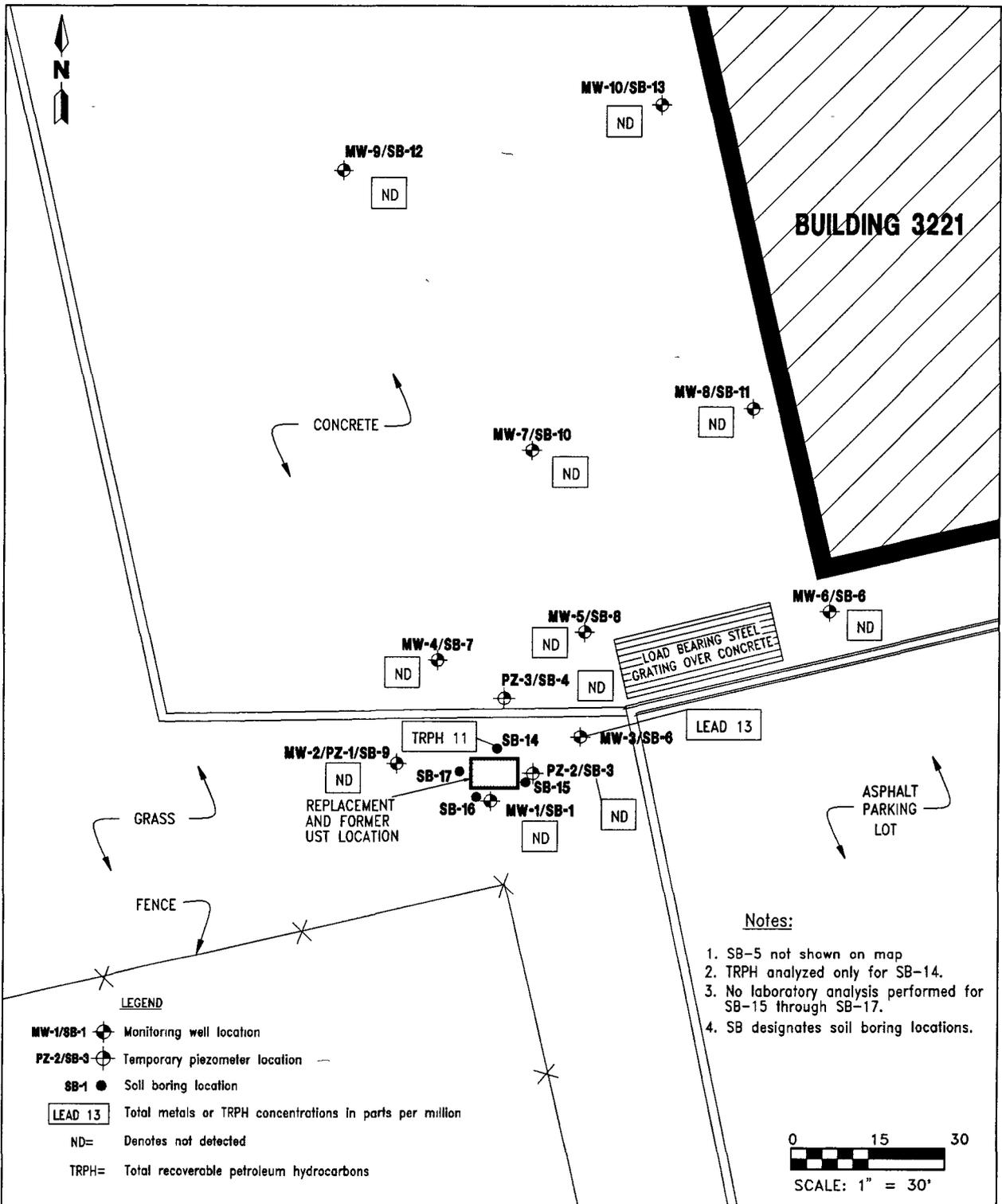
**FIGURE 2-2
SITE PLAN**



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**FIGURE 2-3
SOIL CONTAMINATION DISTRIBUTION MAP,
JANUARY THROUGH DECEMBER 1992**



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2.2.1.2 Groundwater Assessment Ten permanent monitoring wells (MW-1 through MW-10) and five temporary wells (PZ-1 through PZ-5) were installed. Groundwater was encountered approximately 7 to 9 feet below land surface (bls). Groundwater flow direction is to the northeast.

Groundwater samples were collected from monitoring wells and were analyzed for used oil constituents, as outlined in Chapter 17-770, Florida Administrative Code (FAC). Preliminary groundwater sample analyses from January and April 1992 indicated the presence of *diminimus* (low) concentrations of trichloroethene (TCE) and tetrachloroethene (PCE) in groundwater. At the request of FDEP, the CA was expanded to assess the downgradient extent of TCE and PCE in groundwater. Additional groundwater samples were collected in August 1992. The August 1992 analyses are the most recent and complete analyses of the CA and are summarized in Figure 2-4.

No contaminants were detected in samples from monitoring wells MW-1 through MW-3, located in the immediate vicinity of the UST. TCE, PCE, and bis-2-ethylhexyl phthalate were detected in groundwater samples downgradient and peripheral to the UST area. TCE and PCE concentrations exceeded State maximum contaminant levels (MCLs) defined in Chapter 17-770, FAC. Seventeen tentatively identified compounds (TICs) and one unidentified compound were also detected in the downgradient and peripheral wells. Many of the TICs appear to petroleum-related compounds (ABB-ES, 1993).

Because TCE and PCE were not detected in groundwater near the replacement UST, their presence in groundwater does not appear to be associated with UST operations. Because of the low levels of soil and groundwater contamination near the UST, a *No Further Action Proposal (NFAP)* was submitted for the UST in the CAR. Further site assessment was recommended by FDEP to assess the extent of TCE and PCE in groundwater.

2.2.2 Florida Department of Environmental Protection (FDEP) Request for Supplemental Assessment Upon review of the CAR, FDEP requested that a supplemental assessment be conducted around the UST (see Appendix A, FDEP Correspondence, FDEP memorandum from Jorge Caspary to Eric Nuzie, dated April 16, 1993). FDEP was concerned about the source of TICs detected in groundwater samples downgradient of the replacement (and former) USTs. FDEP requested that the following be performed:

- "an additional permanent monitoring well should be installed 10 to 15 feet east of SB-14 to determine if the old tank was the source of tentatively identified compounds (TICs)" and
- sampling of the additional monitoring well for U.S. Environmental Protection Agency (USEPA) Methods 624, 625, methyl tert-butyl ether (MTBE), and 418.1.

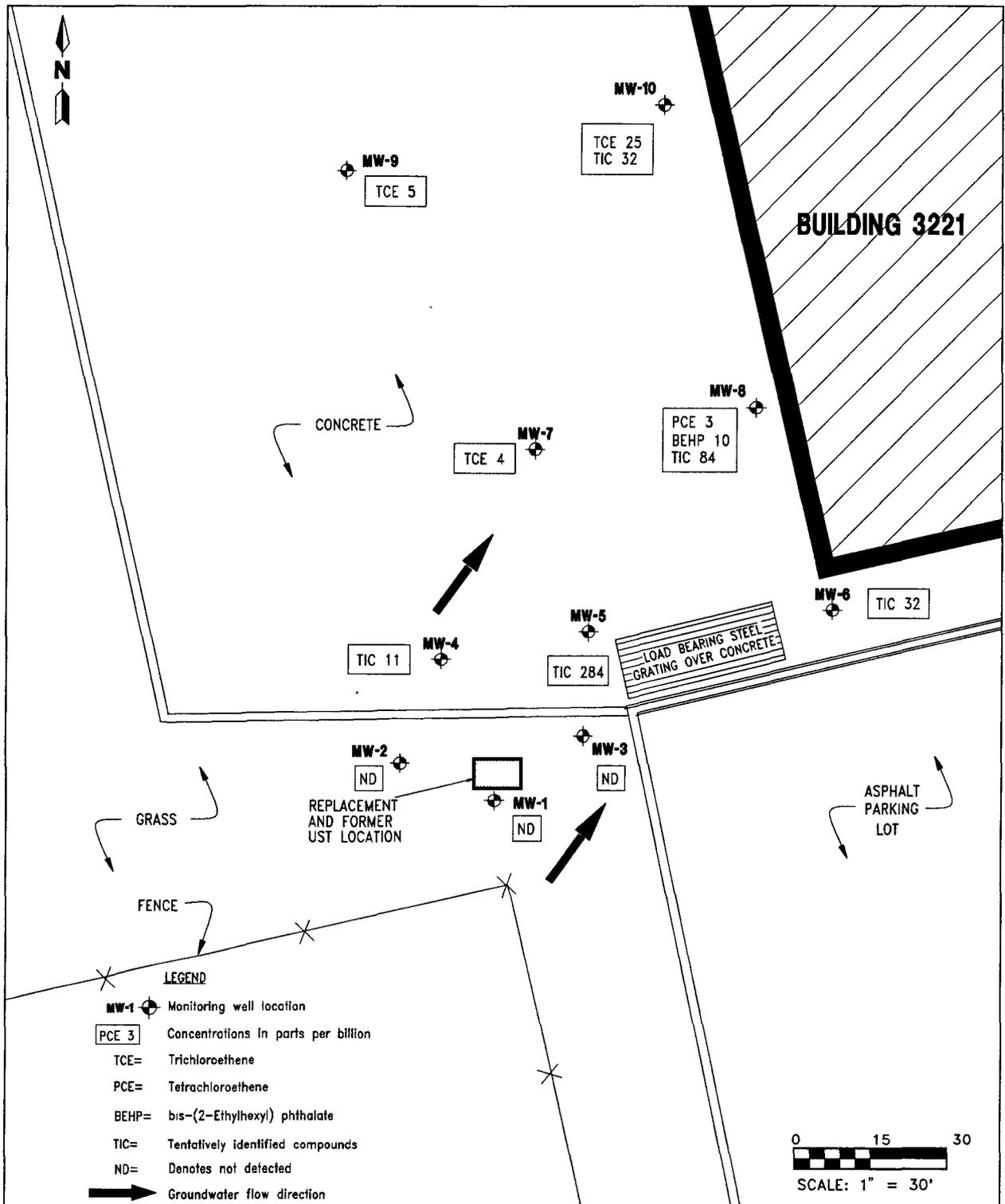


FIGURE 2-4
GROUNDWATER CONTAMINATION
DISTRIBUTION MAP,
AUGUST 1992



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3.0 SUPPLEMENTAL ASSESSMENT

The supplemental assessment addresses the request of FDEP and was conducted concurrently with and subsequent to UST closure activities performed under the Base Realignment and Closure Initiative. Supplemental assessment activities were performed in May 1994 and included the following:

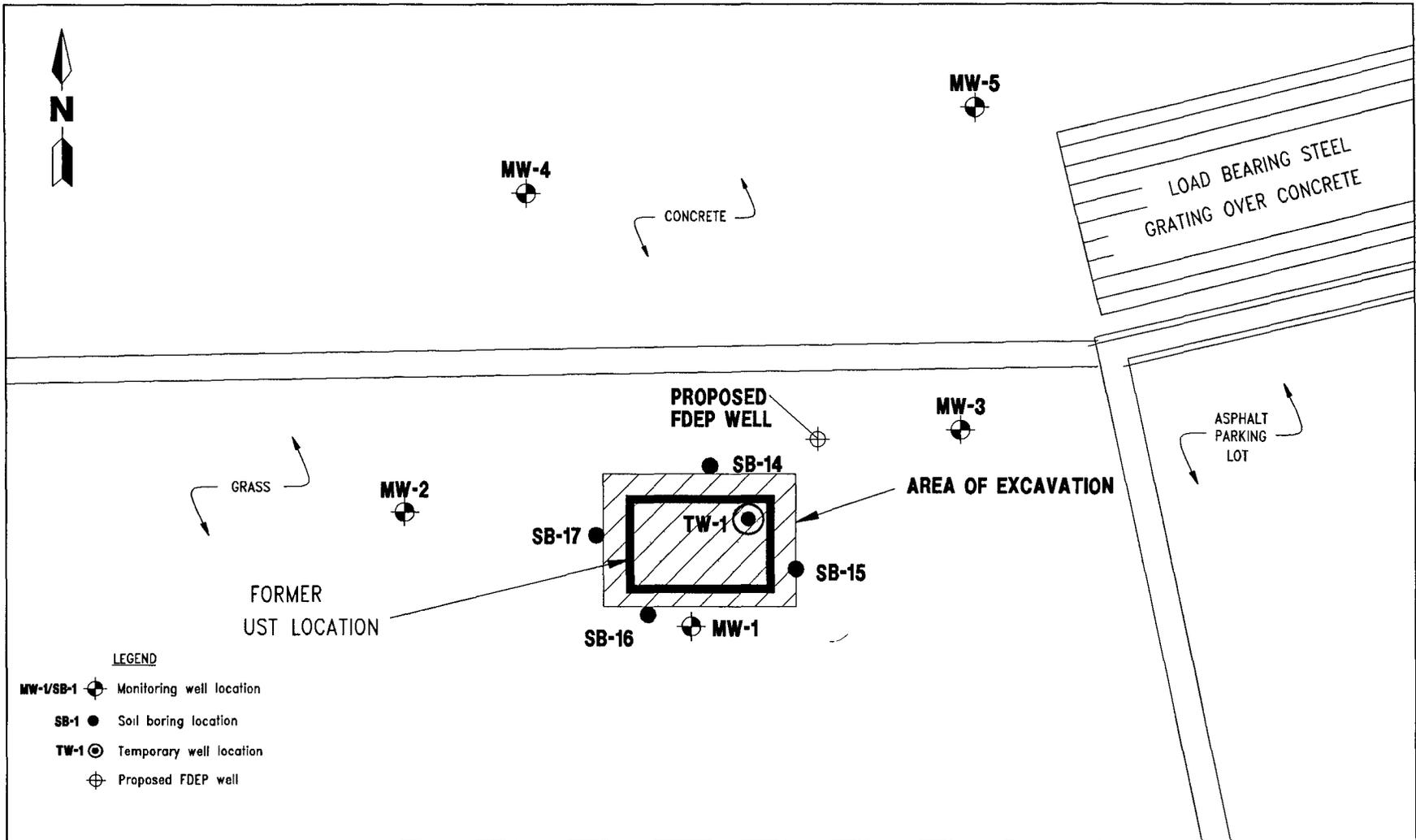
- UST removal and closure,
- OVA headspace monitoring of excavated soil during UST closure activities,
- temporary monitoring well installation and groundwater assessment at the former UST, and
- water table elevation measurements to confirm groundwater flow direction in the UST vicinity.

3.1 UNDERGROUND STORAGE TANK (UST) CLOSURE ACTIVITIES. UST closure activities involved the removal of the replacement UST and soil and groundwater assessment at the UST location. A *Closure Assessment Form* summarizing UST closure activities was submitted by facility personnel to the district FDEP office. This form is attached in Appendix B, Closure Assessment Form. The replacement UST was removed from the site on May 2, 1994. An area approximately 8 feet by 8 feet was excavated with a backhoe around the former UST (Figure 3-1). Soil was excavated to approximately 5 feet bls.

3.1.1 Soil Assessment Around the Former UST During tank removal activities, excavated soil was monitored by OVA headspace techniques and visual inspection. No petroleum-contaminated soil was identified during UST closure activities. After the UST was removed, the excavated area was backfilled with the excavated soil.

3.1.2 Groundwater Assessment Around the Former UST A temporary well (TW-1) was installed within the excavated area to satisfy FDEP (1994) UST closure assessment requirements (Figure 3-1). Temporary well TW-1 is located within 5 feet of the monitoring well location requested by FDEP for the supplemental assessment; therefore, it was used as the monitoring well requested by FDEP. The temporary well was installed to 15 feet bls and was constructed of 2-inch, inside diameter (ID), schedule 40, polyvinyl chloride (PVC) casing and 0.010-inch slot screen. Ten feet of screen were installed from 5 to 15 feet bls.

A groundwater sample was collected from temporary well TW-1 on May 11, 1994. Analyses were performed for USEPA Methods 624, 625 (including MTBE), and 418.1, as requested by FDEP. Analyses for arsenic, cadmium, chromium, and lead were also performed pursuant to UST closure guidelines (FDEP, 1994). Groundwater analytical data sheets are attached in Appendix C, Groundwater Sample Analytical Data, and are summarized in Table 3-1. (Note: the sample from TW-1 is identified on the laboratory data sheets as sample 2617).



LEGEND

- MW-1/SB-1 Monitoring well location
- SB-1 Soil boring location
- TW-1 Temporary well location
- Proposed FDEP well

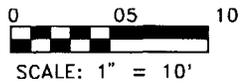


FIGURE 3-1
AREA OF EXCAVATION AND
TEMPORARY WELL TW-1 LOCATION,
UST CLOSURE ACTIVITIES



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No petroleum constituents or TICs were detected by USEPA Methods 624, 625, and 418.1. Cadmium, chromium, and lead were detected in sample TW-1. Metals samples were collected unfiltered. Cadmium, chromium, and lead concentrations are compared to State maximum contaminant levels (MCLs) established in Chapter 17-550, FAC (January 1993). Cadmium and chromium concentrations do not exceed State MCLs. The lead concentration slightly exceeds the State MCL of 15 parts per billion (ppb).

Table 3-1
Groundwater Analytical Data, Temporary Well TW-1
May 11, 1994

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Contaminant	State MCL ¹	Concentration
Cadmium	5	1.1
Chromium	100	100
Lead	15	19

¹ MCL is the maximum contaminant level defined in Chapter 17-550, FAC (January 1993).

Notes. Concentrations are in parts per billion.
Metals samples are unfiltered.

3.2 CONFIRMATION OF NORTHEAST GROUNDWATER FLOW DIRECTION. Water table elevations were recorded July 6, 1994, in monitoring wells MW-1 through MW-3, and monitoring well MW-5 (Table 3-2). These measurements confirm the northeast flow direction observed in the vicinity of the UST during the initial CA (Figure 3-2).

Table 3-2
Water Table Elevation Data
July 6, 1994

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Monitoring Well	TOC Elevation ¹	Depth to Groundwater (from TOC)	Water Table Elevation
MW-1	27.00	8.61	18.39
MW-2	26.94	8.44	18.50
MW-3	27.29	8.97	18.32
MW-5	27.10	8.97	18.13

¹ TOC elevations referenced to U.S.Coastal and Geodetic Survey benchmark on culvert east of site (29.46 feet above National Geodetic Vertical Datum). All elevations and measurements in feet.

Notes: TOC = top of casing.
bls = below land surface.

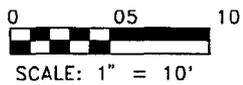
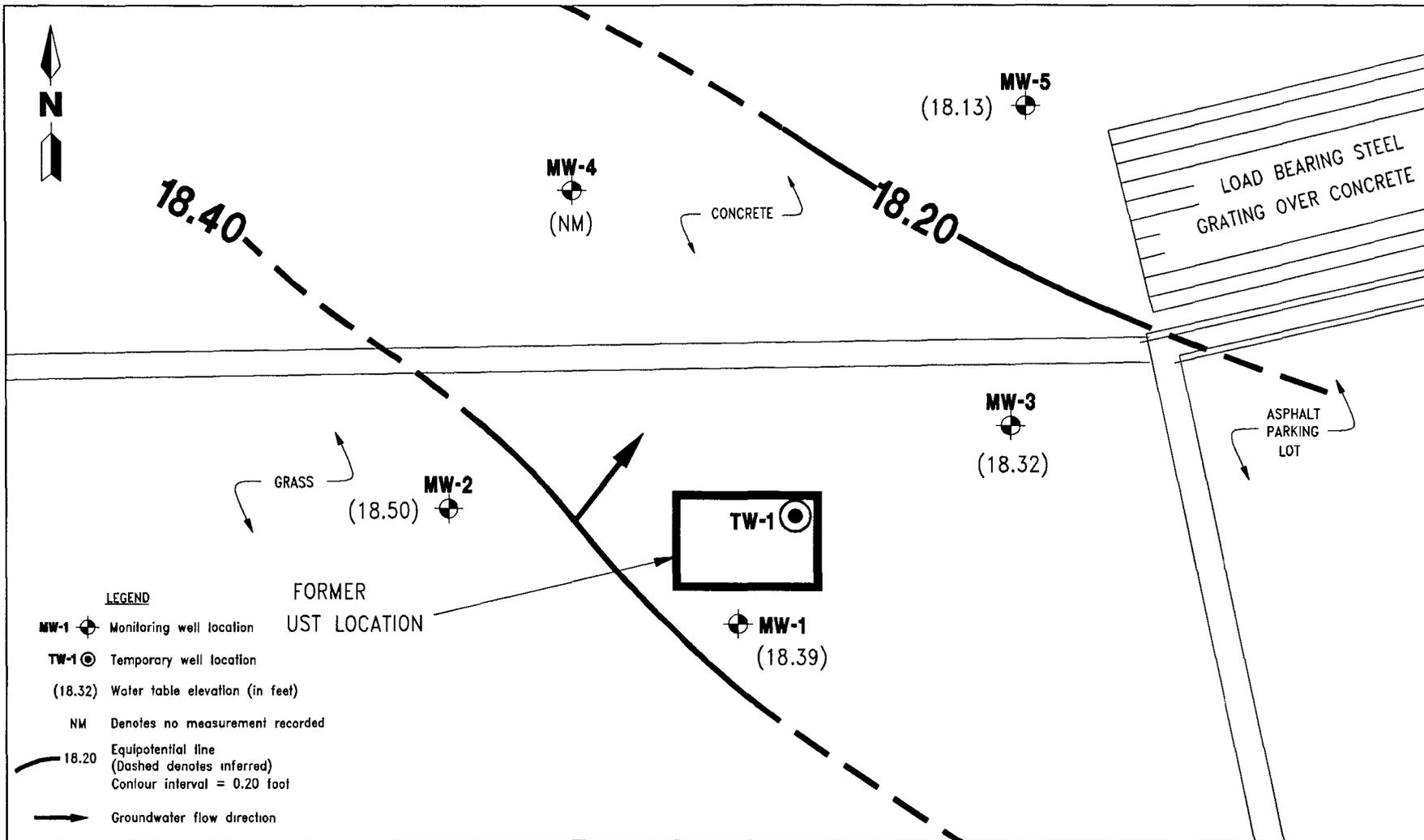


FIGURE 3-2
WATER TABLE ELEVATION CONTOUR MAP,
JULY 6, 1994



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4.0 SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

4.1 SUMMARY. The replacement UST was removed from the site on May 2, 1993. Soil and groundwater contamination near the former and replacement UST is minimal. Petroleum-contaminated soil was not identified during UST closure activities.

Lead is the only groundwater contaminant detected that exceeds State regulatory levels in the vicinity of the former USTs, and exceeded the State MCL in only the unfiltered sample from temporary well TW-1.

The extent of TCE, PCE, and TICs in groundwater has not been assessed in the area downgradient of the former USTs.

4.2 CONCLUSIONS. Soil contamination at the site is minimal. The only contaminants of concern in groundwater appear to be TCE, PCE, and TICs, which were detected downgradient and peripheral to the UST (Figure 2-4).

The source of lead in sample TW-1 appears to be the result of lead-bearing, suspended particulates in groundwater at the time of sample collection. Metals were not detected in filtered metals samples collected during the initial CA, with the exception of one sample collected in April 1992 (ABB-ES, 1993). Filtration, resulting in the removal of suspended particles in groundwater, is typically observed in unconsolidated, porous sediments. Therefore, transportation of particulates in groundwater is expected to be very localized.

The source of the TICs detected in samples from downgradient monitoring wells during the initial CA was not identified. However, because no TIC compounds were detected in the sample from TW-1, the presence of TICs in groundwater cannot be directly attributed to the former or replacement USTs.

4.3 RECOMMENDATIONS. A *NFAP* is submitted for the former and replacement USTs at Site 3221SW. It is ABB-ES' understanding that TCE, PCE, and TICs in groundwater downgradient of the UST are currently being investigated under the Navy's Installation Restoration program and should remain under the authority of that program rather than Chapter 17-770, FAC regulations.

5.0 PROFESSIONAL REVIEW CERTIFICATION

The CA contained in this report was prepared using sound hydrogeologic principles and judgment. This CA 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 geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. This CAR Addendum was developed for the waste oil and PD-680 tank located at Site 3221SW at the Naval Aviation Depot, Naval Air Station in Pensacola, Florida, and should not be construed to apply to any other site.

Roger Durham
Professional Geologist
P.G. No. 001127

Date

REFERENCES

ABB Environmental Services, Inc., 1993, Contamination Assessment Report, Site 3221SW, Naval Aviation Depot, Naval Air Station, Pensacola, Florida: prepared for Southern Division, Naval Facilities Engineering Command, Charleston, South Carolina.

Florida Department of Environmental Protection, 1994, Guidelines for assessment and remediation of petroleum contaminated soils, revised: Division of Waste Management, 48 p.

Florida Department of Environmental Regulation, 1994, Pollutant storage tank closure assessment requirements, revised: Division of Waste Management, 6 p.

APPENDIX A
FDEP CORRESPONDENCE



State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Mailing to Other than the Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Eric S. Nuzie, Federal Facilities Coordinator
Bureau of Waste Cleanup

THROUGH: Dr. James J. Crane, PG III/Administrator
Technical Review Section *JJC*

Tim J. Bahr, Professional Geologist II *B*
Technical Review Section

FROM: Jorge R. Caspary, PG I/Base Coordinator *JRC*
Technical Review Section

DATE: April 16, 1993

SUBJECT: Review of Site 3221 SW Pensacola NADEP. Pensacola Naval
Air Station

I have reviewed the Contamination Assessment Report (CAR) dated February 1993 (received February 5, 1993) submitted for this site. In order to meet the requirements of Chapter 17-770 Florida Administrative Code (F.A.C.), the following comments need to be addressed:

1. An additional permanent water table monitoring well should be installed 10 to 15 feet east of SB-14 to determine if the old tank was the source of the tentatively identified compounds (TICs).
2. After installation of the supplemental monitoring well, it should be sampled and analyzed for EPA Methods 624/625 (including MTBE) and 418.1, so that this review can be completed and a decision reached, based on current data, on the type of action that is warranted.

APPENDIX B
CLOSURE ASSESSMENT FORM



Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

Form No. Closure Ass. P. 4/17a
Effective Date December 10, 1990
DER Approval No. (Pass on by DER)

Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assessment was performed in accordance with Rule 17-761 or 17-762, Florida Administrative Code. Eligible Early Detection Incentive (EDI) and Reimbursement Program sites do not have to perform a closure assessment.

Please Print or Type
Complete All Applicable Blanks

1. Date: 5 May 1994
2. DER Facility ID Number: 17/9202973 3. County: Escambia
4. Facility Name: US Navy - Naval Aviation Depot
5. Facility Owner: Commanding Officer, Naval Air Station
6. Facility Address: Building 3221, Naval Air Station
7. Mailing Address: 190 Radford Boulevard, Pensacola, Florida 32508-5217
8. Telephone Number: (904) 452-3094 9. Facility Operator: Mr. Paul Semmes
10. Are the Storage Tank(s) (Circle one or both) A. Aboveground or **(B)** Underground
Type of Product(s) Stored: Waste Oil
12. Were the Tank(s). (Circle one) A. Replaced **(B)** Removed C. Closed in Place D. Upgraded (aboveground tanks only)
13. Number of Tanks Closed: 2 14. Age of Tanks: 4

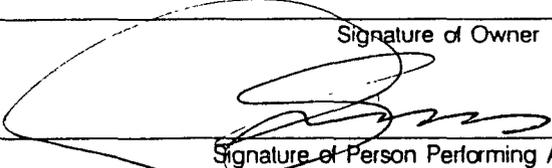
Facility Assessment Information

- | | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Yes | No | Not Applicable | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | 1. Is the facility participating in the Florida Petroleum Liability Insurance and Restoration Program (FPLIRP)? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | | 2. Was a Discharge Reporting Form submitted to the Department?
If yes, When: _____ Where: _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | | 3. Is the depth to ground water less than 20 feet? |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 4. Are monitoring wells present around the storage system?
If yes, specify type: <input checked="" type="checkbox"/> Water monitoring <input type="checkbox"/> Vapor monitoring |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 5. Is there free product present in the monitoring wells or within the excavation? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 6. Were the petroleum hydrocarbon vapor levels in the soils greater than 500 parts per million for gasoline?
Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input type="checkbox"/> Soil sample(s) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 7. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene?
Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input type="checkbox"/> Soil sample(s) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | 8. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels?
(See target levels on reverse side of this form and supply laboratory data sheets) |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 9. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 10. Are any potable wells located within 1/4 of a mile radius of the facility? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 11. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance: _____ |

DER Form #	17-761.900(6)
Form Title	Closure Assessment Form
Effective Date	December 10, 1990
DER Application No.	(Filed in by DER)

- 12 A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.
- 13 If a facility has a pollutant storage tank system that has both gasoline and kerosene/diesel stored on site, both EPA Method 602 and EPA Method 610 must be performed on the ground water samples obtained.
- 14 Amount of soils removed and receipt of proper disposal.
- 15 If yes is answered to any one of questions 5-9, a Discharge Reporting Form 17-761.900(1) indicating a suspected release shall be submitted to the Department within one working day.
- 16 A copy of this form and any attachments must be submitted to the Department's district office in your area and to the locally administered program office under contract with the Department within 60 days of completion of tank removal or filling a tank with an inert material.

 Signature of Owner


 Paul R. Semmes, P.E.

 Signature of Person Performing Assessment

 Environmental Engineer
 Title of Person Performing Assessment

 Date

10 May 94

 Date

State Ground Water Target Levels That Affect A Pollutant Storage Tank System Closure Assessment

State ground water target levels are as follows:

1 For gasoline (EPA Method 602):

- a. Benzene 1 ug/l
- b. Total VOA 50 ug/l
 - Benzene
 - Toluene
 - Total Xylenes
 - Ethylbenzene
- c. Methyl Test-Butyl Ether (MTBE) 50 ug/l

2. For kerosene/diesel (EPA Method 610):

- a. Polynuclear Aromatic Hydrocarbons (PAHS)
 (Best achievable detection limit, 10 ug/l maximum)

APPENDIX C

GROUNDWATER SAMPLE ANALYTICAL DATA

Navy Public Works Center Environmental Laboratory

Bldg. 3207, Code 820
NAS Pensacola, FL 32508-0500
Phone 904-452-3042/4758
Autovon 922-3042

Requester: NADEP
Address: Bldg. 804
NAS Pensacola, FL 32508
Phone #: 452-3004
Contact: Paul Semmes

Laboratory Report

Priority Pollutant Volatiles

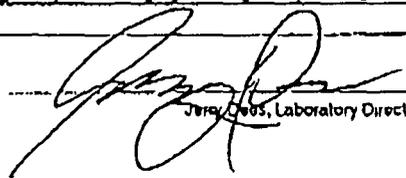
Lab ID Number: 04051418
Received Date: 11 May 94
Sample Site: NAS Pensacola
Job Order #: 120 8810

Sample ID#	Lab	1- 2615	2- 2616	3- 2617	4- 2618
Sample Name	Requester	B3450 MW/3450S	B3221 MW/3221-E	B3221 MW/3221-W	B2691 MW-2691
Collector Name		WGS	WGS	WGS	WGS
Date/Time Collected (Military)	Corp start Comp stop Grab	11 May 94 @ 1025	11 May 94 @ 1120	11 May 94 @ 1150	11 May 94 @ 1230
Sample Type	Corp/Grab	Grab	Grab	Grab	Grab
Analyst		J.W. Moore	J.W. Moore	J.W. Moore	J.W. Moore
Date of Analysis		12 May 94	12 May 94	12 May 94	12 May 94
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- 2615	2- 2616	3- 2617	4- 2618

Priority Pollutant Volatiles (CFR 122, App D, Table II Volatiles)									
Compound	EPA #	1- 2615	2- 2616	3- 2617	4- 2618				
Acrolein	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Acrylonitrile	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benzene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Bromoforn	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Carbon Tetrachloride	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Chlorobenzene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Chlorodibromomethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Chloroethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
2-Chloroethynyl ether	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Chloroform	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Dichlorobromomethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,1-Dichloroethane	EPA 8260	8 ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,2-Dichloroethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,1-Dichloroethylene	EPA 8260	2 ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,2-Dichloropropane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,3-Dichloropropylene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Ethylbenzene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Methyl bromide	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Methyl chloride	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Methyl-tert-butyl ether	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Methylene chloride	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,1,2,2-Tetrachloroethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Tetrachloroethylene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Toluene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,2-trans-dichloroethylene	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,1,1-Trichloroethane	EPA 8260	3 ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,1,2-Trichloroethane	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Trichloroethene	EPA 8260	1 ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Vinyl Chloride	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Xylenes (m,p)	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Xylenes (o)	EPA 8260	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				

Surrogate Recoveries Compound	Acceptance Limits	1- 2615	2- 2616	3- 2617	4- 2618
1,2-Dichloroethane-d4	70-121	102	101	101	101
Toluene-d8	84-138	100	101	102	99
Bromofluorobenzene	59-113	104	103	103	102

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

Approved by: 
Jerry Deas, Laboratory Director

Date/Time: 14-Jun-94 / 07:29

**Navy Public Works Center
Environmental Laboratory**

Dirg. 3297, Code 920
NAS Pensacola, FL 32508-8500
Phone 904-452-3642/4750
Autovon 922-3642

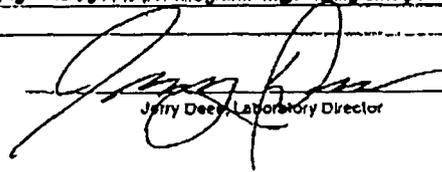
Requester: NADEP
Address: Bldg 804
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Laboratory Report
Used Oil Product Group - TPII & Metals
Lab ID Number: 94051418
Received Date: 11 May 94
Sample Site: NAS Pensacola
Job Order #: 120 8810

Sample ID#	Lab	1- 2615	2- 2616	3- 2617	4- 2618
Sample Name	Requester	B3450 MW/34508	B3221 MW/3221-E	B3221 MW/3221-W	B2601 MW-2601
Collector Name		WGS	WGS	WGS	WGS
Date/Time Collected (Military)	Comp start				
	Comp stop				
	Grab	11 May 94 @ 1025	11 May 94 @ 1120	11 May 94 @ 1150	11 May 94 @ 1230
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab
Analyst		B Nelson / J. Taylor	B. Nelson / J. Taylor	B Nelson / J Taylor	B. Nelson / J. Taylor
Date of Analysis		20 May 94 -- 25 May 94	20 May 94 -- 25 May 94	20 May 94 -- 25 May 94	20 May 94 -- 25 May 94
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater
PARAMETER					
Metals and TPH	METHOD #	ID# 2615 units Det. Limit	ID# 2616 units Limit	ID# 2617 units Limit	ID# 2618 units Limit
Arsenic (As)	EPA 206.2	0.059 mg/l 0.005	BDL mg/l 0.005	BDL mg/l 0.005	BDL mg/l 0.005
Cadmium (Cd)	EPA 213.2	0.0096 mg/l 0.0005	0.0007 mg/l 0.0005	0.0011 mg/l 0.0005	0.0008 mg/l 0.0005
Chromium (Cr)	EPA 200.7	0.88 mg/l 0.02	0.06 mg/l 0.02	0.10 mg/l 0.02	0.05 mg/l 0.02
Lead (Pb)	EPA 239.2	0.059 mg/l 0.003	0.007 mg/l 0.003	0.019 mg/l 0.003	0.01 mg/l 0.003
Total Petroleum Hydrocarbons (TPH)	EPA 418.1	BDL mg/l 1	BDL mg/l 1	BDL mg/l 1	BDL mg/l 1

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

Approved by:



Jerry Dees, Laboratory Director

Date/Time: 14-Jun-94 @ 07.29

**Navy Public Works Center
Environmental Laboratory**

Bldg. 3207, Code 020
NAS Pensacola, FL 32508-6500
Phone 904-452-3042/4758
Autovon 022-3042

Requester: NADEP
Address: Bldg. 604
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Laboratory Report

Priority Pollutant Base/Neutral Extractables

Lab ID Number: 94051418
Received Date: 11 May 94
Sample Site: NAS Pensacola
Job Order #: 120 0810

Sample ID#	Lab	1- 2615	2- 2616	3- 2617	4- 2618
Sample Name	Requester	83450 MW/3450S	83221 MW/3221-E	83221 MW/3221-W	82891 MW-2601
Collector Name		WGS	WGS	WGS	WGS
Time/Date Sample Collected (Military)	Comp start Comp stop Grab	11 May 94 @ 1025	11 May 94 @ 1120	11 May 94 @ 1150	11 May 94 @ 1200
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab
Analyst		J.W. Moore	J.W. Moore	J.W. Moore	J.W. Moore
Date of Analysis		18 May 94	18 May 94	18 May 94	18 May 94
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1
PARAMETER		ID#	ID#	ID#	ID#
Base/Neutral Extractables	METHOD #	1- 2615 units Limit	2- 2616 units Limit	3- 2617 units Limit	4- 2618 units Limit

Priority Pollutant Base/Neutral Extractable Compounds (CFR 40, Part 122, App. D, Table f1, Base/Neutral)									
Compound	EPA #	1- 2615	2- 2616	3- 2617	4- 2618				
PAH	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Acenaphthene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Acenaphthylene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Anthracene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benztidine	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benz(a)anthracene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benz(a)pyrene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
3,4-Benzofluoranthene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benzo(g,h)perylene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Benzo(k)fluoranthene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Bis(2-chloroethoxy)methane	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Bis(2-chloroethyl)ether	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Bis(2-chloroisopropyl)ether	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Bis(2-ethylhexyl)phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
4-Bromophenyl phenyl ether	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Butyl benzyl phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
2-Chloronaphthalene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
4-Chlorophenyl phenyl ether	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Chrysene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Dibenz(a,h)anthracene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,2-Dichlorobenzene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,3-Dichlorobenzene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,4-Dichlorobenzene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
3,3-Dichlorobenzidine	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Diethyl phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Dimethyl phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Di-n-butyl phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
2,4-Dinitrotoluene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
2,6-Dinitrotoluene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Di-n-octyl-phthalate	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
1,2-Diphenylhydrazine	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Fluoranthene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Fluorene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Hexachlorobenzene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Hexachlorobutadiene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Hexachlorocyclopentadiene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Hexachloroethane	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Indeno(1,2,3-cd)pyrene	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				
Isophorone	EPA 8270	BDL ug/l	BDL ug/l	BDL ug/l	BDL ug/l				

Navy Public Works Center Environmental Laboratory

Laboratory Report

Prietary Pollutant Base/Neutral Extractables

Bldg. 3297, Code 920
NAS Pensacola, Fl. 32508-8500
Phone 904-452-3042/4750
Autovon 922-3042

Requester: NADEP
Address: Bldg. 604
NAS Pensacola, FL 32508
Phone #: 452-3094
Contact: Paul Semmes

Lab ID Number: 94051419
Received Date: 11 May 94
Sample Site: NAS Pensacola
Job Order #: 120 6610

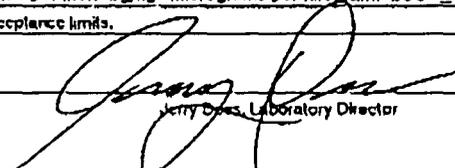
PARAMETER	METHOD #	ID# 2615			ID# 2616			ID# 2617			ID# 2618		
		1-	units	Det. Limit	2-	units	Det. Limit	3-	units	Det. Limit	4-	units	Det. Limit
Base/Neutral Extractables													
Naphthalene	EPA 8270	BDL	ug/l	5									
Nitrobenzene	EPA 8270	BDL	ug/l	5									
N-nitrosodimethylamine	EPA 8270	BDL	ug/l	10									
N-nitrosod-n-propylamine	EPA 8270	BDL	ug/l	10									
N-nitrosodiphenylamine	EPA 8270	BDL	ug/l	10									
Phenanthrene	EPA 8270	BDL	ug/l	5									
Pyrene	EPA 8270	BDL	ug/l	5									
1,2,4-Trichlorobenzene	EPA 8270	BDL	ug/l	5									

SURROGATE RECOVERIES	Acceptance Limits				
Compound					
Nitrobenzene-d5	35-114	61	40	43	77
2-Fluorobiphenyl	43-116	67	30*	70	61
Terphenyl-d14	93-141	69	42	111	70

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

* - Outside acceptance limits.

Approved by:



Jerry D. Semmes, Laboratory Director

Date/Time: 14-Jun-94 / 07:29

**Navy Public Works Center
Environmental Laboratory**

Laboratory Report

Priority Pollutant Acid Extractables

Bldg. 3297, Code 020
NAS Pensacola, FL 32508-6500
Phone 904-452-3842/4758
Autovon 922-3042

Requester: NADEP
Address: Bldg. 604
NAS Pensacola, FL 32508
Phone #: 452-3084
Contact: Paul Semmes

Lab ID Number: 94051418
Received Date: 11 May 94
Sample Site: NAS Pensacola
Job Order #: 120 8010

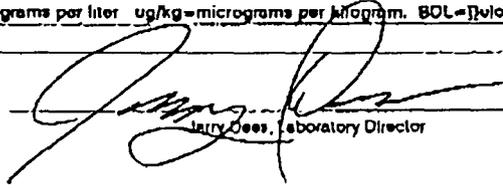
Sample ID#	Lab	1- 2615	2- 2616	3- 2617	4- 2618								
Sample Name	Requester	B3450 MW/34508	B3221 MW/3221-E	B3221 MW/3221-W	B2601 MW-2601								
Collector Name		WGS	WGS	WGS	WGS								
Time/Date Sample Collected (Military)	Comp start												
	Comp stop												
	Grab	11 May 94 @ 1025	11 May 94 @ 1120	11 May 94 @ 1150	11 May 94 @ 1230								
Sample Type	Comp/Grab	Grab	Grab	Grab	Grab								
Analyst		J.W. Moore	J.W. Moore	J.W. Moore	J.W. Moore								
Date of Analysis		18 May 94	18 May 94	18 May 94	18 May 94								
Sample Matrix		Groundwater	Groundwater	Groundwater	Groundwater								
Dilution		Dilution X 1	Dilution X 1	Dilution X 1	Dilution X 1								
PARAMETER		ID#	units	Det. Limit	ID#	units	Det. Limit	ID#	units	Det. Limit	ID#	units	Det. Limit
Acid Extractables	METHOD #	1- 2615	units	Limit	2- 2616	units	Limit	3- 2617	units	Limit	4- 2618	units	Limit

Priority Pollutant Acid Extractable Compounds (CFR 40, Part 122, App. D, Table II Acid Compounds)

Compound	EPA #	1- 2615	2- 2616	3- 2617	4- 2618
2-Chlorophenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
2,4-Dichlorophenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
2,4-Dimethylphenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
4,6-Dinitro-p-cresol	EPA 8270	BDL ug/l 10	BDL ug/l 10	BDL ug/l 10	BDL ug/l 10
2,4-Dinitrophenol	EPA 8270	BDL ug/l 25	BDL ug/l 25	BDL ug/l 25	BDL ug/l 25
2-Nitrophenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
4-Nitrophenol	EPA 8270	BDL ug/l 25	BDL ug/l 25	BDL ug/l 25	BDL ug/l 25
p-Chloro-m-cresol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
Pentachlorophenol	EPA 8270	BDL ug/l 10	BDL ug/l 10	BDL ug/l 10	BDL ug/l 10
Phenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5
2,4,6-Trichlorophenol	EPA 8270	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5	BDL ug/l 5

SURROGATE RECOVERIES	Acceptance Limits	1- 2615	2- 2616	3- 2617	4- 2618
Phenol-d5	24-125	66	30	70	42
2-Fluorophenol	25-121	65	41	62	57
2,4,6-Tribromophenol	19-122	102	42	111	79

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

Approved by: 
Larry Dees, Laboratory Director

Date/Time: 14-Jun-94 / 07:29

