REMEDIAL ACTION OPTIMIZATION
&
REVISED CORRECTIVE ACTION PLAN

RAPID REFUELER

MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

April 13, 2006

Navy Contract No.: N62470-01-D-3009
NCDENR INCIDENT NUMBERS:
5668, 21273, 23691, and 32004
Delivery Order No.: 0079
CATLIN Project No.: 203-063

DRAFT
SUBJECT TO REVISIONS

Prepared by:

CATLIN Engineers and Scientists
P.O. Box 10279
Wilmington, North Carolina 28404-0279
(910) 452-5861

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

LIST OF ACRONYMS

2000 Guidelines	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater
2001 Guidelines	Guidelines for Assessment and Corrective Action, North Carolina Underground Storage Tank Section (Effective July 1, 2001)
2L GWQS	NCAC T15A:02L Groundwater Quality Standards
ARO	Asheville Regional Office
AFVR	Aggressive Fluid Vapor Recovery
AS	Air Sparge
AST	Aboveground Storage Tank
BDL	Below Detection Limit
BN	Base/Neutral (extractables)
BNA	Base/Neutral/Acid (extractables)
BQL	Below Quantitation Limit
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAP	Corrective Action Plan
CATLIN	CATLIN Engineers and Scientists (Formerly RC&A)
CFR	Code of Federal Regulations
Cr	Chromium
CSA	Comprehensive Site Assessment
CNP	Carbon Nitrogen Phosphorous
CPT	Cone Penetrometer Test
DEM	Division of Environmental Management
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
DOD	Department of Defense
DPT	Direct Push Technology
DRO	Diesel Range Organics
DWQ	Division of Water Quality
DWM	Division of Waste Management
DTW	Depth to Water
EAD	Environmental Affairs Department
EDB	Ethylene di-bromide
EMD	Environmental Management Division
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
EQB	Environmental Quality Branch
Fe	Iron
FID	Flame Ionization Detector
FOD	Foreign Object Debris
FRO	Fayetteville Regional Office
FT	Feet
GCL	Gross Contaminant Level
GIS	Geographic Information System
GPS	Global Positioning System
GRO	Gasoline Range Organics

Guidelines Vol. I	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other Than Petroleum Underground Storage Tanks (May 1998)
Guidelines Vol. II	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume II, Petroleum Underground Storage Tanks (January 2, 1998)
HDPE	High Density Polyethylene
I/C	Industrial/Commercial
ID	Identification
I&E	Installations and Environment Department
IGWQS	Interim Groundwater Quality Standards
IPE	Isopropyl Ether
LANTDIV	Atlantic Division
LSA	Limited Site Assessment
LUST	Leaking Underground Storage Tank
m-	meta
m	meter
MADEP	Massachusetts Department of Environmental Protection
MCALF	Marine Corps Auxiliary Landing Field
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCOLF	Marine Corps Outlying Landing Field
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
MMPE	Mobile Multi Phase Extraction
MRO	Mooresville Regional Office
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Liter
NA	Not Analyzed
N/A	Not Applicable
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NCDOC	North Carolina Department of Corrections
NCDOT	North Carolina Department of Transportation
NCSP	North Carolina State Plane
NCSPA	North Carolina State Ports Authority
NE	None Established
NM	Not Measured
NMT	No Measurable Thickness
NS	Not Sampled
o-	ortho
OVA	Organic Vapor Analyzer

p-	para
PAH	Polynuclear Aromatic Hydrocarbons
Pb	Lead
PPB	Parts Per Billion
PPM	Parts Per Million
PID	Photo Ionization Detector
PSA	Preliminary Site Assessment
PQL	Practical Quantitation Limit
PVC	Polyvinyl chloride
RAO	Remedial Action Optimization
RBCA	Risk-Based Corrective Action
RCAP	Revised Corrective Action Plan
RCRA	Resource Conservation and Recovery Act
Res	Residential
ROI	Radius of Influence
RRO	Raleigh Regional Office
SOW	Scope of Work
STGW	Soil-to-Groundwater
SVE	Soil Vapor Extraction
SVOC	Semi Volatile Organic Compound
TDHF	Toxicologically Defined Hydrocarbons Fractions
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TKN	Total Kjeldahl Nitrogen
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
US	United States
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
WaRO	Washington Regional Office
WiRO	Wilmington Regional Office
WSRO	Winston-Salem Regional Office

REMEDIAL ACTION OPTIMIZATION
&
REVISED CORRECTIVE ACTION PLAN

RAPID REFUELER

MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

CATLIN PROJECT NO. 203-063

April 13, 2006

EXECUTIVE SUMMARY

This report is intended to provide information relevant to address and review the effectiveness of current remedial actions being conducted at the Rapid Refueler project site and to make revisions to the CAP in order to move towards site closeout. The site is located aboard Marine Corps Air Station, New River, which is west of Marine Corps Base, Camp Lejeune, North Carolina. The site operates as an active aircraft refueling facility located in the central portion of the MCAS airfield and consists of the Rapid Refueler A-B and C-D tank areas with associated buildings, distribution pits, and eight fuel stations located on six fuel islands. The current refueling infrastructure was installed in the early 1990s when the former refueling infrastructure was abandoned.

Numerous releases of JP-5 jet fuel have occurred at various locations across the Rapid Refueler site resulting in the following NCDENR incident numbers: 5668 (1986 release), 21273 (1987 release), 23691 (2000 release), and 32004 (Oct. 2002 release). Approximately seventeen investigatory reports have been completed at the Rapid Refueler site addressing the releases.

A free product recovery system consisting of five recovery wells with product only pumps was installed and put into service in the area of the A-B fuel islands in March 1994. The product recovery system was apparently operated as a product only recovery system until July 1998.

Richard Catlin and Associates, Inc., (doing business as Catlin Engineers and Scientists, Inc. (CATLIN)) prepared and submitted a CAP for the subject site dated June 15, 1996 that addressed the presence of petroleum impact to the soil and shallow groundwater (surficial aquifer). The recommended remediation strategy within the CAP for site restoration was to conduct AFVR events on a regular basis when free product was encountered. A subsequent CAP completed by CATLIN dated August 10, 2004 addressing an additional JP-5 release in the A-B Tank area recommended the construction of a series of recovery trenches for the purpose of free product recovery. Recovery of free product was recommended utilizing MMPE. CATLIN understands that the recovery system was installed in October 2005.

Current remedial actions for the petroleum impact associated with the Rapid Refueler site is based on the corrective action requirements per 15A NCAC 2L .0106 which became effective on January 2, 1998 and the document entitled *"Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater"* (2000 Guidelines) as released by the NCDENR DWQ, Groundwater Section, effective July 2000 and Risk Based Corrective Action (RBCA) for Petroleum Underground Storage Tanks per 15A NCAC 2L .0115 effective date January 2, 1998 and document entitled *"Guidelines for Assessment and Corrective Action"* (2001 Guidelines) as released by the NCDENR DWM, UST Section, effective July 1, 2001.

In order to effectively evaluate the current remediation system suitability, the recommendations within this report address the evaluation of the potential plume migration, free product, soil contamination, shallow groundwater contamination, and deep groundwater contamination, separately. The following is a brief summary of the recommendations:

- Submittal of RAO & RCAP to the UST Sections of NCDENR for approval of recommendations;
- Consolidate monitoring well nomenclature;
- Weekly groundwater gauging program;
- Confirm status of monitoring wells not located during surveys;
- Install select monitoring wells if unable to locate;
- Affix permanent identification plates to all site monitoring wells;
- Annual groundwater sampling program;
- Inventory existing free product recovery and groundwater treatment system;
- Conduct pilot testing to determine proper Multi-Phase Extraction (MPE) parameters including free product bail down test;
- Based on results of bail down test and MPE pilot testing, determine appropriate recovery strategy including estimated volume of existing and recoverable free product;
- When parameters have been determined, conduct Mobile MPE (MMPE) at recommended intervals for a period of one year while monitoring effectiveness and costs;
- Review MMPE effectiveness and compare costs associated with recommended implementation to utilizing existing infrastructure for treatment and disposal;
- Collection and analysis of recommended soil samples following free product removal and present findings in a Soil Assessment Report;
- Preparation of the Annual Groundwater Monitoring Reports;

REMEDIAL ACTION OPTIMIZATION
&
REVISED CORRECTIVE ACTION PLAN

RAPID REFUELER

MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

CATLIN PROJECT NO. 203-063

April 13, 2006

1.0 BACKGROUND

1.1 PURPOSE OF REPORT

The purpose of this report is to provide information relevant to address and review the effectiveness of current remedial actions being conducted at sites AS-511, AS-497, AS-527, Rapid Refueler JP-5 Pipeline, Rapid Refueler A-B tanks, and Rapid Refueler C-D tanks, collectively referred to as the Rapid Refueler project site located aboard Marine Corps Air Station, New River. Additionally, this report provides recommendations for continuing remediation activities in order to achieve site closure. This report has been formatted according to the NAVFACENGCOM "Guidance for Optimizing Remedial Action Operation" document prepared by Radian International and dated April 2001 with the ultimate purpose to "achieve environmentally protective site closeout at the least cost."

The work conducted herein was conducted in general accordance with the Workplan titled Remediation System Optimization Plans at the Various Sites, Marine Corps Base, Camp Lejeune, North Carolina dated July 16, 2003. CATLIN was authorized to perform this investigation by the LANTDIV Mid-Atlantic in accordance with the Order of Supplies Contract Number N62470-01-D-3009, Delivery Order Number 0079.

1.2 SCOPE OF WORK

This RAO & RCAP was developed in general accordance with the NAVFACENGCOM "Guidance for Optimizing Remedial Action Operation" document dated April 2001 and the 2001 Guidelines. Specific methods utilized to develop the RAO & RCAP included a thorough collection and review of available reports and field data. In addition, a field reconnaissance was conducted to perform on-site inspections of existing site and remedial system conditions. Data was then reviewed and the RAO & RCAP was developed.

2.0 SITE HISTORY

The Rapid Refueler site is located aboard MCAS, New River, which is west of MCB, Camp Lejeune, North Carolina (see Figure 1). The site operates as an active aircraft refueling facility located in the central portion of the MCAS airfield and consists of the Rapid Refueler A-B and C-D tank areas with associated buildings, distribution pits, and eight fuel stations located on six fuel islands. The current A-B tank area was constructed in approximately 1993 replacing the former A-B tank area. The former A-B tank area consisted of two fuel islands with five USTs (UST AS-507, UST AS-508-1, UST AS-508-2, UST AS-546, and UST AS-547) located in the general area of the current A-B fuel islands. The current C-D tank area was constructed in 1994 replacing the former C-D tank area. The former C-D tank area consisted of two fuel islands, each with two fuel stations, with five USTs (UST AS-511-1, UST AS-511-2, UST AS-511-3, UST AS-511-4, UST AS-548, and UST AS-546). The current C-D tank area is generally in the same location as the former C-D tank area. A Site Plan is included on Figure 2. Fuel (JP-5) for refueling aircraft is stored in four USTs, two at the A-B tank area and two at the C-D tank area, located beneath the distribution pits. Fuel for the USTs is supplied via a six-inch diameter transfer line that originates at the Campbell Street Fuel Farm located approximately three quarters of a mile north of the Rapid Refueler site. An underground pipeline currently in use was installed in 1985 replacing the previous pipeline, constructed in 1968, that was abandoned in place for the most part. The former pipeline, in general, is located adjacent to the active pipeline. The entire refueling area is surrounded by open, flat terrain that is comprised of active taxiways, runways, and grasslands. A concrete parking area for aircraft is located immediately north of the site.

Numerous releases are known and/or suspected to have occurred in the Rapid Refueler area. A map displaying the locations of a number of the known releases is included in Appendix C of the attachments. The following is a chronology of the known or suspected release history associated with the subject site:

1983	*JP-5 Fuel Line Investigation MCAS (H)* prepared by Soil and Material Engineers (S&ME) reported free product was present in boreholes in four areas along the pipeline including the Rapid Refueler. Pressure testing conducted on the distribution system as part of the investigation indicated serious leakage problems in the A-B tanks area and less severe leakage in the C-D tanks area.
1988-1991	According to the Safety and Environmental Affairs Department at MCAS, New River, at least three known releases had occurred due to incorrect valves being opened. Anecdotal evidence suggested that approximately 1,200 to 2,000 gallons of JP-5 were released on each occasion.
Jan. 28, '92	1,526 gallons of JP-5 was released near the A-B tank area due to improper valve operation. The exact location of the release is unclear.
Mar. 1994	Release at C-D tank area confirmed during removal of the USTs in that area.

May 23, '02 Release of unknown quantity of JP-5 from the transfer line in the C-D tank area.

Oct. 10, '02 Release of unknown quantity of JP-5 from the low-point drain at the A-B tank area.

Oct. 2003 Release of unknown quantity of JP-5 from eight-inch diameter pipeline in Rapid Refueler, Island 1, the western most fuel station in the A-B tank area.

The air station property surrounding the subject site has been the target of numerous subsurface contamination investigations. Investigations resulting from the previously listed releases have produced the following reports:

REPORT TITLE	DATE	PREPARED BY
Leaked Fuel Inventory, Direct Fueling Pipeline, Marine Corps Naval Air Station	December 7, 1983	S&ME [1]
JP-5 Fuel Line Investigation	1983	S&ME
Interim Report, Confirmation Study to Determine Existence and Possible Migration of Specific Chemicals In-Situ, Soils Investigation. MCAS New River Rapid Refueler Area.	January 9, 1987	Environmental Science and Engineering.
Soil Sampling Report of Findings	January 24, 1990	ATEC [2]
Vacuum Extraction Pilot Test	January 22, 1991	Terra Vac
Basis of Design, Aircraft Rapid Refuel Station, Final Submittal Calculations	February 12, 1991	Robert and Company
Site Assessment Report, The Campbell Street JP-5 Pipeline	August 12, 1992	Baker [3]
Site Assessment Report, AS-527 and the South End of the Aircraft Direct Refueling Area	January 14, 1993	Baker
Initial Site Assessment (Site Check) Report, UST Closure by Removal: Two (2) JP-5 Fuel Tanks and Three (3) JP-5 Waste Oil Tanks. A-B Tank Farm Area, Aircraft Rapid Refuel Facility.	March 1, 1993	CESC [4]
Initial Site Assessment (Site Check) Report, UST Closure by Removal Three (3) JP-5 Fuel Tanks, one (1) Oil/Water Separator Tank, C-D Tank Farm Area, Aircraft Rapid Refueler Facility	May 18, 1994	CESC
Final Progress Report for the Free Product Collection System Installed at the Aircraft Refuel Station	June 3, 1994	ECS [5]
Leaking Underground Storage Tank Comprehensive Site Assessment, Rapid Refueler	November 1, 1994	RC&A [6]
Rapid Refueler Area New River Air Station, Product Recovery System Status, Period: March 1996	April 4, 1996	Geophex, Ltd.
Leaking Underground Storage Tank Comprehensive Site Assessment USTs AS-511-3, 548, 549 (Rapid Refueler Addendum Report)	June 5, 1996	RC&A

REPORT TITLE	DATE	PREPARED BY
Leaking Underground Storage Tank Corrective Action Plan, Rapid Refueler	April 6, 1998	CATLIN
Preliminary Site Assessment, Rapid Refueler C-D Tank Area. Marine Corps Air Station, New River	May 2, 2003	CATLIN
Comprehensive Site Assessment, Rapid Refueler A-B Tanks, Marine Corp Air Station, New River	August 26, 2003	CATLIN
Initial Abatement Measures Repot, Rapid Refueler Repair/Remediation (20-Day Report)	January 2004	Shaw [7]
Annual Groundwater Monitoring Report	January 2004	Shaw
Phase II Limited Site Assessment, Rapid Refueler 2003 Release	June 15, 2004	CATLIN
Corrective Action Plan, Rapid Refueler A-B Tanks	August 10, 2004	CATLIN
Annual Groundwater Monitoring Report 2004-2005, Rapid Refueler Site	June 17, 2005	EEI [8]

(1) Soil and Material Engineers, Inc.
(2) ATEC Environmental Consultants
(3) Baker Environmental, Inc.
(4) Coastal Environmental Services Company
(5) Engineering Consulting Services, LTD
(6) Richard Catlin and Associates, Inc.
(7) Shaw Environmental, Inc.
(8) Engineering and Environment, Inc.

Approximately 60 or more permanent monitoring and recovery wells have been installed at the Rapid Refueler site throughout the course of these investigations. Nomenclatures of many of these wells have never been substantiated or have apparently been modified during these previous investigations. In addition to the unclear nomenclature, TOC elevations appear to have been established utilizing different vertical datum. Sovereign Consulting Inc. (Sovereign) conducted a site wide well survey of the Rapid Refueler project site prior to the initiation of this RAO & RCAP. Sovereign personnel were able to locate and identify 49 of the existing monitoring wells, one unidentified well located near USTRR-MW05, and obtained accurate TOC data as well as horizontal data with sub-foot accuracy. The data provided by Sovereign was compared to existing well location maps in order to correlate the existing well nomenclature (from the maps) to the field determinations made by Sovereign. Utilizing the dominant existing well nomenclature, CATLIN consolidated the well name groupings into five proposed groupings. Table 1 summarizes the data provided by Sovereign and compares the existing nomenclature with the proposed nomenclature. The monitoring well network with the proposed well nomenclature is illustrated on Figure 3. Monitoring well construction data is presented on Table 2.

3.0 CONCEPTUAL SITE MODELS

Multiple Conceptual Site Models (CSM) have been developed during the various investigations performed at the collective Rapid Refueler site. Unless otherwise noted, the following is a cumulative summary of the previously developed CSMs.

3.1 SITE GEOLOGY

Surficial materials from ground surface to approximately five feet BLS consist of soft to stiff, silty, very fine to fine-grained sandy clay to clay with moderate to high

plasticity. Moderately to well sorted; very fine to coarse-grained sand with trace silt extends from beneath the clay unit to a depth of approximately 20 feet BLS. Silty, fine-grained sand with trace cemented sand nodules was identified beneath the sand unit and extended to a depth of approximately 24 feet BLS in the western portion of the site and to approximately 40 feet BLS in the eastern portion of the site. Below these sands, weathered limestone consisting of "limey" sands and weathered fossiliferous limestone fragments was encountered to an average depth of approximately 50 feet (maximum depth of borings) BLS. Boring logs obtained from previous reports prepared by CATLIN are included in Appendix A.

3.2 GROUNDWATER HYDROGEOLOGY

The oldest recovered data pertaining to the hydrogeologic characteristics of groundwater beneath the subject site were obtained from the *Aircraft Rapid Refuel Station, Final Submittal Calculations* (Robert and Company, 1991). The report states that groundwater was typically six to eight feet below existing grade. A Transmissivity (T) value of 3,000 gpd/ft and a hydraulic conductivity (K) value of $2.5x10^{-4}$ ft/sec. (~17 ft/day) were calculated for the shallow unconfined aquifer. Groundwater contour maps provided in the Robert and Company (1991) report indicated that groundwater flow was generally to the north.

Aquifer testing has been conducted during numerous investigations across the subject site since the 1991 study. The most comprehensive hydrogeological analysis of site conditions was conducted by CATLIN in 1994 and documented in a report titled *Leaking Underground Storage Tank Comprehensive Site Assessment Rapid Refueler* (dated November 1, 1994). Three slug tests were conducted during the 1994 CSA on monitoring wells USTRR-MW04, USTRR-MW11, and USTRR-MW12 resulting in calculated hydraulic conductivity values of 18 ft/day, 15 ft/day, and 20 ft/day, respectively. In addition to the slug testing, grain size analysis was performed on two soil samples collected from five to seven feet BLS during the construction on monitoring wells USTRR-MW04 and USTRR-MW15. Comparison of the laboratory results to published information revealed hydraulic conductivity values of 23.78 ft/day for both samples. An eight-hour pumping test was performed on monitoring well USTRR-MW15 as part of the 1994 Rapid Refueler CSA. An estimated hydraulic conductivity value of 77.14 ft/day was determined. Based on these hydraulic conductivity calculations, the average hydraulic conductivity value of 31 ft/day was determined for the site. Utilizing the previously discussed data, an average groundwater linear flow velocity of approximately 1.6 ft/day in a northeasterly direction was calculated in the 2003 CATLIN A-B Tank CSA.

Data presented in subsequent investigations, including the ongoing site monitoring, revealed similar hydrogeologic characteristics for the surficial groundwater with depths to water consistently measuring in the six to eight feet BLS range. One exception occurred during the A-B Tanks CSA completed by CATLIN in August 2003 where substantial groundwater mounding was observed in the area around

monitoring well USTRR-MW17. A hydraulic gradient of approximately 0.01 to the northeast was calculated between monitoring wells USTAS497-MW02 and USTRR-MW11 in the 2003 CSA (CATLIN, 2003).

Vertical hydraulic gradients were calculated between two sets of Type II/Type III monitoring wells (USTRR-MW12/USTAS497-MW06 and USTRR-MW11/USTRR-MW14) in the 2003 A-B Tanks CSA (CATLIN, 2003). The calculated estimated vertical hydraulic gradients between monitoring wells USTRR-MW12 / USTAS497-MW06 and USTRR-MW11 / USTRR-MW14 were –0.02 and –0.10, respectively. The negative number indicates the potential for an "upward" (from deep to shallow) movement of groundwater.

3.3 POTENTIAL RECEPTORS

The receptor surveys summarized in the 2004 A-B CAP (CATLIN 2004) and the 1998 Rapid Refueler CAP (CATLIN 1998) were as follows:

Non-potable Water Wells within 250 feet of source area
No non-potable water wells were located within 250 feet of the source area.

Potable Water Wells within 1,000 feet of source area
No potable water wells were located within 1,000 feet of the source area.

Surface Water within 500 feet of source area
Manmade detention pond on the eastern boundary of the site and a manmade drainage ditch bordered the site to the northeast extending to the southeast then northeast.

Buildings within 250 feet of source area
Rapid Refueler AS-498 building – slab on grade construction.

Underground Utilities within 250 feet of the source area
Fuel lines - A six-inch diameter JP-5 fuel line ran from the fuel farm to the refueling area. Additional fuel lines were present in the subsurface of the Rapid Refueler to transfer JP-5 from the USTs to the fuel stations. The lines were reportedly buried four to five feet below grade.

Electric - According to a representative at the site, electrical conduits were installed at a depth less than three feet below grade. Due to the complexity and high security nature of the electrical system at the site, electrical conduits were not reflected on the utilities map.

Water - An eight-inch diameter water main ran parallel to the abandoned fuel distribution line of the original refueling system. An extension of this line serviced the refueling stations. A six-inch diameter main connected a fire hydrant in front of the active Rapid Refueler building to the eight inch main. Water to the

Rapid Refueler building itself was supplied by a three-inch diameter service from the six-inch main. These lines were typically installed approximately three feet below grade and were not expected to intersect the water table.

Storm Drainage -A storm drain system is located beneath the subject site, which empties into a detention pond located northeast of the Rapid Refueler building. The storm water is discharged to a nearby drainage ditch. As stated in the 1998 CAP (CATLIN, 1998), a comparison of invert elevations from design drawings and well gauging data indicated product levels within approximately one foot.

Spill Containment-A spill containment system is in place at the Rapid Refueler site. The underground piping, according to the design drawings, consists of ductile iron pipe and discharges to an oil/water separator at the northern end of the site.

Miscellaneous - Underground communications and telephone lines were located on-site and were generally installed at a depth of less than two feet BLS; however, their exact locations were not known. Secure communication lines were also located on site, but their exact locations and installation depths were not known. Based on expected burial depths, these lines were not expected to be receptors.

Wellhead Protection Area

As of July 21, 2004, a wellhead protection program, as defined in 42 USC 300h-7(e), had not been approved by the State. However, in accordance with the same guidelines a Wellhead Protection Plan 2002 was prepared by AH Environmental Consultants. MCB Lejeune had identified proposed wellhead protection areas within the air station. The subject site was not located within a proposed wellhead protection area.

Coastal Plain Physiographic Province

The subject site lies within the Coastal Plain physiographic province, as identified in the Geologic Map of North Carolina (North Carolina Department of Natural Resources and Community Development 1985). No contamination had been identified to be a threat to the deeper portions of the aquifer that may have been potentially used for water supply. In addition there were potable water sources other than the fresh water aquifers below the subject site.

3.4 CONTAMINANTS OF CONCERN

3.4.1 Free Product

Free product (JP-5) has historically been the primary contaminant of concern at the Rapid Refueler site. The initial estimated area of free product addressed in the Basis of Design (Robert and Company, 1991) was located in the area of the former A-B tank area (former USTs AS-507, AS-508-1, and AS-508-2) where wells USTRR-MW01G through USTRR-MW06 were

eventually installed. Free product was identified at approximately 11 locations within soil borings (with temporary well screens) at thicknesses ranging from 1.69 ft. to 5.23 ft.

The estimated extent of free product as presented by CATLIN in the 1998 CAP expanded the coverage of the plume presented by Robert and Company to the west and southwest to include monitoring wells USTRR-MW16 and USTRR-MW18. A second area of free product was also identified within the C-D fuel stations including monitoring wells USTRR-MW22 and UST527-MW10. Free product thicknesses in the A-B area, where gauged, ranged from 1.29 ft. to 2.02 ft. Product thicknesses in the C-D area ranged from 0.13 ft. to 2.57 ft. Gauging data from the 1998 CAP in addition to the estimated areal extent of free product are included in Appendix B.

During subsequent CSAs and CAPs, CATLIN identified two additional areas of free product. These included an area near the C-D distribution pit addressed in the 2003 PSA (CATLIN, 2003), where 0.48 ft. of free product was identified in monitoring well USTAS526-MW15 and an area adjacent to the A-B distribution pit addressed in the 2004 CAP (CATLIN, 2004) where free product was identified in numerous monitoring wells and temporary piezometers at thickness ranging from 1.42 ft. to 4.94 ft.

The most recent gauging data available at the time of this report was obtained from the Annual Groundwater Monitoring Report 2004-2005 prepared by Engineering and Environment, Incorporated (EEI). The estimated areal extent of free product encompassed monitoring wells USTRR-MW12, USTRR-MW18, USTRR-MW19, USTRR-MW20, USTRR-MW23, USTRR-MW01G, and USTAS497-MW03. Gauging data and the estimated areal extent of free product from the March 24, 2005 event as presented by EEI are included in Appendix C.

3.4.2 Soil

Petroleum-impacted soils have been identified during the investigations completed at the Rapid Refueler site prior to 1998. Review of data compiled during completion of the 1998 CATLIN CAP revealed that TPH GRO/DRO concentrations above NCDENR action levels had been identified in soils collected from five to seven feet BLS at USTRR-MW18 (BQL/161mg/Kg) and two to four feet BLS at USTAS511-MW06 (23.1mg/Kg/BDL). Summary tables of the analytical results along with the associated figure from the 1998 CATLIN CAP are included in Appendix B.

Analysis of soil collected during investigations completed subsequent to the 1998 CATLIN CAP was completed per EPA Methods 8260B/5035, 8270, and MADEP VPH/EPH (Risk Based Analysis). Compounds in excess of

Soil to Groundwater MSCCs were identified in the Phase II LSA (CATLIN, 2004) in soil samples collected during the installation of monitoring wells USTRR-MW19 from a depth of three to five feet BLS and USTRR-MW23 from a depth of four to six feet BLS. Compounds in excess of the Soil to Groundwater MSCCs in samples collected from USTRR-MW19 included 2-Methylnaphthalene (44.3 mg/kg), 4-Nitroaniline (25 mg/kg), and Naphthalene (25 mg/kg). Compounds in excess of the Soil to Groundwater MSCCs in samples collected from USTRR-MW23 included 2,4-Dimethylphenol (1.88 mg/kg), 2-Methylnaphthalene (13.5 mg/kg), and Naphthalene (9.24 mg/kg).

3.4.3 Groundwater

Results of the comprehensive soil and groundwater-sampling events presented in the 1998 CATLIN CAP revealed the following compounds above 2L GWQS:

- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes
- Phenanthrene
- Naphthalene
- Acenaphthylene
- Pyrene

The estimated areal extent of groundwater contamination concentrations in excess of 2L GWQS covered the majority of the northwestern portion of the Rapid Refueler site. Tables from the 1998 CATLIN CAP along with associated figures summarizing analytical results and estimated extent of dissolved phase contamination are presented in Appendix B. With the exception of groundwater samples collected from monitoring wells occasionally observed with free product, investigations completed since the 1998 CATLIN CAP have revealed minimal additional dissolved constituents above 2L GWQS beyond the estimated extent presented in the 1998 CAP. However, all of the investigations focused on individual incidences and no comprehensive site wide groundwater sampling events were completed.

3.5 REMEDIAL SYSTEM OBJECTIVES

The primary objective of all CAPs and remediation plans completed at the Rapid Refueler site has primarily been the removal of free product. Additional objectives have been the removal or reduction of petroleum impacted soil contamination to below NCDENR Action Levels, and to restore affected sections of the surficial aquifer impacted with petroleum constituents to 2L GWQS.

4.0 RECOMMENDED REMEDIAL SYSTEMS AND STRATAGIES

4.1 JP-5 FUEL LINE INVESTIGATION – S&ME – 1983

S&ME concluded in the JP-5 Fuel Line Investigation (S&ME, 1983) that loss rates identified in the transfer pipeline during integrity testing were sufficiently high to require replacement or lining of the entire pipeline from the Campbell Street Fuel Farm to the Rapid Refueler.

4.2 BASIS OF DESIGN – ROBERT AND COMPANY - 1991

CATLIN could not determine the source of the recommendations that resulted in Robert and Company completing the Basis of Design (1991) for the recovery system installed at the former A-B distribution pit site. The recommendations were apparently to install a recovery system comprised of six 6-inch diameter recovery wells. Installation of monitoring wells was to be conducted in conjunction with the expansion of the Rapid Refueler A-B tanks. Free product would be recovered using water table depression pumps in conjunction with product only recovery pumps installed in each recovery well. Subsequent to removal of free product, the recovery wells would be converted into vacuum extraction wells. A vacuum would be applied to each well in conjunction with the water table drawdown system to facilitate VOC removal from the subsurface soils.

4.3 CORRECTIVE ACTION PLAN – CATLIN – 1998

The 1998 CAP addressed the free product associated with a discharge from the former A-B tank area. Free product was identified in the same general areas identified by Robert and Company in the 1991 Basis of Design. CATLIN (1998) recommended removal of free product from the Rapid Refueler site using aggressive fluid vapor removal (AFVR). Aggressive fluid vapor removal was additionally recommended to address the reduction of vadose soil contamination detected at monitoring wells USTAS511-MW06 and USTRR-MW18. The corrective action strategy for dissolved-phase groundwater contamination was based on the process of natural attenuation.

4.4 CORRECTIVE ACTION PLAN – CATLIN – 2004

The 2004 CAP prepared by CATLIN for the current A-B distribution pit area recommended the installation of an eight-inch diameter recovery well (sump) in the center of the free product plume associated with the A-B tank area. From the sump, four trenches were recommended to extend to the approximate limits of the plume. The trenches were to be excavated to nine feet BLS with a four-inch diameter slotted pipe placed in the bottom and backfilled within five feet of the land surface with 57m washed granite stone or an approved equivalent. Mobile multi-phase extraction (MMPE) events were recommended on a monthly basis for one year for recovery of

free product. The MMPE events were recommended to last 24-hours per day for five consecutive days. No petroleum impacted vadose soils were identified during this investigation. Addressing the dissolved phase groundwater contamination was recommended following the removal of free product.

5.0 IMPLEMENTED REMEDIAL SYSTEMS AND ACTIONS

5.1 INFRASTRUCTURE AND SOILS

The majority of the original JP-5 pipeline was abandoned in place. A 400-feet section of the pipeline was removed adjacent to the Rapid Refueler facility. The installation date of the original pipeline is unknown. Replacement of the pipeline occurred in 1985.

During the early 1990s, the former A-B distribution pit and associated UST piping and infrastructure were removed during the implementation of a construction project that included the installation of a storm sewer and spill containment network in addition to expansion and modernization of the refueling stations. Initially, the Rapid Refueler consisted of four distribution islands; two each associated with the A-B and C-D distribution pits. As part of the referenced construction project the A-B distribution pit and fuel islands were demolished and replaced with current A-B distribution pit and four fuel islands each housing one fuel station. The C-D tank area was rebuilt essentially in place utilizing the existing 20,000-gallon capacity USTs used to store virgin JP-5 beneath the C-D distribution pit.

Sauer, Incorporated contracted CESCO and Onslow Environmental Contractors, Inc. to remove USTs and associated piping in 1993 and1994 from the former A-B and C-D tank areas. According to data presented in the Initial Site Assessment Reports (Coastal Environmental Services, 1993&1994), two 20,000-gallon capacity USTs (AS-507 and AS-508-1) containing virgin JP-5, one 1,000-gallon (AS-508-2) and two 500-gallon capacity USTs (AS-546 and AS-547) containing waste JP-5 and an oil/water separator were removed from the A-B tank area in 1993 and a 1,000-gallon (AS-511-3) and two 500-gallon (AS-548 and AS-549) capacity USTs containing waste JP-5 and an oil/water separator were removed from the C-D tank area. Approximately 804 cubic yards of excavated contaminated soil generated during the UST removal activities was removed from the project site for treatment and disposal.

In response to an October 2002 JP-5 release from the fuel distribution piping beneath the A-B distribution pit, the pipeline was excavated and repaired by Shaw. An unknown quantity of potentially impacted soil was removed and transported off-site for treatment and disposal. The CATLIN A-B Tanks CSA and CAP (CATLIN, 2003 and 2004).

Approximately 30 feet of the transfer pipeline was replaced in 2003 following a release of JP-5 that occurred on May 23, 2003 adjacent to the C-D distribution pit.

Facility personnel immediately following the release performed an initial excavation of impacted soil. The quantity of soil removed during the initial response is unknown. A second excavation, conducted by Shaw in conjunction with the transfer pipeline replacement, included the removal of approximately 1,100 cubic yards of potentially impacted soil. Shaw conducted a third excavation following review of soil sampling results. Details pertaining to excavation limits and quantities of soil removed were not available. A Phase II LSA dated June 15, 2004 was conducted by CATLIN in response to the release.

Shaw removed approximately 225 cubic yards of soil from the immediate area surrounding the October 2003 JP-5 release from an eight-inch diameter pipeline located under the western most fuel station (Station 4) in the A-B tank area. Repairs to the pipeline were made subsequent to the excavation.

5.2 FREE PRODUCT

According to data presented in the Final Progress Report for the Free Product Collection System Installed at the Aircraft Rapid Refuel Station (ECS, 1994), a free product recovery system was installed at the Rapid Refueler (former A-B site) and put into service on March 7, 1994. The system consisted of six 6-inch diameter recovery wells (USTRR-MW01G through USTRR-MW06G) with an average depth of approximately 25 to 26 feet BLS. An Ejector Systems, Inc. Model S2 product only pump was installed in each recovery well. Geophex operated and maintained the product recovery system from March 1994 through August 1997. Data presented in Monthly Progress reports completed by Geophex, Ltd. indicated that approximately 3,500-gallons of product had been recovered from the site as of September 25, 1995 (Geophex, 1995). According to data compiled by Shaw in an Annual Monitoring Report (Shaw, 2004), 5,513 gallons of product were recovered by the recovery system by Geophex between June 1994 and August 1997.

System operation and maintenance responsibilities were transferred to J.A. Jones Environmental Services Company (J.A. Jones) in February 1998. J.A. Jones installed passive skimmers in wells USTRR-MW12, USTRR-MW16, USTRR-MW18, and USTRR-MW22. Between February 1998 and July 2002, approximately 100 gallons of product was recovered with the passive skimmers (Shaw, 2004). The data also suggests that the active remedial system (pumping system) was shut down in July 1998 at which time AFVR was initiated at regular intervals on wells USTRR-MW01G through USTRR-MW06G in addition to other wells with measurable amounts of free product. According to free product recovery data presented by Shaw in the 2004 Annual Monitoring Report approximately 2,260 gallons of free product was recovered by AFVR during that same time period. J.A. Jones continued implementation of the remedial system operation and maintenance through June 31, 2002 when Shaw acquired operation and maintenance responsibilities for the remedial system (Shaw, 2004).

Data presented in the Annual Monitoring Report (Shaw, 2004) indicates that two additional AFVR events were conducted in July 2002 recovering a total of 13 gallons of free product after which no additional events were completed. Free product collected from the passive skimmers installed in wells USTRR-MW12, USTRR-MW16, USTRR-MW18, and USTRR-MW22 totaled approximately 46 gallons. Data is unclear as to what recovery methods, if any, were conducted on wells USTRR-MW01G through USTRR-MW06G during the time Shaw operated and maintained the recovery system. Shaw (2004) stated in the Annual Monitoring Report that as of March 31, 2002, a total of 7,591.6 gallons of product had been recovered by the recovery efforts. Operation and maintenance responsibilities were subsequently transferred to EEI in April 2004.

EEI stated in the Annual Groundwater Monitoring Report (EEI, 2005) that free product recovery pumps were not in place in recovery wells USTRR-MW01G through USTRR-MW06G during the April 2004 – March 2005 period of the monitoring program. The exact date of pump removal is unknown at this time. Recovery methods utilized by EEI included AFVR, hand bailing, and installation of sorbent socks (EEI, 2005). The Report (EEI, 2005) further states that AFVR events were completed on wells USTRR-MW01G, USTRR-MW02G, USTRR-MW05G, USTRR-MW16, USTRR-MW18, and USTRR-MW20 resulting in approximately 150 gallons of liquid product recovery. The total cumulative fuel mass removal via AFVR for the monitoring period as calculated by EEI was 350,000 pounds.

According to data provided by Shaw, a recovery system was installed at the new A-B distribution pit area as per the recommendations made by CATLIN in the 2004 CAP. According to data provided by Shaw, recovery operations began on November 8, 2005. Four recovery events have reportedly been conducted since completion of the trench resulting in approximately 15,500 gallons of total fluids recovery. The quantity of free product recovered through the remedial efforts is unknown.

5.3 REMEDIAL SYSTEM STATUS

The recovery pumps installed in wells USTRR-MW01G through USTRR-MW06G has apparently been removed. Details of the existing remediation and treatment system are unknown. Remedial efforts conducted in the area of the Rapid Refueler, with the exception of the A-B recovery trench, are currently under the direction of Sovereign Consulting Incorporated (Sovereign). Recovery operations have been conducted at regular intervals under the direction of Shaw on the interceptor trench installed adjacent to the A-B distribution pit.

5.4 MONITORING STATUS

Groundwater gauging is typically conducted on a weekly basis (EEI, 2005) on approximately 40 monitoring wells. Due to the substantial quantity of free product and the relatively low levels of dissolved groundwater contamination, groundwater is typically not sampled and analyzed as part of the monitoring activities.

6.0 REMEDIATION EFFECTIVENESS EVALUATION

6.1 FREE PRODUCT LEVELS

During the monitoring period from April 2004 through March 2005, free product was identified and recovered where applicable from wells USTRR-MW01G, USTRR-MW02G, USTRR-MW04G, USTRR-MW05G, USTRR-MW12, USTRR-MW16, USTRR-MW17, USTRR-MW18, USTRR-MW20, USTRR-MW22, UST527-MW10, and UST527-MW12. Free product thickness data from the monitoring report (EEI, 2005) are included in Appendix C. The data indicates that the product thickness as observed during the gauging events has varied considerably. Graphs of observed product thickness over time as presented in the Monitoring Report (EEI, 2005) are included in Appendix C.

Gauging data obtained from Shaw conducted in conjunction with the September 2005 sampling event indicate that free product still exists at the project site. The estimated areal extent of free product as of September 23, 2005, the most comprehensive recent gauging event from which data was available, is present on Figure 4 and summarized on Table 3. In general, measurable thicknesses of free product were identified in the A-B fuel islands, A-B Distribution Pit, and C-D fuel islands.

6.2 CONTAMINANT CONCENTRATIONS

6.2.1 Soil

No additional soil assessments have been conducted in the areas in which exceedances of the NCDENR TPH Action Levels were reported within the 1998 CATLIN CAP.

6.2.2 Groundwater

The most recent comprehensive groundwater-sampling event was conducted by EEI on September 27 through September 29, 2005. Data supplied by EEI indicate that groundwater samples were collected from 36 monitoring wells and analyzed per MADEP VPH/EPH and EPA Methods 601, 602, and 625. Seven of the groundwater samples were identified with EPA 601, 602, and/or 625 compounds in excess of the 2L GWQS. Twelve groundwater samples, including the seven previously mentioned, contained C9-C22 Aromatics in excess of 2LGWQS. No groundwater samples were identified with compounds in excess of established Gross Contaminant Levels (GCLs). However, there are no established GCLs for C9-C22 Aromatics in addition to three of the EPA 625 compounds identified during the sampling event. Summaries of the groundwater sampling results from the EEI event are

included on Tables 4 ,5, and 6. The estimated areal extent of EPA 601/602 and EPA 625 compounds exceeding the 2L GWQS are presented on Figures 5 and 6, respectively. All groundwater samples identified with 601/602 and 625 petroleum related compounds above 2L GWQS contained dissolved Benzene and Naphthalene at levels in excess of their corresponding 2L GWQS. Therefore, Benzene and Naphthalene were used as indicator compounds to establish the plume boundaries of the estimated extent of EPA 601/602 and EPA 625 compounds above 2L GWQS, respectively.

6.3 SYSTEM SUITABILITY

6.3.1 Free-Phase Product

Based on the original design data for the free product recovery system formerly proposed in wells USTRR-MW01G through USTRR-MW06G, the installed system was inadequate to contain and recover the existing free product plume. Aggressive fluid vapor recovery efforts, as implemented, do not appear adequate in reducing the magnitude of the free product plume. The recently installed interceptor trench system in the A-B distribution pit area has just been put into service and will be evaluated over the next year as recommended in the CAP.

6.3.2 Soil

As previously stated, no additional soil assessments have been conducted in the areas in which exceedances of TPH were reported within the CAP. Therefore, the remediation system suitability in the reduction of the soil contamination cannot be determined as of preparation of this RAO & RCAP.

6.3.3 Groundwater

When compared to the contaminant levels established in the 1998 CAP (included in Appendix B), the overall number of groundwater samples with contaminant levels above 2L GWQS have been reduced in addition to the contaminant concentrations. However, contaminant concentrations above 2L GWQS were identified in the groundwater sample collected from Type III monitoring wells USTAS527-MW02 (Benzene 7.0 µg/L) and USTAS527-MW05 (Naphthalene 236 µg/L and 2-Methylnaphthalene 95.2 µg/L) during the September 2005 groundwater-sampling event conducted by EEI.

7.0 REMEDIATION MODIFICATIONS AND ALTERNATIVES

7.1 REGULATORY FRAMEWORK EVALUATION

The remedial goals for the Rapid Refueler site presented in the 1998 CATLIN CAP were based on reducing soil contamination to NCDENR Action Levels and groundwater contamination levels as specified by NCAC T15A:02L .0202. As part of the 2004 Phase II LSA completed by CATLIN, a Risk Characterization and Land Use Form was completed per the requirements established in 15A NCAC 2L.0115 that became effective on January 2, 1998. As presented in the 2004 Phase II LSA, the site meets the criteria for classification as a Low Risk and Industrial/Commercial Land Use site. However, based on the presence of free product, the Rapid Refueler site should be classified as an Intermediate Risk and Industrial/Commercial Land Use site.

7.2 REVISED CONCEPTUAL SITE MODEL

Development of the revised conceptual site model (RCSM) needs to reassess the current site conditions in addition to the ultimate goals of remedial efforts which are to protect human health and the environment. These goals include but are not limited to the following:

- Achieve regulatory compliance utilizing risk-based techniques.
- Minimize disruption of current operations while maximizing site restoration to achieve regulatory compliance.
- Maintain a reasonable schedule for compliance.
- Minimize costs while reducing long-term treatment.
- Define specific endpoints of remedial goals.

In order to achieve the goals, the following sections reassess the known site conditions and address any additional data needs to accomplish these goals in addition to making remedial recommendations.

7.2.1 Groundwater Depth and Flow Direction

During the sampling and gauging events conducted at the subject site, groundwater elevation contours for the shallow monitoring wells have historically indicated a groundwater flow trend to the north. No additional data suggests that the subsurface flow characteristics have been altered. Therefore, no change to the groundwater flow characteristics is necessary in the revised conceptual model.

7.2.2 Potential Receptors

Potential receptors have been re-evaluated during the preparation of this RAO & RCAP. No changes to the Potential Receptors are recommended.

7.2.3 Contaminants of Concern

The groundwater COCs as established in the CAP are still relevant; however, additional contaminants have been identified during the September 2005 above 2L GWQS. Therefore, the COCs have been expanded to include 2-Methylnaphthalene and Bis(2-ethylhexyl)phthalate. The updated list of COCs is as follows:

- Benzene
- Toluene
- Ethylbenzene
- Total Xylenes
- Phenanthrene
- Naphthalene
- Acenaphthylene
- Pyrene
- 2-Methylnaphthalene
- Bis(2-ethylhexyl)phthalate

7.3 ALTERNATIVE REGULATORY MECHANISMS

7.3.1 Revised Target Cleanup Goals

Soil contamination above current NCDENR Action Levels was identified within the 1998 CAP. These samples, collected during the installation of monitoring wells USTAS511-MW06 and USTRR-MW18, were not analyzed in accordance with the 2001 Guidelines. As such, additional soil sampling is recommended subsequent to the elimination of free product from both areas identified with concentrations above NCDENR Action Levels.

Additionally, based on the Intermediate Risk classification, groundwater quality must be restored to levels protective of surface water, wellhead protection areas, and aquifers that could be used for drinking water. If these requirements are met, then the RBCA Gross Contaminant Levels (GCLs) are applicable. Surface waters are not considered a risk for this site based on the historical sampling results. However, contaminant impact to the deeper groundwater zone was confirmed (Benzene 7.0 µg/L from USTAS527-MW02 and Naphthalene 236 µg/L from USTAS527-MW05) during the September 2005 groundwater-sampling event. Impact to the deeper portion of the surficial aquifer has not been previously identified at the Rapid Refueler site and may not be significant at this time. Additional sampling is recommended to monitor the status of the groundwater quality in the deeper portions of the surficial aquifer. Historical groundwater sampling results are included in Appendix B.

Based on the previous data, GCLs are considered the applicable target cleanup goal. Upon removal of the free product and the confirmation of no deep groundwater contamination, the site can be reclassified as Low Risk and become a candidate for No Further Action status.

7.3.2 Notice of Residual Petroleum

A Notice of Residual Petroleum is not required at this time for this site.

7.4 ALTERNATIVE REMEDIAL TECHNOLOGIES

According to *A Decision-Making Framework for Cleanup of Sites Impacted with Light Non-Aqueous Phase Liquids* (EPA, 2005), the free product management plan must define applicable alternatives to address free product remediation.

Hydraulic recovery methods may include product only skimmers and dual pumping systems. Hydraulic recovery methods are typically designed to recover only the liquid-phase contaminants present in the well and surrounding formation by mechanical removal under ambient pressure conditions (EPA, 2005). These systems are often designed to recover groundwater in conjunction with the pumping process to lower the water table in order to induce free product flow towards the recovery point by increasing the hydraulic gradient. Hydraulic recovery methods often work most favorably with light petroleum products in areas of permeable geologic materials.

Volatilization methods include soil vapor extraction and air sparging. These recovery methods remove free product by volatizing the liquid phase of the product then capturing the volatized gasses. Volatilization methods additionally assist in remediation by enhancing bioremediation through increased air-flow within the vadose zone. This method of recovery and remediation typically is limited to lighter low boiling point constituents.

Aggressive source-removal technologies include technologies that are designed to significantly reduce the mass of contaminants in the subsurface by treating or removing free product and highest concentrations of contaminants in the soil and groundwater (EPA, 2005). Aggressive source-removal technologies include but are not limited to: excavation, surfactant flushing, steam stripping, electrical heating, chemical oxidation, and high-vacuum, dual-phase extraction (EPA, 2005). The type of free product that may be recovered in addition to the geologic formations in which the recovery methods would be favorable are highly variable. The limiting factors for the majority of these technologies are site accessibility and cost of installation and operation.

Bioremediation includes a number of technologies that attempt to augment the natural biological activity in the subsurface to reduce the concentration of contaminants in soil and groundwater (EPA, 2005). The majority of bioremediation applications for petroleum related compounds typically include the introduction of oxygen and other nutrients, such as nitrogen and phosphorus (EPA, 2005), into the impacted areas of the subsurface. Bioremediation traditionally has not been attempted with free product.

8.0 OPTIMIZATION RECOMMENDATIONS

In addition to the recommendations presented in the following sections, CATLIN recommends that confirmation of the status of the monitoring wells that have not been located. The statuses of the monitoring wells that have not been substantiated during the site well survey or the comprehensive groundwater sampling event are as follows:

- USTAS527-MW11
- USTAS527-MW05
- USTAS527-MW09
- USTRR-MW04
- USTRR-MW08
- USTAS527-MW13
- USTAS527-MW14
- USTRR-MW01
- USTRR-MW13

Any monitoring well that is located and determined to be physically beyond repair should be properly abandoned. If monitoring wells USTAS527-MW13 and USTRR-MW08 are confirmed destroyed replacement monitoring wells should be installed in the same area to assist in free product delineation. Additionally, the unknown well identified 30 feet southeast of monitoring well USTRR-MW05 should be properly abandoned. Permanent monitoring well identification tags should be affixed to all wells located on the Rapid Refueler site reflecting the approved well nomenclature. All abandonment and monitoring well replacement activities shall be conducted by North Carolina Certified Well Drillers.

8.1 FREE-PHASE PRODUCT

Based on the magnitude of the free product plume in addition to the lithology of the shallow subsurface associated with the Rapid Refueler Site, aggressive source-removal is the recommended free product management plan.

Due to the complex nature of the infrastructure associated with the Rapid Refueler site, excavation or construction and operation of an additional free product recovery system in the immediate area of the A-B fuel stations would be impractical.

Of the listed aggressive source-removal technologies, multi-phase extraction (MPE) is the most practical application with regards to existing site conditions. Multi-phase extraction combines hydraulic recovery methods for liquid-phase removal with volatilization methods for vapor removal (RTDF, 2005). Groundwater recovery is accomplished by recovering water at or slightly below the water table through the use of a "stinger" drop pipe onto which a vacuum is applied. An air-tight fitting is located between the well casing and the stinger so that the vacuum is applied to the entire vadose zone in addition to the stinger. Liquid and vapor extraction are augmented due to the increased pressure gradient applied to the system (EPA, 1999).

As presented in *Multi-Phase Extraction: State-of-the-Practice* (EPA, 1999), the following list highlights the capabilities of MPE:

- Increase in groundwater recovery rates compared to conventional pumping practices
- Increase in radius of influence of individual recovery wells
- Recovery of shallow layer of floating, free product
- Remediation of the capillary fringe and smear zone
- Remediation of volatile, residual phase contaminants located above and below the smear zone
- Simultaneous remediation of soil and groundwater

Mobile multi-phase extraction (MMPE) utilizes mobile equipment that may be transported to the subject site and operated continuously for a period of days or months without the typical costs associated with the construction of a "permanent" remedial system. Multi-phase extraction is essentially the same technology as AFVR. However, MPE and MMPE are intended to be conducted over a length of days or months as opposed short duration (hours) that AFVRs are typically conducted.

Therefore, to optimize free product recovery efforts utilizing existing infrastructure, while minimizing intrusive activities, MMPE events are recommended on a monthly basis on monitoring wells USTRR-MW16, USTRR-MW18 through USTRR-MW20, USTRR-MW01G, USTRR-MW02G, and USTRR-MW05G located within the free product plume associated with the A-B fuel islands. Each MMPE event should be scheduled for a minimum duration of four to five days. The events should be performed concurrently on at least two wells at a time and scheduled to avoid disruptions to airfield operations. A monitoring program is recommended during the initial events to confirm optimum stinger depth, radius of influence, optimum vacuum pressure, etc., necessary for optimal free product recovery. In addition, the recovery wells should be gauged to confirm the effectiveness of the MMPE events.

As a measure to track the free product plume, the following wells are recommended to be gauged on a quarterly basis.

USTAS527-	**USTAS511-**	**USTAS497-**	**USTRR-**	
MW03	MW-01	MW-01	MW-01G	MW-12
MW-08	MW-02	MW-02	MW-02G	MW-16
MW-10	MW-03	MW-03	MW-03G	MW-18
MW-12	MW-08	MW-04	MW-04G	MW-19
MW-15	MW-10	MW-05	MW-05G	MW-20
MW-16			MW-06G	MW-21
MW-13*			MW-07	MW-22
			MW-09	MW-23
			MW-11	MW-08*

* = Equivalent replacement well.

The MMPE events should be conducted over a one-year period utilizing mobile storage tanks (frac-tanks) or tanker trailers for on-site nuisance water storage. Nuisance water may then be subsequently transported to the nearest waste-water treatment system for disposal. Costs associated with the MMPE events should be recorded for the one-year period. Composite nuisance water samples should be collected and laboratory analyzed per EPA Methods 602 and 610 or alternative methods as required for disposal.

Subsequent to the completion of MMPE for the recommended one-year period a thorough review of the data generated during the events will be necessary to determine the feasibility of continuing this remedial technique. Costs associated with utilizing mobile equipment versus constructing a permanent system should be compared. Additionally, costs associated with storage, transportation, and disposal of nuisance water should be reviewed along with analytical data pertaining to the chemical makeup of said nuisance water. Based on the results of the data review, utilization of the existing groundwater treatment system and piping systems installed during the initial phase of remediation should be considered. Nuisance water generated during the MMPE events may be routed through the treatment system then subsequently discharge into the existing oil/water separator located to the east of the A-B fuel islands. According to Base personnel, all oil/water separators located aboard the MCAS are connected to the base sanitary sewer system. An inventory of existing equipment will be necessary to determine the feasibility of utilizing the installed treatment system. If the existing system proves inadequate, modifications to the system or perhaps constructing a new system may be more cost effective than transporting the nuisance water generated during free product recovery activities. Portable nuisance water treatment systems are also available to work in conjunction with MMPE equipment.

8.2 SOIL

Soil contamination in the vicinity of monitoring wells USTAS511-MW08 and USTRR-MW18 of the project site reported within the 1998 CAP has not been re-sampled and analyzed per Risk Based Analysis. Therefore, successive to the removal of free product from the site, soil samples should be collected at these locations and analyzed per Risk Based Analysis. The recommended Risk Based analyses to be performed for each sample are as follows: EPA Method 8260 with IPE and MTBE, EPA Method 8270 plus 10 tics, MADEP VPH and EPH.

8.3 GROUNDWATER

Based on the Remedial Effectiveness Evaluation and the Revised Target Cleanup Concentrations discussed within Sections 6.2.2 and 6.3.3 of this report, no additional groundwater remediation will be necessary assuming the site is approved for Risk Based Corrective Actions. An annual groundwater sampling program is recommended as follows:

- Currently, groundwater contaminant levels are below the GCLs. Therefore, no active groundwater remedial efforts will be necessary.

- The following monitoring wells are recommended to be sampled annually per EPA Methods 602 and 610 (plus 2-methylnaphthalene) and MADEP EPH/VPH:

USTAS527-	USTAS511-	USTAS497-	USTRR-	
MW02	MW-01	MW-01	MW-01G**	MW-11
MW03	MW-02	MW-02	MW-02G**	MW-12
MW05	MW-03	MW-03	MW-03G	MW-16
MW06	MW-07	MW-04	MW-04G	MW-17
MW-08	MW-08	MW-05**	MW-05G**	MW-18**
MW-10	MW-10	MW-06	MW-06G	MW-19**
MW-12			MW-07	MW-20**
MW-15**			MW-08*	MW-21
MW-16			MW-09	MW-22
MW-13*			MW-10	MW-23

* = Equivalent replacement well.
** = If no free product present.

- Upon removal of free product, all of the shallow monitoring wells should be placed on a quarterly closeout-monitoring schedule for one year.

- The results of the sampling should be presented within an Annual Groundwater Monitoring Report. The implemented shut down activities should also be summarized in this report.

At the conclusion of this one-year time frame with concentrations below the GCLs, the following scenarios should be evaluated:

- If concentrations of contaminants of concern are below their corresponding 2L GWQS, then the monitoring wells should be evaluated for abandonment.

- If concentrations of contaminants of concern are below their corresponding GCLs, but still above 2L GWQS, then a Notice of Residual Petroleum or Land Use Restrictions will be necessary to request No Further Action.

- The results of the sampling should be presented within an Annual Groundwater Monitoring Report and Request for No Further Action.

9.0 IMPLEMENTATION

9.1 IMPLEMENTATION PLAN

The following is a suggested implementation plan for obtaining site closure:

- Submittal of RAO & RCAP to the UST Sections of NCDENR for approval of recommendations;
- Consolidate monitoring well nomenclature;
- Confirm status of monitoring wells not located during surveys;
- Install recommended monitoring wells;
- Affix permanent identification plates to all site monitoring wells;
- Implementation of the recommended quarterly gauging and annual groundwater sampling program;
- Inventory existing free product recovery and groundwater treatment system;
- conduct the recommended MMPE events at monthly intervals for a period of one year while monitoring effectiveness and costs;
- Review MMPE effectiveness and compare costs associated with recommended implementation to utilizing existing infrastructure for treatment and disposal;
- Collection and analysis of recommended soil samples following free product removal and present findings in a Soil Assessment Report;
- Preparation of the Annual Groundwater Monitoring Reports;

9.2 SCHEDULE FOR IMPLEMENTATION

Implementation of the groundwater gauging and sampling strategy and free product recovery efforts are recommended to be scheduled upon plan approval by appropriate State authorities. Collection of the soil samples for Risk Based Analysis is recommended following the removal of free product from the site. The annual sampling activities should begin at the time of the next scheduled sampling event.

10.0 LIMITATIONS

The field and groundwater data evaluated as part of this report provide isolated data points and may not represent conditions at every location in the project area. Analyses and conclusions of this report, being based on interpolation between data points at the project area, may not be completely representative of all site conditions. Conclusions and recommendations from this report are based on the best available data in an effort to comply with current regulatory requirements.

11.0 REFERENCES

Catlin Engineers and Scientists, Inc., 1998, *Leaking Underground Storage Tank Corrective Action Plan, Rapid Refueler.* April 6, 1998

Catlin Engineers and Scientists, Inc., 2003, *Comprehensive Site Assessment, Rapid Refueler A-B Tanks, Marine Corps Air Station, New River.* August 26, 2003

Catlin Engineers and Scientists, Inc., 2004, *Corrective Action Plan, Rapid Refueler A-B Tanks, Marine Corps Air Station, New River.* August 10, 2004

Coastal Environmental Services Company, 1993, *Initial Site Assessment (Site Check) Report, UST Closure By Removal: Two (2) JP-5 USTs and Associated Tanks and Piping, A-B Tank Farm Area, Aircraft Rapid Refueling Facility.* February 3, 1993

Coastal Environmental Services Company, 1994, *Initial Site Assessment (Site Check) Report, UST Closure By Removal: Three (3) JP-5 Fuel Tanks, One (1) Oil/Water Separator Tank, C-D Tank Farm Area, Aircraft Rapid Refueling Facility.* May 18, 1994

Engineering and Environment, Inc., 2005, *Annual Groundwater Monitoring Report 2004-2005, Rapid Refueler Site.* June 17, 2005

Environmental Protection Agency, 2003, *Multiphase Extraction: State-of-the-Practice.* EPA 542-R-99-004. June 1999.

Environmental Protection Agency, 2005, *A Decision-Making Framework for Cleanup of Sites Impacted with Light Non-Aqueous Phase Liquids.* EPA 542-R-04-011. March 2005

Environmental Science and Engineering, Inc., 1987, *Interim Report, Confirmation Study to Determine Existence and Possible Migration of Specific Chemicals In-Situ, Soils Investigation. MCAS, New River Rapid Refueler Area.* January 9, 1987

Geophex, Ltd., 1996, *Rapid Refueler Area New River Air Station, Product Recovery System Status, Period: March 1996.* April 4, 1996

North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section, 2000, *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater.* July 2000.

North Carolina Department of Environment and Natural Resources, Division of Waste Management, UST Section, 2001, *Guidelines for Assessment and Corrective Action.* Effective July 1, 2001.

North Carolina Department of Environment and Natural Resources, Division of Water Quality, 2002, *Title 15A Subchapter 2L-Classifications and Water Quality Standards Applicable To The Groundwaters of North Carolina.* Effective as of December 2002.

Remediation Technologies Development Forum (RTDF), 2005, *"The Basics" Understanding the Behavior of Light Non-Aqueous Phase Liquids (LNAPLs) in the Subsurface.* February 2005

Richard Catlin and Associates, Inc., 1994, *Leaking Underground Storage Tank Comprehensive Site Assessment, Rapid Refueler.* November 1, 1994

Richard Catlin and Associates, Inc., 1994, *Leaking Underground Storage Tank Comprehensive Site Assessment USTs AS-511-3, 548, 549 (Rapid Refueler Addendum Report).* June 5, 1996

Robert and Company, 1991, *Basis of Design, Aircraft Rapid Refuel Station, Final Submittal Calculations.* February 12, 1991

Shaw Environmental, Inc., 2004, *Annual Groundwater Monitoring Report.* January 2004

Soil and Material Engineering, Inc. 1983, *Leaked Fuel Inventory, Direct Fueling Pipeline, Marine Corps Naval Air Station.* December 7, 1983

Soil and Material Engineering, Inc. 1983, *JP-5 Fuel Line Investigation.* 1983

TABLES

TABLE 1

MONITORING WELL IDENTIFICATION SUMMARY

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

PROPOSED WELL ID.	WELL ID. PER SURVEY [1]	WELL TYPE	SURVEYED TOC [2]	SURVEYED NORTHING [3]	SURVEYED EASTING [3]
USTAS497-MW01	USTAS497-MW01	TYPE II	17.76	3843783.27	276279.23
USTAS497-MW02	USTAS497-MW02	TYPE II	20.25	3843789.33	276238.47
USTAS497-MW03	USTAS497-MW03	TYPE II	18.13	3843828.81	276232.68
USTAS497-MW04	USTAS497-MW04	TYPE II	17.84	3843841.75	276244.75
USTAS497-MW05	USTAS497-MW05	TYPE II	16.69	3843834.69	276282.98
USTAS497-MW06	USTAS497-MW06	TYPE III	18.13	3843817.78	276267.75
USTAS511-MW01	USTAS511-MW01	TYPE II	20.74	3843760.29	276093.38
USTAS511-MW02	USTAS511-MW02	TYPE II	20.96	3843735.68	276059.79
USTAS511-MW03	USTAS511-MW03	TYPE II	21.53	3843694.79	275998.51
USTAS511-MW04	USTAS511-MW04	TYPE II	21.74	3843603.81	275983.79
USTAS511-MW05	USTAS511-MW05	TYPE III	21.01	3843761.51	276092.58
USTAS511-MW06	USTAS511-MW06	TYPE III	20.83	3843734.29	276060.77
USTAS511-MW07	USTAS511-MW07	TYPE III	21.43	3843696.35	275997.84
USTAS511-MW08	USTAS511-MW08	TYPE II	21.57	3843634.56	275951.88
USTAS527-MW01	NOT LOCATED	UNKNOWN	-	-	-
USTAS527-MW02	USTAS527-DW02	TYPE III	21.22	3843743.58	275926.91
USTAS527-MW03	USTAS522-MW03	TYPE II	21.68	3843754.36	275926.04
USTAS527-MW04	USTAS522-MW04	TYPE II	22.69	3843756.14	275871.71
USTAS527-MW05	USTAS527-DW05	TYPE III	21.63	3843699.40	275971.48
USTAS527-MW06	USTAS527-DW06	TYPE III	20.11	3843623.35	276193.09
USTAS527-MW07	NOT LOCATED	UNKNOWN	-	-	-
USTAS527-MW08	USTAS522-MW08	TYPE II	22.30	3843704.24	275974.90
USTAS527-MW09	NOT LOCATED	TYPE II	-		
USTAS527-MW10	USTAS522-MW10	TYPE II	21.46	3843788.29	276055.94
USTAS527-MW11	NOT LOCATED	TYPE II	-		
USTAS527-MW12	USTAS522-MW12	TYPE II	21.25	3843737.45	275993.09
USTAS527-MW13	NOT LOCATED	TYPE II	-	-	-
USTAS527-MW14	NOT LOCATED	TYPE II	-	-	-
USTAS527-MW15	USTAS512-MW15	TYPE II	21.61	3843720.54	275969.61
USTAS527-MW16	USTAS512-MW16	TYPE II	19.94	3843720.10	276006.85
USTRR-MW01	NOT LOCATED	TYPE II	-	-	-
USTRR-MW02	USTRR-MW02	TYPE II	13.92	3843809.36	276400.60
USTRR-MW03	USTRR-MW03	TYPE II	13.73	3843835.34	276384.63
USTRR-MW04	NOT LOCATED	TYPE II	-	-	-
USTRR-MW05	USTRR-MW05	TYPE II	17.49	3843943.68	276267.83
USTRR-MW06	USTRR-MW06	TYPE II	15.22	3844011.75	276150.31
USTRR-MW07	USTRR-MW07	TYPE II	17.29	3843999.04	276191.28
USTRR-MW08	NOT LOCATED	TYPE II	-	-	-

TABLE 1

MONITORING WELL IDENTIFICATION SUMMARY

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

PROPOSED WELL ID.	WELL ID. PER SURVEY [1]	WELL TYPE	SURVEYED TOC [2]	SURVEYED NORTHING [3]	SURVEYED EASTING [3]
USTRR-MW09	USTRR-MW09	TYPE II	20.67	3843902.11	276078.81
USTRR-MW10	USTRR-MW10	TYPE II	17.11	3843951.36	276234.86
USTRR-MW11	USTRR-MW11	TYPE II	16.24	3843874.27	276282.02
USTRR-MW12	USTRR-MW12	TYPE II	16.50	3843822.21	276274.94
USTRR-MW13	NOT LOCATED	TYPE III	-	-	-
USTRR-MW14	USTRR-MW14	TYPE III	16.33	3843873.28	276280.81
USTRR-MW15	USTRR-MW15	PUMPING	16.34	3843872.72	276282.42
USTRR-MW16	USTRR-MW16	TYPE II	19.76	3843937.84	276131.99
USTRR-MW17	USTRR-MW17	TYPE II	16.50	3843803.09	276252.30
USTRR-MW18	USTRR-MW18	TYPE II	20.65	3843866.77	276133.17
USTRR-MW19	MW-16	TYPE II	20.69	-	-
USTRR-MW20	USTRR-MW20	TYPE II	21.31	3843837.60	276105.12
USTRR-MW21	USTRR-MW21	TYPE II	20.63	3843806.78	276132.46
USTRR-MW22	USTRR-MW22	TYPE II	20.98	3843772.26	276018.75
USTRR-MW23	USTRR-MW23	TYPE II	19.31	3843836.29	276162.35
USTRR-MW01G	USTRR-MW01G	RECOVERY	17.99	3843902.40	276154.55
USTRR-MW02G	USTRR-MW02G	RECOVERY	17.42	3843929.91	276183.15
USTRR-MW03G	USTRR-MW03G	RECOVERY	17.17	3843965.60	276222.85
USTRR-MW04G	USTRR-MW04G	RECOVERY	17.67	3843909.76	276199.29
USTRR-MW05G	USTRR-MW05G	RECOVERY	19.04	3843882.54	276174.21
USTRR-MW06G	USTRR-MW06G	RECOVERY	17.86	3843889.31	276220.36

Notes:

1 = Based of previous maps and survey data provided by Sovereign Consulting, Inc.

2 = Top of casing elevation in feet MSL - Elevation Datum NAVD88

3 = Coordinates in UTM Zone 18N NAD 83 (Meters)

TABLE 2

MONITORING WELL CONSTRUCTION DATA

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

WELL IDENTIFICATION	DATE INSTALLED	TOTAL DEPTH (Ft BLS)	CASING DEPTH (Ft BLS)	SCREEN INTERVAL (Ft BLS)	TOP OF CASING ELEV. (ft. MSL)	OUTER CASING DEPTH (Ft BLS) (Type III)	THIRD CASING DEPTH (Ft BLS) (Triple Cased Type III)
USTAS497-MW01	06/09/03	14.0	2.5	2.5 - 12.5	17.76		
USTAS497-MW02	06/09/03	14.5	4.0	4.0 - 14.0	20.25		
USTAS497-MW03	06/09/03	14.0	3.5	3.5 - 13.5	18.13		
USTAS497-MW04	06/09/03	14.0	3.5	3.5 - 13.5	17.84		
USTAS497-MW05	06/09/03	14.0	3.5	3.5 - 13.5	16.69		
USTAS497-MW06	06/13/03	50.0	44.5	44.5 - 49.5	18.13	39.0	
USTAS511-MW01	02/06/95	14.0	3.5	3.5 - 13.5	20.74		
USTAS511-MW02	02/09/95	15.0	4.5	4.5 - 14.5	20.96		
USTAS511-MW03	02/21/95	15.0	4.5	4.5 - 14.5	21.53		
USTAS511-MW04	03/06/95	13.5	3.0	3.0 - 13.0	21.74		
USTAS511-MW05	02/09/95	49.5	44.0	44.0 - 49.0	21.01	40.0	
USTAS511-MW06	03/06/95	49.0	43.5	43.5 - 48.5	20.83	40.0	
USTAS511-MW07	03/09/95	49.5	44.0	44.0 - 49.0	21.43	40.0	
USTAS511-MW08	03/08/95	14.5	4.0	4.0 - 14.0	21.57		
USTAS527-MW02	ND	29.0	ND	ND	21.22		
USTAS527-MW03	ND	15.5	5.0	5.0 - 15.0	21.68		
USTAS527-MW04	ND	14.5	ND	ND	22.69		
USTAS527-MW05	ND	ND	ND	ND	21.63		
USTAS527-MW06	ND	46.8	ND	ND	20.11		
USTAS527-MW08	ND	15.9	3.4	3.4 - 15.4	22.30		
USTAS527-MW09	ND	ND	ND	ND	NL		
USTAS527-MW10	ND	14.0	3.5	3.5 - 14.5	21.46		
USTAS527-MW11	ND	ND	ND	ND	NL		
USTAS527-MW12	ND	13.9	3.4	3.4 - 13.4	21.25		
USTAS527-MW13	ND	ND	ND	ND	NL		
USTAS527-MW14	ND	ND	ND	ND	NL		
USTAS527-MW15	01/10/03	12.0	2.0	2.0 - 11.5	21.61		
USTAS527-MW16	01/10/03	12.0	2.0	2.0 - 11.5	19.94		
USTRR-MW01	05/23/94	15.0	4.5	4.5 - 14.5	NL		
USTRR-MW02	05/23/94	14.0	3.5	3.5 - 13.5	13.92		
USTRR-MW03	05/25/94	14.0	3.5	3.5 - 13.5	13.73		
USTRR-MW04	05/24/94	15.0	4.5	4.5 - 14.5	NL		
USTRR-MW05	05/26/94	14.5	4.0	4.0 - 14.0	17.49		
USTRR-MW06	05/25/94	13.5	3.0	3.0 - 13.0	15.22		
USTRR-MW07	05/25/94	15.0	4.5	4.5 - 14.5	17.29		
USTRR-MW08	05/26/94	15.0	4.5	4.5 - 14.5	NL		
USTRR-MW09	05/23/94	15.0	4.5	4.5 - 14.5	20.67		

TABLE 2

MONITORING WELL CONSTRUCTION DATA

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

WELL IDENTIFICATION	DATE INSTALLED	TOTAL DEPTH (Ft BLS)	CASING DEPTH (Ft BLS)	SCREEN INTERVAL (Ft BLS)	TOP OF CASING ELEV. (ft. MSL)	OUTER CASING DEPTH (Ft BLS) (Type III)	THIRD CASING DEPTH (Ft BLS) (Triple Cased Type III)
USTRR-MW10	05/22/94	15.0	4.5	4.5 - 14.5	17.11		
USTRR-MW11	05/26/94	15.0	4.5	4.5 - 14.5	16.24		
USTRR-MW12	05/26/94	15.0	4.5	4.5 - 14.5	16.50		
USTRR-MW13	09/02/94	50.0	44.5	44.5 - 49.5	NL	40.5	
USTRR-MW14	06/02/94	48.0	42.5	42.5 - 47.5	16.33	39.5	
USTRR-MW15	06/07/03	31.0	3.0	3.0 - 30.5	16.34		
USTRR-MW16	09/13/97	14.1	3.6	3.6 - 13.6	19.76		
USTRR-MW17	ND	10.0	4.5	4.5 - 9.5	16.50		
USTRR-MW18	09/13/97	14.5	4.0	4.0 - 14.0	20.65		
USTRR-MW19	01/09/04	14.0	3.5	3.5 - 13.5	20.69		
USTRR-MW20	03/11/04	15.0	4.5	4.5 - 14.5	21.31		
USTRR-MW21	03/11/04	14.0	3.5	3.5 - 13.5	20.63		
USTRR-MW22	09/13/97	14.5	4.0	4.0 - 14.0	20.98		
USTRR-MW23	03/11/04	14.0	3.5	3.5 - 13.5	19.31		
USTRR-MW01G	ND	16.9	ND	ND	17.99		
USTRR-MW02G	ND	24.3	ND	ND	17.42		
USTRR-MW03G	ND	21.6	ND	ND	17.17		
USTRR-MW04G	ND	20.5	ND	ND	17.67		
USTRR-MW05G	ND	23.0	ND	ND	19.04		
USTRR-MW06G	ND	21.9	ND	ND	17.86		

ND = NO DATA

NL = NOT LOCATED DURING SURVEY. STATUS UNKNOWN

TABLE 3

GROUNDWATER GAUGING DATA
SEPTEMBER 23, 2005

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

Proposed Well ID.	Recorded Well ID	Well Diameter	Top of Casing	Depth to Water (1)	Depth to Product	Free Product Thickness (2)	Groundwater Elevation (3)
USTAS497-MW01	AS497-MW01	2	17.76	5.80	0	NMT	11.96
USTAS497-MW02	AS497-MW02	2	20.25	7.81	0	NMT	12.44
USTAS497-MW03	AS497-MW03	2	18.13	6.27	0	NMT	11.86
USTAS497-MW04	AS497-MW04	2	17.84	6.30	0	NMT	11.54
USTAS497-MW05	AS497-MW05	2	16.69	8.03	5.31	2.72	10.89
USTAS497-MW06	AS497-MW06	2	18.13	6.68	0	NMT	11.45
USTAS511-MW01	AS511-1	2	20.74	6.75	0	NMT	13.99
USTAS511-MW02	AS511-2	2	20.96	6.83	0	NMT	14.13
USTAS511-MW03	AS511-3	2	21.53	7.55	0	NMT	13.98
USTAS511-MW04	AS511-4	2	21.74	6.52	0	NMT	15.22
USTAS511-MW05	AS511-5	2	21.01	7.41	0	NMT	13.60
USTAS511-MW06	AS511-6	2	20.83	7.32	0	NMT	13.51
USTAS511-MW07	AS511-7	2	21.43	7.85	0	NMT	13.58
USTAS511-MW08	AS511-8	2	21.57	7.06	0	NMT	14.51
USTAS527-MW02	DW-2	2	21.22	9.11	0	NMT	12.11
USTAS527-MW03	MW-3	2	21.68	3.39	0	NMT	18.29
USTAS527-MW04	MW-4	2	22.69	10.56	0	NMT	12.13
USTAS527-MW05	DW-5	Not Located					
USTAS527-MW06	DW-6	2	20.11	5.15	0	NMT	14.96
USTAS527-MW08	MW-8	2	22.3	8.42	0	NMT	13.88
USTAS527-MW09	MW-9	Not Located					
USTAS527-MW10	MW-10	2	21.46	8.32	0	NMT	13.14
USTAS527-MW11	MW-11	Not Located					
USTAS527-MW12	MW-12	2	21.25	7.86	0	NMT	13.39
USTAS527-MW13	MW-13	Not Located					
USTAS527-MW14	MW-14	Not Located					
USTAS527-MW15	AS512-MW15	2	21.61	9.98	8.35	1.63	12.97
USTAS527-MW16	AS512-MW16	2	19.94	6.32	0	NMT	13.62
USTRR-MW01	RR-1	Not Located					
USTRR-MW02	RR-2	2	13.92	4.98	0	NMT	8.94
USTRR-MW03	RR-3	2	13.73	5.32	0	NMT	8.41
USTRR-MW04	RR-4	Not Located					
USTRR-MW05	RR-5	2	17.49	6.89	0	NMT	10.6
USTRR-MW06	RR-6	2	15.22	4.17	0	NMT	11.1
USTRR-MW07	RR-7	2	17.29	6.57	0	NMT	10.7
USTRR-MW08	RR-8	Not Located					
USTRR-MW09	RR-9	2	20.67	8.30	0	NMT	12.37
USTRR-MW10	RR-10	2	17.11	6.50	0	NMT	10.61
USTRR-MW11	RR-11	2	16.24	6.37	0	NMT	9.87

TABLE 3

GROUNDWATER GAUGING DATA
SEPTEMBER 23, 2005

RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

Proposed Well ID.	Recorded Well ID	Well Diameter	Top of Casing	Depth to Water (1)	Depth to Product	Free Product Thickness (2)	Groundwater Elevation (3)
USTRR-MW12	RR-12	2	16.5	4.71	3.98	0.73	12.39
USTRR-MW13	RR-13	Not Located					
USTRR-MW14	RR-14	2	16.33	5.98	0	NMT	10.35
USTRR-MW15	RR-15	6	16.34	6.41	0	NMT	9.93
USTRR-MW16	RR-16	4	19.76	8.34	8.21	0.13	11.53
USTRR-MW17	RR-17	2	16.5	2.09	0	NMT	14.41
USTRR-MW18	RR-18	4	20.65	11.01	8.05	2.96	12.07
USTRR-MW19	AS512-MW1G	2	20.69	12.17	6.50	5.67	13.17
USTRR-MW20	RR-20	2	21.31	9.72	8.50	1.22	12.59
USTRR-MW21	RR-21	2	20.63	4.10	0	NMT	16.53
USTRR-MW22	RR-22	4	20.98	7.00	SHEEN	NMT	13.98
USTRR-MW23	AS512-RR23	2	19.31	6.91	0	NMT	12.4
USTRR-MW01G	RR1G	6	17.99	8.15	5.84	2.31	11.73
USTRR-MW02G	RR2G	6	17.42	4.02	3.8	0.22	13.58
USTRR-MW03G	RR-3G	6	17.17	6.56	0	NMT	10.61
USTRR-MW04G	RR-4G	6	17.67	3.72	SHEEN	NMT	13.95
USTRR-MW05G	RR-5G	6	19.04	6.72	6.68	0.04	12.35
USTRR-MW06G	RR-6G	6	17.86	6.72	0	NMT	11.14

(1) Gauging data obtained from Shaw Environmental, Inc.

(2) NMT = No Measurable Thickness

(3) If free product is present in a well, ground water elevation was calculated by: [Top of Casing Elevation - Depth to Water] + [Free Product Thickness x 0.82]

TABLE 4 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Methods 601 and 602

Well ID	Contaminant of Concern → / Sample ID	Date Collected	Benzene	1,2-Dichlorobenzene	Ethylbenzene	Methyl-tert-butyl ether	Toluene	Xylenes (Total)	All Other 601and 602 Analytes
2L GWQS (µg/L)			1	620	29	200	1,000	530	Varies
GCL (µg/L)			5,000	72,500	29,000	200,000	257,500	87,500	Varies
USTAS497-MW01	USTAS497-MW01	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS497-MW02	USTAS497-MW02	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS497-MW03	USTAS497-MW03	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS497-MW04	USTAS497-MW04	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS497-MW06	USTAS497-MW06	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW01	USTAS511-MW1	9/29/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW02	USTAS511-MW2	9/29/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW03	USTAS511-MW03	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW04	USTAS511-MW04	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW05	USTAS511-MW5	9/29/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW06	USTAS511-MW06	9/29/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW07	USTAS511-MW07	9/27/2005	<1.0	**0.54 J**	<1.0	<1.0	<1.0	<3.0	BQL
USTAS511-MW08	USTAS511-MW08	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS527-MW02	USTAS527-DW2	9/29/2005	**7.0**	<42	**61.2**	<1.0	**0.75 J**	**41.2**	BQL
USTAS527-MW03	USTAS522-MW3	9/29/2005	<1.0	<1.0	<1.0	<1.0	**1.1**	<3.0	BQL
USTAS527-MW04	USTAS522-MW4	9/29/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL

TABLE 4 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Methods 601 and 602

Well ID	Contaminant of Concern → / Sample ID	Date Collected	Benzene	1,2-Dichlorobenzene	Ethylbenzene	Methyl-tert-butyl ether	Toluene	Xylenes (Total)	All Other 601and 602 Analytes
2L GWQS (µg/L)			1	620	29	200	1,000	530	Varies
GCL (µg/L)			5,000	72,500	29,000	200,000	257,500	87,500	Varies
USTAS527-MW05	UST527-DW05	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS527-MW06	USTAS527-DW06	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTAS527-MW08	USTAS522-MW08	9/27/2005	**13.8**	**40**	**59.4**	<1.0	**42.1**	**262 E**	BQL
USTAS527-MW10	USTAS522-MW10	9/29/2005	<1.0	<30	**3.7**	<1.0	<1.0	**3.1**	BQL
USTAS527-MW12	USTAS522-MW12	9/27/2005	**2.4**	<1.0	**6.9**	**1.1**	<1.0	**7.1**	BQL
USTAS527-MW16	USTAS512-MW16	9/27/2005	<1.0	<10	**0.94 J**	<1.0	<1.0	**3.9**	BQL
USTRR-MW02	USTRR-MW02	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW03	USTRR-MW03	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW05	USTRR-MW05	9/28/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW06	USTRR-MW06	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW07	USTRR-MW07	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW09	USTRR-MW09	9/28/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW10	USTRR-MW10	9/28/2005	**18.8**	<35	**78.1**	<1.0	**0.86 J**	**16.3**	BQL
USTRR-MW11	USTRR-MW11	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW14	USTRR-MW14	9/28/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW15	USTRR-MW15	9/27/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL

TABLE 4 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Methods 601 and 602

Well ID	Contaminant of Concern → Sample ID	Date Collected	Benzene	1,2-Dichlorobenzene	Ethylbenzene	Methyl-tert-butyl ether	Toluene	Xylenes (Total)	All Other 601and 602 Analytes
2L GWQS (µg/L)			1	620	29	200	1,000	530	Varies
GCL (µg/L)			5,000	72,500	29,000	200,000	257,500	87,500	Varies
USTRR-MW17	USTRR-MW17	9/28/2005	**3.7**	<25	**29.4**	**4.1**	<1.0	**5.3**	BQL
USTRR-MW21	USTRR-MW21	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW22	USTRR-MW22	9/29/2005	**3.4**	<36	**16.4**	<1.0	<1.0	**28.5**	BQL
USTRR-MW23	USTRR-MW23	9/28/2005	<1.0	<15	**10.7**	<1.0	<1.0	**2.0 J**	BQL
USTRR-MW03-G	USTRR-MW03G	9/28/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW04-G	USTRR-MW04G	9/29/2005	<1.0	<2.0	<1.0	<1.0	<1.0	<3.0	BQL
USTRR-MW06-G	USTRR-MW06G	9/29/2005	<1.0	<1.0	<1.0	<1.0	<1.0	<3.0	BQL

All data by Shaw Environmental, Inc.

All results in µg/L

BQL = Below Quantitation Limit

J = Estimated concentration, below calibration range and above method detection limit.

E = Estimated concentration, exceeds calibration range.

Shaded values indicate concentrations in excess of applicable 2L GWQS.

TABLE 5 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Method 625

Well ID	Contaminant of Concern → / Sample ID	Date Collected	2,4-Dimethylphenol	3&4-Methylphenol	2,6-Dinitrotoluene	Dibenzofuran	Diethyl phthalate	Bis(2-ethylhexyl)phthalate	2-Methylnaphthalene	Naphthalene	All Other 625 Analytes
2L GWQS GCL			140 140,000	NE NE	NE NE	28 2,800	NE NE	3 3,000	28 12,500	21 15,500	Varies Varies
USTAS497-MW01	USTAS497-MW01	9/28/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTAS497-MW02	USTAS497-MW02	9/28/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS497-MW03	USTAS497-MW03	9/28/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTAS497-MW04	USTAS497-MW04	9/28/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTAS497-MW06	USTAS497-MW06	9/27/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTAS511-MW01	USTAS511-MW1	9/29/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS511-MW02	USTAS511-MW2	9/29/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS511-MW03	USTAS511-MW03	9/27/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTAS511-MW04	USTAS511-MW04	9/27/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS511-MW05	USTAS511-MW5	9/29/2005	<4.8	<4.8	<4.8	<4.8	<4.8	**14.1**	<4.8	<4.8	BQL
USTAS511-MW06	USTAS511-MW06	9/29/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTAS511-MW07	USTAS511-MW07	9/27/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTAS511-MW08	USTAS511-MW08	9/27/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS527-MW02	USTAS527-DW2	9/29/2005	<5.0	<5.0	<4.9	<4.9	<4.9	<4.9	**6.8**	**8.6**	BQL
USTAS527-MW03	USTAS522-MW3	9/29/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTAS527-MW04	USTAS522-MW4	9/29/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1.0 J**	BQL

TABLE 5 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Method 625

Well ID	Contaminant of Concern → / Sample ID	Date Collected	2,4-Dimethylphenol	3&4-Methylphenol	2,6-Dinitrotoluene	Dibenzofuran	Diethyl phthalate	Bis(2-ethylhexyl)phthalate	2-Methylnaphthalene	Naphthalene	All Other 625 Analytes
2L GWQS			140	NE	NE	28	NE	3	28	21	Varies
GCL			140,000	NE	NE	2,800	NE	3,000	12,500	15,500	Varies
USTAS527-MW05	UST527-DW05	9/27/2005	<5.0	<5.0	<4.8	<4.8	<4.8	<4.8	**95.2**	**236**	BQL
USTAS527-MW06	USTAS527-DW06	9/27/2005	<5.0	<5.0	**3.4 J**	<4.9	<4.9	<4.9	**13.3**	**20.8**	BQL
USTAS527-MW08	USTAS522-MW08	9/27/2005	**2.7 J**	<4.8	<4.9	<4.9	<4.9	<4.9	**65.6**	**116**	BQL
USTAS527-MW10	USTAS522-MW10	9/29/2005	<4.9	**4.3 J**	<20	<5.0	<5.0	<5.0	**69.5**	**203**	BQL
USTAS527-MW12	USTAS522-MW12	9/27/2005	<4.9	<4.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTAS527-MW16	USTAS512-MW16	9/27/2005	<4.9	<4.9	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTRR-MW02	USTRR-MW02	9/28/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTRR-MW03	USTRR-MW03	9/28/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTRR-MW05	USTRR-MW05	9/28/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1.0 J**	BQL
USTRR-MW06	USTRR-MW06	9/28/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTRR-MW07	USTRR-MW07	9/28/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTRR-MW09	USTRR-MW09	9/28/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	**1.4 J**	BQL
USTRR-MW10	USTRR-MW10	9/28/2005	**8.2**	<5.0	<5.0	**2.0 J**	<5.0	<5.0	**108**	**257**	BQL
USTRR-MW11	USTRR-MW11	9/27/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL
USTRR-MW14	USTRR-MW14	9/28/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTRR-MW15	USTRR-MW15	9/27/2005	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	BQL

TABLE 5 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Rapid Refueler - 5668, 21273, 32004, 23691 Facility ID#: N/A

Analytical Method: EPA Method 625

Well ID	Contaminant of Concern → / Sample ID	Date Collected	2,4-Dimethylphenol	3&4-Methylphenol	2,6-Dinitrotoluene	Dibenzofuran	Diethyl phthalate	Bis(2-ethylhexyl)phthalate	2-Methylnaphthalene	Naphthalene	All Other 625 Analytes
2L GWQS			140	NE	NE	28	NE	3	28	21	Varies
GCL			140,000	NE	NE	2,800	NE	3,000	12,500	15,500	Varies
USTRR-MW17	USTRR-MW17	9/28/2005	**11.4**	<5.0	<5.0	<5.0	<5.0	**19.9**	**23**	**52.8**	BQL
USTRR-MW21	USTRR-MW21	9/28/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	BQL
USTRR-MW22	USTRR-MW22	9/29/2005	**2.4 J**	**3.3 J**	<4.8	**1.1 J**	<4.8	<4.8	**33.5**	**47.9**	BQL
USTRR-MW23	USTRR-MW23	9/28/2005	<4.9	<4.9	<4.9	**1.4 J**	<4.9	<4.9	**41.8**	**66.6**	BQL
USTRR-MW03-G	USTRR-MW03G	9/28/2005	<5.0	<5.0	<5.0	<5.0	**2.1 J**	**103**	<5.0	<5.0	BQL
USTRR-MW04-G	USTRR-MW04G	9/29/2005	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	BQL
USTRR-MW06-G	USTRR-MW06G	9/29/2005	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	<4.8	**2.7 J**	BQL

All data by Shaw Environmental, Inc.

All results in µg/L

BQL = Below Quantitation Limit

NE = None Established

J = Estimated concentration, below calibration range and above method detection limit.

E = Estimated concentration, exceeds calibration range.

Shaded values indicate concentrations in excess of applicable 2L GWQS.

TABLE 6 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Facility ID#: N/A

Rapid Refueler - 5668, 21273, 32004, 23691

Method: MADEP Method EPH/VPH

Well ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics*	C19-C36 Aliphatics	C9-C22 Aromatics*
	Sample ID	Date Collected				
2L GWQS (µg/L) GCL (µg/L)			420 NE	4,200 NE	42,000 NE	210 NE
USTAS497-MW01	USTAS497-MW1	9/27/2005	<100	<260	<200	<170
USTAS497-MW02	USTAS497-MW2	9/27/2005	<100	<250	<190	<160
USTAS497-MW03	USTAS497-MW3	9/27/2005	<100	<260	<200	<170
USTAS497-MW04	USTAS497-MW4	9/27/2005	<100	<260	<200	<170
USTAS497-MW06	USTAS497-MW6	9/27/2005	63.6 J	<230	<200	<160
USTAS511-MW01	USTAS511-MW1	9/29/2005	<100	<250	<190	<204 J
USTAS511-MW02	USTAS511-MW2	9/29/2005	<50	<220	<190	<172 J
USTAS511-MW03	USTAS511-MW3	9/27/2005	<50	<230	<200	<160
USTAS511-MW04	USTAS511-MW4	9/27/2005	<50	<230	<200	<160
USTAS511-MW05	USTAS511-MW5	9/29/2005	<50	<220	<190	<160
USTAS511-MW06	USTAS511-MW6	9/29/2005	<50	<220	<190	<160
USTAS511-MW07	USTAS511-MW7	9/27/2005	<50	<230	<200	<160.5 J
USTAS511-MW08	USTAS511-MW8	9/27/2005	<50	<230	<200	<160
USTAS527-MW02	USTAS527-DW2	9/29/2005	72.5 J	1,535	<190	1,721
USTAS527-MW03	USTAS522-MW3	9/29/2005	<50	<230	<200	<160
USTAS527-MW04	USTAS522-MW4	9/29/2005	<50	<230	<200	184.9 J
USTAS527-MW05	USTAS527-DW5	9/27/2005	<50	402.4 J	<200	<169.4 J
USTAS527-MW06	USTAS527-DW06	9/27/2005	<50	<240	<210	<170
USTAS527-MW08	USTAS522-MW8	9/27/2005	123	2,816	<200	2,740
USTAS527-MW10	USTAS522-MW10	9/29/2005	64.1 J	853	<200	1,041
USTAS527-MW12	USTAS522-MW12	9/27/2005	<50	1,488	<200	1,796 E
USTAS527-MW16	USTAS512-MW16	9/27/2005	<50	<419	<200	433
USTRR-MW02	USTRR-MW02	9/27/2005	<50	<230	<200	<160
USTRR-MW03	USTRR-MW03	9/27/2005	<50	<230	<200	<160
USTRR-MW05	USTRR-MW05	9/27/2005	<50	<230	<200	<160
USTRR-MW06	USTRR-MW06	9/28/2005	<100	<260	<200	<170
USTRR-MW07	USTRR-MW07	9/28/2005	<50	<220	<190	<160
USTRR-MW09	USTRR-MW09	9/28/2005	<100	<260	<200	<170
USTRR-MW10	USTRR-MW10	9/28/2005	133 J	1,168	<190	1,938
USTRR-MW11	USTRR-MW11	9/27/2005	<50	<230	<200	<162.9 J

TABLE 6 SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: September 2005 Incident Number and Name: Facility ID#: N/A

Rapid Refueler - 5668, 21273, 32004, 23691

Method: MADEP Method EPH/VPH

Well ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics*	C19-C36 Aliphatics	C9-C22 Aromatics*
	Sample ID	Date Collected				
	2L GWQS (µg/L) GCL (µg/L)		420 NE	4,200 NE	42,000 NE	210 NE
USTRR-MW14	USTRR-MW14	9/27/2005	<100	<260	<200	<176 J
USTRR-MW15	USTRR-MW15	9/27/2005	<50	<220	<190	<150
USTRR-MW17	USTRR-MW17	9/27/2005	69.4 J	<1,154	<200	1,146
USTRR-MW21	USTRR-MW21	9/28/2005	<100	<260	<200	<170
USTRR-MW22	USTRR-MW22	9/29/2005	<250	2,012	<190	1,546
USTRR-MW23	USTRR-MW23	9/28/2005	<100	661	<200	1,006
USTRR-MW03G	USTRR-MW03G	9/28/2005	<100	<623	229	<635
USTRR-MW04G	USTRR-MW04G	9/29/2005	<100	1,923	<200	551
USTRR-MW06G	USTRR-MW06G	9/29/2005	<50	<230	<200	<165.2 J

All data collected by Shaw Environmental, Inc.

All results in µg/L

NE = None Established

NA = Not Analyzed

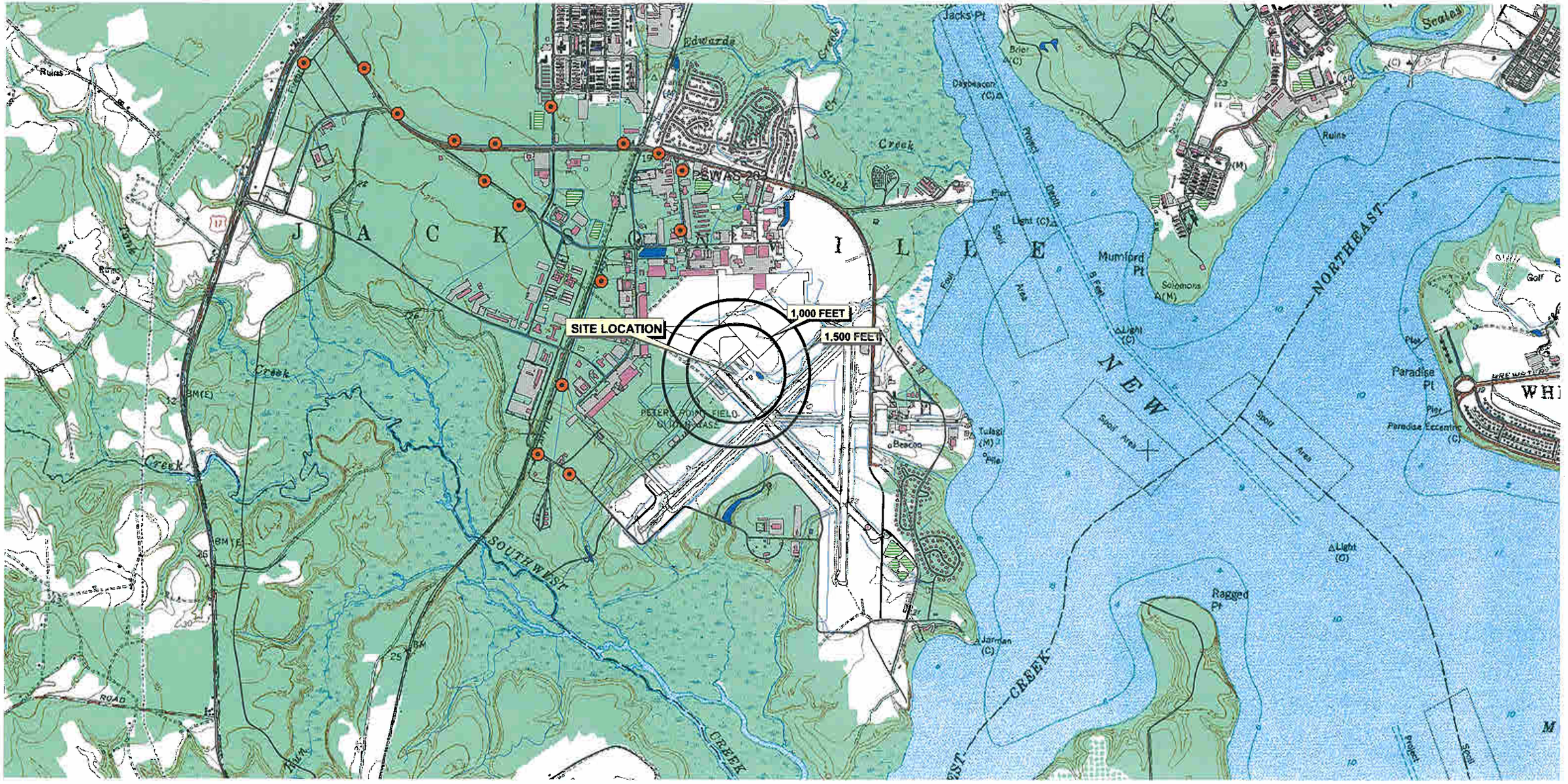
J = Estimated concentration, below calibration range and above method detection limit.

E = Estimated concentration, exceeds calibration range.

Shaded values indicate concentrations in excess of 2L GWQS.

* = The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction, when present.

FIGURES



LEGEND

- WATER SUPPLY WELL
- PLAYGROUND
- ATHLETIC FIELD
- ATHLETIC COURT
- CREEK/STREAM
- DITCH
- SURFACE WATER BODY
- EXISTING BUILDINGS
- FENCE
- PAVEMENT
- PARKING LOT
- AIRFIELD
- SLABS

N

0.5 0 0.5 1 Kilometers

1000 0 1000 2000 3000 4000 5000 Feet

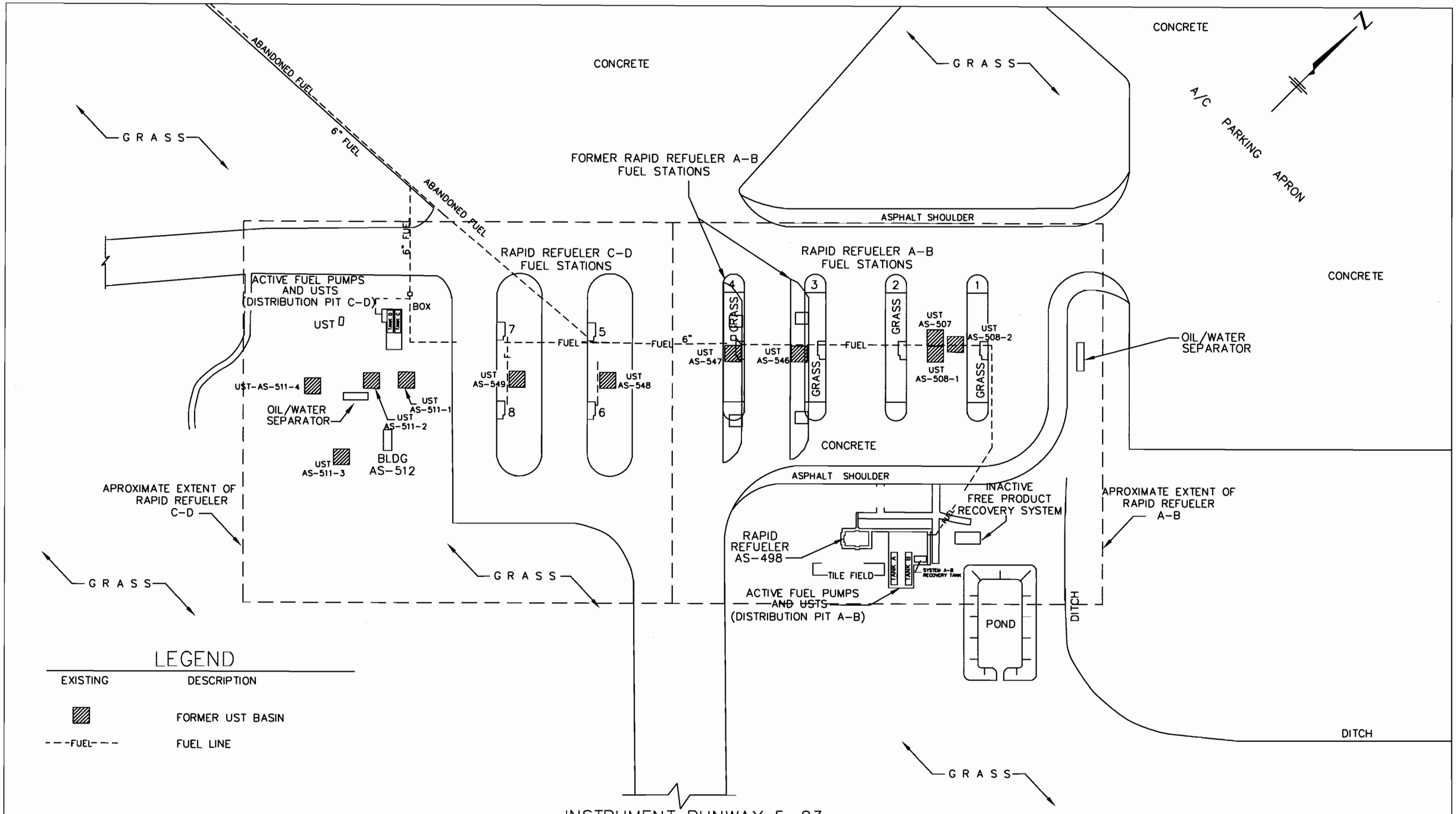
0.5 0 0.5 1 Miles

JACKSONVILLE SOUTH, N.C.
NW/4 NEW RIVER 15' QUADRANGLE
N 3437.5 - W 7722.5 / 7.5
1952
PHOTOREVISED 1971

CATLIN ENGINEERS and SCIENTISTS

PROJECT:	TITLE:	FIGURE
RAPID REFUELER RAO/RCAP MARINE CORPS AIR STATION NEW RIVER, N.C.	GENERAL LOCATION USGS TOPOGRAPHIC QUADRANGLE	1

JOB NO.:	DATE:	SCALE:	DRAWN BY:	CHECKED BY:
203-063	MAR 2006	1 : 24,000	SVH	MEM



LEGEND

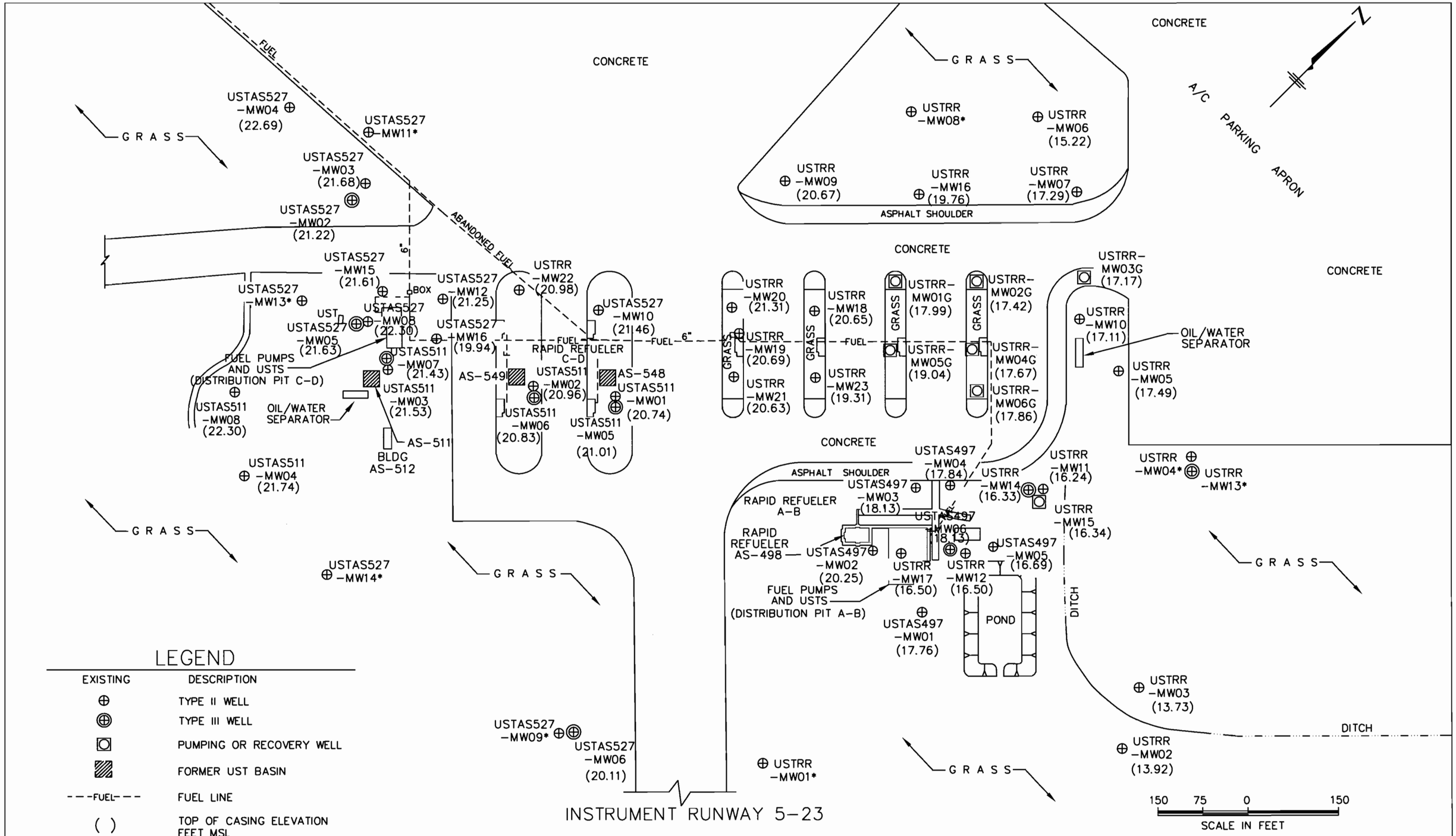
EXISTING	DESCRIPTION
▨	FORMER UST BASIN
---FUEL---	FUEL LINE

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT	TITLE	FIGURE
RAPID REFUELER RAO/RCAP MARINE CORPS AIR STATION NEW RIVER, N.C.	SITE PLAN	2

JOB NO. 203-063 | DATE: APR 2006 | SCALE: 1"=150' | DRAWN BY: SVH | CHECKED BY: MEM

03063-RR_02 SITE PLAN



LEGEND

EXISTING	DESCRIPTION
⊕	TYPE II WELL
⊕	TYPE III WELL
▣	PUMPING OR RECOVERY WELL
▨	FORMER UST BASIN
---FUEL---	FUEL LINE
( )	TOP OF CASING ELEVATION FEET MSL

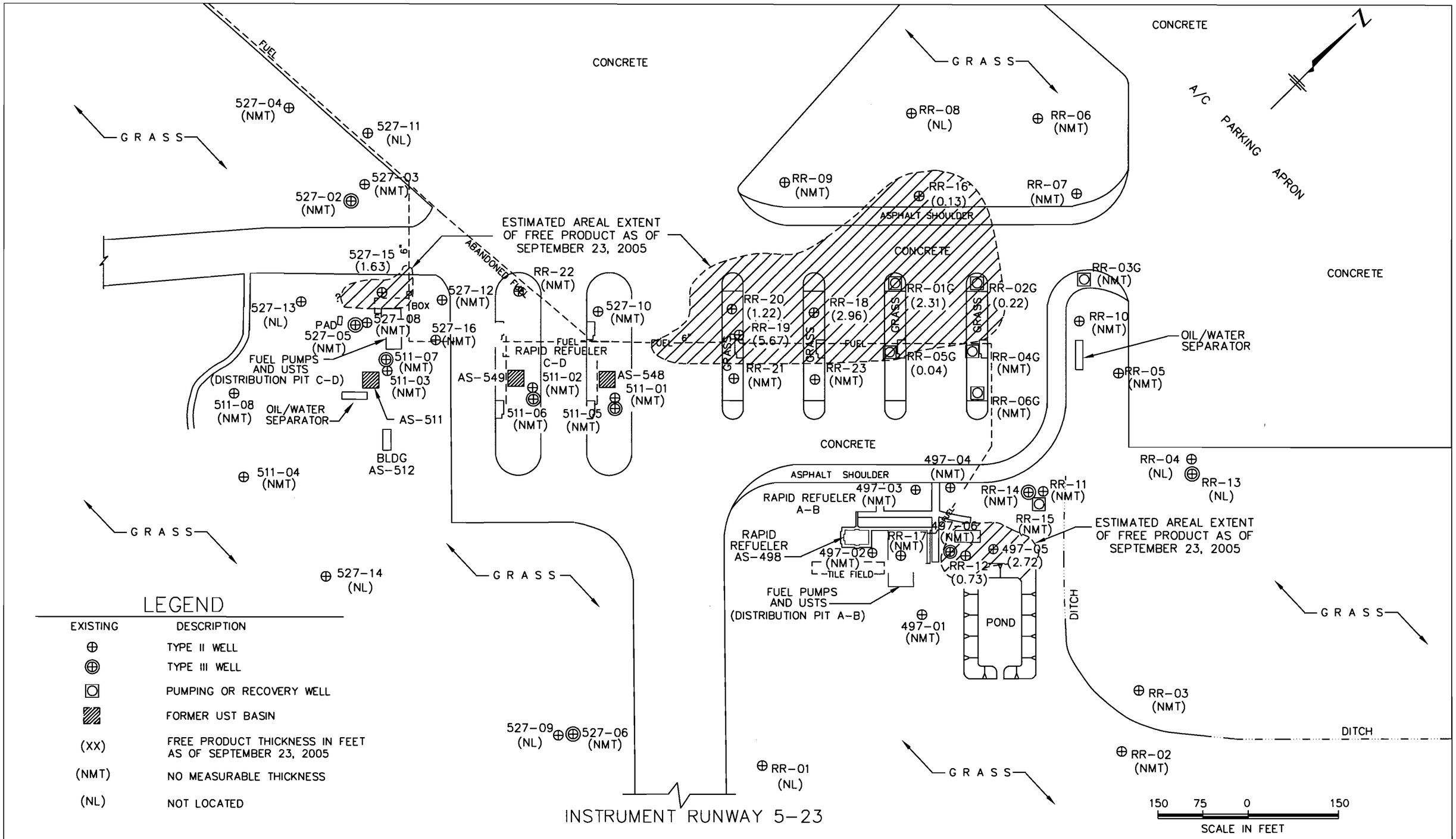
NOTES: * = WELLS NOT LOCATED
TOP OF CASING ELEVATIONS BASED ON SURVEY DATA PROVIDED BY SOVEREIGN CONSULTING, INC.
ELEVATION DATUM = NAVD88
REFERENCE MONUMENT PW-26

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT	TITLE	FIGURE
RAPID REFUELER RAO/RCAP MARINE CORPS AIR STATION NEW RIVER, N.C.	SITE MAP WITH PROPOSED WELL NOMENCLATURE	3

JOB NO.	DATE	SCALE	DRAWN BY	CHECKED BY
203-063	APR 2006	1"=150'	SVH	MEM

203063-RR_03 SITE PLAN



LEGEND

EXISTING	DESCRIPTION
⊕	TYPE II WELL
⊕	TYPE III WELL
▣	PUMPING OR RECOVERY WELL
▨	FORMER UST BASIN
(XX)	FREE PRODUCT THICKNESS IN FEET AS OF SEPTEMBER 23, 2005
(NMT)	NO MEASURABLE THICKNESS
(NL)	NOT LOCATED

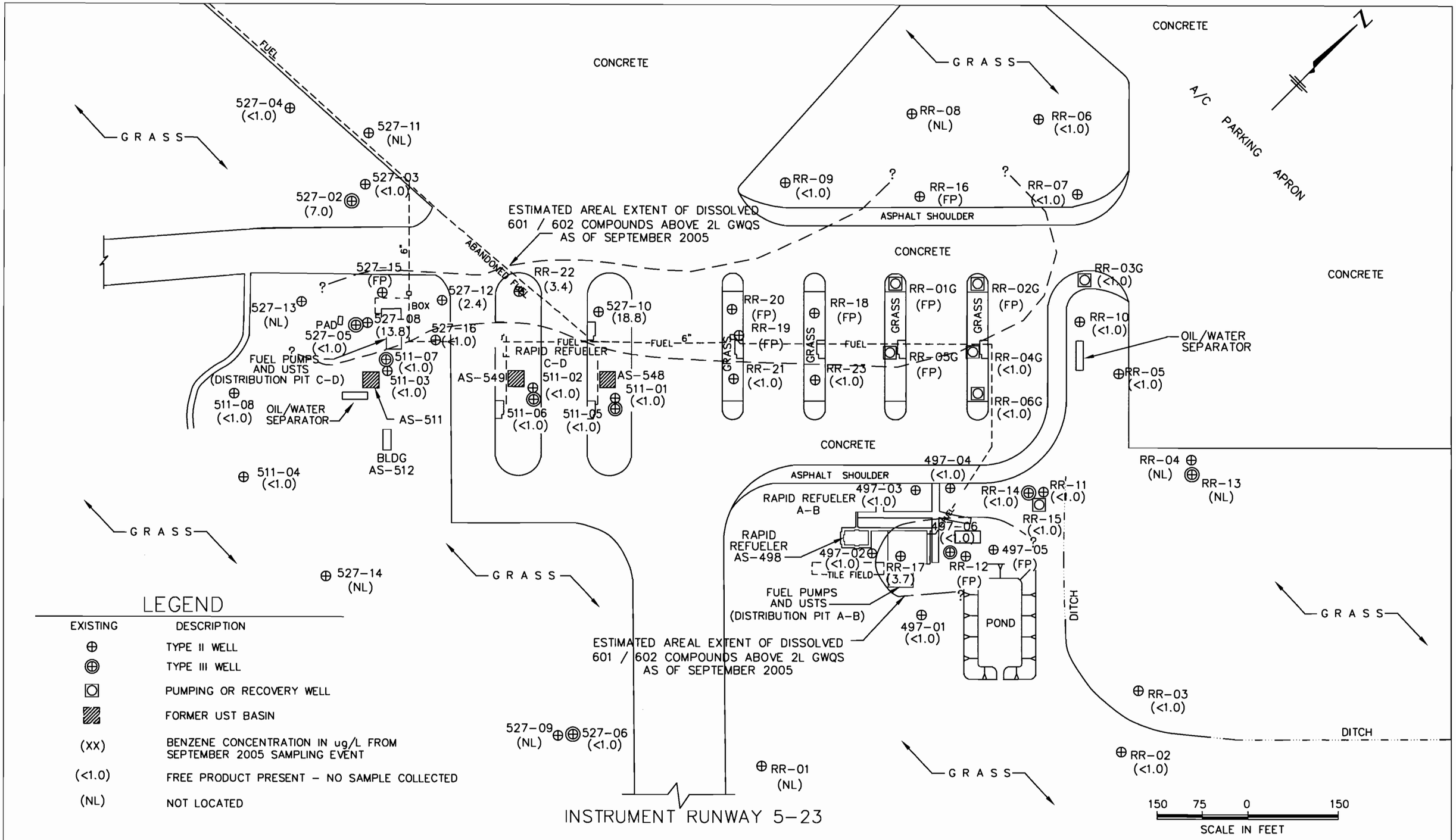
NOTE: WELLS PREFIXED WITH:
497 = USTAS497-MWXX
511 = USTAS511-MWXX
527 = USTAS527-MWXX
RR-XXG = USTRR-MWXXG
RR = USTRR-MWXX

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT	TITLE	FIGURE
RAPID REFUELER RAO/RCAP MARINE CORPS AIR STATION NEW RIVER, N.C.	ESTIMATED AREAL EXTENT OF FREE PRODUCT AS OF SEPTEMBER 23, 2005	4

JOB NO.	DATE	SCALE	DRAWN BY	CHECKED BY
203-063	APR 2006	1"=150'	SVH	MEM

03063-RR_04 FREE PRODUCT.dwg



LEGEND

EXISTING	DESCRIPTION
⊕	TYPE II WELL
⊕	TYPE III WELL
▣	PUMPING OR RECOVERY WELL
▨	FORMER UST BASIN
(XX)	BENZENE CONCENTRATION IN ug/L FROM SEPTEMBER 2005 SAMPLING EVENT
(<1.0)	FREE PRODUCT PRESENT – NO SAMPLE COLLECTED
(NL)	NOT LOCATED

NOTE: WELLS PREFIXED WITH:
497 = USTAS497-MWXX
511 = USTAS511-MWXX
527 = USTAS527-MWXX
RR-XXG = USTRR-MWXXG
RR = USTRR-MWXX

GROUNDWATER SAMPLING DATA PROVIDED BY SOVEREIGN CONSULTING, INC.

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT: RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, N.C.

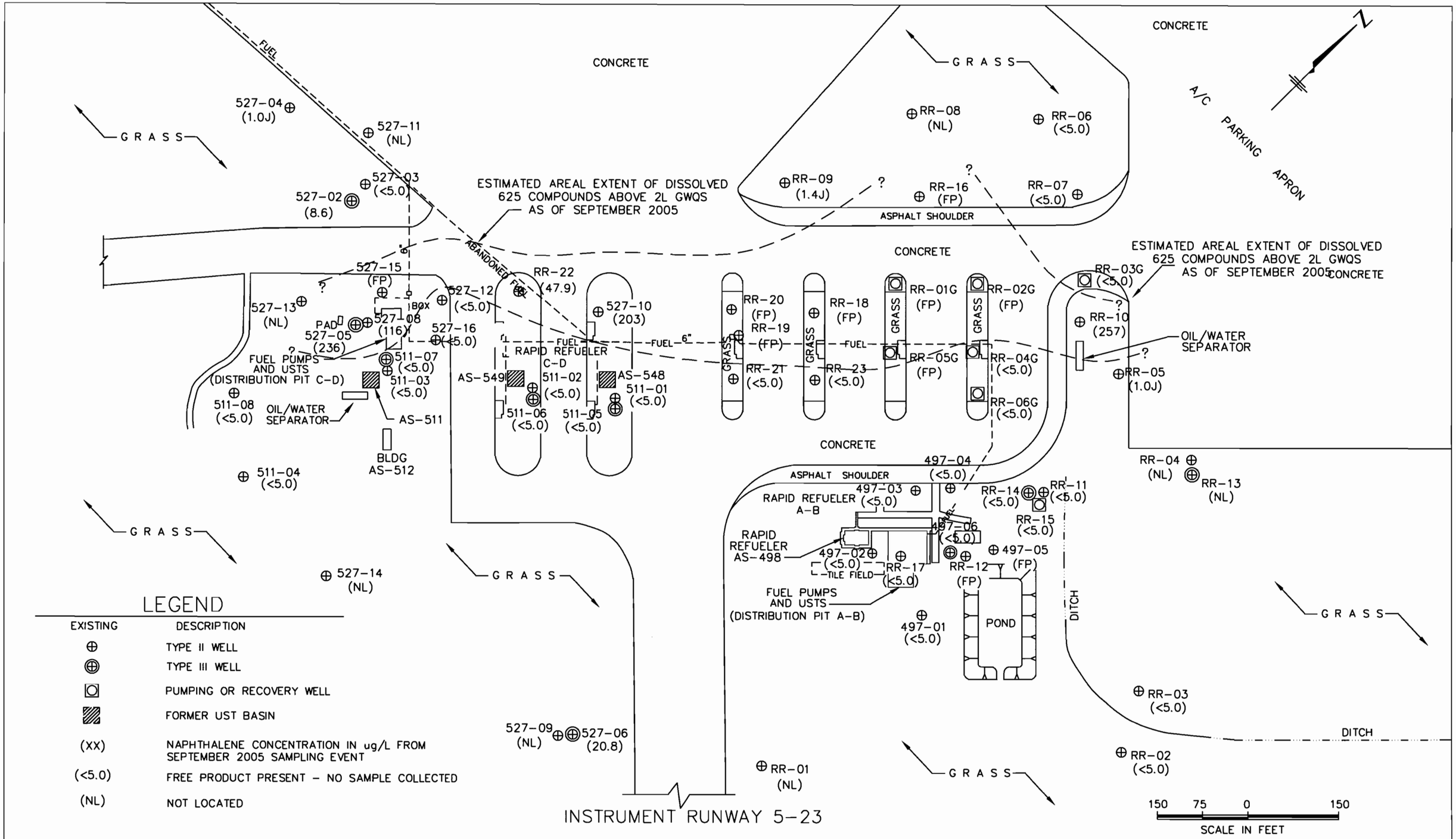
JOB NO. 203-063 | DATE: APR 2006

TITLE: ESTIMATED AREAL EXTENT OF EPA 601-602 COMPOUNDS EXCEEDING 2L GWQS AS OF SEPTEMBER 2005

SCALE: 1"=150' | DRAWN BY: SVH | CHECKED BY: MEM

FIGURE 5

03063-RR_05 FREE PRODUCT.dwg



LEGEND

EXISTING	DESCRIPTION
⊕	TYPE II WELL
⊕	TYPE III WELL
▣	PUMPING OR RECOVERY WELL
▨	FORMER UST BASIN
(XX)	NAPHTHALENE CONCENTRATION IN ug/L FROM SEPTEMBER 2005 SAMPLING EVENT
(<5.0)	FREE PRODUCT PRESENT – NO SAMPLE COLLECTED
(NL)	NOT LOCATED

NOTE: WELLS PREFIXED WITH:
497 = USTAS497-MWXX
511 = USTAS511-MWXX
527 = USTAS527-MWXX
RR-XXG = USTRR-MWXXG
RR = USTRR-MWXX

GROUNDWATER SAMPLING DATA PROVIDED BY SOVEREIGN CONSULTING, INC.

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

PROJECT: RAPID REFUELER RAO/RCAP
MARINE CORPS AIR STATION
NEW RIVER, N.C.

JOB NO. 203-063 | DATE: MAR 2006

TITLE: ESTIMATED AREAL EXTENT OF EPA 625 COMPOUNDS EXCEEDING 2L GWQS AS OF SEPTEMBER 2005

SCALE: 1"=150' | DRAWN BY: SVH | CHECKED BY: MEM

FIGURE 6

0306J-RR_06_625.dwg

APPENDIX A

BORING LOGS
AND
WELL CONSTRUCTION DETAILS

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler	DRILLER: Bobbie Fowler	WELL ID: UST AS497-MW01
NORTHING: 3843783.3	EASTING: 276279.2	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: In field behind building		T.O.C. ELEV.: 17.76
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 4.9	BORING DEPTH: 14.0
START DATE: 06/09/03	FINISH DATE: 06/09/03	24 HOUR DTW: 5.1	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	18.0	0.0
									Dark brown TOPSOIL. Grass, roots.	0.5	17.5	-0.3
3.0	1	2	2	3	310	UST AS497-MW01 (3-5')	CH		Light gray to orange-tan, mottled CLAY. Moist. Soft to moderately stiff. No HCO.	3.0 / 4.5	15.0 / 13.5	1.0 / 2.5 / 3.5
							SC/CH		Light gray to tan, v.f.. sandy CLAY. Similar to above, but high sand content. Moist. No HCO.	5.0	13.0	
8.0	1	2	3	2	120		CH		S. A. A. CLAY. Top .4' of spoon. Relatively sharp contact with below.	8.0 / 8.4	10.0 / 9.6	
							SP		Light gray f. to v.f.. SAND. Minor v.f.. opaque mineral grains and greenish-gray clay-rich lenses (up to 1 cm in length). Saturated. No HCO.	10.0	8.0	
11.0	4	6	5	7	7.2		SP		S. A. A. Light gray f. to v.f.. SAND. Minor opaque grains, greenish-gray clay-rich lenses. Saturated. No HCO.	11.0 / 13.0	7.0 / 5.0	13.5 / 14.0
									Boring Terminated at Elevation 4.0 ft			14.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/08/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler	DRILLER: Bobbie Fowler	WELL ID: UST AS497-MW02
NORTHING: 3843789.3	EASTING: 276238.5	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Behind building in grass		T.O.C. ELEV.: 20.25
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 5.3	BORING DEPTH: 14.5
START DATE: 06/09/03	FINISH DATE: 06/09/03	24 HOUR DTW: 6.2	WELL DEPTH: 14.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	20.6	0.0
0.0	G	R	A	B	4.7		CL/ML		TOPSOIL. Dark brown, poorly sorted f. sandy to silty CLAY. Brick fragments.	0.5	20.1	-0.3
									Dark brown to reddish brown, v.f.. sandy to silty CLAY. Moist. No HCO (sample taken from auger cuttings).	2.0	18.6	1.0
3.0	3	3	6	5	5.2	UST AS497-MW02 (3-5')	CH		Dark brown @ top of spoon, grades into light gray to orange, mottled CLAY to silty CLAY. Stiff. Moderate plasticity. Moist. No HCO.	3.0	17.6	2.0
										5.0	15.6	4.0
8.0	1	3	4	7	5.4		CH		Top of spoon S. A. A. Light gray to orange, mottled, silty CLAY.	8.0	12.6	
							SC		Bottom of spoon. Light tan, silty to clayey, v.f.. SAND. Saturated. Minor pebble sized grains (~3 mm in diameter, rounded quartz pea-gravel to coarse sand-sized grains). Poorly sorted. No HCO.	8.5	12.1	
12.0	4	9	11	12	11		SP		Light gray f. to v.f.. SAND. Relatively clean. Well sorted. Minor greenish-gray, clay-rich lenses. Saturated. No HCO.	10.0	10.6	
										12.0	8.6	
										14.0	6.6	14.0
									Boring Terminated at Elevation 6.1 ft			14.5

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

14.5

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: UST AS497-MW03
	DRILLER: Bobbie Fowler		
NORTHING: 3843828.8	EASTING: 276232.7	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Front of building		T.O.C. ELEV.: 18.13
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 4.5	BORING DEPTH: 14.0
START DATE: 06/09/03	FINISH DATE: 06/09/03	24 HOUR DTW: 5.2	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	18.4	0.0
0.0	G	R	A	B			CL/ML		TOPSOIL	0.6	17.8	- 0.3
									Dark brown, silty to v.f.. sandy CLAY. Minor, thin (~3 mm) v.f.. sandy layering. Relatively soft. Moist. No HCO (from auger cuttings).	2.0	16.4	0.5
3.0	2	3	3	4	2.0	UST AS497-MW03 (3-5')	SC/SM		Dark gray, silty to clayey, f. to v.f.. SAND. Minor interlayered sandy CLAY layering up to 2" in thickness. Moist. No HCO.	5.0	13.4	1.5 2" Sch. 40 PVC 3.5
8.0	2	9	10	12	8.4		SP		Light gray to tan, f. to v.f.. SAND. Well sorted. Saturated. No HCO.	10.0	8.4	2" Slot .010 Sch. 40 PVC
11.0	6	9	10	11	7.1		SP		S. A. A. Light gray to tan f. to v.f.. SAND. Well sorted. Saturated. No HCO.	13.0	5.4	13.0 13.5 14.0
									Boring Terminated at Elevation 4.4 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Stetler	WELL ID: UST AS497-MW04
		DRILLER: Bobbie Fowler	
NORTHING: 3843841.7	EASTING: 276244.8	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Next to tarmac		T.O.C. ELEV.: 17.84
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 4.8	BORING DEPTH: 14.0
START DATE: 06/09/03	FINISH DATE: 06/09/03	24 HOUR DTW: 5.6	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	18.2	0.0
									TOPSOIL	0.5	17.7	- 0.3
							CL/ ML		Brown to dark brown, silty CLAY. Moderately well sorted. Moist. No HCO (from auger cuttings)	2.0	16.2	1.0
3.0										3.0	15.2	2.0
	3	5	6	5	650	UST AS497-MW04 (3-5')	CH		Top of spoon. Gray, CLAY to silty CLAY. Minor component of silt to v.f.. sand. Stiff. Moist. No HCO.	4.5	13.7	3.5
							SM		Bottom of spoon. Brownish gray, silty, f. to v.f.. SAND. Moist. No HCO.	5.0	13.2	
										6.0	12.2	
							CH		Gray, CLAY to silty CLAY (from auger cuttings)	7.5	10.7	
8.0										8.0	10.2	
	2	5	6	7	160		SP		Gray, silty, f. to v.f.. SAND. Saturated. No HCO. Minor light greenish gray clay-rich lenses (~2 to 3 mm in thickness).	10.0	8.2	
										12.0	6.2	
12.0	6	10	12	13	12.4		SP		S. A. A. Gray, silty, f. to v.f.. SAND. Saturated. No HCO.	14.0	4.2	13.5
									Boring Terminated at Elevation 4.2 ft			14.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

14.0

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Stetler	WELL ID: UST AS497-MW05
		DRILLER: Bobbie Fowler	
NORTHING: 3843834.7	EASTING: 276283.0	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Next to pond		T.O.C. ELEV.: 16.69
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 5.5	BORING DEPTH: 15.0
START DATE: 06/09/03	FINISH DATE: 06/09/03	24 HOUR DTW: 5.6	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	16.8	0.0
0.0	G	R	A	B	18		CL/ML		TOPSOIL. roots, grass.	0.2	16.6	-0.1
									Brown, silty CLAY. Minor sand component. Dry. No HCO. Very difficult drilling (sample from auger cuttings).	2.0	14.8	2" Sch. 40 PVC 2.0
3.0										3.0	13.8	3.0
	5	7	6	3	0	UST AS497-MW05 (3-5')	CH		Top of spoon. Light gray to dark gray, mottled clay. Stiff. Dry. No HCO.	4.0	12.8	3.5
							SC/CH		Bottom of spoon. Brownish gray, clayey, poorly sorted, c. to v.f.. SAND. More friable than clay above. Moist. Slight HCO?	5.0	11.8	
8.0	10	12	16	16	26		SP		Tan to gray, thinly layered v.f.. SAND. Saturated. Slight HCO. Layering up to .25" in thickness. Isolated 2" thick layer of brownish-tan, clayey v.f.. SAND.	8.0	8.8	2" Slot .010 Sch. 40 PVC
										10.0	6.8	
13.0	6	12	18	12	20		SP		S. A. A. Relatively clean, gray to tan, v.f.. SAND. Saturated. Slight HCO. Helper changed from 2 wraps to 1 between 3rd and 4th blow count.	13.0	3.8	13.5
										15.0	1.8	14.0 14.0
									Boring Terminated at Elevation 1.8 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Stetler	WELL ID: UST AS497-MW06
		DRILLER: Bobbie Fowler	
NORTHING: 3843817.8	EASTING: 276267.8	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Next to release		T.O.C. ELEV.: 18.13
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW: NM	BORING DEPTH: 50.0
START DATE: 06/05/03	FINISH DATE: 06/13/03	24 HOUR DTW: 5.9	WELL DEPTH: 50.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	18.0	0.1 / 0.0
0.0	G	R	A	B	NM	UST AS497-MW06 (0-2')				0.5	17.5	
3.0	W	O	H		NM		CH		Gray, SILTY, v.f. to f. SANDY CLAY w/high plasticity. Sat. HCO.	3.0 5.0	15.0 13.0	
8.0	5	9	11	14	NM		SP		Gray black to brown, well sorted, v.f. to f. SAND. Sat. High HCO.	8.0 10.0	10.0 8.0	
13.0	5	8	12	16	240		SP		Light gray, f. to v.f. SAND w/trace opaque fines. Sat. Very strong HCO.	13.0 15.0	5.0 3.0	
18.0	8	10	14	15	15		SP		S.A.A. w/greenish-gray lenses. Strong HCO.	18.0 20.0	-2.0	
23.0	2	1	2	17	19		SM		Greenish gray, SILTY, f. SAND. Mod. sorted and soft. Abundant opaque minerals and minor cemented sand clasts.	23.0 24.5	-5.0 -6.5	
							GW		Sharp contact. Light gray, poorly sorted, limey med. SAND and weathered FOSS. LS. frags. Sat. Strong HCO.	25.0	-7.0	

2" Sch. 40 PVC
6" Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: UST AS497-MW06
	DRILLER: Bobbie Fowler		
NORTHING: 3843817.8	EASTING: 276267.8	CREW: Bill Miller	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Next to release		T.O.C. ELEV.: 18.13
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW: NM	BORING DEPTH: 50.0
START DATE: 06/05/03	FINISH DATE: 06/13/03	24 HOUR DTW: 5.9	WELL DEPTH: 50.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										28.0	-10.0	
28.0	2	8	13	12	7.4		GW		Light gray, poorly sorted, limey med. SAND and weathered FOSS. LS. frags. Sat. Strong HCO.	30.0	-12.0	
										33.0	-15.0	
33.0	5	6	7	10	3.8		GW		S.A.A. Sat. Slight HCO.	35.0	-17.0	
										38.0	-20.0	
38.0	8	10	12	17	4.2		GW		S.A.A. Slight HCO.	40.0	-22.0	38.0
										43.0	-25.0	39.0
43.0	8	10	15	17	0		SM		Gray green, SILTY, f. to v.f. SAND w/trace v.f. opaque grains. Sat. No HCO.	45.0	-27.0	43.0
										48.0	-30.0	44.5
48.0	7	9	15	27	0		SM		S.A.A. Mod. hard but not cemented. Sat. No HCO.	50.0	-32.0	2" Slot .010 Sch. 40 PVC
									Boring Terminated at Elevation -32.0 ft			49.5 50.0 50.0

Portland Cement | Bentonite Pellets | #2 Medium Sand

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Landis	WELL ID: UST AS511-MW01
		DRILLER: Tommy Chalmers	
NORTHING: 3843760.3	EASTING: 276093.4	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.74
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 02/06/95	FINISH DATE: 02/06/95	24 HOUR DTW: 7.0	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in / 6in / 6in / 6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
						LAND SURFACE	0.0	21.3	0.0
2.0	G R A B	2.0		SM		Dark brown to black, SILTY, v.f. to med. SAND. Damp. No HCO.	2.0 / 4.0	19.3 / 17.3	- 0.5 / 3.0 / 3.5 / 4.0
5.0	HYDRAPUNCH	3.0		CL		Light gray and orange mottled, v.f. grained SILTY CLAY. Moist. No HCO.	5.0 / 7.0	16.3 / 14.3	
10.0	HYDRAPUNCH	<1		SP		Tan to orange mottled, v.f. to f. SAND. Sat. No HCO.	10.0 / 12.0	11.3 / 9.3	
15.0	HYDRAPUNCH	2.6		SP		Beige tan to brown, f. to med. SAND. Well rounded and sorted. Sat. Slight HCO.	15.0 / 17.0	6.3 / 4.3	13.5 / 14.0 / 17.0
						Boring Terminated at Elevation 4.3 ft			

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Landis	WELL ID: UST AS511-MW02
		DRILLER: Tommy Chalmers	
NORTHING: 3843735.7	EASTING: 276059.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.96
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 02/09/95	FINISH DATE: 02/09/95	24 HOUR DTW: 5.0	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in 6in 6in 6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
							0.0	21.2	0.0
						LAND SURFACE			- 0.3
2.0	HYDRAPULSH	<1		SM		Dark brown, SILTY, f. to med. SAND. Dry. Slight HCO.	2.0	19.2	1.5
							4.0	17.2	2.5
5.0	HYDRAPULSH	<1		SC		Brown orange mottled, v.f. to f. grained SANDY CLAY. Moist. No HCO.	5.0	16.2	4.5
							7.0	14.2	
10.0	HYDRAPULSH	<1		SC		Gray green to tan, CLAYEY, v.f. to f. SAND. Sat. No HCO.	10.0	11.2	
							12.0	9.2	
15.0	HYDRAPULSH	<1		SP		Green gray to gray, f. to med. SAND. Wet. No HCO.	15.0	6.2	14.5
							17.0	4.2	15.0
						Boring Terminated at Elevation 4.2 ft			17.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW03
	DRILLER: Tommy Chalmers		
NORTHING: 3843694.8	EASTING: 275998.5	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.53
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 02/21/95	FINISH DATE: 02/21/95	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	21.7	0.0
2.0	P	U	S	H	0.6		SM		Dark gray, SILTY, f. to med. SAND. Dry. No HCO.	2.0 4.0	19.7 17.7	- 0.1 2.0 3.0
5.0	P	U	S	H	0.6		SC		Yellow orange to light brown, v.f. to f. CLAYEY SAND. Moist. No HCO.	5.0 7.0	16.7 14.7	4.5
10.0	P	U	S	H	1.0		SC ML		S.A.A. Wet. Yellow orange to light brown, f. grained SILTY, SANDY CLAY. Mod. plasticity. Wet. No HCO.	10.0 11.0 12.0	11.7 10.7 9.7	
15.0	P	U	S	H	2		SM		Gray to dark gray, SILTY, v.f. to f. SAND. Sat. Possible slight HCO.	15.0 17.0	6.7 4.7	14.5 15.0 17.0
									Boring Terminated at Elevation 4.7 ft			

2" Sch. 40 PVC
2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

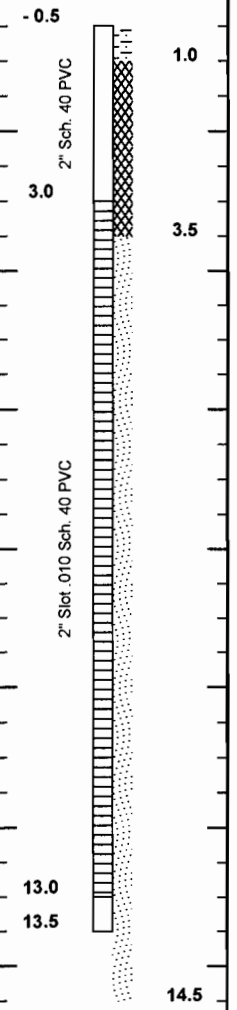
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW04
	DRILLER: Tommy Chalmers		
NORTHING: 3843603.8	EASTING: 275983.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.74
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 03/06/95	FINISH DATE: 03/06/95	24 HOUR DTW:	WELL DEPTH: 13.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
									LAND SURFACE	0.0	22.2
2.0	P	U	S	H			SC		Mottled light gray and yellow orange, CLAYEY, f. to med. SAND. Dry. No HCO.	2.0 / 4.0	20.2 / 18.2
5.0	P	U	S	H			ML		Mottled, v.f. SILTY CLAY. Med. plasticity. Wet. No HCO.	5.0 / 7.0	17.2 / 15.2
10.0	P	U	S	H			SC		Yellowish orange, CLAYEY, f. SAND. Sat. No HCO.	10.0 / 12.0	12.2 / 10.2
15.0	P	U	S	H			SP		Light gray, v.f. to f. SAND. Sat. No HCO.	15.0 / 17.0	7.2 / 5.2
									Boring Terminated at Elevation 5.2 ft		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 2

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW05
	DRILLER: Tommy Chalmers		
NORTHING: 3843761.5	EASTING: 276092.6	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.01
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW:	BORING DEPTH: 52.0
START DATE: 02/07/95	FINISH DATE: 02/09/95	24 HOUR DTW: 5.0	WELL DEPTH: 49.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	21.2	0.0
0.0	G	R	A	B	2		SM		Brown to gray-black, SILTY, f. to med. SAND. Moist. No HCO.			- 0.2
2.5	G	R	A	B	2					5.0	16.2	
5.0	G	R	A	B	3		CL		Mottled orange to gray, v.f. to cse. SANDY CLAY. Wet to Sat. No HCO.			
7.5	P	U	S	H	5.2							
10.0	P	U	S	H	0					12.5	8.7	
12.5	P	U	S	H	6.8		SP		Tan gray, v.f. to med. SAND interbedded with trace clay. Sat. No to slight HCO.			
15.0	P	U	S	H	2.2							
17.5	P	U	S	H	0		SC		Dark olive green, CLAYEY, f. to med. SAND. Moist to wet. No HCO.	17.5	3.7	
										20.0	1.2	

2" Sch. 40 PVC

6" Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW05
	DRILLER: Tommy Chalmers		
NORTHING: 3843761.5	EASTING: 276092.6	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.01
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW:	BORING DEPTH: 52.0
START DATE: 02/07/95	FINISH DATE: 02/09/95	24 HOUR DTW: 5.0	WELL DEPTH: 49.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										40.0	-18.8	
40.0	0	0	17	13	3		CL		Light gray to olive-gray, f. to med. grained SANDY CLAY. Sat. No HCO.	42.0	-20.8	
										45.0	-23.8	
45.0	0	22	16	25			GC		Olive gray, CLAYEY SHELL FRAGS. Very poorly sorted. Sat. No HCO.	47.0	-25.8	
										50.0	-28.8	
50.0	G	R	A	B			GC		Light olive gray, v.f. to f. CLAYEY, SANDY, GRAVEL (shell frags.), No HCO.	52.0	-30.8	
									Boring Terminated at Elevation -30.8 ft			

WELL DETAIL: 39.0; 40.0; 42.5; 44.0; 2" Slot .010 Sch. 40 PVC; 49.0; 49.5; 52.0

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW06
	DRILLER: Tommy Chalmers		
NORTHING: 3843734.3	EASTING: 276060.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.83
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 52.5
START DATE: 02/09/95	FINISH DATE: 03/06/95	24 HOUR DTW:	WELL DEPTH: 49.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	21.2	0.0
2.0	G	R	A	B	0		SM		Dark gray to black, SILTY, f.-med. SAND. Dry. Strong HCO.	2.0 / 4.0	19.2 / 17.2	- 0.3
5.0	P	U	S	H	1		SC/SM		Light gray to gray, SILTY, v.f. SAND grading to CLAYEY SAND. Sat. No HCO.	5.0 / 7.5	16.2 / 13.7	
7.5	P	U	S	H	0		SP		Brown, f. to med. SAND. Moist. No HCO.	9.0	12.2	
9.0	P	U	S	H	0		CL		Dark brown, v.f. to f. grained SANDY CLAY. Sat. No HCO.	11.5	9.7	
11.5	P	U	S	H	0		SC		Light gray to green gray, CLAYEY, v.f. SAND. Sat. No HCO.	16.5	4.7	
13.0	18	11	16	16	0							
15.0	24	35	14	18	0		SP		Dark gray to black, f.-med. SAND. Sat. No HCO.	20.0	1.2	
17.5	0	12	33	17	0							
20.0	12	9	10	10	0		SC		Gray to black, CLAYEY, v.f. to med. f. SAND. Sat. No HCO. (hole collapsed at 30ft. BLS.) = re-drilled to continue.			2" Sch. 40 PVC; 6" Sch. 40 PVC
22.5	5	4	11	10	0							
25.0	10	10	12	5	0							

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW06
	DRILLER: Tommy Chalmers		
NORTHING: 3843734.3	EASTING: 276060.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.83
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 52.5
START DATE: 02/09/95	FINISH DATE: 03/06/95	24 HOUR DTW:	WELL DEPTH: 49.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
27.5	6	10	12	4	0		SC		Gray to black, CLAYEY, v.f. to med. f. SAND. Sat. No HCO. (hole collapsed at 30ft. BLS.) = re-drilled to continue. *(continued)*	30.0	-8.8
30.0	10	12	5	10							
32.5	5	7	7	9							
35.0	6	8	9	12			SC		Light gray to olive gray, CLAYEY, v.f. to med. SAND. Sat. No HCO.		
37.5	10	12	12	10							
40.0	12	10	10	13	0					42.5	-21.3
42.5	9	8	10	12	0		SP		Greenish gray, v.f. to f. SAND. Grades to include silt. Sat. No HCO.		
45.0	10	15	10	12	0					47.5	-26.3
47.5					0		SC/SM		Greenish gray, SILTY/CLAYEY, v.f. SAND. Sat. No HCO.		
50.0					0					52.5	-31.3
									Boring Terminated at Elevation -31.3 ft		

WELL DETAIL: 38.0 | 40.0 | 43.0 | 43.5 | 2" Slot .010 Sch. 40 PVC | 48.5 | 49.0 | 52.5

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Tom Landis	WELL ID: UST AS511-MW07
		DRILLER: Tommy Chalmers	
NORTHING: 3843696.4	EASTING: 275997.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.43
DRILL MACHINE: Diedrich D-50	METHOD:	0 HOUR DTW:	BORING DEPTH: 52.5
START DATE: 03/08/95	FINISH DATE: 03/09/95	24 HOUR DTW:	WELL DEPTH: 49.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	21.8	0.0
2.5										2.5	19.3	- 0.4
	G	R	A	B	<1		SM		Vf. to f. LOAMY SAND. Slight HCO	5.0	16.8	
5.0	HP	HP	HP	HP	<1		CL		SILTY CLAY. Mod. plast. No HCO.	7.5	14.3	
7.5	HP	HP	HP	HP	<1		SW		F. to med. SAND. Well rounded. No HCO.	10.0	11.8	
10.0	HP	HP	HP	HP	<1							
12.5	HP	HP	HP	HP	<1							
15.0	HP	HP	HP	HP	<1							
17.5	3	2	2	2	<1		SM		SILTY, vf. to f. SAND. No HCO.			
20.0	4	7	5	7	<1							
22.5	4	5	8	4	<1							
25.0	5	7	5	6	<1							

2" Sch. 40 PVC
6" Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW07
	DRILLER: Tommy Chalmers		
NORTHING: 3843696.4	EASTING: 275997.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.43
DRILL MACHINE: Diedrich D-50	METHOD:	0 HOUR DTW:	BORING DEPTH: 52.5
START DATE: 03/08/95	FINISH DATE: 03/09/95	24 HOUR DTW:	WELL DEPTH: 49.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
27.5	5	7	7	5	<1		SM		SILTY, vf. to f. SAND. No HCO. *(continued)*	30.0	-8.2
30.0	6	7	4	4	<1		GC		CLAYEY, gravelly SAND. Numerous shell frags. No HCO.	32.5	-10.7
32.5	8	7	2	4	<1		CL		SILTY CLAY. Med. plast. No HCO.	37.5	-15.7
35.0	7	6	4	4	<1						
37.5	6	8	8	7	<1		SM		SILTY, f. SAND. No HCO.	40.0	-18.2
40.0	6	7	7	5	<1				F. grained SANDY LIMESTONE.		
42.5	8	7	7	12	<1						
45.0	7	7	8	9	<1						
47.5	8	9	10	10	<1						
50.0	10	5	5	7	<1					52.5	-30.7
									Boring Terminated at Elevation -30.7 ft		

WELL DETAIL

39.0
40.0
42.5
44.0
2" Slot .010 Sch. 40 PVC
49.0
49.5
50.5

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Landis		WELL ID: UST AS511-MW08
	DRILLER: Tommy Chalmers		
NORTHING: 3843634.6	EASTING: 275951.9	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.57
DRILL MACHINE: Diedrich D-50	METHOD:	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 03/07/95	FINISH DATE: 03/08/95	24 HOUR DTW:	WELL DEPTH: 14.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION DEPTH		ELEVATION	WELL DETAIL
									0.0	LAND SURFACE	21.9	0.0
									2.0		19.9	- 0.4
2.0	G	R	A	B	<1		SC			CLAYEY, f. SAND. No HCO.		2" Sch. 40 PVC
									4.0		17.9	3.0 / 4.0
									5.0		16.9	
5.0	6	5	10	5	<1		CL			F. grained SANDY CLAY. No HCO.		
									7.0		14.9	
									10.0		11.9	2" Slot .010 Sch. 40 PVC
10.0	6	6	7	7	<1		CL		11.0	F. grained SANDY CLAY. No HCO.	10.9	
							SC		12.0	CLAYEY, f. to med. SAND. No HCO.	9.9	
												14.0 / 14.5
									15.0		6.9	
15.0	5	2	2	3	<1		CL			F. to med. grained SANDY CLAY. No HCO.		15.0
									17.0		4.9	
										Boring Terminated at Elevation 4.9 ft		

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Charles Ray		WELL ID: UST AS527-MW15
	DRILLER: Bobbie Fowler		
NORTHING: 3843720.5	EASTING: 275969.6	CREW: Tom Stetler	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 21.61
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 8.3	BORING DEPTH: 12.0
START DATE: 01/10/03	FINISH DATE: 01/10/03	24 HOUR DTW:	WELL DEPTH: 12.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION	WELL DETAIL
									0.0	LAND SURFACE	22.8	0.0
									0.5		22.3	- 1.2
3.5	4	4	3	2		MW15 3.5-5.5	SM		3.5	Gray, SILTY, v.f. to f. SAND.	19.3	1.5
									5.0		17.8	1.7
							CL		5.5	Orange gray, SILTY CLAY w/mod. to high plasticity. Moist to wet. Slight HCO.	17.3	2.0
8.5	1	2	4	3			SW		8.5	Light gray, v.f. to v. cse. SAND. Sat. High HCO.	14.3	
									10.5		12.3	11.5
										Boring Terminated at Elevation 10.8 ft		12.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Charles Ray		WELL ID: UST AS527-MW16
	DRILLER: Bobbie Fowler		
NORTHING: 3843720.1	EASTING: 276006.8	CREW: Tom Stetler	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 19.94
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 12.0
START DATE: 01/10/03	FINISH DATE: 01/10/03	24 HOUR DTW:	WELL DEPTH: 12.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION DEPTH	DESCRIPTION	ELEVATION	WELL DETAIL
									0.0	LAND SURFACE	20.9	0.0
									0.5		20.4	- 1.0 2" Sch. 40 PVC 1.5 1.7 2.0
3.5	2	3	3	4		MW16 3.5-5.5	CH		3.5	Gray orange, SILTY, fat CLAY. Moist. Mod. HCO.	17.4	
									5.5		15.4	2" Slot .010 Sch. 40 PVC
8.5	1	2	2	1			SC/ SM		8.5	Light gray, SILTY, v.f. to med. CLAYEY SAND.	12.4	
									10.5		10.4	11.5 12.0 12.0
										Boring Terminated at Elevation 8.9 ft		

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

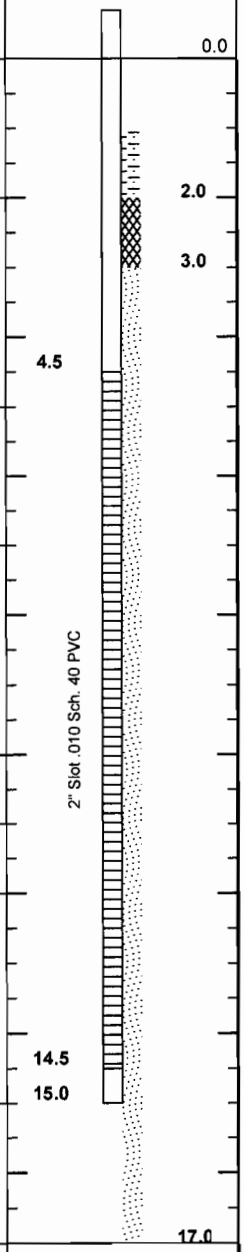
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW01
	DRILLER: Mike Sage		
NORTHING:	EASTING:	CREW: Tommy Chalmers	
SYSTEM:	BORING LOCATION: NOT LOCATED		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/23/94	FINISH DATE: 05/23/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION
									0.0	LAND SURFACE
0.0	G	R	A	B	2.8		CL		2.0	Orange brown, med. grained SANDY CLAY. Damp. No HCO.
5.0	3	3	3	3			SP		7.0	Orange brown, f. SAND. Mod. sorted. Friable. Dry. No HCO.
10.0	4	4	3	4	3.0		CL		11.0	Brown, f. to med. SANDY CLAY. Low perm. Wet. No HCO.
							SC		12.0	Green gray, CLAYEY, med. SAND. Loose. Wet. No HCO.
15.0	3	5	7	7	18		SP		17.0	Gray brown w/orange brown layers, med. f. to med. SAND. Mod. well sorted. Mod. high perm. Wet. No HCO.
										Boring Terminated at Depth 17.0 ft

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW02
	DRILLER: Mike Sage		
NORTHING: 3843809.4	EASTING: 276400.6	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 13.92
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 16.0
START DATE: 05/23/94	FINISH DATE: 05/23/94	24 HOUR DTW:	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	14.6	0.0
0.0	G	R	A	B	0.8		SM		Dark brown, SILTY, v.f. to med. f. SAND. Dry. No HCO.	2.0	12.6	-0.7
5.0	5	7	10	10	26		SP		Red brown, med. f. to med. SAND. Wet. No HCO.	7.0	7.6	1.5 2.5 3.5
10.0	4	6	10	8	6.0		SP		Light gray, med. SAND. Mod. well sorted w/high perm. Wet. No HCO.	12.0	2.6	
14.0	5	8	10	12	0.8		SP		S.A.A.	16.0	-1.4	13.5 14.0 16.0
									Boring Terminated at Elevation -1.4 ft			

2" Sch. 40 PVC
2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Steven Hudson	WELL ID: USTRR-MW03
		DRILLER: Mike Sage	
NORTHING: 3843835.3	EASTING: 276384.6	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 13.73
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 16.0
START DATE: 05/25/94	FINISH DATE: 05/25/94	24 HOUR DTW:	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	14.3	0.0
0.0	G	R	A	B	2.0		CL		Mottled red gray CLAY.	1.0	13.3	- 0.5
							SP		Yellow tan, med. SAND. Mod. well sorted w/high perm. Dry. No HCO.	2.0	12.3	2" Sch. 40 PVC 2.0 3.0 3.5
5.0	5	10	8	10	0.0		SP		Light gray, med. SAND. Mod. well sorted w/high perm. Sat. No HCO.	5.0	9.3	
										7.0	7.3	
10.0	6	6	9	12	3.0		SP		S.A.A.	10.0	4.3	2" Slot .010 Sch. 40 PVC
										12.0	2.3	
14.0	6	7	8	8	4.0		SP		S.A.A.	14.0	0.3	13.5 14.0
										16.0	-1.7	16.0
									Boring Terminated at Elevation -1.7 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

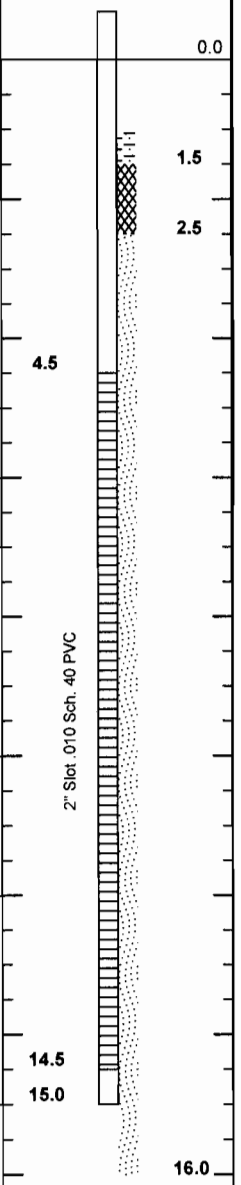
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP		LOGGED BY: Steven Hudson	WELL ID: USTRR-MW04
		DRILLER: Mike Sage	
NORTHING:	EASTING:	CREW: Tommy Chalmers	
SYSTEM:	BORING LOCATION: NOT LOCATED		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/24/94	FINISH DATE: 05/24/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION
									0.0	LAND SURFACE
0.0	G	R	A	B	0.0		SM		2.0	Brown, SILTY, f. SAND. Poorly sorted. Dry. No HCO.
									5.0	
5.0	2	3	4	5	320		CL		6.0	Gray and orange brown mottled, CLAY w/some sand. Mod. plasticity. Low perm. Damp. No HCO.
							SC		7.0	Gray brown, CLAYEY, v.f. to med. SAND. Damp. No HCO.
									10.0	
10.0	8	8	12	15	160		SP		12.0	Light gray, med. f. to med. SAND. Mod. well sorted w/mod high perm. Sat. No HCO.
									15.0	
15.0	5	7	9	6	230		SP		16.5	S.A.A.
							SP		17.0	Green gray, S.A.A. glauconitic sand. No HCO.
										Boring Terminated at Depth 17.0 ft

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW05
	DRILLER: Mike Sage		
NORTHING: 3843943.7	EASTING: 276267.8	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 17.49
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 16.0
START DATE: 05/26/94	FINISH DATE: 05/26/94	24 HOUR DTW:	WELL DEPTH: 14.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	18.3	0.0
0.0	G	R	A	B	0.0		CL		Dark brown, med. grained SANDY CLAY. Low perm. Damp. No HCO.	2.0	16.3	- 0.8
										5.0	13.3	1.5
5.0	4	6	6	7	0.0		CL		Gray and orange brown mottled, SANDY CLAY. Poorly sorted low perm. Damp. No HCO.	6.0	12.3	2.5
							SM		Gray and orange brown mottled, SILTY, v.f. to med. SAND. Damp. No HCO.	7.0	11.3	4.0
										10.0	8.3	
10.0	5	8	10	14	1.0		SP		Light green gray, well sorted med. SAND. High perm. Wet. No HCO.	12.0	6.3	
										14.0	4.3	14.0
14.0	7	5	8	7	8.0		SP		S.A.A.	16.0	2.3	14.5
									Boring Terminated at Elevation 2.3 ft			16.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW06
	DRILLER: Mike Sage		
NORTHING: 3844011.7	EASTING: 276150.3	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 15.22
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 16.0
START DATE: 05/25/94	FINISH DATE: 05/25/94	24 HOUR DTW:	WELL DEPTH: 13.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	15.7	0.0
0.0	G	R	A	B	0.0		SM		Dark brown, SILTY, v.f. to med. SAND. Poorly sorted. Damp. No HCO.	2.0	13.7	- 0.4
										5.0	10.7	2.0
5.0	4	8	8	12	0.0		SP		Light gray white, well sorted med. SAND. High perm. Wet. No HCO.	7.0	8.7	3.0
										10.0	5.7	
10.0	5	7	7	5	4.0		SP		S.A.A.	12.0	3.7	13.0
										14.0	1.7	13.5
14.0	5	6	10	10	66		SP		Green gray, S.A.A. Sat. No HCO.	16.0	-0.3	16.0
									Boring Terminated at Elevation -0.3 ft			

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW07
	DRILLER: Mike Sage		
NORTHING: 3843999.0	EASTING: 276191.3	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 17.29
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/25/94	FINISH DATE: 05/25/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	18.0	0.0
0.0	G	R	A	B	2.0		CL		Brown, med. SANDY CLAY. Low perm. Dry. No HCO.	2.0	16.0	- 0.7
										5.0	13.0	1.5
5.0	4	6	8	10	0.0		SC		Light gray and brown mottled, CLAYEY, f. to med. SAND. Moist. No HCO.	6.0	12.0	3.0
							SP		Light gray and brown mottled, moderately sorted med. f. to med. SAND. Mod. high perm. Wet. No HCO.	7.0	11.0	4.5
										10.0	8.0	
10.0	12	15	15	14	3.0		SP		Light green gray, well sorted med. SAND. Glauconitic. High perm. Sat. No HCO.	12.0	6.0	
										15.0	3.0	14.5
15.0	4	5	8	10	100		SP		S.A.A. Sat. No HCO.	17.0	1.0	15.0
									Boring Terminated at Elevation 1.0 ft			17.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

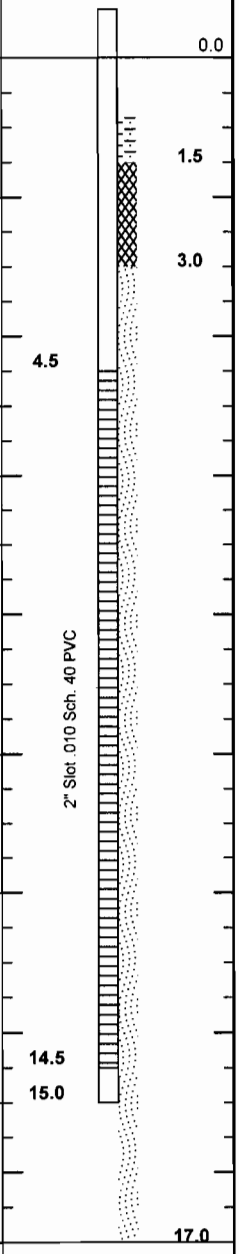
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW08
	DRILLER: Mike Sage		
NORTHING:	EASTING:	CREW: Tommy Chalmers	
SYSTEM:	BORING LOCATION: NOT LOCATED		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/26/94	FINISH DATE: 05/26/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION
									0.0	LAND SURFACE
0.0	G	R	A	B	0.0		SC		2.0	Tan and dark brown, CLAYEY SAND. Low perm. Damp. No HCO.
									5.0	
5.0	4	3	4	8	0.0		SM		6.0	Tan orange, SILTY, v.f. to med. SAND. Poorly sorted. Low perm. Wet. No HCO.
							SP		7.0	Light gray, mod. well sorted med. f. to med. SAND. Mod. high perm. Wet. No HCO.
									10.0	
10.0	3	7	12	13	4.0		SP		12.0	Light green gray, well sorted med. SAND. High perm. Sat. No HCO.
									15.0	
15.0	5	5	6	7	1.0		SP		17.0	S.A.A. Sat. No HCO.
										Boring Terminated at Depth 17.0 ft

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

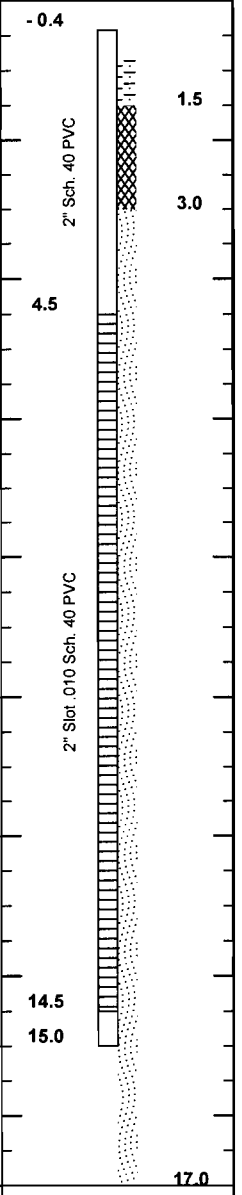
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW09
	DRILLER: Mike Sage		
NORTHING: 3843902.1	EASTING: 276078.8	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.67
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/23/94	FINISH DATE: 05/23/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
										0.0	21.1
0.0	G	R	A	B	5.8		SM		Brown, SILTY, f. to med. SAND. Poorly sorted. Dry. No HCO.	2.0	19.1
5.0	2	2	4	5	350		CL		Dark gray, med. grained SANDY CLAY. Low perm. Moist. No HCO.	7.0	14.1
10.0	5	6	7	8	300		SP		Green gray, mod. well sorted, med. SAND. Glauconitic. Sat. No HCO.	12.0	9.1
15.0	4	5	5	7	250		SP		Light gray, mod. well sorted, med. f. to med. SAND. High perm. Sat. No HCO.	17.0	4.1
									Boring Terminated at Elevation 4.1 ft		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW10
	DRILLER: Mike Sage		
NORTHING: 3843951.4	EASTING: 276234.9	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 17.11
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 05/22/94	FINISH DATE: 05/22/94	24 HOUR DTW:	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	17.6	0.0
0.0	G	R	A	B	12		SM		Brown, SILTY, med. f. to med. SAND. Low perm. Dry. No HCO.	2.0	15.6	- 0.5
5.0	5	5	6	8	220		GP		Gray brown, med. to v. cse. SAND. Well rounded. Wet. No HCO.	6.0	11.6	1.5
							SP		Gray brown, mod. well sorted, med. cse. SAND. High perm. Wet. No HCO.	7.0	10.6	3.0
10.0	6	8	10	10	7.0		SP		Light gray, mod. well sorted SAND. Sat. Possible HCO.	12.0	5.6	4.5
15.0	4	6	6	8	240		SP		S.A.A. med. f. to f. Sat. No HCO.	17.0	0.6	14.5
									Boring Terminated at Elevation 0.6 ft			15.0
												17.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson		WELL ID: USTRR-MW11
	DRILLER: Mike Sage		
NORTHING: 3843874.3	EASTING: 276282.0	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 16.24
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW: 7.0	BORING DEPTH: 17.0
START DATE: 05/26/94	FINISH DATE: 05/26/94	24 HOUR DTW: 7.5	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
										0.0	16.9	0.0
0.0	G	R	A	B	750		CL/CH		Tan and brown mottled, firm CLAY w/moderate plasticity. Root frags. and minor sands. Moist. No HCO.	2.0	14.9	- 0.6
										5.0	11.9	2.0
5.0	2	2	2	2	1000+		SM		Orange brown to light gray mottled, SILTY, med. to v. cse. SAND. Poorly sorted. Wet. No HCO.	7.0	9.9	3.0
										10.0	6.9	4.5
10.0	5	7	7	9	11		SP		Light green/gray, med. f. to med. SAND. Mod. well sorted. Sat. No HCO.	12.0	4.9	
										15.0	1.9	14.5
15.0	8	9	11	9	5		SP		S.A.A. Sat. No HCO.	17.0	-0.1	15.0
									Boring Terminated at Elevation -0.1 ft			17.0

2" Sch. 40 PVC

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

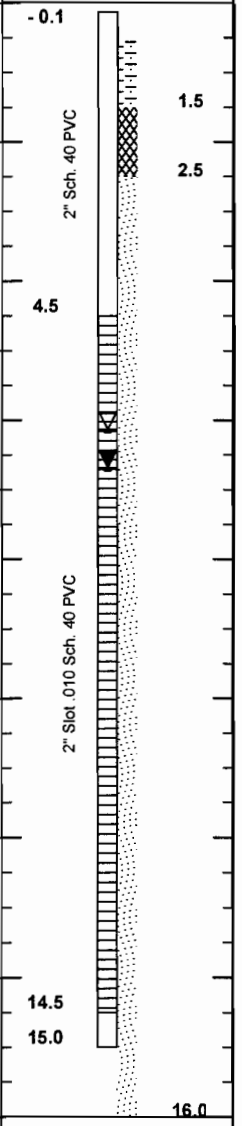
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson		WELL ID: USTRR-MW12
	DRILLER: Mike Sage		
NORTHING: 3843822.2	EASTING: 276274.9	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Off east corner of pond		T.O.C. ELEV.: 16.50
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW: 6.0	BORING DEPTH: 16.0
START DATE: 05/26/94	FINISH DATE: 05/26/94	24 HOUR DTW: 6.6	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
										0.0	16.6
0.0	G	R	A	B	1.0		CL/CH		Orange/brown, CLAY, firm w/mod. plasticity. Some pebble sized clasts. Damp. No HCO.	2.0	14.6
5.0	2	3	5	5	1.0		SP		Mottled orange/brown and brown, med.f. to med. SAND. Well sorted w/minor root frags. Wet. No HCO.	7.0	9.6
10.0	3	5	5	6	1.0		SP		Light green/gray, med. SAND. Mod. well to well sorted. Sat. No HCO.	12.0	4.6
14.0	4	6	6	8	15		SP		S.A.A. Sat. No HCO.	16.0	0.6
									Boring Terminated at Elevation 0.6 ft		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW13
	DRILLER: Mike Sage		
NORTHING:	EASTING:	CREW: Tommy Chalmers	
SYSTEM:	BORING LOCATION: NOT LOCATED		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW:	BORING DEPTH: 51.0
START DATE: 06/01/94	FINISH DATE: 09/02/94	24 HOUR DTW:	WELL DEPTH: 50.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	0.0
0.0	G	R	A	B	0.0		SM			Brown, SILTY SAND. Dry. No HCO.	
2.5	G	R	A	B	160		CL/ CH		2.5	Orange and brown mottled, CLAY w/some sand. Mod. plasticity. Low perm. Damp. No HCO.	
5.0	3	3	5	6	300				7.5		
7.5	7	9	7	7	180		SP			Light green gray, mod. well sorted, med. f. SAND. Mod. high perm. Sat. No HCO.	
10.0	8	9	9	11	160						
12.5	6	6	8	9	15						
15.0	9	8	8	12	6.4						
17.5	10	10	6	6	23				18.0		
20.0	7	5	5	6	11		SP			S.A.A. w/glauconitic sand lenses throughout. Sat. No HCO.	
22.5	8	10	12	12	3.4		SP		22.5	Light green gray, mod. well sorted, med. f. SAND. Sat. No HCO.	
25.0	0	0	0	2	15		GW		25.0	Dark green gray, SILTY, med. SANDY GRAVEL. Sat. No HCO.	

6" Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steven Hudson		WELL ID: USTRR-MW13
	DRILLER: Mike Sage		
NORTHING:	EASTING:	CREW: Tommy Chalmers	
SYSTEM:	BORING LOCATION: NOT LOCATED		T.O.C. ELEV.:
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW:	BORING DEPTH: 51.0
START DATE: 06/01/94	FINISH DATE: 09/02/94	24 HOUR DTW:	WELL DEPTH: 50.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
27.5									DEPTH 27.3	
	16	28	24	30	0.0					
30.0										
	21	10	14	16	0.0					
32.5										
	10	10	10	8	3.8				Light gray, fragmented weathered LIMESTONE. Fossiliferous w/trace sand and shell frags. Sat. No HCO.	
35.0										
	5	5	6	12	1.7					
37.5										
	8	12	12	18	4.2				40.0	39.0
										40.5
										43.0
										44.5
49.0									49.0	
	16	22	56	26	1.6				Brown gray, Calcite cemented SILTY SAND. Sat. No HCO.	49.5
									51.0	50.0
									Boring Terminated at Depth 51.0 ft	51.0

2" Slot .010 Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson		WELL ID: USTRR-MW14
	DRILLER: Mike Sage		
NORTHING: 3843873.3	EASTING: 276280.8	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Paired w/RR-11		T.O.C. ELEV.: 16.33
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW: 6.0	BORING DEPTH: 51.0
START DATE: 06/01/94	FINISH DATE: 06/02/94	24 HOUR DTW: 6.9	WELL DEPTH: 48.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	16.9	0.0
0.0	G	R	A	B	900		CL/CH		Brown and tan mottled, CLAY, mod. plasticity w/med. sand. Damp. No HCO.			- 0.6
2.5	3	2	2	2	1000+					4.0	12.9	
5.0	3	4	4	2	1000+		SM		Light gray to orange brown, SILTY SAND. Minor well rounded pebbles throughout. Wet. No HCO.			
7.5	2	2	5	6	630		SM		Tan gray, SILTY, med. SAND. Loose w/trace glauconitic sand throughout. Sat. No HCO.	7.5 / 9.0	9.4 / 7.9	
10.0	3	3	3	5	12							
12.5	4	3	3	4	3.0		SP		Light green gray, mod. well sorted, med. SAND. Sat. No HCO.			
15.0	5	3	4	4	0							
17.5	16	27	18	10	4.0		SP		Light gray, mod. well sorted, med. f. SAND. Sat. No HCO.	17.5 / 21.0	-0.6 / -4.1	
20.0	5	4	5	5	3.0							
22.5	3	3	2	2	2.4		SP		Dark gray, mod. well sorted, med. f. to med. SAND. Sat. No HCO.			
25.0	WR	WR	WR	8	6.3					26.5	-9.6	

2" Sch. 40 PVC
6" Sch. 40 PVC

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson		WELL ID: USTRR-MW14
	DRILLER: Mike Sage		
NORTHING: 3843873.3	EASTING: 276280.8	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Paired w/RR-11		T.O.C. ELEV.: 16.33
DRILL MACHINE: Diedrich D-50	METHOD: HSA/MR	0 HOUR DTW: 6.0	BORING DEPTH: 51.0
START DATE: 06/01/94	FINISH DATE: 06/02/94	24 HOUR DTW: 6.9	WELL DEPTH: 48.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
27.5												
	8	12	14	14	0				Milky gray/white, fragmented SANDY LIMESTONE. Weathered. Sat. No HCO. *(continued)*			
30.0												
	24	28	53	32	0.8					32.5	-15.6	
32.5									Milky gray, mod. cemented calcareous SAND and SILTY SAND. Sat. No HCO.			
	17	23	28	26	12					35.0	-18.1	
35.0												
	6	8	8	10	9.0		GW/ GM		Light brown/gray, poorly sorted, SAND and LS. frags. w/many fines. Poorly indurated.			
37.5												
	22	36	60/ 4		13					38.5	-21.6	
										39.0	Inferred Limestone due to split spoon refusal. -22.1	
												39.5
												40.0
												42.5
												43.0
												2" Slot .010 Sch. 40 PVC
												47.5
												48.0
49.0										49.0	-32.1	
	16	18	22	45	8.2				Milky gray and brown mottled, SANDY LIMESTONE. Mod. indurated. Sat. No HCO.			
										51.0	-34.1	51.0
									Boring Terminated at Elevation -34.1 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson		WELL ID: USTRR-MW15
	DRILLER: Mike Sage		
NORTHING: 3843872.7	EASTING: 276282.4	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 16.34
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW: 7.0	BORING DEPTH: 33.0
START DATE: 06/07/03	FINISH DATE: 06/07/03	24 HOUR DTW: 7.1	WELL DEPTH: 31.0

DEPTH	BLOW COUNT 6in 6in 6in 6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
						LAND SURFACE	0.0	16.9	0.0
				CL/CH		Brown and tan mottled, CLAY, mod. plasticity w/med. sand. Damp. No HCO.	4.0	12.9	
				SM		Light gray to orange brown, SILTY SAND. Minor well rounded pebbles throughout. Wet. No HCO.	7.5	9.4	
				SM		Tan gray, SILTY, med. SAND. Loose w/trace glauconitic sand throughout. Sat. No HCO.	9.0	7.9	
				SP		Light green gray, mod. well sorted, med. SAND. Sat. No HCO.	17.5	-0.6	
				SP		Light gray, mod. well sorted, med. f. SAND. Sat. No HCO.	21.0	-4.1	
				SP		Dark gray, mod. well sorted, med. f. to med. SAND. Sat. No HCO.	26.5	-9.6	
						Milky gray/white, fragmented SANDY LIMESTONE. Weathered. Sat. No HCO.	32.5	-15.6	
						Milky gray, fragmented SANDY and SILTY SAND. Saturated. No HCO. Lithology inferred from RR-14.	35.0	-18.1	

WELL DETAIL: -0.5; 1.0; 2.0; 3.0; 6" Sch. 40 PVC; 6" Slot .010 Sch. 40 PVC; 30.5; 31.0; 33.0

Boring terminated at Elevation -18.1

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Steve Hudson	DRILLER: Mike Sage	WELL ID: USTRR-MW15
NORTHING: 3843872.7	EASTING: 276282.4	CREW: Tommy Chalmers	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 16.34
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW: 7.0	BORING DEPTH: 33.0
START DATE: 06/07/03	FINISH DATE: 06/07/03	24 HOUR DTW: 7.1	WELL DEPTH: 31.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
							GW/ GM		Light brown/gray, poorly sorted, SAND and LS. frags. w/many fines. Poorly indurated.	38.5	-21.6	
									Inferred Limestone due to split spoon refusal.	39.0	-22.1	
										49.0	-32.1	
									Milky gray and brown mottled, SANDY LIMESTONE. Mod. indurated. Sat. No HCO.	51.0	-34.1	

Portland Cement | Bentonite Pellets | #2 Medium Sand

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Bill Walsh		WELL ID: USTRR-MW16
	DRILLER: Bobbie Fowler		
NORTHING: 3843937.8	EASTING: 276132.0	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 19.76
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 09/13/97	FINISH DATE: 09/13/97	24 HOUR DTW:	WELL DEPTH: 14.1

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	19.9	0.0
0.0	G	R	A	B	0		SW		Brown, f. to med. SAND w/gravel and silt. Dry. No HCO.	2.0	17.9	- 0.1
										5.0	14.9	2" Sch. 40 PVC 2.0 3.0 3.6
5.0	P	U	S	H	10		SW		S.A.A. w/possible HCO.	5.5	14.4	
							CH		Gray, FAT CLAY. Dry. Possible HCO.	7.0	12.9	
										10.0	9.9	2" Slot .010 Sch. 40 PVC
10.0	P	U	S	H	10		SP		Gray, f. SAND w/some SILT. Wet. Strong HCO.	12.0	7.9	
										15.0	4.9	13.6 14.1
15.0	P	U	S	H			SP		S.A.A.	17.0	2.9	17.0
									Boring Terminated at Elevation 2.9 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

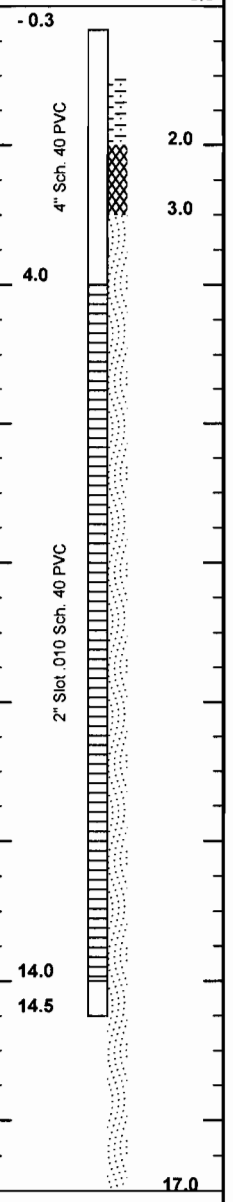
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Bill Walsh	DRILLER: Bobbie Fowler	WELL ID: USTRR-MW18
NORTHING: 3843866.8	EASTING: 276133.2	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.65
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 09/13/97	FINISH DATE: 09/13/97	24 HOUR DTW:	WELL DEPTH: 14.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
										0.0	21.0
0.0	G	R	A	B	52		SP		Black, f. SAND w/some silt. Dry. No HCO.	2.0	19.0
5.0	P	U	S	H	40		SW		Black, f. to med. SAND w/some silt. Dry. Strong HCO.	7.0	14.0
10.0	P	U	S	H	80		SW		Tan gray, f. to med. SAND w/some silt. Wet. Strong HCO.	12.0	9.0
15.0	G	R	A	B	0		SW		S.A.A. Possible HCO.	17.0	4.0
									Boring Terminated at Elevation 4.0 ft		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT 03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: USTRR-MW19
	DRILLER: Bobbie Fowler		
NORTHING: 3843827.3	EASTING: 276117.7	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: In grass next to fuel island		T.O.C. ELEV.: 20.69
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: 9.1	BORING DEPTH: 14.0
START DATE: 01/09/04	FINISH DATE: 01/09/04	24 HOUR DTW: NM	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	21.3	0.0
0.0	P	U	S	H	18		SP		Light brown to tan, f. to v.f. SAND. Moderately well sorted. Minor Fe-oxide staining/banding. Moist. No HCO.	1.0	20.3	-0.6
							SM		Dark brown, SILTY to CLAYEY, v.f. SAND. Moist. Slight HCO.	2.0	19.3	2" Sch. 40 PVC 2.0
3.0										3.0	18.3	3.0
	P	U	S	H	1000+	MW-16 (3-5')	SC/CL		Dark brown, organic-rich, SILTY to CLAYEY, v.f. SAND. Strong HCO. Moist. Large (up to ~2" in length) wood fragments at base of spoon.	5.0	16.3	3.5
8.0	P	U	S	H	1000+		SC/CL		S. A. A. Dark brown, organic-rich, SILTY to CLAYEY, v.f. SAND. Saturated. Strong HCO. No wood.	8.0	13.3	2" Slot .010 Sch. 40 PVC
										10.0	11.3	
12.0	P	U	S	H	24		CL		Brown (lighter in color than above), SILTY to v.f. SANDY CLAY. Soft. Saturated.	12.0	9.3	13.5
										14.0	7.3	14.0 14.0
									Boring Terminated at Elevation 7.3 ft			

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG RAPID REFUELER METRIC COORDS.GPJ TEST.GDT 03/06/06

WELL LOG

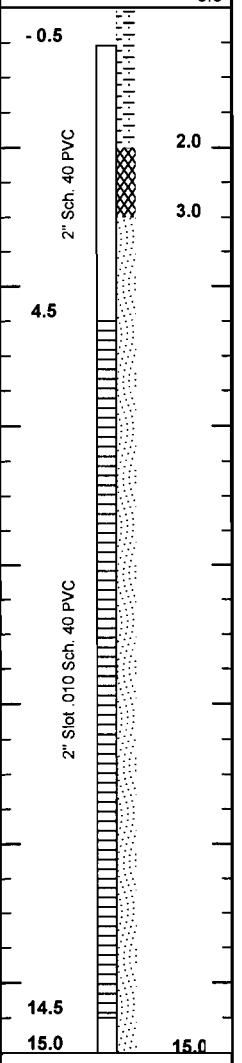
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: USTRR-MW20
	DRILLER: Bobbie Fowler		
NORTHING: 3843837.6	EASTING: 276105.1	CREW: Dimitri Talbert	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Fuel Island		T.O.C. ELEV.: 21.31
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: NM	BORING DEPTH: 15.0
START DATE: 03/11/04	FINISH DATE: 03/11/04	24 HOUR DTW: NM	WELL DEPTH: 15.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
										0.0	21.9
0.0									LAND SURFACE		
	3	5	8	15	0		SM		Dark brown, silty, f. to v.f.. SAND. Very organic-rich (resembles topsoil). Minor light orange-brown to dark brown layering @ base of spoon (layering up to 3 mm in thickness). Dry. Minor clay. Slight HCO?	2.0	19.9
3.0										3.0	18.9
	6	5	3	3	3.9	RR-20 (3-5') + DUP	SM		S. A. A. Moist. No HCO.	4.0	17.9
							SC		Dark gray to dark brown, soft, clayey, f. to v.f.. SAND. Higher clay content than above. Moist. Slight HCO?	5.0	16.9
8.0										8.0	13.9
	0	2	6	7	133.7		CL		Light gray, silty CLAY. Very soft. Stiff. High plasticity clay. Slight HCO.	9.0	12.9
							SP/SM		Light gray to gray-brown, silty, f. to v.f.. SAND. Minor fines. Saturated. Slight HCO?	10.0	11.9
12.0										12.0	9.9
	10	10	3	4	349.8		SP/SM		S. A. A. Light grayish-brown, silty, f. to v.f.. SAND. Well sorted. Saturated. Slight HCO. Base of spoon contains very poorly sorted, c. to f. silty SAND, and a large wood fragment (~2" in diameter).	14.0	7.9
									Boring Terminated at Elevation 6.9 ft Drilled hole down to 15' BLS to set well.		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

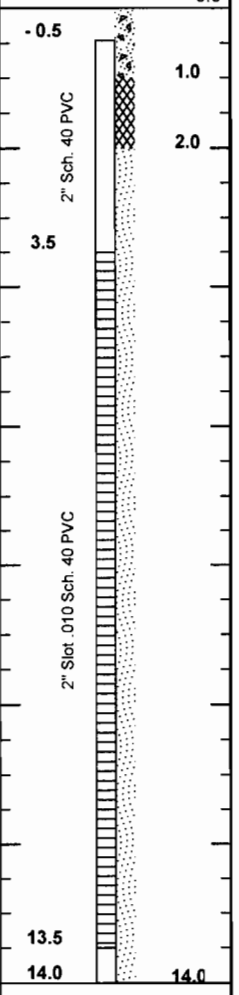
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: USTRR-MW21
	DRILLER: Bobbie Fowler		
NORTHING: 3843806.8	EASTING: 276132.5	CREW: Dimitri Talbert	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Fuel Island		T.O.C. ELEV.: 20.63
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: NM	BORING DEPTH: 14.0
START DATE: 03/11/04	FINISH DATE: 03/11/04	24 HOUR DTW: NM	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
										0.0	21.1
0.0	2	3	4	4	1.5		SM		Dark brown, silty, f. to v.f.. SAND. Almost black, very organic-rich. Moist. No HCO.	2.0	19.1
										3.0	18.1
3.0	3	5	7	8	2.2	RR-21 (3-5')	SM		S. A. A. Dark brown, silty, f. to v.f.. SAND. Moist. No HCO.	4.0	17.1
							SM		S. A. A. but dark reddish-brown in color ~4' BLS. Relatively abrupt gradational contact.	5.0	16.1
										8.0	13.1
8.0	1	2	1	2	4.8		SC		Dark gray to reddish-brown, v.f.. sandy CLAY. Saturated. Slight HCO.	10.0	11.1
										12.0	9.1
12.0	G	R	A	B	1.7		SC		S. A. A. Clayey, dark gray to reddish-brown SAND to v.f.. sandy CLAY. Saturated. Slight HCO? -from auger cuttings.	14.0	7.1
									Boring Terminated at Elevation 7.1 ft		

WELL DETAIL



Concrete | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

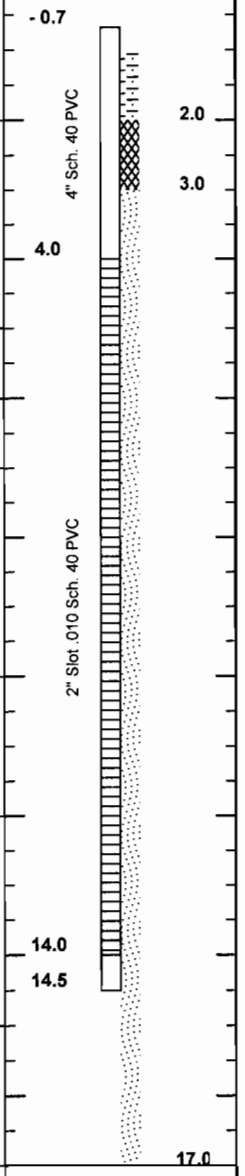
CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Bill Walsh		WELL ID: USTRR-MW22
	DRILLER: Bobbie Fowler		
NORTHING: 3843772.3	EASTING: 276018.8	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION:		T.O.C. ELEV.: 20.98
DRILL MACHINE: Diedrich D-50	METHOD: HSA	0 HOUR DTW:	BORING DEPTH: 17.0
START DATE: 09/13/97	FINISH DATE: 09/13/97	24 HOUR DTW:	WELL DEPTH: 14.5

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
									LAND SURFACE	0.0	21.7
0.0	G	R	A	B	120		SM		Dark brown, SILTY, v.f. to med. SAND. Damp. Mod. HCO.	2.0	19.7
5.0	P	U	S	H	260		SM		S.A.A.	6.0	15.7
							CL		Gray, CLAY. Damp. Strong HCO.	7.0	14.7
10.0	P	U	S	H	520		SM		Light to med. gray, SILTY, v.f. to med. SAND. Wet. Strong HCO.	12.0	9.7
15.0	G	R	A	B	470		SM		Light gray, S.A.A. Very strong HCO.	17.0	4.7
									Boring Terminated at Elevation 4.7 ft		

WELL DETAIL



Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
203-110
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: MCAS, New River
PROJECT NAME: RAPID REFUELER RAO/RCAP	LOGGED BY: Tom Stetler		WELL ID: USTRR-MW23
	DRILLER: Bobbie Fowler		
NORTHING: 3843836.3	EASTING: 276162.3	CREW: Dimitri Talbert	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Fuel Island		T.O.C. ELEV.: 19.31
DRILL MACHINE: Diedrich D-25	METHOD: HSA	0 HOUR DTW: NM	BORING DEPTH: 14.0
START DATE: 03/11/04	FINISH DATE: 03/11/04	24 HOUR DTW: NM	WELL DEPTH: 14.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION	WELL DETAIL
									LAND SURFACE	0.0	19.8	0.0
0.0	2	3	7	8	1.1		SM		Light Brownish-gray to light orange-brown, silty, f. to v.f.. SAND. Minor clay. Dry. No HCO. ~4" TOPSOIL	2.0	17.8	- 0.5 / 1.0 / 2.0
										4.0	15.8	3.5
4.0	1	2	4	3	397.3	RR-23 (4-6')	CL		Light gray to gray-brown, silty CLAY. Very soft. Moist. Strong HCO.	5.0	14.8	
							SC		S. A. A. but high f. to v.f.. sand content. Light brownish gray, silty to clayey f. to v.f.. SAND. Moist. Strong HCO.	6.0	13.8	
										8.0	11.8	
8.0	2	4	6	9	542.2		CL		Similar to top of last spoon. Light gray-brown, silty CLAY. Very soft. Moist. Strong HCO.	8.5	11.3	
							SP/SM		Light gray to greenish-gray, f. to v.f.. SAND. Minor silt. Minor v.f.. opaque mineral grains. Saturated. Strong HCO.	10.0	9.8	
										12.0	7.8	
12.0	G	R	A	B	15.1		SP/SM		S. A. A. Saturated. Slight HCO. -from auger cuttings.	14.0	5.8	13.5 / 14.0 / 14.0
									Boring Terminated at Elevation 5.8 ft			

2" Sch. 40 PVC
2" Slot .010 Sch. 40 PVC

Concrete | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG_RAPID REFUELER METRIC COORDS.GPJ_TEST.GDT_03/06/06

APPENDIX B

HISTORICAL DATA –
1998 CORRECTIVE ACTION PLAN

TABLE 1.1 (Page 1 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS -- SOIL
TPH, FLASHPOINT, AND pH

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

SAMPLE I.D.	SAMPLE DATE	SAMPLE DEPTH (ft)	LABORATORY RESULTS			
			TPH-5030 (mg/Kg)	TPH-3550 (mg/Kg)	FLASHPOINT (Degree C)	pH
RR-1	5/23/94	0 - 2	BDL	BDL	NA	NA
	5/23/94	0 - 2 DUP	BDL	BDL	NA	NA
	5/23/94	5 - 7	BDL	BDL	>97	6.87
RR-2	5/23/94	0 - 2	BDL	BDL	NA	NA
	5/23/94	5 - 7	BDL	BDL	>97	6.23
RR-3	5/25/94	0 - 2	BDL	BDL	NA	NA
	5/25/94	5 - 7	BDL	BDL	>97	5.95
RR-4	5/24/94	0 - 2	BDL	BDL	NA	NA
	5/24/94	5 - 7	BDL	BDL	>97	5.51
RR-5	5/26/94	0 - 2	BDL	BDL	NA	NA
	5/26/94	5 - 7	BDL	BDL	NA	NA
RR-6	5/25/94	0 - 2	BDL	BDL	NA	NA
	5/25/94	5 - 7	BDL	BDL	>97	5.82
RR-7	5/25/94	0 - 2	BDL	BDL	NA	NA
	5/25/94	5 - 7	BDL	BDL	>97	5.68
NCDEHNR STANDARDS			**10**	**40**	**N/A**	**N/A**

NA = Not Analyzed
BDL = Below Detection Limits

TABLE 1.1 (Page 2 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS -- SOIL
TPH, FLASHPOINT, AND pH

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

SAMPLE I.D.	SAMPLE DATE	SAMPLE DEPTH (ft)	LABORATORY RESULTS			
			TPH-5030 (mg/Kg)	TPH-3550 (mg/Kg)	FLASHPOINT (Degree C)	pH
RR-8	5/26/94	0 - 2	BDL	BDL	NA	NA
	5/26/94	5 - 7	BDL	BDL	NA	NA
RR-9	5/23/94	0 - 2	BDL	BDL	NA	NA
	5/23/94	0 - 2 DUP	BDL	BDL	NA	NA
	5/23/94	5 - 7	BDL	BDL	>97	5.52
RR-10	5/23/94	0 - 2	BDL	BDL	NA	NA
	5/23/94	0 - 2 DUP	BDL	BDL	NA	NA
	5/23/94	5 - 7	BDL	BDL	>97	6.31
RR-11	5/26/94	0 - 2	BDL	BDL	NA	NA
	5/26/94	0 - 2 DUP	BDL	BDL	NA	NA
	5/26/94	5 - 7	BDL	BDL	NA	NA
RR-12	5/26/94	0 - 2	BDL	BDL	NA	NA
	5/26/94	5 - 7	BDL	BDL	NA	NA
RR-13	6/01/94	0 - 2.5	BDL	BDL	NA	NA
	6/01/94	37.5 - 40	BDL	BDL	>96	9.10
NCDEHNR STANDARDS			**10**	**40**	**N/A**	**N/A**

NA = Not Analyzed
BDL = Below Detection Limits

TABLE 1.1 (Page 3 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS -- SOIL
TPH, FLASHPOINT, AND pH

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

SAMPLE I.D.	SAMPLE DATE	SAMPLE DEPTH (ft)	LABORATORY RESULTS			
			TPH-5030 (mg/Kg)	TPH-3550 (mg/Kg)	FLASHPOINT (Degree C)	pH
RR-14	6/02/94	0 - 2.5	BDL	BDL	NA	NA
	6/02/94	37.5 - 40	BDL	BDL	>97	9.15
RR-15	6/07/94	0 - 2	BDL	BDL	NA	NA
	6/07/94	5 - 7	BDL	BDL	NA	NA
RR-SC WASTE SOIL COMPOSITE	6/09/94		BDL	BDL	NA	NA
RR-16	9/13/97	5 - 7	BQL	47	NA	NA
RR-17	9/13/97	0 - 2	BQL	BQL	NA	NA
RR-18	9/13/97	5 - 7	BQL	161	NA	NA
RR-19	9/13/97	0 - 2	BQL	BQL	NA	NA
RR-19DUP	9/13/97	0 - 2	BQL	BQL	NA	NA
RR-20	9/13/97	0 - 2	BQL	BQL	NA	NA
RR-21	9/13/97	5 - 7	BQL	BQL	NA	NA
RR-22	9/13/97	10 - 12	BQL	5,020	NA	NA
NCDEHNR STANDARDS			**10**	**40**	**N/A**	**N/A**

NA = Not Analyzed
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations above NCDEHNR Action Levels.

TABLE 1.1 (Page 4 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS -- SOIL
TPH, FLASHPOINT, AND pH

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

SAMPLE I.D.	SAMPLE DATE	SAMPLE DEPTH (ft)	LABORATORY RESULTS			
			TPH-5030 (mg/Kg)	TPH-3550 (mg/Kg)	FLASHPOINT (Degree C)	pH
AS511-1	2/07/95	2-4	BDL	BDL	>97	6.83
	2/07/95	5-7	BDL	BDL	NA	NA
AS511-2	2/10/95	2-4	BDL	BDL	>96	6.94
	2/10/95	5-7	BDL	BDL	NA	NA
AS511-3	2/21/95	2-4	BDL	BDL	>98	7.77
	2/21/95	2-4 DUP	BDL	BDL	NA	NA
	2/21/95	5-7	BDL	BDL	NA	NA
AS511-4	3/08/95	2-4	BDL	BQL	NA	NA
	3/08/95	5-7	BDL	BQL	NA	NA
AS511-5	2/07/95	2-4	BDL	BDL	NA	NA
	2/10/95	40-42	BDL	BDL	NA	NA
AS511-6	2/10/95	2-4	23.1	BDL	NA	NA
	2/10/95	40-42	BDL	BQL	NA	NA
AS511-7	3/08/95	2-4	BDL	BQL	NA	NA
	3/08/95	40-42	BDL	BQL	NA	NA
NCDEHNR STANDARDS			**10**	**40**	**N/A**	**N/A**

NA = Not Analyzed
N/A = Not Applicable
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations above NCDEHNR Action Levels.

TABLE 1.1 (Page 5 of 5)

SUMMARY OF LABORATORY ANALYTICAL RESULTS -- SOIL
TPH, FLASHPOINT, AND pH

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

SAMPLE I.D.	SAMPLE DATE	SAMPLE DEPTH	LABORATORY RESULTS			
			TPH-5030 (mg/Kg)	TPH-3550 (mg/Kg)	FLASHPOINT (Degree C)	pH
AS511-8	3/08/95	2-4	BDL	BQL	NA	NA
	3/08/95	2-4 DUP	BDL	BQL	NA	NA
	3/08/95	5-7	BDL	BQL	NA	NA
AS511-WS	3/10/95	N/A	BDL	BQL	NA	NA
COMP WASTE	3/08/95	N/A	BDL	BQL	NA	NA
LAB BLANK	2/14/95	N/A	BDL	BDL	NA	NA
LAB BLANK	2/24/95	N/A	BDL	BDL	NA	NA
LAB BLANK	3/14/95	N/A	BDL	NA	NA	NA
LAB BLANK	3/15/95	N/A	NA	BDL	NA	NA
LAB BLANK	3/15/95	N/A	BDL	BDL	NA	NA
LAB BLANK	3/15/95	N/A	BDL	BDL	NA	NA
NCDEHNR STANDARDS			**10**	**40**	**N/A**	**N/A**

NA = Not Analyzed
N/A = Not Applicable
BDL = Below Detection Limits
BQL = Below Quantitation Limits

TABLE 1.2 (Page 1 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	CP-1	CP-1 DUP	CP-2	CP-2 DUP	CP-3
DATE SAMPLED		5/16/94	5/17/94	5/16/94	5/17/94	5/17/94
ANALYTE						
Benzene	1	BDL	BDL	BDL	BDL	0.6
Toluene	1000	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	0.6

* = All results in ug/L (ppb)
BDL = Below Detection Limits

TABLE 1.2 (Page 2 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	CP-4	CP-5	CP-6	CP-7	CP-8
DATE SAMPLED		5/17/94	5/17/94	5/17/94	5/17/94	5/18/94
ANALYTE						
Benzene	1	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits

TABLE 1.2 (Page 3 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	CP-9	CP-10	CP-11	CP-12	CP-13
DATE SAMPLED		5/18/94	5/18/94	5/19/94	5/19/94	5/19/94
ANALYTE						
Benzene	1	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	1.7	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	1.7	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits

TABLE 1.2 (Page 4 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	CP-14	CP-15	RINS-1
DATE SAMPLED		6/03/94	6/03/94	5/18/94
ANALYTE				
Benzene	1	BDL	BDL	BDL
Toluene	1000	BDL	1.3	BDL
Chlorobenzene	50	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BQL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL
TOTALS		BDL	1.3	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits

TABLE 1.2 (Page 5 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	ASP-1	ASP-2	ASP-2 DUP	ASP-3	ASP-4	ASP-5	ASP-6
DATE SAMPLED		2/21/95	2/21/95	2/21/95	2/21/95	2/22/95	2/22/95	2/22/95
ANALYTE								
Benzene	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits

TABLE 1.2 (Page 6 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	ASP-7	ASP-8	ASP-9	ASP-10	ASP-11	ASP-12	ASP-13
DATE SAMPLED		2/23/95	2/23/95	2/23/95	2/23/95	3/03/95	3/03/95	3/03/95
ANALYTE								
Benzene	1	BDL	56.4	0.6	1.4	BDL	BDL	BDL
Toluene	1000	0.7	74.0	1.0	2.7	BDL	BDL	BDL
Chlorobenzene	50	BDL	BQL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	164	0.7	1.5	BDL	BDL	BDL
Xylenes	530	1.8	662	1.8	6.6	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BQL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BQL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BQL	BDL	BDL	BDL	BDL	BDL
TOTALS		2.5	956.4	4.1	12.2	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.2 (Page 7 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

PURGEABLE AROMATICS-EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	ASP-14	ASP-15	ASP-15 DUP	LAB BLANK	LAB BLANK	LAB BLANK	LAB BLANK
DATE SAMPLED		3/03/95	3/03/95	3/03/95	2/22/95	2/24/95	2/24/95	3/06/95
ANALYTE								
Benzene	1	BDL	1.1	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	1.1	BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.3 (Page 1 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	MW-3	MW-4	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13
DATE SAMPLED		5/18/94	9/29/94	5/17/94	5/17/94	5/19/94	5/18/94	5/17/94	5/18/94
ANALYTE									
Benzene	1	21.7	BDL	26.2	BDL	169	5.1	BDL	BDL
Toluene	1000	1.9	BDL	62.6	BDL	96.4	9.5	BDL	BDL
Chlorobenzene	50	BQL	BDL	BQL	BDL	BQL	BQL	BDL	BDL
Ethylbenzene	29	96.4	BDL	81.2	BDL	229	3.1	BDL	BDL
Xylenes	530	100	BDL	294	BDL	1160	BQL	BDL	BDL
1,3 Dichlorobenzene	620	BQL	BDL	BQL	BDL	BQL	BQL	BDL	BDL
1,4 Dichlorobenzene	75	BQL	BDL	BQL	BDL	BQL	BQL	BDL	BDL
1,2 Dichlorobenzene	620	BQL	BDL	BQL	BDL	BQL	BQL	BDL	BDL
TOTALS		220	BDL	464	BDL	1,654.4	17.7	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.3 (Page 2 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	MW-14	DW-5	DW-6	RINSE-1	RR-WWC	RR-1	RR-1 DUP	RR-2
DATE SAMPLED		5/18/94	5/17/94	5/17/94	5/18/94	6/09/94	6/09/94	6/09/94	6/09/94
ANALYTE									
Benzene	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	1.1	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Xylenes	530	BDL	BDL	BDL	BDL	1.5	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	1.1	BDL	1.5	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits

TABLE 1.3 (Page 3 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-3	RR-4	RR-5	RR-6	RR-7	RR-8	RR-9	RR-10
DATE SAMPLED		6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94
ANALYTE									
Benzene	1	BDL	BDL	BDL	BDL	BDL	2.1	BDL	11.1
Toluene	1000	BDL	BDL	BDL	BDL	BDL	2.1	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	BDL	15.7
Xylenes	530	BDL	BDL	BDL	BDL	BDL	1.1	BDL	BDL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL	5.3	BDL	26.8

* = All results in ug/L (ppb)
BDL = Below Detection Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.3 (Page 4 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-11	RR-12	RR-13	RR-14	RR-15	TRIP BLANK	RR-9	RR-12
DATE SAMPLED		6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	9/08/97	9/08/97
ANALYTE									
Benzene	1	0.5	BDL	BDL	BDL	BDL	BDL	13	BQL
Toluene	1000	BDL	BDL	BDL	BDL	BDL	BDL	BQL	BQL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BQL	BQL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	30	BQL
Xylenes	530	BDL	BDL	BDL	BDL	BDL	BDL	39	BQL
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BQL	BQL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BQL	BQL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BQL	BQL
TOTALS		0.5	BDL	BDL	BDL	BDL	BDL	82	BQL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.3 (Page 5 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-10	RR-7	RR-11	RR-11 DUP	RR-17	RR-19	RR-20	RR-21	RR-8
DATE SAMPLED		9/08/97	9/08/97	9/13/97	9/13/97	9/22/97	9/22/97	9/22/97	9/22/97	10/4/97
ANALYTE										
Benzene	1	BQL	BQL	BQL	BQL	BQL	6	1	BQL	BDL
Toluene	1000	BQL	BQL	BQL	BQL	BQL	9	BQL	BQL	BDL
Chlorobenzene	50	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BDL
Ethylbenzene	29	BQL	BQL	BQL	BQL	10	24	BQL	14	BDL
Xylenes	530	BQL	BQL	BQL	BQL	16	110	BQL	BQL	BDL
1,3 Dichlorobenzene	620	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BDL
1,4 Dichlorobenzene	75	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BDL
1,2 Dichlorobenzene	620	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BDL
TOTALS		BQL	BQL	BQL	BQL	26	149	1	14	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.3 (Page 6 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	AS511-1	AS511-2	AS511-3	AS511-4	AS511-5	AS511-6	AS511-7	AS511-8
DATE SAMPLED		3/13/95	3/10/95	3/10/95	3/10/95	3/10/95	3/13/95	3/13/95	3/10/95
ANALYTE									
Benzene	1	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Toluene	1000	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Chlorobenzene	50	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Ethylbenzene	29	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.5
Xylenes	530	BDL	BDL	BDL	BDL	BDL	BDL	BDL	11.1
1,3 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL	BDL	BDL	11.6

* = All results in ug/L (ppb)
BDL = Below Detection Limts

TABLE 1.3 (Page 7 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

PURGEABLE AROMATICS - EPA METHOD 602

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	AS511-1	AS511-2	TRIP BLANK	AS511-WW	AS511-TB	LAB BLANK	LAB BLANK
DATE SAMPLED		9/13/97	9/13/97	9/13/97	3/10/95	3/10/95	3/14/95	3/14/95
ANALYTE								
Benzene	1	BQL	BQL	BQL	BQL	BDL	BDL	BDL
Toluene	1000	BQL	BQL	BQL	42.4	BDL	BDL	BDL
Chlorobenzene	50	BQL	BQL	BQL	BQL	BDL	BDL	BDL
Ethylbenzene	29	BQL	BQL	BQL	50.8	BDL	BDL	BDL
Xylenes	530	BQL	BQL	BQL	312	BDL	BDL	BDL
1,3 Dichlorobenzene	620	BQL	BQL	BQL	BQL	BDL	BDL	BDL
1,4 Dichlorobenzene	75	BQL	BQL	BQL	BQL	BDL	BDL	BDL
1,2 Dichlorobenzene	620	BQL	BQL	BQL	BQL	BDL	BDL	BDL
TOTALS		BQL	BQL	BQL	405.2	BDL	BDL	BDL

* = All results in ug/L (ppb)
BDL = Below Detection Limts
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.4 (Page 1 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS-EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARDS*	CP-1	CP-1 DUP	CP-2	CP-2 DUP	CP-3
DATE SAMPLED		5/16/94	5/17/94	5/16/94	5/17/94	5/17/94
ANALYTE						
Naphthalene	21	BDL	BDL	BDL	BDL	BDL
All others**	varies	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in laboratory analytical results in Appendix I of CSA.
BDL = Below Detection Limits

TABLE 1.4 (Page 2 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS-EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARDS*	CP-4	CP-5	CP-6	CP-7	CP-8
DATE SAMPLED		5/17/94	5/17/94	5/17/94	5/17/94	5/18/94
ANALYTE						
Naphthalene	21	BDL	BDL	BDL	BDL	BDL
All others**	varies	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits

TABLE 1.4 (Page 3 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS-EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARDS*	CP-9	CP-10	CP-11	CP-12	CP-13
DATE SAMPLED		5/18/94	5/18/94	5/19/94	5/19/94	5/19/94
ANALYTE						
Naphthalene	21	BQL	BQL	4.1	BDL	BDL
All others**	varies	BQL	BQL	BDL	BDL	BDL
TOTALS		BQL	BQL	4.1	BDL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits
BQL = Below Quantitation Limits

TABLE 1.4 (Page 4 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS-EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARDS*	CP-14	CP-15	RINS-1
DATE SAMPLED		6/03/94	6/03/94	5/18/94
ANALYTE				
Naphthalene	21	BQL	BQL	BDL
All others**	varies	BQL	BQL	BDL
TOTALS		BQL	BQL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits
BQL = Below Quantitation Limits

TABLE 1.4 (Page 5 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	ASP-1	ASP-2	ASP-2 DUP	ASP-3	ASP-4	ASP-5	ASP-6
DATE SAMPLED		2/21/95	2/21/95	2/21/95	2/21/95	2/22/95	2/22/95	2/22/95
ANALYTE								
Naphthalene	21	BDL	BQL	BDL	BDL	BQL	BDL	BQL
Acenaphthylene	210	BDL	BQL	BDL	BDL	BQL	BDL	BQL
All other compounds**	varies	BDL	BQL	BDL	BDL	BQL	BDL	BQL

* = All results in ug/L (ppb)
** = All compounds listed in Laboratory Analytical Reports in Appendix I in CSA.
BDL = Below Detection Limts
BQL = Below Quantitation Limits

TABLE 1.4 (Page 6 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	ASP-7	ASP-8	ASP-9	ASP-10	ASP-12
DATE SAMPLED		2/23/95	2/23/95	2/23/95	2/23/95	3/03/95
ANALYTE						
Naphthalene	21	BDL	14,400	BDL	BDL	BDL
Acenaphthylene	210	BDL	49.6	BDL	BDL	BDL
All other compounds**	varies	BDL	14,449.6	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All compounds listed in Laboratory Analytical Reports in Appendix I in CSA.
BDL = Below Detection Limts
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.4 (Page 7 of 7)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
HYDROPUNCH GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	ASP-14	ASP-15	ASP-15 DUP	LAB BLANK	LAB BLANK	LAB BLANK
DATE SAMPLED		3/03/95	3/03/95	3/03/95	2/23/95	2/24/95	3/07/95
ANALYTE							
Naphthalene	21	BDL	BQL	BQL	BDL	BDL	BDL
Acenaphthylene	210	BDL	BQL	BQL	BDL	BDL	BDL
All other compounds**	varies	BDL	BQL	BQL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All compounds listed in Laboratory Analytical Reports in Appendix I in CSA.
BDL = Below Detection Limts
BQL = Below Quantitation Limits

TABLE 1.5 (Page 1 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	MW-3	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13
DATE SAMPLED		5/18/94	5/17/94	5/17/94	5/19/94	5/18/94	5/17/94	5/18/94
ANALYTE								
Naphthalene	21	436	561	BDL	83,736	7.2	BDL	30.3
Acenaphthylene	210	138	BDL	BDL	BQL	BDL	BDL	BDL
Fluorene	280	BDL	BDL	BDL	BQL	BDL	BDL	BDL
Pyrene	210	BDL	123	BDL	BQL	BDL	BDL	BDL
All other compounds**	Varies	BDL	BDL	BDL	BQL	BDL	BDL	BDL
TOTALS		574	684	BDL	83,736	7.2	BDL	30.3

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.5 (Page 2 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	MW-14	DW-5	DW-6	RR-WWC	RINS-1	RR-1	RR-1 DUP
DATE SAMPLED		5/18/94	5/17/94	5/17/94	6/09/94	5/18/94	6/09/94	6/09/94
ANALYTE								
Naphthalene	21	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Acenaphthylene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluorene	280	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pyrene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL
All other compounds**	Varies	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits

TABLE 1.5 (Page 3 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-2	RR-3	RR-4	RR-5	RR-6	RR-7	RR-8
DATE SAMPLED		6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94
ANALYTE								
Naphthalene	21	BDL	BDL	BDL	1.2	BDL	BDL	BDL
Acenaphthylene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Fluorene	280	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Pyrene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL
All other compounds**	Varies	BDL	BDL	BDL	BDL	BDL	BDL	BDL
TOTALS		BDL	BDL	BDL	1.2	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits

TABLE 1.5 (Page 4 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-9	RR-10	RR-11	RR-12	RR-13	RR-14	RR-15	TRIP BLANK
DATE SAMPLED		6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94	6/09/94
ANALYTE									
Naphthalene	21	BDL	49.5	BQL	BDL	BQL	BDL	BQL	BDL
Acenaphthylene	210	BDL	BDL	BQL	BDL	BQL	BDL	BQL	BDL
Fluorene	280	BDL	BDL	BQL	1.1	BQL	BDL	BQL	BDL
Pyrene	210	BDL	BDL	BQL	BDL	BQL	BDL	BQL	BDL
All others compounds**	varies	BDL	BDL	BQL	BDL	BQL	BDL	BQL	BDL
TOTALS		BDL	49.5	BQL	1.1	BQL	BDL	BQL	BDL

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.5 (Page 5 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-7	RR-7DUP	RR-11	RR-9	RR-10	RR-12	RR-17
DATE SAMPLED		9/13/97	9/13/97	9/13/97	9/08/97	9/08/97	9/08/97	9/22/97
ANALYTE								
Naphthalene	21	BQL	BQL	BQL	110	BQL	BQL	22
Acenaphthylene	210	BQL	BQL	BQL	BQL	BQL	BQL	BQL
Fluorene	280	BQL	BQL	BQL	BQL	BQL	BQL	BQL
Pyrene	210	BQL	BQL	BQL	BQL	BQL	BQL	BQL
All others compounds**	varies	BQL	BQL	BQL	BQL	BQL	BQL	BQL
TOTALS		BQL	BQL	BQL	110	BQL	BQL	22

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.5 (Page 6 of 6)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

POLYNUCLEAR AROMATIC HYDROCARBONS - EPA METHOD 610

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-21	RR-19	RR-20	AS511-1	AS511-2
DATE SAMPLED		9/22/97	9/22/97	9/22/97	9/13/97	9/13/97
ANALYTE						
Naphthalene	21	48	84	BQL	BQL	BQL
Acenaphthylene	210	BQL	BQL	BQL	BQL	BQL
Fluorene	280	BQL	BQL	BQL	BQL	BQL
Pyrene	210	BQL	BQL	BQL	BQL	BQL
All others compounds**	varies	BQL	BQL	BQL	BQL	BQL
TOTALS		48	84	BQL	BQL	BQL

* = All results in ug/L (ppb)
** = All other compounds listed in the laboratory analytical results in Appendix I in CSA.
BQL = Below Quantitation Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.6 (Page 1 of 3)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

BASE/ NEUTRALS AND ACID EXTRACTABLES - EPA METHOD 625

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	N.C. GROUND WATER STANDARD*	RR-4	RR-7	RR-9	RR-10	RR-11
DATE SAMPLED		6/17/94	6/17/94	6/17/94	6/17/94	6/17/94
ANALYTE						
BASE/ NEUTRALS						
Naphthalene	21	BDL	BDL	BDL	23	BDL
All compound others**	varies	BDL	BDL	BDL	BDL	BDL
TOTAL		BDL	BDL	BDL	23	BDL
ACID EXTRACTABLES						
All compounds**	varies	BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All compounds listed in the laboratory analytical results in Appendix I in CSA.
BDL = Below Detection Limits
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.

TABLE 1.6 (Page 2 of 3)

SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

BASE/ NEUTRALS AND ACID EXTRACTABLES - EPA METHOD 625

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	AS511-1	AS511-2	AS511-3	AS511-4	AS511-5	AS511-6	AS511-7	AS511-8
DATE SAMPLED		3/13/95	3/10/95	3/10/95	3/10/95	3/10/95	3/13/95	3/13/95	3/10/95
ANALYTE									
625 AIR STATION/ NEUTRALS									
Naphthalene	21	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Phenanthrene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Acenaphthalene	210	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Bis2EthylhexylPhthalate	NE	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
All other compounds**	varies	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL
625 ACID EXTRACTABLES									
All compounds**	varies	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All compounds listed in Laboratory Analytical Reports in Appendix I in CSA.
BDL = Below Detection Limts
NE = None Established

TABLE 1.6 (Page 3 of 3)

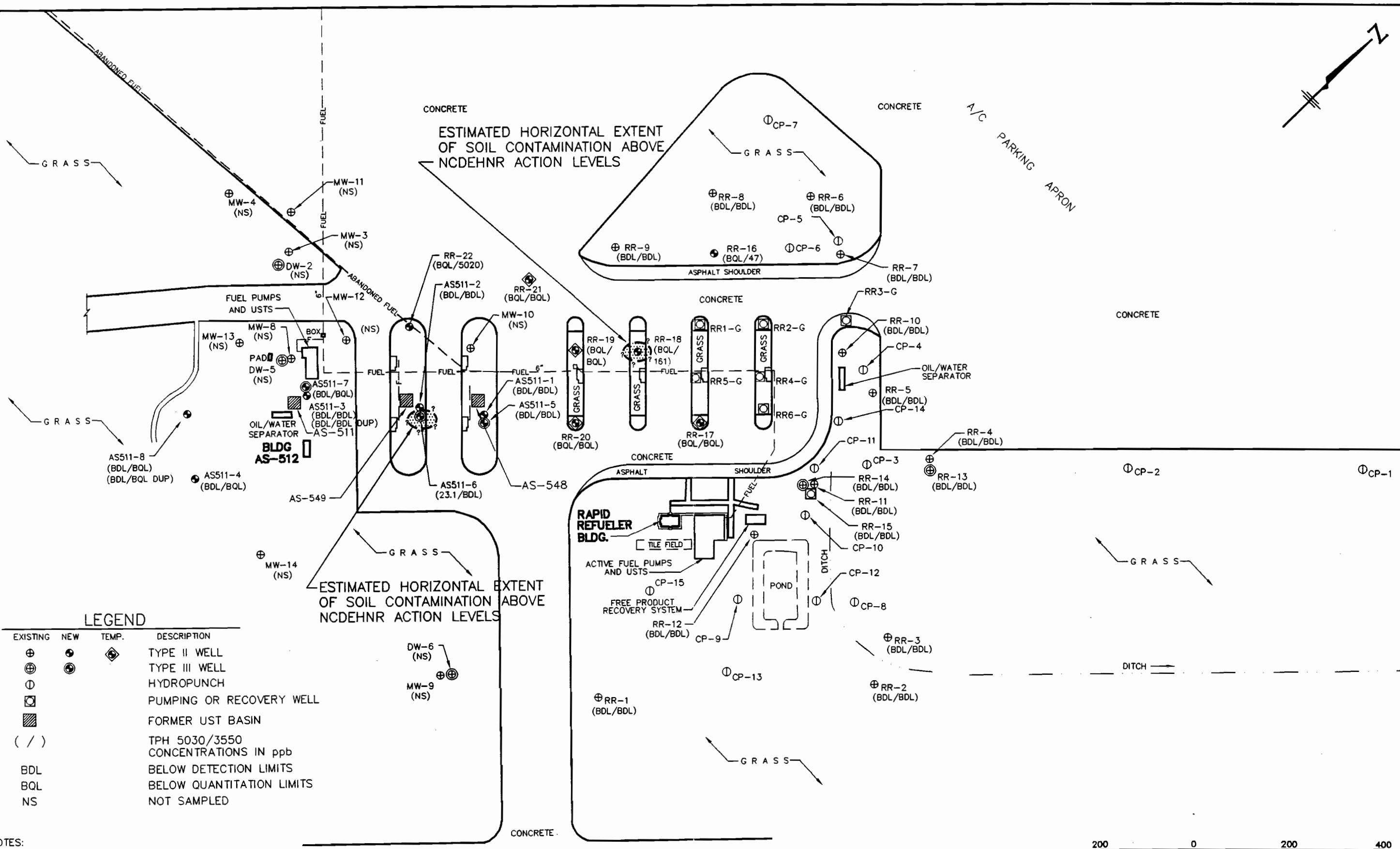
SUMMARY OF LABORATORY ANALYTICAL RESULTS*
MONITORING WELL GROUND WATER SAMPLES

BASE/ NEUTRALS AND ACID EXTRACTABLES - EPA METHOD 625

RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA

	NC GROUND WATER STANDARD*	AS511-WW	AS511-TB	LAB BLANK	LAB BLANK
DATE SAMPLED		3/10/95	3/10/95	3/15/95	3/15/95
ANALYTE					
625 AIR STATION/ NEUTRALS					
Naphthalene	21	297	BDL	BDL	BDL
Phenanthrene	210	87.7	BDL	BDL	BDL
Acenaphthylene	210	26.2	BDL	BDL	BDL
Bis2EthylhexylPhthalate	NE	BDL	47.1	BDL	BDL
All other compounds**	varies	BDL	BDL	BDL	BDL
625 ACID EXTRACTABLES					
All compounds**	varies	BDL	BDL	BDL	BDL

* = All results in ug/L (ppb)
** = All compounds listed in Laboratory Analytical Reports in Appendix I in CSA.
BDL = Below Detection Limts
NE = None Established
Shaded areas indicate concentrations in excess of NCAC T15A:02L Standards.



LEGEND

EXISTING	NEW	TEMP.	DESCRIPTION
⊕	●	◈	TYPE II WELL
⊕	●		TYPE III WELL
⦶			HYDROPUNCH
▣			PUMPING OR RECOVERY WELL
▨			FORMER UST BASIN
(/)			TPH 5030/3550 CONCENTRATIONS IN ppb
BDL			BELOW DETECTION LIMITS
BQL			BELOW QUANTITATION LIMITS
NS			NOT SAMPLED

NOTES:

1. MW-4 LABELED ACCORDING TO BAKER MAPS. FIELD LABELING OF THE WELL WAS FOUND TO BE MW-5.
2. SOIL SAMPLES AS511-1 THROUGH AS511-8 WERE COLLECTED FROM A DEPTH OF 2-4 FEET.
3. NCDEHNR ACTION LEVELS FOR TPH ARE: 10ppm TPH-5030
   40ppm TPH-3550
4. SAMPLES AS511-1 THROUGH AS511-8 WERE COLLECTED 2-7-95 THROUGH 3-17-95.
5. SAMPLES RR-1 THROUGH RR-15 WERE COLLECTED 5-27-94 THROUGH 6-7-94.
6. SAMPLE RR-22 COLLECTED FROM A DEPTH OF 10-12 FEET
7. SAMPLES RR-16 THROUGH RR-22 COLLECTED ON 9-13-97
8. RECOVERY WELLS RR1-G THROUGH RR6-G ARE PART OF THE ACTIVE FREE PRODUCT RECOVERY SYSTEM.

INSTRUMENT RUNWAY 5-23

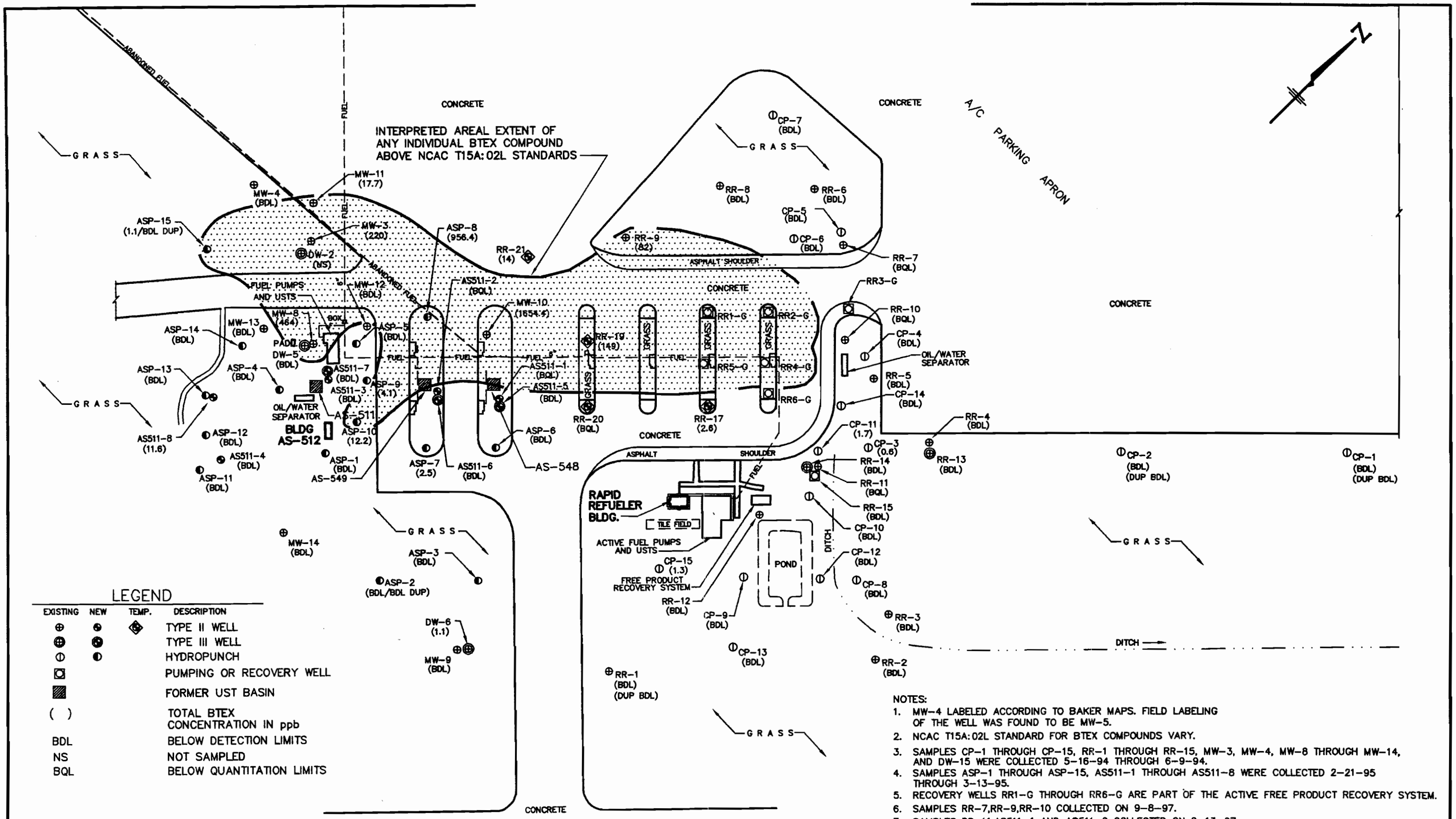
Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA
CHARLOTTE, NC COLUMBIA, SC AMERICUS, GA

PROJECT: RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, N.C.

TITLE: TPH CONCENTRATIONS (SOIL) - SPATIAL EXTENT MAP

FIGURE: 1.3

JOB NO. 97015-CP | DATE: MAR 1998 | SCALE: 1"=200' | DRAWN BY: WHW | CHECKED BY: KPB



LEGEND

EXISTING	NEW	TEMP.	DESCRIPTION
⊕	◒	◈	TYPE II WELL
⊕	◒		TYPE III WELL
⦶	◐		HYDROPUNCH
▣			PUMPING OR RECOVERY WELL
▨			FORMER UST BASIN
( )			TOTAL BTEX CONCENTRATION IN ppb
BDL			BELOW DETECTION LIMITS
NS			NOT SAMPLED
BQL			BELOW QUANTITATION LIMITS

INSTRUMENT RUNWAY 5-23

200 0 200 400
SCALE IN FEET

NOTES:
1. MW-4 LABELED ACCORDING TO BAKER MAPS. FIELD LABELING OF THE WELL WAS FOUND TO BE MW-5.
2. NCAC T15A:02L STANDARD FOR BTEX COMPOUNDS VARY.
3. SAMPLES CP-1 THROUGH CP-15, RR-1 THROUGH RR-15, MW-3, MW-4, MW-8 THROUGH MW-14, AND DW-15 WERE COLLECTED 5-16-94 THROUGH 6-9-94.
4. SAMPLES ASP-1 THROUGH ASP-15, AS511-1 THROUGH AS511-8 WERE COLLECTED 2-21-95 THROUGH 3-13-95.
5. RECOVERY WELLS RR1-G THROUGH RR6-G ARE PART OF THE ACTIVE FREE PRODUCT RECOVERY SYSTEM.
6. SAMPLES RR-7,RR-9,RR-10 COLLECTED ON 9-8-97.
7. SAMPLES RR-11,AS511-1 AND AS511-2 COLLECTED ON 9-13-97.
8. SAMPLES RR-17,RR-19,RR-20 AND RR-21 COLLECTED ON 9-22-97.
9. SAMPLE RR-8 COLLECTED ON 10-4-97.

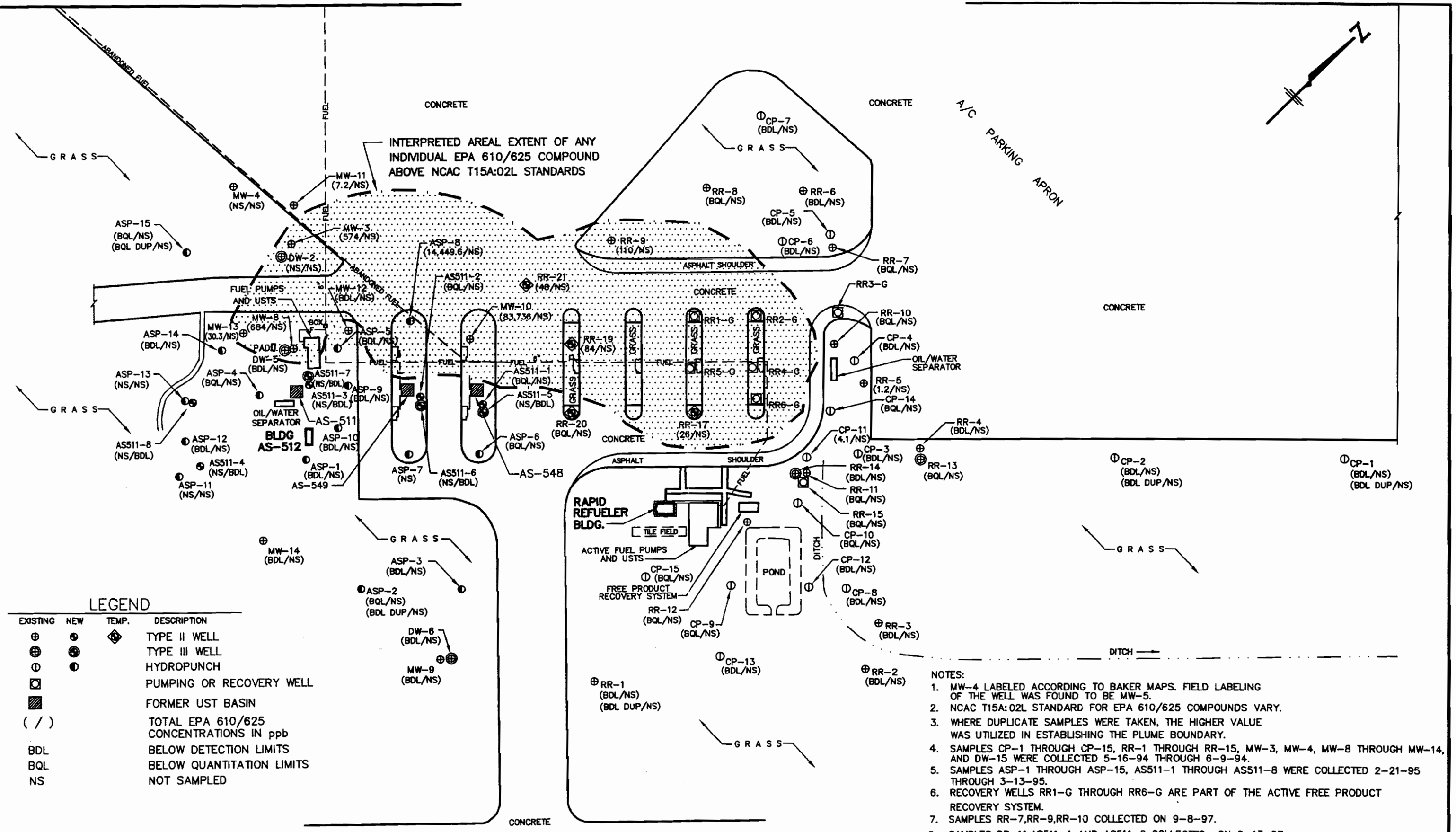
Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLOTTE, NC CHARLESTON, SC COLUMBIA, SC ATLANTA, GA AMERICUS, GA

PROJECT: RAPID REFUELER MARINE CORPS AIR STATION NEW RIVER, N.C.

TITLE: TOTAL BTEX CONCENTRATIONS (WATER) - SPATIAL EXTENT MAP

FIGURE 1.4

JOB NO. 97015-CP | DATE: OCT. 1997 | SCALE: 1"=200' | DRAWN BY: WHW | CHECKED BY: AP



LEGEND

EXISTING	NEW	TEMP.	DESCRIPTION
⊕	⊕	◈	TYPE II WELL
⊕	⊕		TYPE III WELL
⊙	⊙		HYDROPUNCH
▣			PUMPING OR RECOVERY WELL
▨			FORMER UST BASIN
(/)			TOTAL EPA 610/625 CONCENTRATIONS IN ppb
BDL			BELOW DETECTION LIMITS
BQL			BELOW QUANTITATION LIMITS
NS			NOT SAMPLED

200 0 200 400
SCALE IN FEET

INSTRUMENT RUNWAY 5-23

NOTES:
1. MW-4 LABELED ACCORDING TO BAKER MAPS. FIELD LABELING OF THE WELL WAS FOUND TO BE MW-5.
2. NCAC T15A:02L STANDARD FOR EPA 610/625 COMPOUNDS VARY.
3. WHERE DUPLICATE SAMPLES WERE TAKEN, THE HIGHER VALUE WAS UTILIZED IN ESTABLISHING THE PLUME BOUNDARY.
4. SAMPLES CP-1 THROUGH CP-15, RR-1 THROUGH RR-15, MW-3, MW-4, MW-8 THROUGH MW-14, AND DW-15 WERE COLLECTED 5-16-94 THROUGH 6-9-94.
5. SAMPLES ASP-1 THROUGH ASP-15, AS511-1 THROUGH AS511-8 WERE COLLECTED 2-21-95 THROUGH 3-13-95.
6. RECOVERY WELLS RR1-G THROUGH RR6-G ARE PART OF THE ACTIVE FREE PRODUCT RECOVERY SYSTEM.
7. SAMPLES RR-7,RR-9,RR-10 COLLECTED ON 9-8-97.
8. SAMPLES RR-11,AS511-1 AND AS511-2 COLLECTED ON 9-13-97.
9. SAMPLES RR-17,RR-19,RR-20, AND RR-21 COLLECTE ON 9-22-97.
10. SAMPLE RR-8 COLLECTED ON 10-4-97.

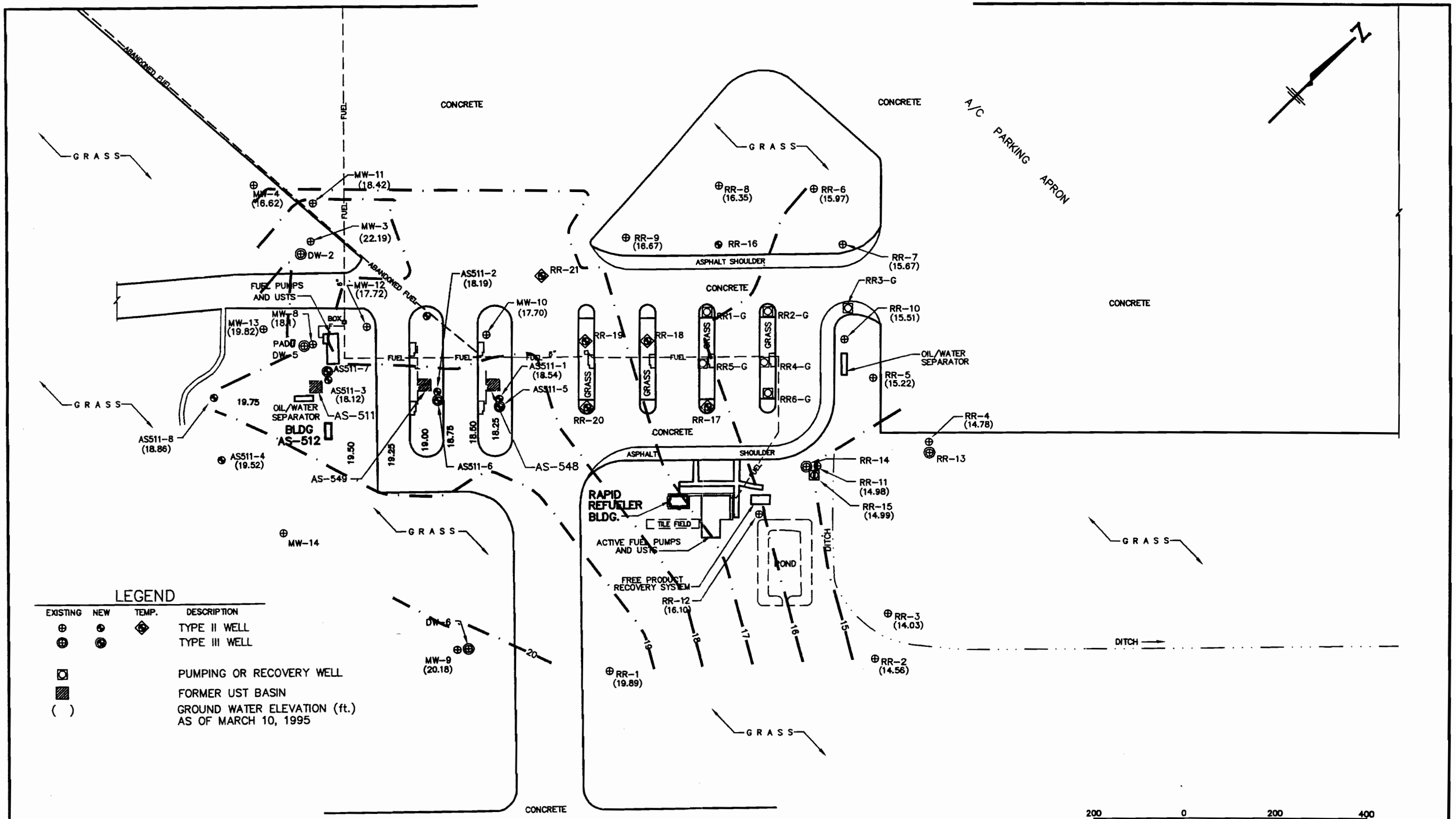
Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA
CHARLOTTE, NC COLUMBIA, SC AMERICUS, GA

PROJECT: RAPID REFUELER MARINE CORPS AIR STATION NEW RIVER, N.C.

TITLE: TOTAL EPA 610/625 CONCENTRATIONS (WATER) - SPATIAL EXTENT MAP

FIGURE: 1.5

JOB NO. 97015-CP | DATE: OCT. 1997 | SCALE: 1"=200' | DRAWN BY: WHW | CHECKED BY: AP



LEGEND

EXISTING	NEW	TEMP.	DESCRIPTION
⊕	⊕	◈	TYPE II WELL
⊕	⊕		TYPE III WELL
▣			PUMPING OR RECOVERY WELL
▨			FORMER UST BASIN
( )			GROUND WATER ELEVATION (ft.) AS OF MARCH 10, 1995

NOTES:
1. MW-4 LABELED ACCORDING TO BAKER MAPS. FIELD LABELING OF THE WELL WAS FOUND TO BE MW-5.
2. GROUND WATER ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL.
3. CONTOUR INTERVAL = 1ft.
4. TYPE III WELLS WERE NOT UTILIZED IN CONTOURING.
5. RECOVERY WELLS RR1-G THROUGH RR6-G ARE PART OF THE ACTIVE FREE PRODUCT RECOVERY SYSTEM.

INSTRUMENT RUNWAY 5-23

Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA
CHARLOTTE, NC COLUMBIA, SC AMERICUS, GA

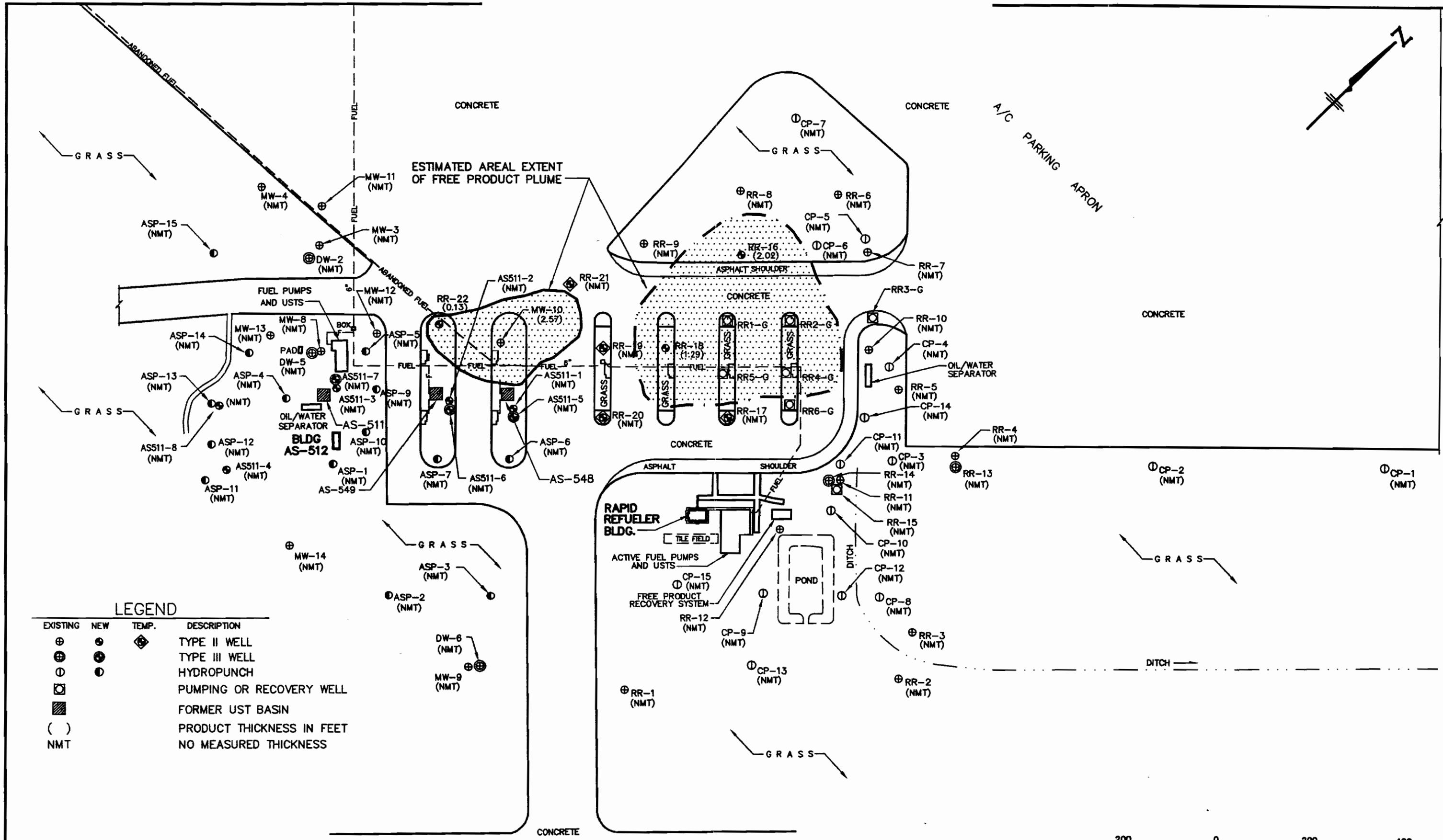
PROJECT: RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, N.C.

JOB NO. 97015-CP | DATE: OCT. 1997

TITLE: WATER TABLE CONTOUR MAP AS OF OCTOBER 4, 1997

SCALE: 1"=200' | DRAWN BY: WHW | CHECKED BY: AP

FIGURE 1.6



LEGEND

EXISTING	NEW	TEMP.	DESCRIPTION
⊕	⊕	◈	TYPE II WELL
⊕	⊕		TYPE III WELL
⊙	◐		HYDROPUNCH
▣			PUMPING OR RECOVERY WELL
▨			FORMER UST BASIN
( )			PRODUCT THICKNESS IN FEET
NMT			NO MEASURED THICKNESS

INSTRUMENT RUNWAY 5-23

NOTES:
1. MW-4 LABELED ACCORDING TO BAKER MAPS. FIELD LABELING OF THE WELL WAS FOUND TO BE MW-5.
2. ALL WELLS GAUGED ON 10-4-97
3. ALL HYDROPUNCH SAMPLES WERE OBSERVED FOR PRODUCT WHEN INSTALLED. INSTALLATION DATES VARY.
4. RECOVERY WELLS RR1-G THROUGH RR6-G ARE PART OF THE ACTIVE FREE PRODUCT RECOVERY SYSTEM.

Richard Catlin & Associates, Inc.
ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A
WILMINGTON, NC CHARLESTON, SC ATLANTA, GA
CHARLOTTE, NC COLUMBIA, SC AMERICUS, GA

PROJECT: RAPID REFUELER
MARINE CORPS AIR STATION
NEW RIVER, N.C.

TITLE: FREE PRODUCT SPATIAL EXTENT MAP

FIGURE 1.7

JOB NO. 97015-CP | DATE: OCT. 1997 | SCALE: 1"=200' | DRAWN BY: WHW | CHECKED BY: AP

APPENDIX C

HISTORICAL GAUGING DATA

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE

RR-6
RR-7
RR-8
RR-16
RR-9
RR-10
RR-5
RR-4
RR-13
RW-3G
OIL/WATER SEPARATOR
FORMER A-B TANK FARM
RW-2G
RW-1G
RW-4G
RW-6G
RW-5G
RR-18
RR-23
RR-20
MW-16
RR-21
RR-11
RR-14
RR-15
FREE PRODUCT RECOVERY SYSTEM
AS467-MW4
AS497-MW5
AS497-MW6
AS467-MW3
RR-12
RR-17
RR-3
RR-2
AS467-MW1
AS497-MW2
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
MW-10
RR-22
AS511-1
AS511-5
AS511-2
AS511-6
MW-11
MW-4
MW-3
DW-2
MW-12
AS512-MW15
AS512-MW16
MW-8
AS511-7
DW-5
AS511-3
MW-13
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
AS511-8
AS511-4
MW-14
DW-6
MW-9
RR-1

GRASS
CONCRETE
ASPHALT SHOULDER
RAPID REFUELER A-B
RAPID REFUELER C-D
TILE FIELD
POND
DITCH
ABANDONED FUEL LINE
FUEL
INSTRUMENT RUNWAY 5-23

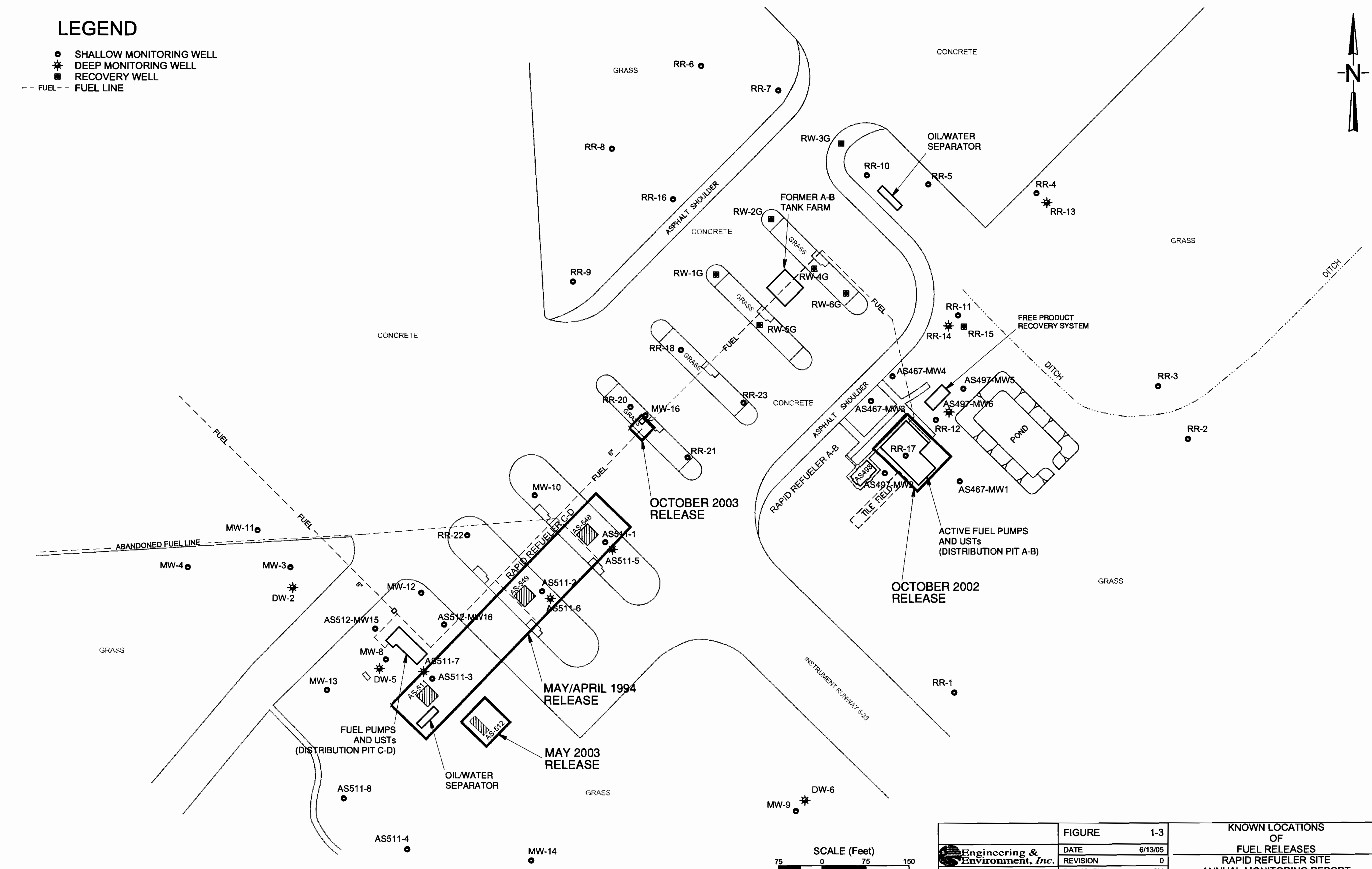
SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	1-2
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SITE LAYOUT AND WELL LOCATIONS
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC


LEGEND
SHALLOW MONITORING WELL
DEEP MONITORING WELL
RECOVERY WELL
FUEL FUEL LINE
-N-
GRASS
CONCRETE
ASPHALT SHOULDER
RAPID REFUELER A-B
RAPID REFUELER C-D
INSTRUMENT RUNWAY 5-23
DITCH
POND
TILE FIELD
FREE PRODUCT RECOVERY SYSTEM
OIL/WATER SEPARATOR
FORMER A-B TANK FARM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
ABANDONED FUEL LINE
OCTOBER 2002 RELEASE
OCTOBER 2003 RELEASE
MAY/APRIL 1994 RELEASE
MAY 2003 RELEASE
RR-1
RR-2
RR-3
RR-4
RR-5
RR-6
RR-7
RR-8
RR-9
RR-10
RR-11
RR-12
RR-13
RR-14
RR-15
RR-16
RR-17
RR-18
RR-20
RR-21
RR-22
RR-23
RW-1G
RW-2G
RW-3G
RW-4G
RW-5G
RW-6G
MW-3
MW-4
MW-8
MW-9
MW-10
MW-11
MW-12
MW-13
MW-14
MW-16
DW-2
DW-5
DW-6
AS467-MW1
AS467-MW3
AS467-MW4
AS497-MW2
AS497-MW5
AS497-MW6
AS498
AS511-1
AS511-2
AS511-3
AS511-4
AS511-5
AS511-6
AS511-7
AS511-8
AS512-MW15
AS512-MW16
AS-511
AS-512
AS-548
AS-549
SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.			KNOWN LOCATIONS OF FUEL RELEASES
	FIGURE	1-3	RAPID REFUELER SITE
	DATE	6/13/05	ANNUAL MONITORING REPORT
	REVISION	0	MCAS NEW RIVER, NC
	DRAWN BY	WCM	
	FILE	RR_Base_Map	

TABLE A-1 (page 1 of 2)
Depth to Groundwater Data Over Time
Rapid Refueler

Location	Top of Casing Elevation[1]	Screen Zone	Depth to Water (feet BTOC)																						
			6/9/1994	9/29/1994	3/10/1995	10/4/1997	4/15/2004	4/22/2004	4/27/2004	5/5/2004	5/12/2004	5/18/2004	5/25/2004	6/1/2004	6/14/2004	6/24/2004	6/29/2004	7/6/2004	7/12/2004	7/29/2004	8/2/2004	8/10/2004	8/16/2004	8/23/2004	9/2/2004	9/7/2004
RR-1	24.31	Shallow	6.31	4.33	NM	4.42	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-2	19.33	Shallow	5.72	5.15	NM	4.77	4.18	4.20	4.99	3.75	4.80	5.05	5.26	5.31	5.39	NM	5.35	5.50	4.80	NM	4.85	4.80	2.82	4.30	3.50	NM
RR-3	19.10	Shallow	5.69	5.45	NM	5.07	5.06	5.08	5.32	4.82	5.21	5.40	5.47	5.51	5.53	NM	5.50	5.57	5.27	NM	5.35	5.32	4.40	4.95	4.86	NM
RR-4	23.34	Shallow	9.10	8.46	NM	8.56	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-5	22.92	Shallow	8.04	7.49	NM	7.70	7.00	7.01	7.15	6.25	6.87	7.13	7.24	7.41	7.56	NM	7.65	7.73	7.61	NM	7.20	6.93	5.63	6.24	6.42	NM
RR-6	20.52	Shallow	4.47	4.08	NM	4.55	5.75	5.75	4.00	3.14	3.75	3.94	4.03	4.16	4.32	NM	4.20	4.53	3.93	NM	4.10	4.07	1.98	3.23	2.80	NM
RR-7	22.68	Shallow	7.04	6.66	NM	7.01	6.37	6.39	6.48	5.91	6.24	6.41	6.44	6.58	6.72	NM	6.73	6.87	6.62	NM	6.60	6.27	5.32	5.82	5.78	NM
RR-8	23.41	Shallow	7.00	NM	NM	7.06	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-9	25.93	Shallow	9.17	8.61	NM	9.26	8.18	8.28	8.38	7.29	7.82	8.12	8.33	8.57	8.78	NM	8.89	9.07	8.90	NM	8.29	8.16	6.51	6.77	6.90	NM
RR-10	22.48	Shallow	7.19	6.68	NM	6.97	6.38	6.38	6.40	5.63	6.13	6.35	6.46	6.62	6.75	NM	6.84	6.95	6.81	NM	6.45	6.20	5.04	5.25	5.72	NM
RR-11	21.73	Shallow	7.49	7.08	NM	6.75	5.83	5.85	6.45	5.80	6.35	6.62	6.69	6.73	6.73	NM	6.80	6.92	6.62	NM	6.62	6.17	5.21	5.70	5.93	NM
RR-12	21.73	Shallow	6.55	6.20	NM	5.63	4.81	4.83	7.06	4.45	8.02	9.40	9.73	8.62	7.80	7.75	7.42	9.71	5.51	8.32	7.91	5.84	3.81	4.00	4.05	4.65
RR-13	23.46	Deep	9.17	7.12	NM	8.85	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-14	21.82	Deep	6.89	NM	NM	6.90	5.83	5.88	5.91	5.02	5.67	6.03	6.18	6.25	6.32	NM	6.35	6.60	6.10	NM	5.20	5.61	4.25	5.03	5.07	NM
RR-15	21.80	Intermediate	7.40	NM	NM	6.81	6.21	6.24	6.50	5.88	6.40	6.69	6.77	6.80	6.82	NM	6.83	7.00	6.67	NM	6.68	6.27	5.46	5.99	5.95	NM
RR-16	20.76	Shallow	NM	NM	NM	10.42	8.45	8.46	8.78	8.02	8.34	8.53	8.55	8.71	8.63	8.33	8.58	9.87	8.58	8.22	8.25	7.78	6.73	7.30	6.92	7.42
RR-17	InD	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	2.93	NM	NM	2.18	NM	2.38	3.45	2.18	NM	1.40	2.88	1.75	1.10	1.69	NM
RR-18	21.69	Shallow	NM	NM	NM	10.26	10.70	10.77	11.38	9.94	10.96	11.30	11.18	10.28	9.80	10.00	10.33	10.90	10.05	10.20	9.92	9.01	8.71	9.26	9.01	8.60
RR-19	26.09	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-20	26.68	Shallow	NM	NM	NM	NM	NM	NM	7.88	6.88	7.15	7.65	6.71	8.35	10.88	NM	11.20	14.19	10.40	13.70	11.10	8.30	7.03	8.35	7.66	7.72
RR-21	26.00	Shallow	NM	NM	NM	NM	NM	NM	4.70	3.35	3.92	4.41	4.82	4.95	4.62	NM	4.22	4.82	4.90	NM	3.53	3.32	1.42	2.90	2.13	NM
RR-22	21.92	Shallow	NM	NM	NM	8.88	7.30	7.31	7.40	6.44	6.54	6.95	7.23	7.60	8.01	NM	8.29	8.32	8.35	NM	7.85	6.99	6.08	5.81	5.92	NM
AS511-1	26.34	Shallow	NM	NM	8.10	7.80	5.93	5.93	6.62	4.32	5.55	6.25	6.70	7.10	7.42	NM	7.52	7.82	7.65	NM	NM	5.60	NM	4.40	4.20	NM
AS511-2	26.26	Shallow	NM	NM	7.35	8.07	5.71	5.94	6.33	4.10	5.21	5.91	6.35	6.74	7.23	NM	7.50	7.70	7.47	NM	6.86	5.38	3.25	4.03	3.94	NM
AS511-3	26.90	Shallow	NM	NM	7.25	8.78	6.72	6.74	6.68	5.33	5.43	5.98	6.36	6.99	7.53	NM	7.90	8.55	8.00	NM	7.52	6.38	5.22	4.65	5.00	NM
AS511-4	26.97	Shallow	NM	NM	6.98	7.45	4.63	4.64	5.94	2.78	4.10	5.04	5.79	6.58	7.25	NM	7.65	7.80	7.68	NM	6.55	4.33	0.51	2.30	2.40	NM
AS511-5	25.98	Deep	NM	NM	7.55	8.11	6.65	6.66	7.30	5.97	6.28	6.89	7.31	8.72	7.98	NM	8.13	8.25	6.45	NM	NM	6.60	NM	4.94	5.50	NM
AS511-6	26.20	Deep	NM	NM	7.62	8.09	6.13	6.45	6.81	4.98	5.78	6.38	6.80	7.22	7.63	NM	7.85	8.05	7.80	NM	7.20	5.95	4.25	4.70	4.77	NM
AS511-7	26.89	Deep	NM	NM	8.06	8.71	6.79	6.80	7.22	5.42	6.15	6.71	7.09	7.66	8.12	NM	8.45	8.02	8.42	NM	7.85	6.50	3.38	5.02	5.25	NM
AS511-8	26.79	Shallow	NM	NM	7.05	7.93	6.10	6.42	6.48	3.90	5.01	5.80	6.33	6.85	7.42	NM	7.77	7.97	7.88	NM	7.11	5.45	2.37	3.12	3.70	NM
MW-3	27.01	Shallow	NM	NM	NM	7.82	8.62	8.65	8.71	7.70	8.03	8.36	8.58	8.91	9.25	NM	9.53	9.58	9.48	NM	NM	5.39	NM	7.30	7.47	NM
MW-4	28.10	Shallow	NM	10.72	NM	11.48	10.13	10.15	10.23	9.04	9.59	9.92	10.17	10.50	10.80	NM	10.96	11.10	11.03	NM	10.70	10.00	8.47	8.91	9.08	NM
MW-8	27.70	Shallow	NM	NM	NM	9.60	7.62	7.63	7.61	6.44	6.57	7.00	7.35	7.89	8.38	NM	8.73	8.87	8.80	NM	NM	7.33	5.94	5.70	6.01	NM
MW-9	26.44	Shallow	NM	NM	NM	6.26	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10	26.86	Shallow	NM	7.72	NM	11.27	7.72	7.74	8.01	6.52	7.13	7.62	7.94	8.30	8.64	NM	8.87	9.02	8.90	NM	8.35	7.35	5.26	6.31	5.87	NM
MW-11	27.79	Shallow	NM	NM	NM	9.37	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	26.58	Shallow	NM	NM	NM	8.86	7.25	7.37	7.35	5.95	6.43	6.85	7.13	7.59	7.89	8.26	8.05	8.51	8.52	NM	7.60	6.96	5.48	5.50	5.40	NM
MW-13	26.90	Shallow	NM	NM	NM	7.08	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	7.17	NM	NM	NM	NM
DW-2	26.62	Deep	NM	NM	NM	10.33	NM	NM	3.43	NM	2.90	3.32	3.61	3.15	3.76	NM	NM	8.92	NM	NM	NM	7.54	NM	NM	NM	NM
DW-5	27.07	Deep	NM	NM	NM	9.02	7.28	7.30	7.62	5.72	6.60	7.15	NM	7.93	8.28	NM	NM	8.87	NM	NM	NM	5.60	NM	5.50	NM	NM
DW-6	25.40	Deep	NM	NM	NM	5.23	NM	NM	4.88	1.98	3.59	4.48	NM	5.58	6.03	NM	6.14	6.55	6.14	NM	5.60	5.43	NM	1.60	NM	NM
RR-1G	InD	Shallow	NM	NM	NM	NM	5.63	5.64	NM	5.90	5.08	5.68	8.85	7.50	6.73	6.78	6.93	6.75	6.93	6.25	6.20	3.46	6.10	4.85	5.60	5.46
RR-2G	InD	Shallow	NM	NM	NM	NM	3.80	3.81	NM	3.25	3.99	4.75	5.42	4.10	4.57	3.30	3.38	6.52	3.38	3.80	3.76	6.29	2.05	3.40	3.25	NM
RR-3G	InD	Shallow	NM	NM	NM	NM	6.45	6.46	NM	5.90	6.23	6.40	6.49	6.65	6.76	NM	7.18	6.92	7.18	NM	6.62	1.49	5.55	5.76	5.67	NM
RR-4G	InD	Shallow	NM	NM	NM	NM	3.35	3.36	NM	0.67	2.11	3.58	6.31	6.54	6.74	1.79	1.60	3.58	1.60	7.34	2.18	6.24	0.65	1.03	0.90	NM
RR-5G	InD	Shallow	NM	NM	NM	NM	6.60	3.42	NM	4.60	6.38	7.32	7.10	7.74	7.60	7.72	7.80	7.89	7.80	2.30	7.33	6.20	3.04	4.43	4.78	5.80
RR-6G	InD	Shallow	NM	NM	NM	NM	6.40	NM	NM	5.66	6.17	6.60	6.77	6.93	7.07	7.12	7.19	7.52	7.19	NM	6.88	NM	5.20	5.50	5.59	NM

[1] Top of casing elevation expressed in feet above/below MSL
BTOC - below top of casing
MSL - mean sea level

NM - Not measured (e.g., for the indicated date, the well was not accessible, the well was not installed, or the well was not included in gauging program)
InD: Insufficient data or data unavailable

vers: 6/17/2005
\\Nas\data\Data Files\Lejeune\IDIQ\CTO 10\RR\RR_Welldata

TABLE A-1 (page 2 of 2)
Depth to Groundwater Data Over Time
Rapid Refueler

Location	Top of Casing Elevatiion [1]	Screen Zone	Depth to Water (feet BTOC)																						
			9/17/2004	9/23/2004	9/28/2004	10/7/2004	10/21/2004	10/28/2004	11/4/2004	11/12/2004	11/18/2004	12/1/2004	12/8/2004	12/17/2004	12/22/2004	12/29/2004	1/5/2005	1/12/2005	2/2/2005	2/17/2005	2/23/2005	3/4/2005	3/11/2005	3/24/2005	3/31/2005
RR-1	24.31	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-2	19.33	Shallow	3.70	4.47	4.59	4.91	5.15	5.25	5.32	5.40	NM	5.18	5.35	NM	5.40	NM	NM	NM	4.73	NM	NM	NM	NM	NM	NM
RR-3	19.10	Shallow	4.70	5.02	5.07	5.28	5.30	5.43	5.47	5.61	NM	5.38	5.40	NM	5.45	NM	NM	NM	5.18	NM	NM	NM	NM	NM	NM
RR-4	23.34	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-5	22.92	Shallow	5.19	6.43	6.58	7.10	7.38	7.55	7.58	7.68	NM	7.70	7.90	NM	7.98	NM	NM	NM	7.60	NM	NM	NM	NM	NM	NM
RR-6	20.52	Shallow	2.62	3.30	3.34	3.88	4.20	4.40	4.45	4.61	NM	4.68	4.80	NM	4.90	NM	NM	NM	4.48	NM	NM	NM	NM	NM	NM
RR-7	22.68	Shallow	5.38	5.91	6.00	6.35	6.60	6.75	6.78	6.96	NM	7.00	7.13	NM	7.25	NM	NM	NM	6.91	NM	NM	NM	NM	NM	NM
RR-8	23.41	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-9	25.93	Shallow	6.01	6.80	7.02	8.02	8.58	8.91	9.04	9.20	NM	9.24	9.42	NM	9.60	NM	NM	NM	9.15	NM	NM	NM	NM	NM	NM
RR-10	22.48	Shallow	4.80	5.75	5.78	6.32	6.63	6.78	6.81	6.92	NM	6.94	7.16	NM	7.25	NM	NM	NM	6.88	NM	NM	NM	NM	NM	NM
RR-11	21.73	Shallow	5.31	6.00	6.03	6.32	6.57	6.67	6.72	6.77	NM	6.53	6.74	NM	6.83	NM	NM	NM	6.38	NM	NM	NM	NM	NM	NM
RR-12	21.73	Shallow	4.30	4.01	4.32	5.81	4.12	8.78	8.20	8.15	7.60	7.22	7.87	7.75	6.80	6.01	7.20	7.50	6.78	7.72	6.60	5.80	6.38	5.35	4.61
RR-13	23.46	Deep	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-14	21.82	Deep	4.54	5.15	5.26	5.74	6.13	6.32	6.40	6.52	NM	6.33	6.52	NM	6.70	NM	NM	NM	6.10	NM	NM	NM	NM	NM	NM
RR-15	21.80	Intermediate	5.60	6.02	6.05	6.37	7.62	6.72	6.78	6.85	NM	6.65	6.80	NM	6.90	NM	NM	NM	6.49	NM	NM	NM	NM	NM	NM
RR-16	20.76	Shallow	6.68	7.33	7.50	8.12	8.32	8.55	8.65	8.74	8.81	8.75	8.95	9.01	9.10	8.93	NM	9.05	8.65	NM	NM	NM	8.28	8.15	7.85
RR-17	InD	Shallow	1.39	1.35	1.42	2.98	2.93	3.75	3.82	4.12	2.86	1.82	3.48	NM	4.30	NM	NM	NM	1.88	NM	NM	NM	NM	NM	NM
RR-18	21.69	Shallow	5.96	6.41	10.42	9.93	10.44	9.95	10.55	11.12	11.35	11.27	11.82	11.18	10.48	11.01	10.51	10.92	10.43	10.44	11.01	11.10	10.62	10.35	8.41
RR-19	26.09	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-20	26.68	Shallow	3.23	8.30	10.42	9.45	9.20	9.80	11.80	13.05	13.52	13.12	13.15	12.84	11.48	13.23	14.01	11.39	10.63	10.17	10.58	10.12	9.51	9.90	9.10
RR-21	26.00	Shallow	1.96	3.05	2.98	3.80	4.60	5.13	5.53	5.82	NM	4.49	5.53	NM	5.90	NM	NM	NM	5.00	NM	NM	NM	NM	NM	NM
RR-22	21.92	Shallow	5.37	5.65	6.20	6.95	7.85	8.24	8.35	8.52	NM	8.62	8.83	NM	9.06	NM	8.91	9.10	8.63	NM	NM	NM	NM	NM	NM
AS511-1	26.34	Shallow	3.18	4.22	5.10	6.13	7.26	7.63	7.78	8.00	NM	7.88	8.20	NM	8.45	NM	NM	NM	7.33	NM	NM	NM	NM	NM	NM
AS511-2	26.26	Shallow	3.28	4.19	5.82	6.04	7.06	7.47	7.63	7.90	NM	7.89	8.17	NM	8.40	NM	NM	NM	7.58	NM	NM	NM	NM	NM	NM
AS511-3	26.90	Shallow	4.20	4.40	6.03	7.25	8.30	8.42	8.25	8.25	NM	8.32	8.58	NM	9.80	NM	NM	NM	8.37	NM	NM	NM	NM	NM	NM
AS511-4	26.97	Shallow	1.18	2.90	2.95	5.31	7.12	7.49	7.62	7.83	NM	8.09	8.25	NM	8.51	NM	NM	NM	7.77	NM	NM	NM	NM	NM	NM
AS511-5	25.98	Deep	NM	5.30	6.00	6.76	7.75	8.13	8.40	8.70	NM	8.68	8.75	NM	8.92	NM	NM	NM	7.41	NM	NM	NM	NM	NM	NM
AS511-6	26.20	Deep	3.99	4.80	4.46	6.55	7.60	7.88	8.00	8.76	NM	8.13	8.43	NM	8.65	NM	NM	NM	8.00	NM	NM	NM	NM	NM	NM
AS511-7	26.89	Deep	4.80	5.12	6.52	7.57	8.56	8.48	8.51	8.65	NM	8.71	9.01	NM	9.20	NM	NM	NM	8.65	NM	NM	NM	NM	NM	NM
AS511-8	26.79	Shallow	2.58	3.51	3.72	6.30	7.55	7.77	7.85	8.01	NM	8.19	8.42	NM	8.70	NM	NM	NM	8.07	NM	NM	NM	NM	NM	NM
MW-3	27.01	Shallow	6.18	7.21	7.60	8.52	9.25	9.45	9.55	9.65	NM	9.77	9.95	NM	10.18	NM	NM	NM	9.91	NM	NM	NM	NM	NM	NM
MW-4	28.10	Shallow	4.13	8.92	9.30	10.10	10.75	10.95	11.04	11.20	NM	11.32	11.51	NM	11.70	NM	NM	NM	11.41	NM	NM	NM	NM	NM	NM
MW-8	27.70	Shallow	5.10	5.60	7.03	8.14	9.13	9.07	9.00	9.10	NM	9.23	9.55	NM	9.75	NM	NM	NM	9.30	NM	NM	NM	NM	NM	NM
MW-9	26.44	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10	26.86	Shallow	5.21	6.27	6.81	7.62	8.55	8.88	9.01	9.22	NM	9.21	9.48	NM	9.68	NM	NM	NM	9.10	NM	NM	NM	NM	NM	NM
MW-11	27.79	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	26.58	Shallow	4.75	5.23	6.78	7.20	8.23	8.42	8.42	8.57	NM	8.30	8.93	NM	9.15	NM	NM	NM	8.44	NM	NM	NM	NM	NM	NM
MW-13	26.90	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DW-2	26.62	Deep	NM	2.50	NM	3.16	3.90	4.33	4.50	4.90	NM	3.68	4.97	NM	5.35	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DW-5	27.07	Deep	NM	5.60	NM	7.45	8.80	8.80	8.82	8.91	NM	9.09	9.17	NM	9.60	NM	NM	NM	7.32	NM	NM	NM	NM	NM	NM
DW-6	25.40	Deep	6.81	2.52	3.02	4.04	5.53	6.13	6.28	4.50	NM	NM	6.62	NM	7.14	NM	NM	NM	5.71	NM	NM	NM	NM	NM	NM
RR-1G	InD	Shallow	4.82	4.90	5.23	5.77	6.41	6.92	7.05	7.20	7.30	7.20	7.42	7.14	7.20	7.07	7.06	7.17	6.91	6.84	6.85	7.30	6.60	6.31	5.85
RR-2G	InD	Shallow	3.11	3.99	3.49	3.94	4.37	6.44	6.55	6.70	6.72	6.50	6.96	7.04	7.10	6.72	6.93	6.95	6.37	4.71	3.35	NM	4.95	3.38	4.22
RR-3G	InD	Shallow	5.37	5.92	6.20	6.37	6.63	6.77	6.83	6.93	NM	6.98	7.17	7.14	7.25	NM	NM	NM	6.92	NM	NM	NM	NM	NM	NM
RR-4G	InD	Shallow	0.78	1.57	1.12	2.15	3.56	6.80	6.88	7.00	NM	2.50	3.50	6.35	7.03	NM	NM	4.97	2.53	3.34	NM	NM	NM	1.70	NM
RR-5G	InD	Shallow	3.30	4.77	5.06	6.72	7.40	7.64	7.80	7.71	7.82	6.95	8.15	8.26	5.30	NM	8.18	8.11	7.22	7.84	NM	NM	NM	6.15	NM
RR-6G	InD	Shallow	4.99	5.55	5.35	6.38	6.88	7.10	7.20	7.30	NM	7.25	7.47	7.49	7.50	NM	NM	NM	7.03	NM	NM	NM	NM	NM	NM

[1] Top of casing elevation expressed in feet above/below MSL
BTOC - below top of casing
MSL - mean sea level

NM - Not measured (e.g., for the indicated date, the well was not accessible, the well was not installed, or the well was not included in gauging program)
InD: Insufficient data or data unavailable

vers: 6/17/2005
\\Nas\data\Data Files\Lejeune\IDIQ\CTO 10\RR\RR_Welldata

TABLE A-2 (page 1 of 2)
Depth to Product Data Over Time
Rapid Refueler

Location	Top of Casing Elevation[1]	Screen Zone	Depth to Product (feet BTOC)																						
			6/9/1994	9/29/1994	3/10/1995	10/4/1997	4/15/2004	4/22/2004	4/27/2004	5/5/2004	5/12/2004	5/18/2004	5/25/2004	6/1/2004	6/14/2004	6/24/2004	6/29/2004	7/6/2004	7/12/2004	7/29/2004	8/2/2004	8/10/2004	8/16/2004	8/23/2004	9/2/2004	9/7/2004
RR-1	24.31	Shallow	--	--	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-2	19.33	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-3	19.10	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-4	23.34	Shallow	--	--	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-5	22.92	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-6	20.52	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-7	22.68	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-8	23.41	Shallow	--	NM	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-9	25.93	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-10	22.48	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-11	21.73	Shallow	--	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-12	21.73	Shallow	--	--	NM	--	4.47	4.48	4.53	4.12	4.34	4.86	5.05	5.10	5.10	4.83	4.95	5.48	4.79	4.99	5.18	4.44	3.75	3.95	4.01	4.05
RR-13	23.46	Deep	--	--	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-14	21.82	Deep	--	NM	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-15	21.80	Intermediate	--	NM	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-16	20.76	Shallow	NM	NM	NM	8.40	7.63	7.64	7.88	6.76	7.43	7.70	7.92	8.11	8.36	--	8.40	9.70	8.50	--	--	--	6.48	6.98	--	7.10
RR-17	InD	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	--	NM	NM	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-18	21.69	Shallow	NM	NM	NM	8.97	7.53	7.54	--	6.40	7.01	7.40	7.78	8.28	8.65	8.71	8.70	8.78	8.76	8.12	8.33	7.58	6.47	6.52	6.68	6.92
RR-19	26.09	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-20	26.68	Shallow	NM	NM	NM	NM	NM	NM	7.80	--	6.91	7.33	--	8.22	8.14	NM	7.83	7.93	8.42	7.40	8.19	7.80	6.63	6.60	6.90	7.08
RR-21	26.00	Shallow	NM	NM	NM	NM	NM	NM	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-22	21.92	Shallow	NM	NM	NM	8.75	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-1	26.34	Shallow	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	NM	--	NM	--	--	NM
AS511-2	26.26	Shallow	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-3	26.90	Shallow	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-4	26.97	Shallow	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-5	25.98	Deep	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	NM	--	NM	--	--	NM
AS511-6	26.20	Deep	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-7	26.89	Deep	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
AS511-8	26.79	Shallow	NM	NM	--	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
MW-3	27.01	Shallow	NM	NM	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	NM	--	NM	--	--	NM
MW-4	28.10	Shallow	NM	--	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
MW-8	27.70	Shallow	NM	NM	NM	--	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	NM	--	--	--	--	NM
MW-9	26.44	Shallow	NM	NM	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10	26.86	Shallow	NM	6.84	NM	8.70	--	--	--	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
MW-11	27.79	Shallow	NM	NM	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	26.58	Shallow	NM	NM	NM	--	--	--	--	--	--	--	--	--	7.85	8.22	--	--	--	NM	--	--	--	--	--	NM
MW-13	26.90	Shallow	NM	NM	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	--	NM	NM	NM	NM
DW-2	26.62	Deep	NM	NM	NM	--	NM	NM	--	NM	--	--	--	--	--	NM	NM	--	NM	NM	NM	--	NM	NM	NM	NM
DW-5	27.07	Deep	NM	NM	NM	--	--	--	--	--	--	--	NM	--	--	NM	NM	--	NM	NM	NM	--	NM	--	NM	NM
DW-6	25.40	Deep	NM	NM	NM	--	NM	NM	--	--	--	--	NM	--	--	NM	--	--	--	NM	--	--	NM	--	NM	NM
RR-1G	InD	Shallow	NM	NM	NM	NM	5.35	5.36	NM	4.52	4.98	5.33	5.52	6.12	6.48	6.59	6.56	6.70	6.56	6.22	--	--	4.44	4.84	4.98	5.21
RR-2G	InD	Shallow	NM	NM	NM	NM	--	--	NM	--	--	--	--	--	--	--	--	6.50	--	--	--	--	--	--	--	NM
RR-3G	InD	Shallow	NM	NM	NM	NM	--	--	NM	--	--	--	--	--	--	NM	--	--	--	NM	--	--	--	--	--	NM
RR-4G	InD	Shallow	NM	NM	NM	NM	--	--	NM	--	--	--	--	--	--	--	--	--	--	7.33	--	--	--	--	--	NM
RR-5G	InD	Shallow	NM	NM	NM	NM	--	--	NM	4.08	6.20	6.87	--	7.28	7.59	7.70	--	7.85	--	--	--	6.19	2.91	4.40	--	5.75
RR-6G	InD	Shallow	NM	NM	NM	NM	--	NM	NM	--	--	--	--	--	--	--	--	--	--	NM	--	NM	--	--	--	NM

[1] Top of casing elevation expressed in feet above/below MSL
BTOC - below top of casing
MSL - mean sea level

"--": indicates no measurable product detected
NM - Not measured (e.g., for the indicated date, the well was not accessible, the well was not installed, or the well was not included in gauging program)
InD: Insufficient data or data unavailable

vers: 6/17/2005
\\Nas\data\Data Files\Lejeune\IDIQ\CTO 10\RR\RR_Welldata

TABLE A-2 (page 2 of 2)
Depth to Product Data Over Time
Rapid Refueler

Location	Top of Casing Elevatiion [1]	Screen Zone	Depth to Product (feet BTOC)																					
			9/17/2004	9/23/2004	9/28/2004	10/7/2004	10/21/2004	10/28/2004	11/4/2004	11/12/2004	11/18/2004	12/1/2004	12/8/2004	12/17/2004	12/22/2004	12/29/2004	1/5/2005	1/12/2005	2/2/2005	2/17/2005	2/23/2005	3/4/2005	3/11/2005	3/24/2005	3/31/2005
RR-1	24.31	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-2	19.33	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-3	19.10	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-4	23.34	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-5	22.92	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-6	20.52	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-7	22.68	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-8	23.41	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-9	25.93	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-10	22.48	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-11	21.73	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-12	21.73	Shallow	3.70	3.93	--	4.52	--	4.92	--	5.45	5.25	4.97	5.29	5.48	5.86	5.22	5.11	5.39	4.76	4.76	4.80	5.28	4.60	4.56	--
RR-13	23.46	Deep	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-14	21.82	Deep	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-15	21.80	Intermediate	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-16	20.76	Shallow	6.32	7.00	7.18	7.74	8.28	8.48	8.58	8.73	--	--	--	--	--	8.93	NM	--	--	NM	NM	NM	--	--	--
RR-17	InD	Shallow	--	--	--	--	--	--	--	4.11	--	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-18	21.69	Shallow	--	--	7.65	7.57	8.28	8.70	8.61	8.82	8.85	8.79	8.95	9.13	9.40	9.06	8.98	9.25	8.80	8.87	8.72	8.85	8.23	8.12	8.40
RR-19	26.09	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
RR-20	26.68	Shallow	--	6.60	6.55	7.71	8.15	8.73	8.48	8.21	8.22	8.20	8.46	8.98	9.50	8.70	8.57	9.46	9.00	9.18	9.00	8.20	8.38	8.25	8.21
RR-21	26.00	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-22	21.92	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	8.90	--	--	NM	NM	NM	NM	NM	NM
AS511-1	26.34	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-2	26.26	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-3	26.90	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-4	26.97	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-5	25.98	Deep	NM	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-6	26.20	Deep	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-7	26.89	Deep	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
AS511-8	26.79	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-3	27.01	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-4	28.10	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-8	27.70	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-9	26.44	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-10	26.86	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-11	27.79	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
MW-12	26.58	Shallow	--	--	--	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
MW-13	26.90	Shallow	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DW-2	26.62	Deep	NM	--	NM	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
DW-5	27.07	Deep	NM	--	NM	--	--	--	--	--	NM	--	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
DW-6	25.40	Deep	--	--	--	--	--	--	--	--	NM	NM	--	NM	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-1G	InD	Shallow	4.31	--	5.18	5.75	6.38	6.53	6.62	6.78	6.88	6.79	7.04	--	7.19	7.04	7.04	--	6.72	6.77	6.70	7.28	6.23	6.20	--
RR-2G	InD	Shallow	--	--	--	--	--	--	--	6.65	6.68	6.41	6.85	6.86	6.89	6.51	6.70	--	--	--	--	NM	--	--	--
RR-3G	InD	Shallow	--	--	--	--	--	--	--	--	NM	--	--	--	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM
RR-4G	InD	Shallow	--	--	--	--	--	--	--	--	NM	--	--	--	--	NM	NM	--	--	--	NM	NM	NM	--	NM
RR-5G	InD	Shallow	3.23	--	--	6.71	--	7.62	7.78	7.70	7.81	6.87	8.04	8.13	--	NM	7.98	--	--	--	NM	NM	NM	--	NM
RR-6G	InD	Shallow	--	--	--	--	--	--	--	--	NM	--	--	--	--	NM	NM	NM	--	NM	NM	NM	NM	NM	NM

[1] Top of casing elevation expressed in feet above/below MSL
BTOC - below top of casing
MSL - mean sea level

"--": indicates no measurable product detected
NM - Not measured (e.g., for the indicated date, the well was not accessible, the well was not installed, or the well was not included in gauging program)
InD: Insufficient data or data unavailable

vers: 6/17/2005
\\Nas\data\Data Files\Lejeune\IDIQ\CTO 10\RR\RR_Welldata

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

ESTIMATED EXTENT OF FREE PRODUCT

OIL/WATER SEPARATOR

FREE PRODUCT RECOVERY SYSTEM

ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)

FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)

OIL/WATER SEPARATOR

ABANDONED FUEL LINE

RAPID REFUELER A-B

RAPID REFUELER C-D

TILE FIELD

POND

DITCH

INSTRUMENT RUNWAY 5-23

GRASS

CONCRETE

ASPHALT SHOULDER

RR-1 NP
RR-2 NP
RR-3 NP
RR-4
RR-5 NP
RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 0.34
RR-13
RR-14
RR-15
RR-16 0.82
RR-17
RR-18 3.17
RR-20
RR-21
RR-22 NP
RR-23
RW-1G 0.28
RW-2G NP
RW-3G NP
RW-4G NP
RW-5G NP
RW-6G NP
AS467-MW1
AS467-MW2
AS467-MW3
AS467-MW4
AS497-MW5
AS497-MW6
AS511-1 NP
AS511-2 NP
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15 NP
AS512-MW16
AS-511
AS-512
AS-548
AS-549
MW-3 NP
MW-4 NP
MW-8 NP
MW-9
MW-10 NP
MW-11
MW-12 NP
MW-13
MW-14
MW-16
DW-2
DW-5
DW-6

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

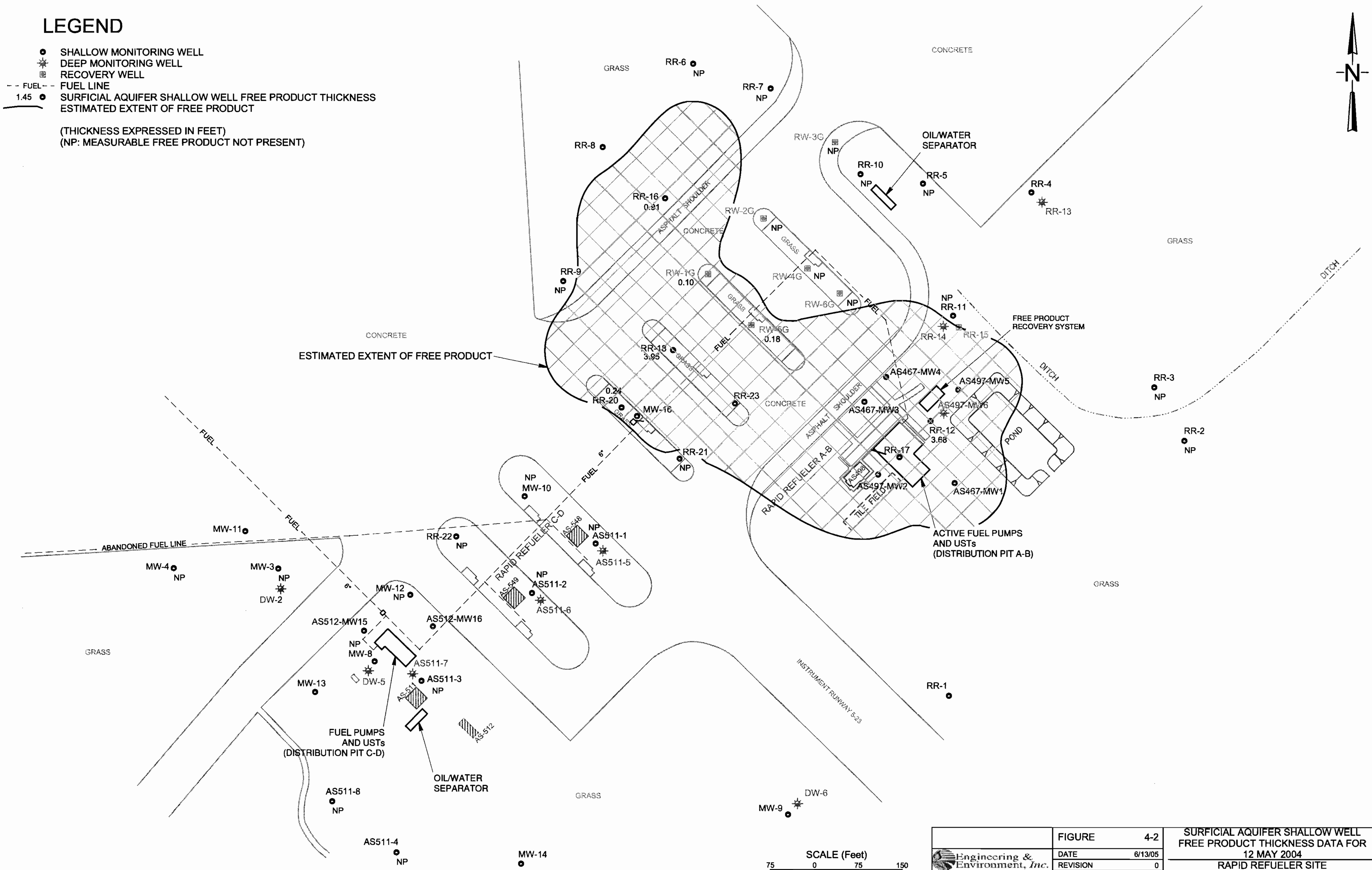
FIGURE	4-1
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 15 APRIL 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- ● SHALLOW MONITORING WELL
- ✷ DEEP MONITORING WELL
- ▣ RECOVERY WELL
- - - FUEL - - FUEL LINE
- 1.45 ● SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ⁀ ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)



N
GRASS
CONCRETE
RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-16 0.31
RW-2G NP
RW-3G NP
RR-10 NP
RR-5 NP
OIL/WATER SEPARATOR
RR-4
RR-13
ASPHALT SHOULDER
RW-1G 0.10
RW-4G NP
RW-6G NP
RW-5G 0.18
RR-18 3.95
FUEL
RR-11 NP
RR-14
RR-15
FREE PRODUCT RECOVERY SYSTEM
DITCH
ESTIMATED EXTENT OF FREE PRODUCT
RR-20 0.24
MW-16
RR-23
AS467-MW4
AS497-MW5
AS467-MW3
AS497-MW6
RR-12 3.68
RR-3 NP
RR-2 NP
POND
RR-17
RAPID REFUELER A-B
AS497-MW2
AS467-MW1
TILE FIELD
RR-21 NP
6"
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
MW-10 NP
MW-11
ABANDONED FUEL LINE
RR-22 NP
RAPID REFUELER C-D
AS-548
AS511-1 NP
AS511-5
MW-4 NP
MW-3 NP
DW-2
AS511-2 NP
AS-549
AS511-6
MW-12 NP
AS512-MW15
AS512-MW16
MW-8 NP
AS511-7
DW-5
AS511-3 NP
MW-13
AS-511
AS-512
INSTRUMENT RUNWAY 5-23
RR-1
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
AS511-8 NP
DW-6
MW-9
AS511-4 NP
MW-14
SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.	FIGURE	4-2	SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 12 MAY 2004
	DATE	6/13/05	RAPID REFUELER SITE
	REVISION	0	ANNUAL MONITORING REPORT
	DRAWN BY	WCM	MCAS NEW RIVER, NC
	FILE	RR_Base_Map	

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

ESTIMATED EXTENT OF FREE PRODUCT

RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 2.70
RR-13 1.15
RR-14
RR-15
RR-16 0.27
RR-17 NP
RR-20 2.74
RR-21 NP
RR-22 NP
RR-23
RR-1
RR-2 NP
RR-3 NP
RR-4
RR-5 NP

RW-1G 0.25
RW-2G NP
RW-3G NP
RW-4G NP
RW-5G 0.01
RW-6G NP

MW-8
MW-9
MW-10 NP
MW-11
MW-12 0.04
MW-13
MW-14
MW-16
MW-3 NP
MW-4 NP

DW-2
DW-5
DW-6

AS467-MW1
AS467-MW2
AS467-MW3
AS467-MW4
AS497-MW5
AS497-MW6
AS511-1
AS511-2
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15 NP
AS512-MW16

AS-498
AS-511
AS-512
AS-548
AS-549

OIL/WATER SEPARATOR
FREE PRODUCT RECOVERY SYSTEM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR

FUEL
ABANDONED FUEL LINE
RAPID REFUELER A-B
RAPID REFUELER C-D
TILE FIELD
POND
DITCH
ASPHALT
SHOULDER
CONCRETE
GRASS
INSTRUMENT RUNWAY 5-23

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-3
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 14 JUNE 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 4.23
RR-13
RR-14
RR-15
RR-16 0.17
RR-17 NP
RR-18 2.12
RR-20 6.26
RR-21 NP
RR-22 NP
RR-23
RW-1G 0.05
RW-2G 0.02
RW-3G NP
RW-4G NP
RW-5G 0.04
RW-6G NP
MW-8 NP
MW-10 NP
MW-11
MW-12 NP
MW-13
MW-14
MW-16
MW-3 NP
MW-4 NP
MW-9
DW-2
DW-5
DW-6
AS467-MW1
AS467-MW2
AS467-MW3
AS467-MW4
AS497-MW5
AS497-MW6
AS511-1 NP
AS511-2 NP
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15
AS512-MW16
AS-511
AS-512
AS-549
AS-550
OIL/WATER SEPARATOR
FREE PRODUCT RECOVERY SYSTEM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
ESTIMATED EXTENT OF FREE PRODUCT
ABANDONED FUEL LINE
FUEL
RAPID REFUELER A-B
RAPID REFUELER C-D
TILE FIELD
POND
DITCH
INSTRUMENT RUNWAY 5-23
ASPHALT SHOULDER
CONCRETE
GRASS

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-4
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 6 JULY 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

ESTIMATED EXTENT OF FREE PRODUCT

FREE PRODUCT RECOVERY SYSTEM

OIL/WATER SEPARATOR

ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)

FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)

OIL/WATER SEPARATOR

ABANDONED FUEL LINE

RAPID REFUELER A-B

RAPID REFUELER C-D

TILE FIELD

POND

DITCH

INSTRUMENT RUNWAY 5-23

ASPHALT SHOULDER

CONCRETE

GRASS

RR-1 NP
RR-2 NP
RR-3 NP
RR-4 NP
RR-5 NP
RR-6 NP
RR-7 NP
RR-8 NP
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 1.49
RR-13 1.43
RR-14 NP
RR-15 NP
RR-16 NP
RR-17 NP
RR-20 0.50
RR-21 NP
RR-22 NP
RR-23 NP
RW-1G NP
RW-2G NP
RW-3G NP
RW-4G NP
RW-5G 0.01
RW-6G NM
MW-3 NP
MW-4 NP
MW-5 NP
MW-8 NP
MW-9 NP
MW-10 NP
MW-11 NP
MW-12 NP
MW-13 NP
MW-14 NP
MW-16
AS467-MW1
AS467-MW3
AS467-MW4
AS497-MW2
AS497-MW5
AS497-MW6
AS498
AS511-1 NP
AS511-2 NP
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15
AS512-MW16
AS-511
AS-512
AS-548
AS-549
DW-2
DW-5
DW-6

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

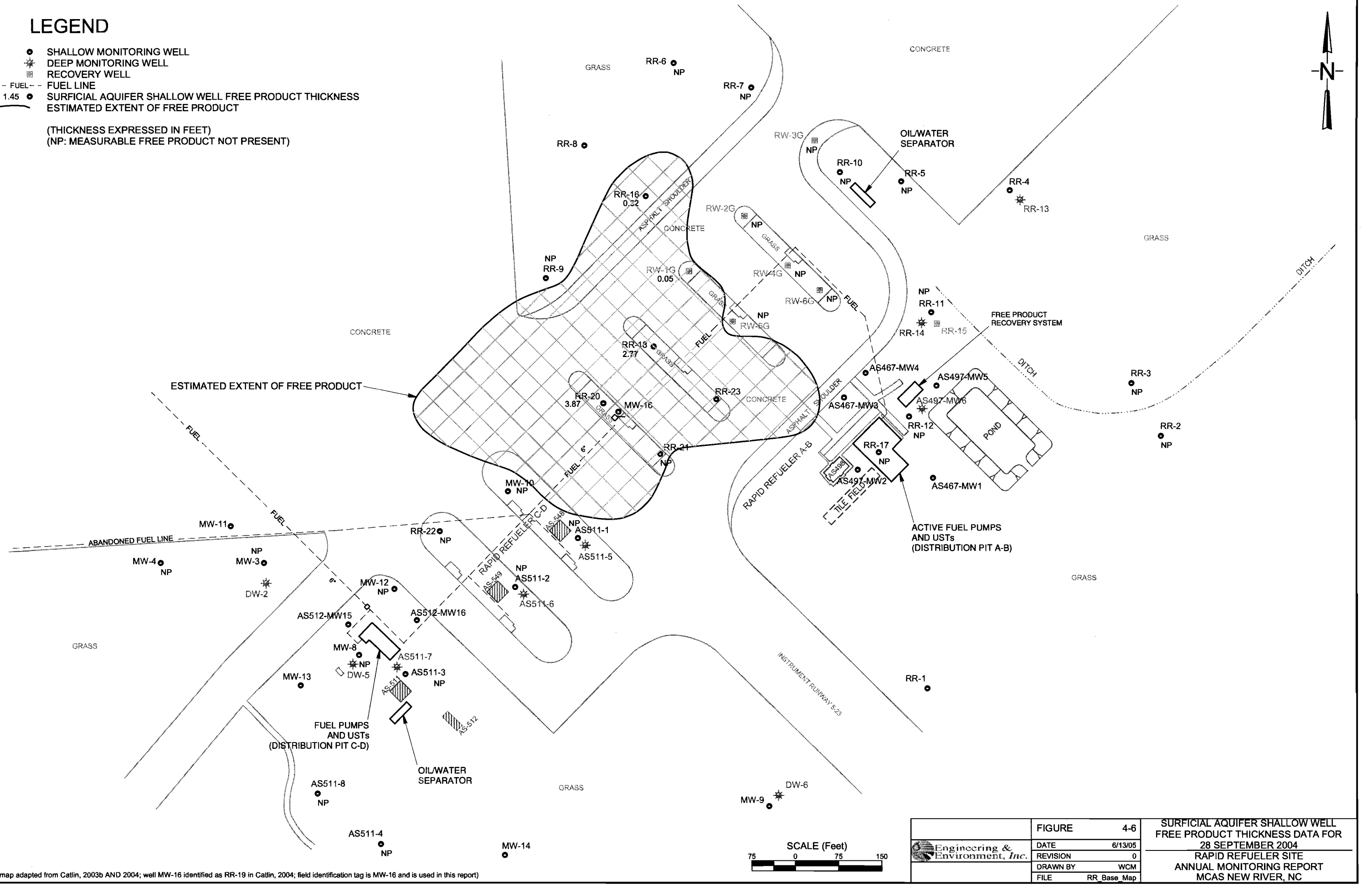
FIGURE	4-5
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 10 AUGUST 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)



(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-6
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 28 SEPTEMBER 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

ESTIMATED EXTENT OF FREE PRODUCT

RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 3.86
RR-13
RR-14
RR-15
RR-16 0.57
RR-17 NP
RR-18 1.25
RR-20 1.07
RR-21 NP
RR-22 NP
RR-23
RR-1
RR-2 NP
RR-3 NP
RR-4
RR-5 NP

RW-1G 0.39
RW-2G NP
RW-3G NP
RW-4G NP
RW-5G 0.02
RW-6G NP

MW-8 NP
MW-9
MW-10 NP
MW-11
MW-12 NP
MW-13
MW-14
MW-16
DW-2
DW-5
DW-6

AS467-MW1
AS467-MW3
AS467-MW4
AS497-MW2
AS497-MW5
AS497-MW6
AS486
AS511-1 NP
AS511-2 NP
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15
AS512-MW16
AS512
AS546
AS549

OIL/WATER SEPARATOR
FREE PRODUCT RECOVERY SYSTEM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
ABANDONED FUEL LINE
RAPID REFUELER A-B
RAPID REFUELER C-D
TILE FIELD
POND
DITCH
INSTRUMENT RUNWAY 5-23
ASPHALT SHOULDER
CONCRETE
GRASS
FUEL
6"

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-7
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 28 OCTOBER 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

ESTIMATED EXTENT OF FREE PRODUCT

RR-6 NP
RR-7 NP
RR-8
RR-9 NP
RR-10 NP
RR-11 NP
RR-12 2.70
RR-13
RR-14
RR-15
RR-16 0.01
RR-17 0.01
RR-18 2.30
RR-20 4.84
RR-21 NP
RR-22 NP
RR-23
RW-1G 0.42
RW-2G 0.05
RW-3G NP
RW-4G NP
RW-5G 0.01
RW-6G NP
MW-10 NP
MW-11
MW-12 NP
MW-13
MW-14
MW-16
AS467-MW1
AS467-MW2
AS467-MW3
AS467-MW4
AS497-MW5
AS497-MW6
AS511-1 NP
AS511-2 NP
AS511-3 NP
AS511-4 NP
AS511-5
AS511-6
AS511-7
AS511-8 NP
AS512-MW15 NP
AS512-MW16
DW-2
DW-5
DW-6
MW-3 NP
MW-4 NP
MW-9
RR-1
RR-2 NP
RR-3 NP
RR-4
RR-5 NP

OIL/WATER SEPARATOR
FREE PRODUCT RECOVERY SYSTEM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
ABANDONED FUEL LINE
RAPID REFUELER A-B
RAPID REFUELER C-D
TILE FIELD
POND
DITCH
INSTRUMENT RUNWAY 5-23
ASPHALT SHOULDER
CONCRETE
GRASS
FUEL
AS-496
AS-497
AS-498
AS-499
AS-511
AS-512

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-8
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 12 NOVEMBER 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

N

RR-6 NP
RR-7 NP
RR-8
RR-16 NP
RR-9 NP
RW-2G 0.11
RW-1G 0.38
RW-3G NP
RW-4G NP
RW-5G 0.11
RW-6G NP
RR-10 NP
RR-5 NP
OIL/WATER SEPARATOR
RR-4
RR-13
RR-11 NP
RR-14
RR-15
FREE PRODUCT RECOVERY SYSTEM
RR-18 2.97
RR-20 4.69
MW-16
RR-23
AS467-MW4
AS497-MW5
AS467-MW3
AS497-MW6
RR-12 2.58
RR-17 NP
AS497-MW2
AS467-MW1
RR-3 NP
RR-2 NP
RR-21 NP
MW-10 NP
AS-48 NP
AS511-1
AS511-5
AS511-2 NP
AS511-6
RR-22 NP
AS-49
MW-11
MW-4 NP
MW-3 NP
DW-2
MW-12 NP
AS512-MW15
AS512-MW16
NP MW-8
AS511-7
DW-5
AS511-3 NP
MW-13
AS-511
AS-512
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
RR-1
AS511-8 NP
AS511-4 NP
MW-14
DW-6
MW-9

ESTIMATED EXTENT OF FREE PRODUCT
ABANDONED FUEL LINE
FUEL
RAPID REFUELER C-D
RAPID REFUELER A-B
ASPHALT SHOULDER
CONCRETE
GRASS
DITCH
POND
TILE FIELD
INSTRUMENT RUNWAY 5-23

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

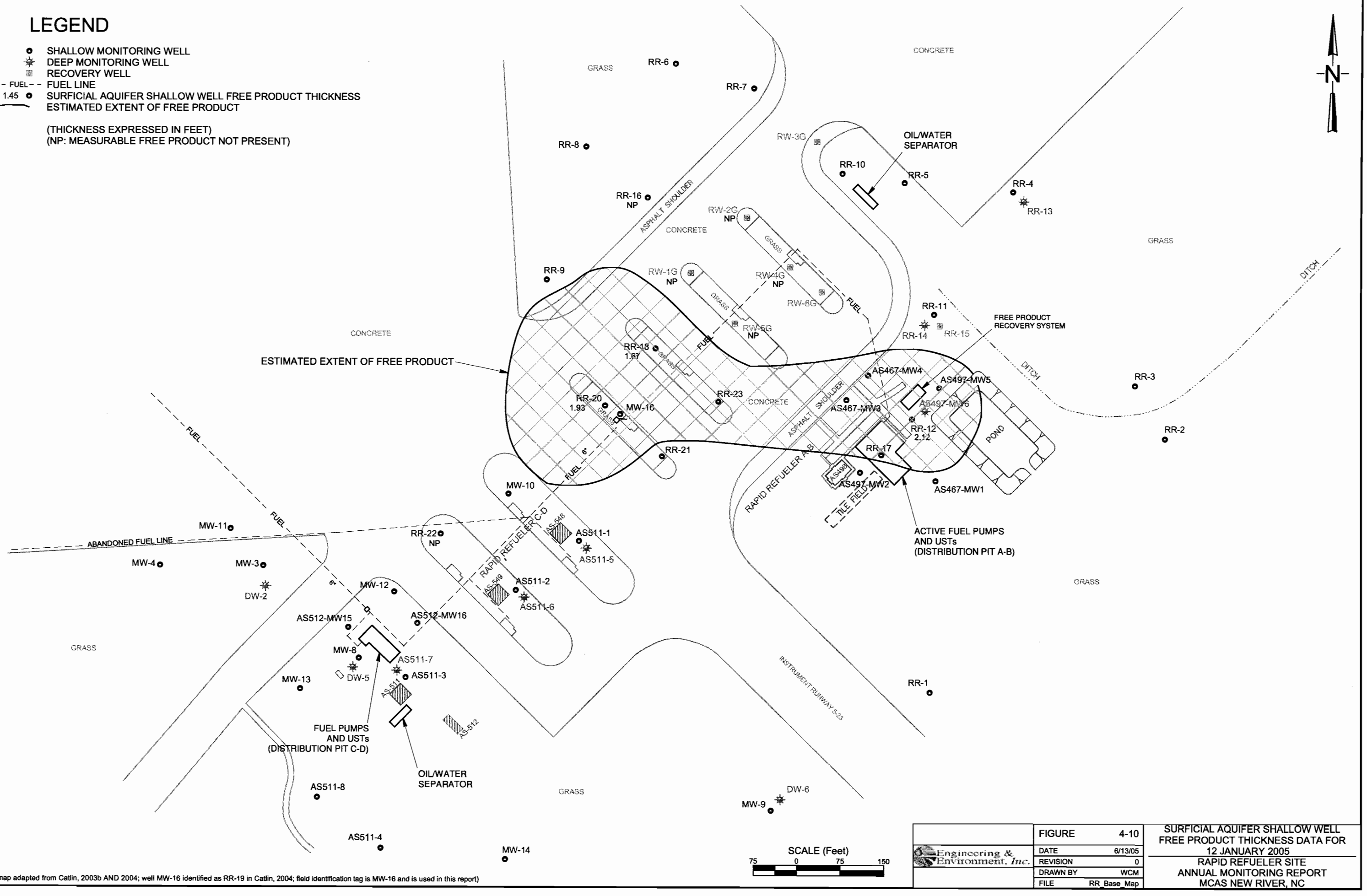
FIGURE	4-9
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 8 DECEMBER 2004
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)



(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

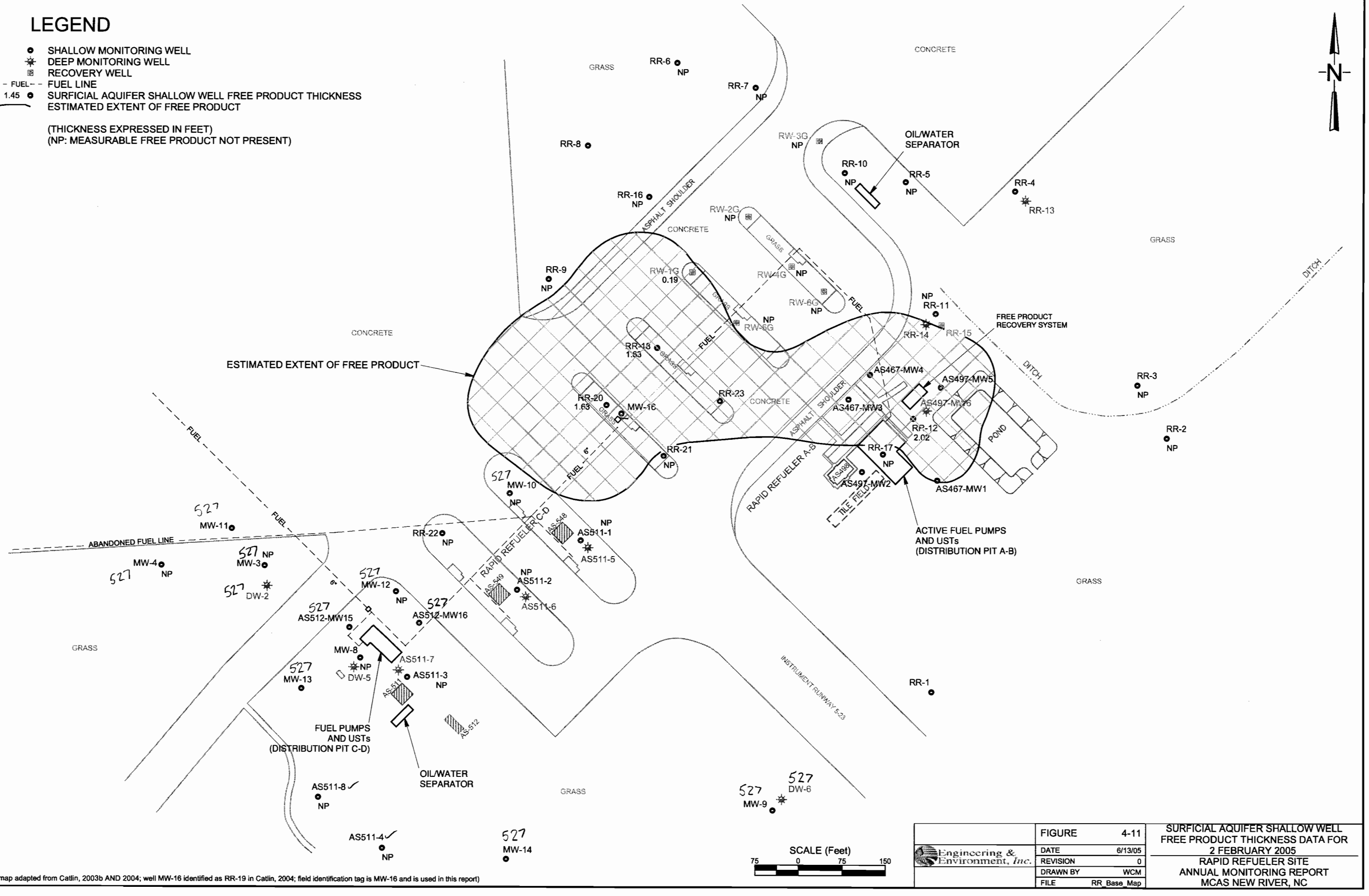
FIGURE	4-10
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL
FREE PRODUCT THICKNESS DATA FOR
12 JANUARY 2005
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)



(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-11
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 2 FEBRUARY 2005
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

LEGEND

- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- RECOVERY WELL
- FUEL LINE
- 1.45 SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS
- ESTIMATED EXTENT OF FREE PRODUCT

(THICKNESS EXPRESSED IN FEET)
(NP: MEASURABLE FREE PRODUCT NOT PRESENT)

ESTIMATED EXTENT OF FREE PRODUCT

RR-6
RR-7
RR-8
RR-16 NP
RR-9
RR-18 2.23
RR-20 1.65
MW-16
RR-23
RR-21
RR-10
RR-5
RR-4
RR-13
RR-11
RR-14
RR-15
RR-3
RR-2
RR-12 0.79
RR-17
RR-1
RW-3G
RW-2G NP
RW-1G 0.11
RW-4G NP
RW-6G
RW-5G NP
AS467-MW4
AS497-MW5
AS467-MW3
AS497-MW6
AS497-MW2
AS467-MW1
AS498
MW-10
MW-11
RR-22
MW-4
MW-3
DW-2
MW-12
AS512-MW15
AS512-MW16
MW-8
DW-5
MW-13
AS511-7
AS511-3
AS511-1
AS511-5
AS511-2
AS511-6
AS548
AS549
AS511
AS512
AS511-8
AS511-4
MW-14
DW-6
MW-9

OIL/WATER SEPARATOR
FREE PRODUCT RECOVERY SYSTEM
ACTIVE FUEL PUMPS AND USTs (DISTRIBUTION PIT A-B)
FUEL PUMPS AND USTs (DISTRIBUTION PIT C-D)
OIL/WATER SEPARATOR

ABANDONED FUEL LINE
FUEL
ASPHALT SHOULDER
RAPID REFUELER C-D
RAPID REFUELER A-B
TILE FIELD
POND
DITCH
INSTRUMENT RUNWAY 5-23
CONCRETE
GRASS
ASPHALT
SHOULDER

N

SCALE (Feet)
75 0 75 150

(Base map adapted from Catlin, 2003b AND 2004; well MW-16 identified as RR-19 in Catlin, 2004; field identification tag is MW-16 and is used in this report)

Engineering & Environment, Inc.

FIGURE	4-12
DATE	6/13/05
REVISION	0
DRAWN BY	WCM
FILE	RR_Base_Map

SURFICIAL AQUIFER SHALLOW WELL FREE PRODUCT THICKNESS DATA FOR 24 MARCH 2005
RAPID REFUELER SITE
ANNUAL MONITORING REPORT
MCAS NEW RIVER, NC

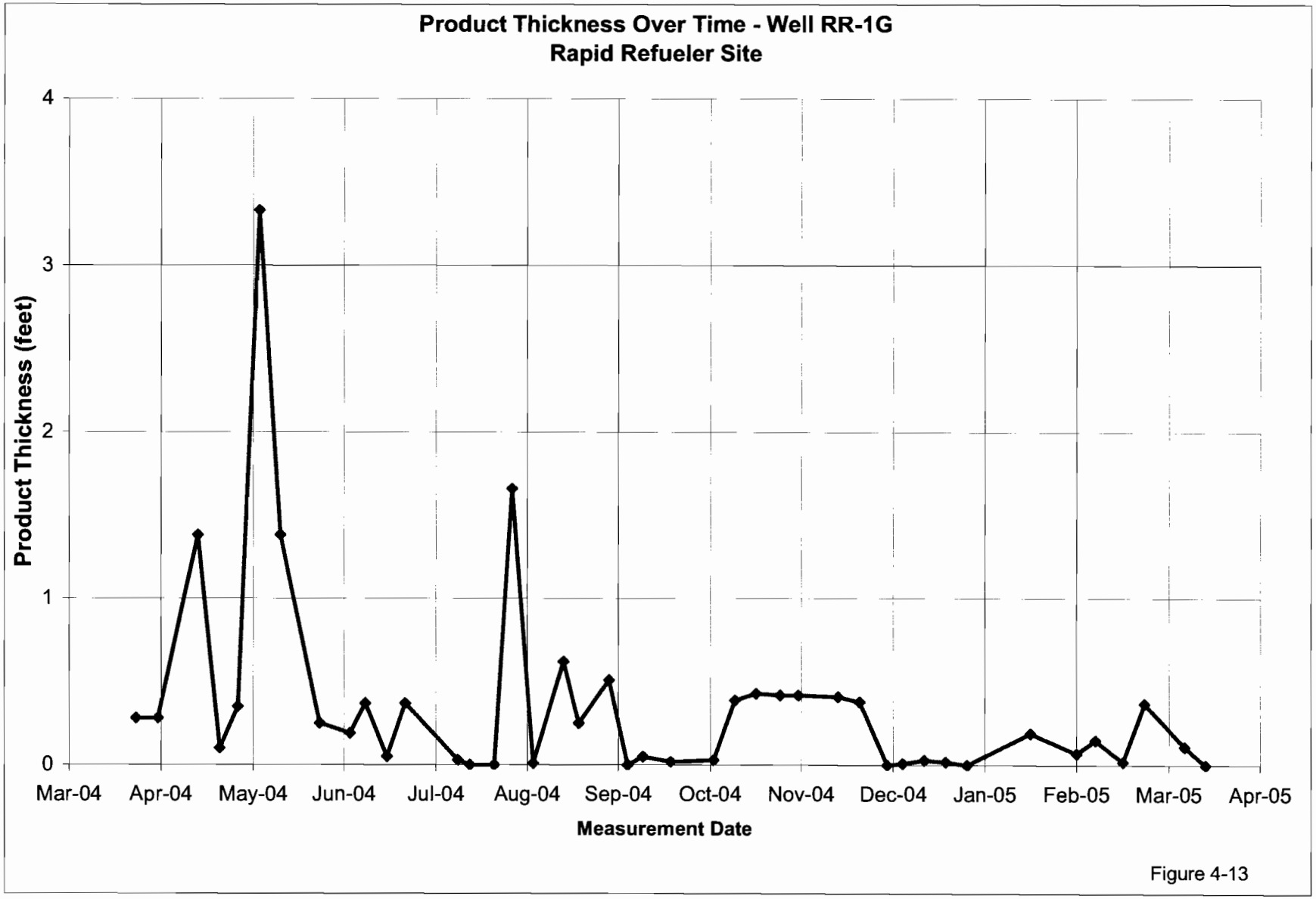

Product Thickness Over Time - Well RR-1G
Rapid Refueler Site
Product Thickness (feet)
4
3
2
1
0
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-13

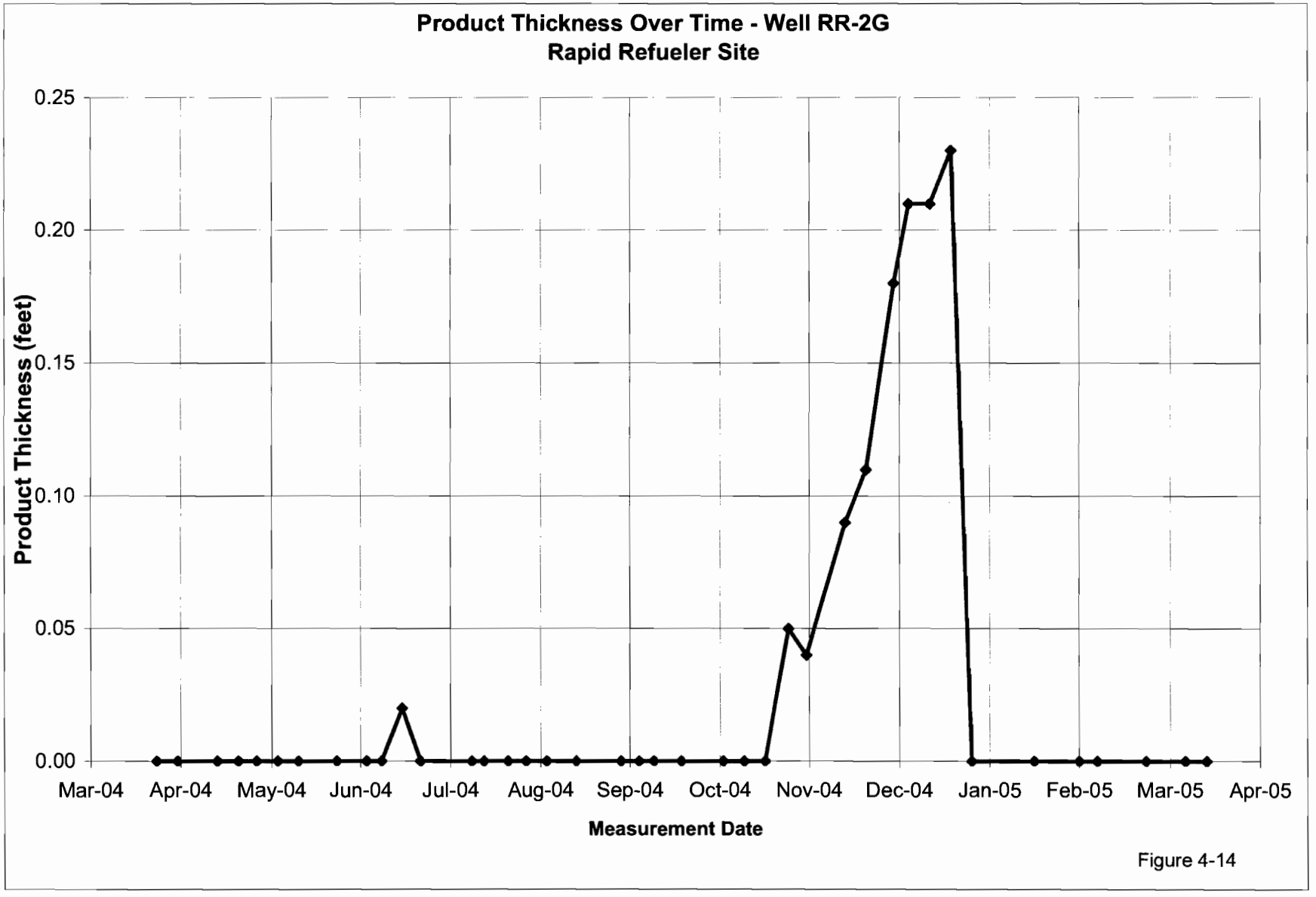

Product Thickness Over Time - Well RR-2G
Rapid Refueler Site
Product Thickness (feet)
0.25
0.20
0.15
0.10
0.05
0.00
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-14

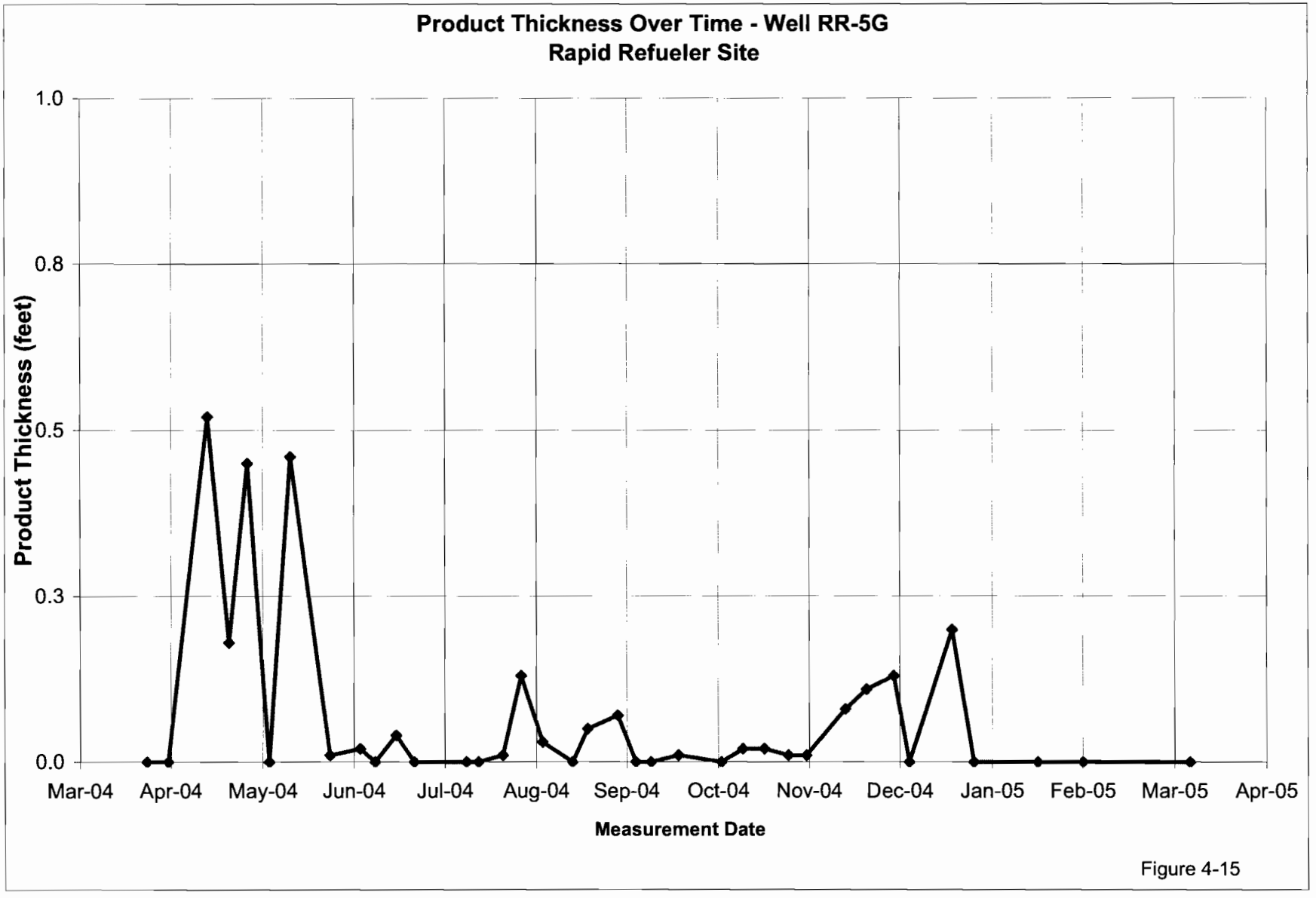

Product Thickness Over Time - Well RR-5G
Rapid Refueler Site
Product Thickness (feet)
1.0
0.8
0.5
0.3
0.0
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-15

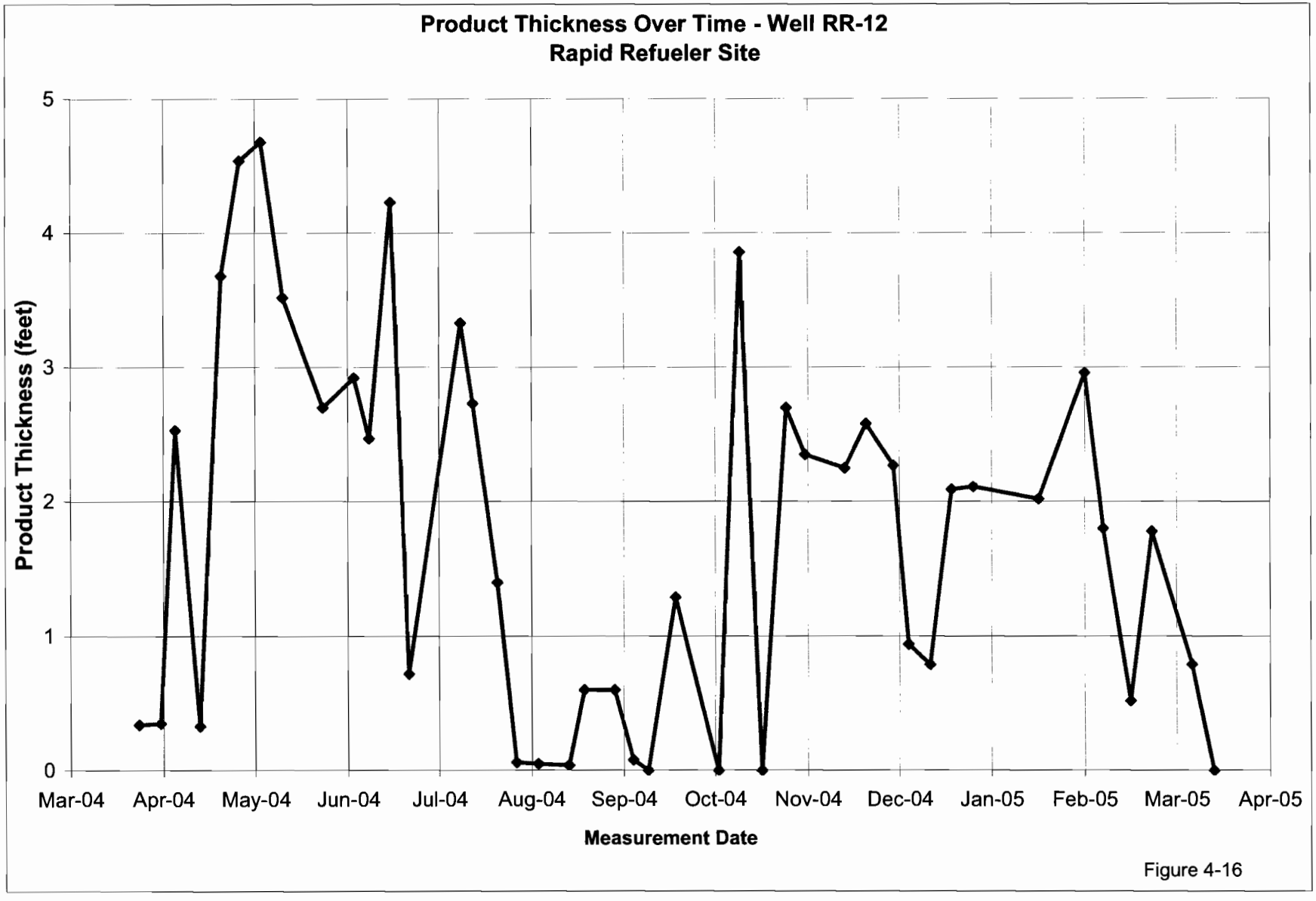

Product Thickness Over Time - Well RR-12
Rapid Refueler Site
Product Thickness (feet)
0
1
2
3
4
5
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-16

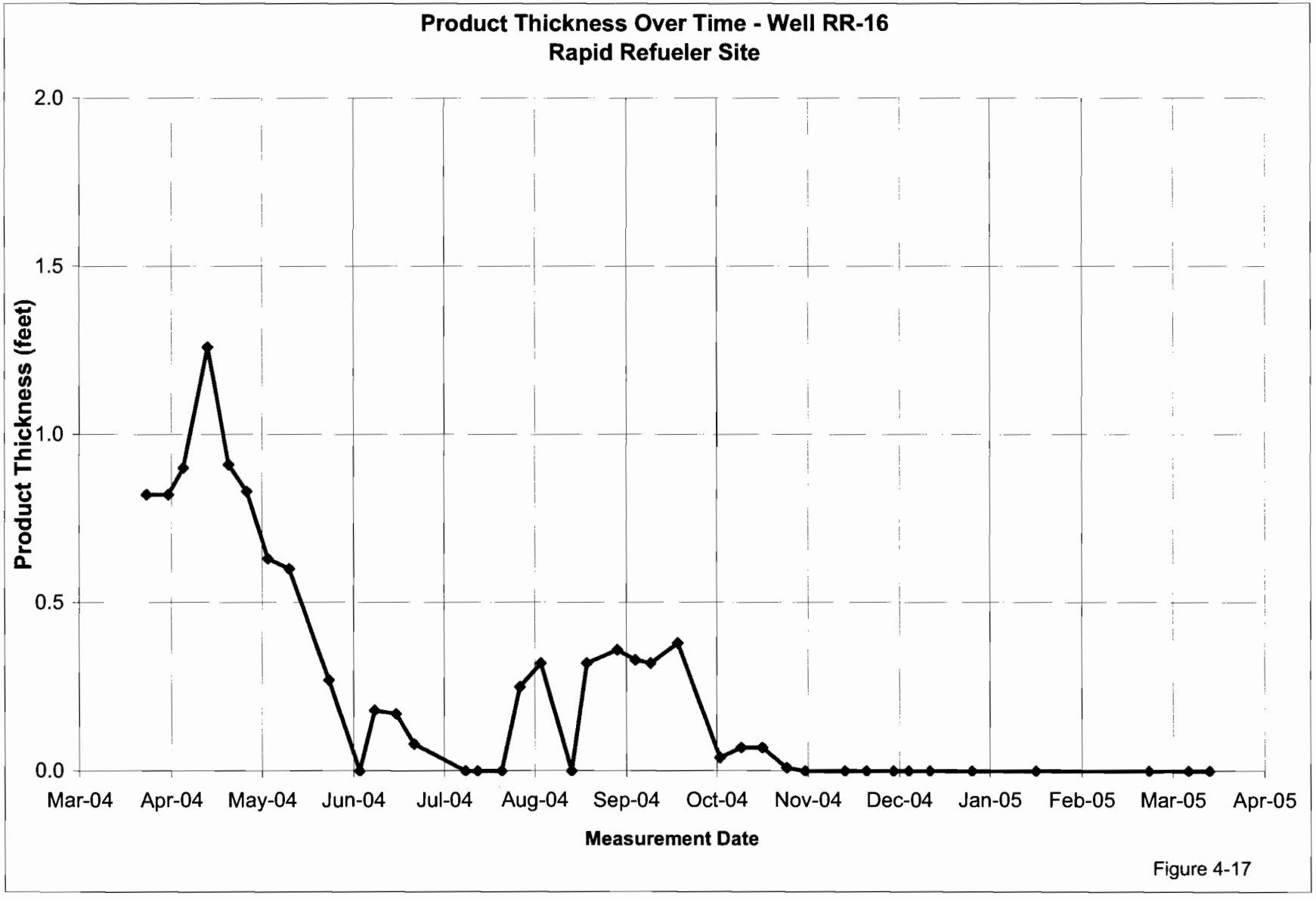

Product Thickness Over Time - Well RR-16
Rapid Refueler Site
Product Thickness (feet)
2.0
1.5
1.0
0.5
0.0
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-17

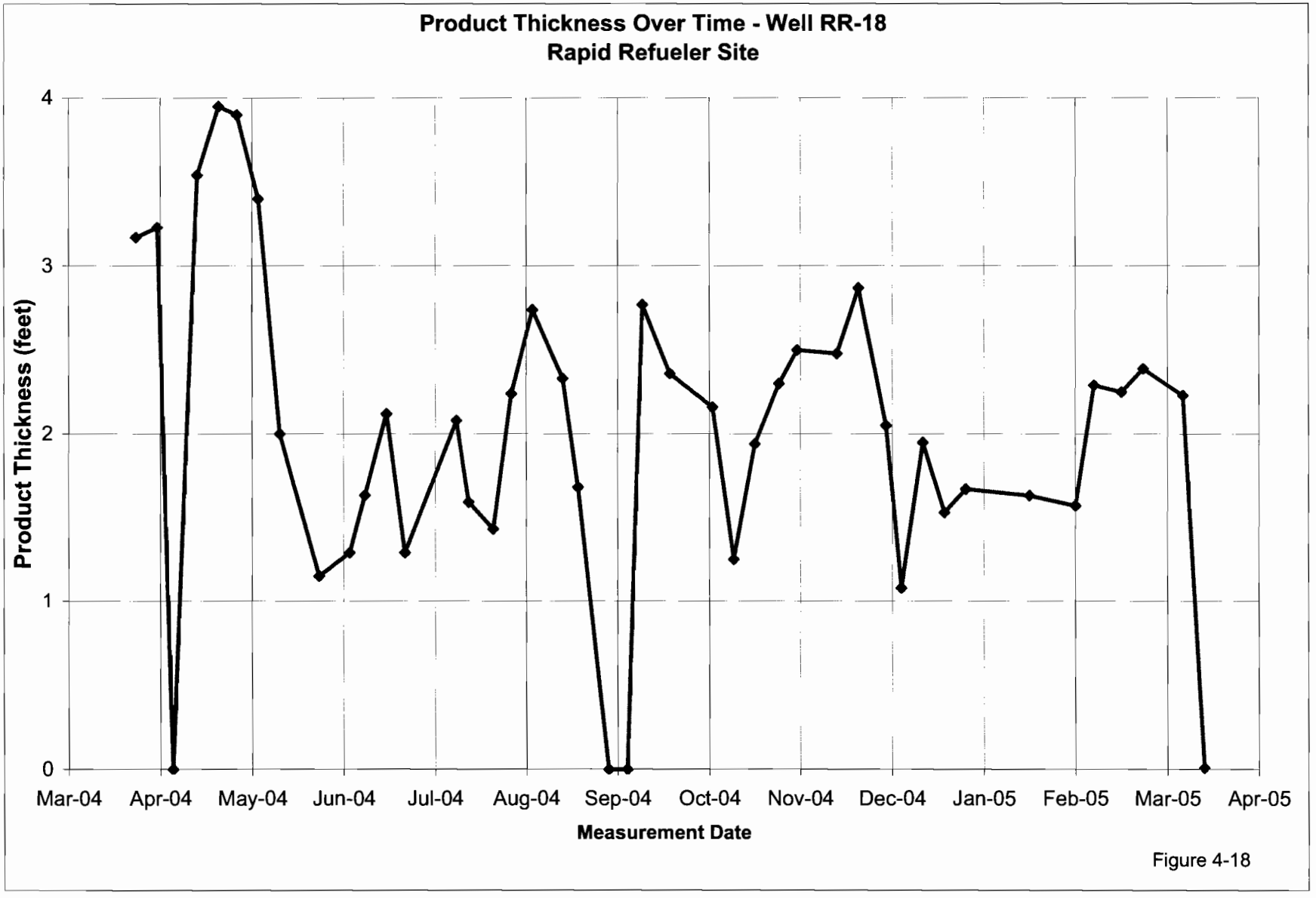

Product Thickness Over Time - Well RR-18
Rapid Refueler Site
Product Thickness (feet)
0
1
2
3
4
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-18

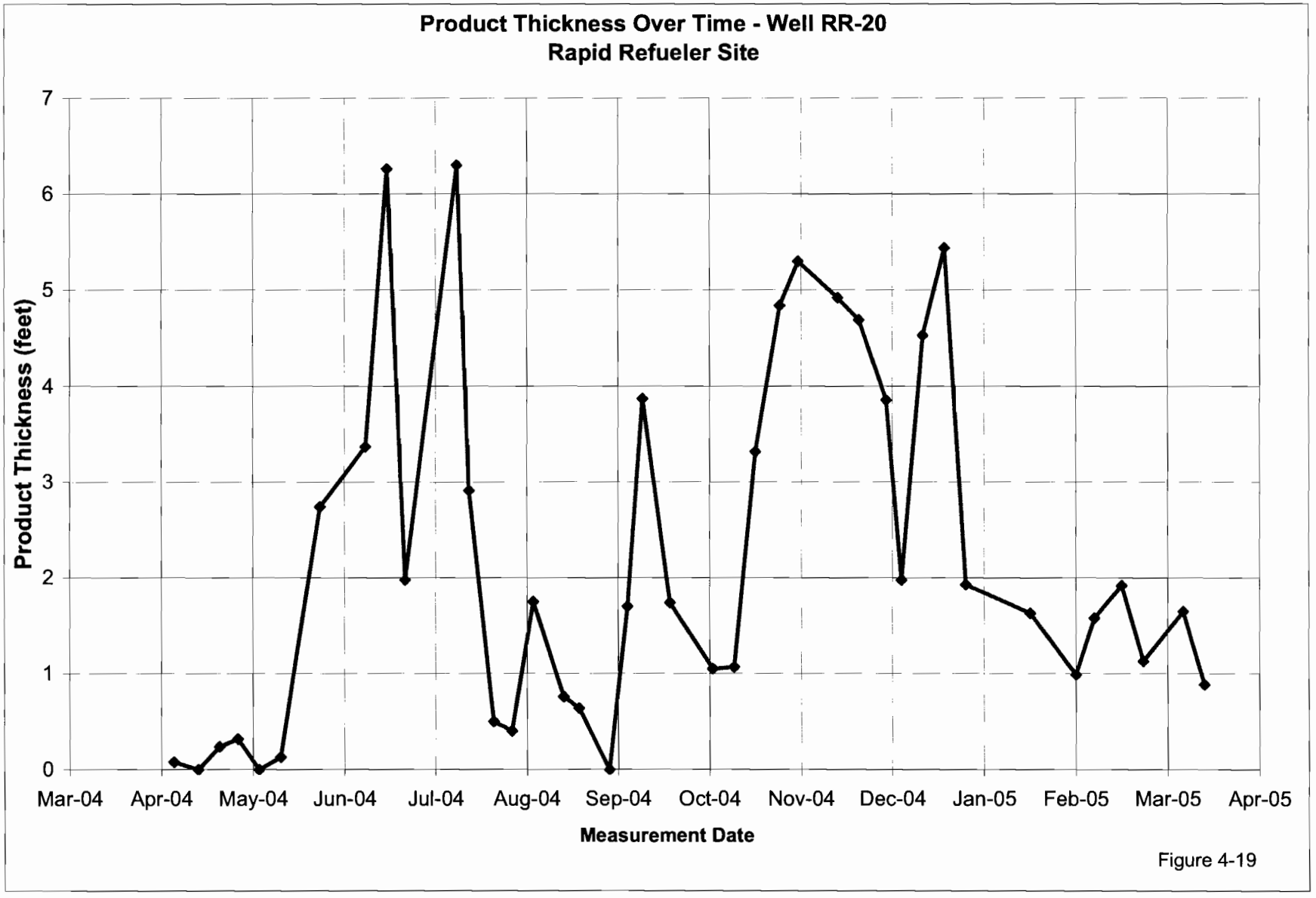

Product Thickness Over Time - Well RR-20
Rapid Refueler Site
Product Thickness (feet)
0
1
2
3
4
5
6
7
Mar-04
Apr-04
May-04
Jun-04
Jul-04
Aug-04
Sep-04
Oct-04
Nov-04
Dec-04
Jan-05
Feb-05
Mar-05
Apr-05
Measurement Date

Figure 4-19