



UNITED STATES MARINE CORPS

MARINE CORPS BASE

PSC Box 20004

Camp Lejeune, North Carolina 28542-0004

IN REPLY REFER TO:

6287

BEMD

SEP - 7 2001

Mr. Bruce Reed
North Carolina Department of Environment
and Natural Resources
Division of Waste Management
UST Section
127 Cardinal Drive
Wilmington, North Carolina 28405-3845

Dear Mr. Reed:

Enclosed are the soil sampling results you requested in your letter dated June 8, 2001. Results show an absence of petroleum contamination in all but one sample – soil sample 006 with 20ppm TPH-DRO. Groundwater sampling results will be forwarded upon receipt.

For further information, please contact Ms. Nikki Hall, Environmental Management Division, Installations and Environment Department, at (910) 451-9610.

Sincerely,

SCOTT A. BREWER, PE

Director, Environmental Management Division

By direction of

the Commanding General

Enclosure: IT Submittal, 8/24/2001 Soil sampling results, 820, Marine Corps Base,
Camp Lejeune, North Carolina

NCDNR Letter dtd June 8, 2001

Copy to: (w/o encl)
NAVFACENGCOM (Ms. Reuther Code EV21LR)



OHM Remediation Services Corp.

11560 Great Oaks Way, Suite 500

Alpharetta, GA 30022-2424

Tel. 770.475.8994

Fax. 770.777.9545

A Member of The IT Group

August 24, 2001

Ms. Nikki Hall
Installation Restoration Branch
Environmental Management Division
Installations & Environment Department
PSC Box 20004, Building 58
MCB Camp Lejeune, N.C. 28547

Re: Soil Sampling Results for POL Site BM 820,
Task Order 33, Contract N62470-97-D-5000,
MCB Camp Lejeune, NC

Dear Ms. Hall:

In compliance with a request from the State of North Carolina dated June 8, 2001, OHM Remediation Services Corp. (OHM) procured soil samples from the dispenser island areas and along the route of the fuel transfer lines at Berkeley Manor 820 at MCB Camp Lejeune, North Carolina on August 1, 2001. The samples were analyzed for presence of hydrocarbons by EPA Methods 5035/8015B and 3550/8015B and by MADEP Methods for VPH.

The results of the analyses are provided in Appendix A and a map indicating the location of the sample points is included in Appendix B.

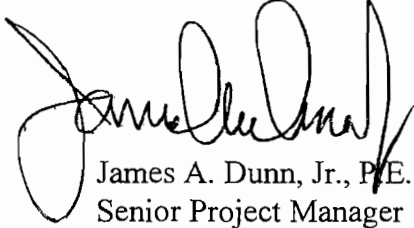
The sampling along the transfer lines included samples from the area of the former line break which occurred on August 27, 1991 (Samples 2 and 3). Both these sample points indicated an absence of hydrocarbon contamination.

Installation of the two additional monitoring wells recommended in the Annual Report for 2000 and the additional well requested by the state between the pump islands should be effected within the next forty-five days.

Enclosure (1)

Should you have any additional questions regarding this submission or require any additional clarification, please do not hesitate to contact us.

Yours truly,
OHM Remediation Services Corp.

A handwritten signature in black ink, appearing to read "James A. Dunn, Jr.", written over a printed name and title.

James A. Dunn, Jr., P.E.
Senior Project Manager

Attachments

pc: File 780790
Lori Reuther, RPM, Code EV21LR
Brent Rowse, AROICC
Randy Smith, OHM

APPENDIX A
ANALYTICAL RESULTS

Sample Number	UST820-SS-002	UST820-SS-003	UST820-SS-004	UST820-SS-005	UST820-SS-006	UST820-SS-007	UST820-SS-008
Sample Date	8/1/01	8/1/01	8/1/01	8/1/01	8/1/01	8/1/01	8/1/01
Lab Lot #	G-468-6	G-468-6	G-468-6	G-468-6	G-468-6	G-468-6	G-468-6
Location	UST830-SB2	UST830-SB3	UST830-SB4	UST830-SB5	UST830-SB6	UST830-SB7	UST830-SB8
Depth	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'	4.5'
Parameter							
DRO	mg/kg	<7.3	<6.6	<6.8	20	<6.6	<6.2
GRO	mg/kg	<7.1	<6.3	<6.6	<6.3	<6.8	<6.5
MEDEP VPH							
C5 - C8	mg/kg	NA	NA	NA	NA	NA	NA
C9 - C12	mg/kg	NA	NA	NA	NA	NA	NA
C9 - C10	mg/kg	NA	NA	NA	NA	NA	NA

Sample Number	UST820-SS-009	UST820-SS-010	UST820-SS-011	UST820-SS-012	UST820-SS-013	UST820-SS-014
Sample Date	8/1/01	8/1/01	8/1/01	8/1/01	8/1/01	8/1/01
Lab Lot #	G-468-6	G-468-6	G-468-6	G-468-6	G-468-6	G-468-6
Location	UST830-SB9	UST830-SB10	UST830-SB11	UST830-SB11Dup	Equip. Blank	Trip Blank
Depth	4.5'	4.5'	4.5'	4.5'		
Parameter						
DRO	mg/kg	<7.2	<6.4	<6.7	<0.5 (mg/l)	NA
GRO	mg/kg	<6.9	<6.6	<6.6	<0.5 (mg/l)	<0.5 (mg/l)
MEDEP VPH						
C5 - C8	mg/kg	NA	NA	NA	NA	NA
C9 - C12	mg/kg	NA	NA	NA	NA	NA
C9 - C10	mg/kg	NA	NA	NA	NA	NA



Chemical Analytical Data
Review/Evaluation/Validation

Camp Lejeune (LANTDIV)

Report Type [] Preliminary Final Date Received: 8/17/01 Project Number: 780790
 Project Name: BM 820 Analysis Method: DRO/GRO MEDICAL VPH
 Laboratory: PARADIGM. Laboratory Project Case Number: G 468-6
 Sample Number(s): US7820-55-(002-014)

Evaluated By: Mark Martin Date Evaluated: 8/22/01

Data Package Deliverables Requirement: [] OHM Minimum [] OHM Standard OHM Maximum

[] Other, please describe: _____

Quality Control Deliverables	Required	Received	Passed	Failed
PQL,MDL,RL, etc meets DQOs Comments:			<input checked="" type="checkbox"/>	
Holding Times Comments:			<input checked="" type="checkbox"/>	
Sample Condition (preservatives, containers, temperature, etc /Case Narrative) Comments:			<input checked="" type="checkbox"/>	
Surrogate Recoveries Comments:			<input checked="" type="checkbox"/>	
Lab Control Sample Recoveries Comments:			<input checked="" type="checkbox"/>	
Lab Control Sample Duplicates or Spike Recoveries Comments:			<input checked="" type="checkbox"/>	
Lab Control Sample Duplicates or Other Laboratory Duplicates RPDs Comments:			<input checked="" type="checkbox"/>	
Matrix Spike Recoveries Comments:			<input checked="" type="checkbox"/>	
Matrix Spike Duplicate Recoveries Comments:			<input checked="" type="checkbox"/>	
Matrix Spike/Matrix Spike Duplicate RPD Comments:			<input checked="" type="checkbox"/>	
Laboratory Blanks (Daily, Method, Instrument) Comments:			<input checked="" type="checkbox"/>	
Field Blanks (Trip, Equip. Rinsate, Ambient, Matrix) Comments:			<input checked="" type="checkbox"/>	

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum

Hydrocarbons

by GC 8015B

Client Sample ID: UST820-SS-002 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25063 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 83.9
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.1	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	7.3	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum

Hydrocarbons

by GC 8015B

Client Sample ID: UST820-SS-003 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25064 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 95.3
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.3	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.5	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum
Hydrocarbons
by GC 8015B

Client Sample ID: UST820-SS-004 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25065 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 94.6
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.3	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.6	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum

Hydrocarbons

by GC 8015B

Client Sample ID: UST820-SS-005 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25066 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 91.3
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.8	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum

Hydrocarbons
by GC 8015B

Client Sample ID: UST820-SS-007 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25068 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 88.3
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.8	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.6	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum

Hydrocarbons

by GC 8015B

Client Sample ID: UST820-SS-008 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25069 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 92.4
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.5	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.2	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum

Hydrocarbons
by GC 8015B

Client Sample ID: UST820-SS-010 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25071 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 84.1
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	7.1	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	7.2	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum

Hydrocarbons
by GC 8015B

Client Sample ID: UST820-SS-011 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25072 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 90.2
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.4	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Total Petroleum

Hydrocarbons

by GC 8015B

Client Sample ID: UST820-SS-012 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25073 Analyzed By: BMS
Lab Project ID: G468-6 %Solids: 91.2
Matrix: Soil

Compound	Result (MG/KG)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.6	5035/8015B	1.0	8/6/01
Diesel Range Organics	BQL	6.7	3550/8015B	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum
Hydrocarbons
by GC

Client Sample ID: UST820-EB-013 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25074 Analyzed By: BMS
Lab Project ID: G468-6
Matrix: Water

Compound	Result (MG/L)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	0.5	5030	1.0	8/3/01
Diesel Range Organics	BQL	0.5	3510	1.0	8/7/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum
Hydrocarbons
by GC

Client Sample ID: UST820-EB-013 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25074 Analyzed By: BMS
Lab Project ID: G468-6
Matrix: Water

Compound	Result (MG/L)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	0.5	5030	1.0	8/3/01
Diesel Range Organics	BQL	0.5	3510	1.0	8/7/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.
Results for Total Petroleum
Hydrocarbons
by GC

Client Sample ID: UST820-TB-014 Date Collected: 8/1/01
Client Project ID: CAMP LEJEUNE - BM 820 Date Received: 8/2/01
Lab Sample ID: 25075 Analyzed By: BMS
Lab Project ID: G468-6
Matrix: Water

Compound	Result (MG/L)	Quantitation Limit	Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	0.5	5030	1.0	8/3/01

Comments:

Quantitation Limits are fully calculated using dilution factors and % solids.
BQL = Undetected or below quantitation limit.

PARADIGM ANALYTICAL LABORATORIES, INC.

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: IT Group/OHM Remediation Services

Project Name: CAMP LEJEUNE - BM 820

Sample Information and Analytical Results	
Sample Identification	UST820-SS-003
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	08/01/01
Date Received	08/02/01
Date Extracted	08/02/01
Date Analyzed	08/06/01
Dry Weight	95
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	98
Surrogate % Recovery - FID	100

* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

** = Excludes any surrogates or internal standards.

Lab Info: G468-6-25064

Reviewed By: JW

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 08/02/01 PID Initial Calibration Date: 08/02/01

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	2.4	0.12	7.5	0.38	100	10
C ₉ -C ₁₂ Aliphatics	1.3	0.065	4.0	0.21	100	10
C ₉ -C ₁₀ Aromatics	0.5	0.025	1.6	0.08	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	40	2	15.9	Calibration Factor
	160	8		
	400	20		
	1600	80		
	4000	200		
C ₉ -C ₁₂ Aliphatics	30	1.5	14.2	Calibration Factor
	120	6		
	300	15		
	1200	60		
	3000	150		
C ₉ -C ₁₀ Aromatics	65	3.25	0.993	Linear Regression
	260	13		
	650	32.5		
	2600	130		
	6500	325		

Calibration Check Date: 08/06/01

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C ₅ -C ₈ Aliphatics	400	20	10.6
C ₉ -C ₁₂ Aliphatics	300	15	16.6
C ₉ -C ₁₀ Aromatics	650	32.5	4.4

MDL = Method Detection Limit


ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

Reviewed By: 

N.C. Certification #481 S.C. Certification #99029

COC Number:
780790-820SS-080101



G468-6

CHAIN-OF-CUSTODY RECORD

IT Group/OHM Remediation Services - Piney Green Rd. Lot 203 Bld 626 - 910-451-2390		Receiving LAB: Paradigm Analysis Desired							
Project Name CAMP LEJEUNE - BM 820		Project Location CAMP LEJEUNE, NC							
Project Number 780790	Contact Mark Martin	P.O. Number 174697	Reviewed by						
Client Rep US NAVY - LANTDIV		Project Manager JIM DUNN							
Item No.	Sample Number	Date	Time	Comp	Grab	Sample Description	Number of Containers	DRO/GRO 3550/5035/8016	MEDEP VPH
1	UST820-SS-002	8/1/01	8:55		X	UST820-SB2	4	X	
2	UST820-SS-003	8/1/01	9:30		X	UST820-SB3	4	X	X
3	UST820-SS-004	8/1/01	10:00		X	UST820-SB4	4	X	
4	UST820-SS-005	8/1/01	10:30		X	UST820-SB5	4	X	
5	UST820-SS-006	8/1/01	11:00		X	UST820-SB6	4	X	
6	UST820-SS-007	8/1/01	11:30		X	UST820-SB7	4	X	
7	UST820-SS-008	8/1/01	12:00		X	UST820-SB8	4	X	
8	UST820-SS-009	8/1/01	12:30		X	UST820-SB9	4	X	
9	UST820-SS-010	8/1/01	13:00		X	UST820-SB10	4	X	
10	UST820-SS-011	8/1/01	13:30		X	UST820-SB11	4	X	
11	UST820-SS-012	8/1/01	13:33		X	UST820-SB11D	4	X	
12	UST820-EB-013	8/1/01	13:40		X	UST820-EB	4	X	
13	UST820-TB-014	8/1/01	13:45		X	UST820-TB	2	X	GRO Only

Transfer Number	Item Number	Transfers Relinquished By	Transfers Accepted By	Date	Time	Remarks
1	1-13	<i>[Signature]</i>	Fed EX 824152609345	8/1/01	16:00	- PLEASE FAX RESULTS TO 910-451-1809
2		<i>[Signature]</i>	<i>[Signature]</i> 5.8K	8/2/01	0850	14 Day Tat
3						

APPENDIX B
SOIL BORING LOCATIONS

OPTIONAL FORM 99 (7-90)

11 Jun 2001

FAX TRANSMITTAL

of pages = 1 of 5

To	Jim Dunn / Lon Rutter	From	Nikki Hall
Dept./Agency	OHM/IT / LANTDN	Phone #	910.451.9610
Fax #	770.377.8165 / 862624804	Fax #	.5997
NSN 7540-01-317-7368		5099-101 GENERAL SERVICES ADMINISTRATION	

State of North Carolina
 Department of Environment
 and Natural Resources
 Wilmington Regional Office
 Division of Waste Management
 UST Section

Michael F. Easley, Governor
 William G. Ross Jr., Secretary

June 8, 2001

Ms. Nikki Hall, Environmental Engineer
 Attention: Director, I & E/EMD/IRB
 PSC Box 20004
 Camp Lejeune, NC 28542-0004

N Jim-
 NO ENVI
 Please review NCDENR
 comments on B20.
 Note due date of
 Sept 8 2001. Shall we
 discuss @ Partnering ???
 -Nikki

Subject: Review of Annual Monitoring
 Report
 USMC-Camp Lejeune, Bldg. 820
 Incident No. 23135
 Intermediate Risk

Dear Ms. Hall:

Thank you for submitting the subject report to the Division on May 31, 2001. The Division has reviewed the report and offers the following comments:

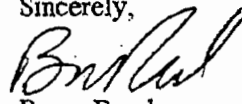
- Contaminant concentrations detected in groundwater samples tend to indicate a source of contamination near the dispenser islands. This prompted a review of previous documents submitted to the Division concerning the subject site. This review indicates that no soil samples were obtained from the dispenser island areas. The closest soil boring was 43 feet from a dispenser. Please collect soil samples from the dispenser island areas and send us a brief report of findings. The Division also suggests that a monitoring well be placed in the center of the pump island area.
- Please find attached a copy of several pages of the UST Site Check Report dated February 18, 1992. This report referenced a transfer line break which occurred on August 27, 1991. Please note that it was stated in this report that excavated contaminated soil was probably placed back into the excavation. Please remove this contaminated soil or immediately provide effective vacuum extraction on this area, as there does not appear to be a vacuum extraction well near the area of the line break. Furthermore, if the actual radius of influence of the vacuum extraction wells is 30 feet, as referenced in the pilot test study, then there is a large area of untreated soil between the UST basin and the dispenser area.

Ms. Nikki Hall
June 8, 2001
Page 2

- Since no EPA Method 601 compounds were detected in the monitoring wells, the USMC may discontinue this test method for indicator sampling. However, these tests may be needed prior to closure since a few 601 compounds were detected during initial assessment activities. It is recommended that the full range of VOC's continue to be used on the water supply well samples.
- The Division agrees with the recommendations to construct additional monitoring wells in conjunction with this incident, and to monitor select wells for natural attenuation parameters.

Please provide the above referenced assessment work by September 8, 2001 in order to achieve compliance with 15A NCAC 2L .0115(g). Also, please include a response concerning the line break area, and include manifests if the soil was hauled for treatment. If you have any questions concerning this letter, please call me at (910) 395-3900.

Sincerely,


Bruce Reed
Hydrogeologist II

Attachment

BR

cc: WiRO-UST

s:\bruce\hall820.jun

The calculated velocity equals 0.022 ft/day or 8 ft/year. This groundwater flow velocity is relatively swift, which is mostly due to the relatively steep water table gradient at the site. This analysis shows that groundwater contamination, if present, would migrate relatively quickly from the UST area toward the southeast. However, as an aquifer pumping or slug test was not conducted at this site, this calculated value represents only a rough estimate of the true groundwater flow velocity. This estimated velocity also does not necessarily correspond with the rate of contaminant movement, as contaminant characteristics greatly affect their rate of movement.

2.6 Gasoline Line Break

On August 27, 1991, while drilling at the MW1 monitoring well location, the fiberglass supply line from the 820-2 UST to the super unleaded fuel pump was broken at a depth of 4 feet BGS by the drill bit and hollow stem auger. ATEC previously had obtained a site plan from the Camp Lejeune Public Works Technical Records Department. The site plan indicated that the gasoline supply lines were located approximately 14 feet to the west of the MW1 location. ATEC's account of the incident is detailed in the Field Activity Daily Logs included as Appendix D.

When the line break was discovered, the gasoline pumps were shut off and the electricity to the pump islands was turned off. The Camp Lejeune Fire Department and Spill Control Team were called to respond. ATEC personnel bailed the product from the borehole until the Spill Control Team arrived and placed absorbent pads into the borehole. The Fire Department estimated that 60 gallons of gasoline had been contained in the supply line; much of this product was absorbed or bailed. Once the product stopped draining from the supply lines, ATEC was allowed to resume drilling at the MW4 location (the MW2 and MW3 wells had been installed and soil samples obtained prior to the line break). A contractor hired by the Marine Corps Exchange excavated the area and repaired the break in the supply line on August 28 and 29, 1991. It is believed that this contractor placed the contaminated soils back into the excavation once the line was repaired.

Although the line break released gasoline product into the site soils and potentially into the site groundwater, it does not appear possible that this release could have affected the reported soil and groundwater contaminant results. This conclusion is based upon the time frame of the incident and sampling procedures and upon contaminant transport factors. Soil samples from the MW2 and MW3 locations were obtained prior to the line break. The soil sample from the MW4 location was obtained shortly following the break, on the same day. Groundwater samples were obtained only two days after the line break had occurred. The movement of released gasoline through unsaturated soil relies upon absorption and dispersion activities as well as gravitational forces. The gasoline contamination would not drain immediately through the 9 feet of unsaturated soil and into the groundwater. Upon reaching the groundwater, the product would be subject to dilution, dispersion, and diffusion as well as the influence of groundwater flow, which was estimated to be approximately 8 feet per year. These contaminant transport mechanisms are relatively slow processes once a release has occurred. The released product would not have had time to reach the other three well locations. This area of soil contamination should be addressed during any future remediation efforts.