03.12-11/07/97-01768

FINAL

REMEDIAL INVESTIGATION REPORT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY

APPENDICES

MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0312

NOVEMBER 7, 1997

Prepared For:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

APPENDICES

A	UST Analytical Data
B	Test Boring and Well Construction Records
C	Sampling Summary
D	Chain of Custody Records
E	Well Development Records
F	Geophysical Survey Report
G	IDW Management and Disposal Information
H	Rainfall Data from MCAS New River
I	Hydraulic Conductivity Data
J	Summary of Groundwater and Aquifer Characteristics
K	Tidal Study Data
L	Groundwater Flow Model Figures
M	Background Metals Concentrations Surface vs. Subsurface Soil
N	Evaluation of Metals in Groundwater
O	Frequency of Detection Summaries
P	Results of Engineering Parameters
Q	Field Duplicate Summaries
R	QA/QC Frequency of Detection Summaries
S	Statistical Summaries
T	Permeability Constant Calculations
U	Human Health Risk Calculations
V	Shower Model Calculations
W	White Oak River Basin Reference Data
X	SQC and QI Calculations
Y	Sampling Station Characterization Data Sheets
Z	Benthic Macroinvertebrate Laboratory Bench Sheets
AA	Fish Collection Logs
AB	Terrestrial Reference Values and CDI Ecological Spreadsheets

APPENDIX A
UST ANALYTICAL DATA

DETECTED VOLATILES IN SURFACE SOILS
VIA METHOD 8021
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW13-00	73-AC1-MW14-00	73-AC1-MW28-00
METHOD	8021	8021	8021	8021	8021	8021
DATE SAMPLED	04/19/95	04/20/95	04/19/95	05/04/95	04/21/95	04/19/95
VOLATILES (ug/kg)						
BENZENE	1.1 U	1.5 J	1.1 U	1.1 U	1.1 U	1 U
CHLOROFORM	1.1 U	2.1 J	1.1 U	1.1 U	1.1 U	1 U
ETHYLBENZENE	1.1 U	4 J	1.1 U	1.1 U	1.1 U	1 U
M-XYLENE & P-XYLENE	1.1 U	10 J	1.6 J	4.9 J	3.2 J	1 U
O-XYLENE	1.1 U	1.5 J	1.1 U	1.1 U	1.3	1 U
TOLUENE	1.1 U	2.9 J	1.1 U	1.1 U	1.1 U	1 U

DETECTED VOLATILES IN SURFACE SOILS
VIA METHOD 8021
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW29-00	73-AC1-SB03-00	73-AC5-SB10-00	73-ACI-DW03-00
METHOD	8021	8021	8021	8021
DATE SAMPLED	04/24/95	04/19/95	04/18/95	04/22/95
VOLATILES (ug/kg)				
BENZENE	1.1 U	1.1 U	1.1 U	1.1 U
CHLOROFORM	1.1 U	1.1 U	1.1 U	1.1 U
ETHYLBENZENE	1.1 U	1.1 U	1.1 U	1.1 U
M-XYLENE & P-XYLENE	1.3 J	1.1 U	1.1 U	3.4 J
O-XYLENE	1.1 U	1.1 U	1.1 U	1.1 U
TOLUENE	1.1 U	1.1 U	1.1 U	2.7 J

DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHOD 8021
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-ACI-DW03-01	73-AC1-MW04-01	73-AC1-MW14-02	73-AC1-MW15-01	73-ACI-MW15IW-01	73-AC1-MW28-01
METHOD	8021	8021	8021	8021	8021	8021
DATE SAMPLED	04/22/95	04/20/95	04/21/95	04/19/95	04/21/95	04/19/95
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	1.1 U	1.2 U	2.2 U	1.1 U	1.1 U	2.2 J
BENZENE	1.1 U	1.8 J	2.2 U	1.1 U	1.1 U	1.1 U
CHLOROFORM	1.1 U	1.2 U	2.2 U	1.1 U	1.1 U	1.2 J
ETHYLBENZENE	2.5 J	1.2 U	1.9 J	12 J	1.3	1.1 U
M-XYLENE & P-XYLENE	6.5 J	1.5 J	9.6 J	6.4 J	3.6	4.4 J
METHYLENE CHLORIDE	1.1 U	1.2 U	4.5 J	1.1 U	1.1 U	1.1 U
O-XYLENE	1.1 U	1.2 U	2.2 U	1.1 U	1.1 U	2.8 J
TOLUENE	2.6 J	1.6 J	2.2 U	8.4 J	1.1 U	1.1 U

DETECTED VOLATILES IN THE UPPERMOST PORTION
OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW28-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01
METHOD	524.2	524.2	524.2	524.2	524.2	524.2
DATE SAMPLED	05/06/95	05/07/95	05/07/95	05/04/95	05/04/95	05/06/95
VOLATILES (ug/L)						
N-PROPYLBENZENE	0.5 U	2.2	0.26 J	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.87	0.5 U	0.29 J	0.34 J	0.18 J	0.53
TOLUENE	0.5	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J	0.5 U
SEC-BUTYLBENZENE	0.5 U	1.7	0.35 J	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	0.5 U	0.3 J	0.5 U	0.1 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	0.5 U	0.72	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	0.6	0.51	0.53	0.41 J	2.2 J	2.7
TERT-BUTYLBENZENE	0.5 U	1.4	0.21 J	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	1.1	0.39 J	0.5 U	0.5 U	0.5 U

DETECTED VOLATILES IN THE UPPERMOST PORTION OF THE SURFICIAL AQUIFER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW30-01	73-BG-MW01-01	73-GW05-01RS
METHOD	524.2	524.2	524.2
DATE SAMPLED	05/16/95	05/04/95	05/02/95
VOLATILES (ug/L)			
N-PROPYLBENZENE	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.5 U	0.28 J	0.5 U
TOLUENE	0.5 U	0.16 J	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U
SEC-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	7 J	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	3 J	0.5 U	0.5 U
BENZENE	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2 J	0.5 U	0.5 U
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 J
1,1,2-TRICHLOROETHANE	0.5 J	0.5 U	0.5 U
TRICHLOROETHENE	0.8 J	1.9	0.5 U
TERT-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	0.5 U	0.5 U

DETECTED VOLATILES IN THE LOWER PORTION
OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW02B-01	73-BG-MW01B-01
METHOD	524.2	524.2
DATE SAMPLED	05/16/95	05/05/95
VOLATILES (ug/L)		
1,2-DICHLOROETHANE	0.5 U	0.2 J
1,2,4-TRICHLOROBENZENE	0.4 J	0.52
CIS-1,2-DICHLOROETHENE	22 J	0.5 U
TRANS-1,2-DICHLOROETHENE	4 J	0.5 U
CHLOROFORM	0.6 J	0.15 J
TRICHLOROETHENE	3 J	6
1,2,3-TRICHLOROBENZENE	0.5 U	0.1 J

DETECTED VOLATILES IN THE UPPERMOST PORTION
OF THE CASTLE HAYNE AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-DW01-01
METHOD	524.2
DATE SAMPLED	05/05/95
VOLATILES (ug/L)	
1,2-DICHLOROETHANE	0.47 J
TOLUENE	0.62
CHLOROFORM	0.46 J
BROMODICHLOROMETHANE	0.12 J
TRICHLOROETHENE	1.7

DETECTED OIL & GREASE IN SUBSURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-SB01-01	73-AC1-SB03-01	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC6-SB07-01	73-AC5-SB08-01	73-AC5-SB10-03
METHOD	9071	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)								
OIL AND GREASE (GRAV)	2000	4060	570 U	570 U	970	6800	570 U	620 U

DETECTED OIL & GREASE IN SUBSURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB11-02	73-AC5-SB12-01	73-AC4-SB13-01	73-AC4-SB14-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC1-MW04-01
METHOD	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)							
OIL AND GREASE (GRAV)	590 U	610 U	550 U	600 U	580 U	570 U	600 U

DETECTED OIL & GREASE IN SUBSURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW10-01	73-AC1-MW12-01	73-AC1-MW14-02	73-AC1-MW15IW-01	73-AC4-MW19-02	73-AC5-MW21-03	73-AC3-MW23-01
METHOD	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)							
OIL AND GREASE (GRAV)	540 U	580 U	3800	1100	620 U	730 U	630 U

DETECTED OIL & GREASE IN SUBSURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-01	73-AC1-MW28-01	73-SB37MW-02	73-AC1-DW03-01
METHOD	9071	9071	9071A	9071
TPH (mg/kg)				
OIL AND GREASE (GRAV)	650 U	13800	284 U	860

DETECTED OIL & GREASE IN SUBSURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TPH (mg/kg)								
OIL AND GREASE (GRAV)	284 U	730 U	860	13800	73-AC1-MW28-01	8/26	4173.75	2900.00

DETECTED TPH IN SUBSURFACE SOILS
VIA METHOD 8015A, MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW03-01	73-AC1-MW28-01	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC2-MW06-01
TPH (mg/kg)						
DIESEL RANGE ORGANICS	110	1000	38	23	21	32
HBPH, AS MOTOR OIL	NA	10000	NA	NA	NA	250

DETECTED TPH IN SUBSURFACE SOILS
VIA METHOD 8015A, MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW03-01	73-AC3-SB01-01	73-AC5-SB10-03	73-SB06DW-03	73-SB36MW-02	73-SB37MW-02
TPH (mg/kg)						
DIESEL RANGE ORGANICS	20	710	15	14	38	13
HBPH, AS MOTOR OIL	110	NA	NA	NA	NA	NA

DETECTED TPH IN SUBSURFACE SOILS
VIA METHOD 8015A, MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TPH (mg/kg)								
DIESEL RANGE ORGANICS	11 U	15 U	13	1000	73-AC1-MW28-01	12/35	169.50	27.50
HBPH, AS MOTOR OIL	NA	NA	27	10000	73-AC1-MW28-01	4/4	2596.75	180.00

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-SB01-00	73-AC1-SB03-00	73-AC1-SB04-00	73-AC1-SB05-00	73-AC1-SB06-00	73-AC6-SB07-00	73-AC5-SB08-00
METHOD	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)							
OIL AND GREASE (GRAV)	2700	560 U	1100 U	640 U	550 U	730	540 U

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB09-00	73-AC5-SB10-00	73-AC5-SB11-00	73-AC5-SB12-00	73-AC4-SB13-00	73-AC4-SB14-00	73-AC1-DW03-00
METHOD	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)							
OIL AND GREASE (GRAV)	600 U	580 U	540 U	590 U	540 U	710 U	1100

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC3-MW02-00	73-AC3-MW03-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW12-00	73-AC1-MW13-00
METHOD	9071	9071	9071	9071	9071	9071	9071
TPH (mg/kg)							
OIL AND GREASE (GRAV)	560 U	540 U	610 U	530 U	540 U	890	2340

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW14-00	73-AC4-MW18-00	73-AC4-MW19-00	73-AC5-MW20-00	73-AC5-MW21-00	73-AC3-MW23-00
METHOD	9071	9071	9071	9071	9071	9071
TPH (mg/kg)						
OIL AND GREASE (GRAV)	2900	720 U	620 U	1600	540 U	600 U

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-00	73-AC1-MW28-00	73-AC1-MW29-00	73-AC3-MW30-00
METHOD	9071	9071	9071	9071
TPH (mg/kg)				
OIL AND GREASE (GRAV)	760 U	7200	560 U	620 U

DETECTED OIL & GREASE IN SURFACE SOILS
VIA METHOD 9071
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TPH (mg/kg)								
OIL AND GREASE (GRAV)	530 U	1100 U	730	7200	73-AC1-MW28-00	8/31	2432.50	1970.00

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW08-00	73-AC1-MW11-00	73-AC1-MW12-00	73-AC1-MW13-00	73-AC1-MW27-00
METHOD	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T
TPH (mg/kg)						
DIESEL RANGE ORGANICS	17	81	21	160	18	14
GASOLINE RANGE ORGANICS	11 U	11 U	12 U	12 U	10 U	11 U
HBPH, AS MOTOR OIL	NA	NA	NA	NA	NA	NA

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-SB02-00	73-AC1-SB03-00	73-AC1-SB05-00	73-AC1-SB06-00	73-AC2-MW06-00	73-AC2-MW22-00
METHOD	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T
TPH (mg/kg)						
DIESEL RANGE ORGANICS	10 U	17	22	26	13	126
GASOLINE RANGE ORGANICS	16	11 U	13 U	11 U	10 U	12 U
HBPH, AS MOTOR OIL	NA	NA	NA	NA	NA	130

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW02-00	73-AC3-MW23-00	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00	73-AC4-MW24-00
METHOD	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T
TPH (mg/kg)						
DIESEL RANGE ORGANICS	11	17	61	94	19	23
GASOLINE RANGE ORGANICS	11 U	13 U	11 U	14 U	12 U	15 U
HBPH, AS MOTOR OIL	NA	NA	NA	NA	160	NA

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00	73-AC5-SB09-00	73-AC5-SB10-00	73-AC6-SB07-00	73-SB06DW-00	73-SB07DW-00
METHOD	8015A,MD/T	8015A,MD/T	8015A,MD/T	8015A,MD/T	TN DRO	TN DRO
TPH (mg/kg)						
DIESEL RANGE ORGANICS	58	15	22	93	16	44
GASOLINE RANGE ORGANICS	18 U	12 U	11 U	11 U	11 U	13 U
HBPH, AS MOTOR OIL	150	NA	NA	NA	NA	NA

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SB08DW-00	73-SB09DW-00	73-SB10DW-00	73-SB13DW-00	73-SB36MW-00
METHOD	TN DRO	TN DRO	TN DRO	TN DRO	TN DRO
TPH (mg/kg)					
DIESEL RANGE ORGANICS	14	13	22	17	34
GASOLINE RANGE ORGANICS	11 U	11 U	11 U	13 U	15 U
HBPH, AS MOTOR OIL	NA	NA	NA	NA	NA

DETECTED TPH IN SURFACE SOILS
VIA METHOD 8015A,MD/T
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TPH (mg/kg)								
DIESEL RANGE ORGANICS	10 U	14 U	11	160	73-AC1-MW12-00	28/46	38.86	21.50
GASOLINE RANGE ORGANICS	10 U	18 U	16	16	73-AC1-SB02-00	1/49	16.00	16.00
HBPH, AS MOTOR OIL	NA	NA	130	160	73-AC4-MW19-00	3/3	146.67	150.00

DETECTED VOLATILES IN THE LOWER PORTION
OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW02B-01	73-BG-MW01B-01
METHOD	524.2	524.2
DATE SAMPLED	05/16/95	05/05/95
VOLATILES (ug/L)		
1,2-DICHLOROETHANE	0.5 U	0.2 J
1,2,4-TRICHLOROBENZENE	0.4 J	0.52
CIS-1,2-DICHLOROETHENE	22 J	0.5 U
TRANS-1,2-DICHLOROETHENE	4 J	0.5 U
CHLOROFORM	0.6 J	0.15 J
TRICHLOROETHENE	3 J	6
1,2,3-TRICHLOROBENZENE	0.5 U	0.1 J

DETECTED VOLATILES IN THE LOWER PORTION
OF THE SURFICIAL AQUIFER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
1,2-DICHLOROETHANE	0.5 U	0.5 U	0.2 J	0.2 J	73-BG-MW01B-01	1/2	0.20	0.20
1,2,4-TRICHLOROBENZENE	NA	NA	0.4 J	0.52	73-BG-MW01B-01	2/2	0.46	0.46
CIS-1,2-DICHLOROETHENE	0.5 U	0.5 U	22 J	22 J	73-AC3-MW02B-01	1/2	22.00	22.00
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	4 J	4 J	73-AC3-MW02B-01	1/2	4.00	4.00
CHLOROFORM	NA	NA	0.15 J	0.6 J	73-AC3-MW02B-01	2/2	0.38	0.38
TRICHLOROETHENE	NA	NA	3 J	6	73-BG-MW01B-01	2/2	4.50	4.50
1,2,3-TRICHLOROBENZENE	0.5 U	0.5 U	0.1 J	0.1 J	73-BG-MW01B-01	1/2	0.10	0.10

DETECTED VOLATILES IN THE UPPERMOST PORTION OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW28-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01
METHOD	524.2	524.2	524.2	524.2	524.2	524.2
DATE SAMPLED	05/06/95	05/07/95	05/07/95	05/04/95	05/04/95	05/06/95
VOLATILES (ug/L)						
N-PROPYLBENZENE	0.5 U	2.2	0.26 J	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	0.5 U	1.1	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.87	0.5 U	0.29 J	0.34 J	0.18 J	0.53
TOLUENE	0.5	0.5 U	0.5 U	0.14 J	0.5 U	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U	0.5 U	0.12 J	0.5 U
SEC-BUTYLBENZENE	0.5 U	1.7	0.35 J	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	0.5 U	0.3 J	0.5 U	0.1 U	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	0.5 U	0.72	0.5 U	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
TRICHLOROETHENE	0.6	0.51	0.53	0.41 J	2.2 J	2.7
TERT-BUTYLBENZENE	0.5 U	1.4	0.21 J	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	1.1	0.39 J	0.5 U	0.5 U	0.5 U

DETECTED VOLATILES IN THE UPPERMOST PORTION OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW30-01	73-BG-MW01-01	73-GW05-01RS
METHOD	524.2	524.2	524.2
DATE SAMPLED	05/16/95	05/04/95	05/02/95
VOLATILES (ug/L)			
N-PROPYLBENZENE	0.5 U	0.5 U	0.5 U
N-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.5 U	0.28 J	0.5 U
TOLUENE	0.5 U	0.16 J	0.5 U
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.5 U
SEC-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
CIS-1,2-DICHLOROETHENE	7 J	0.5 U	0.5 U
TRANS-1,2-DICHLOROETHENE	3 J	0.5 U	0.5 U
BENZENE	0.5 U	0.5 U	0.5 U
VINYL CHLORIDE	2 J	0.5 U	0.5 U
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 J
1,1,2-TRICHLOROETHANE	0.5 J	0.5 U	0.5 U
TRICHLOROETHENE	0.8 J	1.9	0.5 U
TERT-BUTYLBENZENE	0.5 U	0.5 U	0.5 U
ISOPROPYLBENZENE	0.5 U	0.5 U	0.5 U

DETECTED VOLATILES IN THE UPPERMOST PORTION OF THE SURFICIAL AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
N-PROPYLBENZENE	0.5 U	0.5 U	0.26 J	2.2	73-AC1-MW10-01	2/9	1.23	1.23
N-BUTYLBENZENE	0.5 U	0.5 U	1.1	1.1	73-AC1-MW10-01	1/9	1.10	1.10
1,2-DICHLOROETHANE	0.5 U	0.5 U	0.18 J	0.87	73-AC1-MW04-01	6/9	0.42	0.32
TOLUENE	0.5 U	0.5 U	0.14 J	0.5	73-AC1-MW04-01	3/9	0.27	0.16
1,2,4-TRICHLOROBENZENE	0.5 U	0.5 U	0.12 J	0.12 J	73-AC3-MW03-01	1/9	0.12	0.12
SEC-BUTYLBENZENE	0.5 U	0.5 U	0.35 J	1.7	73-AC1-MW10-01	2/9	1.03	1.03
CIS-1,2-DICHLOROETHENE	0.1 U	0.5 U	0.3 J	7 J	73-AC3-MW30-01	2/9	3.65	3.65
TRANS-1,2-DICHLOROETHENE	0.5 U	0.5 U	3 J	3 J	73-AC3-MW30-01	1/9	3.00	3.00
BENZENE	0.5 U	0.5 U	0.72	0.72	73-AC1-MW10-01	1/9	0.72	0.72
VINYL CHLORIDE	0.5 U	0.5 U	2 J	2 J	73-AC3-MW30-01	1/9	2.00	2.00
METHYLENE CHLORIDE	0.5 U	0.5 U	0.5 J	0.5 J	73-GW05-01RS	1/9	0.50	0.50
1,1,2-TRICHLOROETHANE	0.5 U	0.5 U	0.5 J	0.5 J	73-AC3-MW30-01	1/9	0.50	0.50
TRICHLOROETHENE	0.5 U	0.5 U	0.41 J	2.7	73-AC3-MW23-01	8/9	1.21	0.70
TERT-BUTYLBENZENE	0.5 U	0.5 U	0.21 J	1.4	73-AC1-MW10-01	2/9	0.81	0.81
ISOPROPYLBENZENE	0.5 U	0.5 U	0.39 J	1.1	73-AC1-MW10-01	2/9	0.75	0.75

DETECTED VOLATILES IN THE UPPERMOST PORTION OF THE CASTLE HAYNE AQUIFIER, VIA METHOD 524.2 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-DW01-01
METHOD	524.2
DATE SAMPLED	05/05/95
VOLATILES (ug/L)	
1,2-DICHLOROETHANE	0.47 J
TOLUENE	0.62
CHLOROFORM	0.46 J
BROMODICHLOROMETHANE	0.12 J
TRICHLOROETHENE	1.7

APPENDIX B
TEST BORING AND WELL CONSTRUCTION RECORDS

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB01

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 4/18/95 DATE COMPLETED: 4/18/95

GROUND SURFACE ELEVATION: 12.2
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
12:00	0.0		00	SP	-	--	0.0	0.0		SAND: fine, little silt lt. orange-brown, loose, damp	0.0
11:00	1.0				5						1.0
10:00	2.0		01	SS	11 6 4	2.0	0.0	0.0		SAND: fine, little silt lt. brown, loose, damp	2.0
9:00	3.0				4						3.0
8:00	4.0		02	SS	2 2 8	2.0	0.0	0.0		SAND: fine, little silt, dark brown, moist, odor, wood frags	4.0
7:00	5.0									End of Boring @ 5'	5.0
6:00	6.0										6.0
5:00	7.0										7.0
4:00	8.0										8.0
3:00	9.0										9.0
2:00	10.0										10.0
1:00	11.0										11.0
0:00	12.0										12.0
1:00	13.0										13.0
2:00	14.0										14.0
3:00	15.0										15.0
4:00	16.0										16.0
5:00	17.0										17.0
6:00	18.0										18.0
7:00	19.0										19.0
8:00	20.0										20.0
9:00	21.0										21.0
10:00	22.0										22.0
11:00	23.0										23.0
12:00	24.0										24.0
13:00	25.0										25.0
14:00	26.0										26.0
15:00	27.0										27.0
16:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB02

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 9/18/95 DATE COMPLETED: 9/18/95

GROUND SURFACE ELEVATION: 9.8
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		SB	SP	-	1.0	0.0	0.0		SAND: fine, trace silt, brown, loose, dry	0.0
9-00	1.0				1						1.0
8-00	2.0		01	SS	1 3 3	1.5	0.0	0.0		FILL: sand, fine, trace silt, brown, loose, wet at 2.4'	2.0
7-00	3.0				1						3.0
6-00	4.0		02	SS	1 1 1	0.5	0.0	0.0		FILL: cemented limestone, wet	4.0
5-00	5.0									End of boring @ 5'	5.0
4-00	6.0										6.0
3-00	7.0										7.0
2-00	8.0										8.0
1-00	9.0										9.0
0-00	10.0										10.0
1-00	11.0										11.0
2-00	12.0										12.0
3-00	13.0										13.0
4-00	14.0										14.0
5-00	15.0										15.0
6-00	16.0										16.0
7-00	17.0										17.0
8-00	18.0										18.0
9-00	19.0										19.0
10-00	20.0										20.0
11-00	21.0										21.0
12-00	22.0										22.0
13-00	23.0										23.0
14-00	24.0										24.0
15-00	25.0										
16-00	26.0										
17-00	27.0										27.0
18-00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB03

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: ROBERT M. LEWIS
ENV. SCIENTIST: GRAYDON ALLEN
DATE BEGUN: 9/19/95 DATE COMPLETED: 9/19/95

GROUND SURFACE ELEVATION: 9.5
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
9:00	0.0		00	SP	-	1.0	--	--		CONCRETE	0.0
8:00	1.0				12						1.0
	2.0		01	SS	14 19 20	1.9	0.4	0.5		SAND: Fine, trace silt lt. brown, stained black, damp, odor	2.0
7:00	3.0				16						3.0
6:00	4.0		02	SS	16 12 10	1.9	0.4	0.5		Wet at 4'	4.0
5:00	5.0									End of Boring @ 5'	5.0
4:00	6.0										6.0
3:00	7.0										7.0
2:00	8.0										8.0
1:00	9.0										9.0
0:00	10.0										10.0
1:00	11.0										11.0
2:00	12.0										12.0
3:00	13.0										13.0
4:00	14.0										14.0
5:00	15.0										15.0
6:00	16.0										16.0
7:00	17.0										17.0
8:00	18.0										18.0
9:00	19.0										19.0
10:00	20.0										20.0
11:00	21.0										21.0
12:00	22.0										22.0
13:00	23.0										23.0
14:00	24.0										24.0
15:00	25.0										25.0
16:00	26.0										26.0
17:00	27.0										27.0
18:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB04

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: ROBERT M. LEWIS
ENV SCIENTIST: GRAYDON ALLEN
DATE BEGUN: 4/22/95 DATE COMPLETED: 4/22/95

GROUND SURFACE ELEVATION: 3.8
TOTAL DEPTH: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		00	SS	-	1.0	--	--		SAND: Fine, trace silt	0.0
3+00	1.0				14					lt. brown, Dry	1.0
2+00	2.0		01	SS	23	2.0	0.5	0.5			2.0
1+00	3.0				23 30						3.0
0+00	4.0									End of Boring @ 3'	4.0
1+00	5.0										5.0
2+00	6.0										6.0
3+00	7.0										7.0
4+00	8.0										
5+00	9.0										
6+00	10.0										10.0
7+00	11.0										11.0
8+00	12.0										12.0
9+00	13.0										13.0
10+00	14.0										14.0
11+00	15.0										15.0
12+00	16.0										16.0
13+00	17.0										17.0
14+00	18.0										18.0
15+00	19.0										19.0
16+00	20.0										20.0
17+00	21.0										21.0
18+00	22.0										22.0
19+00	23.0										23.0
20+00	24.0										24.0
21+00	25.0										
22+00	26.0										26.0
23+00	27.0										27.0
24+00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB05

SHEET: 1 OF: 1

PROJECT NUMBER	62470-312
PROJECT NAME	SITE 73 - REMEDIAL INVESTIGATION
LOCATION	MCB CAMP LEJEUNE, NC
DRILLING COMPANY	PARRATT WOLFF, INC
RIG TYPE & NUMBER	TRACK-MOUNTED CME 850
DRILLING METHOD	HOLLOW STEM AUGERS
WEATHER	SUNNY
GEOLOGIST	ROBERT M. LEWIS
ENV. SCIENTIST	GRAYDON ALLEN
DATE BEGUN	9/22/95 DATE COMPLETED: 9/22/95

GROUND SURFACE ELEVATION: 5.2
TOTAL DEPTH: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
5:00	0.0		00	SP	-	1.0	0.5	0.5		SAND: fine, trace silt lt. brown, dry	0.0
4:00	1.0				6						1.0
3:00	2.0		01	SS	7	2.0	0.5	0.5		SAND: fine, trace silt gray, moist, wet at 2.8'	2.0
2:00	3.0				6						3.0
1:00	4.0				4					End of Boring @ 3'	4.0
0:00	5.0										5.0
1:00	6.0										6.0
2:00	7.0										7.0
3:00	8.0										8.0
4:00	9.0										9.0
5:00	10.0										10.0
6:00	11.0										11.0
7:00	12.0										12.0
8:00	13.0										13.0
9:00	14.0										14.0
10:00	15.0										15.0
11:00	16.0										16.0
12:00	17.0										17.0
13:00	18.0										18.0
14:00	19.0										19.0
15:00	20.0										20.0
16:00	21.0										21.0
17:00	22.0										22.0
18:00	23.0										23.0
19:00	24.0										24.0
20:00	25.0										25.0
21:00	26.0										26.0
22:00	27.0										27.0
23:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB06

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: ROBERT M. LEWIS
ENV. SCIENTIST: GRAYDON ALLEN
DATE BEGUN: 4/22/95 DATE COMPLETED: 4/22/95

GROUND SURFACE ELEVATION: 4.7
TOTAL DEPTH: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		00	SS	-	--	0.4	0.4		SAND: Fine, trace silt	0.0
4:00	1.0				11					lt. brown, dry	1.0
3:00	2.0		01	SS	13	2.0	0.4	0.4			2.0
2:00	3.0				14						3.0
1:00	4.0				14					End of Boring @ 3'	4.0
0:00	5.0										5.0
1:00	6.0										6.0
2:00	7.0										7.0
3:00	8.0										8.0
4:00	9.0										
5:00	10.0										10.0
6:00	11.0										11.0
7:00	12.0										12.0
8:00	13.0										13.0
9:00	14.0										14.0
10:00	15.0										15.0
11:00	16.0										16.0
12:00	17.0										17.0
13:00	18.0										18.0
14:00	19.0										19.0
15:00	20.0										20.0
16:00	21.0										21.0
17:00	22.0										22.0
18:00	23.0										23.0
19:00	24.0										24.0
20:00	25.0										
21:00	26.0										
22:00	27.0										27.0
23:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB07
SHEET: 1 OF: 1

PROJECT NUMBER	62470-312
PROJECT NAME	SITE 73 - REMEDIAL INVESTIGATION
LOCATION	MCB CAMP LEJEUNE, NC
DRILLING COMPANY	PARRATT WOLFF, INC
RIG TYPE & NUMBER	TRACK-MOUNTED CME 850
DRILLING METHOD	HOLLOW STEM AUGERS
WEATHER	SUNNY
GEOLOGIST	ROBERT M. LEWIS
ENV SCIENTIST	GRAYDON ALLEN
DATE BEGUN	4/22/95 DATE COMPLETED 4/22/95

GROUND SURFACE ELEVATION: 7.5
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
7:00	0.0		00	SP	-	--	0.5	0.5		SAND: fine, trace silt lt. brown, dry	0.0
6:00	1.0										1.0
	2.0		01	SS	8 12 14 21	19	0.4	0.5		SAND: fine, trace silt, moist lt. brown, stained black, odor	2.0
5:00	3.0										3.0
4:00	4.0		02	SS	8 8 12 11	19	0.4	0.5		SAND: fine, trace silt, trace clay, trace wood frags, moist, lt brown, stained black, odor, wet at 4'	4.0
3:00	5.0										5.0
2:00	6.0									End of Boring @ 5'	6.0
1:00	7.0										7.0
0:00	8.0										8.0
1:00	9.0										9.0
2:00	10.0										10.0
3:00	11.0										11.0
4:00	12.0										12.0
5:00	13.0										13.0
6:00	14.0										14.0
7:00	15.0										15.0
8:00	16.0										16.0
9:00	17.0										17.0
10:00	18.0										18.0
11:00	19.0										19.0
12:00	20.0										20.0
13:00	21.0										21.0
14:00	22.0										22.0
15:00	23.0										23.0
16:00	24.0										24.0
17:00	25.0										25.0
18:00	26.0										26.0
19:00	27.0										27.0
20:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB08

SHEET: 1 OF: 1

PROJECT NUMBER	62470-312
PROJECT NAME	SITE 73 - REMEDIAL INVESTIGATION
LOCATION	MCB CAMP LEJEUNE, NC
DRILLING COMPANY	PARRATT WOLFF, INC
RIG TYPE & NUMBER	TRACK-MOUNTED CME 850
DRILLING METHOD	HOLLOW STEM AUGERS
WEATHER	SUNNY
GEOLOGIST	EDWARD S. BRENNAN
ENV. SCIENTIST	TOM VALLI
DATE BEGUN	4/9/95
DATE COMPLETED	4/9/95

GROUND SURFACE ELEVATION: 10.6
TOTAL DEPTH: 1

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
10:00	0.0		00	SP	-	1.0	0.0	0.0		SAND: fine, trace silt	0.0
9:00	1.0									brown and grey, loose, damp	1.0
8:00	2.0										2.0
7:00	3.0									End of Boring @ 1'	3.0
6:00	4.0										4.0
5:00	5.0										5.0
4:00	6.0										6.0
3:00	7.0										7.0
2:00	8.0										
1:00	9.0										
0:00	10.0										10.0
1:00	11.0										11.0
2:00	12.0										12.0
3:00	13.0										13.0
4:00	14.0										14.0
5:00	15.0										15.0
6:00	16.0										16.0
7:00	17.0										17.0
8:00	18.0										18.0
9:00	19.0										19.0
10:00	20.0										20.0
11:00	21.0										21.0
12:00	22.0										22.0
13:00	23.0										23.0
14:00	24.0										24.0
15:00	25.0										
16:00	26.0										
17:00	27.0										27.0
	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB09

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 4/18/95 DATE COMPLETED: 4/18/95

GROUND SURFACE ELEVATION: 7.2
TOTAL DEPTH: 1

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
7:00	0.0		SB	SP	-	1.0	0.0	0.0		FILL: sand, fine, trace silt, brown, loose, damp	0.0
6:00	1.0									End of Boring @ 1'	1.0
5:00	2.0										2.0
4:00	3.0										3.0
3:00	4.0										4.0
2:00	5.0										5.0
1:00	6.0										6.0
0:00	7.0										7.0
1:00	8.0										8.0
2:00	9.0										9.0
3:00	10.0										10.0
4:00	11.0										11.0
5:00	12.0										12.0
6:00	13.0										13.0
7:00	14.0										14.0
8:00	15.0										15.0
9:00	16.0										16.0
10:00	17.0										17.0
11:00	18.0										18.0
12:00	19.0										19.0
13:00	20.0										20.0
14:00	21.0										21.0
15:00	22.0										22.0
16:00	23.0										23.0
17:00	24.0										24.0
18:00	25.0										25.0
19:00	26.0										26.0
20:00	27.0										27.0
21:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB10

SHEET: 1 OF: 1

PROJECT NUMBER	62470-312
PROJECT NAME	SITE 73 - REMEDIAL INVESTIGATION
LOCATION	MCB CAMP LEJEUNE, NC
DRILLING COMPANY	PARRATT WOLFF, INC.
RIG TYPE & NUMBER	TRACK-MOUNTED CME 850
DRILLING METHOD	HOLLOW STEM AUGERS
WEATHER	SUNNY
GEOLOGIST	EDWARD S. BRENNAN
ENV. SCIENTIST	TOM VALLI
DATE BEGUN	4/18/95 DATE COMPLETED: 4/18/95

GROUND SURFACE ELEVATION: 8.3
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
8-00	0.0		00	SP	-	1.0	0.0	0.0		SAND, fine, trace silt, brown, loose, damp	0.0
7-00	1.0				3						1.0
6-00	2.0		01	SS	3 3 10	1.2	0.0	0.0		SILT: trace sand fine, trace clay, brown, loose, moist	2.0
5-00	3.0				3						3.0
4-00	4.0		02	SS	2 3 10	1.6	0.0	0.0		SAND, fine, trace silt, brown, loose, damp	4.0
3-00	5.0									End of Boring @ 5'	5.0
2-00	6.0										6.0
1-00	7.0										7.0
0-00	8.0										
1-00	9.0										
2-00	10.0										10.0
3-00	11.0										11.0
4-00	12.0										12.0
5-00	13.0										13.0
6-00	14.0										14.0
7-00	15.0										15.0
8-00	16.0										16.0
9-00	17.0										17.0
10-00	18.0										18.0
11-00	19.0										19.0
12-00	20.0										20.0
13-00	21.0										21.0
14-00	22.0										22.0
15-00	23.0										23.0
16-00	24.0										24.0
17-00	25.0										
18-00	26.0										26.0
19-00	27.0										27.0
20-00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB11

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV SCIENTIST: TOM VALLI
DATE BEGUN: 4/9/95 DATE COMPLETED: 4/9/95

GROUND SURFACE ELEVATION: 7.97
TOTAL DEPTH: 1

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0		00	SS	-	1.0	0.0	0.0		SAND, fine, little silt, brown, loose, damp	0.0
7:00	1.0										1.0
6:00	2.0									End of Boring @ 1'	2.0
5:00	3.0										3.0
4:00	4.0										4.0
3:00	5.0										5.0
2:00	6.0										6.0
1:00	7.0										7.0
0:00	8.0										8.0
1:00	9.0										9.0
2:00	10.0										10.0
3:00	11.0										11.0
4:00	12.0										12.0
5:00	13.0										13.0
6:00	14.0										14.0
7:00	15.0										15.0
8:00	16.0										16.0
9:00	17.0										17.0
10:00	18.0										18.0
11:00	19.0										19.0
12:00	20.0										20.0
13:00	21.0										21.0
14:00	22.0										22.0
15:00	23.0										23.0
16:00	24.0										24.0
17:00	25.0										25.0
18:00	26.0										26.0
19:00	27.0										27.0
20:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB12

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 4/9/95 DATE COMPLETED: 4/9/95

GROUND SURFACE ELEVATION: 7.8
TOTAL DEPTH: 1

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	0.0										0.0
7:00	1.0		00	SP	-	1.0	0.0	0.0		SAND, fine, trace silt, brown and grey, loose, damp	1.0
6:00	2.0									End of Boring @ 1'	2.0
5:00	3.0										3.0
4:00	4.0										4.0
3:00	5.0										5.0
2:00	6.0										6.0
1:00	7.0										7.0
0:00	8.0										8.0
1:00	9.0										
2:00	10.0										10.0
3:00	11.0										11.0
4:00	12.0										12.0
5:00	13.0										13.0
6:00	14.0										14.0
7:00	15.0										15.0
8:00	16.0										16.0
9:00	17.0										17.0
10:00	18.0										18.0
11:00	19.0										19.0
12:00	20.0										20.0
13:00	21.0										21.0
14:00	22.0										22.0
15:00	23.0										23.0
16:00	24.0										24.0
17:00	25.0										
18:00	26.0										
19:00	27.0										27.0
20:00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB13

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 9/9/95 DATE COMPLETED: 9/9/95

GROUND SURFACE ELEVATION: 10.0
TOTAL DEPTH: 5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
10.00	0.0		00	SP	-	1.0	0.0	0.0		SAND: fine, trace silt brown and grey, loose, damp	0.0
9.00	1.0				0 1 1 2						1.0
8.00	2.0		01	SS		1.9	0.0	0.0		SAND: fine, little silt brown, loose, damp	2.0
7.00	3.0										3.0
6.00	4.0		01	SS		1.6	0.0	0.0		SAND: fine, little silt brown, loose, wet at 3.7'	4.0
5.00	5.0									End of Boring @ 5'	5.0
4.00	6.0										6.0
3.00	7.0										7.0
2.00	8.0										8.0
1.00	9.0										9.0
0.00	10.0										10.0
1.00	11.0										11.0
2.00	12.0										12.0
3.00	13.0										13.0
4.00	14.0										14.0
5.00	15.0										15.0
6.00	16.0										16.0
7.00	17.0										17.0
8.00	18.0										18.0
9.00	19.0										19.0
10.00	20.0										20.0
11.00	21.0										21.0
12.00	22.0										22.0
13.00	23.0										23.0
14.00	24.0										24.0
15.00	25.0										25.0
16.00	26.0										26.0
17.00	27.0										27.0
18.00	28.0										28.0

BAKER

TEST BORING LOG

BOREHOLE NUMBER: 73-SB14

SHEET: 1 OF: 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY
GEOLOGIST: EDWARD S. BRENNAN
ENV. SCIENTIST: TOM VALLI
DATE BEGUN: 9/9/95 DATE COMPLETED: 9/9/95

GROUND SURFACE ELEVATION: 9.6
TOTAL DEPTH: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/6"	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
9-00	0.0		00	SB	-	1.0	0.0	0.0		SAND: fine, trace silt brown and grey, loose, damp	0.0
8-00	1.0		01	SS	1 3 3 4	1.9	0.0	0.0		SAND: fine, some silt orange brown, loose, wet at 2.6'	1.0
7-00	2.0										2.0
6-00	3.0									End of Boring @ 3'	3.0
5-00	4.0										4.0
4-00	5.0										5.0
3-00	6.0										6.0
2-00	7.0										7.0
1-00	8.0										8.0
0-00	9.0										9.0
1-00	10.0										10.0
2-00	11.0										11.0
3-00	12.0										12.0
4-00	13.0										13.0
5-00	14.0										14.0
6-00	15.0										15.0
7-00	16.0										16.0
8-00	17.0										17.0
9-00	18.0										18.0
10-00	19.0										19.0
11-00	20.0										20.0
12-00	21.0										21.0
13-00	22.0										22.0
14-00	23.0										23.0
15-00	24.0										24.0
16-00	25.0										
17-00	26.0										
18-00	27.0										27.0
	28.0										28.0

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-01

SHEET: 1 OF 2

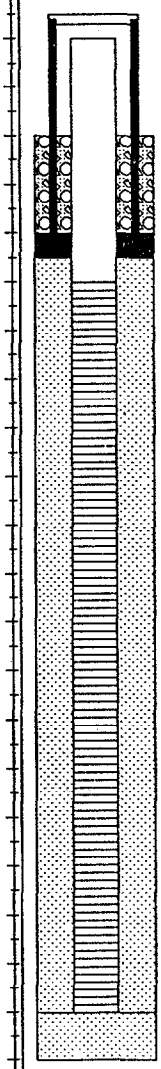
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/8/95 DATE COMPLETED: 4/8/95

DEPTH TO WATER:
GROUND SURFACE ELEVATION: 13.4 msl
TOP OF PVC CASING ELEVATION: 15.35 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
17:00	0.0										0.0	
16:00	1.0										1.0	
15:00	2.0										2.0	
14:00	3.0										3.0	
13:00	4.0									see log 73MW-01B for representative stratigraphy of 0.0-19.0'	4.0	
12:00	5.0										5.0	
11:00	6.0										6.0	
10:00	7.0										7.0	
9:00	8.0										8.0	
8:00	9.0										9.0	
7:00	10.0										10.0	
6:00	11.0										11.0	
5:00	12.0										12.0	
4:00	13.0										13.0	
3:00	14.0										14.0	
2:00	15.0										15.0	
1:00	16.0										16.0	
0:00	17.0										17.0	
1:00	18.0										18.0	
2:00	19.0									End of Boring at 19.0'	19.0	
3:00	20.0										20.0	
4:00	21.0										21.0	
5:00	22.0										22.0	
6:00	23.0										23.0	
7:00	24.0										24.0	
8:00												
9:00												
10:00												
11:00												



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-01B

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 60s
GEOLOGIST 1: E.S. BRENNAN
GEOLGIST 2: T.P. VALLI
DATE BEGUN: 4/8/95 DATE COMPLETED: 4/10/95

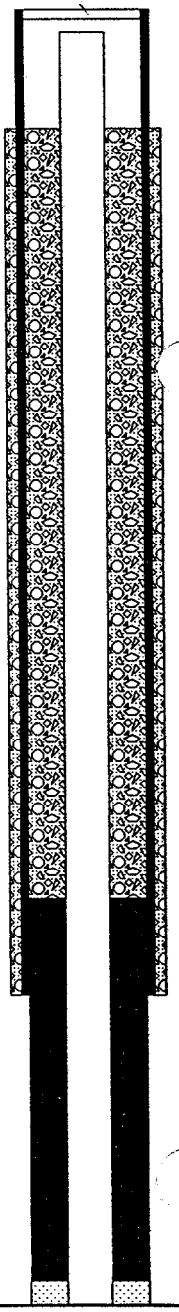
DEPTH TO WATER: 3.3
GROUND SURFACE ELEVATION: 13.8 msl
TOP OF PVC CASING ELEVATION: 15.86 msl

WELL DETAILS (FT)

STICKUP:	2.0
OUTER CASING (6"I.D.):	20.5
LENGTH OF RISER (2"I.D.):	27.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	16.0
THICKNESS OF SEAL:	8.0
THICKNESS OF SAND PACK:	14.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
17:00	4.0										4.0
16:00	3.0										3.0
15:00	2.0										2.0
14:00	1.0										1.0
13:00	0.0		S-1	SP	-	-	0.0	0.0		SAND: very fine grained, little silt; mixed brown, gray-brown, yellow-brown; loose to very loose; moist, trace roots to 1'; (samples 73-AC1-MW01B-00 and 73-AC1-MW01B-01)	0.0
12:00	1.0		S-2	SS	2 3 3 3	1.7	0.0	0.0			1.0
11:00	2.0										2.0
10:00	3.0		S-3	SS	2 4 4 5	1.3	0.0	0.0		SILTY SAND: very fine grained; yellow-brown to light brown; loose; wet at 3.3'	3.0
9:00	4.0										4.0
8:00	5.0		S-4	SS	2 3 3 4	1.2	0.0	0.0		SAND: very fine grained, little silt, trace clay; light brown, light yellow-brown, gray, and gray-brown; loose to medium dense; wet	5.0
7:00	6.0										6.0
6:00	7.0		S-5	SS	3 7 7 9	1.4	0.0	0.0			7.0
5:00	8.0										8.0
4:00	9.0		S-6	SS	11 13	1.0	0.0	0.0			9.0
3:00	10.0										10.0
2:00	11.0		S-7	SS	8 8 12 15	1.3	0.0	0.0			11.0
1:00	12.0										12.0
0:00	13.0		S-8	SS	3 4 4 5	1.6	0.1	0.1		SILTY SAND: very fine grained, trace clay; light gray; loose; wet	13.0
1:00	14.0									SAND: very fine grained, little silt; light gray; loose; wet	14.0
2:00	15.0		S-9	SS	WOH for 1' 1 2	0.3	0.0	0.0		CLAY: trace silt, trace very fine sand; dark brown-gray; very soft; moist to damp	15.0
3:00	16.0										16.0
4:00	17.0		S-10	SS	1 3 3 2	2.0	0.0	0.0			17.0
5:00	18.0										18.0
6:00	19.0		S-11	SS	1 1 2 2	2.0	-	-		CLAY: trace silt; dark gray-brown; very soft to soft; damp, moist to wet 22-23.6'	19.0
7:00	20.0										20.0
8:00	21.0		S-12	SS	1 1 2 3	2.0	-	-			21.0
9:00	22.0										22.0
10:00	23.0		S-13	SS	3 4 5 8	1.4	-	-		SILTY SAND: very fine grained, trace clay;	23.0
	24.0										24.0

WELL INSTALLATION



BAKER

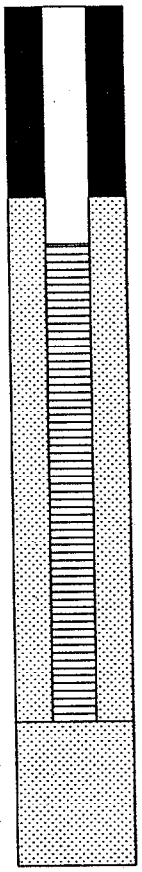
WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-01B

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	20.0										20.0
7:00	21.0		S-12	SS	1 1 2 3	2.0	-	-		CLAY: trace silt; dark gray-brown; soft; damp, moist to wet 22-23.5'	21.0
8:00	22.0										22.0
9:00	23.0		S-13	SS	3 4 5 8	1.4	-	-			23.0
10:00	24.0										24.0
11:00	25.0		S-14	SS	1 2 8 11	1.3	-	-		SILTY SAND: very fine grained, trace clay; gray-brown; loose; wet, trace wood fibers 24-26'	25.0
12:00	26.0									12.0	26.0
13:00	27.0		S-15	SS	5 7 12 13	1.4	-	-		SAND: very fine grained, little to trace silt; gray; loose; wet, trace wood fibers	27.0
14:00	28.0									SAND: very fine grained, little silt, trace clay; dark brown; medium stiff; wet, more wood	28.0
15:00	29.0		S-16	SS	3 6 8 9	1.1	-	-		SAND: very fine grained, little silt; gray; medium dense; wet	29.0
16:00	30.0										30.0
17:00	31.0		S-17	SS	3 6 9 9	1.2	-	-		SAND: very fine grained, some to little silt; brown to brown-gray; loose; wet; trace wood fibers	31.0
18:00	32.0									SAND: very fine grained, little silt, few medium sand grains; gray-brown; loose; wet	32.0
19:00	33.0		S-18	SS	7 6 9 8	1.2	-	-		SILTY SAND: very fine grained, trace clay; dark brown; stiff; wet, trace wood fibers	33.0
20:00	34.0									SAND: fine grained, trace silt; gray; loose; wet	34.0
21:00	35.0		S-19	SS	1 2 7 8	1.4	-	-		SAND: fine grained, trace silt, single lens of very fine silty sand with trace clay and wood fibers at 33.8'; brown-gray; loose; wet	35.0
22:00	36.0										36.0
23:00	37.0		S-20	SS	10 11 13 13	1.3	-	-		SAND: fine to very fine grained, little to some silt, trace clay; mixed gray-green and gray; very loose; wet	37.0
24:00	38.0									SILTY SAND: very fine grained, trace clay, cemented sand nodules increasing with depth; gray-green; loose to medium dense; wet to moist, occasional shell chips from 36'	38.0
25:00	39.0									End of Boring at 38.0'	39.0
26:00	40.0										40.0
27:00	41.0										41.0
28:00	42.0										42.0
29:00	43.0										43.0
30:00	44.0										44.0
31:00	45.0										45.0
32:00	46.0										46.0
33:00	47.0										47.0
34:00	48.0										48.0
35:00	49.0										49.0
36:00	50.0										50.0
37:00	51.0										51.0
38:00	52.0										52.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73RW-2

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 50s/CLOUDY, 40s
GEOLOGIST 1: T.P. VALLI
GEOLOGIST 2:
DATE BEGUN: 5/6/95 DATE COMPLETED: 5/6/95

DEPTH TO WATER: 3.8
GROUND SURFACE ELEVATION: 11.3 msl
TOP OF PVC CASING ELEVATION: 13.21 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	7.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
15:00	4.0										4.0	
14:00	3.0										3.0	
13:00	2.0										2.0	
12:00	1.0										1.0	
11:00	0.0										0.0	
10:00	1.0		S-1	SS	1 4 6 4	0.9	-	-		SAND: very fine grained, little to trace silt; black to brown-black 0-2', light brown to brown-gray 2-6', then light gray; loose; damp to moist, wet at 3.8', frequent roots 0-2'	1.0	
9:00	2.0										2.0	
8:00	3.0		S-2	SS	4 6 7 8	0.7	-	-			3.0	
7:00	4.0										4.0	
6:00	5.0		S-3	SS	5 7 8 8	0.8	-	-			5.0	
5:00	6.0										6.0	
4:00	7.0		S-4	SS	5 8 8 9	1.0	-	-			7.0	
3:00	8.0										8.0	
2:00	9.0		S-5	SS	3 4 1 7	0.6	-	-			9.0	
1:00	10.0										10.0	
0:00	11.0		S-6	SS	1 1 3 4	0.5	-	-		SAND: very fine grained, trace silt, trace clay; dark brown to brown; very loose; wet	11.0	
1:00	12.0										12.0	
2:00	13.0		S-7	SS	3 4 2 2	1.7	-	-			13.0	
3:00	14.0										14.0	
4:00	15.0		S-8	SS	1 2 1 2	0.9	-	-		SAND: very fine grained, little clay, trace clay; gray; very loose; wet	15.0	
5:00	16.0									CLAY: trace very fine sand; gray; very soft; moist	16.0	
6:00	17.0									CLAY: gray; very soft; damp	17.0	
7:00	18.0									End of Boring at 16.0'	18.0	
8:00	19.0										19.0	
9:00	20.0										20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
13:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-02

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 60s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/7/95 DATE COMPLETED: 4/7/95

DEPTH TO WATER: 3.0
GROUND SURFACE ELEVATION: 12.8 msl
TOP OF PVC CASING ELEVATION: 14.66 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
16:00	4.0										4.0	
15:00	3.0										3.0	
14:00	2.0										2.0	
13:00	1.0										1.0	
12:00	0.0		S-1	SS	-	-	0.2	0.2		SAND: very fine grained, trace silt; brown; loose; damp; (sample 73-AC3-MW02-00)	0.0	
11:00	1.0		S-2	SS	5 6 6 7	1.8	0.2	0.2		SAND: very fine grained, little silt; dark brown with some gray-brown; loose; damp to moist; (sample 73-AC3-MW02-01)	1.0	
10:00	2.0		S-3	SS	4 4 4 6	1.6	0.2	0.2		SAND: trace silt; light brown; loose; wet	2.0	
9:00	3.0		S-4	SS	5 6 8 11	1.6	-	-		SAND: very fine grained, little silt; trace clay in middle of spoon; light green-gray to gray; loose; wet	3.0	
8:00	4.0										4.0	
7:00	5.0										5.0	
6:00	6.0										6.0	
5:00	7.0										7.0	
4:00	8.0										8.0	
3:00	9.0									SAND: very fine grained, trace silt; light gray, loose to very loose; wet	9.0	
2:00	10.0		S-5	SS	4 3 3 1	1.2	-	-			10.0	
1:00	11.0										11.0	
0:00	12.0									SAND: very fine grained (though more coarse than above), little silt, trace clay; dark brown-gray; soft; wet	12.0	
1:00	13.0										13.0	
2:00	14.0									SILT and very fine SAND: trace clay; green-gray; very soft; wet	14.0	
3:00	15.0		S-6	SS	WOH for 2'	0.1	-	-			15.0	
4:00	16.0										16.0	
5:00	17.0										17.0	
6:00	18.0										18.0	
7:00	19.0									End of Boring at 19.0'	19.0	
8:00	20.0										20.0	
9:00	21.0										21.0	
10:00	22.0										22.0	
11:00	23.0										23.0	
	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-02B

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: CLOUDY, RAIN, 60s
GEOLOGIST 1: T. P. VALLI
GEOLGIST 2:
DATE BEGUN: 5/1/95 DATE COMPLETED: 5/2/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 12.5 msl
TOP OF PVC CASING ELEVATION: 14.39 msl

WELL DETAILS (FT)

STICKUP:	2.0
OUTER CASING (6"I.D.):	18.5
LENGTH OF RISER (2"I.D.):	22.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	14.5
THICKNESS OF SEAL:	3.5
THICKNESS OF SAND PACK:	14.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
16:00	4.0										4.0	
15:00	3.0										3.0	
14:00	2.0										2.0	
13:00	1.0										1.0	
12:00	0.0									see log 73MW-02 for representative stratigraphy of 0.0-10.0'	0.0	
11:00	1.0										1.0	
10:00	2.0										2.0	
9:00	3.0										3.0	
8:00	4.0										4.0	
7:00	5.0										5.0	
6:00	6.0										6.0	
5:00	7.0										7.0	
4:00	8.0										8.0	
3:00	9.0										9.0	
2:00	10.0		S-1	SS	2 1 3 3	1.4	-	-		SAND: very fine grained, trace silt, trace clay, few clay lenses; brown; very loose; wet	10.0	
1:00	11.0										11.0	
0:00	12.0		S-2	SS	3 6 6 5	1.0	-	-		SANDY CLAY: sand is very fine grained, trace silt; light gray-brown; soft to medium stiff; moist	12.0	
1:00	13.0										13.0	
2:00	14.0		S-3	SS	3 3 3 3	0.6	-	-		CLAY: little very fine sand; gray; soft; moist	14.0	
3:00	15.0										15.0	
4:00	16.0										16.0	
5:00	17.0		S-4	SS	2 3 2 2	0.3	-	-		SAND: very fine grained, little clay, trace silt; gray; very loose; wet	17.0	
6:00	18.0										18.0	
7:00	19.0										19.0	
8:00	20.0		S-5	SS	WOH for 1' 2 2	1.5	-	-			20.0	
9:00	21.0										21.0	
10:00	22.0		S-6	SS	2 2 2 3	1.6	-	-			22.0	
11:00	23.0										23.0	
	24.0									SAND: very fine grained, trace clay;	24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-02B

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
8:00	20.0		S-5	SS	WOH for 1'	1.5	-	-		SAND: as above	20.0	
	21.0				2 2						21.0	
9:00	22.0										22.0	
10:00	23.0		S-6	SS	2 2 3	1.6	-	-			23.0	
11:00	24.0										24.0	
12:00	25.0		S-7	SS	1 3 5 7	1.7	-	-		SAND: very fine grained, trace clay; gray; loose; wet	25.0	
13:00	26.0										26.0	
14:00	27.0		S-8	SS	8 10 11 10	1.6	-	-			27.0	
15:00	28.0										28.0	
16:00	29.0		S-9	SS	3 2 1 2	0.6	-	-		SAND: fine grained with trace very fine sand; gray; very loose; wet	29.0	
17:00	30.0										30.0	
18:00	31.0		S-10	SS	3 3 6 5	1.2	-	-		SAND: very fine grained, trace silt, trace clay; light green-gray; very loose to loose; wet to damp	31.0	
19:00	32.0									End of Boring at 32.0'	32.0	
20:00	33.0										33.0	
21:00	34.0										34.0	
22:00	35.0										35.0	
23:00	36.0										36.0	
24:00	37.0										37.0	
25:00	38.0										38.0	
26:00	39.0										39.0	
27:00	40.0										40.0	
28:00	41.0										41.0	
29:00	42.0										42.0	
30:00	43.0										43.0	
31:00	44.0										44.0	
32:00	45.0										45.0	
33:00	46.0										46.0	
34:00	47.0										47.0	
35:00	48.0										48.0	
36:00	49.0										49.0	
37:00	50.0										50.0	
38:00	51.0										51.0	
39:00	52.0										52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-03

SHEET: 1 OF 1

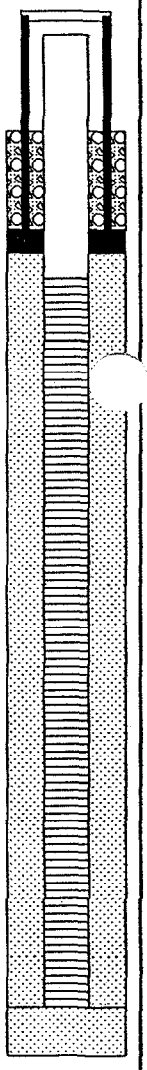
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 60s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/7/95 DATE COMPLETED: 4/7/95

DEPTH TO WATER: 3.6
GROUND SURFACE ELEVATION: 11.9 msl
TOP OF PVC CASING ELEVATION: 13.70 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
15:00	4.0										4.0	
	3.0										3.0	
14:00	2.0										2.0	
13:00	1.0										1.0	
12:00	0.0		S-1	SP	-	-	0.2	0.2		SAND: very fine grained, little to trace silt; light brown to light orange-brown to 1', then brown; loose; moist to 1', then damp to moist (samples 73-AC3-MW03-00 and 73-AC3-MW03-01 /01D/01MS/01MSD)	0.0	
11:00	1.0										1.0	
10:00	2.0		S-2	SS	6 10 4 4	1.0	0.2	0.2			2.0	
9:00	3.0										3.0	
8:00	4.0		S-3	SS	3 4 4 7	1.7	0.2	0.2		SILT and very fine SAND: dark brown; loose; wet; grading to brown silty sand	4.0	
7:00	5.0										5.0	
6:00	6.0		S-4	SS	1 2 3 7	1.6	-	-			6.0	
5:00	7.0									SAND: very fine grained, little silt; brown to gray-brown to light gray; very loose; wet	7.0	
4:00	8.0										8.0	
3:00	9.0										9.0	
2:00	10.0										10.0	
1:00	11.0		S-5	SS	1 1 3 2	1.7	-	-			11.0	
0:00	12.0									SILTY SAND: very fine grained, trace clay; dark gray-brown; soft; wet	12.0	
1:00	13.0									SILTY SAND: very fine grained; dark brown; soft; wet	13.0	
2:00	14.0									SAND: very fine grained, little silt; brown to light gray; loose; wet	14.0	
3:00	15.0										15.0	
4:00	16.0		S-6	SS	1 1 2 1	2.0	-	-			16.0	
5:00	17.0									CLAY, very few trace silt and trace very fine sand inclusions; dark brown-gray; very soft; damp	17.0	
6:00	18.0										18.0	
7:00	19.0									End of Boring at 19.0'	19.0	
8:00	20.0										20.0	
9:00	21.0										21.0	
10:00	22.0										22.0	
11:00	23.0										23.0	
12:00	24.0										24.0	



Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW04
COORDINATES: EAST: 2489296.22 NORTH: 309935.67
ELEVATION: SURFACE: 13.2 TOP OF PVC CASING: 12.86

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	–	2 3/4"/6 1/4"		4-20-95	0-11.5	clear, mild (70s)	5.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-20-95. OVM background is .4 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	-.34'	-2.0'
well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-11.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	1.0	00	-	.4/.4	ASPHALT ROOTED MATERIAL w/ SAND, fine grained w/ trace silt throughout. Light brown w/ dark brown staining medium dense, moist No odor.	Bentonite pellets	12.7
2		S-1	2.0/2.0	4 7 7		2" PVC riser pipe	11.7
3	3.0	01	100%	8		well screen	11.2
4		S-2	2.0/2.0	3 4 4	SAND, fine grained w/ trace silt. Light brown to brown, loose, wet		10.2
5	5.0		100%	4		▽	8.2
6		AN	-	-	-		
7	7.0					Sand pack	6.2
8		S-3	-	9 3 8	SAND, fine grained, trace silt w/ trace organic material and wood fragments. Gray w/ dark brown staining, medium dense, wet. Rotten odor		
9	9.0			10			
10		S-4	-	10 11 6 6			

Match to Sheet 2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW04 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-4	-			.4/.4	Continued from Sheet 1	well screen	2.2
11.0						CLAY at very bottom		
11.5	AN	—	—		—			1.7
12						End of Boring	sand pack	
13						TD = 11.5' (bgs)	well cap	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW04 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-05

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 50s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/7/95 DATE COMPLETED: 4/7/95

DEPTH TO WATER: 2.6
GROUND SURFACE ELEVATION: 13.9 msl
TOP OF PVC CASING ELEVATION: 15.78 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
14:00	0.0		S-1	SP	-	-	0.2	0.2		SAND: very fine grained, trace to little silt, brown to light brown; loose; damp to moist, wet from 2.6'; trace roots 0-1'; (samples 73-AC2-MW05-00 and -01)	0.0	
13:00	1.0		S-2	SS	2 2 1 1	1.9	0.2	0.2			1.0	
12:00	2.0		S-3	SS	1 2 3 3	1.2	0.2	0.2			2.0	
11:00	3.0										3.0	
10:00	4.0										4.0	
9:00	5.0		S-4	SS	2 5 6 7	1.3	-	-		SILTY SAND: very fine grained; orange-brown to gray-brown to 15.5', then dark brown; loose to very loose; wet, occasional wood fibers 10-12', faint organic decomposition odor from 10'	5.0	
8:00	6.0										6.0	
7:00	7.0										7.0	
6:00	8.0										8.0	
5:00	9.0										9.0	
4:00	10.0										10.0	
3:00	11.0		S-5	SS	1 5 7 7	0.8	-	-			11.0	
2:00	12.0										12.0	
1:00	13.0										13.0	
0:00	14.0										14.0	
1:00	15.0										15.0	
2:00	16.0		S-6	SS	WOH for 1.5' 1	1.6	-	-		CLAY: trace silt from 16.5', few very fine gray sand grains; mixed dark brown-gray and green-gray; very soft; damp, few wood fibers	16.0	
3:00	17.0										17.0	
4:00	18.0										18.0	
5:00	19.0									End of Boring at 19.0'	19.0	
6:00	20.0										20.0	
7:00	21.0										21.0	
8:00	22.0										22.0	
9:00	23.0										23.0	
10:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-06

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLOUDY, 50s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/6/95 DATE COMPLETED: 4/6/95

DEPTH TO WATER: 4.7
GROUND SURFACE ELEVATION: 5.4 msl
TOP OF PVC CASING ELEVATION: 7.32 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	7.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	9.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
9:00	4.0										4.0	
	3.0										3.0	
8:00	2.0										2.0	
7:00	1.0										1.0	
6:00	0.0		S-1	SP	-	-	0.0	0.0		SAND: very fine grained, trace silt; brown with orange-brown streaks 1-3'; loose; damp to 1', then damp to moist; (samples 73-AC2-MW06-00 and 73-AC2-MW06-01)	0.0	
5:00	1.0										1.0	
4:00	2.0		S-2	SS	2 3 4 5	1.3	0.0	0.0			2.0	
3:00	3.0										3.0	
2:00	4.0		S-3	SS	3 4 6 7	1.6	0.0	0.0		SAND: very fine grained, little silt, trace clay; dark brown with black staining around trace roots; loose; moist to wet, faint weathered petroleum odor	4.0	
1:00	5.0										5.0	
0:00	6.0		S-4	SS	1 4 7 7	1.2	0.0	1.1		SAND: very fine grained, little to trace silt; brown; loose; wet at 4.7', two tree roots throughout, very faint organic decomposition odor at bottom of spoon	6.0	
1:00	7.0										7.0	
2:00	8.0									SAND: very fine grained, little silt; brown; loose; wet, trace wood fibers, very faint organic odor	8.0	
3:00	9.0										9.0	
4:00	10.0									CLAY: trace to little silt; frequent very fine light gray sand inclusions; gray-green; very soft; damp to moist, trace wood fibers	10.0	
5:00	11.0		S-5	SS	1 1 1 1	1.8	0.0	0.0			11.0	
6:00	12.0									End of Boring at 12.0'	12.0	
7:00	13.0										13.0	
8:00	14.0										14.0	
9:00	15.0										15.0	
10:00	16.0										16.0	
11:00	17.0										17.0	
12:00	18.0										18.0	
13:00	19.0										19.0	
14:00	20.0										20.0	
15:00	21.0										21.0	
16:00	22.0										22.0	
17:00	23.0										23.0	
18:00	24.0										24.0	
19:00												

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-06B

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: PARTLY CLOUDY, 70s/CLOUDY, RAIN, 60s
GEOLOGIST 1: T. P. VALLI
GEOLGIST 2:
DATE BEGUN: 4/21/95 DATE COMPLETED: 5/2/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 4.9 msl
TOP OF PVC CASING ELEVATION: 6.85 msl

WELL DETAILS (FT)

STICKUP:	2.0
OUTER CASING (6"I.D.):	12.0
LENGTH OF RISER (2"I.D.):	34.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	10.0
THICKNESS OF SEAL:	20.0
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
8:00	4.0										4.0	
7:00	3.0										3.0	
6:00	2.0										2.0	
5:00	1.0										1.0	
4:00	0.0										0.0	
3:00	1.0									see log 73MW-06 for representative stratigraphy of 0.0-12.0'	1.0	
2:00	2.0										2.0	
1:00	3.0										3.0	
0:00	4.0										4.0	
1:00	5.0										5.0	
2:00	6.0										6.0	
3:00	7.0										7.0	
4:00	8.0										8.0	
5:00	9.0										9.0	
6:00	10.0										10.0	
7:00	11.0										11.0	
8:00	12.0										12.0	
9:00	13.0		S-1	SS	4 2 1 1	1.8	-	-		CLAY: dark green-gray to blue-gray; very soft; moist to damp	13.0	
10:00	14.0										14.0	
11:00	15.0		S-2	SS	2 1 1 1	1.3	-	-			15.0	
12:00	16.0										16.0	
13:00	17.0		S-3	SS	WOH for 1.5' 1	1.4	-	-			17.0	
14:00	18.0										18.0	
15:00	19.0		S-4	SS	WOH 1 1 1	1.0	-	-		CLAY: trace silt; gray-brown to brown; very soft; moist	19.0	
16:00	20.0										20.0	
17:00	21.0		S-5	SS	1 1 1 2	1.1	-	-			21.0	
18:00	22.0										22.0	
19:00	23.0										23.0	
	24.0										24.0	

BAKER

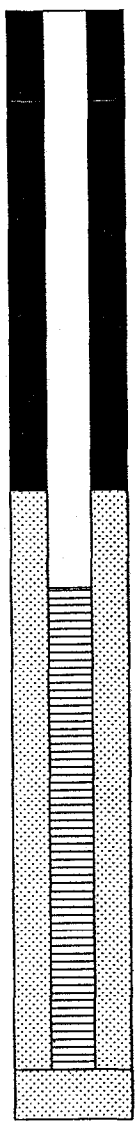
WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-06B

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	20.0										20.0
16:00	21.0										21.0
17:00	22.0										22.0
18:00	23.0										23.0
19:00	24.0										24.0
20:00	25.0										25.0
21:00	26.0		S-6	SS	WOH for 1.5' 2	2.0	-	-		CLAY: as above	26.0
22:00	27.0										27.0
23:00	28.0		S-7	SS	WOH for 1.5' 2	2.0	-	-			28.0
24:00	29.0										29.0
25:00	30.0										30.0
26:00	31.0		S-8	SS	WOH for 2'	2.0	-	-		CLAY: little silt, with frequent silt lenses; gray; very soft; moist to damp	31.0
27:00	32.0										32.0
28:00	33.0									-28	33.0
29:00	34.0									SAND: very fine grained, little silt; gray; loose; wet to damp	34.0
30:00	35.0										35.0
31:00	36.0		S-9	SS	8 11 10 11	0.6	-	-			36.0
32:00	37.0										37.0
33:00	38.0										38.0
34:00	39.0										39.0
35:00	40.0									SAND: very fine grained, trace silt, trace clay, few clay lenses; gray to light green-gray; loose to dense; wet to damp	40.0
36:00	41.0		S-10	SS	1 4 20 38	1.2	-	-			41.0
37:00	42.0										42.0
38:00	43.0									End of Boring at 43.0'	43.0
39:00	44.0										44.0
40:00	45.0										45.0
41:00	46.0										46.0
42:00	47.0										47.0
43:00	48.0										48.0
44:00	49.0										49.0
45:00	50.0										50.0
46:00	51.0										51.0
47:00	52.0										52.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-07

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLOUDY, 50s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/6/95 DATE COMPLETED: 4/6/95

DEPTH TO WATER: 6.4
GROUND SURFACE ELEVATION: 11.8 msl
TOP OF PVC CASING ELEVATION: 13.94 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	6.0
LENGTH OF SCREEN (2"I.D.):	13.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	16.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
15:00	1.0										4.0	
14:00	3.0										3.0	
13:00	2.0										2.0	
12:00	1.0										1.0	
11:00	0.0		S-1	SP	-	-	0.2	1.2		SAND: very fine grained, little to trace silt; brown to 1', then gray-brown to orange-brown with a few dark brown inclusions; loose to very loose; damp, trace roots to 1'; (sample 73-AC4-MW07-00)	0.0	
10:00	1.0		S-2	SS	2 4 3 2	1.7	0.2	0.2			1.0	
9:00	2.0		S-3	SS	3 4 5 7	1.7	0.2	0.2			2.0	
8:00	3.0										3.0	
7:00	4.0										4.0	
6:00	5.0		S-4	SS	3 6 8 7	1.4	0.2	0.2		SAND: very fine grained, trace to little silt; brown to gray-brown; loose; damp to moist, wet at 6.4'; (sample 73-AC2-MW07-03)	5.0	
5:00	6.0										6.0	
4:00	7.0										7.0	
3:00	8.0										8.0	
2:00	9.0										9.0	
1:00	10.0										10.0	
0:00	11.0		S-5	SS	4 4 2 3	1.0	-	-			11.0	
1:00	12.0									SAND: very fine grained, little silt, trace clay; brown; loose; wet	12.0	
2:00	13.0									SAND: very fine grained, little to some silt, little clay; dark green-gray; soft; wet	13.0	
3:00	14.0										14.0	
4:00	15.0									CLAY: trace silt; dark green-gray; very soft; moist to damp, frequent wood inclusions 17-19'	15.0	
5:00	16.0		S-6	SS	1 1 2 1	0.2	-	-			16.0	
6:00	17.0										17.0	
7:00	18.0		S-7	SS	2 2 2 1	1.6		-			18.0	
8:00	19.0										19.0	
9:00	20.0									End of Boring at 19.0'	20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
	24.0										24.0	

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW08
COORDINATES: EAST: 2489830.77 NORTH: 309288.30
ELEVATION: SURFACE: 9.0 TOP OF PVC CASING: 10.98

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		2¾"/6¼"		4-19-95	0-11.5	Clear, mild (70's)	3.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-19-95. HNu background range is .4ppm to .5ppm

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+1.98	-2.0'
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-11.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	1.0	00	-	-	.4/.4	SAND, fine grained w/ trace silt throughout. Light brown w/ dark reddish brown staining, medium dense, dry to moist / wet	Bentonite pellets	8.0
2		S-1	2.0'/2.0	4 9 9 9	.4/.5		2" PVC riser pipe	7.0
3	3.0	01	100%				▽	6.0
4								
5		AN	-	-	-		Sand pack	
6								
7	7.0						Well screen	2.0
8		S-2	1.5'/2.0	6 7 9 6	.4/.5	SAND, fine grained w/ trace silt throughout. Gray to greenish gray loose, wet.		
9	9.0		75%					
10		S-3	2.0'/2.0 100%	4 4 4 4	.4/.4	Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW08 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW08

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11 11.0	S-3	100%			.4/.4	Continued from Sheet 1		
11.5	AN					CLAY at bottom	sand pack	-2.0
12						End of Boring		-2.5
13						TD= 11.5' (bgs)	well screen	
14							well cap	
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW08 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-09

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/20/95 DATE COMPLETED: 4/20/95

DEPTH TO WATER: 2.5
GROUND SURFACE ELEVATION: 7.1 msl
TOP OF PVC CASING ELEVATION: 6.94 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 2.75
LENGTH OF SCREEN (2"I.D.): 8.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 1.0
THICKNESS OF SAND PACK: 10.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
11:00	4.0										4.0	
10:00	3.0										3.0	
9:00	2.0										2.0	
8:00	1.0										1.0	
7:00	0.0									ASPHALT:	0.0	
6:00	1.0		S-1	SS	8 8 8	1.4	0.6	0.6		SAND: very fine grained, trace silt; gray to brown; loose; damp; (sample 73-AC1-MW09-00)	1.0	
5:00	2.0										2.0	
4:00	3.0		S-2	SS	6 8 8 10	1.6	0.5	0.5		SAND: very fine grained, little silt, trace clay; light brown; medium stiff; moist to wet, wet at 2.5'	3.0	
3:00	4.0									SAND: very fine grained, trace silt; light brown; loose; wet	4.0	
2:00	5.0										5.0	
1:00	6.0									SAND: very fine to fine grained, little silt, trace clay; brown; soft; wet	6.0	
0:00	7.0		S-3	SS	3 4 6 4	1.0	-	-			7.0	
1:00	8.0									SILTY SAND: very fine grained, trace clay, slightly less silt from 8'; gray-brown; medium stiff; moist to 8', then moist to wet, few wood fibers	8.0	
2:00	9.0		S-4	SS	5 6 4 5	1.2	-	-			9.0	
3:00	10.0									CLAY: little silt, trace very fine sand; gray-green; medium stiff; damp, trace wood fibers	10.0	
4:00	11.0										11.0	
5:00	12.0									End of Boring at 12.0'	12.0	
6:00	13.0										13.0	
7:00	14.0										14.0	
8:00	15.0										15.0	
9:00	16.0										16.0	
10:00	17.0										17.0	
11:00	18.0										18.0	
12:00	19.0										19.0	
13:00	20.0										20.0	
14:00	21.0										21.0	
15:00	22.0										22.0	
16:00	23.0										23.0	
17:00	24.0										24.0	

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW10
COORDINATES: EAST: 2490012.13 NORTH: 309306.18
ELEVATION: SURFACE: 6.8 TOP OF PVC CASING: 6.54

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		2 3/4"/6 1/4"		4-19-95	0-11	clear, mild (70's)	3.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-19-95. HNu background range is .4ppm to .5pp

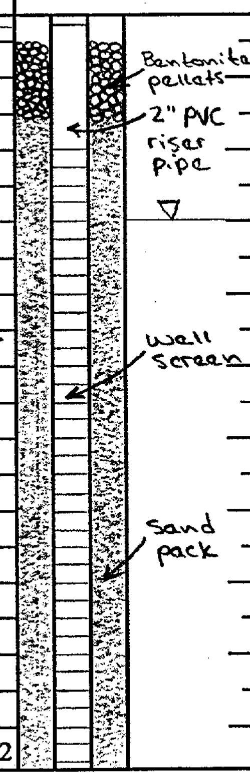
SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	-.26'	-2.0'
Well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-11.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Elevation (ft. MSL)
0–1.0	00	-	-	.5/.5	ASPHALT	6.3
1.0–3.0	S-1 01	1.9'/2.0 95%	7 10 10 14	.5/.5	SAND, fine grained w/trace silt throughout. Gray to dark brown, damp to wet	5.3, 4.8, 3.8
3.0–5.0	S-2	1.7'/2.0 85%	14 8 8 14	.5/.5		
5.0–7.0	S-3	1.5'/2.0 75%	7 10 10 14	.4/.4		
7.0–9.0	S-4	1.7'/2.0 85%	8 6 6 8	.4/.4		
9.0–10	S-5	1.9/2.0 95%	2 2 4 5	.4/.4		

Well Installation Detail



Match to Sheet 2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW10

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW10

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	11.0 S-5	95%			.4/.4	Continued from Sheet 1 CLAY, greenish gray	sand pack well screen well cap	-3.7 -4.2
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW10 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-11

SHEET: 1 OF 1

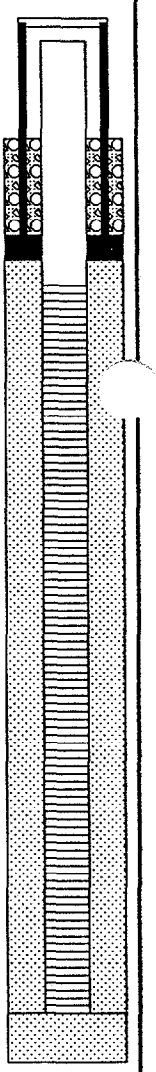
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 80s CHANGED TO CLOUDY, 70s, BREEZY
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/17/95 DATE COMPLETED: 4/17/95

DEPTH TO WATER: 1.8
GROUND SURFACE ELEVATION: 11.3 msl
TOP OF PVC CASING ELEVATION: 13.14 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
15:00	4.0										4.0	
14:00	3.0										3.0	
13:00	2.0										2.0	
12:00	1.0										1.0	
11:00	0.0		S-1	SS	-	-	0.0	0.0		SILT: trace very fine sand; dark brown; loose; damp; (sample 73-AC1-MW11-00)	0.0	
10:00	1.0		S-2	SS	4 4 5 8	2.0	0.2	0.2		SAND: very fine grained, trace silt; light gray-brown; loose; moist; (sample 73-AC1-MW11-01)	1.0	
9:00	2.0									SILTY SAND: very fine grained; dark gray-brown; loose; wet at 1.8'	2.0	
8:00	3.0									SAND: very fine grained, trace to little silt; light gray-brown; loose; wet	3.0	
7:00	4.0										4.0	
6:00	5.0		S-3	SS	5 9 9 9	1.8	0.0	0.0			5.0	
5:00	6.0										6.0	
4:00	7.0										7.0	
3:00	8.0										8.0	
2:00	9.0										9.0	
1:00	10.0		S-4	SS	4 5 4 6	1.4	0.0	0.0			10.0	
0:00	11.0										11.0	
1:00	12.0									SILTY SAND: very fine grained, little clay; dark green-gray; loose; wet	12.0	
2:00	13.0										13.0	
3:00	14.0										14.0	
4:00	15.0		S-5	SS	WOH for 1.5' 2	0.1	-	-		CLAY: little silt; dark green-gray; very soft; moist to damp	15.0	
5:00	16.0										16.0	
6:00	17.0										17.0	
7:00	18.0										18.0	
8:00	19.0									End of Boring at 19.0'	19.0	
9:00	20.0										20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
13:00	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-11B

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 60s
GEOLOGIST 1: T.P. VALLI
GEOLGIST 2:
DATE BEGUN: 5/2/95 DATE COMPLETED: 5/3/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 11.2 msl
TOP OF PVC CASING ELEVATION: 13.00 msl

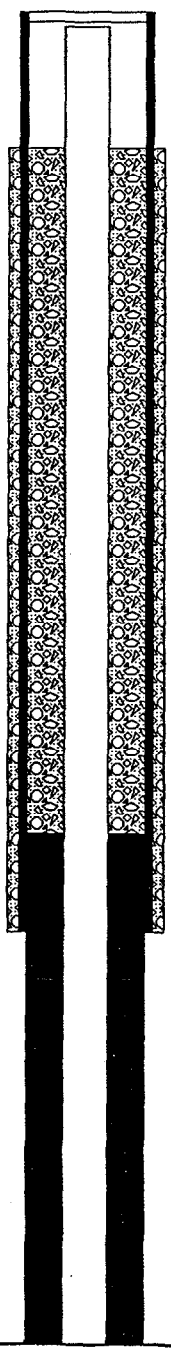
WELL DETAILS (FT)

STICKUP:	2.5
OUTER CASING (6"I.D.):	18.8
LENGTH OF RISER (2"I.D.):	29.5
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	14.0
THICKNESS OF SEAL:	11.0
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
15:00	4.0									
14:00	3.0									
13:00	2.0									
12:00	1.0									
11:00	0.0									see log 73mw-11 for representative stratigraphy of 0.0-18.0'
10:00	1.0									
9:00	2.0									
8:00	3.0									
7:00	4.0									
6:00	5.0									
5:00	6.0									
4:00	7.0									
3:00	8.0									
2:00	9.0									
1:00	10.0									
0:00	11.0									
1:00	12.0									
2:00	13.0									
3:00	14.0									
4:00	15.0									
5:00	16.0									
6:00	17.0									
7:00	18.0		S-11	SS	WOH for 1' / 1 / 2	1.8	-	-		CLAY: trace silt; gray; very soft to soft; moist
8:00	19.0									
9:00	20.0		S-12	SS	1 / 2 / 3 / 2	1.8	-	-		
10:00	21.0									
11:00	22.0									
12:00	23.0		S-13	SS	2 / 4 / 3	1.7	-	-		
13:00	24.0									CLAY and SILT, trace very fine sand; gray;

DEPTH: 4.0, 3.0, 2.0, 1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-11B

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
9:00	20.0										20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
13:00	24.0										24.0	
14:00	25.0										25.0	
15:00	26.0										26.0	
16:00	27.0										27.0	
17:00	28.0										28.0	
18:00	29.0										29.0	
19:00	30.0										30.0	
20:00	31.0										31.0	
21:00	32.0										32.0	
22:00	33.0										33.0	
23:00	34.0										34.0	
24:00	35.0										35.0	
25:00	36.0										36.0	
26:00	37.0										37.0	
27:00	38.0										38.0	
28:00	39.0										39.0	
29:00	40.0										40.0	
30:00	41.0										41.0	
31:00	42.0										42.0	
32:00	43.0										43.0	
33:00	44.0										44.0	
34:00	45.0										45.0	
35:00	46.0										46.0	
36:00	47.0										47.0	
37:00	48.0										48.0	
38:00	49.0										49.0	
39:00	50.0										50.0	
40:00	51.0										51.0	
41:00	52.0										52.0	
	23.0		S-12	SS	1 2 3 2	1.8		-		CLAY: as above		
	24.0		S-13	SS	2 4 3 2	1.7		-		CLAY and SILT: trace very fine sand; gray; soft; wet		
	25.0		S-14	SS	2 3 3 3	1.5		-		SAND: very fine grained; little to trace silt; trace clay; gray to light brown-gray; very loose; wet		
	27.0											
	28.0		S-15	SS	2 2 3 3	0.6		-		SAND: very fine grained; trace silt; gray; very loose; wet		
	30.0		S-16	SS	1 for 2'	0.5		-				
	33.0									SAND: Fine grained; gray; loose; wet		
	35.0		S-17	SS	4 6 7 17	1.1		-		SAND: very fine grained; trace silt; trace clay; light green-gray; medium stiff; moist		
	37.0									SAND: very fine grained; trace silt; trace clay, trace cemented sand; green-gray; stiff; moist		
	38.0									End of Boring at 38.0'		

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-12

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLOUDY, 70s
GEOLOGIST 1: T.P. VALLI
GEOLOGIST 2:
DATE BEGUN: 5/5/95 DATE COMPLETED: 5/5/95

DEPTH TO WATER: 5.1
GROUND SURFACE ELEVATION: 10.1 msl
TOP OF PVC CASING ELEVATION: 9.76 msl

WELL DETAILS (FT)

STICKUP:	
LENGTH OF RISER (2"I.D.):	3.0
LENGTH OF SCREEN (2"I.D.):	12.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	15.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
14:00	4.0										4.0	
13:00	3.0										3.0	
12:00	2.0										2.0	
11:00	1.0										1.0	
10:00	0.0										0.0	
9:00	1.0		S-1	SS	7 16 20 21	1.6	-	-		FILL: very fine grained sand, trace silt; light brown to dark black-brown; medium dense; moist; (sample 73-AC1-MW12-00)	1.0	
8:00	2.0										2.0	
7:00	3.0		S-2	SS	15 19 20 20	1.4	-	-		FILL: clay-like cohesive material; appears to be greasy; (sample 73-AC1-MW12-01)	3.0	
6:00	4.0									SAND: very fine grained; trace silt; brown-gray to gray-brown; medium dense; moist to 5.1', then wet	4.0	
5:00	5.0		S-3	SS	8 15 16 9	1.6	-	-			5.0	
4:00	6.0										6.0	
3:00	7.0		S-4	SS	8 12 14 16	1.5	-	-			7.0	
2:00	8.0										8.0	
1:00	9.0		S-5	SS	6 4 2 2	1.4	-	-		SAND: very fine grained; trace silt; trace clay; brown-gray to gray; loose to very loose; wet	9.0	
0:00	10.0										10.0	
1:00	11.0										11.0	
2:00	12.0		S-6	SS	3 1 2 3	0.8	-	-			12.0	
3:00	13.0									CLAY: trace silt; gray-green; soft; damp	13.0	
4:00	14.0										14.0	
5:00	15.0		S-7	SH	- - - -	2.0	-	-		CLAY: green-gray	15.0	
6:00	16.0										16.0	
7:00	17.0									End of Boring at 17.0'	17.0	
8:00	18.0										18.0	
9:00	19.0										19.0	
10:00	20.0										20.0	
11:00	21.0										21.0	
12:00	22.0										22.0	
13:00	23.0										23.0	
14:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-13

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 60s
GEOLOGIST 1: T.P. VALLI
GEOLOGIST 2:
DATE BEGUN: 5/4/95 DATE COMPLETED: 5/4/95

DEPTH TO WATER: 4.0
GROUND SURFACE ELEVATION: 8.8 msl
TOP OF PVC CASING ELEVATION: 8.43 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 2.6
LENGTH OF SCREEN (2"I.D.): 15.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 0.5
THICKNESS OF SAND PACK: 17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
12:00	4.0										4.0	
11:00	3.0										3.0	
10:00	2.0										2.0	
9:00	1.0										1.0	
8:00	0.0										0.0	
7:00	1.0		S-1	SS	21 30 33 16	0.8	-	-		CONCRETE:	1.0	
6:00	2.0									SAND: Fine to very fine grained, trace silt; gray-brown to 5', then brown-gray to gray; medium dense to loose; damp to wet, wet at 4.0'; (sample 73-AC1-MW13-00)	2.0	
5:00	3.0		S-2	SS	10 20 25 25	1.6	-	-			3.0	
4:00	4.0										4.0	
3:00	5.0		S-3	SS	3 7 11 12	1.2	-	-			5.0	
2:00	6.0										6.0	
1:00	7.0									7.0	7.0	
0:00	8.0									see log 73DW-03 for representative stratigraphy of 7.0-19.0'	8.0	
1:00	9.0										9.0	
2:00	10.0										10.0	
3:00	11.0										11.0	
4:00	12.0										12.0	
5:00	13.0										13.0	
6:00	14.0										14.0	
7:00	15.0										15.0	
8:00	16.0										16.0	
9:00	17.0										17.0	
10:00	18.0										18.0	
11:00	19.0									End of Boring at 19.0'	19.0	
12:00	20.0										20.0	
13:00	21.0										21.0	
14:00	22.0										22.0	
15:00	23.0										23.0	
	24.0										24.0	

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
COORDINATES: EAST: 2490155.77 NORTH: 310058.74
ELEVATION: SURFACE: 8.8 TOP OF PVC CASING: 8.48
BORING NO.: 73-MW14

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		2¾"/6¼"		4-20-95	0-19	clear, mild (70's)	5.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-20-95. HNu background range is .3ppm to 1.5 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	-.32	-3.0'
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-3.0'	-18.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	1.0	00	-	-	.4/.4 CONCRETE	Bentonite pellets	8.3 / 8.1
2		S-1	1.7'/2.0 85%	18 26 33	.3/.5 SAND, fine grained w/trace silt and wood fragments (3' to 5' only). Light brown to brown w/ black staining (petro odor), very dense, damp to moist	2" PVC riser pipe	7.3
3	3.0	01		30			5.8
4		S-2	1.5'/2.0 75%	26 31 30 27	.5/.5	▽	3.8
5	5.0						
6		AN	-	-	-	Well screen	
7	7.0						1.8
8		S-3	1.5'/2.0 75%	10 11 12 10	.7/.7 SAND, fine grained w/trace silt. Gray and tan w/ dark brown/ black staining (petro odor), medium dense, wet	Sand pack	
9	9.0						
10		S-4	1.7'/2.0 85%	3 6 10 9	.7/.8 Match to Sheet 2		

DRILLING CO.: Parratt-Wolff
DRILLER: M. Eves
BAKER REP.: R. Lewis
BORING NO.: 73-MW14

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW14

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-4	85%			.7/.8	Continued from Sheet 1		
11.0								
12	S-5	2.0'/2.0 100%	1 1 1 3		1.3/1.5	SAND, fine grained w/trace silt. Gray and tan w/dark brown/black staining (petro odor), medium dense, wet	well screen	
13								
13.0								
14	S-6	2.0'/2.0 100%	11 10 9 10		-		sand pack	
15								
15.0								
16	S-7	2.0'/2.0 100%	2 2 2 6		.7/.7			
17								
17.0								
18	S-8	2.0'/2.0 100%	18 11 8 10		.6/.7	SAND, fine grained w/ trace silt and trace clay, and wood fragments		-8.2
19						SAND, fine grained w/ trace silt. Gray, wet.		-8.7 -9.2 -10.2
19.0						End of Boring TD = 19.0' (bgs)	well cap	
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW14 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-15

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/19/95 DATE COMPLETED: 4/19/95

DEPTH TO WATER: 3.0
GROUND SURFACE ELEVATION: 3.3 msl
TOP OF PVC CASING ELEVATION: 5.00 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	7.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	8.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
7:00	4.0										4.0	
6:00	3.0										3.0	
5:00	2.0										2.0	
4:00	1.0										1.0	
3:00	0.0										0.0	
2:00	1.0		S-1	SS	5 9 12 6	1.3	0.5	0.5		SAND: very fine grained, little silt; brown; loose; damp to moist, diesel fuel odor, piece of wood in bottom 0.3', black stained 0.2' above wood; (sample 73-AC1-MW15-01MS/MSD)	1.0	
1:00	2.0										2.0	
0:00	3.0		S-2	SS	5 10 9 9	1.4	0.5	0.5		SAND: very fine grained (though slightly more coarse); gray-brown; loose; wet at 3.0', very faint diesel odor in top 0.2'	3.0	
1:00	4.0										4.0	
2:00	5.0										5.0	
3:00	6.0									SILTY CLAY: cuttings; black stained, faint diesel odor	6.0	
4:00	7.0										7.0	
5:00	8.0		S-3	SS	1 2 2 3	1.3	-	-		CLAY: little silt; green-gray; soft; damp, trace wood fibers throughout	8.0	
6:00	9.0										9.0	
7:00	10.0										10.0	
8:00	11.0									End of Boring at 11.0'	11.0	
9:00	12.0										12.0	
10:00	13.0										13.0	
11:00	14.0										14.0	
12:00	15.0										15.0	
13:00	16.0										16.0	
14:00	17.0										17.0	
15:00	18.0										18.0	
16:00	19.0										19.0	
17:00	20.0										20.0	
18:00	21.0										21.0	
19:00	22.0										22.0	
20:00	23.0										23.0	
21:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-15B

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: PARTLY CLOUDY, 70s/SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLGIST 2: T.P. VALLI/G.R. ALLEN
DATE BEGUN: 4/21/95 DATE COMPLETED: 4/25/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 3.2 msl
TOP OF PVC CASING ELEVATION: 4.68 msl

WELL DETAILS (FT)

STICKUP:	1.8
OUTER CASING (6"I.D.):	10.0
LENGTH OF RISER (2"I.D.):	35.8
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	8.0
THICKNESS OF SEAL:	24.0
THICKNESS OF SAND PACK:	14.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
7:00	4.0										4.0	
6:00	3.0										3.0	
5:00	2.0										2.0	
4:00	1.0										1.0	
3:00	0.0										0.0	
2:00	1.0										1.0	
1:00	2.0		S-1	SS	-	-	0.0	0.0		SAND: very fine grained, little silt; brown; loose; damp to moist, diesel fuel odor, 3" SS; (73-AC1-MW15B-01/01D)	2.0	
0:00	3.0										3.0	
1:00	4.0									see log 73MW-15 for representative stratigraphy of 3.0-12.0	4.0	
2:00	5.0										5.0	
3:00	6.0										6.0	
4:00	7.0										7.0	
5:00	8.0										8.0	
6:00	9.0										9.0	
7:00	10.0										10.0	
8:00	11.0										11.0	
9:00	12.0		S-2	SS	1 1 1 1	2.0	-	-		CLAY: trace silt, two very fine sand lenses; dark green-gray to gray-brown; very soft; damp, few wood fibers 12-14' and 16-18'	12.0	
10:00	13.0		S-3	SS	2 2 3 3	2.0	-	-			13.0	
11:00	14.0										14.0	
12:00	15.0		S-4	SS	3 4 4 3	2.0	-	-			15.0	
13:00	16.0										16.0	
14:00	17.0										17.0	
15:00	18.0		S-5	SS	WOH for 1' 1 2	2.0	-	-			18.0	
16:00	19.0										19.0	
17:00	20.0		S-6	SS	2 2 2 2	2.0	-	-			20.0	
18:00	21.0										21.0	
19:00	22.0										22.0	
20:00	23.0										23.0	
21:00	24.0										24.0	

BAKER

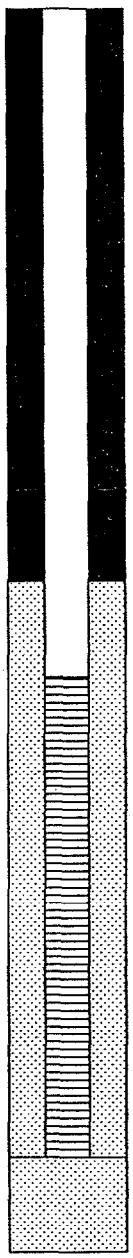
WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-15B

SHEET: 2 OF: 2

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
17:00	20.0										20.0
18:00	21.0										21.0
19:00	22.0										22.0
20:00	23.0										23.0
21:00	24.0										24.0
22:00	25.0		S-6	SS	2 2 2 2	2.0	-	-		CLAY: as above, wet at 24'	25.0
23:00	26.0										26.0
24:00	27.0										27.0
25:00	28.0		S-7	SS	2 3 5 7	1.0	-	-		.22.2	28.0
26:00	29.0									SAND: very fine grained, some to little silt, trace clay; dark brown-gray; loose; wet	29.0
27:00	30.0									.25	30.0
28:00	31.0		S-8	SS	5 6 7 9	2.0	-	-		SILTY SAND: very fine grained, trace clay, two cemented sand nodules; gray-green; loose; wet, few shell chips	31.0
29:00	32.0		S-9	SS	5 7 5 9	2.0	-	-		.29	32.0
30:00	33.0									SILTY SAND: as above, no shells or cemented sand	33.0
31:00	34.0										34.0
32:00	35.0										35.0
33:00	36.0										36.0
34:00	37.0										37.0
35:00	38.0										38.0
36:00	39.0		S-10	SS	2 3 2 4	1.5	-	-			39.0
37:00	40.0									.37	40.0
38:00	41.0		S-11	SS	2 2 3 3	2.0	-	-		SILT and very fine SAND: trace clay (though increased % from above); green-gray; soft; wet	41.0
39:00	42.0										42.0
40:00	43.0									.40	43.0
41:00	44.0									SAND: very fine grained, some to little silt, two thin clayey silt lenses, single large cemented sand nodule at top of spoon; light gray-green and gray; medium dense; wet (but decreased moisture content from above)	44.0
42:00	45.0		S-12	SS	17 26 27 36	1.5	-	-		.43	45.0
43:00	46.0									End of Boring at 46.0'	46.0
44:00	47.0										47.0
45:00	48.0										48.0
46:00	49.0										49.0
47:00	50.0										50.0
48:00	51.0										51.0
49:00	52.0										52.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-16

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 80s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/22/95 DATE COMPLETED: 4/22/95

DEPTH TO WATER: 2.8
GROUND SURFACE ELEVATION: 11.4 msl
TOP OF PVC CASING ELEVATION: 11.13 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 1.8
LENGTH OF SCREEN (2"I.D.): 13.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 0.5
THICKNESS OF SAND PACK: 13.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
15:00	4.0										4.0	
14:00	3.0										3.0	
13:00	2.0										2.0	
12:00	1.0										1.0	
11:00	0.0										0.0	
10:00	1.0									CONCRETE:	1.0	
9:00	2.0		S-1	SS	4 6 8	1.2	2.8	3.8		FILL: very fine grained sand, little silt; dark brown to gray-brown; loose; damp, wet at 2.8', faint organic decomposition odor, few roots to 3.0'; (sample 73-AC1-MW16-00)	2.0	
8:00	3.0										3.0	
7:00	4.0		S-2	SS	9 10 9 7	1.6	2.8	3.8			4.0	
6:00	5.0										5.0	
5:00	6.0		S-3	SS	1 1 1 1	0.7	-	-		FILL: very fine grained sand, little to some silt; gray-brown; very loose; wet, organic odor to 7.0', suspected metal pipe 6.5-8.5'	6.0	
4:00	7.0										7.0	
3:00	8.0										8.0	
2:00	9.0										9.0	
1:00	10.0									SAND: very fine grained, little to some silt; brown; very loose; wet	10.0	
0:00	11.0		S-4	SS	2 3 2 2	2.0	2.8	2.8			11.0	
1:00	12.0										12.0	
2:00	13.0		S-5	SS	1 2 2 2	2.0	-	-			13.0	
3:00	14.0									SILT and very fine SAND: trace clay; dark green-gray; soft; wet, few wood fibers	14.0	
4:00	15.0									CLAY: trace silt; gray-green; soft; damp	15.0	
5:00	16.0									End of Boring at 15.0'	16.0	
6:00	17.0										17.0	
7:00	18.0										18.0	
8:00	19.0										19.0	
9:00	20.0										20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
13:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-17

SHEET: 1 OF 1

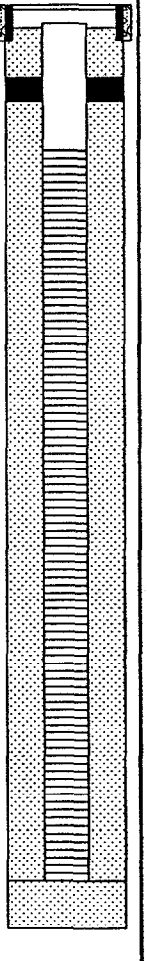
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: T.P. VALLI
GEOLOGIST 2:
DATE BEGUN: 5/4/95 DATE COMPLETED: 5/5/95

DEPTH TO WATER: 4.8
GROUND SURFACE ELEVATION: 10.95 msl
TOP OF PVC CASING ELEVATION: 10.69 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 2.6
LENGTH OF SCREEN (2"I.D.): 15.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 0.5
THICKNESS OF SAND PACK: 17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
14:00	4.0										4.0	
13:00	3.0										3.0	
12:00	2.0										2.0	
11:00	1.0										1.0	
10:00	0.0		S-1	SP	-	-	0.4	0.4		CONCRETE:	0.0	
9:00	1.0		S-2	SS	8 8 8 5	1.8	0.3	0.4		SILT: fine to very fine grained, trace silt; light brown with dark brown staining; loose; damp, petroleum odor; (sample 73-AC1-MW17-00)	1.0	
8:00	2.0										2.0	
7:00	3.0		S-3	SS	6 5 4 3	1.8	-	-		SILT and very fine SAND: gray-brown to gray-black; loose to very loose; damp to wet, wet at 4.8', petroleum odor; (sample 73-AC1-MW17-01) Note: obstruction encountered at 5'; relocated boring several feet after second utility clearance.	3.0	
6:00	4.0										4.0	
5:00	5.0		S-4	SS	2 1 2 2	0.4	-	-			5.0	
4:00	6.0										6.0	
3:00	7.0		S-5	SS	2 2 7 14	1.7	-	-		SILT: trace very fine sand; black-brown; soft to stiff; wet to damp, frequent wood pieces, petroleum odor	7.0	
2:00	8.0										8.0	
1:00	9.0		S-6	SS	5 11 11 12	1.6	-	-			9.0	
0:00	10.0										10.0	
1:00	11.0		S-7	SS	16 15 16 16	1.7	-	-		SAND: very fine grained, trace silt; yellow-brown to light brown-gray to 13', then light gray and brown-gray; loose to medium dense to 13', then very loose; wet	11.0	
2:00	12.0										12.0	
3:00	13.0		S-8	SS	1 for 1' 1 2	0.3	-	-			13.0	
4:00	14.0										14.0	
5:00	15.0		S-9	SS	3 4 4 4	1.7	-	-			15.0	
6:00	16.0										16.0	
7:00	17.0		S-10	SS	3 4 3 5	1.5	-	-			17.0	
8:00	18.0										18.0	
9:00	19.0									End of Boring at 19.0'	19.0	
10:00	20.0										20.0	
11:00	21.0										21.0	
12:00	22.0										22.0	
13:00	23.0										23.0	
	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-18

SHEET: 1 OF 1

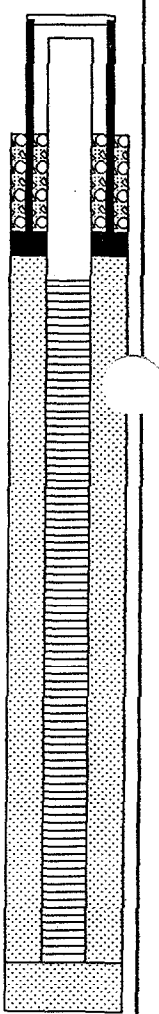
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/4/95 DATE COMPLETED: 4/5/95

DEPTH TO WATER: 1.5
GROUND SURFACE ELEVATION: 10.2 msl
TOP OF PVC CASING ELEVATION: 12.19 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	14.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	15.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
14:00	4.0										4.0	
13:00	3.0										3.0	
12:00	2.0										2.0	
11:00	1.0										1.0	
10:00	0.0		S-1	SS	-	-	0.0	0.0		SILT and very fine SAND: dark brown; loose; moist; (samples 73-AC4-MW18-00/000/00MS/00MSD)	0.0	
9:00	1.0										1.0	
8:00	2.0		S-2	SS	1 4 6 9	1.4	0.0	0.0		SAND: very fine grained, some to little silt; gray; loose; moist to wet; (samples 73-AC4-MW18-00/000/00MS/00MSD)	2.0	
7:00	3.0										3.0	
6:00	4.0		S-3	SS	4 7 10 9	1.4	0.0	0.0		SILT and very fine SAND: dark brown; loose; wet at 1.5'	4.0	
5:00	5.0										5.0	
4:00	6.0		S-4	SS	3 2 7 10	1.1	-	-		SAND: very fine grained (though slightly more coarse than above), some to little silt; brown; loose; wet	5.0	
3:00	7.0									SAND: very fine grained, little silt; brown with several dark brown bands; loose; wet	6.0	
2:00	8.0										7.0	
1:00	9.0										8.0	
0:00	10.0										9.0	
1:00	11.0		S-5	SS	2 3 4 4	1.5	-	-		SAND: very fine grained, little silt, trace fine sand; brown-gray; loose to very loose; wet	10.0	
2:00	12.0										11.0	
3:00	13.0										12.0	
4:00	14.0										13.0	
5:00	15.0										14.0	
6:00	16.0		S-6	SS	WOH 1 2 2	2.0	-	-			15.0	
7:00	17.0										16.0	
8:00	18.0									CLAY: little silt; dark gray-brown; very soft; wet	17.0	
9:00	19.0									End of Boring at 18.0'	18.0	
10:00	20.0										19.0	
11:00	21.0										20.0	
12:00	22.0										21.0	
13:00	23.0										22.0	
14:00	24.0										23.0	
											24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-19

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 50s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/5/95 DATE COMPLETED: 4/5/95

DEPTH TO WATER: 5.0
GROUND SURFACE ELEVATION: 10.9 msl
TOP OF PVC CASING ELEVATION: 12.73 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
14:00	3.0											
13:00	2.0											
12:00	1.0											
11:00	0.0		S-1	SP	-	-	0.2	0.3		SAND: very fine grained, little to trace silt; brown to dark brown; loose; damp; (sample 73-AC4-MW19-00)	0.0	
10:00	1.0										1.0	
9:00	2.0		S-2	SS	12 14 16 15	1.7	0.2	0.2		SAND: very fine grained, little silt; dark to light brown; medium dense; damp to moist; (sample 73-AC4-MW19-02)	2.0	
8:00	3.0										3.0	
7:00	4.0		S-3	SS	12 13 10 10	1.8	0.2	1.1			4.0	
6:00	5.0										5.0	
5:00	6.0		S-4	SS	3 5 7 8	1.2	0.2	0.2		SAND: very fine grained, little to some silt; light brown to orange-brown to gray-brown; loose; wet	6.0	
4:00	7.0										7.0	
3:00	8.0										8.0	
2:00	9.0										9.0	
1:00	10.0									SAND: very fine grained, little silt; gray-brown to gray, with few thin black bands 8-14'; loose to very loose; wet, faint to very faint sewage odor 8-16.5'	10.0	
0:00	11.0		S-5	SS	2 3 5 6	1.4	-	-			11.0	
1:00	12.0										12.0	
2:00	13.0										13.0	
3:00	14.0										14.0	
4:00	15.0										15.0	
5:00	16.0		S-6	SS	1 1 1 1	1.4	-	-			16.0	
6:00	17.0										17.0	
7:00	18.0										18.0	
8:00	19.0									End of Boring at 19.0'	19.0	
9:00	20.0										20.0	
10:00	21.0										21.0	
11:00	22.0										22.0	
12:00	23.0										23.0	
13:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-20

SHEET: 1 OF 2

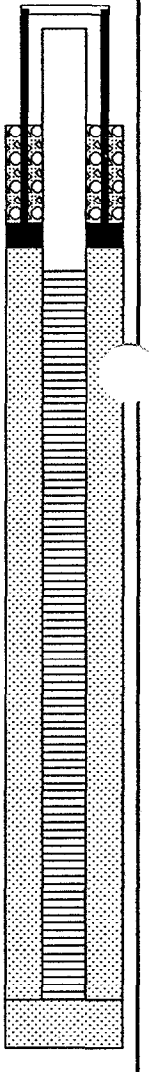
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/9/95 DATE COMPLETED: 4/9/95

DEPTH TO WATER:
GROUND SURFACE ELEVATION: 5.7 msl
TOP OF PVC CASING ELEVATION: 7.70 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
9:00	4.0									see log 73DW-05 for representative stratigraphy of 0.0-19.0'	4.0	
8:00	3.0										3.0	
7:00	2.0										2.0	
6:00	1.0										1.0	
5:00	0.0										0.0	
4:00	1.0										1.0	
3:00	2.0										2.0	
2:00	3.0										3.0	
1:00	4.0										4.0	
0:00	5.0										5.0	
1:00	6.0										6.0	
2:00	7.0										7.0	
3:00	8.0										8.0	
4:00	9.0										9.0	
5:00	10.0										10.0	
6:00	11.0										11.0	
7:00	12.0										12.0	
8:00	13.0										13.0	
9:00	14.0										14.0	
10:00	15.0										15.0	
11:00	16.0										16.0	
12:00	17.0										17.0	
13:00	18.0										18.0	
14:00	19.0									End of Boring at 19.0'	19.0	
15:00	20.0										20.0	
16:00	21.0										21.0	
17:00	22.0										22.0	
18:00	23.0										23.0	
	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-21

SHEET: 1 OF 1

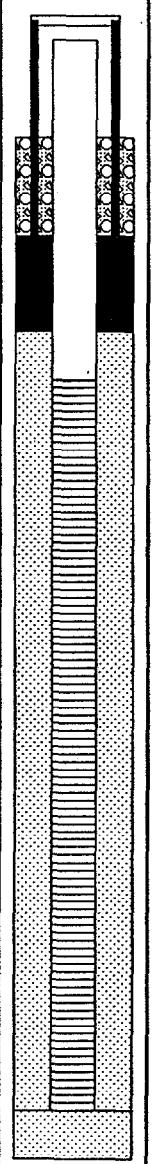
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 60s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/5/95 DATE COMPLETED: 4/5/95

DEPTH TO WATER: 1.0
GROUND SURFACE ELEVATION: 5.2 msl
TOP OF PVC CASING ELEVATION: 7.26 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 7.0
LENGTH OF SCREEN (2"I.D.): 15.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 2.0
THICKNESS OF SAND PACK: 17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
9:00	4.0										4.0	
8:00	3.0										3.0	
7:00	2.0										2.0	
6:00	1.0										1.0	
5:00	0.0		S-1	SP	-	-	0.0	0.0		SILT and very fine SAND: dark brown; loose; moist to wet	0.0	
4:00	1.0				WOH						1.0	
3:00	2.0		S-2	SS	2 3 1	1.6	0.0	0.0		SAND: very fine grained, little silt; dark brown; very loose; moist to wet, wet at 1.0'	2.0	
2:00	3.0				1					SAND: very fine grained; trace silt; light brown; very loose; moist to wet	3.0	
1:00	4.0		S-3	SS	3 3 3	1.2	0.0	0.0		SILTY SAND: very fine grained, little clay; orange-brown and gray; soft; moist	4.0	
0:00	5.0				WOH					SILTY CLAY: little to trace very fine sand; orange-brown and gray; soft to very soft; moist to damp	5.0	
1:00	6.0		S-4	SS	1 1 2	1.0	0.0	0.0			6.0	
2:00	7.0				WOH						7.0	
3:00	8.0		S-5	SS	1 1 1	1.1	0.0	0.0		SILT: little clay, trace very fine sand; gray; very soft; wet	8.0	
4:00	9.0									SILT: little clay, little to trace very fine sand; orange-brown and gray; very soft; wet	9.0	
5:00	10.0				WOH					SILTY CLAY: little very fine sand; orange-brown; very soft; wet	10.0	
6:00	11.0		S-6	SS	1 1 2	1.6	-	-		SILT and very fine SAND: trace clay; orange-brown to gray-brown; very soft; wet	11.0	
7:00	12.0										12.0	
8:00	13.0									SAND: very fine grained (though slightly more coarse than above), trace to little silt; orange-brown to gray-brown; very loose; wet	13.0	
9:00	14.0										14.0	
10:00	15.0				2						15.0	
11:00	16.0		S-7	SS	2 4 2	1.4	-	-			16.0	
12:00	17.0										17.0	
13:00	18.0										18.0	
14:00	19.0										19.0	
15:00	20.0										20.0	
16:00	21.0									End of Boring at 21.0'	21.0	
17:00	22.0										22.0	
18:00	23.0										23.0	
19:00	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-22
SHEET: 1 OF 1

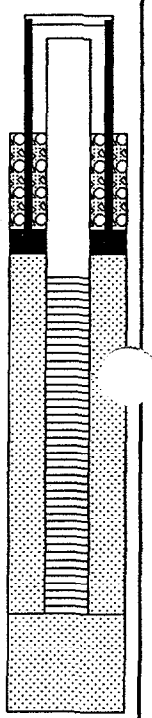
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLOUDY, 50s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/6/95 DATE COMPLETED: 4/6/95

DEPTH TO WATER: 1.5
GROUND SURFACE ELEVATION: 8.1 msl
TOP OF PVC CASING ELEVATION: 10.11 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	7.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	8.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
12:00	4.0										4.0	
11:00	3.0										3.0	
10:00	2.0										2.0	
9:00	1.0										1.0	
8:00	0.0		S-1	SS	-	-	0.2	0.2		SAND: very fine grained, little silt; brown; loose; moist to wet, wet at 1.5', trace roots to 1.0'; (sample 73-AC2-MW22-00)	0.0	
7:00	1.0				5						1.0	
6:00	2.0		S-2	SS	7	1.5	0.2	0.2			2.0	
5:00	3.0				8					SAND: very fine grained, litttle silt, trace clay; gray-brown; wet, faint organic decomposition odor	3.0	
4:00	4.0				7						4.0	
3:00	5.0				4						5.0	
2:00	6.0		S-3	SS	3	1.4	-	-		SILT and very fine SAND: brown-gray; very loose; wet, stronger organic odor, wood fibers at 6.6'	6.0	
1:00	7.0				2						7.0	
0:00	8.0				2					SILT: little clay; dark brown; soft; damp, trace wood fibers, no odor	8.0	
1:00	9.0										9.0	
2:00	10.0				WOH					CLAY: little to trace silt, occasional very fine gray sand inclusions; mixed dark brown-gray and green-gray; moist to damp, wood fibers throughout	10.0	
3:00	11.0		S-4	SS	for	2.0	-	-			11.0	
4:00	12.0				1.5'					End of Boring at 12.0'	12.0	
5:00	13.0				1						13.0	
6:00	14.0										14.0	
7:00	15.0										15.0	
8:00	16.0										16.0	
9:00	17.0										17.0	
10:00	18.0										18.0	
11:00	19.0										19.0	
12:00	20.0										20.0	
13:00	21.0										21.0	
14:00	22.0										22.0	
15:00	23.0										23.0	
16:00	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-23

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 50s/CLOUDY, 40s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/5/95 DATE COMPLETED: 4/6/95

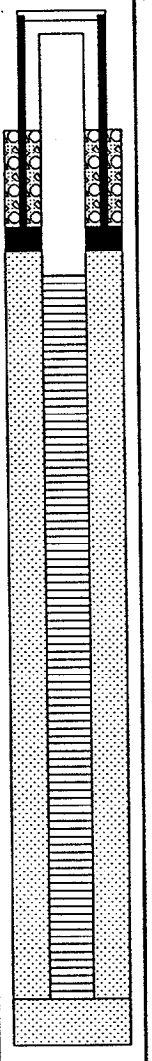
DEPTH TO WATER: 2.5
GROUND SURFACE ELEVATION: 9.9 msl
TOP OF PVC CASING ELEVATION: 11.67 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
13:00	4.0										4.0
12:00	3.0										3.0
11:00	2.0										2.0
10:00	1.0										1.0
9:00	0.0		S-1	SS	-	-	0.0	0.1		SAND: very fine grained, trace silt; dark to medium gray-brown; very loose; damp to moist; (samples 73-AC3-MW23-00 and -01)	0.0
8:00	1.0		S-2	SS	2 3 3 2	1.6	0.3	0.4			1.0
7:00	2.0										2.0
6:00	3.0		S-3	SS	3 5 7 9	1.3	0.3	1.8		SILT and very fine SAND: dark brown; very loose to loose; wet, very faint organic decomposition odor 3-4.5'	3.0
5:00	4.0										4.0
4:00	5.0		S-4	SS	1 7 13 13	1.2	0.3	1.9		SAND: very fine grained, little silt; brown to light gray-brown to gray; loose to medium dense to very loose; wet, faint organic odor 5-6'	5.0
3:00	6.0										6.0
2:00	7.0										7.0
1:00	8.0										8.0
0:00	9.0										9.0
1:00	10.0		S-5	SS	1 1 for 1' 1	1.5	0.3	1.9		CLAY: little to trace very fine sand, trace silt; dark gray; very soft; wet	10.0
2:00	11.0									CLAY: dark gray; very soft; moist	11.0
3:00	12.0		S-6	SS	1 4 4 2	0.9	0.3	1.9		SAND: very fine grained (though slightly more coarse than at shallower depths), little silt; brown; very loose; wet	12.0
4:00	13.0										13.0
5:00	14.0										14.0
6:00	15.0									SAND: little silt; dark gray-brown; very loose; wet	15.0
7:00	16.0		S-7	SS	1 2 2 1	0.7	-	-			16.0
8:00	17.0										17.0
9:00	18.0									CLAY: with very fine sand inclusions 17.7-17.8', decayed wood 17.8-17.9', wood flecks 17.9-18'; dark gray-brown; very soft; wet to moist	18.0
10:00	19.0									End of Boring at 19.0'	19.0
11:00	20.0										20.0
12:00	21.0										21.0
13:00	22.0										22.0
14:00	23.0										23.0
	24.0										24.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-24
SHEET: 1 OF 1

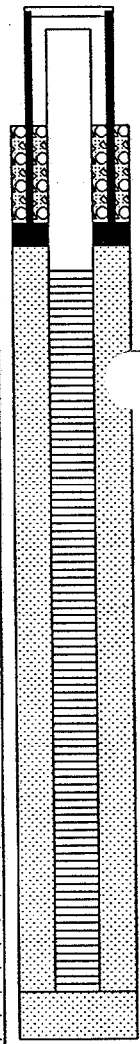
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/4/95 DATE COMPLETED: 4/4/95

DEPTH TO WATER: 2.7
GROUND SURFACE ELEVATION: 4.8 msl
TOP OF PVC CASING ELEVATION: 6.59 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
8:00	4.0										4.0	
7:00	3.0										3.0	
6:00	2.0										2.0	
5:00	1.0										1.0	
4:00	0.0		S-1	SP	-	-	0.0	0.0		SILT and very fine SAND: dark brown; very loose to loose; moist to wet, wet at 2.7', trace roots in upper 1.0'; (samples 73-AC4-MW24-00 and -01)	0.0	
3:00	1.0		S-2	SS	1 1 3 5	1.6	0.0	0.0			1.0	
2:00	2.0										2.0	
1:00	3.0		S-3	SS	4 4 4 5	1.4	0.0	0.0			3.0	
0:00	4.0										4.0	
1:00	5.0		S-4	SS	1 3 5 6	1.1	0.0	0.0		SILTY SAND: very fine grained; brown; very loose; wet	5.0	
2:00	6.0										6.0	
3:00	7.0									SAND: very fine grained, little silt; brown-gray; loose; wet	7.0	
4:00	8.0										8.0	
5:00	9.0										9.0	
6:00	10.0		S-5	SS	1 1 1 1	1.4	-	-		SILT: little clay, little to trace very fine sand; gray; very soft; wet	10.0	
7:00	11.0										11.0	
8:00	12.0										12.0	
9:00	13.0										13.0	
10:00	14.0									SAND: very fine grained, little silt, trace fine sand; gray; very loose; wet	14.0	
11:00	15.0		S-6	SS	WOH 1 2 2	0.8	-	-			15.0	
12:00	16.0										16.0	
13:00	17.0										17.0	
14:00	18.0										18.0	
15:00	19.0									End of Boring at 19.0'	19.0	
16:00	20.0										20.0	
17:00	21.0										21.0	
18:00	22.0										22.0	
19:00	23.0										23.0	
	24.0										24.0	



Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
BORING NO.: 73-MW25
COORDINATES: EAST: 2489767.08 NORTH: 309205.23
ELEVATION: SURFACE: 8.4 TOP OF PVC CASING: 11.09

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		2¾"/6¼"		4-19-95	0-9	clear, mild (70's)	3.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-19-95. HNu background range is .4ppm to .5ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.69	-2.0'
Well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-9.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	1.0	oo	-	-	.4/.5	SAND, fine grained w/trace silt. Light brown w/ black stain at top only (petro odor), medium dense, dry (at top) to moist to wet (below 3.0' (bgs).	Bentonite pellets	7.4
2		S-1	2.0'/2.0	8 9 8 10	.4/.5		2" PVC risers pipe	6.4
3	3.0	oz	100%				▽	5.4
4		S-2	2.0'/2.0	7 5 5 3	.4/.5		well screen	
5	5.0		100%					3.4
6		AN	-	-	-		Sand pack	
7	7.0							1.4
8		S-3	2.0'/2.0	4 3 2 3	.5/.5	SAND, fine grained w/trace silt. Light brown, med. dense, wet		.4
9	9.0		100%			CLAY w/ sand, fine grained trace silt. Grayish green, wet		-.1 -.6
10						End of Boring TD = 9.0' (bgs) Match to Sheet 2	well cap	

DRILLING CO.: Parratt-Wolff
DRILLER: M. Elles
BAKER REP.: R. Lewis
BORING NO.: 73-MW25
SHEET 1 OF 1

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-26

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: PARTLY CLOUDY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: T.P. VALLI
DATE BEGUN: 4/18/95 DATE COMPLETED: 4/18/95

DEPTH TO WATER: 4.4
GROUND SURFACE ELEVATION: 14.1 msl
TOP OF PVC CASING ELEVATION: 16.04 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	13.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	15.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
18:00	4.0										4.0	
17:00	3.0										3.0	
16:00	2.0										2.0	
15:00	1.0										1.0	
14:00	0.0		S-1	SP	-	-	0.0	0.0		SAND: very fine grained, trace to little silt; brown to orange-brown to gray-brown; loose; dry to moist, wet at 4.4'; (samples 73-AC1-MW26-00 and sample 73-AC1-MW26-01)	0.0	
13:00	1.0				4						1.0	
12:00	2.0		S-2	SS	6 5 4	1.5	0.0	0.0			2.0	
11:00	3.0				6						3.0	
10:00	4.0		S-3	SS	5 4 6	1.0	1.2	1.1			4.0	
9:00	5.0				2						5.0	
8:00	6.0		S-4	SS	3 5 4	1.2	1.3	1.7			6.0	
7:00	7.0										7.0	
6:00	8.0										8.0	
5:00	9.0										9.0	
4:00	10.0				4						10.0	
3:00	11.0		S-5	SS	7 7 10	1.7	1.0	4.0			11.0	
2:00	12.0				4						12.0	
1:00	13.0		S-6	SS	4 3 3	2.0	1.1	5.1			13.0	
0:00	14.0				2					SILT and very fine SAND: trace clay; dark gray; soft; wet	14.0	
1:00	15.0		S-7	SS	1 1 2	1.4	1.0	1.6		CLAY: little silt, occasional to frequent very fine sand inclusions; gray and green-gray; very soft; moist to damp 14-17.2, then moist, trace wood fibers to 16.0'	15.0	
2:00	16.0				WOH						16.0	
3:00	17.0		S-8	SS	for 1.5' 2	1.5	0.8	1.8			17.0	
4:00	18.0										18.0	
5:00	19.0									End of Boring at 18.0'	19.0	
6:00	20.0										20.0	
7:00	21.0										21.0	
8:00	22.0										22.0	
9:00	23.0										23.0	
10:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-27

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75/TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 80s/CLOUDY, 70s
GEOLOGIST 1: R.M. LEWIS/E.S. BRENNAN
GEOLOGIST 2: G.R. ALLEN/T.P. VALLI
DATE BEGUN: 4/22/95 DATE COMPLETED: 4/23/95

DEPTH TO WATER: 4.0
GROUND SURFACE ELEVATION: 9.9 msl
TOP OF PVC CASING ELEVATION: 9.52 msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 2.6
LENGTH OF SCREEN (2"I.D.): 15.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 0.5
THICKNESS OF SAND PACK: 17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	4.0										4.0	
13:00	3.0										3.0	
12:00	2.0										2.0	
11:00	1.0										1.0	
10:00	0.0		S-1	SP	-	-	0.8	0.9		CONCRETE:	0.0	
9:00	1.0				5					SAND: fine to very fine grained, trace silt; light to dark brown; loose to medium dense; damp to moist; (sample 73-AC1-MW27-00)	1.0	
8:00	2.0		S-2	SS	5 2 8	2.0	0.4	0.4			2.0	
7:00	3.0				19						3.0	
6:00	4.0		S-3	SS	12 10 17	1.5	0.4	0.4			4.0	
5:00	5.0				18					Sand, fine to very fine grained, trace clay; dark gray; medium dense; dry, wet at 5.0'; (sample 73-AC1-MW27-02) Note - obstruction encountered at 6'; relocated boring 27' south; at this location petroleum odor was detected in upper 3' of cuttings, also cuttings from 4-9' consisted of dark brown organic Silt with trace to little clay; wet; wood pieces from 6.5-8.5'	5.0	
4:00	6.0		S-4	SS	14 12 12	2.0	0.4	0.4			6.0	
3:00	7.0										7.0	
2:00	8.0										8.0	
1:00	9.0									SILT: as described in note	9.0	
0:00	10.0				4					SILT and very fine SAND: brown; loose to very loose; wet	10.0	
1:00	11.0		S-5	SS	4 2 6	0.7	0.3	0.3			11.0	
2:00	12.0										12.0	
3:00	13.0										13.0	
4:00	14.0										14.0	
5:00	15.0										15.0	
6:00	16.0		S-6	SS	WOH for 2'	0.5	0.3	1.0		SILTY SAND: very fine grained; brown; very loose; wet	16.0	
7:00	17.0									SAND: very fine grained, little silt; brown-gray; loose; wet, faint organic decomposition odor	17.0	
8:00	18.0		S-7	SS	2 5 8 9	2.0	0.2	0.3		SILTY SAND: very fine grained, trace clay; dark green-gray; stiff; wet	18.0	
9:00	19.0									CLAY: little silt, trace very fine sand; dark gray-brown; stiff; wet	19.0	
10:00	20.0									SAND: very fine grained, little silt, with some trace clay lenses; gray-brown; loose; wet	20.0	
11:00	21.0										21.0	
12:00	22.0									End of Boring at 19.0'	22.0	
13:00	23.0										23.0	
14:00	24.0										24.0	

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW28
COORDINATES: EAST: 2489901.43 NORTH: 309311.94
ELEVATION: SURFACE: 9.3 TOP OF PVC CASING: 11.45

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		2¾"/6¼"		4-19-95	0-11	clear, mild (70's)	4.5'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 4-19-95. HNu background is .7 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.15	-2.0'
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-11.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft.)
1	1.0	SS	-	-	-	SAND, fine grained w/ trace silt. Light brown, dry	Bentonite pellets	8.3
2		S-1	1.7'/2.0	8 8 8 8	.7/9	SAND, fine to medium grained w/ trace silt Brown w/ black stain (petro odor), medium dense, moist to wet	2" PVC riser pipe	7.3
3	3.0		85%					
4		S-2	1.0'/2.0	10 8 6 7	.7/.9		▽	4.8
5	5.0		50%					4.3
6							Well Screen	
7		AN	-	-	-		Sand pack	
8								
9	9.0							.3
10		S-3	2.0'/2.0	7 2 3 2	.7/.7	SAND, fine grained w/ trace silt. Gray, loose, wet. Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Eves BORING NO.: 73-MW28 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW28

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	11.0 S-3	100%			.7/.7	Continued from Sheet 1 SAND, fine grained w/s. clay	sand pack	-1.2 -1.3 -1.7
12						End of Boring TD= 11.0' (bgs)	well screen	
13							well cap	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: M. Evas BORING NO.: 73-MW28 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-29
SHEET: 1 OF 1

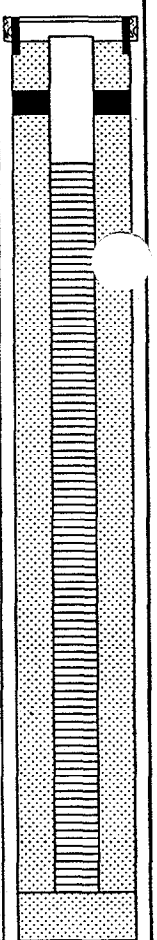
PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: CLOUDY, 60s, OCC. RAIN
GEOLOGIST 1: E.S. BRENNAN
GEOLOGIST 2: G.R. ALLEN
DATE BEGUN: 4/23/95 DATE COMPLETED: 4/23/95

DEPTH TO WATER: 2.7
GROUND SURFACE ELEVATION: msl
TOP OF PVC CASING ELEVATION: msl

WELL DETAILS (FT)

STICKUP:
LENGTH OF RISER (2"I.D.): 2.6
LENGTH OF SCREEN (2"I.D.): 15.0
THICKNESS OF GROUT: 0.0
THICKNESS OF SEAL: 0.5
THICKNESS OF SAND PACK: 17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
4:00	4.0										4.0	
3:00	3.0										3.0	
2:00	2.0										2.0	
1:00	1.0										1.0	
0:00	0.0									concrete	0.0	
1:00	1.0		S-1	SS	3 3 2 3	2.0	0.4	0.4		SAND: very fine grained, trace silt; gray to brown to orange-brown; very loose; dry to damp	1.0	
2:00	2.0										2.0	
3:00	3.0									SAND: very fine grained, little silt; orange-brown to brown-gray to brown; very loose; damp, wet at 2.7'	3.0	
4:00	4.0		S-2	SS	2 4 4 5	1.4	0.4	0.4			4.0	
5:00	5.0										5.0	
6:00	6.0		S-3	SS	1 1 1 1	1.7	0.4	0.4			6.0	
7:00	7.0									SILTY SAND: very fine grained, trace clay; dark brown; very soft; wet, faint organic decomposition odor	7.0	
8:00	8.0									SAND: very fine grained, little silt; gray-brown; loose; wet, single piece of wood	8.0	
9:00	9.0										9.0	
10:00	10.0										10.0	
11:00	11.0		S-4	SS	4 5 5 4	1.4	0.4	0.4			11.0	
12:00	12.0									SILTY SAND: very fine grained, with two thin gray clay, little silt lenses; light brown; loose; wet	12.0	
13:00	13.0									SAND: very fine grained, little silt; brown; very loose; wet	13.0	
14:00	14.0										14.0	
15:00	15.0										15.0	
16:00	16.0		S-5	SS	2 1 2 2	1.4	0.4	0.4			16.0	
17:00	17.0									CLAY: trace silt; gray-green with some intermixed gray; barely damp, few wood fibers	17.0	
18:00	18.0										18.0	
19:00	19.0									End of Boring at 19.0'	19.0	
20:00	20.0										20.0	
21:00	21.0										21.0	
22:00	22.0										22.0	
23:00	23.0										23.0	
24:00	24.0										24.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73MW-30

SHEET: 1 OF 1

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS
WEATHER: SUNNY, 70s
GEOLOGIST 1: T.P. VALLI
GEOLOGIST 2:
DATE BEGUN: 5/3/95 DATE COMPLETED: 5/3/95

DEPTH TO WATER: 1.6
GROUND SURFACE ELEVATION: 7.4 msl
TOP OF PVC CASING ELEVATION: 9.13 msl

WELL DETAILS (FT)

STICKUP:	2.0
LENGTH OF RISER (2"I.D.):	5.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	0.0
THICKNESS OF SEAL:	0.5
THICKNESS OF SAND PACK:	16.5

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
			S-1	SS	-	-	0.2	0.2		SAND: very fine grained, little silt; red-brown; loose; moist to wet, wet at 1.6'; (sample 73-AC3-MW30-00)	
			S-2	SS	4 5 7 9	1.5	0.2	0.2			
			S-3	SS	10 21 22 26	1.5	0.2	2.1		SAND: very fine grained, little silt, trace clay; red-brown; medium dense; wet	
			S-4	SS	3 15 13 12	1.2	0.2	5.2			
			S-5	SS	7 14 21 17	1.8	0.2	11.0			
			S-6	SS	2 3 7 13	1.6	0.2	5.8			
			S-7	SS	10 13 16 9	1.8	0.2	2.0		SAND: very fine grained, little clay, trace clay; gray; stiff; moist to wet SAND: very fine grained, trace silt, trace clay, single sandy clay lense; brown-gray to red-brown to brown; medium dense to loose to very loose; wet	
			S-8	SS	1 2 3 3	1.6	0.2	2.4			
			S-9	SS	1 1 1 1	1.3	0.2	2.8		CLAY: little silt; brown; very soft; damp	
										End of Boring at 19.0'	

WELL INSTALLATION

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW31
COORDINATES: EAST: 2489289.1509 NORTH: 308730.3975
ELEVATION: SURFACE: 9.9 TOP OF PVC CASING: 12.06

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		2-21-96	0-12	Clear, mild (50's)		
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 2-21-96.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.16	-2.0'
Well Screen	2"	Schedule 40 PVC pipe .01 Slot	-2.0'	-12.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. M
1						cement grout	9.4
2						Bentonite pellets	8.4
3						2" PVC riser pipe	7.9
4						Sand pack	
5	AN	-	-	-	Refer to log # 73-DW06 for soil descriptions Auger to 12.0' (bgs)		
6						Well screen	
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW31 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW31

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	AN	–	–		–	Continued from Sheet 1 Auger to 12.0' (bgs)	well screen sand pack	
12 (12.0)								-1.6 -2.1
13						End of Boring TD = 12.0' (bgs)	well plug	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW31 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW32
COORDINATES: EAST: 2488768.3893 NORTH: 309585.8444
ELEVATION: SURFACE: 4.2 TOP OF PVC CASING: 6.73

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6¼"		2-23-96	0-9	Foggy, cool (40's)		
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 2-23-96.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.53	-2.0'
Well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-9.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. M
1						cement grout	3.7
2						Bentonite pellets	2.7
3						2" PVC riser pipe	2.2
4	AN	—	—	—	Refer to log # 73-DW07 for soil descriptions Auger to 9.0' (bgs)	well screen	
5						sand pack	
6							
7							
8							
9	9.0				End of Boring	well plug	-4.8
10					TD = 9.0' (bgs)		

Match to Sheet 2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW32 SHEET 1 OF 1

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
COORDINATES: EAST: 2488696.9791 NORTH: 310453.6430
ELEVATION: SURFACE: 11.6 TOP OF PVC CASING: 14.32
BORING NO.: 73-MW33

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		2-21-96	0-12	clear (595), mild		
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 2-21-96

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.72	-2.0'
Well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0'	-12.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1						cement grout	11.1
2						Bentonite pellets	10.1
3						2" PVC riser pipe	9.6
4							
5	AN	—	—	—	Refer to Log # 73-DW08 for soil descriptions Auger to 12.0' (bgs)	Sand pack	
6							
7						Well Screen	
8							
9							
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff
DRILLER: D. Stratton
BAKER REP.: R. Lewis
BORING NO.: 73-MW33

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW33

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	AN	—	—		—	Continued from Sheet 1 Auger to 12.0' (bgs)	well screen	
12 (12.0)							sand pack	.1 -.4
13						End of Boring TD = 12.0' (bgs)	well cap	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW33 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
BORING NO.: 73-MW34
COORDINATES: EAST: 2488582.6485 NORTH: 311080.7484
ELEVATION: SURFACE: 10.1 TOP OF PVC CASING: 12.90

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		2-22-96	0-19	partly cloudy, mild (70's)	3.5	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 2-22-96.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.8	-2.0
well screen	2"	Schedule 40 PVC pipe .01 slot	-2.0	-17.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1						cement grout	9.6
2						Bentonite pellets	8.6
3						2" PVC riser pipe	8.1
4						▽	6.6
5	AN	–	–	–	Refer to Log # 73-DW09 for soil descriptions	Sand pack	
6					Auger to 19.0' (bgs)		
7						well screen	
8							
9							
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff
BAKER REP.: R. Lewis
DRILLER: D. Stratton
BORING NO.: 73-MW34
SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW34

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12								
13							Sand pack	
14						Auger to 19.0' (bgs)		
15	AN	—	—		—			
16							Well Screen	
17							Well cap	-6.4 -6.9
18								
19	19.0							-18.9
20						End of Boring		
1						TD = 19.0' (bgs)		
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW34 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW35
COORDINATES: EAST: 2490182.5889 NORTH: 311002.9066
ELEVATION: SURFACE: 10.5 TOP OF PVC CASING: 12.89

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		2-23-96	0-18	partly cloudy, mild (70's)	5.0	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 2-23-96.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.39	-3.0
well screen	2"	Schedule 40 PVC pipe .01 slot	-3.0	-18.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1						cement grout	9.5
2						Bentonite pellets	8.5
3						2" PVC riser pipe	7.5
4							
5	AN	—	—	-	Refer to Log # 73-DW10 for soil descriptions Auger to 18.0' (bgs)	▽	5.5
6						sand pack	
7							
8							
9						well screen	
10							

Match to Sheet 2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW35 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW35

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12							Sand pack	
13								
14	AN	–	–		–	Auger to 18.0' (bgs)	Well Screen	
15								
16								
17								
18	18.0						Well cap	-7 / -7.5
19						End of Boring		
20						TD= 18.0' (bgs)		
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW35 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW36
COORDINATES: EAST: 2491493.0353 NORTH: 308349.3963
ELEVATION: SURFACE: 5.8 TOP OF PVC CASING: 8.40

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		3-21-96	0-11	Clear (50's) cool	5.0'	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 3-21-96. HNu background is .9 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.6	-2.5
Well screen	2"	Schedule 40 PVC pipe .01 slot	-2.5	-11.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	OO	—	—	.9/.9	SILTY SAND, fine grained w/ trace organic material, Dark brown/gray, v. loose, damp	cement grout	5.3
1 1.0	AN	—	—	—		Bentonite pellets	4.8
2	S-1	2.0'/2.0 100%	2 2 3 3	.9/.9	SAND, fine grained w/ trace to little silt and wood splinters Dark brown, loose, moist	2" PVC riser pipe	3.8
3 3.0							3.3
4	S-2	2.0'/2.0 100%	4 7 8 8	.9/.9			
5 5.0	OZ					▽	.8
6	S-3	1.5'/2.0 75%	4 5 1 1	.9/.9	SAND, fine to medium grained w/ trace silt Brown to light brown to light gray, loose, wet	sand pack well screen	
7 7.0							
8	S-4	2.0'/2.0 100%	1 2 1 1	.9/.9			-2.2
9 9.0					CLAY w/ little silt and trace sand, fine grained Dark greenish gray and brown, soft to very soft, moist to damp Match to Sheet 2		
10	S-5	1.8'/2.0 90%	WOH/6" 1	.9/.9			

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: L. Pech BORING NO.: 73-MW36 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW36

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	5-5	90%	1/1		.9/.9	Continued from Sheet 1	Sand pack	-4.7
11.0								-5.2
12						End of Boring	Well screen	
13						TD = 11.0' (bgs)	Well cap	
14								
15								
16								
17								
18								
19								
20								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: L. Pach BORING NO.: 73-MW36 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW37
COORDINATES: EAST: 2489855.6693 NORTH: 310308.4838
ELEVATION: SURFACE: 11.22 TOP OF PVC CASING: 11.12

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"		6 1/4"		3-10-96	0-18	Clear, cold (30's)	4.0	
LENGTH	2'		5'						
TYPE	Std.		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type II monitoring well set 3-10-96. HNu background range is 1.6 ppm to 1.7p

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	-.1	-3.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-3.0	-18.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1	AN	–	–	–	Auger to 1.0' (bgs)	cement grout	10.22
2	S-1	1.5'/2.0 75%	8, 15, 18, 24	1.6/1.8	SAND, fine grained w/ trace silt. Light brown to gray, dense, dry to moist	Bentonite pellets; 2" PVC riser pipe	9.22
3	3.0						8.22
4	S-2	1.7'/2.0 85%	31, 42, 21, 21	1.6/1.8	SILT and little sand, fine grained. Brown, v. dense, wet	▽	7.22
5	5.0						6.22
6							
7	AN	–	–	–	Auger to 9.0' (bgs)	Sand pack	
8							
9	9.0					Well Screen	2.22
10	S-3	1.5'/2.0 75%	8, 10, 10, 7	1.7/1.7	SAND, fine grained w/ trace silt. Light gray to gray, medium Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW37 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-MW37

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-3	75%			1.7/1.7	Continued from Sheet 1 dense, wet.		+2.2
12								
13	AN	—	—		—	Auger to 15.0' (bgs)	Sand pack	
14								
15							Well screen	-3.78
16	S-4	—	WOH/12" 1 3		—	SAND, fine grained w/trace silt. Light gray to gray, loose, wet		
17								-5.78
18	AN	—	—		—	Auger to 18.0' (bgs)		-6.2 -6.78
19						End of Boring		
20						TD = 18.0' (bgs)	Well cap	
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-MW37 SHEET 2 OF 2

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-01

SHEET: 1 OF 3

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: PARTLY CLOUDY, 70s/SUNNY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLGIST 2: T.P. VALLI
DATE BEGUN: 4/18/95 DATE COMPLETED: 4/19/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 14.3 msl
TOP OF PVC CASING ELEVATION: 15.92 msl

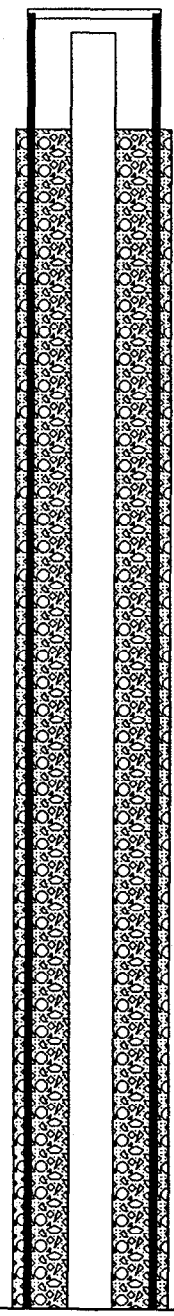
WELL DETAILS (FT)

STICKUP:	2.0
OUTER CASING (6"I.D.):	37.0
LENGTH OF RISER (2"I.D.):	49.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	34.0
THICKNESS OF SEAL:	11.0
THICKNESS OF SAND PACK:	12.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
18:00	4.0									see log 73MW-01B for representative stratigraphy of 0.0-24.5'
17:00	3.0									
16:00	2.0									
15:00	1.0									
14:00	0.0									
13:00	1.0									
12:00	2.0									
11:00	3.0									
10:00	4.0									
9:00	5.0									
8:00	6.0									
7:00	7.0									
6:00	8.0									
5:00	9.0									
4:00	10.0									
3:00	11.0									
2:00	12.0									
1:00	13.0									
0:00	14.0									
1:00	15.0									
2:00	16.0									
3:00	17.0									
4:00	18.0									
5:00	19.0									
6:00	20.0									
7:00	21.0									
8:00	22.0									
9:00	23.0									
10:00	24.0									

DEPTH: 4.0, 3.0, 2.0, 1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-01

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
6:00	20.0									see log 73MW-01B for representative stratigraphy of 20.0-40.0'
7:00	21.0									
8:00	22.0									
9:00	23.0									
10:00	24.0									
11:00	25.0									
12:00	26.0									
13:00	27.0									
14:00	28.0									
15:00	29.0									
16:00	30.0									
17:00	31.0									
18:00	32.0									
19:00	33.0									
20:00	34.0									
21:00	35.0									
22:00	36.0									
23:00	37.0									
24:00	38.0									
25:00	39.0									
26:00	40.0									-26.5'
27:00	41.0		S-1	SS	4 6 8 9	2.0	-	-		SILT: little very fine sand, trace clay, trace coarse sand to fine gravel; gray; -27.5' medium stiff; wet, trace shell chips
28:00	42.0									
29:00	43.0		S-2	SS	8 28 29 30	2.0	-	-		SAND: fine grained, little silt, little coarse sand to fine gravel, few zones with trace clay -29.5' gray-green; medium dense; moist, trace shell chips
30:00	44.0									
31:00	45.0		S-3	SS	13 12 11 14	1.4	-	-		SAND: fine to medium grained, frequent cemented sand nodules; mixed gray, light orange-brown and green-gray; medium dense; wet, little marine life remnants
32:00	46.0									
33:00	47.0									
34:00	48.0									
35:00	49.0									
36:00	50.0									
37:00	51.0									
38:00	52.0									

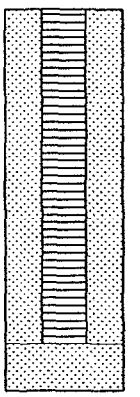
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 730W-01

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
36:00	50.0									SAND: as above	50.0	
37:00	51.0										51.0	
38:00	52.0										52.0	
39:00	53.0										53.0	
40:00	54.0										54.0	
41:00	55.0										55.0	
42:00	56.0										56.0	
43:00	57.0										57.0	
44:00	58.0									End of Boring at 58.0'	58.0	
45:00	59.0										59.0	
46:00	60.0										60.0	
47:00	61.0										61.0	
48:00	62.0										62.0	
49:00	63.0										63.0	
50:00	64.0										64.0	
51:00	65.0										65.0	
52:00	66.0										66.0	
53:00	67.0										67.0	
54:00	68.0										68.0	
55:00	69.0										69.0	
56:00	70.0										70.0	
57:00	71.0										71.0	
58:00	72.0										72.0	
59:00	73.0										73.0	
60:00	74.0										74.0	
61:00	75.0										75.0	
62:00	76.0										76.0	
63:00	77.0										77.0	
64:00	78.0										78.0	
65:00	79.0										79.0	
66:00	80.0										80.0	
67:00	81.0										81.0	
68:00	82.0										82.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-02

SHEET: 1 OF 2

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 80s/PARTLY CLOUDY, 70s
GEOLOGIST 1: E.S. BRENNAN
GEOLGIST 2: T.P. VALLI
DATE BEGUN: 4/20/95 DATE COMPLETED: 4/21/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 7.1 msl
TOP OF PVC CASING ELEVATION: 6.74 msl

WELL DETAILS (FT)

STICKUP:	
OUTER CASING (6"I.D.):	45.25
LENGTH OF RISER (2"I.D.):	51.6
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	41.5
THICKNESS OF SEAL:	6.5
THICKNESS OF SAND PACK:	14.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
11:00	4.0										4.0	
10:00	3.0										3.0	
9:00	2.0										2.0	
8:00	1.0										1.0	
7:00	0.0										0.0	
6:00	1.0									see log 73MW-09 for representative stratigraphy of 0.0-10.0'	1.0	
5:00	2.0										2.0	
4:00	3.0										3.0	
3:00	4.0										4.0	
2:00	5.0										5.0	
1:00	6.0										6.0	
0:00	7.0										7.0	
1:00	8.0										8.0	
2:00	9.0										9.0	
3:00	10.0										10.0	
4:00	11.0		S-1	SS	2 3 4 5	1.5	-	-		CLAY: little silt, very fine sand stringers throughout; gray; soft; damp to near dry, some wood fibers	11.0	
5:00	12.0										12.0	
6:00	13.0										13.0	
7:00	14.0										14.0	
8:00	15.0										15.0	
9:00	16.0		S-2	SS	2 3 2 2	1.9	-	-			16.0	
10:00	17.0										17.0	
11:00	18.0		S-3	SS	2 2 1 2	1.1	-	-		CLAY: trace silt; gray-brown with frequent gray-green inclusions to dark gray-brown; soft to very soft; damp	18.0	
12:00	19.0		S-4	SS	1 1	1.0	-	-			19.0	
13:00	20.0										20.0	
14:00	21.0		S-5	SS	1 1 1 2	2.0	-	-			21.0	
15:00	22.0										22.0	
16:00	23.0		S-6	SS	1 1 2 2	1.5	-	-			23.0	
17:00	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-02

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
13:00	20.0										20.0	
14:00	21.0		S-5	SS	1 1 1 2	2.0	-	-		CLAY: trace silt; dark gray-brown; very soft; damp	21.0	
15:00	22.0										22.0	
16:00	23.0		S-6	SS	1 1 2 2	1.5	-	-			23.0	
17:00	24.0										24.0	
18:00	25.0		S-7	SS	WOH for 1.5' 1	2.0	-	-			25.0	
19:00	26.0										26.0	
20:00	27.0		S-8	SS	WOH 1 1 1	2.0	-	-			27.0	
21:00	28.0										28.0	
22:00	29.0		S-9	SS	WOH for 2'	2.0	-	-		CLAY: trace silt, very fine gray sand incusions; dark gray-brown; very soft; damp to moist	29.0	
23:00	30.0										30.0	
24:00	31.0		S-10	SS	WOH for 2'	2.0	-	-			31.0	
25:00	32.0									-26	32.0	
26:00	33.0										33.0	
27:00	34.0										34.0	
28:00	35.0		S-11	SS	2 2 2 3	2.0	-	-		SAND: very fine grained (though slightly more coarse than above inclusions), trace silt; brown-gray; very loose; wet	35.0	
29:00	36.0										36.0	
30:00	37.0										37.0	
31:00	38.0										38.0	
32:00	39.0										39.0	
33:00	40.0		S-12	SS	3 5 15 9	1.2	-	-			40.0	
34:00	41.0									-37	41.0	
35:00	42.0										42.0	
36:00	43.0										43.0	
37:00	44.0										44.0	
38:00	45.0		S-13	SS	10 25 29 31	1.4	-	-		SILTY SAND: very fine to fine grained, trace clay, few cemented sand nodules; mixed gray and gray-green; very stiff; moist	45.0	
39:00	46.0										46.0	
40:00	47.0		S-14	SS	20 26	0.9	-	-		-40 SAND: very fine to fine grained, little silt; gray; dense; moist to wet	47.0	
41:00	48.0										48.0	
42:00	49.0		S-15	SS	20 33 42 46	1.8	-	-		SAND: very fine grained, trace silt; few green clay lenses 48-58'; light green-gray and gray; medium to very dense; wet, trace shell fragments	49.0	
43:00	50.0										50.0	
44:00	51.0		S-16	SS	5 18 51 73	1.6	-	-			51.0	
45:00	52.0										52.0	

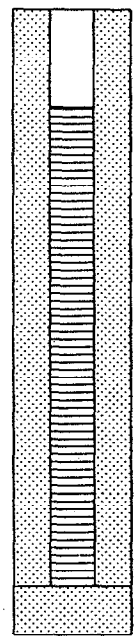
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-02

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
43:00	50.0										50.0	
44:00	51.0									SAND: as above	51.0	
45:00	52.0		S-17	SS	55 89	1.0	-	-			52.0	
46:00	53.0										53.0	
47:00	54.0				18						54.0	
48:00	55.0		S-18	SS	42 50/4"	1.2	-	-			55.0	
49:00	56.0										56.0	
50:00	57.0										57.0	
51:00	58.0									-51.0	58.0	
52:00	59.0									SAND: very fine grained, little silt, frequent cemented sand nodules; green-gray; medium dense; moist to wet, trace shell fragments	59.0	
53:00	60.0				12						60.0	
54:00	61.0		S-19	SS	26 16	1.4	-	-			61.0	
55:00	62.0				16					-54.9	62.0	
56:00	63.0									End of Boring at 63.0'	63.0	
57:00	64.0										64.0	
58:00	65.0										65.0	
59:00	66.0										66.0	
60:00	67.0										67.0	
61:00	68.0										68.0	
62:00	69.0										69.0	
63:00	70.0										70.0	
64:00	71.0										71.0	
65:00	72.0										72.0	
66:00	73.0										73.0	
67:00	74.0										74.0	
68:00	75.0										75.0	
69:00	76.0										76.0	
70:00	77.0										77.0	
71:00	78.0										78.0	
72:00	79.0										79.0	
73:00	80.0										80.0	
74:00	81.0										81.0	
75:00	82.0										82.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-03

SHEET: 1 OF 3

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRUCK-MOUNTED CME 75/TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 80s/CLOUDY, 70s, OCC. LIGHT RAIN
GEOLOGIST 1: R.M. LEWIS/E.S. BRENNAN
GEOLGIST 2: G.R. ALLEN/T.P. VALLI
DATE BEGUN: 4/22/95 DATE COMPLETED: 4/24/95

DEPTH TO WATER: 4.0
GROUND SURFACE ELEVATION: 8.8 msl
TOP OF PVC CASING ELEVATION: 8.28 msl

WELL DETAILS (FT)

STICKUP:	
OUTER CASING (6"I.D.):	55.0
LENGTH OF RISER (2"I.D.):	59.5
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	51.0
THICKNESS OF SEAL:	6.0
THICKNESS OF SAND PACK:	12.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
12:00	4.0										4.0	
11:00	3.0										3.0	
10:00	2.0										2.0	
9:00	1.0										1.0	
8:00	0.0		S-1	SP	-	-	0.4	0.4		CONCRETE:	0.0	
7:00	1.0		S-2	SS	12 20 18 11	1.8	0.4	0.4		SAND: fine to very fine grained, trace silt; brown with dark brown to black staining; medium dense; damp; petroleum odor; (samples 73-AC1-DW03-00/00D/00MS/00MSD)	1.0	
6:00	2.0										2.0	
5:00	3.0		S-3	SS	10 10 12 8	1.8	0.4	0.4		CLAY: with fine to very fine sand; mottled gray and brown; very stiff; damp; (sample 73-AC1-DW03-01)	3.0	
4:00	4.0										4.0	
3:00	5.0		S-4	SS	2 2 18 10	1.8	0.4	0.4		SAND: fine to very fine grained, trace silt; stained black to 4.5', then gray to brown; medium dense to loose; damp, wet at 4.0', trace wood fibers	5.0	
2:00	6.0										6.0	
1:00	7.0		S-5	SS	12 14 18 21	1.0	0.4	0.4			7.0	
0:00	8.0										8.0	
1:00	9.0										9.0	
2:00	10.0		S-6	SS	3 7 10 14	2.0	-	-		SAND: very fine grained, little silt; gray-brown; loose; wet	10.0	
3:00	11.0										11.0	
4:00	12.0									SILTY SAND: very fine grained; brown; medium dense; wet	12.0	
5:00	13.0										13.0	
6:00	14.0									SAND: very fine grained, little to some silt; brown; very loose; wet	14.0	
7:00	15.0		S-7	SS	WOH 1 1 1	2.0	-	-			15.0	
8:00	16.0										16.0	
9:00	17.0									SILTY SAND: very fine grained, trace clay; dark green-gray; very soft; wet to moist	17.0	
10:00	18.0										18.0	
11:00	19.0									CLAY: little to trace silt; dark brown; very soft; damp	19.0	
12:00	20.0										20.0	
13:00	21.0		S-8	SS	1 3 5 6	1.9	-	-		SILT and very fine SAND: trace clay; gray; soft; wet	21.0	
14:00	22.0									CLAY: little silt; dark brown; soft; moist, wood pieces and fibers throughout	22.0	
15:00	23.0		S-9	SS	3 4 5 7	0.8	-	-		Intermixed very fine SANDY SILT and SILTY SAND, little to trace clay; gray-brown and dark brown; soft; moist, frequent wood fibers	23.0	
	24.0										24.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 730W-03

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
12:00	20.0									CLAY: as above	20.0	
	21.0		S-8	SS	1 3 5 6	1.9	-	-		SILT and very fine SAND: trace clay; gray; soft; wet	21.0	
13:00	22.0									CLAY: little silt; dark brown; soft; moist, wood pieces and fibers throughout	22.0	
14:00	23.0		S-9	SS	3 4 5 7	0.8	-	-		Intermixed very fine SANDY SILT and SILTY SAND, little to trace clay; gray-brown and dark brown; soft; moist, frequent wood fibers	23.0	
15:00	24.0										24.0	
16:00	25.0		S-10	SS	5 6 10 10	1.7	-	-		SAND: very fine grained, some to little silt; brown-gray; loose; wet, wood fibers 25-26.0'	25.0	
17:00	26.0										26.0	
18:00	27.0										27.0	
19:00	28.0									SILTY SAND: very fine grained, few trace clay lenses; light to dark gray-green; very loose; wet	28.0	
20:00	29.0										29.0	
21:00	30.0		S-11	SS	2 2 2 2	1.2	-	-			30.0	
22:00	31.0										31.0	
23:00	32.0										32.0	
24:00	33.0										33.0	
25:00	34.0										34.0	
26:00	35.0		S-12	SS	WOH for 1.5' 3	1.5	-	-			35.0	
27:00	36.0										36.0	
28:00	37.0										37.0	
29:00	38.0										38.0	
30:00	39.0									SILT and very fine SAND: trace clay; gray-green; soft; wet, frequent shell chips	39.0	
31:00	40.0		S-13	SS	3 3 4 3	2.0	-	-			40.0	
32:00	41.0										41.0	
33:00	42.0										42.0	
34:00	43.0										43.0	
35:00	44.0									SILTY SAND: very fine grained, trace clay, except bottom 0.2'; gray-green; medium dense; wet to moist, bottom 0.2' wet	44.0	
36:00	45.0		S-14	SS	18 26 21 23	1.2	-	-			45.0	
37:00	46.0										46.0	
38:00	47.0		S-15	SS	23 32 58	1.3	-	-		SAND: very fine grained, little silt, few silty clay inclusions; green-gray; medium dense; moist to wet	47.0	
39:00	48.0									SAND: fine grained, some to little silt, single clay lense at 50.6'; green-gray; medium dense to very dense; wet, moist to wet from 49.5'	48.0	
40:00	49.0										49.0	
41:00	50.0		S-16	SS	23 33 55	1.1	-	-			50.0	
42:00	51.0										51.0	
43:00	52.0									SAND: fine to coarse grained, trace silt,	52.0	

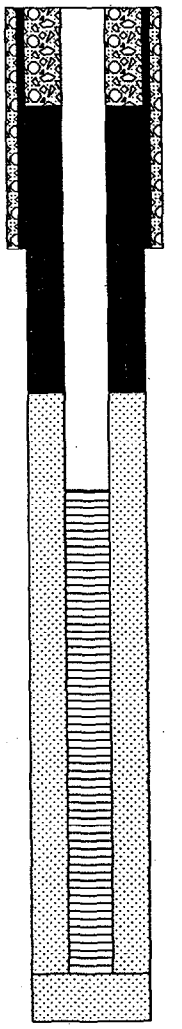
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 730W-03

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	50.0										50.0	
12:00	51.0		S-16	SS	33 55	1.1	-	-		SAND: as above	51.0	
13:00	52.0										52.0	
14:00	53.0									SAND: fine to coarse grained, trace silt, cemented sand nodules; green-gray; medium dense to dense; wet, trace shell chips and fragments	53.0	
15:00	54.0										54.0	
16:00	55.0		S-17	SS	18 16 22 18	1.4	-	-			55.0	
17:00	56.0										56.0	
18:00	57.0										57.0	
19:00	58.0										58.0	
50:00	59.0										59.0	
51:00	60.0										60.0	
52:00	61.0										61.0	
53:00	62.0										62.0	
54:00	63.0										63.0	
55:00	64.0										64.0	
56:00	65.0										65.0	
57:00	66.0										66.0	
58:00	67.0										67.0	
59:00	68.0										68.0	
60:00	69.0										69.0	
61:00	70.0										70.0	
62:00	71.0									End of Boring at 71.0'	71.0	
63:00	72.0										72.0	
64:00	73.0										73.0	
65:00	74.0										74.0	
66:00	75.0										75.0	
67:00	76.0										76.0	
68:00	77.0										77.0	
69:00	78.0										78.0	
70:00	79.0										79.0	
71:00	80.0										80.0	
72:00	81.0										81.0	
73:00	82.0										82.0	



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-04

SHEET: 1 OF 3

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 70s/SUNNY, 60s
GEOLOGIST 1: E.S. BRENNAN/T.P. VALLI
GEOLGIST 2: G.R. ALLEN
DATE BEGUN: 4/25/95 DATE COMPLETED: 4/26/95

DEPTH TO WATER: -
GROUND SURFACE ELEVATION: 3.2 msl
TOP OF PVC CASING ELEVATION: 4.68 msl

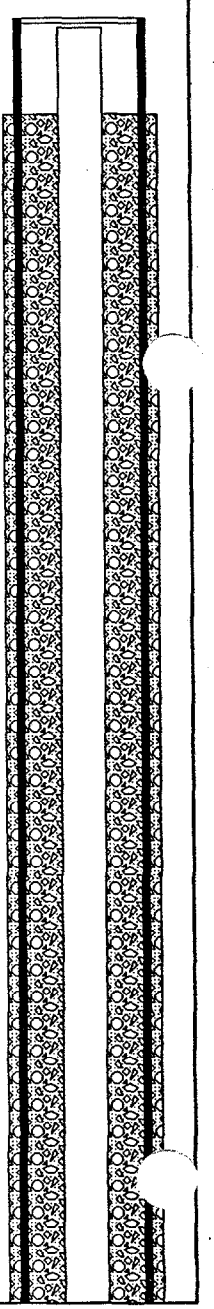
WELL DETAILS (FT)

STICKUP:	
OUTER CASING (6"I.D.):	46.5
LENGTH OF RISER (2"I.D.):	51.8
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	45.0
THICKNESS OF SEAL:	3.0
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
7:00	4.0									see logs 73MW-15 and 73MW-15B for representative stratigraphy of 0.0-46.0'
6:00	3.0									
5:00	2.0									
4:00	1.0									
3:00	0.0									
2:00	1.0									
1:00	2.0									
0:00	3.0									
1:00	4.0									
2:00	5.0									
3:00	6.0									
4:00	7.0									
5:00	8.0									
6:00	9.0									
7:00	10.0									
8:00	11.0									
9:00	12.0									
10:00	13.0									
11:00	14.0									
12:00	15.0									
13:00	16.0									
14:00	17.0									
15:00	18.0									
16:00	19.0									
17:00	20.0									
18:00	21.0									
19:00	22.0									
20:00	23.0									
21:00	24.0									

DEPTH: 4.0, 3.0, 2.0, 1.0, 0.0, 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0, 23.0, 24.0

WELL INSTALLATION



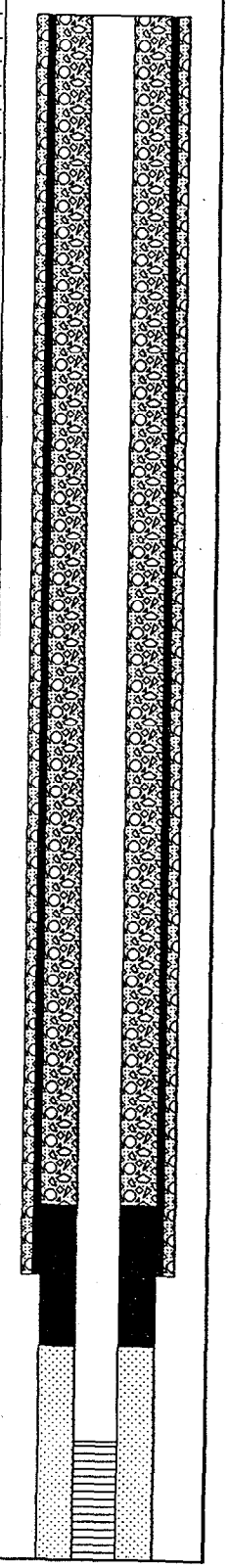
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-04

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
17:00	20.0									see log 73MW-158 for representative stratigraphy of 20.0-46.0'
18:00	21.0									
19:00	22.0									
20:00	23.0									
21:00	24.0									
22:00	25.0									
23:00	26.0									
24:00	27.0									
25:00	28.0									
26:00	29.0									
27:00	30.0									
28:00	31.0									
29:00	32.0									
30:00	33.0									
31:00	34.0									
32:00	35.0									
33:00	36.0									
34:00	37.0									
35:00	38.0									
36:00	39.0									
37:00	40.0									
38:00	41.0									
39:00	42.0									
40:00	43.0									
41:00	44.0									
42:00	45.0									
43:00	46.0									
44:00	47.0		S-1	SS	14 18 30 47	1.6	-	-		SAND: very fine grained, trace silt, thin green clay lense in S4-S6' spoon; gray to light green-gray; medium to very dense; wet
45:00	48.0									
46:00	49.0		S-2	SS	31 42 50/2"	1.2	-	-		
47:00	50.0									
48:00	51.0									
49:00	52.0									

DEPTH	WELL INSTALLATION
20.0	
21.0	
22.0	
23.0	
24.0	
25.0	
26.0	
27.0	
28.0	
29.0	
30.0	
31.0	
32.0	
33.0	
34.0	
35.0	
36.0	
37.0	
38.0	
39.0	
40.0	
41.0	
42.0	
43.0	
44.0	
45.0	
46.0	
47.0	
48.0	
49.0	
50.0	
51.0	
52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-04

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
97:00	50.0									SAND: very fine grained, trace silt, thin green clay lense in 54-56' spoon; gray to light green-gray; medium to very dense; wet	50.0	
96:00	51.0										51.0	
95:00	52.0										52.0	
94:00	53.0		S-3	SS	24 30 47 50/2"	1.2	-	-			53.0	
93:00	54.0										54.0	
92:00	55.0		S-4	SS	19 20 34 37	1.4	-	-		.52	55.0	
91:00	56.0									SAND: very fine grained, trace silt, trace clay, few green clay lenses; light green-gray; dense to very dense; moist, trace shell fragments	56.0	
90:00	57.0		S-5	SS		1.5	-	-			57.0	
89:00	58.0									.55 SAND: medium to coarse grained; gray; medium dense; wet	58.0	
88:00	59.0										59.0	
87:00	60.0		S-6	SS	37 52 50/2"	0.9	-	-		SAND: very fine to fine grained, trace silt, trace fine to medium sand, frequent cemented sand nodules; light green-gray; medium dense; moist, trace shell fragments	60.0	
86:00	61.0									End of Boring at 61.0'	61.0	
85:00	62.0										62.0	
84:00	63.0										63.0	
83:00	64.0										64.0	
82:00	65.0										65.0	
81:00	66.0										66.0	
80:00	67.0										67.0	
79:00	68.0										68.0	
78:00	69.0										69.0	
77:00	70.0										70.0	
76:00	71.0										71.0	
75:00	72.0										72.0	
74:00	73.0										73.0	
73:00	74.0										74.0	
72:00	75.0										75.0	
71:00	76.0										76.0	
70:00	77.0										77.0	
69:00	78.0										78.0	
68:00	79.0										79.0	
67:00	80.0										80.0	
66:00	81.0										81.0	
65:00	82.0										82.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 73DW-05

SHEET: 1 OF 3

PROJECT NUMBER: 62470-312
PROJECT NAME: SITE 73 - REMEDIAL INVESTIGATION
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARRATT WOLFF, INC.
RIG TYPE & NUMBER: TRACK-MOUNTED CME 850
DRILLING METHOD: HOLLOW STEM AUGERS/MUD ROTARY
WEATHER: SUNNY, 70s/CLOUDY, 60s
GEOLOGIST 1: E.S. BRENNAN
GEOLGIST 2: T.P. VALLI
DATE BEGUN: 4/8/95 DATE COMPLETED: 4/11/95

DEPTH TO WATER: 0.0
GROUND SURFACE ELEVATION: 5.8 msl
TOP OF PVC CASING ELEVATION: 7.32 msl

WELL DETAILS (FT)

STICKUP:	2.0
OUTER CASING (6"I.D.):	36.5
LENGTH OF RISER (2"I.D.):	45.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	33.5
THICKNESS OF SEAL:	7.5
THICKNESS OF SAND PACK:	13.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
9:00	4.0										4.0	
8:00	3.0										3.0	
7:00	2.0										2.0	
6:00	1.0										1.0	
5:00	0.0		S-1	SS	WOH for 1.5' 2	1.4	0.2	0.2		SILT: dark brown; very loose; wet	0.0	
4:00	1.0									SILT and very fine SAND: dark brown; very loose; wet	1.0	
3:00	2.0										2.0	
2:00	3.0									SILTY SAND: very fine grained; medium to light brown; loose; wet	3.0	
1:00	4.0										4.0	
0:00	5.0		S-2	SS	2 6 3 2	1.2	0.1	0.1			5.0	
1:00	6.0									-7.1	6.0	
2:00	7.0									CLAY: trace silt; brown; soft; moist	7.0	
3:00	8.0									-8.0	8.0	
4:00	9.0									SAND: very fine grained, trace silt; gray; loose; wet	9.0	
5:00	10.0		S-3	SS	4 5 6 5	1.6	0.1	0.1			10.0	
6:00	11.0										11.0	
7:00	12.0									-13.0	12.0	
8:00	13.0									SAND: as above, with trace clay; very loose to loose	13.0	
9:00	14.0										14.0	
10:00	15.0		S-4	SS	3 2 2 2	1.6	0.2	0.2			15.0	
11:00	16.0										16.0	
12:00	17.0										17.0	
13:00	18.0		S-5	SS	3 5 5 5	1.8	0.2	0.2			18.0	
14:00	19.0										19.0	
15:00	20.0									-15.0	20.0	
16:00	21.0									SAND: very fine to fine grained, light gray; very loose, wet	21.0	
17:00	22.0		S-6	SS	2 2 2 2	1.7	0.2	0.2			22.0	
18:00	23.0										23.0	
	24.0										24.0	

BAKER

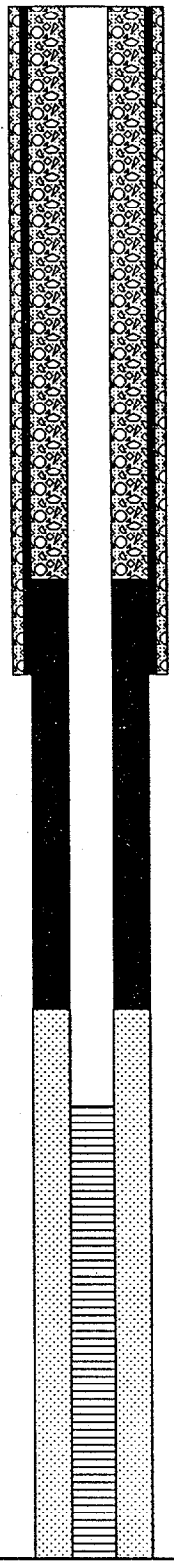
WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 730W-05

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	20.0										20.0
15:00	21.0									SAND: as above	21.0
16:00	22.0		S-6	SS	2 2 2 2	1.7	0.2	0.2			22.0
17:00	23.0										23.0
18:00	24.0										24.0
19:00	25.0		S-7	SS	1 1 1 2	1.9	0.2	0.2			25.0
20:00	26.0										26.0
21:00	27.0		S-8	SS	1 1 1 1	1.9	0.1	0.1		-21.0 SAND: Fine grained mixed with trace to little very fine sand; light gray; very loose to loose; wet	27.0
22:00	28.0										28.0
23:00	29.0										29.0
24:00	30.0										30.0
25:00	31.0		S-9	SS	3 5 7 7	1.8	0.2	0.2		-25.5	31.0
26:00	32.0									-26 SAND: very fine grained, trace clay, few clay lenses; light gray; loose; moist trace shell chips	32.0
27:00	33.0		S-10	SS	5 6 7 6	0.3	-	-			33.0
28:00	34.0									-28 SAND: very fine grained, trace clay, trace silt; light gray; loose; moist	34.0
29:00	35.0		S-11	SS	6 7 6 6	1.3	-	-		SILTY SAND: very fine grained, trace clay; light green-gray; medium stiff; wet to moist	35.0
30:00	36.0									-36.0	36.0
31:00	37.0		S-12	SS	5 6 9 11	2.0	-	-		SILTY SAND: very fine grained, trace clay, occasional cemented sand nodules; green-gray; medium stiff to stiff; moist, occasional shell chips	37.0
32:00	38.0									-32.0	38.0
33:00	39.0		S-13	SS	12 22 38 31	2.0	-	-		SILTY SAND: very fine grained, trace clay, frequent cemented sand nodules, some coarse grained sand in upper 0.5'; green-gray; medium dense; damp, frequent shell chips	39.0
34:00	40.0										40.0
35:00	41.0										41.0
36:00	42.0										42.0
37:00	43.0										43.0
38:00	44.0										44.0
39:00	45.0										45.0
40:00	46.0										46.0
41:00	47.0										47.0
42:00	48.0										48.0
43:00	49.0										49.0
44:00	50.0										50.0
45:00	51.0										51.0
46:00	52.0										52.0

WELL INSTALLATION



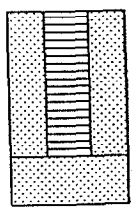
BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 730W-05

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
45:00	50.0									SILTY SAND: as above	50.0	
46:00	51.0										51.0	
47:00	52.0										52.0	
48:00	53.0										53.0	
49:00	54.0									End of Boring at 54.0'	54.0	
50:00	55.0										55.0	
51:00	56.0										56.0	
52:00	57.0										57.0	
53:00	58.0										58.0	
54:00	59.0										59.0	
55:00	60.0										60.0	
56:00	61.0										61.0	
57:00	62.0										62.0	
58:00	63.0										63.0	
59:00	64.0										64.0	
60:00	65.0										65.0	
61:00	66.0										66.0	
62:00	67.0										67.0	
63:00	68.0										68.0	
64:00	69.0										69.0	
65:00	70.0										70.0	
66:00	71.0										71.0	
67:00	72.0										72.0	
68:00	73.0										73.0	
69:00	74.0										74.0	
70:00	75.0										75.0	
71:00	76.0										76.0	
72:00	77.0										77.0	
73:00	78.0										78.0	
74:00	79.0										79.0	
75:00	80.0										80.0	
76:00	81.0										81.0	
	82.0										82.0	



Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW06
COORDINATES: EAST: 2489286.90600 NORTH: 308723.3520
ELEVATION: SURFACE: 9.6 TOP OF PVC CASING: 11.85

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	6"/8"	8¼"	
LENGTH	2'	55'/13'	5'	
TYPE	Std.	Steel	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
2-20-96	0-13	overcast, rain cool (50's)	8.0	
2-21-96	13-40	partly cloudy, mild (60's)		
2-22-96	40-55	partly cloudy, mild (70's)		
2-26-96	55-70	clear, warm (70's)		

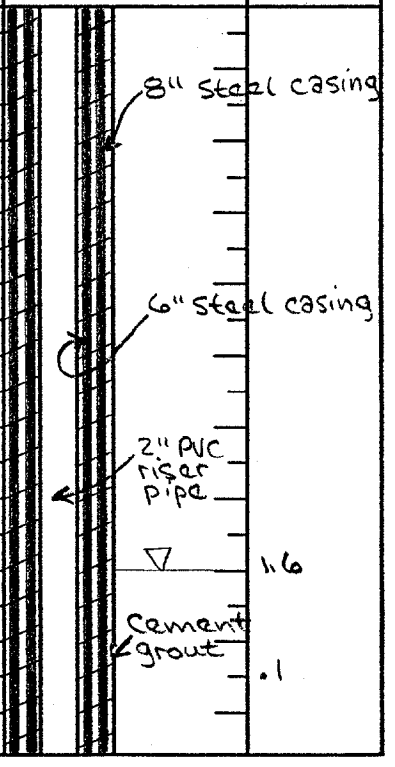
REMARKS: Type III monitoring well set 2-26-96. HNu background range is .2 ppm to 2.4 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.25	-60.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-60.0	-70.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description
.5	OO	–	–	1.3/1.3	SAND, fine grained, trace silt / roots
1 1.0	AN	–	–	–	
2	S-1	1.0'/2.0 50%	2 3 3 2	1.3/1.3	
3 3.0					
4	S-2	1.0'/2.0 50%	2 2 2 3	1.3/1.3	SAND, fine grained w/trace silt. Gray to dark brown, loose to medium dense, damp (at top) to wet.
5 5.0					
6	S-3	1.7'/2.0 85%	7 9 9 13	1.3/1.3	
7 7.0	03				
8	S-4	1.0'/2.0	6 7 6 8	1.3/1.3	
9 9.0					
10	S-5	1.0'/2.0 50%	6 3 3 2	–	

Match to Sheet 2



Well Installation Detail | Elevation (ft. MSL)

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW06 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW06

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-5	50%			–	Continued from Sheet 1	8" steel casing	
11.0								
12	S-6	1.5'/2.0	4 4		–	CLAY w/trace Silt and trace Sand, fine grained. Greenish gray, medium stiff damp		
13		75%	4 4					-3.4
13.0								
14	N							
15								-5.4
15.0								
16	S-7	2.0'/2.0	WOH/24"		.2/.2	CLAY w/trace to little Sand, fine grained, little Silt Olive green, soft, damp.	6" steel casing	
17		100%						
17.0								
18	N							
19							cement grout	
20								-10.4
20.0								
21	S-8	1.8'/2.0	1 WOH/6"		.2/.2	CLAY w/trace Silt Olive green, very soft, damp		
22		90%	1 2				2" PVC riser pipe	
22.0								
23	N							
24								
25								-15.4
25.0								
26	S-9	2.0'/2.0	WOH/12"		.2/.2	CLAY w/trace Silt Dark greenish gray, very soft, damp		
27		100%	1 2					
27.0								
28	N							
29								
30								
30.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerm.
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW06 SHEET 2OF

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW06

SAMPLE TYPE
S = Split Spoon, T = Shelby Tube, R = Air Rotary, D = Denison, N = No Sample
A = Auger, W = Wash, C = Core, P = Piston

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-10	2.0'/2.0 100%	WOH/24"		.2/.2	Continued from Sheet 2		
32 (32.0)								-22.4
33	S-11	2.0'/2.0 100%	WOH/6" 4 15		.2/.2	SAND, fine to medium grained w/trace silt and trace clay lenses. Greenish gray, loose to med. dense, moist/wet	6" steel casing	
34 (34.0)								
35	S-12	1.0' 50%	3 3 4 3		.2/.2			
36 (36.0)								-26.4
37	S-13	1.3' 65%	4 6 6 7		.2/.2			
38 (38.0)								
39	S-14	1.0'/2.0 50%	5 6 6 6		.2/.2	SAND, fine grained w/trace silt Grayish green, medium dense, wet.	2" PVC riser pipe	
40 (40.0)								
41	S-15	1.3'/2.0 60%	3 3 5 6		.2/.2			
42 (42.0)								-32.4
43	S-16	1.5'/2.0 75%	5 5 5 8		.2/.2	SAND, fine to medium grained, trace silt. Greenish gray, wet		-33.6
44 (44.0)						CEMENTED SANDSTONE w/ sand, fine grained, trace silt		-34.4
45	S-17	2.0'/2.0 100%	12 32 46 46		.2/.2	SAND, fine grained w/trace silt. Grayish green to gray, very dense, wet	Cement grout	
46 (46.0)								
47	S-18	1.0'/2.0 50%	19 53 6"		.2/.2			
48 (48.0)								-38.4
49	S-19	1.0'/2.0 50%	28 56		.2/.2	SAND, fine grained w/trace silt and trace shell		
50 (50.0)								-40.4

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW06 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW06

SAMPLE TYPE
S = Split Spoon; A = Auger; T = Shelby Tube; W = Wash; R = Air Rotary; C = Core; D = Denison; P = Piston; N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	S-20	1.3'/2.0 65%	33 49 75/3"		.2/.2	Continued from Sheet 3 material. Grayish green to gray and white, very dense, wet	6" Steel casing	
52 52.0								
53	S-21	1.3'/2.0 65%	30 33 54		.2/.2		Bentonite Slurry	
54 54.0								-45.4
55								
56							2" PVC riser pipe	
57	N							
58								-48.
59							Sand pack	
60 60.0								-50.4
61	S-22	1.0'/2.0 50%	23 21 24 18		2.0/2.0	SAND, fine grained trace silt, trace shell fragments (some sand cemented in clumps). Greenish gray, dense, wet.		
62 62.0								
63							Well screen	
64	N							
65 65.0								-55.4
66	S-23	1.5'/2.0 75%	12 13 22 25		2.4/2.4	SAND, fine grained little silt, trace shell fragments Dark greenish gray, dense, wet		
67 67.0								
68 68.0	N							-58.4
69	S-24	1.7'/2.0 85%	12 14 21 27		2.4/2.4	SAND, fine grained little silt, trace shell fragments	Well plug	-59.9
70 70.0								-60.4

End of Boring. TD = 70.0' (bgs)

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerm
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW06 SHEET 4 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
BORING NO.: 73-DW07
COORDINATES: EAST: 2488769.8982 NORTH: 309572.9697
ELEVATION: SURFACE: 4.1 TOP OF PVC CASING: 6.85

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6" / 8"	8 1/4"		2-21-96	0-11	partly cloudy, mild (60's)	1.0	
LENGTH	2'	35' / 10'	5'		3-4-96	11-37	clear, cool (50's)		
TYPE	Std.	Steel	HSA		3-10-96	37-51	clear, cold (30's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-10-96. HNu background range is .8ppm to 2.3ppm

SAMPLE TYPE
S = Split Spoon, A = Auger, T = Shelby Tube, W = Wash, R = Air Rotary, C = Core, D = Denison, P = Piston, N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.75	-41.0
well screen	2"	Schedule 40 PVC pipe .01 slot	-41.0	-51.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	OO	—	—	—	SAND, fine grained, little silt, tree roots		3.6
1 1.0	AN	—	—	—		▽	3.1
2	S-1	1.0' / 2.0 50%	2 2 3 6	2.3 / 2.3	SAND, fine grained w/ little silt. Dark brown to black to light brown, loose to medium dense, wet	8" steel casing	
3 3.0							
4	S-2	1.5' / 2.0 75%	4 6 9 14	2.1 / 2.1		6" steel casing	
5 5.0							
6	S-3	1.7' / 2.0 85%	8 11 7 7	2.0 / 2.0		2" PVC riser pipe	
7 7.0							
8	S-4	1.7' / 2.0 85%	8 7 6 9	2.0 / 2.0			
9 9.0							-4.9
10	S-5	1.0' / 2.0 50%	5 7 11 5	2.0 / 2.0	CLAY, trace sand, fine grained, moist		-5.4
					SILT, trace clay, dark brown, dry		-5.9
					Match to Sheet 2	Cement grout	

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW07 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW07

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11 11.0	S-5	50%			2.0/2.0	Continued from Sheet 1		
12								
13	N							
14								
15 15.0								-10.9
16	S-6	1.5'/2.0 75%	2 1 1 1		1.0/1.0	SAND, fine grained w/trace silt. Gray to light gray, very loose, wet	6" steel casing	
17 17.0								
18	N							
19								
20 20.0								-15.9
21	S-7	1.2'/2.0 60%	4 3 2 2		.9/.9	SAND, fine grained w/trace silt. Gray to light gray to greenish gray, loose, wet	Cement grout	
22 22.0								
23	N							
24							2" PVC risers pipe	
25 25.0								-20.9
26	S-8	1.0'/2.0 50%	WOH/24"		.9/.9	SAND, fine grained w/trace silt. Gray to light gray, very loose, wet.		
27 27.0								
28	N							
29								
30 30.0								-25.9

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW07 SHEET 2 OF 4

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW07

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
						Continued from Sheet 2
31	S-9	1.0'/2.0 50%	WOH/24"		.9/.9	SAND, fine to medium grained w/trace silt. Greenish gray, very loose, wet.
32						
32.0						
33	N					
34						
35						
35.0						
36	S-10	1.0'/2.0 50%	1 4 13 16		.9/.9	SAND, fine to medium grained w/trace silt, trace shell mat., trace cemented sandstone. Greenish gray, med. dense, damp
37						
37.0						
38	N					
39						
39.0						
40	S-11	1.0'/2.0 50%	19 17 27 27		-	SAND, fine to medium grained w/trace silt. Light brown to gray, dense, wet.
41						
41.0						
42	N					
43						
44						
44.0						
45	S-12	1.0'/2.0 50%	20 18 19 38		-	SAND, fine to medium grained w/trace silt and trace cemented sandstone. Light brown to gray, dense, wet
46						
46.0						
47	N					
48						
49						
49.0						
50	S-13	1.0'/2.0	26 37		-	SAND, fine to medium grained w/trace silt

Well Installation Detail: 6" Steel casing; Cement grout; Bentonite Slurry; 2" PVC riser pipe; Sand pack; Well Screen

Elevation (ft. MSL): -27.9; -30.9; -32.9; -34.9; -36.9; -39.9; -44.9

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW07 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW07

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	51.0 S-13	50%	35 44		-	Continued from Sheet 3 trace cemented sandstone	Sand pack	-46.4 -46.9
52						End of Boring	Well screen	
53						TD = 51.0' (bgs)	Well plug	
54								
55								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW07 SHEET 4 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW08
COORDINATES: EAST: 2488699.4145 NORTH: 310462.1996
ELEVATION: SURFACE: 11.7 TOP OF PVC CASING: 14.33

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6"/8"	8¼"		2-21-96	0-13	Partly cloudy, mild (60's)	3.5	
LENGTH	2'	38'/13'	5'		2-27-96	13-40	clear, warm, (80's)		
TYPE	Std.	Steel	HSA		3-9-96	40-56	clear, cold (30's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-9-96. HNu background range .2 ppm to 1.4 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.63	-46.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-46.0	-56.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description
-.5	OO	—	—	—	
1 1.0	AN	—	—	—	
2	S-1	2.0'/2.0	WOH/3	1.3/1.4	SAND, fine grained w/ trace silt, trace rooted material. Gray, very loose, damp
3 3.0	01	100%	WOH/3		SILT w/ trace fine grained sand
4	S-2	1.7'/2.0	2/3	1.3/1.3	
5 5.0		85%	4/5		
6					SAND, fine grained w/ trace silt. Light gray, loose to medium dense, wet
7	AN	—	—	—	
8					
9 9.0					
10	S-3	1.7'/2.0	4/7	1.4/1.4	
		85%	4/1		Match to Sheet 2

Well Installation Detail: 8" steel casing; 6" steel casing; 2" PVC riser pipe; Cement grout

Elevation (ft. MSL): 9.0; 8.7; 8.2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW08 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW08

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11 / 11.0	S-3	85%			1.4 / 1.4	Continued from Sheet 1	8" steel casing	
12	AN	1.5' / 2.0	1 1 1 1		1.3 / 1.3			-.3
13 / 13.0		75%				CLAY / SILTY CLAY w/trace sand, fine grained. Wood splinters (at 17.0' (bgs) only. Dark brownish gray to greenish gray to dark greenish gray, soft to very soft damp to moist.		-1.3
14	N	-	-		-		6" steel casing	
15 / 15.0								
16	S-4	1.2' / 2.0	WOH / 24"		.2 / .2			
17 / 17.0		60%						
18								
19	N	-	-		-		cement grout	
20 / 20.0								-8.5
21	S-5	1.2' / 2.0	2 3 2 2		.2 / .2	SAND, fine grained w/trace silt. Dark greenish gray, loose, wet		
22 / 22.0		60%					2" PVC riser pipe	
23								
24	N	-	-		-			
25 / 25.0								-13.3
26	S-6	.7 / 2.0	2 2 2 2		.2 / .2	SAND, fine grained w/trace silt. Dark greenish gray, loose, wet		
27 / 27.0		35%						
28								
29	N	-	-		-			
30 / 30.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerm...
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW08 SHEET 2 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW08

SAMPLE TYPE
S = Split Spoon; A = Auger; T = Shelby Tube; W = Wash; R = Air Rotary; C = Core; D = Denison; P = Piston; N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-7	1.2'/2.0 60%	2 2 1 1		.2/.2	Continued from Sheet 2	6" steel casing; cement grout	
32 32.0								-20.3
33	S-8	.6'/2.0 30%	WOH/24"		.2/.2	SAND, fine to medium grained w/trace silt. Green to greenish gray, very loose, wet		-21.3
34 34.0								
35	S-9	2.0'/2.0 100%	WOH/24"		.2/.2		Bentonite Slurry	
36 36.0								
37	S-10	2.0'/2.0 100%	2 3 6 7		.2/.2			
38 38.0								-26.0
39	S-11	1.8'/2.0 90%	11 12 14 12		.2/.2	CEMENTED SANDSTONE nodules w/shell fragments/ shell material w/little sand, fine grained and trace silt. Light brown/brown white, med. dense/loose, wet		-26.3
40 40.0								-28.3
41	S-12	1.0'/2.0 50%	20 32 39 47		1.3/1.3		2" PVC riser pipe	
42 42.0								
43	N	—	—		—	SAND, fine to medium grained w/trace coarse grains, trace silt, trace cemented sandstone nodules trace shell fragments. Light brown to gray, dense to very dense, wet		-31.3
44 44.0								
45	S-13	1.0'/2.0 50%	18 28 27 31		1.3/1.3		Sand pack	
46 46.0								-34.3
47	N	—	—		—		Well Screen	
48								
49 49.0								-37.3
50	S-14	NR	20 50/4		—	NO RECOVERY		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW08 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW08

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	S1.0 S-14	NR			-	Continued from Sheet 3		-39.3
52							sand pack	
53		N	-	-	-			
54	S4.0						well screen	-42.3
55	S-15	1.0'/2.0	38 39		-	SAND fine to coarse grained w/trace silt trace shell fragments, very dense, wet		
56	S6.0	50%	46 45					-43.8 -44.3
57						End of Boring TD = 56.0' (bgs)	well cap	
58								
59								
60								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerm
DRILLER: D. Stratton / B. Rice BORING NO.: 73-DW08 SHEET 4 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW09
COORDINATES: EAST: 2488582.2078 NORTH: 311074.6269
ELEVATION: SURFACE: 9.9 TOP OF PVC CASING: 12.57

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6" / 8"	8 1/4		2-22-96	0-19	Partly cloudy, mild (70's)	3.5	
LENGTH	2'	45' / 18'	5'		3-5-96	19-52	Clear, mild (70's)		
TYPE	Std.	Steel	HSA		3-8-96	52-61	Partly cloudy, cold (40's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-8-96. HNu background range 1.0 ppm to 3.0 ppm.

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.67	-51.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-51.0	-61.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	OO	-	-	-			9.4
1 1.0	AN	-	-	-		8" steel casing	8.9
2	S-1	1.5' / 2.0	2 1 1 1	1.5 / 1.5		6" steel casing	
3 3.0	O1	75%					
4	S-2	.5' / 2.0	2 2 3 4	1.6 / 1.6	SAND, fine grained w/trace silt. Light gray to light brown, loose to medium dense, damp to wet	▽	6.4
5 5.0		25%					
6	S-3	1.0' / 2.0	5 3 3 4	1.6 / 1.6		cement grout	
7 7.0		50%				2" PVC riser pipe	
8	S-4	1.7' / 2.0	3 5 6 6	1.7 / 1.7			
9 9.0		85%					
10	S-5	1.7' / 2.0	9 11 14 16	1.7 / 1.7			
		85%			Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW09 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW09

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-5	85%			1.7/1.7	Continued from Sheet 1		
11.0								
12	S-6	1.7'/2.0	5 11 13 14		1.7/1.7	SAND, fine grained w/trace silt. Light gray to light brown, loose to medium dense, wet	8" steel casing	
13		85%						
13.0								
14	S-7	1.0'/2.0	12 6 7 10		1.6/1.6		6" steel casing	
15		50%						
15.0								
16	S-8	1.5'/2.0	14 7 10 20		1.6/1.6			
17		75%						
17.0								
18	S-9	1.5'/2.0	5 2 2 1		1.0/1.0			-8.1
19		75%						-9.1
19.0								
20	N	-	-		-			-10.1
20.0								
21	S-10	2.0'/2.0	1 1 2 2		2.5/2.5			
22		100%					2" PVC riser pipe	
22.0								
23	N	-	-		-	CLAY w/trace silt Dark greenish gray, soft to medium stiff, damp to dry		
24								
25							Cement grout	-15.1
25.0								
26	S-11	2.0'/2.0	2 2 3 4		2.4/2.4			
27		100%						
27.0								
28	N	-	-		-			
29								
30								-20.1
30.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW09 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW09

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-12	1.5'/2.0 75%	4 6 5 4		3.0/3.0	Continued from Sheet 2		
32 32.0								
33	N	–	–		–	SAND, fine grained w/trace silt. Greenish gray, loose to medium dense, wet.	6" steel casing	
34								
35 35.0								-25.1
36	S-13	1.0'/2.0 50%	5 3 3 3		–		cement grout	
37 37.0								
38	N	–	–		–		2" PVC riser pipe	
39								
40 40.0								-30.1
41	S-14	1.5'/2.0 75%	4 3 2 2		–			-31.1
42 42.0								
43	N	–	–		–	SAND, fine grained w/trace silt and trace shell fragments. Greenish gray, loose to very loose, wet	Bentonite Slurry	
44								
45 45.0								-35.1
46	S-15	1.0'/2.0 50%	WOH/18" 2		–			
47 47.0								
48	N	–	–		–			-38.1
49							Sand pack	
50 50.0								-40.1

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW09 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW09

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 3		
51	S-16	1.0'/2.0 50%	5 7 7 9		–	SAND, fine to coarse grained w/trace silt and trace shell fragments. Gray, medium dense, wet.	Sand pack	-41.1
52 (52.0)								
53	N	–	–		–			
54								
55 (55.0)								-45.1
56	S-17	1.0'/2.0 50%	8 7 8 8		1.8/1.8	SAND, fine to coarse grained w/ trace silt. Light brown medium dense, wet	Well Screen	
57 (52.0)								
58	N	–	–		–			
59 (59.0)								-49.1
60	S-18	.5'/2.0 25%	3 2 2 2		1.8/1.8	SILT/SAND, fine grained. Green, loose, wet		-50.6
61 (61.0)								-51.1
62						End of Boring TD = 61.0' (bgs)	Well cap	
63								
64								
65								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW09 SHEET 4 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW10
COORDINATES: EAST: 2499180.4089 NORTH: 310996.6884
ELEVATION: SURFACE: 10.6 TOP OF PVC CASING: 13.29

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6"	8 1/4		2-20-96	0-42	overcast, rain (50's)	6.0'	
LENGTH	2'	42'	5'		3-7-96	42-61	rain, mild (50's)		
TYPE	Std.	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-7-96. KNu not available due to weather cond.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.69	-51.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-51.0	-61.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	00			-	SAND, fine grained, trace silt / organics		10.1
1 1.0	AN						9.6
2	S-1	1.7'/2.0 85%	5 3 2 3	-		6" steel casing	
3 3.0							
4	S-2	1.7'/2.0 85%	3 4 4 5	-	SAND, fine grained w/ trace silt. Light brown to gray, loose to medium dense, moist to wet.	cement grout	
5 5.0	02						
6	S-3	1.0'/2.0 50%	3 1 1 4	-		▽	4.6
7 7.0							
8	S-4	1.0'/2.0 50%	7 7 7 8	-		2" PVC riser pipe	
9 9.0							
10 10.0	AN						
	S-5	75%		-	Match to Sheet 2		.6

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW10 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW10

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-5	1.5'/2.0 75%	7 5 9 10		-	Continued from Sheet 1		
12 12.0								
13	AN	-	-		-	SAND, fine grained w/trace silt. Light brown to gray, loose to medium dense, moist to wet.	6" steel casing	
14								
15 15.0								-4.4
16	S-6	2.0'/2.0 100%	6 5 - 1		-		cement grout	
17 17.0								
18	AN	-	-		-			
19								
20 20.0								-9.9
21	S-7	1.0'/2.0 50%	6 5 9 11		-	SILT w/sand, fine grained. Gray, medium dense, wet	2" PVC riser pipe	
22 22.0								
23	AN	-	-		-			
24								
25 25.0								-14.4
26	S-8	1.5'/2.0 75%	WOH/18" 6		-	SAND, fine grained w/trace silt. Light gray, loose, wet		
27 27.0								
28	AN	-	-		-			
29								
30 30.0								-19.4

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW10 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW10

SAMPLE TYPE
S = Split Spoon; A = Auger; T = Shelby Tube; W = Wash; R = Air Rotary; C = Core; D = Denison; P = Piston; N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
31	S-9	1.5'/2.0 75%	9 3 3 5		-	Continued from Sheet 2
32 320						
33	AN	-	-		-	SAND, fine to medium grained w/trace silt. Light brown, loose, wet.
34						
35 35.0						
36	S-10	1.5'/2.0 75%	5 2 3 7		-	
37 320						
38	AN	-	-		-	
39						
40 40.0						
41	S-11	1.0'/2.0 50%	10 22 45 56		-	CEMENTED SANDSTONE w/sand, fine grained, trace silt. Greenish gray, very dense, dry
42 420						
43	N	-	-		-	
44 44.0						
45	S-12	1.5'/2.0 75%	12 22 28 42		-	SAND, fine to medium grained, trace silt cemented sandstone nodules, trace shell fragments. Greenish gray, very dense, wet
46 46.0						
47	N	-	-		-	
48						
49 49.0						
50	S-13	.8'/2.0	44		-	

Well Installation Detail: 6" steel casing; cement grout; Bentonite slurry; 2" PVC riser pipe; Sand pack

Elevation (ft. MSL): -24.4; -29.9; -31.4; -33.4; -37.4; -38.8

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW10 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW10

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51 / 51.0	S-13	40%	5/4		-	Continued from Sheet 3 SAND, fine to medium grained, trace silt, trace shell fragments, Greenish gray, very dense, wet.	2" PVC riser pipe; Sand pack	-40.4
52								
53	N	–	–		–			
54 / 54.0								-43.4
55	S-14	1.0'/2.0 50%	20 21 22 20		-	SAND, fine to medium grained, trace silt, trace shell fragments, Greenish gray, dense, wet	Well Screen	
56 / 56.0								
57								
58	N	–	–		–			
59 / 59.0								-48.4
60	S-15	1.0'/2.0 50%	26 32 31 31		-	SAND, fine to medium grained, trace to little silt, trace shell fragments, Greenish gray, dense, wet		-49.9
61 / 61.0								-50.4
62						End of Boring TD = 61.0' (695)	Well Cap	
63								
64								
65								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW10 SHEET 4 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW11
COORDINATES: EAST: 2489523.8470 NORTH: 309971.2930
ELEVATION: SURFACE: 14.2 TOP OF PVC CASING: 16.15

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6" / 8"	8¼"		3-6-96	0 - 15	overcast mild (60's)		
LENGTH	2'	39'/16'	5'		3-7-96	15 - 40	overcast, cool, (60's)		
TYPE	Std.		HSA		3-8-96	40 - 57	partly cloudy (40's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-8-96. HNu background range .4 ppm to .5 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+1.95	-45.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-45.0	-55.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1						8" steel casing	
2							
3							
4	AN			-	Auger to 15.0' (bgs)	6" steel casing	
5							
6							
7						cement grout	
8							
9						2" PVC riser pipe	
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rica BORING NO.: 73-DW11 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
BORING NO.: 73-DW11

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12	AN			-		Auger to 15.0' (bgs)	8" steel casing	
13								
14								
15								.8
16	N				.4			+1.8
17					.4		6" steel casing	
18								
19								
20								
21						Drill to 40.0' (bgs)	cement grout	
22								
23								
24							2" PVC riser pipe	
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff
DRILLER: B. Rice
BAKER REP.: J. Zimmerman
BORING NO.: 73-DW11
SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW11

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31						Continued from Sheet 2		
32							6" steel casing	
33								
34							cement grout	
35	N				.4/.4	Drill to 40.0' (bgs)		
36								-21.3
37							Bentonite Slurry	
38								
39								-24.8
40	40.0							-25.8
41	S-1	1.7'/2.0 85%	4 5 4 5		.5/.5		2" PVC riser pipe	
42	42.0							
43	S-2	2.0'/2.0 100%	3 3 4 6		.5/.5	SAND, fine grained w/trace silt and trace shell material. Light greenish gray to greenish gray and white, loose to medium dense, wet		-28.8
44	44.0						sand pack	
45	45.0	N						-30.8
46	S-3	1.7'/2.0 85%	2 2 2 3		.5/.5			
47	47.0						well screen	
48								
49								
50	50.0							-36.2

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: R. Rice BORING NO.: 73-DW11 SHEET 3 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW11

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	S-4	1.5'/2.0 75%	17 18 24 40		.5/.5	Continued from Sheet 3 FOSSILIFEROUS LIMESTONE		-36.5
52	S20						well screen	
53	N					SAND, fine grained w/trace silt. light gray to white and gray, dense, wet.	Sand pack	
54								
55	S50							-40.8
56	S-5	1.2'/2.0 60%	11 11 12 12		.5/.5	FOSSILIFEROUS LIMESTONE w/trace sand, fine grained, trace silt, trace shell material. Cemented sand nodules are occasional. Light gray/white, wet		-41.3
57	S20							-42.8
58						End of Boring TD= 57.0' (bgs)	well plug	
59								
60								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-DW11 SHEET 4 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW12
COORDINATES: EAST: 2490786.5524 NORTH: 310226.7644
ELEVATION: SURFACE: 4.3 TOP OF PVC CASING: 6.94

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6"/8"	8¼		3-6-96	0-59	overcast mild, rainy (sat)		
LENGTH	2'	58'/20'	5'		3-9-96	59-61	clear, cold (30's)		
TYPE	Std.	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-9-96. HNu background is 1.6 ppm.

SAMPLE TYPE
S = Split Spoon, A = Auger, T = Shelby Tube, W = Wash, R = Air Rotary, C = Core, D = Denison, P = Piston, N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.64	-64.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-64.0	-74.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1		0.5			SAND AND SILT, fine grained, trace roots, Dark brown, MOIST 0.5	cement grout	
2	S-1	2.0/2.0	1, 1, 2	2.0	CLAY, little fine sand, grey to light brown, soft, moist 1.0		
3		100%	1		SAND, fine to very fine, trace SILT, Light Grey, very loose, moist 3.0	6" steel casing	
4	S-2	1.0/2.0	WOH, WOH, WOH	1.9	CLAY, trace fine sand, Grey, very soft, moist 3.5		
5		50%	WOH		PEAT, Dark Brown, very loose, damp, swamp odor	8" steel casing	
6	S-3	0.5/2.0	WOH, WOH, WOH	1.8			
7		25%	1				
8	S-4	0/2.0	WOH, WOH, WOH	—		2" PVC riser pipe	
9		0%	WOH		9.5		
10	S-5	1.5/2.0	5, 4, 5, 6	1.8	SAND, fine grained, trace SILT, trace wood fragments, Light brown, Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW12 SHEET 1 OF 5

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW12

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
11 11.0						Continued from Sheet 1 medium dense, wet
12	S-6	1.75/2.0	3 8 10		1.8	
13 13.0		88%	13			SAND, fine grained, trace silt, medium dense, wet
14	S-7	0/2.0	4 3 3		—	
15 15.0		0%	3			
16	S-8	1.5/2.0	8 5 2		1.7	
17 17.0		75%	3			NOTE: @ 16.8'; trace clay
18	S-9	1.0/2.0	8 10 11		1.7	
19 19.0		50%	11			
20	S-10	0/2.0	8 9 14		—	SAME AS ABOVE
21 21.0		0%	20			
22						
23	AN					
24						
25 25.0						
26	S-11	1.0/2.0	6 8 9		1.7	SAND, fine grained, trace silt, medium dense, wet
27 27.0		50%	12			
28						
29	AN					
30 30.0						

Well Installation Detail: 6" steel casing; 8" steel casing; -15.7; cement grout; 2" PVC riser pipe

Elevation (ft. MSL)

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW12 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW12

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-12	1.0/2.0	6 8		1.7	Continued from Sheet 2 SAME AS ABOVE		
32 32.0		50%	9 13					
33	AN							
34								
35 35.0								-30.7
36	S-13	1.5'/2.0	6 1		–			
37 37.0		75%	1 2					
38	N	–	–		–	SAND, fine to medium grained w/trace silt. Light brown to light greenish gray, loose to medium dense, wet		
39								
40 40.0								-35.7
41	S-14	1.5'/2.0	5 6		–			
42 42.0		75%	12 16					
43	N	–	–		–			
44								
45 45.0								-40.7
46	S-15	1.5'/2.0	8 18		–			
47 47.0		75%	23 29					
48	N	–	–		–	SAND, fine grained w/trace silt, greenish gray, dense to very dense, wet.		
49								
50 50.0								-45.7

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW12 SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW12

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description
51	S-16	1.0'/2.0 50%	17 26 32 50/3		–	Continued from Sheet 3
52 (52.0)						
53	N	–	–		–	SAND, fine grained w/trace silt, greenish gray, dense to very dense, wet
54						
55 (55.0)						
56	S-17	1.0'/2.0 50%	18 31 27 13		–	
57 (57.0)						
58	S-18	1.0'/2.0 50%	31 33 29 43		–	SAND, fine to medium grained w/trace silt, trace shell fragments, cemented sandstone nodules. Greenish gray to gray, very dense to medium dense, moist to wet.
59 (59.0)						
60	S-19	.5'/2.0 25%	18 16 19 20		1.6/1.6	
61 (61.0)						
62	N	–	–		–	
63						
64 (64.0)						
65	S-20	1.5'/2.0 75%	13 20 26 38		1.6/1.6	
66 (66.0)						
67	N	–	–		–	SAND, fine grained w/trace to little silt. Greenish gray, dense to very dense, wet.
68						
69 (69.0)						
70	S-21	1.5'/2.0	24 22		1.6/1.6	

Well Installation Detail: 6" steel casing; cement grout; Bentonite Slurry; Sand pack; well screen

Elevation (ft. MSL): -50.7; -52.7; -53; -56.7; -59.7

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW12 SHEET 4 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW12

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71	S-21	75%	26 29		1.6/1.6	Continued from Sheet 4	Sand pack	-66.7
71.0								
72	N	—	—		—	Drill to 74.0' (bgs)	Well screen	
73								
74								-69.7
74.0						End of Boring	Well cap	
75						TD = 74.0' (bgs)		
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW12 SHEET 5 OF 5

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW13
COORDINATES: EAST: 2491497.6924 NORTH: 308354.0057
ELEVATION: SURFACE: 6.2 TOP OF PVC CASING: 8.67

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6"/8"	8 1/4		2-25-96	0-11	clear, warm (70's)	6.0	
LENGTH	2'	11'/30'	5'		3-11-96	11-31	clear, cold (30's)		
TYPE	Std.	steel	HSA		3-12-96	31-45	clear, cool (60's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-12-96. HNu background range 1.6 ppm to 2.2 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.47	-35.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-35.0	-45.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	00	-	-	1.6/1.6	SAND, fine grained, trace silt, organics		5.7
1 1.0	AN	-	-	-			
2	S-1	1.5'/2.0 75%	4 5 5 4	1.6/1.6	SAND, fine grained w/ little silt, wood fragments. Dark brown, medium dense, moist	8" steel casing; 6" steel casing	
3 3.0							3.2
4	S-2	2.0'/2.0 100%	3 2 3 6	1.6/1.6	SAND, fine grained, trace organics, trace silt. Dark brown, loose, moist	cement grout	
5 5.0	02						1.2
6	S-3	1.0'/1.0 50%	6 13 5 3	1.6/1.6	SAND, fine to medium grained, trace silt. Light brown to light gray, medium dense, wet.	▽	.2
7 7.0							-.8
8	S-4	1.0'/2.0 50%	2 2 1 1	1.6/1.6	CLAY w/ trace sand, fine to medium grained trace shell fragments. Dark greenish gray to dark greenish brown, soft, damp/moist Match to Sheet 2	2" PVC riser pipe	
9 9.0							
10	S-5	2.0'/2.0 100%	1 1 1 1	1.6/1.6			

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW13 SHEET 1 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW13
COORDINATES: EAST: 2491497.6924 NORTH: 308354.0057
ELEVATION: SURFACE: 6.2 TOP OF PVC CASING: 8.67

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6" / 8"	8 1/4		2-25-96	0-11	clear, warm (70's)	6.0	
LENGTH	2'	11' / 30'	5'		3-11-96	11-31	clear, cold (30's)		
TYPE	Std.	steel	HSA		3-12-96	31-45	clear, cool (60's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-12-96. HNu background range 1.6 ppm to 2.2 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.47	-35.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-35.0	-45.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
.5	OO	-	-	1.6/1.6	SAND, fine grained, trace silt, organics		5.7
1 1.0	AN	-	-	-			
2	S-1	1.5'/2.0 75%	4 5 5 4	1.6/1.6	SAND, fine grained w/ little silt, wood fragments. Dark brown, medium dense, moist	8" steel casing; 6" steel casing	
3 3.0							3.2
4	S-2	2.0'/2.0	3 2 3 6	1.6/1.6	SAND, fine grained, trace organics, trace silt. Dark brown, loose, moist	cement grout	
5 5.0	02	100%					1.2
6	S-3	1.0'/1.0	6 13 5 3	1.6/1.6	SAND, fine to medium grained, trace silt. Light brown to light gray, medium dense, wet.	▽	.2
7 7.0		50%					-.8
8	S-4	1.0'/2.0	2 2 1 1	1.6/1.6	CLAY w/ trace sand, fine to medium grained trace shell fragments. Dark greenish gray to dark greenish brown, soft, damp/moist Match to Sheet 2	2" PVC riser pipe	
9 9.0		50%					
10	S-5	2.0'/2.0 100%	1 1 1 1	1.6/1.6			

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW13 SHEET 1 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW13

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11	S-5	100%			1.6/1.6	Continued from Sheet 1	8" steel casing	
11.0								-4.8
12	N	-	-		-	Auger to 12.0' (bgs)		
12.0								-5.8
13	S-6	2.0'/2.0 100%	1 1 1 1		2.2/2.2			
14								
14.0								
15	S-7	2.0'/2.0 100%	2 2 2 2		2.2/2.2	CLAY w/trace silt w/ trace to little shell fragments throughout. Dark greenish gray, soft damp to moist	cement grout	
16								
16.0								
17	S-8	2.0'/2.0 100%	2 2 2 2		2.2/2.2			
18								
18.0								
19	S-9	2.0'/2.0 100%	2 1 1 2		2.1/2.1		6" steel casing	
20								
20.0								
21	S-10	2.0'/2.0 100%	3 3 3 3		1.6/1.6			
22							2" PVC riser pipe	
22.0								
23	S-11	2.0'/2.0 100%	4 4 13 15		1.6/1.6			-16.8
24						SAND, fine grained w/trace to little silt. Dark greenish gray / dark brown medium dense, moist to wet		
24.0								
25	S-12	1.5'/2.0 75%	7 8 8 6		1.6/1.6			
26								
26.0								-19.8
27								
28	N	-	-		-	Drill to 29.0' (bgs)		-21.8
29							Bentonite Slurry	
29.0								-22.8
30	S-13	.5'/2.0	5 8		-	CEMENTED SANDSTONE and shell fragments		-23.8

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW13 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-DW13

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31 31.0	S-13	25%	5 6		-	Continued from Sheet 2 Greenish gray, med. dense, wet	Bentonite Slurry	-24.8
32 33 33.0	S-14		11 16 21 7		1.4 / 1.4	SAND, fine to medium grained w/trace silt, little cemented nodules, little shell fragments throughout. Greenish gray to light greenish gray, medium dense, wet	2" PVC riser pipe	-25.8
34 34.0	N	-	-		-			
35 36 36.0	S-15		5 11 12 16		1.4 / 1.4			-28.8
37 38 39 39.0	N	-	-		-			
40 41 41.0	S-16		16 19 21 29		1.4 / 1.4	SAND, fine grained w/trace silt and trace shell fragments throughout. Light gray, dense, wet.	Sand pack	-32.8
42 43 44 45 45.0	N	-	-		-		Well Screen	-38.3
46 47 48 49 50						End of Boring TD = 45.0' (bgs)	Well cap	-38.8

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis
DRILLER: D. Stratton BORING NO.: 73-DW13 SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312
COORDINATES: EAST: 2489531.9587 NORTH: 309961.3224
ELEVATION: SURFACE: 13.80 TOP OF PVC CASING: 15.83
BORING NO.: 73-GW01

RIG: #103

	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	6"/8"/10"	8 1/4"	
LENGTH	2'	98'/39'/16'	5'	
TYPE	Std.	steel	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
3-6-96	0-15	overcast, mild (60's)		
3-7-96	15-40	overcast, cool (60's)		
3-8-96	40-85	partly cloudy cold (40's)		
3-9-96	85-103	clear, cold (20's)		
3-10-96	103-152	clear, cold (20's)		

REMARKS: Type III monitoring well set 3-10-96. HNu background range is .5ppm to 1.8ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser Pipe	2"	Schedule 40 PVC pipe	+2.03	-145.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-145.0	-150.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft.)
1						10" steel casing	
2						8" steel casing	
3						6" steel casing	
4							
5	AN						
6					Auger to 15.0' (bgs)	2" PVC riser pipe	
7							
8							
9							
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff
DRILLER: D. Stratton / B. Rice
BAKER REP.: R. Lewis / J. Zimmerman
BORING NO.: 73-GW01
SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12	AN							
13						Auger to 15.0' (bgs)		
14								
15 15.0								-1.2
16 16.0	N						10" steel casing	-2.2
17	S-1	1.4'/2.0 70%	WOH/24"		1.8/1.8	CLAY w/little silt throughout and wood splinters (20 to 24' (bgs) only) Greenish gray to dark greenish gray and brown, very soft to soft, damp.		
18 18.0								
19	S-2	2.0'/2.0 100%	WOH/24"		1.8/1.8		8" steel casing	
20 20.0								
21	S-3	1.6'/2.0 80%	WOH/24"		1.8/1.8		6" steel casing	
22 22.0								
23	S-4	1.7'/2.0 85%	WOH/12" 1 2		1.8/1.8		cement grout	
24 24.0								-10.4
25	S-5	.4'/2.0 20%	WOH/12" 1/12"		1.8/1.8			
26 26.0						SAND, fine grained w/trace silt throughout. Dark greenish gray to greenish gray, loose to medium dense, wet.	2" PVC riser pipe	
27	S-6	1.0'/2.0 50%	2 3 4 5		1.8/1.8			
28 28.0								
29	N							
30 30.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 2 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-7	.9'/2.0 45%	8 5 4 4		1.8/1.8	Continued from Sheet # 2	8" steel casing	
32 32.0								
33	N							
34								
35 35.0								-21.2
36	S-8	.8'/2.0 40%	5 6 6 5		1.8/1.8	SAND, fine to medium grained w/ trace silt throughout. Greenish gray, medium dense, wet		
37 37.0								
38 38.0	N							-24.2
39	S-9	2.0'/2.0 100%	15 10 7 8		1.8/1.8	FOSSILIFEROUS LIMESTONE w/ trace sand, fine grained, trace silt and trace shell material 0 to .3'. SAND, fine grained w/ trace silt and little Cemented Sandstone nodules .3 to 1.3'. SAND, fine grained w/ trace silt 1.3' to 2.0'. Light gray to light greenish gray and white, medium dense, moist to wet.		-25.2
40 40.0								-26.2
41							6" steel casing	
42								
43							cement grout	
44								
45								
46							2" PVC riser pipe	
47								
48						Drill from 40.0' (bgs) to 60.0' (bgs)		
49								
50								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 3 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51						Continued from Sheet # 3		
52								
53								
54								
55	N					Drill from 40.0' (bgs) to 60.0' (bgs)	6" steel casing	
56								
57							cement grout	
58								
59								
60	60.0							-46.2
61	S-10	1.1'/2.0 55%	10 40 11 18		.5/.5	FOSSILIFEROUS LIMESTONE w/little sand, fine to medium grained, little cemented sandstone nodules, trace silt and trace shell material. Light gray and white very dense, wet		
62	62.0							
63							2" PVC riser pipe	
64	N							
65	65.0							-51.2
66	S-11	1.0'/2.0 50%	8 10 8 11		.5/.5	FOSSILIFEROUS LIMESTONE w/little sand, fine to medium grained, trace silt and trace shell material. Micrite cement is matrix only Light gray and white, medium dense, wet		
67	67.0							
68								
69	N							
70	70.0							-56.2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 4 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE
S = Split Spoon, T = Shelby Tube, R = Air Rotary, D = Denison, N = No Sample
A = Auger, W = Wash, C = Core, P = Piston

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71	S-12	1.2'/2.0 60%	2 3 5 5		.5/.5	Continued from Sheet # 4 SAND, fine grained w/ trace silt, trace cemented sand nodules, trace shell material and trace fossiliferous limestone Light gray and white, loose, wet.	6" steel casing	
72								
73								
74	N							
75	75.0							-61.2
76	S-13	1.6'/2.0 80%	5 9 11 11		.5/.5	SAND, fine grained w/ trace to little silt, trace shell material/ shell fragments throughout. Greenish gray and white, medium dense, wet	Cement grout	
77	77.0							
78								
79	N						2" PVC riser pipe	
80	80.0							-66.2
81	S-14	1.8'/2.0 90%	4 5 8 7		.5/.5	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray and white, medium dense, wet		-67.2
82	82.0							
83							Bentonite Slurry	
84	N							
85	85.0							-71.2
86	S-15	1.8'/2.0 90%	4 9 9 13		1.5/1.5	SAND, fine grained w/ trace silt throughout. Greenish gray, medium dense, wet		
87	87.0							
88								
89	N							
90	90.0							-76.2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
91	S-16	1.2'/2.0 60%	16 17 17 19		1.5/1.5	Continued from Sheet #5 FOSSILIFEROUS LIMESTONE w/little sand, fine grained, trace silt, trace shell material and micrite cement 0 to 1.0'. SAND, fine grained w/trace silt 1.0 to 2.0'. Light gray and white to greenish gray, dense, wet	6" Steel casing	
92								
92.0								
93								
94	N							
95								-81.2
95.0								
96	S-17	1.1'/2.0 55%	16 18 28 40		1.5/1.5	FOSSILIFEROUS LIMESTONE /SAND, fine to medium grained, trace to little silt, trace shell material and trace cemented sandstone nodules. Micrite cement is traceable Light gray to white to greenish gray, dense, wet		
97								
97.0								
98								-84.2
99								
100							2" PVC riser pipe	
101	N							
102								
103						Drill from 97.0' (bgs) to 105.0' (bgs)		
104							Bentonite Slurry	
105								-91.2
105.0								
106	S-18	1.2'/2.0 60%	22 28 24 24		1.5/1.5	FOSSILIFEROUS LIMESTONE w/little sand, fine grained, trace to little silt, trace shell material and micrite cement as matrix only. Light gray to gray and white, v. dense, wet		
107								
107.0								
108								
109	N							
110								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 6 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet 2 of 6		
111								
112								
113	N							
114								
115								
115.0								-101.2
116	S-19	1.3'/2.0 65%	15 18 28 31		1.5/1.5	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray to olive and white, dense, wet	Bentonite Slurry	
117								
117.0								
118								
119								
120								
121	N							
122							2" PVC riser pipe	
123								
124								
125								
125.0								-111.2
126	S-20	1.6'/2.0 80%	9 14 15		1.5/1.5	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet		
127								
127.0								
128								
129	N							
130								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 7 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
131						Continued from Sheet # 7		
132								
133	N							
134								
135	135.0							-121.2
136	S-21	1.6'/2.0 80%	9 12 15 17		1.5/1.5	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet	Bentonite slurry	
137	137.0							
138								
139								
140							2" PVC riser pipe	
141	N							
142								
143								-128.9
144							Sand Pack	
145	145.0							-131.2
146	S-22	1.5'/2.0 75%	7 8 11 11		1.5/1.5	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet.		
147	147.0						Well Screen	
148								
149	N							
150								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW01 SHEET 8 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
151	N					Continued from Sheet # 8	well plug	-136.7
152	1520						sand pack	-138.2
153						End of Boring		
154						TD = 152.0' (bgs)		
155								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / R. Rice BORING NO.: 73-GW01 SHEET 9 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02
COORDINATES: EAST: 2489881.7642 NORTH: 309178.2916
ELEVATION: SURFACE: 7.13 TOP OF PVC CASING: 6.69

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	6"/8"/10"	8¼"	
LENGTH	2'	100'/45'/13'	5'	
TYPE	Std.	Steel	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
2-19-96	0-13	cloudy cool, windy, 50's		
2-22-96	13-30	partly cloudy 70's		
2-23-96	30-47	partly cloudy 70's		
3-4-96	47-67	clear, cool 50's		
3-5-96	67-103	clear, mild 70's		
3-6-96	103-152	overcast, mild 60's		

REMARKS: Type III monitoring well set 3-6-96. HNu background range is .2 ppm to 1.3 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	-.4	-145.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-145.0	-150.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1							.4
2						10" steel casing	
3						8" steel casing	
4	AN					6" steel casing	
5					Auger 0 to 9.0' (bgs)		
6							
7						2" PVC riser pipe	
8							
9	9.0						-1.87
10	S-1	1.5'/2.0 75%	6 4 5 4	1.3/1.3	SAND, fine grained, w/trace silt, trace clay; Light brown. CLAY w/trace silt and wood fragments. Match to Sheet 2		-2.37

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 1 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
11.0						CLAY w/trace silt and wood fragments Gray, stiff, moist		
12	S-2	1.8'/2.0 90%	5 4 5 5		1.3/1.3		10" steel casing	-5.87
13.0								
14								
15								
16							8" steel casing	
17								
18							6" steel casing	
19						Drill from 13.0' (bgs) to 43.0' (bgs)		
20	N							
21								
22							Cement grout	
23								
24								
25								
26							2" PVC riser pipe	
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 2 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31						Continued from Sheet # 2		
32							8" steel casing	
33								
34								
35								
36								
37	N							
38						Drill from 13.0' (bgs) to 43.0' (bgs)	2" PVC riser pipe	
39								
40								
41								
42								
43	43.0							
44	S-3	1.8'/2.0 90%	WOH/12" 1 3		.2/.2	SAND, fine grained wl trace silt and trace clay. Grayish green, v. loose, wet		-35.87
45	45.0							
46	S-4	1.2'/2.0 60%	9 16 40 38		.2/.2	CEMENTED SANDSTONE wl sand, fine grained and trace silt throughout. Grayish green to light green, very dense, moist to wet.		-37.87
47	47.0						6" steel casing	
48								
49	N						Cement grout	
50								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 3 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51						Continued from Sheet #3		
52								
53								
54								
55	N					Drill from 47.0' (bgs) to 60.0' (bgs)		
56								
57								
58								
59								
60	60.0							
61	S-5	1.1/2.0 55%	11 10 11 11		.8/.8	SAND, fine grained w/trace silt and little cemented sandstone nodules. Greenish gray to gray, medium dense wet		-52.87
62	62.0							
63	N							
64								
65	65.0							-57.87
66	S-6	1.3'/2.0 65%	8 10 11 12		1.8/1.8	SAND, fine grained w/ trace silt and little cemented sandstone nodules (only occasional) w/trace shell material Greenish gray and white, medium dense wet		
67	67.0							
68								
69	N							
70								

6" steel casing
cement grout
2" PVC riser pipe

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 4 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet #4		
71								
72							6" steel casing	
73	N							
74								
75								
75.0								-67.87
76	S-7	1.8'/2.0	3 3 6 7		1.8/1.8	SAND, fine grained w/trace to little silt and trace shell material. Dark green and white, loose to medium dense, wet		
77		90%						
77.0								
78								
79							cement grout	
80								
81								
82	N							
83							2" PVC riser pipe	
84								
85								
85.0								-77.87
86	S-8	1.8'/2.0	18 8 9 12		1.8/1.8	SAND, fine grained w/trace silt, trace to little cemented sandstone nodules and trace shell material throughout. Dark green and white, medium dense, wet.		
87		90%						
87.0								
88								-80.87
89	N							
90							Bentonite slurry	

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / R. Rice BORING NO.: 73-GW02 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
91						Continued from Sheet 5		
92	N						6" steel casing	
93								
94								
95	95.0							-87.87
96	S-9	1.2'/2.0 60%	17 17 24 17		1.8/1.8	FOSSILIFEROUS LIMESTONE w/trace cemented sand nodules, trace to little sand, fine grained, trace silt and trace shell material throughout. Micrite cement is matrix only. Light gray and white, dense, wet	Bentonite slurry	
97	97.0							
98								
99								
100								-92.87
101								
102	N							
103							2" PVC riser pipe	
104								
105	105.0							-97.87
106	S-10	.3/2.0 15%	10 50/.1		1.2/1.2	FOSSILIFEROUS LIMESTONE w/trace sand, fine grained, trace silt and trace shell material throughout. Light gray and white, very dense, wet		
107	107.0							
108								
109	N							
110								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 6 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
111						Continued from Sheet #6		
112								
113	N							
114								
115	115.0							-107.87
116	S-11	1.5/2.0 75%	6 8 10 10		1.2/1.2	SAND, fine grained w/trace silt and trace shell material throughout. Greenish gray to olive and white, medium dense wet.	Bentonite slurry	
117	117.0							
118								
119								
120								
121								
122	N						2" PVC riser pipe	
123								
124								
125	125.0							-117.87
126	S-12	1.3/2.0 65%	7 10 20 35		1.2/1.2	SAND, fine grained w/trace silt throughout. Greenish gray to olive, medium dense to dense, wet.		
127	127.0							
128								
129	N							
130								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 7 OF 9

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE
S = Split Spoon; A = Auger; T = Shelby Tube; W = Wash; R = Air Rotary; C = Core; D = Denison; P = Piston; N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
131						Continued from Sheet # 7		
132								
133		N						
134								
135	135.0							-127.87
136		1.5'/2.0	12		1.2/1.2	SAND, fine grained w/trace silt throughout. Greenish gray to olive, dense, wet	Bentonite slurry	
137	137.0	S-13 75%	14 19 19					
138								
139								
140							2" PVC riser pipe	
141		N						
142								
143								-135.87
144							Sand pack	
145	145.0							-137.87
146		1.3'/2.0	9 10 20 25		1.2/1.2	SAND, fine grained w/trace silt throughout. Greenish gray to olive, medium dense to dense to very dense, wet		
147	147.0	S-14 65%						
148		2.0'/2.0	10 45 50/.2		1.2/1.2		Well screen	
149	149.0	S-15 100%						
150		N						-142.

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 8 OF 9

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW02

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
151	N					Continued from Sheet # 8		-143.37
152	152.0						well plug	-144.87
153						End of Boring		
						TD = 152.0' (bgs).	sand pack	

DRILLING CO.: Parratt-Wolff BAKER REP.: B. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW02 SHEET 9 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03
COORDINATES: EAST: 2490339.2187 NORTH: 309670.3966
ELEVATION: SURFACE: 3.10 TOP OF PVC CASING: 5.75

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	6"/8"/10"	8 1/4"	
LENGTH	2'	100'/33'/13'	5'	
TYPE	Std.	Steel	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
2-19-96	0-13	clear, cool, (45°)		
2-23-96	13-34	partly cloudy, mild (70's)		
2-24-96	34-75	partly cloudy, mild (60's)		
2-25-96	75-103	clear, warm (70's)		
2-26-96	103-151.5	clear, warm, (70's)		

REMARKS: Type III monitoring well set 2-26-96. HNu background range is .2 to 2.0 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.65	-145.0
Well screen	2"	Schedule 40 PVC pipe .01 slot	-145.0	-150.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1						10" steel casing	
2						8" steel casing	
3	AN				Auger to 5.0' (bgs)	6" steel casing	
4							
5	5.0						
6	S-1	1.0/2.0 50%	S 6 7 6	2.0/2.0	SAND, fine grained w/ trace to little silt throughout. Dark gray to light brown, medium dense, wet		
7	7.0						-3.9
8	S-2	1.5/2.0 75%	S 10 3 3	2.0/2.0	SAND, fine grained w/ trace silt and trace clay throughout. Brown to gray, medium dense, wet	2" PVC riser pipe	
9	9.0						
10	S-3	2.0/2.0 100%	S 4 5 5	2.0/2.0	Match to Sheet 2		-6.9

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE
S = Split Spoon, T = Shelby Tube, R = Air Rotary, D = Denison, A = Auger, W = Wash, C = Core, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
11.0	S-3	100%				CLAY wl trace silt, trace sand, fine grained. Gray, stiff, moist	10" steel casing	
12	S-4	1.8'/2.0	4 5		2.0/2.0			
13		80%	4					-9.9
13.0							8" steel casing	
14								
15								
16								
17								
18							6" steel casing	
19								
20	N							
21							Cement grout	
22						Drill from 13.0' (bgs) to 28.0' (bgs)		
23								
24								
25							2" PVC riser pipe	
26								
27								
28								-24.9
28.0								
29	S-5	.8/2.0	4 1		.2/.2	SAND, fine grained wl trace silt and little cemented sandstone. Grayish green to green, loose, wet.		
30		40%	1 9					
30.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE
S = Split Spoon; A = Auger; T = Shelby Tube; W = Wash; R = Air Rotary; C = Core; D = Denison; P = Piston; N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	N					Continued from Sheet 2 of 2		
32	S-6	1.4'/2.0 70%	4 4 4 4		.2/.2	SAND, fine grained w/trace silt and trace shell material green and white, loose, wet	8" steel casing	-27.9
33								-29.9
34								
35								
36	N					Drill from 33.0' (bgs) to 40.0' (bgs)	6" steel casing	
37								
38							cement grout	
39								
40	40.0							-36.9
41	S-7	1.4/2.0 70%	3 3 3 3		.2/.2	SAND, fine grained w/trace to little silt throughout. Grayish green to light green, loose to medium dense, wet.	2" PVC riser pipe	
42	42.0							
43	S-8	1.2'/2.0 60%	3 3 15 16		.2/.2			
44	44.0							-40.9
45	S-9	1.6'/2.0 80%	10 25 25 46		.2/.2	SAND, fine grained w/trace silt and trace shell material. Grayish green to gray and white very dense, wet		
46	46.0							-42.9
47	S-10	.9'/2.0 45%	23 50/4"		.2/.2	SAND, fine grained w/trace silt throughout. Grayish green to gray, very dense, wet.		
48	48.0							
49	S-11	1.2'/2.0 60%	13 43 50/4"		.2/.2			
50	50.0							

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 3 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	S-12	1.2'/2.0 60%	23 32 50/4"		.2/.2	Continued from Sheet # 3		
52 52.0								-48.9
53	S-13	1.2'/2.0 60%	19 36 50/4"		.2/.2	SAND, fine grained w/ trace silt and trace shell fragments throughout. Greenish gray to gray and white, v. dense, wet	6" Steel casing	
54 54.0								-50.9
55	S-14	.9'/2.0 45%	38 50/4"		.2/.2	SAND, fine grained w/ trace silt. Grayish green to gray, very dense, wet		
56 56.0								-52.9
57	S-15	1.3'/2.0 65%	12 12 12 14		.2/.2	SAND, fine grained w/ trace silt and trace shell mat.		-53.6
58 58.0						FOSSILIFEROUS LIMESTONE w/ little cemented sandstone little sand, fine grained, trace silt and trace shell material throughout. Light gray and white, medium dense to dense, wet.	cement grout	
59	S-16	.7'/2.0 35%	12 19 22 23		.2/.2			
60 60.0								-56.9
61	S-17	1.0'/2.0 50%	16 19 17 17		.2/.2	FOSSILIFEROUS LIMESTONE / CEMENTED SANDSTONE w/ little sand, fine grained, trace silt and trace shell material throughout. Light gray and white, dense, wet	2" PVC riser pipe	
62 62.0								
63	S-18	1.7'/2.0 85%	15 13 16 13		.2/.2			
64 64.0								-60.9
65	S-19	1.2'/2.0 60%	1 1 6 10		.2/.2	SAND, fine grained w/ trace silt throughout. Dark green, loose wet.		
66 66.0								-62.9
67	S-20	1.0'/2.0 50%	6 12 11 14		.2/.2	SAND, fine grained w/ trace silt and little cemented sandstone nodules (only occasional). Dark green, medium dense, wet		
68 68.0								-64.9
69	S-21	.7'/2.0 35%	4 5 5 7		.2/.2	SAND, fine grained w/ trace silt and little shell frags / shell material. Dark green and white, medium dense, wet.		
70 70.0								-66.9

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / R. Rice BORING NO.: 73-GW03 SHEET 4 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE
S = Split Spoon, A = Auger, T = Shelby Tube, W = Wash, R = Air Rotary, C = Core, D = Denison, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71						Continued from Sheet # 4		
72							6" steel casing	
73	N							
74								
75 75.0								-71.9
76	S-22	1.6'/2.0 80%	7 7 7 9		.2/.2	SAND, fine grained w/trace silt and trace shell material throughout. Dark green and white, medium dense, wet.	cement grout	
77 77.0								
78								
79	N							
80 80.0								-76.9
81	S-23	1.8'/2.0 90%	11 9 18 10		.2/.2	SAND, fine grained w/trace silt, trace to little cemented sandstone nodules and trace shell material. Dark green to light green and white, medium dense, wet.	2" PVC riser pipe	
82 82.0								
83								
84	N							
85 85.0								-81.9
86	S-24	1.9'/2.0 95%	6 14 13 12		.2/.2	SAND, fine grained w/ trace silt, trace to little cemented sandstone nodules and trace shell material dark green to light green and white, medium dense, wet.		
87 87.0								-84.9
88								
89	N						Bentonite Slurry	
90 90.0								-86.

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
91	S-25	1.8'/2.0 90%	32 47 28 26		.2/.2	Continued from Sheet #5 FOSSILIFEROUS LIMESTONE w/little cemented sandstone nodules, trace to little sand, fine grained, trace silt and trace shell material throughout. Light gray and white, very dense, wet.	6" Steel casing	
92								
92.0								
93	N							
94								
95								-91.9
95.0								
96	S-26	1.2'/2.0 60%	18 20 22 24		.2/.2	FOSSILIFEROUS LIMESTONE w/little cemented sandstone nodules, trace to little sand, fine grained, trace silt and trace shell material throughout. Micrite cement is matrix only. Light gray and white, very dense, wet.		
97								
97.0								
98	N							
99								
100								-96.9
100.0								
101	S-27	.1'/2.0 5%	100/1"		.2/.2	FOSSILIFEROUS LIMESTONE w/trace sand, fine grained, trace silt and trace shell material throughout. Micrite cement is matrix only. Light gray to gray and white, very dense, wet.	2" PVC riser pipe	
102								
102.0								
103	N							
104								
105								-101.9
105.0								-102.1
106	S-28	1.1'/2.0 55%	20 28 31 35		.2/.2	FOSSILIFEROUS LIMESTONE w/ little cemented sandstone nodules, trace sand, fine grained, trace silt and trace shell material w/ trace of micrite cement 0 to 2'. Very dense, wet	Bentonite Slurry	
107								
107.0								
108	N					SAND, fine grained w/ trace silt and trace shell material .2' to 1.1' Light gray and white to grayish green, very dense wet.		
109								
110								-106.9
110.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 6 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE
S = Split Spoon, A = Auger, T = Shelby Tube, W = Wash, R = Air Rotary, C = Core, D = Denison, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
111	S-29	1.6'/2.0 80%	16 25 28 30		.2/.2	Continued from Sheet #6 SAND, fine grained w/ trace silt and trace shell material throughout. Grayish green and white, very dense, wet		
112								
112.0								
113	N							
114								
115								-111.9
115.0								
116	S-30	1.7'/2.0 85%	11 12 15 15		.2/.2	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray to olive and white, medium dense, wet.	Bentonite slurry	
117								
117.0								
118	N							
119								
120								-116.9
120.0								
121	S-31	1.7'/2.0 85%	8 9 11 15		.2/.2	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray to olive and white, medium dense, wet	2" PVC riser pipe	
122								
122.0								
123	N							
124								
125								-121.9
125.0								
126	S-32	1.2'/2.0 60%	11 47 50/6"		.2/.2	SAND, fine grained w/ trace silt and trace cemented sandstone nodules throughout. Greenish gray to olive, very dense, wet.		
127								
127.0								
128	N							
129								
130								-126.
130.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / BORING NO.: 73-GW03 SHEET 7 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE
S = Split Spoon, T = Shelby Tube, R = Air Rotary, D = Denison, A = Auger, W = Wash, C = Core, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
131	S-33	1.5'/2.0 75%	10 18 18 20		.2/.2	Continued from Sheet 7 SAND, fine grained w/ trace silt and trace sandstone nodules throughout. Greenish gray to olive, dense, wet.	Bentonite Slurry	
132 (132.0)								
133	N							
134								
135 (135.0)								-131.9
136	S-34	1.8'/2.0 90%	10 8 8 8		.2/.2	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet.	2" PVC riser pipe	
137 (137.0)								
138	N							
139								
140 (140.0)								-136.9
141	S-35	1.6'/2.0 80%	7 8 8 11		.2/.2	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense to very dense, wet		
142 (142.0)								
143	S-36	1.6'/2.0 80%	6 19 33 38		.2/.2			-139.9
144 (144.0)							Sand pack	
145	S-37	1.8'/2.0 90%	12 17 22 24		.2/.2			-141.9
146 (146.0)								
147	S-38	2.0'/2.0 100%	12 20 40 48		.2/.2		Well Screen	
148 (148.0)								
149	S-39	2.0'/2.0 100%	28 32 41 54		.2/.2			
150 (150.0)								-146.9

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Statton / B. R. BORING NO.: 73-GW03 SHEET 8 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW03

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
151	N					Continued from Sheet # 8		-147.4
151.0								-147.9
2						End of Boring		
3						TD= 151.0' (bgs)	well cap	
4							sand pack	
5								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW03 SHEET 9 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04
COORDINATES: EAST: 2490775.4090 NORTH: 310219.8003
ELEVATION: SURFACE: 4.0 TOP OF PVC CASING: 6.55

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
SIZE (DIAM.)	2"	6"/8"/10"	8 1/4"		2-24-96	0-18	clear, warm (70's)		
LENGTH	2'	100'/60'/18'	5'		3-11-96	18-63	cold, blustery (30's)		
TYPE	Std.	Steel	HSA		3-12-96	63-103	clear, cool (60's)		
HAMMER WT.	140#				3-18-96	103-153	overcast, light drizzle (50's)		
FALL	30"								
STICK UP									

REMARKS: Type III monitoring well set 3-18-96. HNu background range is 1.5ppm to 1.8ppm.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	2"	Schedule 40 PVC pipe	+2.55	-145.0
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-145.0	-150.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1							
2							
3						10" steel casing	
4							
5	AN	—	—	—		8" steel casing	
6							
7					Auger to 17' (bgs)		
8						6" steel casing	
9							
10					Match to Sheet 2	2" PVC riser pipe	

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12							10" steel casing	
13	AN							
14						Auger to 17' (bgs)	8" steel casing	
15								
16							6" steel casing	
17								-13.0
18								-14.0
19								
20								
21							2" PVC riser pipe	
22								
23								
24	N					Drill from 17' (bgs) to 58' (bgs)	cement grout	
25								
26								
27								
28								
29								
30								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

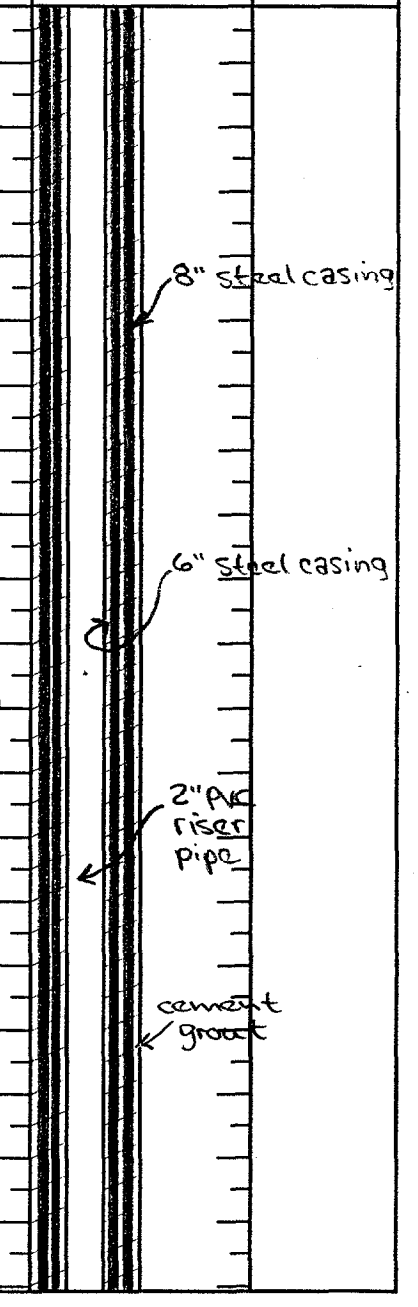
SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31						Continued from Sheet # 2		
32								
33								
34								
35								
36								
37								
38								
39	N							
40								
41						Drill from 17.0' (bgs) to 58.0' (bgs)		
42								
43								
44								
45								
46								
47								
48								
49								
50								



DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 3 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51						Continued from Sheet # 3		
52								
53						Drill from 17.0' (bgs) to 58.0' (bgs)		
54	N							
55								
56							cement grout	
57								
58	58.0							-54.0
59	S-1	2.0'/2.0 100%	WOH/12" 9 20		1.5/1.5	SAND, fine to coarse grained w/trace silt, trace shell fragments / shell material, trace cemented sand-stone and micrite cement as matrix. Light greenish gray to light gray and white, loose to medium dense, wet.	8" steel casing	-55.5
60	60.0							-56.0
61							6" Steel casing	
62								
63	N						2" PVC riser pipe	
64								
65	65.0							-61.0
66	S-2	1.7'/2.0 85%	4 4 6 9		1.5/1.5	SAND, fine grained w/trace to little silt trace shell fragments and trace shell material. Greenish gray and white, medium dense, wet		
67	67.0							
68							Bentonite Slurry	
69	N							
70								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 4 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71						Continued from Sheet # 4		
72								
73	N							
74								
75								
75.0								
76	S-3	1.8'/2.0 90%	3 5 10 13		1.5/1.5	SAND, fine grained w/trace to little silt, trace shell fragments, trace shell material. Greenish gray and white, medium dense, wet	6" steel casing	-71.0
77								
77.0								
78								
79								
80							Bentonite Slurry	
81	N							
82								
83								
84								
85							2" PVC riser pipe	-81.0
85.0								
86	S-4	1.8'/2.0 90%	3 6 8 12		1.5/1.5	SAND, fine grained w/trace to little silt, trace shell fragments, trace shell material Greenish gray and white, medium dense, wet.		
87								
87.0								
88								
89	N							
90								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
91						Continued from Sheet #5		
92								
93	N						6" Steel Casing	
94								
95	95.0							-91.0
96	S-5	1.7'/2.0 85%	24 15 12 15		1.5/1.5	SAND, fine grained w/trace to little silt, trace shell fragments, trace shell material, trace cemented sandstone nodules Greenish gray and white, medium dense, wet	Bentonite slurry	
97	97.0							
98								
99								
100								-96.0
101	N						2" PVC riser pipe	
102								
103								
104								
105	105.0							-101.0
106	S-6	1.1'/2.0 55%	20 42 30 11		1.8/1.8	FOSSILIFEROUS LIMESTONE w/little sand, fine grained, trace to little silt, trace shell material and micrite cement. Light gray to gray and white very dense, wet		
107	107.0							
108								
109	N							
110								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 6 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
111						Continued from Sheet 3 of 6	Bentonite slurry	
112								
113	N							
114								
115								
115.0								-111.0
116	S-7	1.6'/2.0 80%	8 14 17 11		1.8/1.8	SAND, fine grained w/trace silt and trace shell material. Greenish gray to olive and white, dense, wet		
117								
117.0								
118								
119							2" PVC riser pipe	
120								
121	N							
122								
123								
124								
125								
125.0								-121.0
126	S-8	1.6'/2.0 80%	9 13 18 21		1.8/1.8	SAND, fine grained w/trace silt. Greenish gray to olive, dense, wet		
127								
127.0								
128								
129	N							
130								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 7 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet # 7		
1								
2								
3	N						Bentonite slurry	
4								
5 135.0								-131.0
6	S-9	1.7'/2.0 85%	5 7 8 9		1.6/1.6	SAND, fine grained w/trace silt. Greenish gray to olive, medium dense, wet		
7 132.0							2" PVC riser pipe	
8								
9								
140								
141	N							
142								-137.5
143							Sand pack	
144								
145 145.0								-141.0
146	S-10	1.6'/2.0 80%	6 8 9 13		1.6/1.6	SAND, fine grained w/trace silt. Greenish gray to olive, medium dense, wet	Well screen	
147 147.0								
148								
149	N							
150								-146.0

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 8 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW04

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
151						Continued from Sheet #8		-146.5
152	N						Sand pack	
153	153.0							-149.0
154						End of Boring	well cap	
155						TD = 153.0' (bgs)		
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW04 SHEET 9 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05
COORDINATES: EAST: 2491502.6019 NORTH: 308358.1696
ELEVATION: SURFACE: 5.80 TOP OF PVC CASING: 8.40

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	6"/8"/10"	8 1/4"	
LENGTH	2'	100'/30'/11'	5'	
TYPE	Std.	Steel	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
3-11-96	0-11	overcast, cold (20's)		
3-13-96	11-30	clear, cold (30's)		
3-19-96	30-35	overcast, cool (50's)		
3-20-96	35-105	clear, cold (30's)		
3-21-96	105-153	clear, cold (30's)		

REMARKS: Type III monitoring well set 3-21-96. HNu background range is .9 ppm to 1.2 ppm

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser Pipe	2"	Schedule 40 PVC pipe	+2.6'	-145.0'
Well Screen	2"	Schedule 40 PVC pipe .01 slot	-145.0'	-150.0'

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. I
1						10" steel casing	
2						8" steel casing	
3							
4						1.8'	
5							
6	AN				Auger to 11.0' (bgs)	6" steel casing	
7							
8							
9						2" PVC riser pipe	
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		-5.2
12							10" steel casing	
13								
14								
15								
16								
17							8" steel casing	
18								
19								
20	N						cement grout	
21								
22						Drill from 11.0' (bgs) to 35.0' (bgs)	6" steel casing	
23								
24								
25								
26							2" PVC riser pipe	
27								
28								
29								
30								-24.2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 2 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31						Continued from Sheet #2		
32								
33	N					Drill from 11.0' (bgs) to 35.0' (bgs)	6" Steel Casing	
34								
35	35.0							-29.2
36	S-1	1.2'/2.0 60%	2 4 6 6		.9/.9	SAND, fine grained w/ trace silt, trace cemented sandstone nodules, trace shell material w/micrite cement as matrix only. Light gray to gray and white, medium dense, wet		
37	37.0							
38							Cement grout	
39								
40								
41	N							
42							2" PVC riser pipe	
43								
44								
45	45.0							-39.2
46	S-2	1.5'/2.0 75%	3 4 4 6		.9/.9	SAND, fine to medium grained w/ trace silt, trace shell material, and trace silty clay lamina at 1.3' only. Gray to greenish gray and white, loose, wet		
47	47.0							
48								
49	N							
50								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 3 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet # 3		
51							6" steel casing	
52								
53	N							
54								
55	55.0							-49.2
56	S-3	1.1'/2.0 55%	8 19 21 26		.9/.9	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray and white, dense, wet		
57	57.0							
58							cement grout	
59								
60								
61	N							
62							2" PVC riser pipe	
63								
64								
65	65.0							-59.2
66	S-4	1.4'/2.0 70%	10 8 9 12		.9/.9	FOSSILIFEROUS LIMESTONE w/ little sand, fine to medium grained, trace silt and trace shell material 0 to .4'. SAND, fine grained w/ trace to little silt, trace shell material and trace cemented sandstone nodules .4' to 1.4'. Micrite cement is trace to lt. Light gray and white to greenish		
67	67.0							-61.2
68								
69	N						Bentonite slurry	
70								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 4 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71						Continued from Sheet #4 gray, medium dense, wet.		
72							6" steel casing	
73	N							
74								
75	75.0							-69.2
76	S-5	.3'/2.0 15%	5 5 6 8		.9/.9	SAND, fine grained w/ trace to little silt and trace shell material throughout. Greenish gray and white, medium dense, wet		
77	77.0							
78								
79							2" PVC riser pipe	
80								
81	N							
82								
83								
84							Bentonite Slurry	
85	85.0							-79.2
86	S-6	1.7'/2.0 85%	6 6 9 11			SAND, fine grained w/ trace to little silt and trace shell material throughout. Greenish gray and white, medium dense, wet		
87	87.0							
88								
89	N							
90								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
						Continued from Sheet #5		
91							6" Steel casing	
92								
93	N							
94								
95	95.0							-89.2
96	S-7	1.3'/2.0 65%	12 25 27 23		.9/.9	FOSSILIFEROUS LIMESTONE w/little sand, fine to medium grained, trace silt and trace shell material throughout. Micrite cement is traceable. Light gray and white, very dense, wet		
97	97.0							
98							2" PVC riser pipe	
99								
100								
101	N							
102							Bentonite Slurry	
103								
104								-98.2
105	105.0							-99.2
106	S-8	1.1'/2.0 55%	48 32 21 50/4		.9/.9	FOSSILIFEROUS LIMESTONE w/little sand, fine grained, trace to little silt, trace shell material throughout. Micrite cement is matrix only. Light gray to gray and white, very dense, wet.		
107	107.0							
108								
109	N							
110								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 6 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
111						Continued from Sheet 36		
112								
113	N							
114								
115 115.0								
116	S-9	1.7'/2.0 85%	9 13 14 20		.9/.9	SAND, fine grained w/ trace silt and trace shell material throughout. Greenish gray to olive and white, medium dense, wet.	Bentonite slurry	-109.2
117 117.0								
118								
119								
120								
121	N						2" PVC riser pipe	
122								
123								
124								
125 125.0								-119.2
126	S-10	1.8'/2.0 90%	7 11 12 12		.9/.9	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet		
127 127.0								
128								
129	N							
130								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 7 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
131						Continued from Sheet #7		
132							Bentonite Slurry	
133	N							
134								
135	135.0							-129.2
136	S-11	1.2'/2.0 60%	10 18 21 25		.9/.9	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, dense, wet		
137	137.0							
138							2" PVC riser pipe	
139								
140								
141	N							
142								-136.2
143							Sand pack	
144								
145	145.0							-139.2
146	S-12	1.3'/2.0 65%	5 7 8 8		.9/.9	SAND, fine grained w/ trace silt throughout. Greenish gray to olive, medium dense, wet.	Well Screen	
147	147.0							
148								
149	N							
150								-144.2

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 8 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-GW05

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
151						Continued from Sheet # 8		-144.7
152	N						well cap	
153	1530						sand pack	-147.2
154						End of Boring		
155						TD = 153.0' (bgs)		
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: R. Lewis / J. Zimmerman
DRILLER: D. Stratton / B. Rice BORING NO.: 73-GW05 SHEET 9 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01
COORDINATES: EAST: 2490185.1235 NORTH: 310900.0806
ELEVATION: SURFACE: 8.82 TOP OF PVC CASING: Well was abandoned

RIG: #103	SPLIT SPOON	CASING	AUGERS	CORE BARREL
SIZE (DIAM.)	2"	8"/6"/4"	2¾"/8¼	
LENGTH	2'	18'/46'/100'	5'	
TYPE	Std.	PVC	HSA	
HAMMER WT.	140#			
FALL	30"			
STICK UP				

DATE	PROGRESS (FT.)	WEATHER	WATER DEPTH (FT.)	TIME
2-17-96	0-22	clear, cold (30's)		
2-18-96	22-46	cloudy, cool (50's)		
2-19-96	46-101.5	cloudy, cool (50's)		
2-20-96	101.5-150.5	overcast, rain (50's)		

REMARKS: Temporary well set 2-20-96. HNu background range is .1ppm to .2ppm.

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
N = No Sample
A = Auger
W = Wash
C = Core
P = Piston

Well Information	Diam.	Type	Top Depth (ft.)	Bottom Depth (ft.)
Riser pipe	1"	Schedule 40 PVC pipe	-	-145.0
Well screen	1"	Schedule 40 PVC pipe .01 slot	-145.0	-150.0

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
1					CONCRETE		7.52 5.02
2							
3						8" PVC casing	
4							
5	AN					6" PVC casing	
6					Auger to 22.0' (bgs)	4" PVC casing	
7							
8							
9						1" PVC riser pipe	
10					Match to Sheet 2		

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 1 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
11						Continued from Sheet 1		
12							8" PVC casing	
13								
14							6" PVC casing	
15								
16	AN						4" PVC casing	
17						Auger to 22.0' (bgs)		
18								-9.18
19								
20								
21							cement grout	
22								-13.18
23								
24								
25						Drill to 29.5' (bgs)	1" PVC riser pipe	
26	N							
27								
28								
29								
29.5 30								-20.68

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
31	S-1 (31.5)	1.2'/2.0 60%	3 4 4 5		.2/.2	Continued from Sheet 2 SAND, fine grained w/ trace silt. Green, loose, wet.		-22.68
32 33	S-2 (33.5)	1.0'/2.0 50%	5 3 2 2		.2/.2	SAND, fine to medium grained w/ trace to little silt and trace clay (?) at very bottom Green to dark greenish gray, loose, wet	6" PVC casing	
34 35	S-3 (35.5)	1.0'/2.0 50%	WOH/24"		.2/.2			
36 37	S-4 (37.5)	1.0'/2.0 50%	WOH/18" 2		.2/.2	SAND, fine grained w/ trace silt. Dark grayish green to green, very loose, wet		-26.68 -28.68
38 39	S-5 (39.5)	1.3'/2.0 65%	1 1 1 2		.2/.2	SAND, fine grained w/ trace to little silt, trace clay, trace shell material. Green + white, very loose, wet	4" PVC casing	-30.68
40 41	S-6 (41.5)	1.7'/2.0 85%	3 4 4 3		.2/.2	SAND, fine grained w/ trace silt and trace shell material Green + white, loose.		-32.68
42 43	S-7 (43.5)	1.2'/2.0 60%	2 3 6 7		.2/.2	SAND, fine grained w/ trace to little silt and trace shell material and trace clay (?). Green & white, wet.		-34.68
44 45	S-8 (45.5)	1.4'/2.0 70%	4 8 28 31		.2/.2	CEMENTED SANDSTONE		-35.38
46	S-9 (46.5)	1.0'/2.0 50%	8 26		.2/.2	FOSSILIFEROUS LIMESTONE w/ trace sand, fine grained, trace silt, trace shell material Light gray + white, wet		-37.18 -37.68
47 48 49 50	N (50.0)						cement grout 1" PVC riser pipe	-41.18

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 3 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
51	S-10	1.0'/2.0 50%	39 51		.1/.1	Continued from Sheet 3 SAND, fine grained w/ trace silt and trace shell material. Greenish gray & white, very dense, wet	4" PVC casing	
52 52.0								
53	N							
54								
55 55.0								-46.18
56	S-11	1.1'/1.0 55%	14 28 14 12		.1/.1	SAND, fine grained w/ trace silt, trace shell material. FOSSILIFEROUS LIMESTONE w/ trace Sand, fine grained, trace silt, trace shell material and micrite cement as matrix only. Greenish gray to light gray & white, dense, wet.	cement grout	-46.88
57 57.0								
58	N							
59								
60 60.0								-51.18
61	S-12	1.3'/2.0 65%	9 29 37 33		.1/.1	SAND, fine to medium grained w/ trace silt trace shell material and micrite cement as matrix only. Greenish gray & white, very dense, wet.	1" PVC riser pipe	
62 62.0								
63	N							
64								
65 65.0								-56.18
66	S-13	1.2'/2.0 60%	14 15 14 9		.1/.1	SAND, fine grained w/ trace to little silt, trace shell material and micrite cement as matrix only. Greenish gray & white, medium dense to dense, wet.		
67 67.0								
68	N							
69								
70 70.0								-61.18

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 4 OF 5

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
71	S-14	1.9'/2.0 95%	5 6 17 17		.1/.1	Continued from Sheet 4 SAND, fine grained w/ little to some silt and trace shell mat. Dark greenish gray & white, medium dense wet		
72								
72.0								
73	N						4" PVC casing	
74								
75								-66.18
75.0								
76	S-15	1.9'/2.0 95%	4 9 9 11		.1/.1	SAND, fine grained w/ little to some silt and trace shell fragments (top 1/2 only) Dark greenish gray & white, medium dense, wet	cement grout	
77								
77.0								
78	N							
79								
80								-71.18
80.0								
81	S-16	2.0'/2.0 100%	8 11 13 21		.1/.1	SAND, fine grained w/ little to some silt and trace shell material. Dark greenish gray & white, medium dense, wet		
82								
82.0								
83	N						1" PVC riser pipe	
84								
85								-76.18
85.0								
86	S-17	1.9'/2.0 95%	9 12 12 26		.1/.1	SAND, fine grained w/ little to some silt and trace shell material. Dark greenish gray & white, medium dense, wet		
87								
87.0								
88	N							
89								
90								-81.18
90.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 5 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
91	S-18	2.0' / 2.0 100%	5 8 22 23		.1/.1	Continued from Sheet 5 SAND, fine grained w/ little to some silt and trace shell material. Green & white, medium dense to dense, wet.	4" PVC casing	
92 92.0								
93	N							
94								
95 95.0								-86.18
96	S-19	.8' / 2.0 40%	13 19 19 17		.1/.1	SAND, fine grained w/ little to some silt and trace shell material. Green & white, dense, wet		
97 97.0								
98								
99								
100								-91.18
101	N						Cement grout	
102								
103								
104								
105 105.0								-96.18
106	S-20	.8' / 2.0 40%	34 36 21 50/1"		-	FOSSILIFEROUS LIMESTONE w/ trace sand, fine grained and trace silt. Light gray & white, very dense, wet.	1" PVC riser pipe	
107 107.0								
108								
109	N							
110 110.0								-101.18

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 6 OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
111						Continued from Sheet 6		
112	S-21	1.3'/2.0 65%	22 46 46 44		-	SAND, fine grained w/ trace to little silt and trace shell material. Dark greenish gray & white, very dense, wet.		
112.0								
113								
114	N							
115								-106.18
115.0								
116	S-22	1.0'/2.0 50%	11 17 24 17		-	SAND, fine grained w/ trace to little silt. Greenish gray, dense wet.		
117								
117.0								
118							Cement grout	
119	N							
120								-111.18
120.0								
121	S-23	1.4'/2.0 70%	13 17 16 21		-	SAND, fine grained w/ trace to little silt. Olive, dense wet	1" PVC riser pipe	
122								
122.0								
123								
124	N							
125								-116.18
125.0								
126	S-24	1.9'/2.0 95%	13 22 33 34		-	SAND, fine grained w/ trace to little silt. Olive, very dense, wet		
127								
127.0								
128								-119.18
129	N						Bentonite Slurry	
130								-121.18
130.0								

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 7 OF 9

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW01

SAMPLE TYPE
S = Split Spoon, T = Shelby Tube, R = Air Rotary, D = Denison, A = Auger, W = Wash, C = Core, P = Piston, N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
131	S-25		28 28 41 38		-	Continued from Sheet 7 SAND, fine grained w/trace to little silt. Olive, very dense, wet.	Bentonite Slurry	
132 (132.0)								
133								
134	N							
135 (135.0)								-126.18
136	S-26		11 13 18 19		-	SAND, fine grained w/trace to little silt. Olive, dense to medium dense, wet.	1" PVC riser pipe	
137 (137.0)								
138								
139	N							
140 (140.0)								-131.18
141	S-27		10 11 16 16		-	SAND, fine grained w/trace to little silt. Olive, medium dense, wet.		-132.18
142 (142.0)							Sand pack	
143								
144	N							
145 (145.0)								-136.18
146	S-28		11 24 31 28		-	SAND, fine grained w/ trace to little silt Olive, very dense, wet.	Well Screen	
147 (147.0)								
148								
149	N							
150								-141.18

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW01 SHEET 8OF

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: MCB Camp Lejeune, O. U. #9, Sites 65 and 73 Remedial Investigations
CTO NO.: 0312 BORING NO.: 73-TW07

SAMPLE TYPE

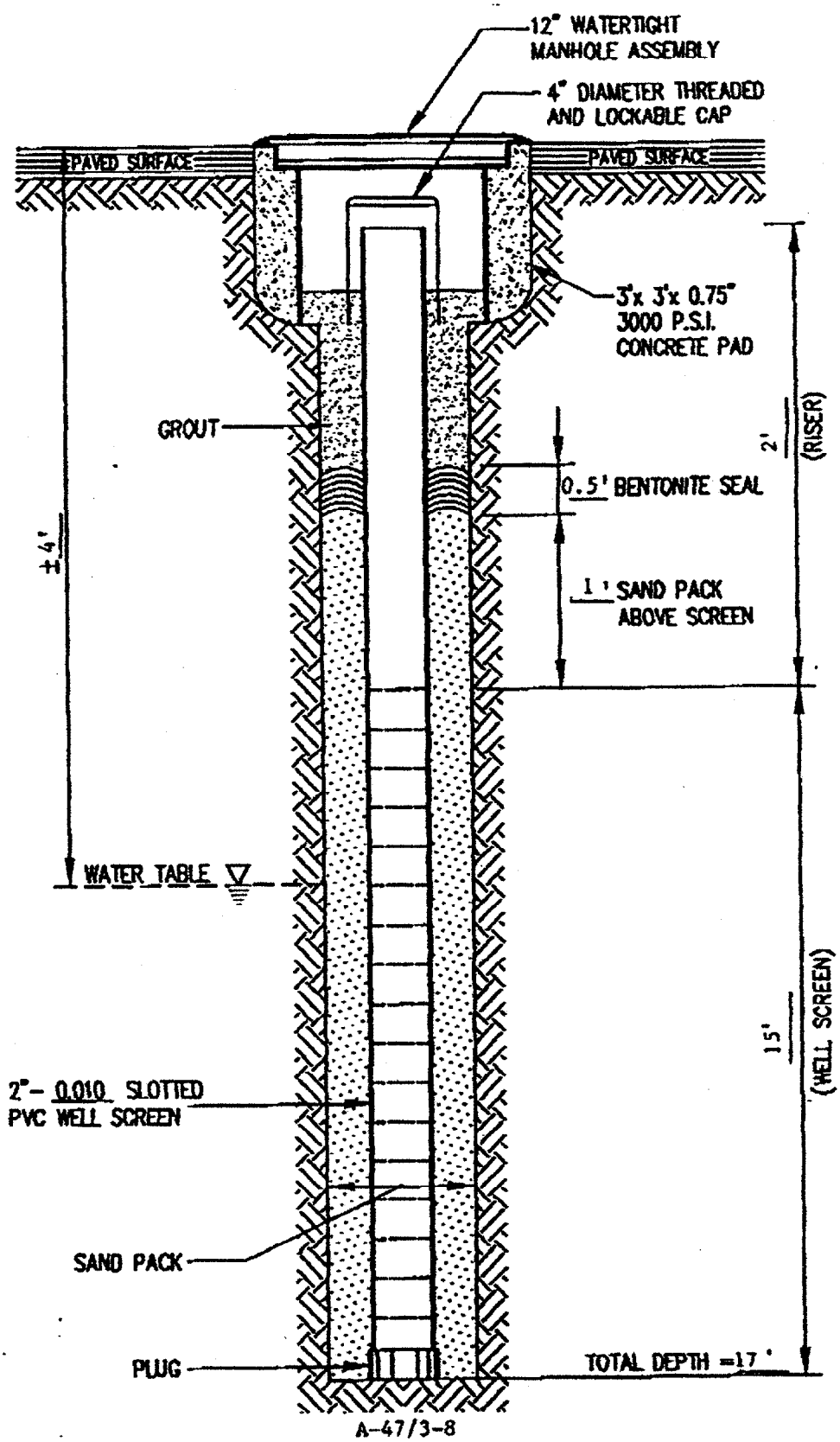
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586)(Blows/0.5')
RQD = Rock Quality Designation (%)
PID (ppm) = Results recorded with Hnu or OVA in ppm

Depth (ft.)	Samp. Type and No.	Samp. Rec. (ft. & %)	SPT or RQD	Lab Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation (ft. MSL)
150	150.5 N					Continued from Sheet 8		141.98
151						End of Boring		141.68
152						TD = 150.5' (bgs)	Well plug	
153								
154							Sand pack	
155								
6								
7								
8								
9								
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
0								

DRILLING CO.: Parratt-Wolff BAKER REP.: J. Zimmerman
DRILLER: B. Rice BORING NO.: 73-TW07 SHEET 9 OF



A-47/3-8

Richard Catlin & Associates, Inc. / RCA ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE PAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
JOB NO. 93124	DATE: 11-1993	SCALE: AS SHOWN	DRAWN BY: WHW	CHECKED BY: JC

BORING LOG

BORING NUMBER A47/3-8
TOTAL DEPTH 17'

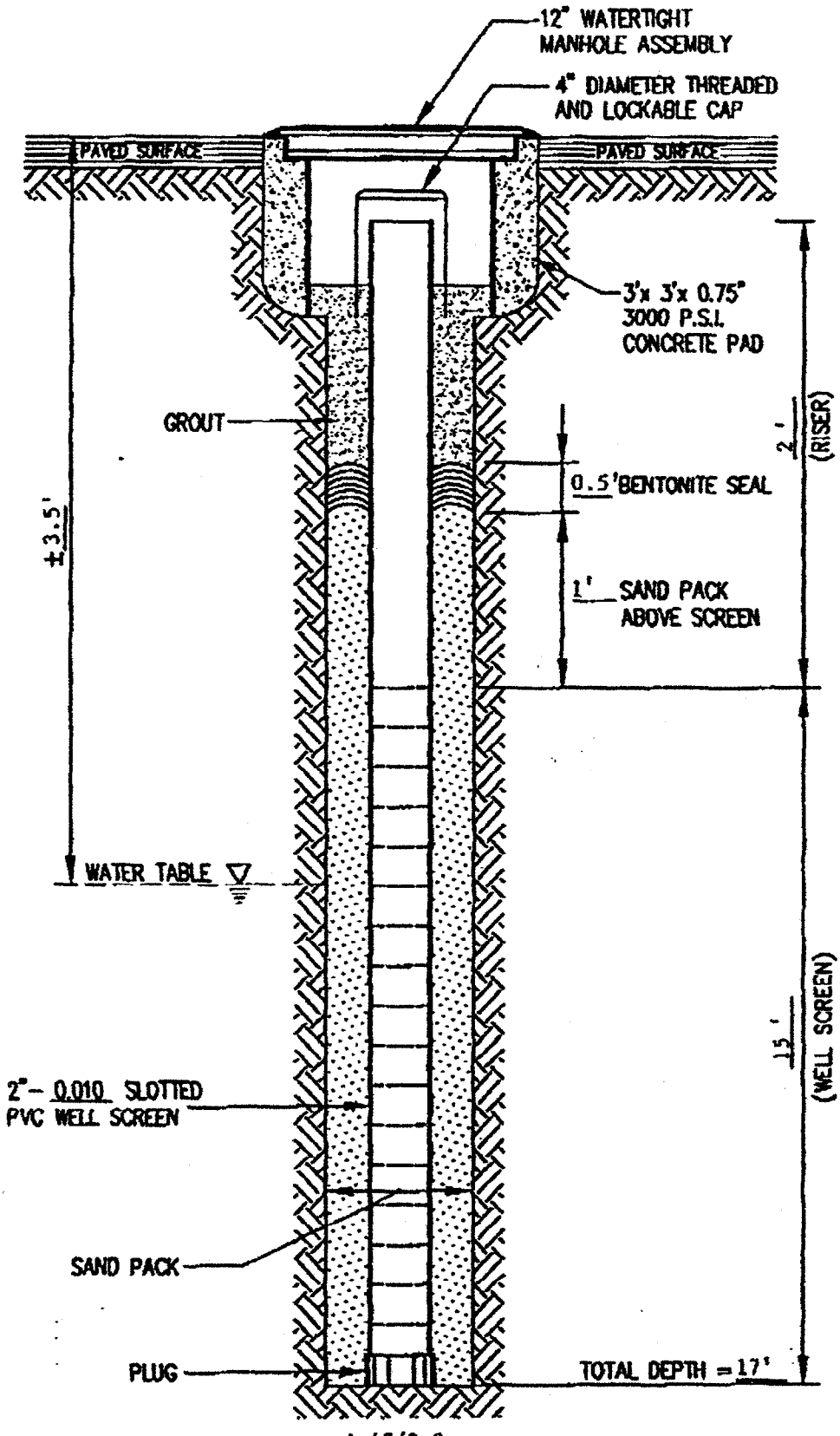
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Dark brown/green, silty sands with minor clays, poorly sorted, very fine to medium fine grained	SM	Damp	Possible	550	5-5-6-5
5.0	7.0	Dark gray to brown sands and silty sands, fine to medium grained, moderate to poorly sorted, with minor clays	SM	Wet	Yes	900	2-2-2-2
10.0	12.0	Dark brown, sands and silty sands with peat interbeds, poorly sorted, fine to medium grained, with much organics	SM/Pt	Wet	Yes	>1000	3-3-4-3
15.0	17.0	Brown sands with silt, medium/fine grained, moderate sorting	SM	Wet	Possible	850	3-3-5-7

REMARKS TPH samples taken at 2'-4' and 5'-7'. FP/pH sample at 10'-12'.



A-47/3-9

Richard Catlin & Associates, Inc. / ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS / RCA	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: PAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
	JOB NO. 93124 DATE 11-1993	SCALE: AS SHOWN DRAWN BY: WHW	CHECKED BY: JC

BORING LOG

BORING NUMBER A47/3-9
TOTAL DEPTH 17'

SITE LOCATION Building A-47
Camp Lejeune, North Carolina

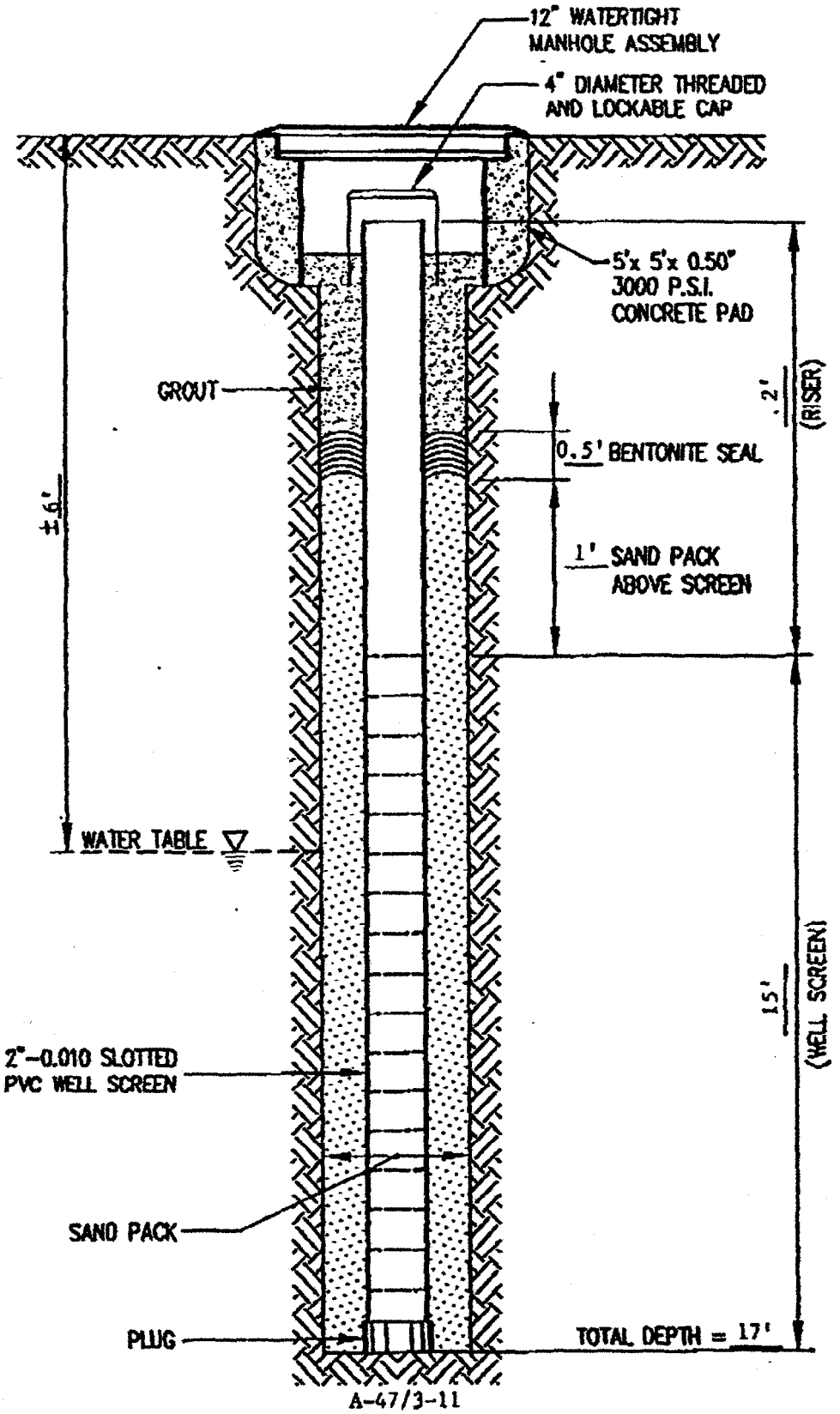
DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Dark gray to brown, sands with clay (clayey sand), poorly sorted, medium fine to very fine grained	SC	Damp	Strong	>1000	GRAB
5.0	7.0	Black to gray, sands with clay/silt, poorly sorted, medium to fine grained, root fragments	SC	Damp	Possible	>1000	2-4-2-4
10.0	12.0	Tan/orange to gray/tan, sands with minor silts, medium-fine to fine grained, moderately poorly sorted	SM	Wet	Possible	920	10-12-9-4
15.0	17.0	Tan/brown to gray/brown, sands, fine grained, moderately to poorly sorted, many root fragments in = 6" of bottom of spoon = black= peat	SM/Pt	Saturated	Possible	12	3-5-7-3

REMARKS TPH samples taken at 2'-4' and 5'-7'. All samples have sulphur odor. FP/pH sample at 10'-12'.

PAGE 1 OF 1



A-47/3-11

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: UNPAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
	93124 — 11-1993	AS SHOWN — MHW — JC	

BORING LOG

BORING NUMBER A47/3-11
TOTAL DEPTH 17'

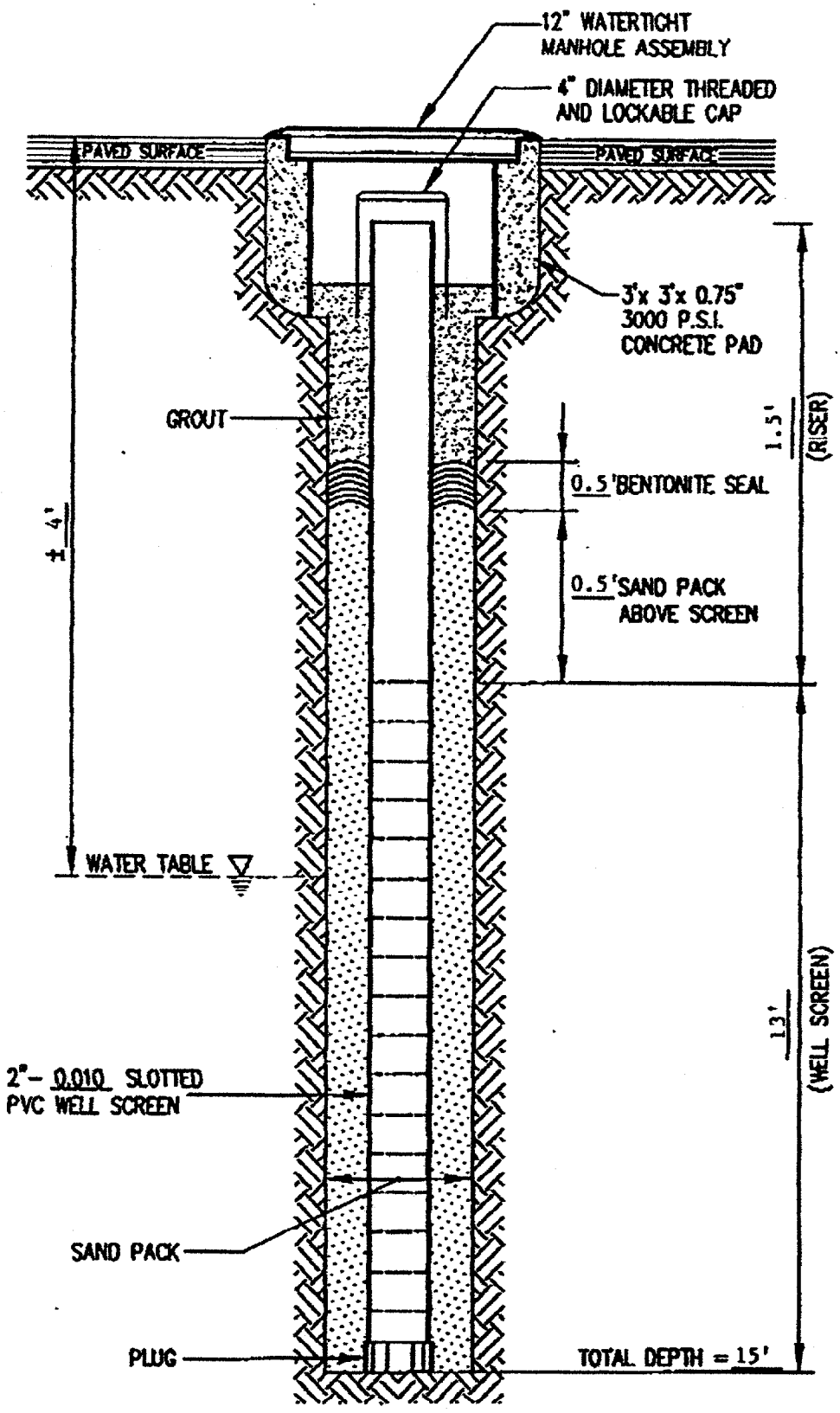
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Brown to brown/green, sandy clay, very fine to fine grained, poorly sorted, cohesive and malleable	CL	Wet	No	800	GRAB
5.0	7.0	Brown/green to dark gray, clayey sand to sands, very fine to medium grained, poor to moderate sorting. (Note: Description is from top to bottom of spoon sample. Representative of grading.)	SC	Damp	No	550	5-5-7-2
10.0	12.0	Dark gray to tan, sands, medium-fine to medium grained, moderately sorted	SP	Wet	No	200	10-12-16-18
15.0	17.0	Dark gray to tan, sands, medium-fine to medium grained, moderately sorted	SP	Wet	No	120	3-5-6-8

REMARKS TPH samples at 2'-4' and 5'-7'. FP/pH sample at 10'-12'.



A-47/3-13

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: PAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
	JOB NO. 93124 DATE 11-1993	SCALE AS SHOWN DRAWN BY WHW	CHECKED BY JC

BORING LOG

BORING NUMBER A47/3-13
TOTAL DEPTH 17'

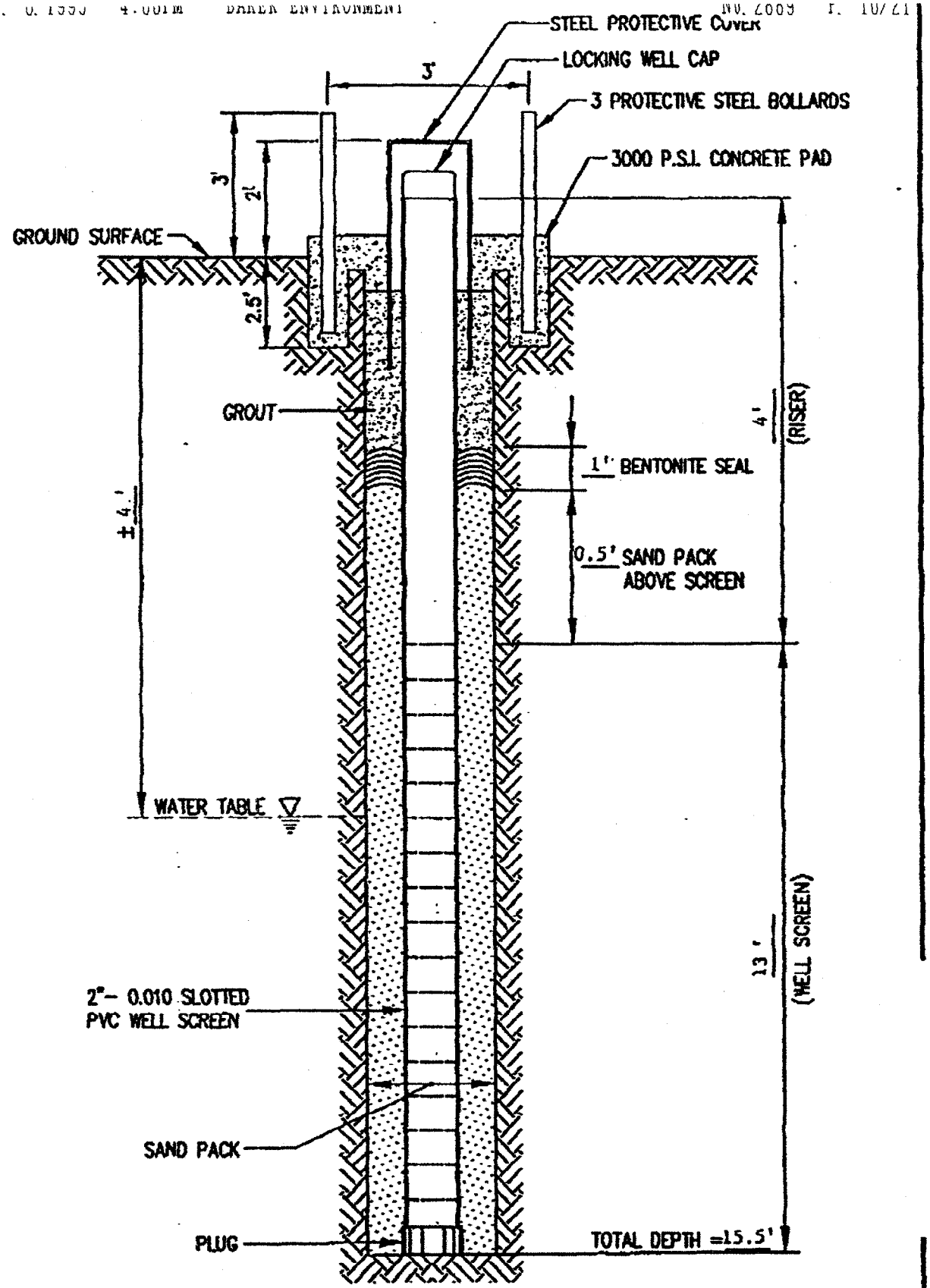
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/28/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Brown/tan sands and silty sands, very fine to medium/fine grained, poorly sorted, root fragments	SM	Dry	Possible	22	GRAB
5.0	7.0	Gray/tan to dark brown sands to clayey sands, very fine to medium grained, moderately sorted	SC	Wet	No	>1000	10-10-11-15
10.0	12.0	Tan/brown sands, fine to medium grained, moderately/poorly sorted, large root fragments	SP	Wet	No	520	8-12-9-14
15.0	17.0	Dark brown clayey/silty sands to silty clays, very fine to fine grained, very poorly sorted, root fragments	ML	Wet	No	700	6-3-1-1

REMARKS TPH samples at 2 - 4' and 5 - 7'. FP/pH sample at 10 - 12'.



A-47/3-16

Richard Catlin & Associates, Inc. / ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS / RCA / WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: ABOVE GROUND TYPE II MONITORING WELL DETAIL	FIGURE
JOB NO. 93124	DATE 11-1993	SCALE AS SHOWN	DRAWN BY WHW	CHECKED BY JC

ACAD FILE: SITE DETAILS 8

BORING LOG

BORING NUMBER A47/3-16
TOTAL DEPTH 16'

SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 11/1/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Orange/brown to brown sands and clayey sands, very fine to medium/fine grained, poorly sorted	SM/SC	Damp		220	GRAB
5.0	7.0	Dark brown to black sandy silts and peat, very fine to medium grained, very poorly sorted	OL	Wet		98	1-1-1-1
10.0	12.0	Dark gray to brown sands and silty sands, moderately poorly sorted, very fine to medium/fine grained, root fragments	SM	Wet		540	5-6-5-8
14.0	16.0	Gray sands, medium/fine to medium grained, moderately sorted, large root fragments	SP	Wet		120	6-5-6-8

REMARKS TPH samples at 2 - 4' and 5 - 7'. FP/pH sample at 10 - 12'.

Baker

Baker Environmental, Inc

PROJECT: BLDG A-47
S.O. NO.: 19109 BORING NO.: DW-2

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
11	S4	S	1.4/2 70%	8 17 22 23		7	Sand (med)	yellow	dense	wet - slight odor		
12												
13		N										
14												
15												158
16		S	2/2 100%	3 2 3 5		4	clay	gray	medium stiff	wet - slight odor		
17							Sand (fine) with silt	white				13.58
18		N										
19												
20												6.58
21		S	3/2 100%	8 5 4 5		7	clay with organics	brown	stiff	wet - no odor		
22												
23		N										
24							12" clay some sand (fine)	gray	stiff	wet		
25		S	2/2 100%	5 5 7 5		12	12" sand (fine)	black	medium dense	stained dark black slight odor		11.58
26												
27		N										
28												
29		S	1.5/2 75%	5 5 7 5		11	Sand (coarse) with clay	green	medium dense	wet		
30							END OF BORING					16.58

DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A. Tua
DRILLER: James Carter BORING NO.: DW-2 SHEET 2 OF 2

Baker

Baker Environmental, Inc

FIELD TEST BORING RECORD

PROJECT: BLDG. A-47
S.O. NO.: 19109
COORDINATES: EAST: 5011.55
ELEVATION: SURFACE: 13.42
BORING NO.: DW-2
NORTH: 5465.02
TOP OF PVC CASING: 15.78

RIG: TRAILER MOUNT DEEP ROCK	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/4" ID				5-2-92	20"	MILD		
LENGTH	2.0'				5-3-92	30"	MILD		
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: BORING ADVANCED BY ROTARY DRILL TO 20' THEN 6" PVC CASING SET AND GROUTED. 30' OF 2" PVC SET AND GROUTED.

DRILL RECORD / VISUAL DESCRIPTION

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1	S1	S	1.2/2	7 10 12 12		6	SILT WITH SAND (FINE)	LT BROWN	VERY STIFF	DAMP - ODOR NOTICED		
2			60%									
3	S2	S	.4/2	8 11 13 13		50	"	"	VERY STIFF	BLACK STAIN, STRONG ODOR		
4			20%									
5	S3	S	.9/2	4 6 7 8		70	" WATER	"	STIFF	WET ODOR		8.92
6			45%									
7												
8												
9												
10												

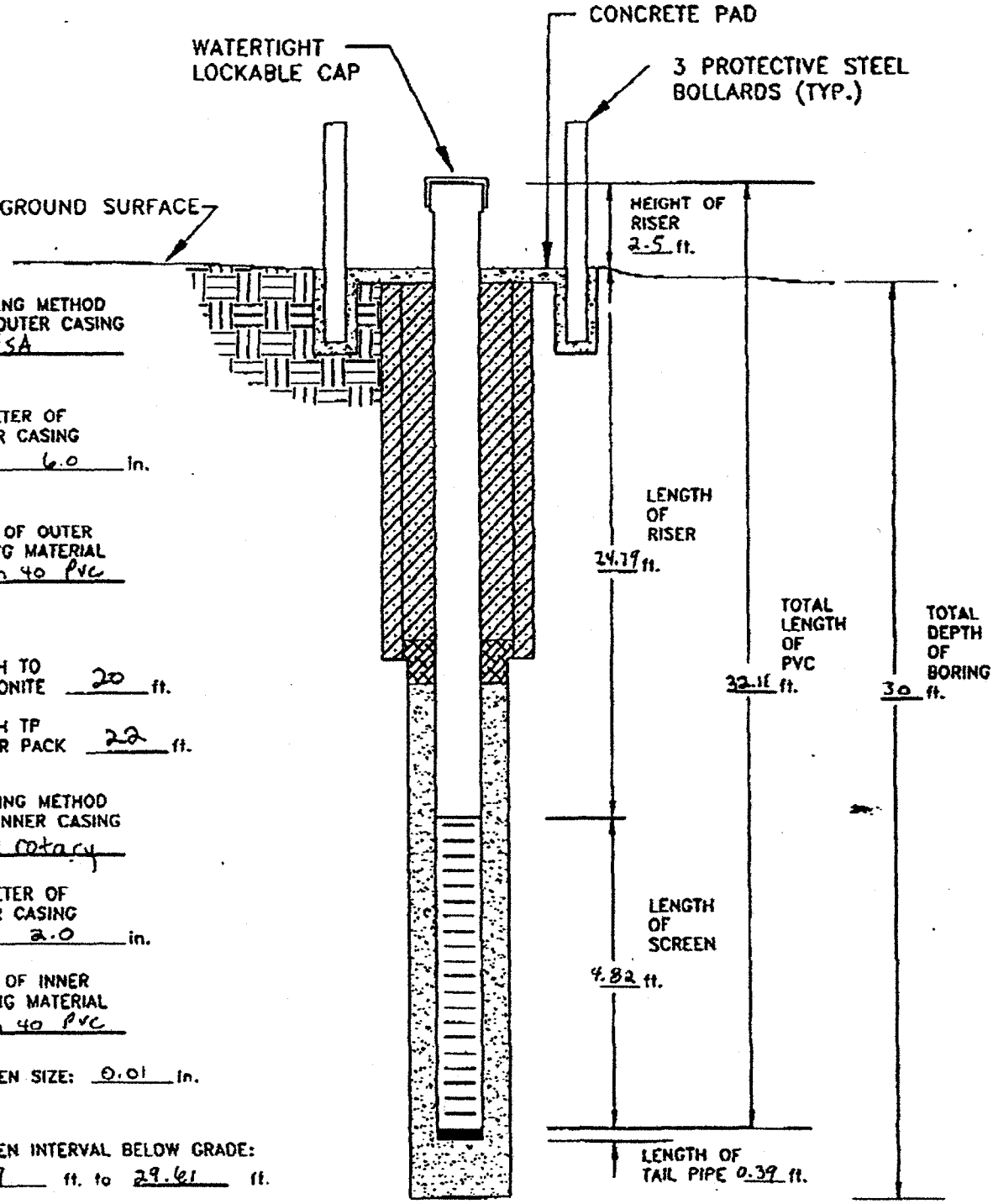
DRILLING CO.: MCCAW BROTHERS
DRILLER: JAMES CARTER
BAKER REP.: KENNETH A. TUA
BORING NO.: DW-2 SHEET 1 OF 2

Baker
Baker Environmental, Inc.

ABOVE GRADE TYPE III MONITORING WELL

PROJECT No.: 19109
PROJECT NAME: A-47
WELL No.: DW2-2
DRILLING CO.: McCall Brothers

DATE STARTED: 5-2-92
DATE COMPLETED: 5-3-92
DATE DEVELOPED: 5-4-92
DEVELOPMENT METHOD: pump



DRILLING METHOD FOR OUTER CASING: HSA

DIAMETER OF OUTER CASING: 6.0 in.

TYPE OF OUTER CASING MATERIAL: Sch 40 PVC

DEPTH TO BENTONITE: 20 ft.

DEPTH TP FILTER PACK: 22 ft.

DRILLING METHOD FOR INNER CASING: mud rotary

DIAMETER OF INNER CASING: 2.0 in.

TYPE OF INNER CASING MATERIAL: Sch 40 PVC

SCREEN SIZE: 0.01 in.

SCREEN INTERVAL BELOW GRADE: 24.79 ft. to 29.61 ft.

BAKER ENVIRONMENTAL REPRESENTATIVE: K. Tua

Baker Environmental, Inc.

PROJECT: A-47
S.O. NO.: 19109-51-SRN BORING NO.: MW-13

DRILL RECORD							VISUAL DESCRIPTION					
DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1	SOIL	S-6	2.0	4 6 8 12		0	SILT, and SAND, F.G.	LT GRAY	MED. DENSE	WET	SOIL	
2	12.0		100%									
3										13.48		0.48
4							Top of Bedrock 3.48'					
5												
6												
7												
8												
9												
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

DRILLING CO.: McCall Brothers BAKER REP.: R. Sevcik
DRILLER: Charles Clay BORING NO.: MW-13 SHEET 2 OF 2

Baker
Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: A-47
S.O. NO.: 19107-51-SRN
BORING NO.: MW-13
COORDINATES: EAST: 5086.21 NORTH: 5375.31
ELEVATION: SURFACE: 13.00 TOP OF PVC CASING: 12.95

RIG: Buck Rodgers - 760 Series

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		4 1/4"		5/2	13.0	Sunny 70°F	4.5'	1130
LENGTH	2.0'		5.0'						
TYPE	STD		HSA						
HAMMER WT.	140#								
FALL									
STICK UP									

REMARKS: Boring advanced to 13', continuous split spoon samples taken from 0-12'. Monitoring well installed at 13.48

DRILL RECORD							VISUAL DESCRIPTION					
DEPTH	SOIL / ROCK	Sample ID / Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
0-2	2.0	S-1	1.4 70%	10 12 12 13		0-1	Silt, little Sand, f.c.	Lt Brown	V. Stiff	Damp; Blackstaining at 1.5'		
2-4	4.0	S-2	1.6 80%	9 12 14 16		0-1					4.0	9.00
4-6	6.0	S-3	1.2 60%	9 7 10 12		0	Silt, little Sand, f.c.	Lt Gray	Med. Dense	Moist; Wet; Water at 4.5'		
6-8	8.0	S-4	0.8 40%	1 4 5 6		0	Silt, no Sand, f.c.		Loose			
8-10	10.0	S-5	2.0 100%	1 4 4 3		0						

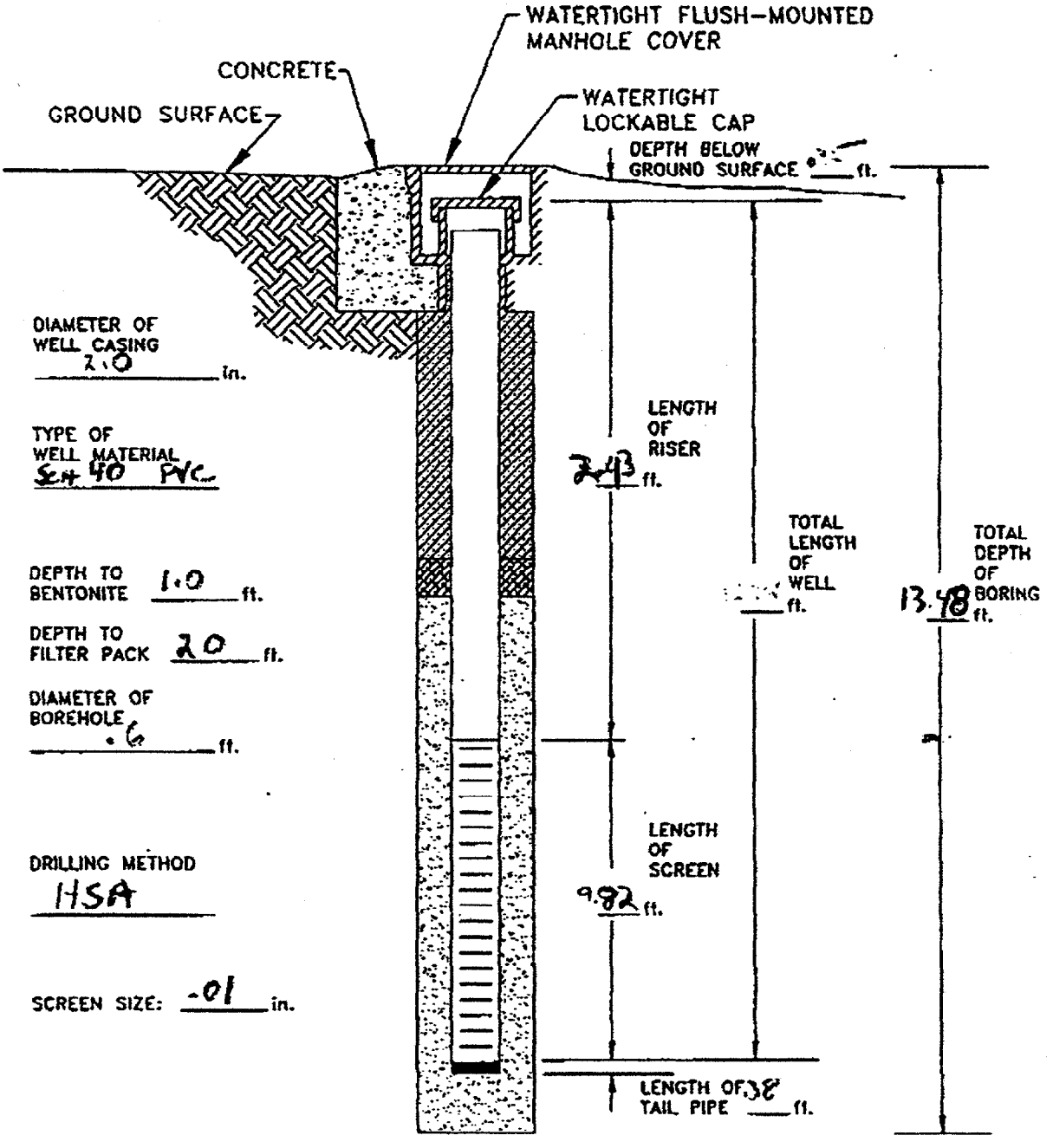
DRILLING CO.: McCall Brothers
BAKER REP.: R. Sevcik
DRILLER: Charles City
BORING NO.: MW-13 SHEET 1 OF 2

Baker

BELOW GRADE TYPE II MONITORING WELL

PROJECT No.: 13109-51-SRN
PROJECT NAME: A-47
WELL No.: MW-13
DRILLING CO.: [illegible]

DATE STARTED: 5/2/12
DATE COMPLETED: 5/2/12
DATE DEVELOPED: 5/2/12
DEVELOPMENT METHOD: Pump



BAKER ENVIRONMENTAL REPRESENTATIVE: _____

Baker Environmental, Inc

PROJECT: BLDG 4-47
S.O. NO.: 19109 BORING NO.: MW-9

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
11	SS		0.83/2 = 42%	2 3 6 9		0	sand (med - fine)	brown	loose	wet - looked stained		
12							sand (med - fine)	brown	loose	wet		
13	SS		1.5/2 = 75%	4 7 3 3		0	2° sand (med - fine)	gray				
14							sand (med - fine)	brown	loose			
15	SS		1.2/2 = 60%	5 5 2 8		0						
16							END OF BORING					933
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A Tug
DRILLER: James Carter BORING NO.: MW-9 SHEET 2 OF 2

Baker

Baker Environmental, Inc

FIELD TEST BORING RECORD

PROJECT: BLDG A-47
S.O. NO.: 19109 BORING NO.: MW-9
COORDINATES: EAST: 4898.59 NORTH: 5228.97
ELEVATION: SURFACE: 15.67 TOP OF PVC CASING: 18.47

RIG: Trailer Mount Deep Rock	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	2"	6 1/4" ID		4-30-92	16	clear/mild		
LENGTH	2.0'		5.0'						
TYPE	STD	SCH 40 PVC	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Boring augered to 16' taking continuous split spoon samples every 2'. Monitoring well installed using SCH 40 2" PVC

DEPTH	SOIL / ROCK	Sample ID / Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	ELEVATION
1	S1	S	1.3/2 65%	3 6 6 7		0	1" Asphalt				15.5'
2							Sand (fine) with silt	yellow	medium dense	Dry	
3	S1	S	1.2/2 60%	3 3 4 4		0	Sand (fine) with silt	yellow	Loose	Dry	
4											
5	S2	S	1.1/2 55%	2 4 4 5		0	Sand (fine) with silt	yellow	Loose	Moist	
6											9.67
7	S3	S	0.82/2 42%	2 5 6 8		0	Sand (fine) with silt	yellow	medium dense	Wet	
8											
9	S4	S	0.67/2 33%	0 1 2 2		0	silt some sand (fine)	gray	soft	wet	
10											

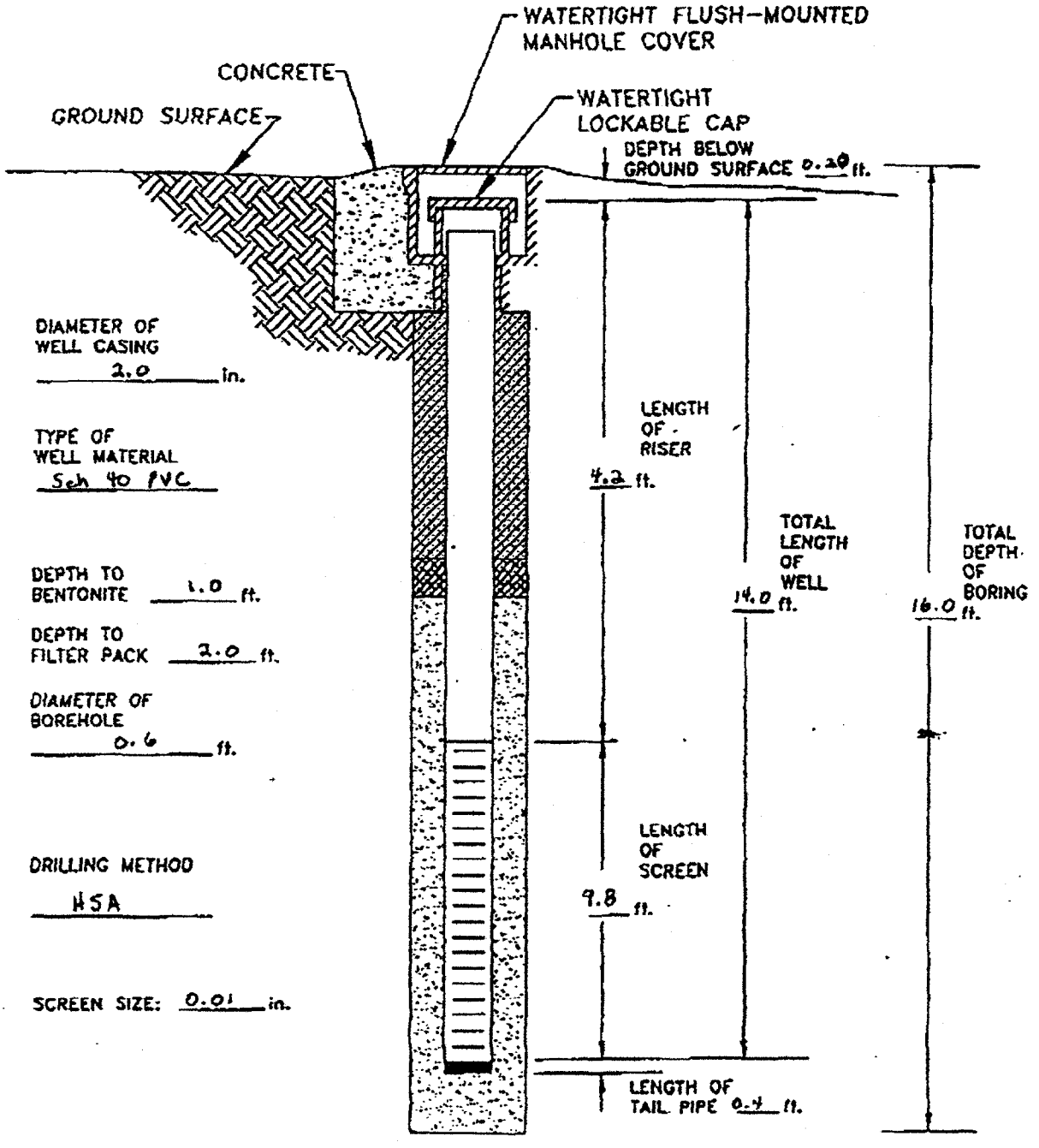
DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A Tua
DRILLER: James Carter BORING NO.: MW-9 SHEET 1 OF 2

Baker

BELOW GRADE TYPE II MONITORING WELL

PROJECT No.: 19109
PROJECT NAME: A-47
WELL No.: MW-9
DRILLING CO.: McCall Brothers

DATE STARTED: 4-30-92
DATE COMPLETED: 4-30-92
DATE DEVELOPED: 5-4-92
DEVELOPMENT METHOD: pump

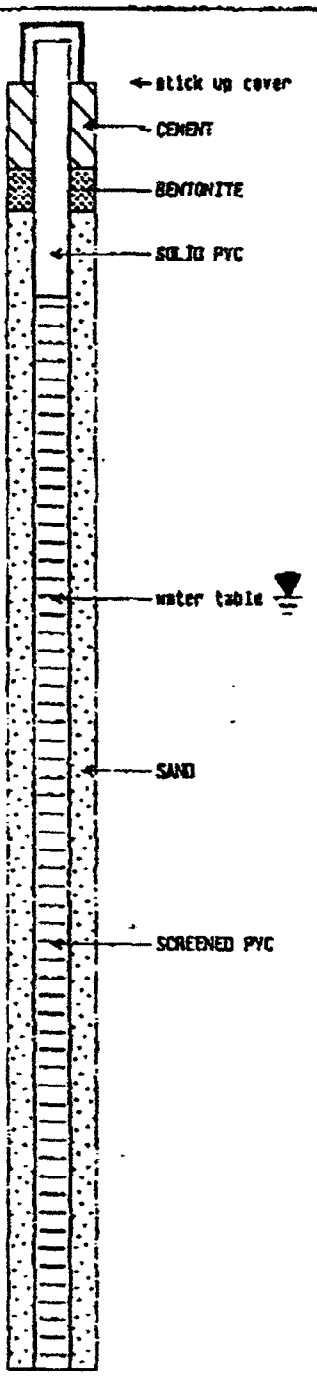


BAKER ENVIRONMENTAL REPRESENTATIVE: K. Tua

BORING LOG

Project: CAMP LEJEUNE
Location: AMPHIB AREA BLDG. A-47
Job No.: 26-17483
Geologist: JANET EMBY
CLIENT: U.S. NAVY

Hole/Well No.: MW8
Diameter of Drill Hole: 10"
Total Depth of Hole: 15 feet
Date Started: 8/22/91
Date Completed: 8/22/91



DEPTH IN FEET	FID-PPM	SAMPLE	GRAPHIC SYMBOL	DESCRIPTION
0				
	20.8			BROWN TO TAN FINE SAND, TRACE OF CLAY
2	150			
4	>1000			
6	>1000			BLACK AND TAN FINE SAND, TRACE OF CLAY, DAMP AND ODOROUS, WET AND SLIGHTLY MORE CLAY AND SILT AT 6'
8	500			
10				
12				GREY-GREEN CLAYEY FINE SAND AND FINE SANDY CLAY, WET, STICKY
14	110			

ATEC ENVIRONMENTAL

ELECTRIC LOG BY

Carolina Well & Pump Co. SANFORD N.C.

JOHNSON·KECK™ DR·61 ELECTRICAL LOGGING SYSTEM

Well Test #2 Owner Camp Lejeune

Location [illegible] Bay Date [illegible]

Borehole depth [illegible] ft. dia. 6 in. Casing depth [illegible] ft. dia. 9 in.

Mud resistivity ______ temperature 67 F

viscosity ______ sec weight ______ lb/gal type Quik Gel

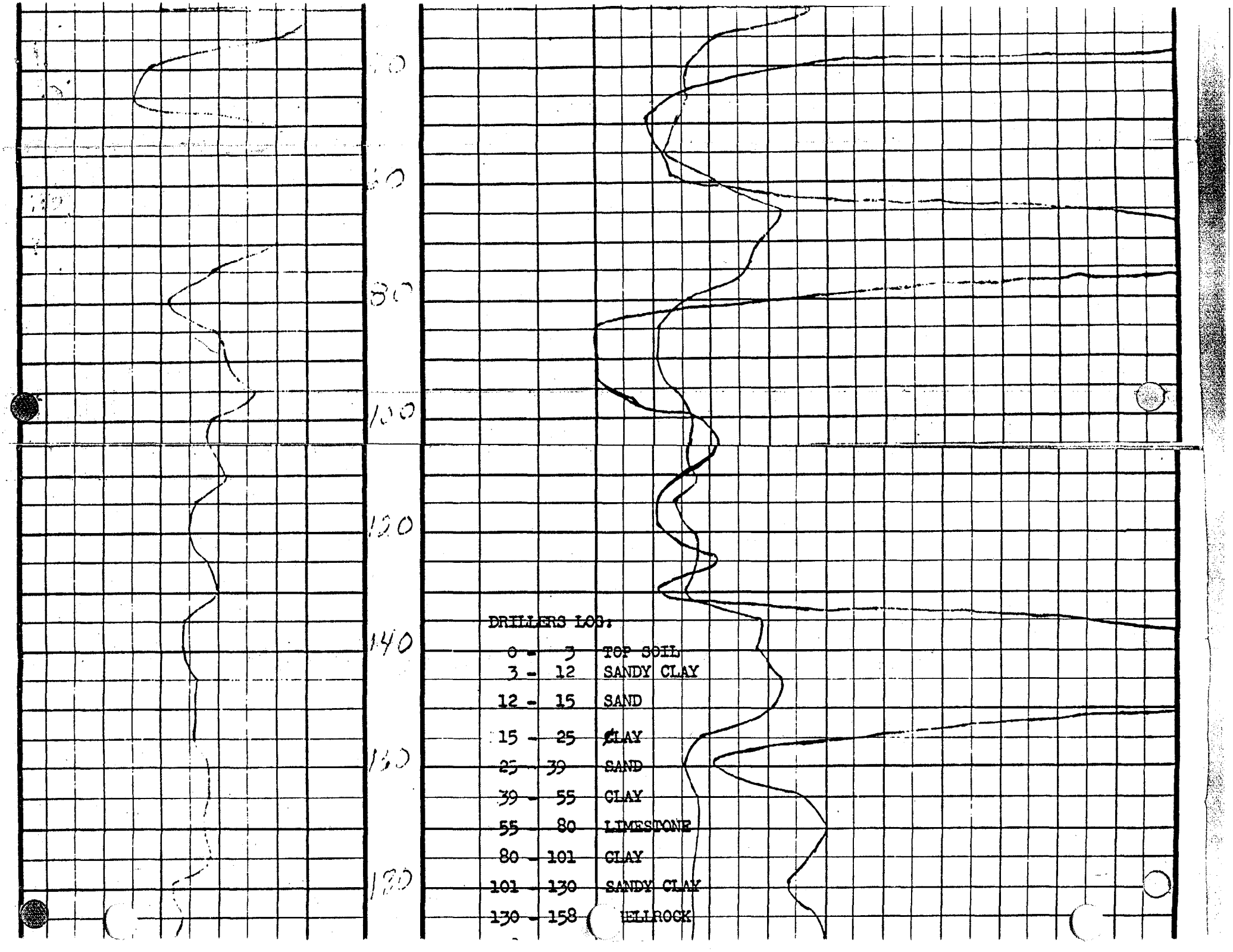
Measuring point 0 ft. above/below ground level

Fluid level in hole 9 ft. Other logs ______

Driller [illegible] E·log operator [illegible]

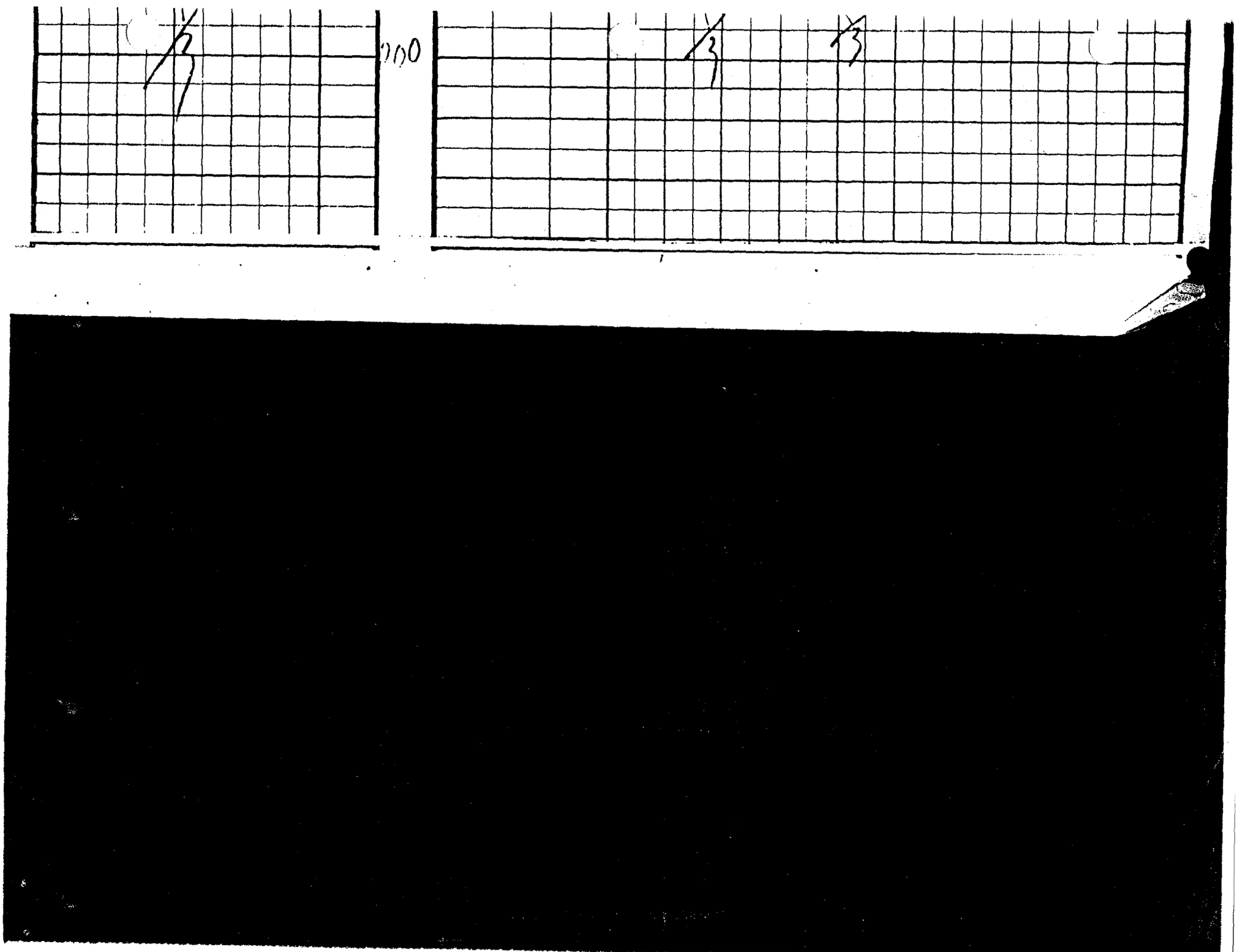
Spontaneous Potential (millivolts)						Depth (ft)	Resistivity (ohm – ft)							
-20	-10	0	10	20	SP	1"=10' 1"=20' 1"=40'	(Circle one) Normal - Lateral .25	2.5	10	0	100	200	300	400

20



DRILLERS LOG:

0 -	3	TOP SOIL
3 -	12	SANDY CLAY
12 -	15	SAND
15 -	25	CLAY
25 -	39	SAND
39 -	55	CLAY
55 -	80	LIMESTONE
80 -	101	CLAY
101 -	130	SANDY CLAY
130 -	158	BEDROCK

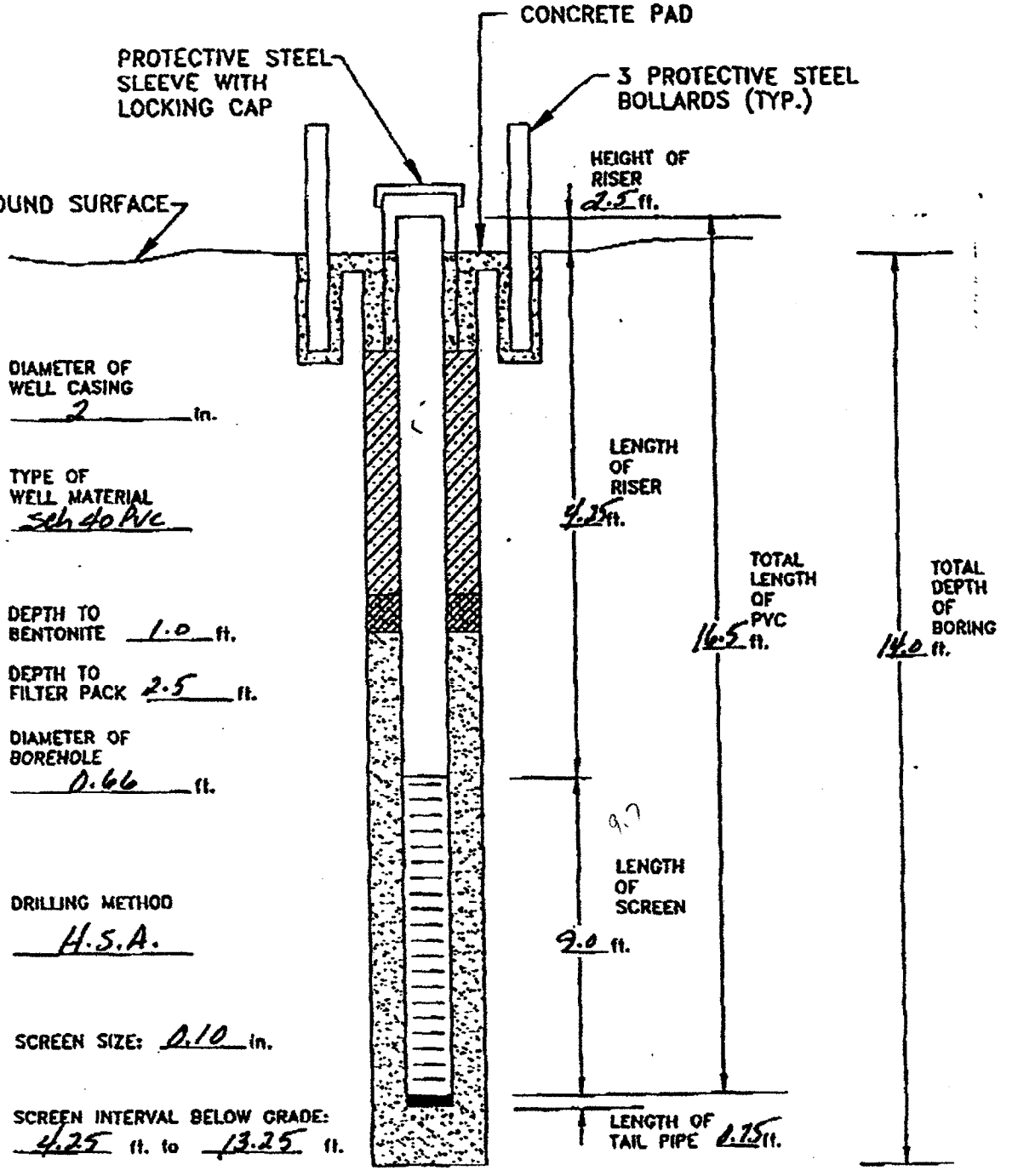


Baker

ABOVE GRADE TYPE II MONITORING WELL

PROJECT No.: 19109-30-SRN
PROJECT NAME: A-47
WELL No.: MW-18
DRILLING CO.: Hardin-Huber

DATE STARTED: 1-17-93
DATE COMPLETED: 1-17-93
DATE DEVELOPED: 1-21-93
DEVELOPMENT METHOD: Air



BAKER ENVIRONMENTAL REPRESENTATIVE: J. Culp

Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: A-47- Amphibious Vehicle Maintenance Facility
S.O. NO.: 19109-50-SEN BORING NO.: MW-18
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: 11.6 TOP OF PVC CASING:

RIG: Mobile B-81	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2 in.		4.25" I.D		1-17-95	14.0	Sunny, Cool		
LENGTH	2.0 FT		5 FT						
TYPE	STD		H.S.A.						
HAMMER WT.	140 lb								
FALL	30 in.								
STICK UP									

REMARKS: Well was Set at 14.0 Ft.

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No. Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1			2.0 / 2.0 / 100%	4 / 12 / 19 / 27		0	Sand, Medium to Fine grained, Some Silt	Lt Brown	Dense	Damp		
2												
3		S-1	2.0 / 2.0 / 100%	18 / 16 / 10 / 8		0				3.3		8.3
4							Silt, trace Sand	Dk Brown	Med Dense	Moist		
5		S-2	2.0 / 2.0 / 100%	7 / 4 / 7 / 8		0	Silt, trace Sand	Dk Brown	Med Dense	Moist, Encountered Groundwater at 6.0 Ft.		
6												
7												
8		A.N.										
9												
10										10.0		1.6

DRILLING CO.: Hardin-Huber Inc. BAKER REP.: Jim Culp
DRILLER: Chad Chism BORING NO.: MW-18 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: A-47 Amphibious Vehicle Maintenance Facility
S.O. NO.: 19107-50-SRN BORING NO.: MW-18

DEPTH	SOIL / ROCK	Sample ID / Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1		A.N.					Sand, Medium to fine grained, trace SILT	LT. Grey	MED. DENSE	WET		
2–3			2.0 2.0 100%	8 9 9 11		0	Sand, Medium to fine grained, trace SILT	LT Grey	MED. DENSE	WET 14.0		-2A
4							END OF BORING AT 14.0 FT.					
5												
6												
7												
8												
9												
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

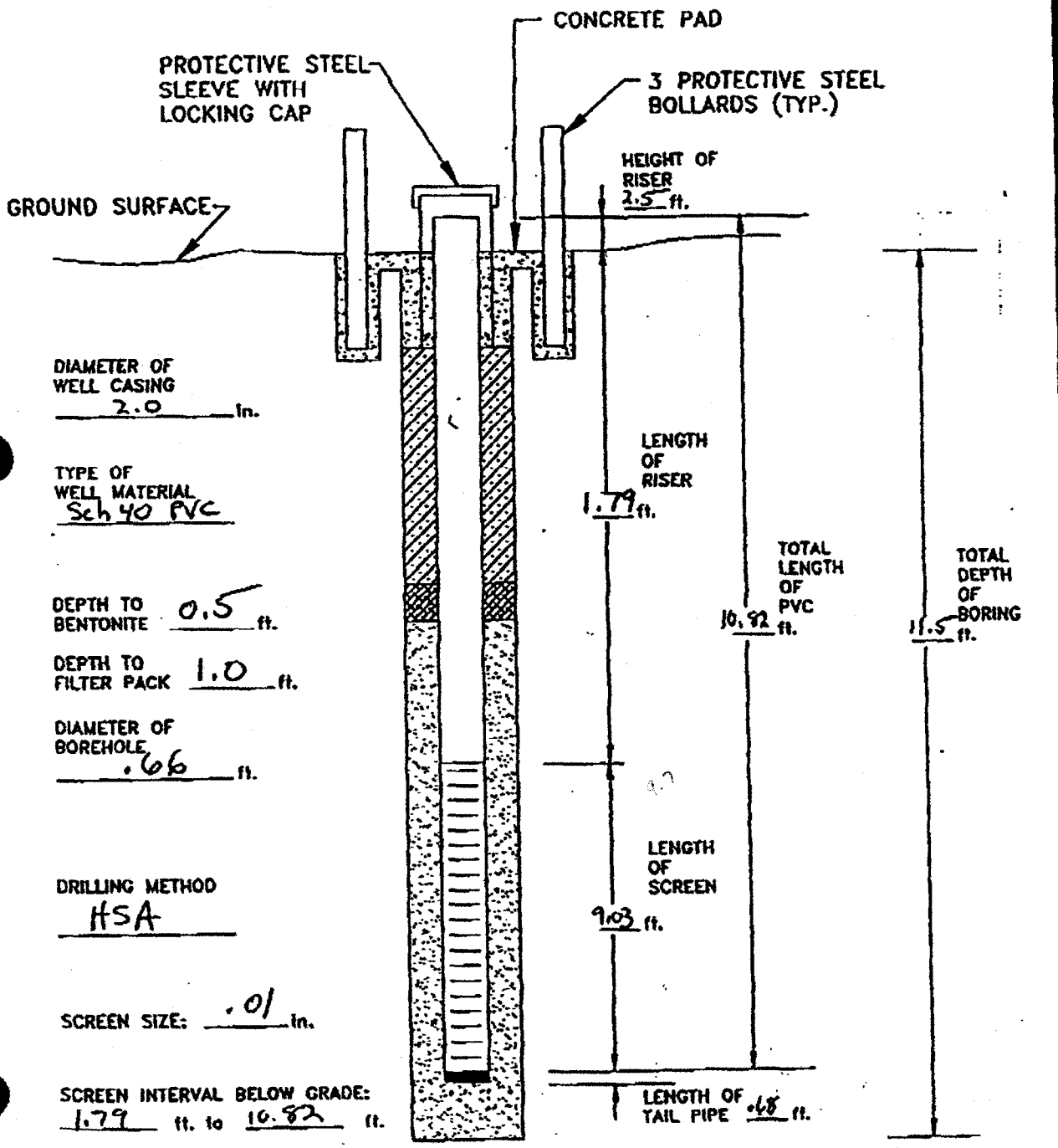
DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J. McCoy
DRILLER: Chad Chism BORING NO.: MW-18 SHEET 2 OF 2

Baker

ABOVE GRADE TYPE II MONITORING WELL

PROJECT No.: 19109-51-SRN
PROJECT NAME: A-47 SITE ASSESSMENT
WELL No.: MW16
DRILLING CO.: HARDIN HUBER, INC

DATE STARTED: 1/17/93
DATE COMPLETED: 1/17/93
DATE DEVELOPED: 1/21/93
DEVELOPMENT METHOD: AIR PUMP & SURGE



BAKER ENVIRONMENTAL REPRESENTATIVE: R. SEVCIK

Baker Environmental, Inc.

PROJECT: SITE ASSESSMENT A-47
S.O. NO.: 19109-51-SAN BORING NO.: MW16

DRILL RECORD							VISUAL DESCRIPTION					
DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1	12.0	S-6	2.0 / 100%	3 6 6 7		0	SAND, FG, TRACE SILT	GRAY	MED. DENSE	WET		
2												
3												
4												
5	16.0	S-7	1.8 / 90%	9 7 7 6		0						-3.75 15.9
6							SAND, FG, AND SILT	BLUE GRAY		WET		
7		NS										-5.85
8												
9	20.0	S-8	1.9 / 95%	18 20 24 18		0	CLAY, LITTLE SILT, TRACE SAND	BLUE GRAY	HARD	WET		-7.85 20.0
0							END OF BORING AT 20'					
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: R. SEVCIK
DRILLER: JOYCE KEENAN BORING NO.: MW16 SHEET 2 OF 2

Baker

Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: SITE ASSESSMENT A-47
S.O. NO.: 19109-51-SRN BORING NO.: MW16
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: 12.15 TOP OF PVC CASING:

RIG: MOBILE B-81	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4¼ ID		1/19/93	20.0	SUNNY 40°F	3.10'	0915
LENGTH	2.0		5.0						
TYPE	STD		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: BORING ADVANCED TO 20' WITH CONTINUOUS SPLIT SPOON SAMPLING FROM 0'-16' THEN 18'-20'. WELL INSTALLED AT 12' BGS

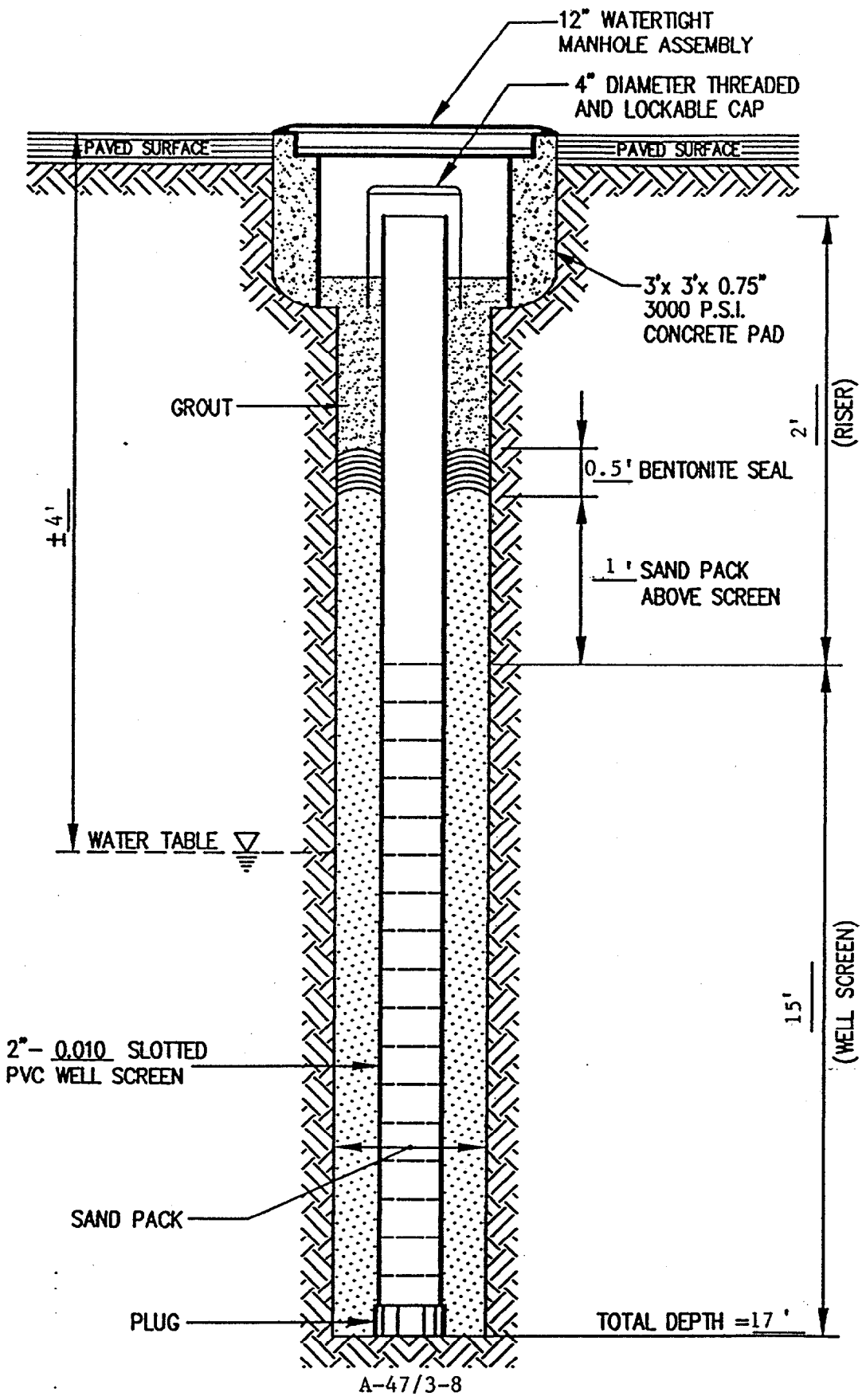
DRILL RECORD

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No. Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)
1		S-1	1.3 / 65%	2 3 7 9		0
2	2.0					
3		S-2	1.6 / 50%	7 9 12 11		0
4	4.0					
5		S-3	1.0 / 50%	7 9 9 10		0
6	6.0					
7		S-4	1.1 / --%	6 7 9 9		0
8	8.0					
9		S-5	2.0 / 100%	6 6 9 10		0
10	10.0					

VISUAL DESCRIPTION

DEPTH	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1	SAND, FG, SOME SILT	LT BROWN DK BROWN		MOIST SAND GRAINS, SUB ROUNDED WELL SORTED		
2						
3	SAND FG SILT	LT BROWN		FINE GRAINED SR/NS SAND WATER AT 7.0' WET		
4						
5	SAND, FG, SOME SILT	GRAY		WET		
6						
7						5.15
8	CHANGE SMALL TRACE SILT AT 8.5					
9						
10						

DRILLING CO.: HARDIN - HUBER, INC. BAKER REP.: R. SEVCIK
DRILLER: ROYCE KEENAN BORING NO.: MW16 SHEET 1 OF 2



A-47/3-8

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RCA WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: PAVED SURFACE TYPE II MONITORING WELL DETAIL			FIGURE
	JOB NO: 93124	DATE: 11-1993	SCALE: AS SHOWN	DRAWN BY: WHW	CHECKED BY: JC

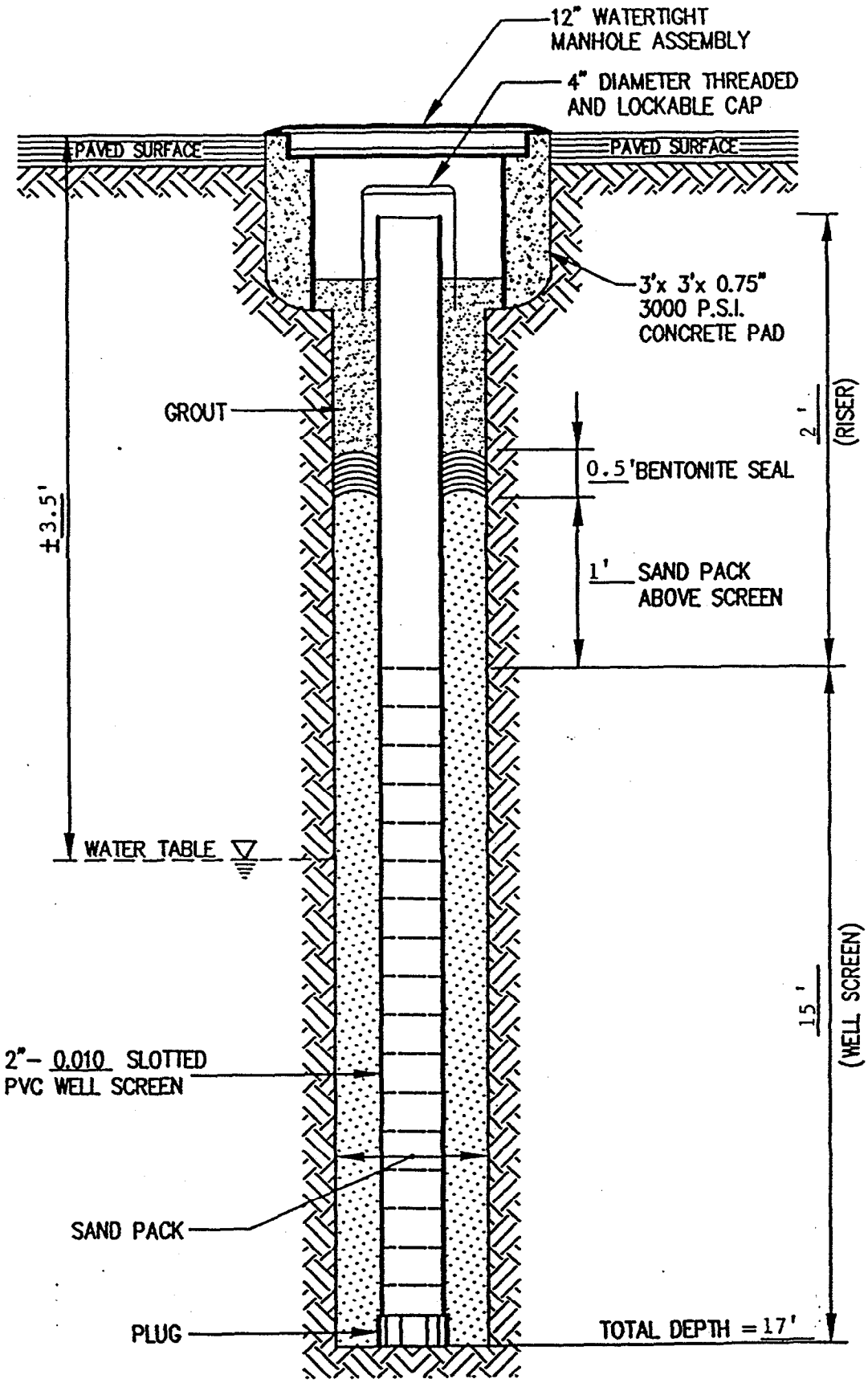
ACAD FILE: SBD DETAILS 5

BORING LOG

BORING NUMBER A47/3-8 | SITE LOCATION Building A-47 | DRILLED BY M. Sage
TOTAL DEPTH 17' | Camp Lejeune, North Carolina | LOGGED BY S. Hudson
DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Dark brown/green, silty sands with minor clays, poorly sorted, very fine to medium fine grained	SM	Damp	Possible	550	5-5-6-5
5.0	7.0	Dark gray to brown sands and silty sands, fine to medium grained, moderate to poorly sorted, with minor clays	SM	Wet	Yes	900	2-2-2-2
10.0	12.0	Dark brown, sands and silty sands with peat interbeds, poorly sorted, fine to medium grained, with much organics	SM/Pt	Wet	Yes	>1000	3-3-4-3
15.0	17.0	Brown sands with silt, medium/fine grained, moderate sorting	SM	Wet	Possible	850	3-3-5-7

REMARKS TPH samples taken at 2'-4' and 5'-7'. FP/pH sample at 10'-12'.



A-47/3-9

Catlin & Associates, Inc. / VIRONMENTAL ENGINEERS D HYDROGEOLOGISTS / RC&A GTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE PAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
	JOB NO: 93124 DATE: 11-1993	SCALE: AS SHOWN DRAWN BY: WHW CHECKED BY: JC	

ACAD FILE: 330 DETAILS 5

BORING LOG

BORING NUMBER A47/3-9
TOTAL DEPTH 17'

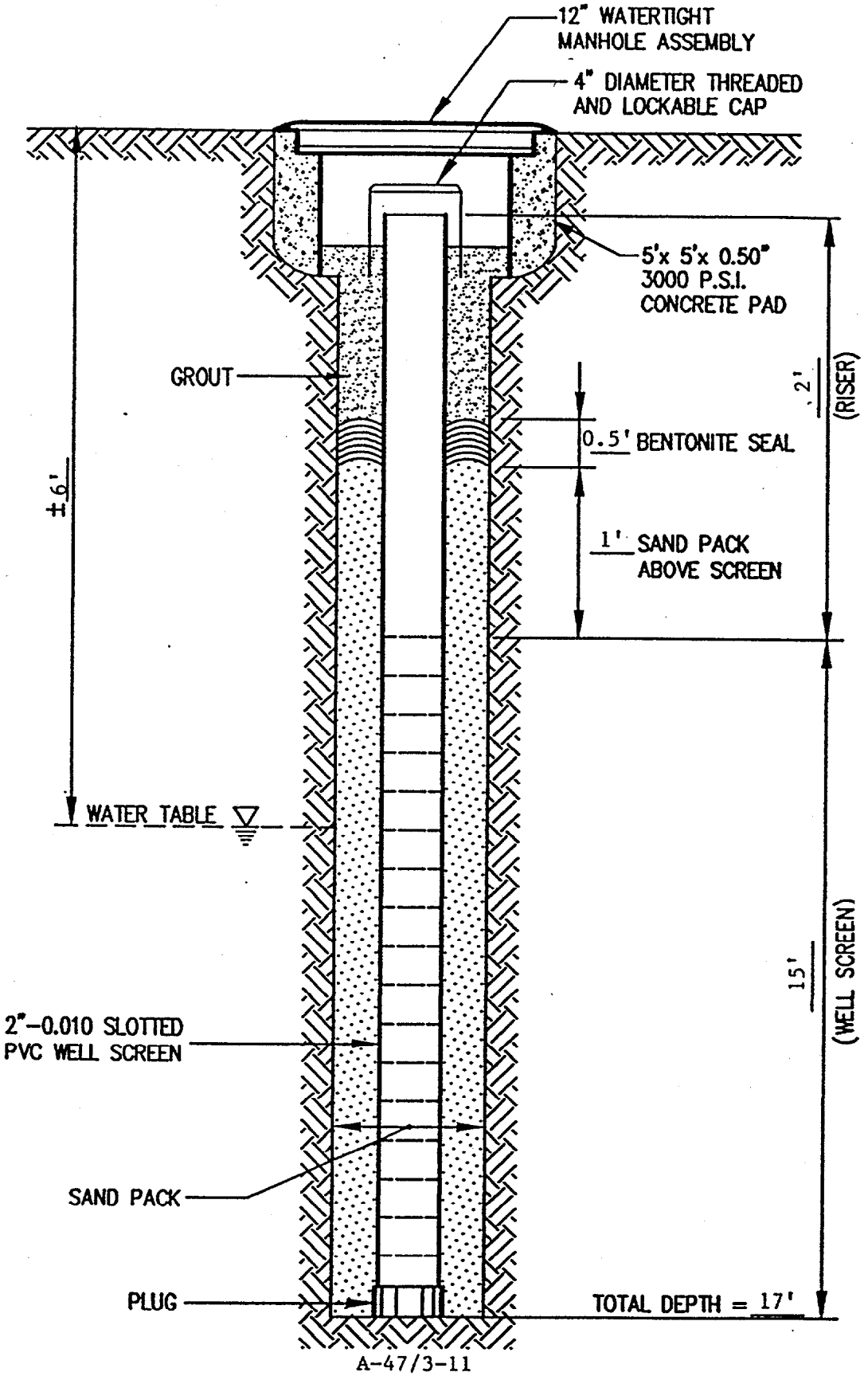
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Dark gray to brown, sands with clay (clayey sand), poorly sorted, medium fine to very fine grained	SC	Damp	Strong	>1000	GRAB
5.0	7.0	Black to gray, sands with clay/silt, poorly sorted, medium to fine grained, root fragments	SC	Damp	Possible	>1000	2-4-2-4
10.0	12.0	Tan/orange to gray/tan, sands with minor silts, medium-fine to fine grained, moderately poorly sorted	SM	Wet	Possible	920	10-12-9-4
15.0	17.0	Tan/brown to gray/brown, sands, fine grained, moderately to poorly sorted, many root fragments in ≈ 6" of bottom of spoon = black≈ peat	SM/Pt	Saturated	Possible	12	3-5-7-3

REMARKS TPH samples taken at 2'-4' and 5'-7'. All samples have sulphur odor. FP/pH sample at 10'-12'.



A-47/3-11

Caitlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS — RICHINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC — RC&A	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: UNPAVED SURFACE TYPE II MONITORING WELL DETAIL		FIGURE
	JOB NO: 93124	DATE: 11-1993	SCALE: AS SHOWN — DRAWN BY: WHW — CHECKED BY: JC	

ACAD FILE: 510 DETAILS 5

BORING LOG

ORING NUMBER A47/3-11
OTAL DEPTH 17'

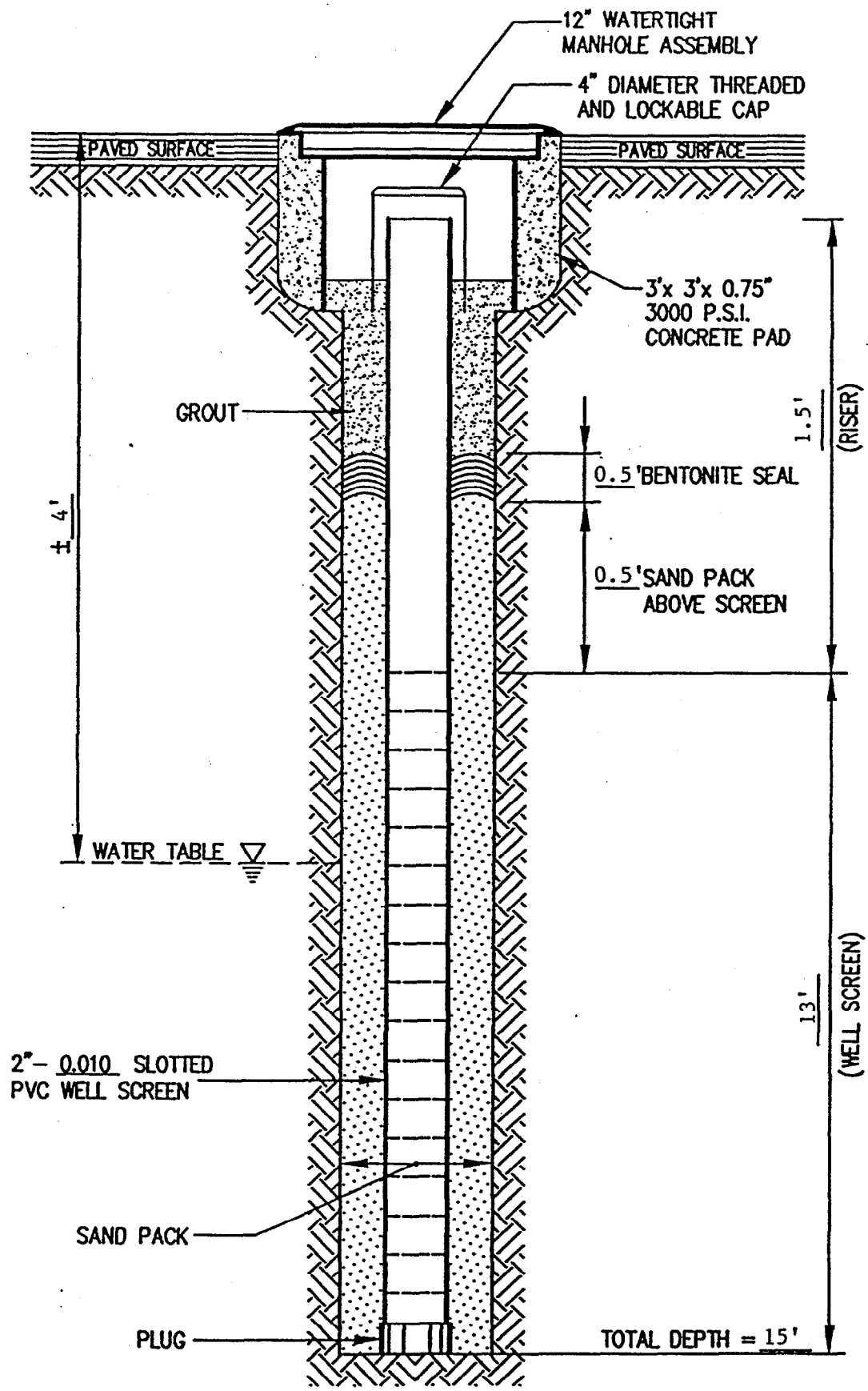
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/21/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Brown to brown/green, sandy clay, very fine to fine grained, poorly sorted, cohesive and malleable	CL	Wet	No	800	GRAB
5.0	7.0	Brown/green to dark gray, clayey sand to sands, very fine to medium grained, poor to moderate sorting. (Note: Description is from top to bottom of spoon sample. Representative of grading.)	SC	Damp	No	550	5-5-7-2
10.0	12.0	Dark gray to tan, sands, medium-fine to medium grained, moderately sorted	SP	Wet	No	200	10-12-16-18
15.0	17.0	Dark gray to tan, sands, medium-fine to medium grained, moderately sorted	SP	Wet	No	120	3-5-6-8

EMARKS TPH samples at 2'-4' and 5'-7'. FP/pH sample at 10'-12'.



A-47/3-13

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT: BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE: PAVED SURFACE TYPE II MONITORING WELL DETAIL	FIGURE
	JOB NO: 93124 DATE: 11-1993	SCALE: AS SHOWN DRAWN BY: WHW	CHECKED BY: JC

ACAD FILE: 516 DETAILS 5

BORING LOG

BORING NUMBER A47/3-13
TOTAL DEPTH 17'

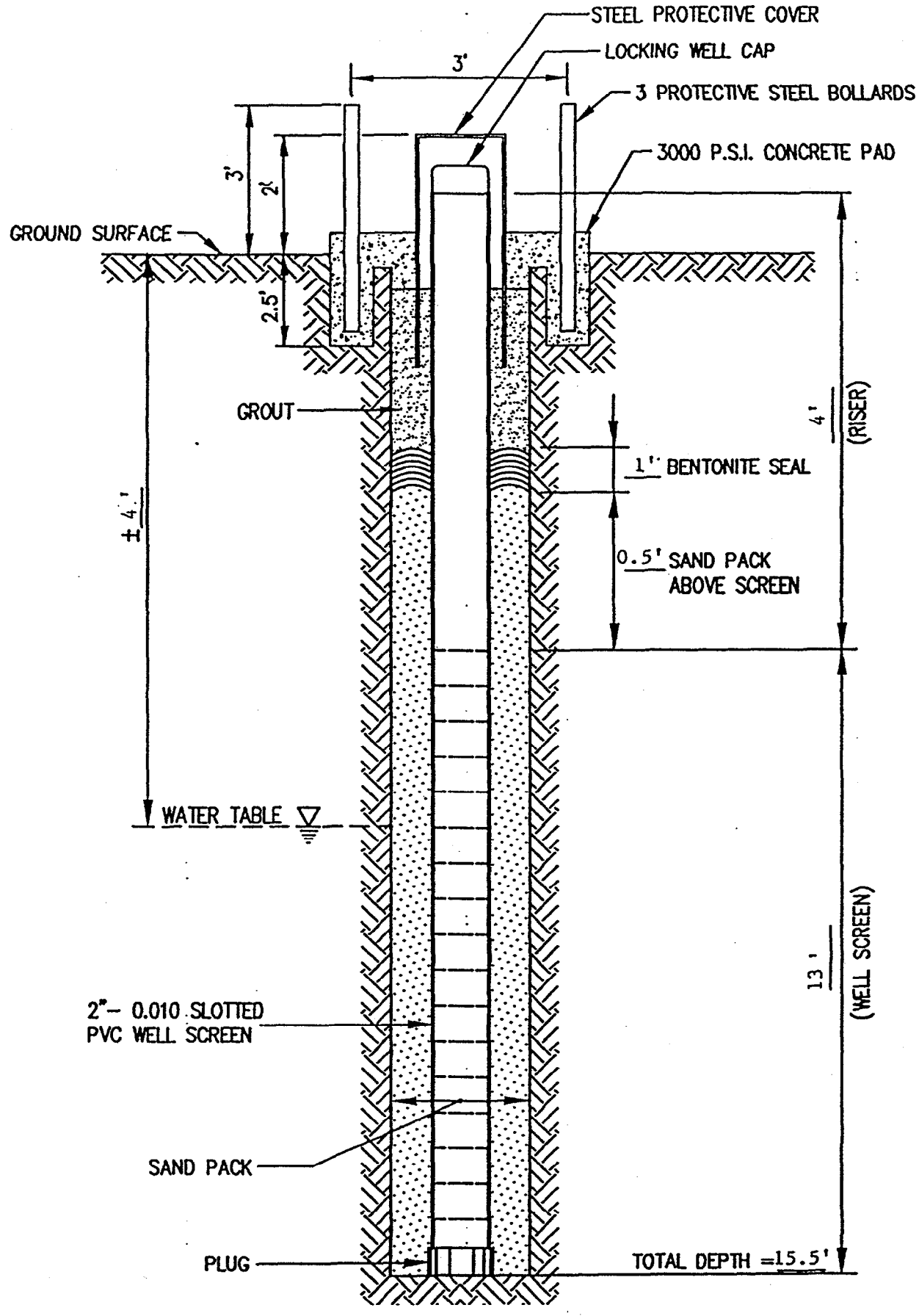
SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 10/28/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Brown/tan sands and silty sands, very fine to medium/fine grained, poorly sorted, root fragments	SM	Dry	Possible	22	GRAB
5.0	7.0	Gray/tan to dark brown sands to clayey sands, very fine to medium grained, moderately sorted	SC	Wet	No	>1000	10-10-11-15
10.0	12.0	Tan/brown sands, fine to medium grained, moderately/poorly sorted, large root fragments	SP	Wet	No	520	8-12-9-14
15.0	17.0	Dark brown clayey/silty sands to silty clays, very fine to fine grained, very poorly sorted, root fragments	ML	Wet	No	700	6-3-1-1

REMARKS TPH samples at 2 - 4' and 5 - 7'. FP/pH sample at 10 - 12'.



A-47/3-16

Richard Catlin & Associates, Inc. ENVIRONMENTAL ENGINEERS AND HYDROGEOLOGISTS RC&A WILMINGTON, NC CHARLESTON, SC ATLANTA, GA WINSTON-SALEM, NC	PROJECT BUILDING A-47 PUMPS LANTDIV NAVFACENGCOM CAMP LEJEUNE, NC	TITLE ABOVE GROUND TYPE II MONITORING WELL DETAIL	FIGURE
	JOB NO: 93124 DATE: 11-1993	SCALE: AS SHOWN DRAWN BY: WHW CHECKED BY: JC	

ACAD FILE: STD DETAILS 5

BORING LOG

BORING NUMBER A47/3-16
TOTAL DEPTH 16'

SITE LOCATION Building A-47
Camp Lejeune, North Carolina

DRILLED BY M. Sage
LOGGED BY S. Hudson

DRILLING DATE 11/1/93

SAMPLE DEPTH (FT.)		SAMPLE DESCRIPTION	USCS	WATER CONTENT	HC ODOR	PID/ FID PPM	BLOW COUNT
2.0	4.0	Orange/brown to brown sands and clayey sands, very fine to medium/fine grained, poorly sorted	SM/SC	Damp		220	GRAB
5.0	7.0	Dark brown to black sandy silts and peat, very fine to medium grained, very poorly sorted	OL	Wet		98	1-1-1-1
10.0	12.0	Dark gray to brown sands and silty sands, moderately poorly sorted, very fine to medium/fine grained, root fragments	SM	Wet		540	5-6-5-8
14.0	16.0	Gray sands, medium/fine to medium grained, moderately sorted, large root fragments	SP	Wet		120	6-5-6-8

REMARKS TPH samples at 2 - 4' and 5 - 7'. FP/pH sample at 10 - 12'.

Baker

Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: BLDG A-47
S.O. NO.: 19109 BORING NO.: DW-2

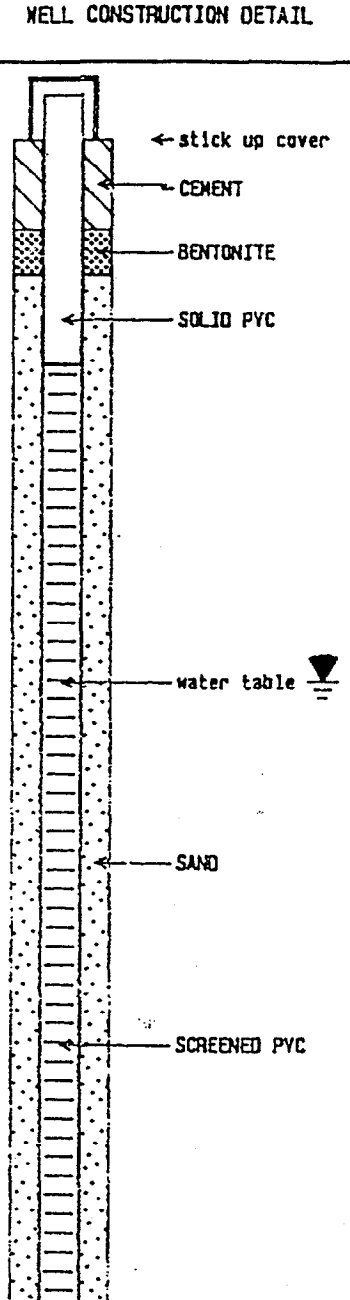
DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft & %)	Lab. Class.. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
11	S4	S	1.4/2 70%	8 17 22 23		7	Sand (med)	yellow	dense	wet - slight odor		
12												
13		N										
14												
15												1.58
16		S	2/2 100%	3 2 3 5		4	clay	gray	medium stiff	wet - slight odor		
17							Sand (fine) with silt	white				3.58
18		N										
19												
20												6.58
21		S	2/2 100%	8 5 4 5		7	clay with organics	brown	stiff	wet - no odor		
22												
23		N										
24												
25		S	2/2 100%	5 5 7 5		12	12" clay some sand (fine)	gray	stiff	wet		11.58
26							12" sand (fine)	black	medium dense	stained dark black slight odor		
27		N										
28												
29		S	1.5/2 75%	5 5 7 5		11	Sand (coarse) with clay	green	medium dense	wet		
30							END OF BORING					16.5

DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A. Tua
DRILLER: James Carter BORING NO.: DW-2 SHEET 2 OF 2

BORING LOG

Project: CAMP LEJEUNE
Location: AMPHIB AREA BLDG. A-47
Job No.: 26-17483
Geologist: JANET EMAY
CLIENT: U.S. NAVY

Hole/Well No.: MW8
Diameter of Drill Hole: 10"
Total Depth of Hole: 15 feet
Date Started: 8/22/91
Date Completed: 8/22/91



DEPTH IN FEET	FID-PPM	SAMPLE	GRAPHIC SYMBOL	DESCRIPTION
0				
	20.0			BROWN TO TAN FINE SAND, TRACE OF CLAY
2				
	150			
4				
	>1000			
6				
	>1000			BLACK AND TAN FINE SAND, TRACE OF CLAY, DAMP (NO ODOR), WET AND SLIGHTLY MORE CLAY AND SILT AT 6'
8				
	500			
10				
12				GREY-GREEN CLAYEY FINE SAND AND FINE SANDY CLAY, WET, STICKY
	110			
14				

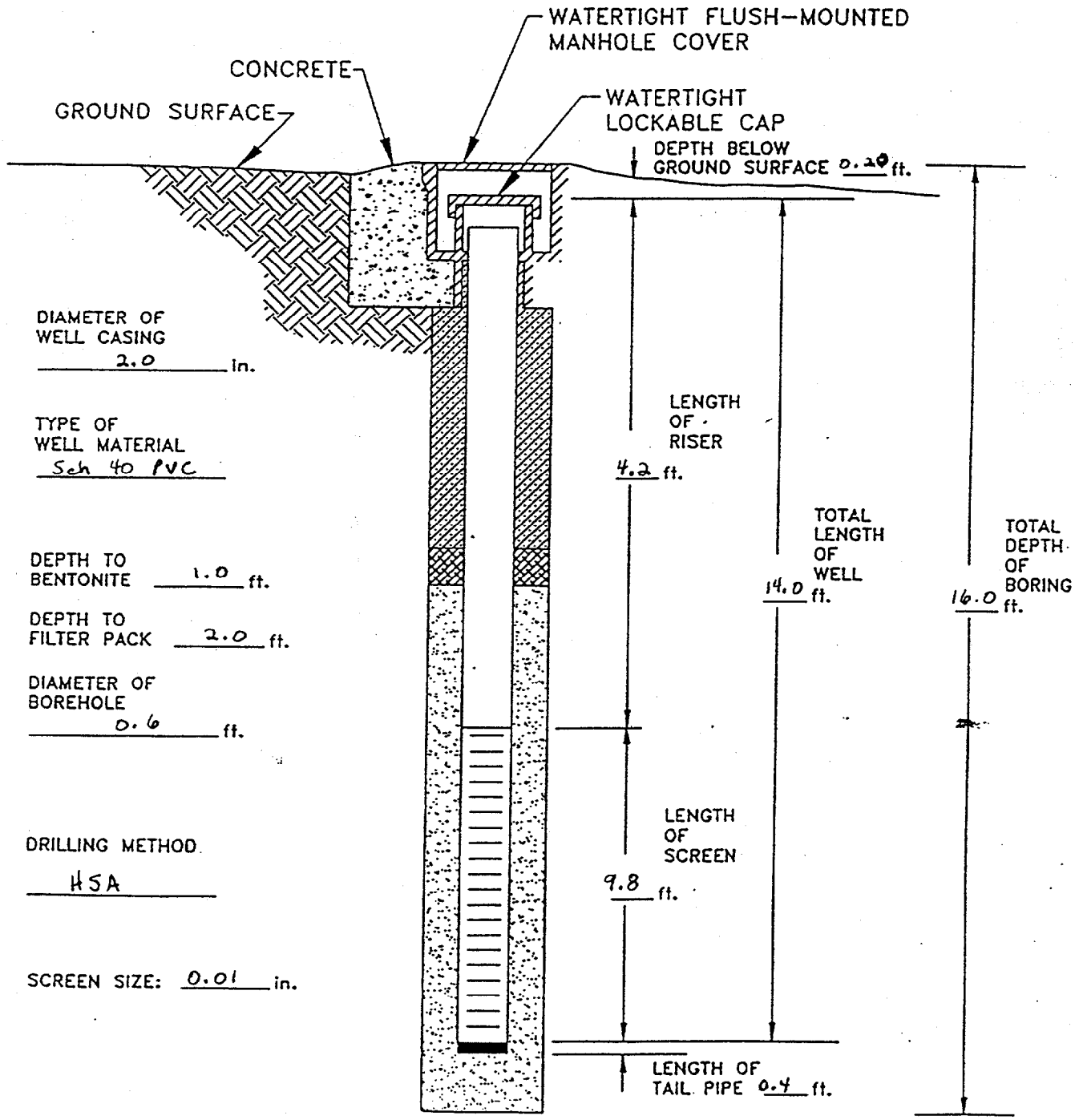
ATEC ENVIRONMENTAL

Baker

BELOW GRADE TYPE II MONITORING WELL

PROJECT No.: 19109
PROJECT NAME: A-47
WELL No.: MW-9
DRILLING CO.: McCall Brothers

DATE STARTED: 4-30-92
DATE COMPLETED: 4-30-92
DATE DEVELOPED: 5-4-92
DEVELOPMENT METHOD: pump



BAKER ENVIRONMENTAL REPRESENTATIVE: K. Tua

Baker

Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: BLDG A-47
S.O. NO.: 19109 BORING NO.: MW-9
COORDINATES: EAST: 4898.59 NORTH: 5228.97
ELEVATION: SURFACE: 15.67 TOP OF PVC CASING: 15.4

RIG: Trailer Mount Deep Rock	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIM
SIZE (DIAM.)	1 3/8" ID	2"	6 1/4" ID		4-30-92	16	clear/mild		
LENGTH	2.0'		5.0'						
TYPE	STD	SCH 40 PVC	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Boring augered to 16' taking continuous split spoon samples every 2'. Monitoring well installed using SCH 40 2" PVC

DRILL RECORD / VISUAL DESCRIPTION

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1	S1	S	1.3/2 65%	3 6 6 7		0	1" Asphalt Sand (fine) with silt	yellow	medium dense	Dry		15.5
2												
3	S1	S	1.2/2 60%	3 3 4 4		0	Sand (fine) with silt	yellow	Loose	Dry		
4												
5	S2	S	1.1/2 55%	2 4 4 5		0	Sand (fine) with silt	yellow	Loose	Moist		
6												9.6
7	S3	S	0.83/2 42%	2 5 6 8		0	Sand (fine) with silt	yellow	medium dense	Wet		
8												
9	S4	S	0.67/2 33%	0 1 2 2		0	Silt some sand (fine)	gray	soft	wet		
10												

DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A Tua
DRILLER: James Carter BORING NO.: MW-9 SHEET 1 OF 2

Baker

Baker Environmental, Inc.

FIELD TEST BORING RECORD

PROJECT: BLDG A-47
S.O. NO.: 19109 BORING NO.: MW-9

DRILL RECORD							VISUAL DESCRIPTION					
DEPTH	SOIL / ROCK	Sample ID — Type - No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class.. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color / Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
11	S5		0.83/2 42%	2 3 6 9		0	Sand (med - fine)	brown	Loose	wet - looked stained		
12							Sand (med - fine)	brown	Loose	Wet		
13	S6		1.5/2 75%	4 7 3 3		0	2" sand (med - fine)	gray				
14							Sand (med - fine)	brown	Loose			
15	S7		1.2/2 60%	5 5 2 8		0						
16							END OF BORING					93
17												
18												
19												
20												
21												
22												
23												
24												
25												
26												
27												
28												
29												
30												

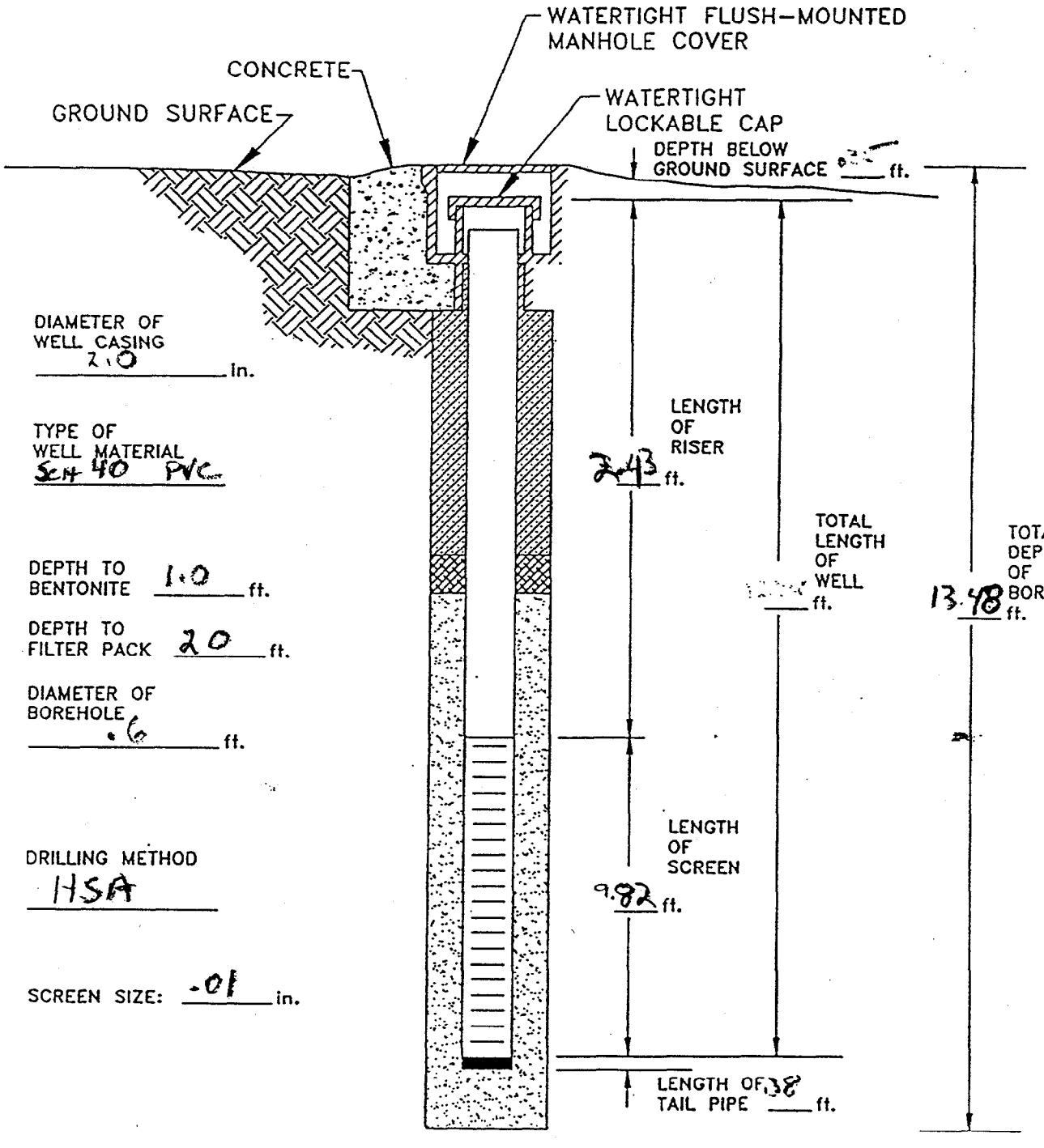
DRILLING CO.: McCall Brothers BAKER REP.: Kenneth A Tua
DRILLER: James Carter BORING NO.: MW-9 SHEET 2 OF 2

Baker

BELOW GRADE TYPE II MONITORING WELL

PROJECT No.: 19109-51-SRN
PROJECT NAME: A-47
WELL No.: MW-13
DRILLING CO.: McCall Environmental

DATE STARTED: 5/2/92
DATE COMPLETED: 5/2/92
DATE DEVELOPED: 5/4/92
DEVELOPMENT METHOD: Pump



BAKER ENVIRONMENTAL REPRESENTATIVE: _____

FIELD TEST BORING RECORD

Baker Environmental, Inc.

PROJECT: A-47
S.O. NO.: 19109-51-SRN
BORING NO.: MW-13
COORDINATES: EAST: 5086.21
NORTH: 5375.31
ELEVATION: SURFACE: 13.00
TOP OF PVC CASING: 12.95

RIG: Buck Rodgers - 760 Series

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	TOP OF CASING WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8"		4¼"		5/2	13.0	Sunny 70°F	4.5'	1130
LENGTH	2.0'		5.0'						
TYPE	STD		HSA						
HAMMER WT.	140 #								
FALL									
STICK UP									

REMARKS: Boring advanced to 13', continuous split spoon samples taken from 0'-12'
Monitoring well installed at 13.48

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1		S-1	1.4	10 12 12 13		0-1	Silt, little Sand, f.G.	Lt Brown	V. Stiff	Damp		
2	2.0		70%							Blackstaining at 1.5'		
3		S-2	1.6	9 12 14 16		0-1						
4	4.0		80%								4.0	9.00
5		S-3	1.2	9 7 10 12		0	Silt, little Sand, f.G.	Lt Gray	Med. Dense	moist wet water at 4.5'		
6	6.0		60%									
7		S-4	0.8	1 4 5 6		0	Silt, and Sand, f.G.		Loose			
8	8.0		40%									
9		S-5	2.0	1 4 4 3		0						
10	10.0		100%									

DRILLING CO.: McCall Brothers
DRILLER: Charles City
BAKER REP.: R. Sevcik
BORING NO.: MW-13
SHEET 1 OF 2

FIELD TEST BORING RECORD

Baker Environmental, Inc.

PROJECT: A-47
S.O. NO.: 19109-51-SRN BORING NO.: MW-13

DEPTH	SOIL / ROCK	Sample ID — Type-No. (N = No Samp.)	Samp. Rec. (Ft. & %)	SPT Blows Per 0.5' / RQD (Ft. & %)	Lab. Class. / Pen. Rate	PID (ppm)	Classification (Grain Size, Principal Constituents, Etc.) / Classification (Name, Grain Size, Principal Constituents, Etc.)	Color	Consist. or Density / Hardness	Moisture Content, Organic Content, Plasticity, and Other Observations / Weathering, Bedding, Fracturing, and Other Observations	SOIL / ROCK	ELEVATION
1		S-6	2.0	4 6 8 12		0	SILT, AND SAND, F.G.	LT GRAY	MED. DENSE	WET		
2	12.0		100%									
3										13.98		0.4
4							Top of Bedrock 3.48'					
5												
6												
7												
8												
9												
0												
1												
2												
3												
4												
5												
6												
7												
8												
9												
0												

DRILLING CO.: McCall Brothers BAKER REP.: R. Sevcik
DRILLER: Charles Clay BORING NO.: MW-13 SHEET 2 OF 2

APPENDIX C
SAMPLING SUMMARY

Site 73, AOC 1
CTO-0312

SITE 73 SOIL AOC 1

				Analyses Requested								Analyses Received									
Location	Related UST Numbers or Area	Sample ID	Date Shipped	TCL VOA (8021)	TCL VOA (8240)	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	ENG PAR	TCL VOA (8021)	TCL VOA (8240)	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	ENG PAR	Date Received	Comments
	UST A2	73-AC1-SB03-00	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A2	73-AC1-SB03-01	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A47/1	73-AC1-SB04-00	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	
		73-AC1-SB04-01	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	MS/MSD
	UST A47/1	73-AC1-SB04-01D	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	DUPLICATE
	UST A47/1	73-AC1-SB05-00	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	
	UST A47/1	73-AC1-SB05-01	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	
	UST A47/1	73-AC1-SB06-00	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	
	UST A47/1	73-AC1-SB06-01	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	
Site 73 AOC 1	UST A10/SA 26	73-AC1-MW04-00	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
Monitoring Well Soil Borings	UST A10/SA 26	73-AC1-MW04-01	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	MS/MSD
		73-AC1-MW04-01D	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A2	73-AC1-MW10-00	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A2	73-AC1-MW10-01	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A47/1	73-AC1-MW11-00	4/10/95						X								X			5/17/95	
	UST A47/1	73-AC1-MW12-00	5/9/95	X	X	X	X	X				X	X	X	X	X		X		6/26/95	
		73-AC1-MW12-00	5/9/95						X	X							X			5/24/95	
	UST A47/1	73-AC1-MW12-01	5/9/95	X	X	X	X	X				X	X	X	X	X		X		6/26/95	
		73-AC1-MW12-01	5/9/95						X	X							X			5/24/95	
	UST A47/1	73-AC1-MW13-00	5/5/95	X	X	X	X	X				X	X	X	X	X				6/21/95	
	UST A47/1	73-AC1-MW13-00	5/5/95						X	X							X	X		6/21/95	
		73-AC1-MW13	5/5/95								X								X	6/21/95	
	UST A47/1	73-AC1-MW14-00	4/22/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/8/95	
	UST A47/1	73-AC1-MW14-02	4/22/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/8/95	
	DOWN GRADIENT AC1	73-AC1-MW15-01	4/20/95	X	X	X	X	X				X	X	X	X	X				6/8/95	MS/MSD
		73-AC1-MW15IW-01	4/22/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/8/95	
		73-AC1-MW15IW-01D	4/22/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/8/95	
		73-AC1-MW17-01	5/9/95						X								X			5/24/95	
		73-AC1-MW17-01D	5/9/95						X								X			5/24/95	
	UST A47/4	73-AC1-MW26-00	4/10/95						X								X			5/17/95	
	UST A2	73-AC1-MW28-00	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A2	73-AC1-MW28-01	4/20/95	X		X	X	X	X	X		X		X	X	X	X	X		6/8/95	
	UST A47/1	73-AC1-MW29-00	4/25/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/9/95	
		73-AC1-DW04-00	4/20/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/8/95	
	UST A47/1	73-AC1-DW03-00	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	MS/MSD
		73-AC1-DW03-00D	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	DUPLICATE
	UST A47/1	73-AC1-DW03-01	4/24/95	X	X	X	X	X	X	X		X	X	X	X	X	X	X		6/12/95	

Site 73 AOC 2
CTO-0312

SITE 73 SOIL AOC 2

			Analyses Requested					Analyses Received						
Location	Sample ID (1)	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Date Received	Comments
Site 73 AOC 2	73-AC2-MW05-00	4/8/95	X	X	X	X		X	X	X	X		5/22/95	
	73-AC2-MW05-00	4/8/95					X					X	4/24/95	
Monitoring Well Soil Borings	73-AC2-MW05-01	4/8/95	X	X	X	X		X	X	X	X		5/22/95	
	73-AC2-MW05-01	4/8/95					X					X	4/24/95	
	73-AC2-MW05-01D	4/8/95	X	X	X	X		X	X	X	X		5/22/95	
	73-AC2-MW05-01D	4/8/95					X					X	4/24/95	
	73-AC2-MW06-00	4/7/95					X					X	4/21/95	
	73-AC2-MW06-00	4/7/95	X	X	X	X		X	X	X	X		5/16/95	
	73-AC2-MW06-01	4/7/95					X					X	4/21/95	
	73-AC2-MW06-01	4/7/95	X	X	X	X		X	X	X	X		5/16/95	
	73-AC2-MW07-00	4/6/95	X	X	X	X	X	X	X	X	X	X	5/15/95	
	73-AC2-MW07-03	4/6/95	X	X	X	X	X	X	X	X	X	X	5/15/95	
	73-BB-DW01-00	4/10/95	X	X	X	X		X	X	X	X		5/26/95	Background deep well
	73-BB-DW01-01	4/10/95	X	X	X	X		X	X	X	X		5/26/95	Background deep well
	73-AC2-MW22-00	4/7/95	X	X	X	X		X	X	X	X		5/16/95	
	73-AC2-MW22-00	4/7/95					X					X	4/21/95	

Site 73 AOC 3
CTO-0312

SITE 73 SOIL AOC 3

				Analyses Requested						Analyses Received							
Location	Related UST Number or Area	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	Date Received	Comments
Site 73 AOC 3 Soil Boring	A10/SA26	73-AC3-SB01-00	4/18/95	X	X	X	X			X	X	X	X			5/30/95	
	A10/SA26	73-AC3-SB01-01	4/18/95	X	X	X	X			X	X	X	X			5/30/95	
Site 73 AOC 3	A10/SA26	73-AC3-MW02-00	4/8/95	X	X	X	X			X	X	X	X			5/22/95	
		73-AC3-MW02-00	4/8/95					X	X					X	X	4/24/95	
	A10/SA26	73-AC3-MW02-01	4/8/95	X	X	X	X			X	X	X	X			5/22/95	
		73-AC3-MW02-01	4/8/95					X	X					X	X	4/24/95	
	A10/SA26	73-AC3-MW03-00	4/8/95	X	X	X	X			X	X	X	X			5/22/95	
		73-AC3-MW03-00	4/8/95					X	X					X	X	4/24/95	
	A10/SA26	73-AC3-MW03-01	4/8/95	X	X	X	X			X	X	X	X			5/22/95	
		73-AC3-MW03-01	4/8/95					X	X					X	X	4/24/95	MS/MSD
		73-AC3-MW03-01D	4/8/95	X	X	X	X			X	X	X	X			5/22/95	DUPLICATE
		73-AC3-MW03-01D	4/8/95					X	X					X	X	4/24/95	
		73-AC3-MW30-00	5/5/95	X	X	X	X			X	X	X	X			6/21/95	
		73-AC3-MW30-00	5/5/95					X	X					X	X	6/21/95	
	A10/SA26	73-AC3-MW23-00	4/6/95	X	X	X	X	X	X	X	X	X	X	X	X	5/15/95	
	A10/SA26	73-AC3-MW23-01	4/6/95	X	X	X	X	X	X	X	X	X	X	X	X	5/15/95	

Site 73 AOC 4
CTO-0312

SITE 73 SOIL AOC 4

			Analyses Requested						Analyses Received							
Location	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	Date Received	Comments
Site 73 AOC 4 Soil Borings	73-AC4-SB13-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC4-SB13-01	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC4-SB13-01D	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	DUPLICATE
	73-AC4-SB14-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC4-SB14-01	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
Site 73 AOC 4	73-AC4-MW18-00	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	MS/MSD
Monitoring Well Soil Borings	73-AC4-MW18-00D	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	
	73-AC4-MW19-00	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	
	73-AC4-MW19-02	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	
	73-AC4-MW24-00	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	
	73-AC4-MW24-01	4/5/95	X	X	X	X	X	X	X	X	X	X	X	X	5/12/95	

Site 73 AOC 5
CTO-0312

SITE 73 SOIL AOC 5

			Analyses Requested						Analyses Received							
Location	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	Date Received	Comments
Site 73 AOC 5 Soil Borings	73-AC5-SB08-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-SB08-01	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-SB09-00	4/20/95	X	X	X	X	X	X	X	X	X	X	X	X	6/8/95	
	73-AC5-SB09-00D	4/20/95	X	X	X	X	X	X	X	X	X	X	X	X	6/8/95	
	73-AC5-SB10-00	4/20/95	X	X	X	X	X	X	X	X	X	X	X	X	6/8/95	8021 VOL ANALYSIS DONE
	73-AC5-SB10-03	4/20/95	X	X	X	X	X	X	X	X	X	X	X	X	6/8/95	
	73-AC5-SB11-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-SB11-02	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-SB12-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-SB12-01	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
Site 73 AOC 5	73-AC5-MW20-00	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	
	73-AC5-MW20-00D	4/10/95	X	X	X	X	X	X	X	X	X	X	X	X	5/26/95	DUPLICATE
	73-AC5-MW21-00	4/6/95	X	X	X	X	X	X	X	X	X	X	X	X	5/15/95	
	73-AC5-MW21-03	4/6/95	X	X	X	X	X	X	X	X	X	X	X	X	5/15/95	

Site 73 AOC 6
CTO-0312

SITE 73 SOIL AOC 6

			Analyses Requested				Analyses Received							
Location	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	Oil and Grease	Date Received	Comments
Site 73 AOC 6 Soil Borings	73-AC6-SB07-00	4/24/95	X	X	X	X	X	X	X	X	X	X	6/12/95	MS/MSD
	73-AC6-SB07-00D	4/24/95	X	X	X	X	X	X	X	X	X	X	6/12/95	DUPLICATE
	73-AC6-SB07-01	4/24/95	X	X	X	X	X	X	X	X	X	X	6/12/95	

SITE 73
CTO - 0312

SITE 73 MOTOR OIL

			Analysis Requested	Analysis Received		
Location	Sample ID	Date Shipped	MOTOR OIL (8015)	MOTOR OIL (8015)	Date Received	Comments
AOC 2	73-AC2-MW22-00	4/7/95	X	X	5/16/95	
	73-AC2-MW06-01	4/7/95	X	X	5/16/95	
AOC 3	73-AC3-MW03-01	4/8/95	X	X	5/22/95	
AOC 4	73-AC5-MW20-00	4/10/95	X	X	5/26/95	
	73-AC4-MW19-00	4/5/95	X	X	5/12/95	
	73-AC4-SB13-01	4/10/95	X	X	5/26/95	
AOC 1	73-AC1-MW28-01	4/20/95	X	X	6/8/95	

Site 73 AOC 1
CTO-0312

SITE 73 GROUNDWATER AOC 1

				Analyses Requested							Analyses Received								
Location	Related UST Numbers or Area	Sample ID	Date Shipped	VOA 601/602	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Dissolved Metals	ENG PAR	VOA 601/602	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Dissolved Metals	ENG PAR	Date Received	Comments
Site 73 AOC 1 Monitoring Well	UST A12-1	73-AC1-MW08-01	5/9/95	X							X							5/24/95	
Newly Installed Wells	UST A12-1	73-AC1-MW08-01	5/9/95		X		X	X				X		X	X			6/26/95	
		73-AC1-MW08-01D	5/9/95	X							X							5/24/95	
		73-AC1-MW08-01D	5/9/95		X		X	X				X		X	X			6/26/95	DUPLICATE
	UST A12-2	73-AC1-MW09-01	5/9/95	X							X							5/24/95	
	UST A12-2	73-AC1-MW09-01	5/9/95		X		X	X				X		X	X			6/26/95	
		73-AC1-MW09F-01	5/9/95						X							X		6/26/95	
		73-AC1-MW09F-01	5/9/95						X							X		6/26/95	DUPLICATE
	UST A47/1	73-AC1-MW11-01	5/17/95	X							X							6/1/95	
	UST A47/1	73-AC1-MW11-01	5/17/95		X	X	X	X				X	X	X	X			6/23/95	
		73-AC1-MW11B-01	5/18/95	X							X							6/26/95	
		73-AC1-MW11B-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
	UST A47/1	73-AC1-MW12-01	5/18/95	X							X							6/26/95	
	UST A47/1	73-AC1-MW12-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
	UST A47/1	73-AC1-MW13-01	5/18/95	X							X							6/26/95	
	UST A47/1	73-AC1-MW13-01	5/18/95		X	X	X	X		X		X	X	X	X		X	6/26/95	
	UST A47/1	73-AC1-MW14-01	4/26/95	X	X	X	X	X			X	X	X	X	X			6/6/95	
	DOWN GRADIENT AC1	73-AC1-MW15-01	5/17/95	X							X							6/1/95	
	DOWN GRADIENT AC1	73-AC1-MW15-01	5/17/95		X	X	X	X				X	X	X	X			6/23/95	
		73-AC1-MW15B-01	5/18/95	X							X							6/26/95	
		73-AC1-MW15B-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
	UST A47/4	73-AC1-MW16-01	5/9/95	X							X							5/24/95	
	UST A47/4	73-AC1-MW16-01	5/9/95		X		X	X				X		X	X			6/26/95	
	UST A47/5	73-AC1-MW17-01	5/18/95	X							X							6/26/95	
	UST A47/5	73-AC1-MW17-01	5/18/95		X		X	X				X		X	X			6/26/95	
	UST A12-2	73-AC1-MW25-01	5/9/95	X							X							5/24/95	
	UST A12-2	73-AC1-MW25-01	5/9/95		X		X	X				X		X	X			6/26/95	
	UST A47/4	73-AC1-MW26-01	5/9/95	X							X							5/24/95	
	UST A47/4	73-AC1-MW26-01	5/9/95		X		X	X				X		X	X			6/26/95	
	UP GRADIENT A47/1	73-AC1-MW27-01	5/18/95	X							X							6/26/95	
	UP GRADIENT A47/1	73-AC1-MW27-01	5/18/95		X		X	X				X		X	X			6/26/95	
	UST A47/1	73-AC1-MW29-01	5/18/95	X							X							6/26/95	
	UST A47/1	73-AC1-MW29-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
Deep Monitoring Wells	DOWN GRADIENT A12	73-AC1-DW02-01	5/9/95	X							X							5/24/95	
	DOWN GRADIENT A12	73-AC1-DW02-01	5/9/95		X		X	X				X		X	X			6/26/95	
	UST A47/1	73-AC1-DW03-01	5/18/95	X							X							6/26/95	
	UST A47/1	73-AC1-DW03-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
	DOWN GRADIENT AC1	73-AC1-DW04-01	5/18/95	X							X							6/26/95	MS/MSD;
	DOWN GRADIENT AC1	73-AC1-DW04-01	5/18/95		X	X	X	X				X	X	X	X			6/26/95	MS/MSD
		73-AC1-DW04-01D	5/18/95	X							X							6/26/95	
		73-AC1-DW04-01D	5/18/95		X	X	X	X				X	X	X	X			6/26/95	
		73-AC1-DW04F-01	5/18/95						X							X		6/26/95	MS/MSD
	DOWN GRADIENT AC1	73-AC1-DW04F-01D	5/18/95						X							X		6/26/95	
Existing Monitoring Wells	DOWN GRADIENT AC1	73-GW03-01	5/20/95	X							X							6/5/95	
	DOWN GRADIENT AC1	73-GW03-01	5/20/95		X	X	X	X				X	X	X	X			6/23/95	
	UST A47/1	73-A47/3-8-01	5/18/95	X							X							6/26/95	
	UST A47/1	73-A47/3-8-01	5/18/95		X	X	X	X		X		X	X	X	X		X	6/26/95	
	UST A47/1	73-A47/3-9-01	5/18/95	X							X							6/26/95	
					X	X	X	X				X	X	X	X			6/26/95	

Site 73 AOC 1
CTO-0312

SITE 73 GROUNDWATER AOC 1 524.2

				Analyses Requested					Analyses Received						
Location	Related UST Numbers or Area	Sample ID	Date Shipped	VOA 524.2	SVOA 625	TAL Metals	TSS	Dissolved Metals	VOA 524.2	SVOA 625	TAL Metals	TSS	Dissolved Metals	Date Received	Comments
Site 73 AOC 1 Monitoring Wells	UST A10/SA26	73-AC1-MW04-01	5/9/95	X					X					5/30/95	MS/MSD
Newly Installed Wells	UST A10/SA26	73-AC1-MW04-01	5/9/95		X	X	X			X	X	X		6/26/95	MS/MSD
		73-AC1-MW04-01D	5/9/95	X					X					5/30/95	
		73-AC1-MW04-01D	5/9/95		X	X	X			X	X	X		6/26/95	
	UST A10/SA26	73-AC1-MW04F-01	5/9/95					X					X	6/26/95	
		73-AC1-MW04F-01D	5/9/95					X					X	6/26/95	
	UST A2	73-AC1-MW10-01	5/9/95	X					X					5/30/95	
	UST A2	73-AC1-MW10-01	5/9/95		X	X	X			X	X	X		6/26/95	
	UST A2	73-AC1-MW28-01	5/9/95	X					X					5/30/95	
	UST A2	73-AC1-MW28-01	5/9/95		X	X	X			X	X	X		6/26/95	

Site 73 AOC 2
CTO-0312

SITE 73 GROUNDWATER AOC 2

			Analyses Requested						Analyses Received							
Location	Sample ID	Date Shipped	VOA 601/602	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Dissolved Metals	VOA 601/602	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Dissolved Metals	Date Received	Comments
Site 73 AOC 2 Monitoring Wells	73-AC2-MW05-01	5/5/95	X						X						6/21/95	
Newly Installed Wells	73-AC2-MW05-01	5/5/95		X	X	X	X			X	X	X	X		6/21/95	
	73-AC2-MW06-01	5/5/95	X						X						6/21/95	
	73-AC2-MW06-01	5/5/95		X	X	X	X			X	X	X	X		6/21/95	
	73-AC2-MW06B-01	5/20/95	X						X						6/5/95	
	73-AC2-MW06B-01	5/20/95		X	X	X	X			X	X	X	X		6/23/95	
	73-AC2-MW07-01	5/5/95	X						X						6/21/95	
	73-AC2-MW07-01	5/5/95		X	X	X	X			X	X	X	X		6/21/95	
	73-AC2-MW22-01	5/5/95	X						X						6/21/95	
	73-AC2-MW22-01	5/5/95		X	X	X	X			X	X	X	X		6/21/95	
	73-AC2-MW22-01D	5/5/95	X						X						6/21/95	
	73-AC2-MW22-01D	5/5/95		X	X	X	X			X	X	X	X		6/21/95	DUPLICATE
	73-AC2-MW22F-01	5/5/95						X						X	6/21/95	
	73-AC2-MW22F-01D	5/5/95						X						X	6/21/95	
Existing Monitoring Well	73-GW02-01	5/17/95	X						X						6/1/95	
	73-GW02-01	5/17/95		X	X	X	X			X	X	X	X		6/23/95	

Site 73 AOC 3
CTO-0312

SITE 73 GROUNDWATER AOC 3

				Analyses Requested						Analyses Received								
Location	Related UST Number or Area	Sample ID	Date Shipped	VOA 524.2	VOA (601/2)	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	VOA 524.2	VOA (601)	VOA (602)	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Date Received	Comments
Site 73 AOC 3 Monitoring Wells	UST A10/SA26	73-AC3-MW02-01	5/5/95	X						X							5/19/95	
Newly Installed Wells	UST A10/SA26	73-AC3-MW02-01	5/5/95			X		X	X				X		X	X	6/21/95	
		73-AC3-MW02B-01	5/17/95	X						X							6/1/95	
		73-AC3-MW02B-01	5/17/95			X		X	X				X		X	X	6/23/95	
	UST A10/SA26	73-AC3-MW03-01	5/5/95	X						X							5/19/95	
	UST A10/SA26	73-AC3-MW03-01	5/5/95			X		X	X				X		X	X	6/21/95	
		73-AC3-MW30-01	5/17/95	X						X							6/1/95	
		73-AC3-MW30-01	5/17/95			X		X	X				X		X	X	6/23/95	
	UST A10/SA26	73-AC3-MW23-01	5/9/95	X	X					X	X	X					5/30/95	
	UST A10/SA26	73-AC3-MW23-01	5/9/95			X	X	X	X				X	X	X	X	6/26/95	

SITE 73 GROUNDWATER AOC 4

			Analyses Requested					Analyses Received						
Location	Sample ID	Date Shipped	VOA 601/602	SVOA 625	TAL Metals	TSS	Dissolved Metals	VOA 601/602	SVOA 625	TAL Metals	TSS	Dissolved Metals	Date Received	Comments
Site 73 AOC 4 Monitoring Well	73-AC4-MW18-01	5/6/95	X					X					5/23/95	
Newly Installed Wells	73-AC4-MW18-01	5/6/95		X	X	X			X	X	X		6/15/95	
	73-AC4-MW19-01	5/6/95	X					X					5/23/95	
	73-AC4-MW19-01	5/6/95		X	X	X			X	X	X		6/15/95	
	73-AC4-MW24-01	5/9/95	X					X					5/24/95	
	73-AC4-MW24-01	5/9/95		X	X	X			X	X	X		6/26/95	
Existing Monitoring Well	73-MW08-01	5/2/95	X					X					5/17/95	
	73-MW08-01	5/2/95		X	X	X			X	X	X		6/9/95	
	73-MW09-01	5/3/95	X					X					5/18/95	
	73-MW09-01	5/3/95		X	X	X			X	X	X		6/12/95	
	73-MW13-01	5/2/95	X					X					5/17/95	MS/MSD
	73-MW13-01	5/2/95		X	X	X			X	X	X		6/9/95	
	73-MW16-01	5/2/95	X					X					5/17/95	
	73-MW16-01	5/2/95		X	X	X			X	X	X		6/9/95	
	73-MW18-01	5/3/95	X					X					5/18/95	
	73-MW18-01	5/3/95		X	X	X			X	X	X		6/12/95	
Existing Deep Monitoring Well	73-DW02-01	5/9/95	X					X					5/24/95	MS/MSD
	73-DW02-01	5/9/95		X	X	X			X	X	X		6/26/95	MS/MSD
	73-DW02-01D	5/9/95	X					X					5/24/95	DUPLICATE
	73-DW02-01D	5/9/95		X	X	X			X	X	X		6/26/95	DUPLICATE
	73-DW02F-01D	5/9/95					X					X	6/26/95	DUPLICATE
	73-DW02F-01	5/9/95					X					X	6/26/95	MS/MSD

Site 73 AOC 5
CTO-0312

SITE 73 GROUNDWATER AOC 5

			Analyses Requested					Analyses Received						
Location	Sample ID	Date Shipped	VOA 601/602	SVOA 625	TAL Metals	TSS	ENG PAR	VOA 601/602	SVOA 625	TAL Metals	TSS	ENG PAR	Date Received	Comments
Site 73 AOC 5 Monitoring Wells	73-AC5-MW20-01	5/6/95	X					X					5/23/95	
Newly Installed Wells	73-AC5-MW20-01	5/6/95		X	X	X	X		X	X	X	X	6/15/95	
	73-AC5-MW21-01	5/9/95	X					X					5/24/95	
	73-AC5-MW21-01	5/9/95		X	X	X			X	X	X		6/26/95	
Newly Installed Deep Well	73-AC5-DW05-01	5/6/95	X					X					5/23/95	
	73-AC5-DW05-01	5/6/95		X	X	X			X	X	X		6/15/95	

Site 73 AOC 6
CTO-0312

SITE 73 GROUNDWATER AOC 6

			Analyses Requested						Analyses Recieved							
Location	Sample ID	Date Shipped	VOA 601/2	SVOA 625	TAL Metals	TSS	ENG PAR	Dissolved Metals	VOA 601	VOA 602	SVOA 625	TAL Metals	TSS	Dissolved Metals	Date Received	Comments
Site 73 AOC 6 Monitoring Well	73-A47/3-11-01	5/9/95	X						X	X					5/24/95	
Existing Monitoring Wells	73-A47/3-11-01	5/9/95		X	X	X					X	X	X		6/26/95	
	73-A47/3-13-01	5/18/95	X						X	X					6/26/95	
	73-A47/3-13-01	5/18/95		X	X	X					X	X	X		6/26/95	
	73-A47/3-16-01	5/9/95	X						X	X					5/24/95	MS/MSD
	73-A47/3-16-01	5/9/95		X	X	X					X	X	X		6/26/95	
	73-A47/3-16-01D	5/9/95	X						X	X					5/24/95	
	73-A47/3-16-01D	5/9/95		X	X	X					X	X	X		6/26/95	
	73-A47/3-16F-01	5/9/95						X						X	6/26/95	MS/MSD
	73-A47/3-16F-01D	5/9/95						X						X	6/26/95	
	73-A47/3-22-01	5/9/95	X						X	X					5/24/95	
	73-A47/3-22-01	5/9/95		X	X	X					X	X	X		6/26/95	

Site 73 Background
CTO-0312

SITE 73 GROUNDWATER BACKGROUND

			Analyses Requested						Analyses Received							
Location	Sample ID	Date Shipped	VOA 601/2	VOA (524.2)	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	VOA 601/602	VOA (524.2)	SVOA 625	TCL PEST/PCB	TAL Metals	TSS	Date Received	Comments
Site 73 Background Monitoring	73-BG-MW01-01	5/5/95	X	X					X	X					6/21/95	
Wells	73-BG-MW01-01	5/5/95			X	X	X	X			X	X	X	X	6/21/95	
	73-BG-MW01B-01	5/5/95	X	X					X	X					6/21/95	
	73-BG-MW01B-01	5/5/95				X	X	X			X	X	X	X	6/21/95	
	73-BG-DW01-01	5/5/95	X	X					X	X					6/21/95	
	73-BG-DW01-01	5/5/95			X	X	X	X			X	X	X	X	6/21/95	
	73-GW05-01	5/3/95	X						X						5/18/95	
	73-GW05-01	5/3/95			X	X	X	X		X	X	X	X	X	6/12/95	
	73-GW05-01RS	5/20/95	X	X					X	X					6/5/95	MS/MSD
	73-GW05-01RS	5/20/95			X	X	X	X			X	X	X	X	7/6/95	MS/MSD

SITE 73 ECOLOGICAL AOCs 7,8,9

			Analyses Requested								Analyses Received									
Location	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	Hardness	TPH	TOC	Particle Size	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL Metals	TPH	TOC	Particle Size	Date Received	Comments
Site 73 Surface Water	73-SW01-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW02-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW03-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW04-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW05-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW06-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW06-01D	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW07-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW08-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW09-01	5/10/95	X	X	X	X	X				X	X	X	X				6/30/95	
	73-SW11-01	5/10/95	X	X	X	X					X	X	X	X				6/30/95	
	73-SW12-01	5/10/95	X	X	X	X					X	X	X	X				6/30/95	
AOC 2 SEEP SAMPLE	73-SW13-01	5/18/95	X	X	X	X					X	X	X	X				6/26/95	
Site 73 Sediment	73-SD01-06	5/10/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD01-612	5/10/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD02-06	5/10/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD02-612	5/10/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD03-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD03-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD04-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD04-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD05-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	7/6/95	
	73-SD05-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		7/6/95	
	73-SD06-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	7/6/95	MS/MSD
	73-SD06-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		7/6/95	MS/MSD
	73-SD06-06D	5/22/95	X	X	X	X		X			X	X	X	X	X			7/6/95	
	73-SD06-612D	5/22/95	X	X	X	X		X			X	X	X	X	X			7/6/95	
	73-SD07-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD07-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD08-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD08-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD09-06	5/22/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD09-612	5/22/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD11-06	5/10/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD11-612	5/10/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
	73-SD12-06	5/10/95	X	X	X	X		X	X	X	X	X	X	X	X	X	X	6/30/95	
	73-SD12-06D	5/10/95	X	X	X	X		X			X	X	X	X	X			6/30/95	
	73-SD12-612	5/10/95	X	X	X	X		X	X		X	X	X	X	X	X		6/30/95	
Site 73 Fish/Crab (2)	73-FS01-BF01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
Fish Sample IDs	73-FS01-PF01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS01-SF01W	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS01-SF01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-YM01W	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SF01W	6/6/95	X	X	X	X					X	X	X	X				8/7/95	MS/MSD
	73-FS02-SF01WM	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SF01WM	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SF01WD	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SF01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SS01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-SFM01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-PF01W	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-AC01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-SF01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-SM01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-YM01W	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
Crab Sample IDs	73-FS01-BC01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS01-BC01FD	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS01-BC02F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-BC01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS02-BC02F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-BC01F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	
	73-FS03-BC02F	6/6/95	X	X	X	X					X	X	X	X				8/7/95	

			Analyses Requested									Analyses Received												
Location	Sample ID	Date Shipped	TCLP VOA	TCLP SVOA	TCLP PEST	TCLP HERBICIDES	TCLP Metals	RCRA HAZ CHAR	TCL PEST	TCL PCBs	TAL Metals	TCLP VOA	TCLP SVOA	TCLP PEST	TCLP HERBICIDES	TCLP Metals	RCRA HAZ CHAR	TCL VOA	TCL SVOA	TCL PEST	TCL PCBs	TAL Metals	Date Received	TURNAROUND TIME	Comments
Site 73 Soil IDW (1)	73-RX-01	5/10/95	X	X	X	X	X	X	X	X		X	X	X	X	X	X			X	X		6/30/95	50	
Site 73 Liquid IDW	73-TK-3617	5/10/95						X	X	X							X	X	X	X	X	X	6/30/95	50	TCL VOA
	73-TK-615	5/10/95						X	X	X							X	X	X	X	X	X	6/30/95	50	TCL VOA
	73-POLY-01	5/22/95							X	X		X	X			X				X			6/30/95	38	

Site 73
CTO-0312

SITE 73 MONITORING WELLS-PHASE II

			Analyses Requested					Analyses Received						
			USEPA CLP					USEPA CLP						
Location	Sample ID	Date Shipped	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	ENG PAR (1)	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	ENG PAR (1)	Date Received	Comments
Site 73 Monitoring Wells	73-GW31MW-01	3/20/96	X					X					4/17/96	
Newly Installed Wells-Shallow	73-GW32MW-01	3/21/96	X					X					4/22/96	MS/MSD
	73-GW32MW-01D	3/21/96	X					X					4/22/96	
	73-GW33MW-01	3/20/96	X					X					4/17/96	
	73-GW34MW-01	3/21/96	X					X					4/22/96	
	73-GW35MW-01	3/20/96	X					X					4/17/96	
	73-GW36MW-01	3/26/96	X					X					4/23/96	
	73-GW37MW-01	3/21/96	X	X				X	X				4/22/96	
Newly Installed Wells-	73-GW06DW-01	3/20/96	X					X					4/17/96	
	73-GW07DW-01	3/21/96	X					X					4/22/96	
	73-GW08DW-01	3/20/96	X					X					4/17/96	
	73-GW09DW-01	3/21/96	X					X					4/22/96	
	73-GW10DW-01	3/20/96	X					X					4/17/96	
	73-GW11DW-01	3/21/96	X					X					4/22/96	
	73-GW12DW-01	3/26/96	X					X					4/23/96	
	73-GW13DW-01	3/26/96	X					X					4/23/96	
Newly Installed Wells-Deep	73-GW01GW-01	3/21/96	X					X					4/22/96	
	73-GW02GW-01	3/20/96	X					X					4/17/96	
	73-GW03GW-01	3/20/96	X					X					4/17/96	MS/MSD
	73-GW03GW-01D	3/20/96	X					X					4/17/96	
	73-GW04GW-01	3/26/96	X				X	X				X	4/23/96	
	73-GW05GW-01	3/26/96	X					X					4/23/96	
Existing Wells-Shallow	73-BG-MW01-02	2/23/96	X					X					3/25/96	
	73-AC3-MW02-02	2/23/96	X					X					3/25/96	
	73-AC1-MW09-02	2/23/96	X					X					3/25/96	
	73-AC1-MW09-02D	2/23/96	X					X					3/25/96	
	73-AC1-MW11-02	2/23/96	X					X					3/25/96	
	73-AC1-MW14-02	2/26/96	X					X					3/26/96	MS/MSD
	73-AC1-MW15-02	2/27/96	X					X					3/20/96	
	73-AC4-MW19-02	2/21/96	X					X					3/20/96	
	73-AC5-MW20-02	2/23/96	X					X					3/25/96	
	73-AC1-MW26-02	2/21/96	X					X					3/20/96	
	73-AC1-MW27-02	2/21/96	X					X					3/20/96	
	73-AC3-MW30-02	2/23/96	X					X					3/25/96	
Existing Wells-Intermediate	73-BG-MW01B-02	2/23/96	X					X					3/25/96	
	73-AC3-MW02B-02	2/23/96	X					X					3/25/96	
	73-AC1-MW11B-02	2/23/96	X					X					3/25/96	
	73-AC1-MW15B-02	2/27/96	X					X					3/20/96	
Existing Wells-Deep	73-BG-DW01-02	2/23/96	X					X					3/25/96	
	73-AC1-DW02-02	2/23/96	X					X					3/25/96	
	73-AC1-DW02-02D	2/23/96	X					X					3/25/96	
	73-AC1-DW03-02	2/21/96	X					X					3/20/96	
	73-AC1-DW04-02	2/27/96	X					X					3/20/96	
	73-AC5-DW05-02	2/23/96	X					X					3/25/96	
	73-A47/3-8-02	2/26/96	X					X					3/26/96	
	73-A47/3-19-02	2/26/96	X					X					3/26/96	
	73-TW-01	2/21/96	X					X					2/22/96	24-HOUR TAT
Supply Well	BB-44	3/21/96	X					X					4/22/96	
Liquid IDW	73-IDW-AQ	3/26/96	X	X	X	X		X	X	X	X		4/23/96	

Site 73
CTO-0312

SITE 73 SOILS - PHASE II

Location	Sample ID	Date Shipped	Analyses Requested						Analyses Received						Date Received	Comments
			TCL VOA(1)	TPH(5030)-Gas	TPH(3550)-Diesel	Oil & Grease	TCLP(2)	RCRA(3)	TCL VOA(1)	TPH(5030)-Gas	TPH(3550)-Diesel	Oil & Grease	TCLP(2)	RCRA(3)		
Monitoring Well Soil Borings	73-SB37MW-02	3/12/96	X	X	X	X			X	X	X	X			4/9/96	
	73-SB36MW-00	3/21/96	X	X	X				X	X	X				4/22/96	
	73-SB36MW-02	3/21/96	X	X	X				X	X	X				4/22/96	
	73-SB06DW-00	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB06DW-03	2/21/96	X	X	X				X	X	X				3/20/96	MS/MSD
	73-SB06DW-03D	2/21/96	X	X	X				X	X	X				3/20/96	DUP
	73-SB07DW-00	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB08DW-00	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB08DW-01	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB09DW-00	2/23/96	X	X	X				X	X	X				3/25/96	
	73-SB09DW-02	2/23/96	X	X	X				X	X	X				3/25/96	
	73-SB10DW-00	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB10DW-02	2/21/96	X	X	X				X	X	X				3/20/96	
	73-SB12DW-00	2/23/96	X	X	X				X	X	X				3/25/96	
	73-SB12DW-00D	2/23/96	X	X	X				X	X	X				3/25/96	
	73-SB13DW-00	2/26/96	X	X	X				X	X	X				3/26/96	
	73-SB13DW-02	2/26/96	X	X	X				X	X	X				3/26/96	
Soil IDW	73-IDW-101	3/12/96					X	X					X	X	4/9/96	

APPENDIX D
CHAIN OF CUSTODY RECORDS

Baker COC # 873001

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document . . 325262

Project Name/No.[1] CTO-0312

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] Mal Petroccia

Purchase Order No.[6]

Required Report Date[11] 14-28 days

Samples Shipment Date[7] 4/5/95

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Bld 3
Coraopolis, Pa

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC4-MW24-00	SOIL	4/4/95 1330	Glass			TCL Organics TAL Metal, TPH 8015 (5030/3550)		
73-RB-01	Water	4/4/95 1645	Glass Plastic		HCL, HNO3	TCL Organics TAL Metals		
73-AC4-MW18-00	SOIL	4/4/95 1630	Glass			TCL Organics, Oil & Grease (9071) TAL Metal, TPH (8015)		
73-AC4-MW18-00D	Soil	4/4/95 1630	Glass			TCL Organics, Oil & Grease (9071) TAL Metal, TPH (8015)		
73-AC4-MW18-00MS	Soil	4/4/95 1630	Glass			TCL Organics, Oil & Grease (9071) TAL METAL, TPH (8015)		
73-AC4-MW18-00MSD	Soil	4/4/95 1630	Glass			TCL Organics, Oil & Grease (9071) TAL Metal, TPH (8015)		
73-AC4-MW24-01	Soil	4/4/95 1357	Glass			TCL Organics, Oil & Grease (9071) TAL Metals, TPH (8015)		
73-AC4-MW19-00	Soil	4/5/95 1010	Glass			TCL Organics, Oil & Grease (9071) TAL Metals, TPH (8015)		

Special Instructions:[23] TPH METHOD 8015 - needs 14 day TURN; Oil & Grease needs 14-day Turn.

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☒

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James E. Culp	Date: 4/5/95 Time: 1420	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Baker COC # 73001

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325262
Page 2 of 2

Project Name CTO-312 Project No. 62470-312 Samples Shipment Date 4/5/95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-ACA-MW19-02	SOIL	4/5/95 1050	Glass			TCL Organics, TAL Metals (~~6010~~ ISM) TPH (8015), Oil & Grease (9071)		
73-TB-01	Water	4/6/95	Glass		HCL	TCL VOLS.	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
NOTE: TPH (8015) and Oil & Grease need 14-Day TURN.							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

Baker COC # 73002

IT INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325248

Page 1 of 1

Project Name/No.[1] CTO-312

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] Mal Petraccia

Purchase Order No.[6]

Required Report Date[11] 14-28days

Samples Shipment Date[7] 4-6-95

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Bldg 3
Coraopolis, Pa 15108

Report to:[10] Mal Petraccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-RB-02	Water	4-5-95 1750	Glass/ Plastic		HNO3 HCL	TCL ORGANICS, TAL METALS	HOLD FOR ANALYSIS	
73-AC3-MW23-01	SOIL	4-6-95 0815	Glass			TCL Organics, TAL Metals TPH(8015), Oil and grease(9071)	FOR LAB USE ONLY	
73-AC3-MW23-00	Soil	4-5-95 1740	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)		
73-AC5-MW21-00	Soil	4-5-95 1450	Glass			TCL Organics, TAL METALS, TPH(8015), Oil & Grease(9071)		
73-AC5-MW21-03	Soil	4-5-95 1435	Glass			TCL Organics, TAL METALS TPH(8015), Oil&Grease(9071)		
73-AC2-MW07-00	Soil	4-6-95 1040	Glass			TCL Organics, TAL METALS TPH(8015)	FOR LAB USE ONLY	
73-AC2-MW07-03	Soil	4-6-95 1140	Glass			TCL Organics, TAL METALS TPH(8015)		
73-TP-02	WATER	4-6-95	Glass			TCL VOLS.		

COPY

Special Instructions:[23] TPH(8015) & OIL AND GREASE (9071) REQUIRES 14-DAY TURN.

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: Time:	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: to accompany samples
Yellow: field copy
*See back of form for special instructions.

INTERNATIONAL TECHNOLOGY CORPORATION

Baker COC # 73003

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325250
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4-7-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rosser Rd.
Bldg 3
Coraopolis, Pa 15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-RB-03	Water		1730 4-6-95		HCL HNO3	~~TCL VOCs~~ SSC, TCL Organics TAL METALS		
73-TB-03	Water		4-7-95		HCL	TCL VOCs.	FOR LAB USE ONLY	
73-AC2-MW22-00	Soil		1750 4-6-95			TCL Organics, TAL METALS, TPH(8015),		
73-AC2-MW16-00	Soil		4-6-95 1550			TCL Organics, TAL METALS, TPH(8015)		
73-AC2-MW06-01	Soil		1600 4-6-95			TCL Organics, TAL METALS, TPH(8015)	FOR LAB USE ONLY	

COPY

Special Instructions:[23] TPH (8015) ANALYZED FOR 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation)	Date: 4-7-95 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

Baker COC # 730

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325251

Project Name/No.[1] CTO-312 | Samples Shipment Date[7] 4-8-95 | Bill to:[5] Baker Environmental, 420 Rouser Rd. Bldg 3, Coraopolis, Pa. 15108

Sample Team Members[2] | Lab Destination[8]

Profit Center No.[3] | Lab Contact[9]

Project Manager[4] Mal Petrocci | Project Contact/Phone[12] | Report to:[10] Mal Petroccia

Purchase Order No.[6] | Carrier/Waybill No.[13]

Required Report Date[11]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-RB-04	WATER	4-7-95 1845	GLASS/ PLASTIC		HCL HNO3	TCL ORGANICS, TAL METALS	← HOLD FOR ANALYS	
73-AC3-MW02-00	SOIL	4-7-95 1610	Glass			TCL Organics, TAL Metals, TPH (8015), Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC3-MW02-01	SOIL	4-7-95 1620	Glass			TCL Organics, TAL Metals, TPH(8015), Oil & Grease (9071)		
73-AC3-MW03-01	SOIL	4-7-95 1330	Glass			TCL Organics, TAL Metals, Oil & Grease (9071), TPH(8015)		
73-AC3-MW03-01D	SOIL	4-7-95 1330	Glass			TCL Organics, TAL Metals, Oil & Grease (9071), TPH(8015)	FOR LAB USE ONLY	
73-AC3-MW03-01MS/MSD	SOIL	4-7-95 1330	Glass			TCL Organics, TAL METALS		
73-AC-MW03-00	SOIL	4-7-95 1130	Glass			TCL Organics, TAL METALS, TPH(8015), Oil & Grease		
73-TB-04	Water	4-8-95	Glass			TCL VOLS.		

COPY

Special Instructions:[23] TPH (8015) and Oil & Grease (9071) are to be analysis on 14-Day TUR

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive ____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): Level D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 4-8-95 Time: 1000	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

Baker COC # 73004

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325252
Page 2 of 2

Project Name/No.[1] CGO-372
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mac Petrocella
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4-8-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental, 420 Rouser Rd, Bldg 3, Coraopolis, Pa 15108
Report to:[10] Mac Petrocella

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC2-MW05-01D	SOIL	4-7-95 0905	GLASS			TCL Organics, TAL Metals, TPH (8015)	FOR LAB USE ONLY	
73-AC2-MW05-00	SOIL	4-7-95 0805	GLASS			TCL Organics, TAL METALS, TPH (8015), ~~Oil & Grease (9071)~~		
73-AC2-MW05-01	SOIL	4-7-95 0905	GLASS			TCL Organics, TAL Metals, TPH (8015)		
73-TB-05	WATER	4-8-95	GLASS			TCL VOLS	FOR LAB USE ONLY	

COPY

Special Instructions:[23] TPH (8015) ARE TO be Analyzed ON 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive ____ (mos.)

Turnaround Time Required:[26]
Normal ☐ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) [signature]	Date: 4-8-95 Time: 1000	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

BAKER COC # 73005

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325254

Page 1 of 2

Project Name/No.[1] CTO-312 | Samples Shipment Date[7] 4-10-95 | Bill to:[5] Baker Environmental, 420 Rouser Rd, Bldg 3, Coraopolis, Pa

Sample Team Members[2] | Lab Destination[8]

Profit Center No.[3] | Lab Contact[9]

Project Manager[4] Mal Petroccia | Project Contact/Phone[12] | Report to:[10] Mal Petroccia

Purchase Order No.[6] | Carrier/Waybill No.[13]

Required Report Date[11]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC5-MW20-00D	SOIL	4-8-95 1750	Glass			TCL Organics, TAL METALS, TPH(8015), Oil & Grease(9071)		
73-AC5-MW20-00MS/MSD	SOIL	4-8-95 1750	Glass			TCL Organics, TAL METALS	FOR LAB USE ONLY	
73-AC5-MW20-00	SOIL	4-8-95 1750	Glass			TCL Organics, TAL METALS, TPH(8015), Oil & GREASE(9071)		
73-BB-DW01-01	SOIL	4-8-95 0850	Glass			TCL Organics TAL METALS		
73-BB-DW01-00	SOIL	4-8-95 0845	Glass			TCL Organics TAL METALS		
73-AC5-SB11-02	SOIL	4-9-95 1725	Glass			TCL Organics, TAL Metals TPH(8015), Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC4-SB13-01D	SOIL	4-9-95 1520	GLASS			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)		
73-AC5-SB12-01	SOIL	4-9-95 1500	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)		

COPY

Special Instructions:[23] TPH(8015)/Oil & Grease(9071) NEED 14-DAY TURN.

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 4-10-95 Time: 1600	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples

Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

BAKER COC # 73005

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325254.

Project Name CTO-312

Project No. 62470-312

Samples Shipment Date 4-10-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-AC5-SB11-00	SOIL	4-9-95 1645	Glass			TCL Organics, TAL METALS TPH(8015), Oil/Grease (9071)		
73-AC4-SB14-01	SOIL	4-9-95 1425	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC5-SB08-01	SOIL	4-9-95 1330	Glass			TCL Organics, TAL METALS, TPH(8015), Oil & Grease (9071)		
73-AC5-SB12-00	SOIL	4-9-95 1605	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC4-SB13-00	SOIL	4-9-95 1135	Glass			TCL Organics, TAL METALS TPH(8015), Oil & GREASE (9071)		
73-AC4-SB14-00	SOIL	4-9-95 0950	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC5-SB08-00	SOIL	4-9-95 1020	Glass			TCL Organics, TAL METALS TPH(8015), Oil & Grease (9071)		
							FOR LAB USE ONLY	
	NOTE: TPH (8015) / Oil & Grease (9071) NEED 14-DAY TURN						FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

Baker COC# 13006

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325257

Page 1 of 1

Project Name/No.[1] CTO-312

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] Mark Petroccia

Purchase Order No.[6]

Required Report Date[11]

Samples Shipment Date[7] 4-10-95

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12] Mal Petroccia

Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Bldg 3
Coraopolis, Pa 15108

Report to:[10] Mal Petroccia

White: to accompany samples Yellow: Field copy

See back of form for special instructions.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-MW11-00	Soil	(1140) 4-11-95	Glass			TPH (8015)		
73-AC1-MW26-00	Soil	(1205) 4-11-95	Glass			TPH (8015)		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

Special Instructions:[23] TPH (8015) NEEDS 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): Level D

1. Relinquished by[28] (Signature/Affiliation) James S. Cuff	Date: 4-11-95 Time: 1630	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

Baker CoC # 73007

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325256
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 4-18-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Bldg 3
Coraopolis, Pa. 15108

Report to:[10] Mal Petroccia

White: to accompany samples. Yellow: field copy.

ONE CONTAINER PER LINE

Sample Number [14]	Sample Description/Type [15]	Date/Time Collected [16]	Container Type [17]	Sample Volume [18]	Pre-servative [19]	Requested Testing Program [20]	Condition on Receipt [21]	Disposal Record No. [22]
73-AC1-MW26-01	Soil	4-18-95 (0800)	Glass		—	TPH (8015)		
73-AC3-SB01-00	Soil	4-18-95 (1040)	Glass		—	Oil&Grease (9071), TCL Organics, TAL METAL, TPH (8015)	FOR LAB USE ONLY	
73-AC3-SB01-01	Soil	4-18-95 (1130)	Glass		—	"		
73-AC1-MW11-01	Soil	4-17-95 (1515)	Glass		—	TPH (8015)		
73-TB-04	Water	4-18-95	Glass		HCL	TCL VOCs.		
73-RB-05	Water	4-17-95 (1700)	Glass Plastic		HCL HNO3	TCL Organics, TAL Metals	FOR LAB USE ONLY	

COPY

Special Instructions:[23] TPH (8015) NEEDS 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 4-18-95 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

Baker COC# 73008

anterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1241
Page 1 of 3

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petraccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 4-20-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Bldg 3
Coraopolis, Pa 15108

Report to:[10] Mal Petraccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-MW10-01	Soil	4-19-95 (0919)	Glass		Cool	TCL VOCs (8021); TCL SemiVOCs/ Pest/PCB; TAL METALS; TPH (8015); Oil & Grease (9071)	FOR LAB USE ONLY	
73-AC1-MW10-00	"	4-19-95 (0910)	Glass		Cool	TCL VOCs (8021); TCL SemiVOCs/ Pest/PCB; TAL METALS; TPH (8015); Oil & Grease (9071)		
73-AC1-SB02-00	"	4-18-95 (1330)	Glass		Cool	TPH (8015)		
73-AC5-SB10-00	"	4-18-95 (1410)	"		Cool	TPH (8015); Oil & Grease (9071); TCL VOCs (8021) TCL SemiVOCs/ Pest/PCB; TAL METALS		
73-AC1-MW28-00	"	4-19-95 (1030)	"		Cool	TPH (8015); TCL VOCs (8021); TCL SemiVOCs/ PEST/PCB; Oil & Grease (9071); TAL METALS		
73-AC1-MW28-01	"	4-19-95 (1110)	"		Cool	↓	FOR LAB USE ONLY	
73-AC5-SB09-00	"	4-18-95 (1500)	"		Cool	TCL Organics, TAL METALS, TPH (8015), Oil & Grease (9071)		
73-AC1-SB02-01	"	4-18-95 (1335)	"		Cool	TPH (8015)		

Special Instructions:[23] TPH (8015) & Oil and Grease (9071) needs 7-Day TURN

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐ SEE LINE 23

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 4-20-95 Time: 1428	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

16-9-988

Baker Col #73008

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 1241

Project Name CTO-312 Project No. 62470-312 Samples Shipment Date 4-20-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-AC5-SB10-03	SOIL	4-18-95 (1415)	Glass		—	TPH (8015); Oil & Grease (9071); TCL Organics; TAL METALS		
73-AC5-SB09-00D	SOIL	4-18-95 (1500)	Glass		—	TPH (8015); Oil & Grease (9071) TCL Organics; TAL METALS		
73-RB-06	Water	4-19-95	Glass/ PLASTIC		HCL HNO3	TCL Organics, TAL METALS	HOLD FOR ANALYSIS	
73-TB-05	WATER	4-19-95	Glass		HCL	TCL VOLS.		
73-AC1-DW04-00	SOIL	4-19-95 (1800)	Glass		—	VOA (8240), VOA (8021), Oil & GREASE (9071) TPH (8015); TCL SEMIVOLS/PEST/PCBS; TAL METALS		
73-AC1-MW08-00	SOIL	4-19-95 (1500)	Glass		—	TPH (8015);		
73-AC1-MW08-01	SOIL	4-19-95 (1510)	Glass		—	TPH (8015);		
73-AC1-MW15-01MS/MSD	SOIL	4-19-95 (1410)	Glass		—	VOA (8240); VOA (8021); TAL Metals TCL SEMIVOLS/PEST/PCBs		
73-AC1-MW25-01	SOIL	4-19-95 (1707)	Glass		—	TPH (8015)		
73-AC1-MW25-00	SOIL	4-19-95 (1700)	Glass		—	TPH (8015)		
73-RB-07	Water	4-18-95 (1710)	Glass/ PLASTIC		HNO3 HCL	TCL ORGANICS TAL METALS		
73-AC1-SB03-00	SOIL	4-19-95 (1240)	Glass		—	VOLS (8021), TPH (8015); Oil & Grease (9071) TCL SEMIVOLS/ Pest /PCB; TAL METALS		
73-AC1-SB03-01	SOIL	4-19-95 (1430)	Glass		—	VOLS (8021), TPH (8015); Oil & Grease (9071) TCL SEMIVOLS/ PEST/PCB; TAL Metals		
73-AC1-MW09-00	SOIL	4-20-95 (0745)	Glass		—	TPH (8015)		
73-AC1-MW04-00	SOIL	4-20-95 (0800)	Glass		—	VOC (8021); TPH (8015), Oil & Grease (9071) TCL SEMIVOLS/ PEST/ PCB; TAL METALS		
73-AC1-MW04-01	SOIL	4-20-95 (0815)	"		—	VOC (8021); TPH (8015), Oil & Grease (9071) TCL SEMIVOLS/PEST/PCB; TAL METALS		
73-AC1-MW04-01D	SOIL	4-20-95 (0815)	"		—	↓ ↓	↓	
73-AC1-MW04-01MS/MSD	SOIL	4-20-95 (0815)	"		—	↓ ↓	↓	
73-FB-01	Water	4-20-95 (1045)	Glass PLASTIC		HNO3 HCL	TCL Organics TAL Metals		
73-FB-	"	4-20-95 (1125)	"		"	"		

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

Barrel COC # 73008

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 1241

Page 3 of 3

Project Name CTO 312

Project No. 62470-312

Samples Shipment Date 4-20-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-FB-02	Water	4-20-95 1105	Glass PLASTIC		HCL HNO_3	TCL Organics TAL METAL		
73-~~AB-08~~ RB-08	Water	4-20-95 1000	Glass PLASTIC		HCL HNO_3	TCL Organics TAL METALS	HOLD FOR ANALYSIS	
73-TB-06	Water	4-20-95	Glass		HCL	TCL VOLS,		

COPY

FOR LAB USE ONLY

White: To accompany samples – Yellow: Field copy

*See back of form for special instructions.

Baker COC # 73009

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325258
Page 1 of 1

Project Name/No.[1] CTO 312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 4-22-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd. Bldg 3
Coraopolis, Pa. 15108

Report to:[10] Mal Petroccia

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-RB-09	Water	4-22-95 (0820)	Glass/ Plastic	40V	HCL HNO_3	TCL ORGANICS TAL METALS	This is Rinseate for 4-21-95	
73-AC1-MW14-00	Soil	4-21-95 (1215)	Glass		—	TPH(8015), VOC(8240), Oil & Grease (9071), TAL Metals	VOC(8021), TCL SEMIVOL/PEST/PCB	
73-AC1-MW14-02	Soil	4-21-95 (1340)	Glass		—	TPH(8015), VOC(8240), VOC(8021), TCL SEMIVOL/PEST/PCB OIL & GREASE(9071), TAL METALS		
73-AC1-MW15B-01	Soil	4-21-95 (1685)	Glass		—	VOA(8240), VOA(8021), TCL SEMIVOL/PEST/PCB TPH(8015), OIL & GREASE (9071), TAL METALS		
73-AC1-MW15B01D	Soil	4-21-95 (1625)	Glass		—	VOA(8240), VOA(8021), TCL SEMIVOL/PEST/PCB TPH(8015), OIL & GREASE(9071), TAL METALS		
73-AC1-~~EW~~MW17-00	Soil	4-21-95 (0850)	Glass		—	TPH (8015)		
73-TB-07	Water	4-22-95	Glass		—	TCL VOCS		

Special Instructions:[23] TPH (8015) & Oil and Grease (9071) is to be Analyzed on 7-Day TURN.

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Clark	Date: 4/22/95 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

MCA 3/15/91

Baker C-L # 73010

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325260

Project Name/No.[1] CTO-312 | Samples Shipment Date[7] 4/24/95 | Bill to:[5] Baker Environmental Inc. 420 Rouser Rd BLD 3 Coraoplis, Pa 15108

Sample Team Members[2] | Lab Destination[8] |

Profit Center No.[3] | Lab Contact[9] |

Project Manager[4] Malcolm Petroccia | Project Contact/Phone[12] | Report to:[10] Mal Petroccia

Purchase Order No.[6] 62470-312 | Carrier/Waybill No.[13] |

Required Report Date[11] |

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-SB05-00	Soil	4-22-95 (1320)	Glass		—	VOC (8021), VOC (8240), TAL Metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC1-SB05-01	Soil	4-22-95 (1710)	Glass		—	VOC (8021), VOC (8240), TAL Metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC1-SB06-00	Soil	4-22-95 (1310)	Glass		—	VOC (8021), VOC (8240), TAL Metals, TPH (8015) oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC1-SB06-01	Soil	4-22-95 (1325)	Glass		—	VOC (8021), VOC (8240), TAL metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC6-SB07-00	Soil	4-22-95 (1415)	Glass		— TCL	VOC (~~8021, VOC (8240~~), TAL metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC6-SB07-00D	Soil	4-22-95 (1415)	Glass		— TCL	VOC (~~8021, VOC (8240~~), TAL Metals, TPH (8015) oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC6-SB07-00	MS/MSD Soil	4-22-95 (1415)	Glass		— TCL	VOC (~~8021, VOC (8240~~), TAL Metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/Pest	
73-AC6-SB07-01	Soil	4-22-95 (1735)	Glass		—	VOC (8021), VOC (8240), TAL Metals, TPH (8015), oil & grease (9071)	TCL semi VOC/PCB/PEST	

COPY

Special Instructions:[23] TPH (8015)/Oil & Grease (9071) REQUIRES 7-DAY TURN

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[26] (Signature/Affiliation) James S. Culp	Date: 4-24-95 Time: 1530	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

Baker CoC # ~~T5007~~ T5010

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325259
Page 2 of 3

Project Name/No.[1] CTO-0312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Malcolm Petraccia
Purchase Order No.[6] 62470-RA312
Required Report Date[11]

Samples Shipment Date[7] 4/24/95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental Inc.
420 Rouser Road Bld 3
Coraopolis Pa 15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-DW03-00	Soil	4-22-95 (0830)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest, TAL Metals, TPH (8015), oil & Grease (9071)		
73-AC1-DW03-00D	Soil	4-22-95 (0830)	Glass		—	TCL VOC (8021), VOC (8240) TCL Semi VOC/PCB/Pest, TAL Metals, TPH (8015), oil and grease (9071)		
73-AC1-DW03-00 MS/MSD	Soil	4-22-95 (0830)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & Grease (9071)		
73-AC1-DW03-01	Soil	4-22-95 (0930)	Glass		—	TAL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & grease (9071)		
73-AC1-SB04-00	Soil	4-22-95 (1255)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & grease (9071)		
73-AC1-SB04-01	Soil	4-22-95 (1635)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & grease (9071)		
73-AC1-SB04-01D	Soil	4-22-95 (1635)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & grease (9071)		
73-AC1-SB04-01 MS/MSD	Soil	4-22-95 (1635)	Glass		—	TCL VOC (8021), VOC (8240), TCL Semi VOC/PCB/Pest TAL Metals, TPH (8015), oil & grease (9071)		

COPY

Special Instructions:[23] TPH (8015)/Oil & Grease (9071) needs 7-day Turn

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 4-24-95 Time: 1530	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]
1 day TAT

MCA 3/15/91

Baker LOT # 75010

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1237
Page 3 of 3

Project Name/No. 1 CTO-312
Sample Team Members 2
Profit Center No. 3
Project Manager 4 Malcom Petroccia
Purchase Order No. 6 62470-312
Required Report Date 11

Samples Shipment Date 7 4/24/95
Lab Destination 8
Lab Contact 9
Project Contact/Phone 12
Carrier/Waybill No. 13

Bill to: 5 BAKER ENVIRONMENTAL
470 Rouser Rd BLD 3
Coraopolis, PA 15108

Report to: 10 Mal Petroccia

ONE CONTAINER PER LINE

Sample Number 14	Sample Description/Type 15	Date/Time Collected 16	Container Type 17	Sample Volume 18	Preservative 19	Requested Testing Program 20	Condition on Receipt 21	Disposal Record No. 22
73-ACI-MW16-00	Soil	4-22-95 (0920)	Glass		—	TPH (8015)	FOR LAB USE ONLY	
73-ACI-MW27-00	Soil	4-22-95 (1515)	Glass		—	TPH (8015)		
73-ACI-MW27-02	Soil	4-22-95 (1535)	Glass		—	TPH (8015)		
73-ACI-MW27-02D	Soil	4-22-95 (1535)	Glass		—	TPH (8015)		
73-TB-08	water	4-22-95	Glass		HCL	TCL VOA's	FOR LAB USE ONLY	
73-RB-10	Water	4-23-95	Glass/plastic		HCL HNO3	TCL ORGANICS, TAL METALS		

Special Instructions: 23 TPH (8015) / Oil & Grease (9071) REQUIRES 7-DAY TURN

Possible Hazard Identification: 24
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal: 25
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required: 26
Normal ☑ Rush ☐

QC Level: 27
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by 28 (Signature/Affiliation) [signature]	Date: 4-24-95 Time: 1530	1. Received by 28 (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments: 29

Baker Lot C #73011

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1238
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 4-25-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental Inc
420 Rouser Rd Bld 3
Coraopolis, Pa 15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-MW29-00	Soil	4/24/95 1400	Glass		—	VOA(8240), VOA(8021), TPH(8015), Oil & Grease(9071) TCL SEMIVOLS/PEST/PCB, TAL METALS		
73-RB-11	Water	4/25/95 1345	Glass/ Plastic		HCL HNO3	TCL ORGANICS, TAL METALS	RINSEATE FOR 4/24/95	
73-TB-09	Water	4/25/95	Glass		HCL	TCL VOCs		

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23] TPH(8015)/Oil & Grease (9071) Need 7-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Cleg	Date: 4-25-95 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Baker COC # 73012

Interra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1236
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 4-26-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bld 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-RB-12	Water	(1730) 4-25-95	Glass PLASTIC		HCL HNO3	~~VOC(601) VOC(602)~~ TCL TAL Metals	Organics	
73-ACI-MW14-01	Water	4-25-95 (0535)	Glass PLASTIC		HCL HNO3	VOC(601) VOC(602), TCL Semivols/Pest/PCB/TAL Metals	FOR LAB USE ONLY	
73-TB-10	Water	4-25-95	Glass		HCL	601/602		
							FOR LAB USE ONLY	

Special Instructions:[23] Sample 73-ACI-MW14-01 is 7-Day TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive ____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James E. Culp	Date: 4-26-95 Time: 1200	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples - Yellow: Field copy

*See back of form for special instructions.

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

Baker COC # 73013

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1233
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-2-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd. Bld 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-MW13-01	WATER	5-2-95 (1010)	Glass/ Plastic		HCL HNO3	EPA 601/602, TCL SEMIVOLS, TAL METALS, TSS		
73-MW08-01	"	5-2-95 (1315)	"		"	EPA 601/602, TCL SEMIVOLS, TAL METALS, TSS	FOR LAB USE ONLY	
73-MW16-01	"	5-1-95 (1530)	"		"	EPA 601/602, TCL SEMIVOLS, TAL Metals, TSS		
73-RB-13	"	5-1-95 (0745)	"		"	EPA 601/602, TCL SEMIVOLS, TAL METALS, TSS		
73-TB-11	"	5-2-95	Glass		HCL	EPA 601/602		
							FOR LAB USE ONLY	

Special Instructions:[23] EPA 601/602 Require 14-DAY TURN; Includes Xylenes, MTBE, EDB AND ISOPROPYL Ether

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S Culp	Date: 5-2-95 Time: 1600	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Baker Co # 23014

Janterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1234
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-3-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd. Bldg 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-TB-12	Water	5-3-95	GLASS		HCL	EPA 601/602, 502.2		
73-RB-14	Water	5-2-95 (0715)	GLASS/ PLASTIC		HNO3 HCL	EPA 601/602, EPA 625 TAL METALS, TSS	FOR LAB USE ONLY	
73-MW18-01	Water	5-2-95 (1520)	GLASS/ PLASTIC		HNO3 HCL	EPA 601/602, EPA 625 TAL METALS, TSS		
73-MW09-01	Water	5-2-95 (1640)	GLASS/ PLASTIC		HNO3 HCL	EPA 601/602, EPA 625 TAL Metals, TSS EPA 625 ~~TCL SVOC~~, PEST/PCB		
73-GW05-01	Water	5-2-95 (1823)	GLASS/ PLASTIC		HNO3 HCL	EPA 601/602, 502.2, ~~TCL SVOC~~, PEST/PCB TAL Metals, TSS	FOR LAB USE ONLY	

Special Instructions:[23] EPA 601/602; EPA 502.2 NEEDS 14-DAY TURN; EPA 601/602 INCLUDES XYLENES, MTBE, EDB AND ISOPROPYL ETHER

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Cuff	Date: 5-3-95 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

Baker EDC # 73015

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1235
Page 1 of 2

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-5-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bldg 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC2-MW22-01D	Water	5-4-95 1205	GLASS PLASTIC		HNO3 HCL	601/602, 625, TCL PEST/PCB, TAL Metals TSS, DISSOLVED METALS		
73-AC2-MW22-01	Water	5-4-95 1205			HNO3 HCL	601/602/625, TCL PEST/PCB, TAL Metals, TSS, DISSOLVED Metals	FOR LAB USE ONLY	
73-AC2-MW07-01	Water	5-4-95 1000			HNO3 HCL	601/602, 625, TCL PEST/PCB, TAL Metals, TSS		
73-AC2-MW06-01	Water	5-4-95 1110			HNO3 HCL	601/602, TSS, TAL Metals TCL PEST/PCB, 625		
73-AC2-MW05-01	Water	5-4-95 1340			HNO3 HCL	601/602, TSS, TAL Metals TCL PEST/PCB, 625		
73-AC3-MW02-01	Water	5-4-95 1530			HNO3 HCL	502.2, TAL Metals, 625, TSS	FOR LAB USE ONLY	
73-AC3-MW03-01	Water	5-4-95 1515			HNO3 HCL	502.2, TAL Metals, 625, TSS		
73-RB-15	Water	5-3-95 1715			HNO3 HCL	TCL Organics, TAL METALS		

Special Instructions:[23] 601/602 & 502.2 including Xylenes, MTBE, EDB & Isopropyl ETHER Needs 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James D. Ault Date: 5-5-95 Time:	1. Received by[28] (Signature/Affiliation) Date: Time:
2. Relinquished by (Signature/Affiliation) Date: Time:	2. Received by (Signature/Affiliation) Date: Time:
3. Relinquished by (Signature/Affiliation) Date: Time:	3. Received by (Signature/Affiliation) Date: Time:

Comments:[29]

Baker CO# 73015

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 1235

Page 2 of 2

Project Name CTO-312

Project No. 62470-312

Samples Shipment Date 5-5-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-AC3-MW30-00	Soil	5/3/95 1530	GLASS	-	—	TCL Organics, TAL METALS, Oil & Grease (907), TPH (8015)		
73-AC1-MW13-00	Soil	5-4-95 1105	GLASS		—	VOA8240/8021, TCL SVOC/PEST/PCB, TAL METALS, Oil & Grease (907)	FOR LAB USE ONLY	
73-AC1-MW13	Soil	5-4-95 1130	Glass PLASTIC		—	GRAINSIZE, ATTERBURG LIMITS, Alkalinity, TOC, MICROBIAL COUNT, COD, TKN, TOTAL PHOSPHOROUS		
73-RB-16	Water	5-5-95 0830	Glass PLASTIC		HNO_3 HCL	TCL Organics, TAL Metals	ANALYSIS IS FOR 5-4-95 DECON "HOLD" FOR ANALYSES	
73-BG-MW01-01	Water	5-4-95 1750	Glass PLASTIC		HNO_3 HCL	601/602, 502.2, 625, TAL METALS, TSS, TCL PEST/PCB	FOR LAB USE ONLY	
73-BG-MW01B-01	Water	5-5-95 1050	Glass PLASTIC		HNO_3 HCL	TSS, 601/602, 502.2, 625, TAL METALS, TCL PEST/PCB		
73-BG-DW01-01	Water	5-5-95 1140	Glass PLASTIC		HNO_3 HCL	601/602, 625, 502.2, TSS TAL METALS, TCL PEST/PCB	FOR LAB USE ONLY	
73-TB-13	Water	5-5-95	Glass		HCL	601/602/502.2 TCL VOAS	FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples * Yellow: Field copy

*See back of form for special instructions.

Baker COC # 73016

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1232
Page 1 of ___

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-6-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd. Bldg 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC4-MW18-01	Water	5-5-95 2030	Glass PLASTIC		HCL HNO3	601/602, 625, TCL PEST/PCB, TSS, TAL Metals		
73-AC5-MW20-01	"	5-5-95 1515	Glass PLASTIC		H2SO4 HCL HNO3	601/602, 625 BOD, MICROBIAL Radon TDS, TSS, COD, TKN, TOTAL PHOSPHORUS &	FOR LAB USE ONLY	
~~73-RB-16~~	~~Water~~	~~5-5-95 1820~~	~~Glass PLASTIC~~		~~HCL~~	TAL METALS, ALKALINITY, ACIDITY		
73-RB-17	Water	5-5-95 1820	GLASS PLASTIC		HCL HNO3	601/602, 625, TSS, TCL PEST/PCB TAL METAL, 502.2	HOLD FOR ANALYSIS	
73-AC4-MW19-01	Water	5-5-95 1730	Glass PLASTIC		HCL HNO3	601/602, 625, TSS, TAL Metals		
73-AC5-DUP5-01	Water	5-5-95 1710	Glass PLASTIC		HCL HNO3	601/602, 625, TSS, TAL Metals	FOR LAB USE ONLY	

Special Instructions:[23] 601/602, 502.2 requires 14-DAY TURN including Xylenes, MTBE, EDB & Isopropyl ETHER

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation)	Date: 5-6-95 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Baker Cl # 73017

IT INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325340

Page 1 of 3

Project Name/No.[1] CTO - 312 | Samples Shipment Date[7] 5-9-95 | Bill to:[5] Baker Environmental 420 Rouser Rd Bldg 3 Coraopolis, Pa. 15108

Sample Team Members[2] | Lab Destination[8] |

Profit Center No.[3] | Lab Contact[9] |

Project Manager[4] Mal Petroccia | Project Contact/Phone[12] | Report to:[10] Mal Petroccia

Purchase Order No.[6] 62470-312 | Carrier/Waybill No.[13] |

Required Report Date[11] |

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC1-MW10-01	WATER	5-7-95 1625	GLASS PLASTIC		HNO_3	625, TAL METALS, TSS 502.2		
73-AC1-MW16-01		5-7-95 1450			HNO_3 HCl	625, TAL METALS, TSS 601/602	FOR LAB USE ONLY	
73-AC1-MW28-01		5-7-95 1620			HNO_3 HCl	625, TAL METALS, TSS 502.2,		
73-~~AC2~~DW02-01D		5-6-95 1530			HNO_3 HCl	625, TAL METALS, TSS 601/602		
73-~~AC2~~DW02F-01D		5-6-95 1530			HNO_3	DISSOLVED METALS		
73-~~AC2~~DW02-01		5-6-95 1530			HNO_3 HCl	625, TAL METALS, TSS 602/601	FOR LAB USE ONLY	
73-~~AC2~~DW02F-01		5-6-95 1530			HNO_3	DISSOLVED METALS		
73-A47/3-16-01 MSD		5-7-95 1020			HNO_3 HCl	625, TAL METALS, TSS 601/602		

COPY

Special Instructions:[23] 602/601 includes Xylenes, MTBE, ETBE, Isopropyl Ether & 502.2 requires 14-DAY TURN

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5-9-95 Time: 1100	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Baker COC # 73017

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325340

Page 2 of 3

Project Name CTO-312 Project No. 62470-312 Samples Shipment Date 5-9-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-A47/3-16F-01MSD	Water	5-7-95 1020	~~GLASS~~ PLASTIC		HNO_3	DISSOLVED METALS		
73-A47/3-16-01MS		5-7-95 1020	GLASS PLASTIC		HNO_3 HCL	625, TAL METALS, TSS, 601/602	FOR LAB USE ONLY	
73-A47/3-16F-01MS		5-7-95 1020	PLASTIC		HNO_3	DISSOLVED METALS		
73-AC4-MW24-01		5-6-95 0955	GLASS PLASTIC		HNO_3 HCL	625, TAL METALS, TSS, 601/602		
73-A47/3-16-01D		5-7-95 1020	Glass PLASTIC		HNO_3 HCL	625, TAL METALS, 601/602, TSS	FOR LAB USE ONLY	
73-A47/3-16F-01D		5-7-95 1020	PLASTIC		HNO_3	DISSOLVED METALS		
73-A47/3-11-01		5-7-95 1310	GLASS PLASTIC		HNO_3 HCL	625, TAL METALS, TSS, 601/602	FOR LAB USE ONLY	
73-AC1-MW26-01		5-7-95 1445			HNO_3 HCL	625, TAL METALS, TSS 601/602		
73-AC3-MW23-01		5-6-95 1315			HNO_3 HCL	625, TCL PEST/PCB, TSS, TAL METALS, 502.2, 601/602	FOR LAB USE ONLY	
73-AC1-MW08-01D		5-7-95 1735			HNO_3 HCL	625, TAL METALS, TSS, 601/602		
73-AC1-MW08-01		5-7-95 1735			HNO_3 HCL	625, TAL METALS, TSS, 601/602	FOR LAB USE ONLY	
73-AC1-DW02-01		5-8-95 1130			HNO_3 HCL	625, TAL Metals, TSS 601/602		
73-AC1-MW25-01		5-8-95 1030			HNO_3 HCL	625, TSS, TAL METALS 601/602	FOR LAB USE ONLY	
73-AC1-MW09-01		5-6-95 1600	GLASS PLASTIC		HNO_3 HCL	625, TSS, TAL METALS 502.2		
73-AC1-MW04F-01		5-6-95 1600	PLASTIC		HNO_3	DISSOLVED METALS	FOR LAB USE ONLY	
73-AC1-MW04-01D		5-6-95 1600	Glass PLASTIC		HNO_3 HCL	625, TSS, TAL METALS 502.2		
73-AC1-MW04F-01D		5-6-95 1600	Plastic		HNO_3	DISSOLVED METALS	FOR LAB USE ONLY	
73-A47/3-16-01		5-7-95 1020	GLASS PLASTIC		HNO_3 HCL	625, TAL METALS, TSS, 601/602		
73-A47/3-16F-01		5-7-95 1020	PLASTIC		HNO_3	DISSOLVED METALS		
73-AC5-[illegible]1-01		5-6-95 [illegible]	Glass PLASTIC		HNO_3 HCL	TSS, TAL Metals, 625 601/602		

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

Baker UOC 73017

IT INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No. 325340

Page 3 of 3

Project Name CTO-312 Project No. 62470-312 Samples Shipment Date 5-9-95

ONE CONTAINER PER LINE

Sample 14 Number	Sample 15 Description/Type	Date/Time 16 Collected	Container 17 Type	Sample 18 Volume	Pre-19 servative	Requested Testing 20 Program	Condition on 21 Receipt	Disposal 22 Record No.
73-AC1-MW09-01MSD	Water	5-6-95 1600	Glass plastic		HNO_3 HCL	625, TAL METALS, TSS, 502.2		
73-AC1-MW04-01MS		5-6-95 1600			HNO_3 HCL	625, TAL METALS, TSS, 502.2	FOR LAB USE ONLY	
73-A97/3-22-01		5-7-95 0800			HNO_3 HCL	625, TAL METALS, TSS, 601/602		
73-AC1-MW09F-01		5-8-95 1155	PLASTIC		HNO_3	DISSOLVED METALS		
73-AC1-MW09-01		5-8-95 1155	GLASS PLASTIC		HNO_3 HCL	625, TAL METALS, TSS 601/602	FOR LAB USE ONLY	
73-KB-18		5-6-95 1740	Glass PLASTIC		HNO_3 HCL	625, TCL PEST/PCB, 601/602 TAL METALS, TSS, 502.2		
OIL 73-[redacted]-MW12-00	Soil	5-5-95 1510	Glass		—	TCL ~~Org~~ SEMIVOLS/PEST/PCB, 8015 (TPH), TAL METALS, OIL & GREASE (9071), 8240, 8021	FOR LAB USE ONLY	
73-[redacted]-MW12-01	Soil	5-5-95 1515	Glass		—	TCL SEMIVOLS/PEST/PCB, TPH (8015), TAL METALS, OIL & GREASE (9071), 8021, 8240		
73-AC1-MW17-01	Soil	5-5-95 1100	Glass		—	TPH (8015)	FOR LAB USE ONLY	
73-AC1-MW17-01D	Soil	5-5-95 1100	Glass		—	TPH (8015)		
73-DW02-01MS	Water	5-6-95 1530	Plastic Glass		HNO_3 HCL	625, TAL METALS, TSS 601/602	FOR LAB USE ONLY	
73-DW02-01MSD	Water	5-6-95 1530	Plastic Glass		HNO_3 HCL	625, TAL Metals, TSS 601/602		
73-DW02F-01MS	Water	5-6-95 1530	Plastic		HNO_3	DISSOLVED Metals	FOR LAB USE ONLY	
73-DW02F-01MSD	Water	5-6-95 1530	Plastic		HNO_3	DISSOLVED Metals		
73-AC1-MW09F-01D	Water	5-8-95 1155	Plastic		HNO_3	DISSOLVED METALS	FOR LAB USE ONLY	
73-TB-20	Water	5-8-95	Glass		HCL	502.2, 601/602		
							FOR LAB USE ONLY	

COPY

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

Baker UOC # 13018

Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1230
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5/10/95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rosser Rd Bldg 3
Coraopolis, Pa 15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
65-MW07A-01	Water	5-9-95 0945	Plastic		—	BOD		
73-AC6-MW20-01	"	5-9-95 1710	"		—	BOD	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26]
Normal ☑ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5-10-95 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples Yellow: Field copy

See back of form for special instructions.

Baker COC # 15011

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325246

Page 1 of 2

Project Name/No.[1] CTO-312 | Samples Shipment Date[7] 5-10-95 | Bill to:[5] Baker Environmental 420 Rouser Rd. Bldg 3 Coraopolis, Pa 15108

Sample Team Members[2] | Lab Destination[8]

Profit Center No.[3] | Lab Contact[9]

Project Manager[4] Mal Petroccia | Project Contact/Phone[12] | Report to:[10] Mal Petroccia

Purchase Order No.[6] 62470-312 | Carrier/Waybill No.[13]

Required Report Date[11]

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
65-MW07A-01	Water	5-9-95 0945	Glass Plastic		HCl HNO_3 H_2SO_4	TCL SVOA, TCL PEST/PCB, TAL, Alkalinity Metals, TSS, TCL VOA, TDS, Mycobial Count BOD, COD, TKN, Total Phosphorus, TOC		TPV
73-SW05-01	Water	5-9-95 1055	Glass Plastic		HCL HNO_3	TCL SVOA, TCL PEST/PCB, TAL Metals, TCL VOA, Hardness	FOR LAB USE ONLY	
73-SW08-01	Water	5-9-95 1120	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL Metals, TCL VOA Hardness		
73-SW09-01	Water	5-9-95 1150	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		
73-SW04-01	Water	5-9-95 1215	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB TAL METALS, TCL VOA, Hardness	FOR LAB USE ONLY	
73-SW02-01	Water	5-8-95 1030	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		
73-SW01-01	Water	5-8-95 1255	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		
73-SW06-01	Water	5-9-95 1025	Glass Plastic		HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		

COPY

Special Instructions:[23] 601/602 includes Xylenes, MTBE, EDB & Isopropyl ether & 524 requires 14-DAY TURN. TPH (8015) & Oil and Grease (9071) requires 7 day TURN.

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S Culp	Date: 5-10-95 Time: 1500	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples Yellow: Field copy See back of form for special instructions.

MCA 3/15/91

Baker COC # 13019

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325246
Page 2 of 2

Project Name CTO-312

Project No. 62470-312 CTO-312

Samples Shipment Date 5-10-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-SW06-01D	Water	5-9-95 1025			HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		
73-SW07-01	Water	5-9-95 0955			HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness	FOR LAB USE ONLY	
73-SW03-01	Water	5-9-95 1245			HCl HNO_3	TCL SVOA, TCL PEST/PCB, TAL METALS, TCL VOA, Hardness		
73-TK-3617	Water	5-9-95 1900			HCl HNO_3	TCL SVOA, TCL PCB, TCL PEST, TAL METALS, TCL VOA, RCRA Hazard Characteristics	FOR LAB USE ONLY	
73-TK-615	Water	5-9-95 1740			HCl HNO_3	TCL SVOA, TCL PCB, TCL PEST, TAL METALS, TCL VOA, RCRA Hazard Characteristics		
73-RB-19	Water	5-7-95 1700			HCl HNO_3	TCL VOA, TCL SVOA, TCL PEST/PCB TAL METALS	FOR LAB USE ONLY	
73-RB-20	Water	5-8-95 1530			HCl HNO_3	TCL VOA, TCL SVOA, TCL PEST/PCB TAL METALS		
73-SD01-06	Soil	5-8-95 1322				TCL PEST/PCB, TCL SVOA, TPH (8015), TAL METALS, TOC, TCL VOA, Grain Size	FOR LAB USE ONLY	
73-RX-01	Soil	5-9-95 1600				TCLP Volatiles (8240), TCL PCB, TCLP PEST/PCB TCLP Semivolatiles (8270) TCLP METALS (6010) RCRA Hazard Characteristics		
73-SD01-612	Soil	5-8-95 1320				TCL VOA, TAL METALS, TPH (8015), TCL SVOA, TCL PEST/PCB, TOC	FOR LAB USE ONLY	
73-SW11-01	Water	5-9-95 1650			HCl HNO_3	TCL VOA, TCL SVOA, TCL PEST/PCB, TAL METALS,		
73-SW12-01	Water	5-9-95 1500			HCl HNO_3	TCL VOA, TCL SVOA, TCL PEST/PCB, TAL METALS	FOR LAB USE ONLY	
73-SD12-06	Soil	5-9-95 1700				TAL METALS, TPH (8015), TCL VOA, TOC, TCL SVOA, TCL PEST/PCB, grain size		
73-SD11-612	Soil	5-9-95 1658				TAL METALS, TPH (8015) TCL VOA, TOC, TCL SVOA, TCL PEST/PCB	FOR LAB USE ONLY	
73-SD12-612	Soil	5-9-95 1515				TAL METALS, TPH (8015), TCL VOA, TOC, TCL SVOA, TCL PEST/PCB		
73-SD12-06	Soil	5-9-95 1517				TAL METALS, TPH (8015), TCL VOA, TOC, TCL SVOA, TCL PEST/PCB, grain size	FOR LAB USE ONLY	
73-SD12-06D	Soil	5-9-95 1517				TAL METALS, TPH (8015), TCL VOA, TCL SVOA, TCL PEST/PCB		
73-SD02-06	Soil	5-8-95 1105				TAL METALS, TPH (8015) TCL VOA, TCL SVOA, TOC TCL PEST/PCB grain size	FOR LAB USE ONLY	
73-SD02-612	Soil	5-8-95 1103				TAL METALS, TPH (8015), TCL VOA, TCL SVOA, TOC, TCL PEST/PCB		
73-TB-	Water	5-10-95				TCL VOCs / 601/602 524		

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

Baker COC # 3020

Canterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1228
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-17-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bld 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-AC3-MW30-01	Water	(1230) 5-16-95	Glass Plastic		HCl HNO3	524, 625, TSS TAL METALS		
73-AC3-MW02B-01	Water	(1545) 5-16-95	"		"	524, 625, TAL Metals, TSS	FOR LAB USE ONLY	
73-AC1-MW15-01	Water	(2100) 5-16-95	"		"	601/602, TCL SVOLS, Pest/PCB, TAL Metals, TSS		
73-GW02-01	Water	(0945) 5-16-95	"		"	601/602, TCL Pest/PCB, 625, TSS, TAL Metals		
73-RB-22		(2010) 5-16-95	"		"	TCL Organics, 601/602, 524 TAL Metals, 625	FOR LAB USE ONLY	
73-AC1-MW11-01		(1240) 5-16-95	"		"	601/602, 625, TCL Pest/PCB, TAL METALS, TSS		
73-RB-21		(0940) 5-17-95	"		"	TCL Organics, 8240, TAL Metals		
73-TB-22		5-17-95	Glass		HCl	601/602, 524, TCL VOCS		

Special Instructions:[23] 601/602 includes Xylenes, MTBE, EDB, Isopropyl ETHER; 601/602, 524, TCL VOCs - Require 14 DAY TURN

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5-17-95 Time: 1620	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Yellow: Field Copy
Use back of form for special instructions

Baker CoC# 73021

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325473
Page 1 of 2

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-18-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd. B.3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-SW13-01	Water	(1440) 5-17-95	GLASS PLASTIC		HCL HNO3	TCL Organics, TAL METALS		
73-A47/3-09-01	Water	(1140) 5-17-95			HCL HNO3	601/602, 625, TCL Pest/PCB, TAL Metals, TSS	FOR LAB USE ONLY	
73-ACI-MW17-01	Water	(1135) 5-17-95			HCL HNO3	601/602, 625, ~~TCL Pest/PCB, DO NOT~~ TAL Metals, TSS, DO NOT ANALYZE PEST/PCB BOTTLE		
73-A47/3-08-01	Water	(1400) 5-17-95			HCL HNO3 H2SO4	601/602, 625, TCL Pest/PCB, TOC TAL METALS, TSS, TDS, ACIDITY, ALKALINITY MICROBIAL COUNT, COD, TKN, Phosphorous		
73-ACI-MW15B-01	Water	(1840) 5-17-95			HCL HNO3	601/602, TCL Pest/PCB, 625 TAL Metals, TSS	FOR LAB USE ONLY	
73-ACI-MW12-01	Water	(1405) 5-17-95			HCL HNO3	601/602, TCL Pest/PCB, 625 TAL Metals, TSS		
73-ACI-MW11B-01	Water	(1730) 5-17-95			HCL HNO3	625, 601/602, TCL Pest/PCB, TSS, TAL Metals		

COPY

Special Instructions:[23] 601/602 includes Xylenes, MTBE, EDB, Isopropyl Ether AND REQUIRES 14-DAY TURN

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5-18-95 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

Baker COC # 93022

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325473

Page 2 of ___

Project Name CTO 312

Project No. 62470-312

Samples Shipment Date 5-18-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-A47/3-73-01	Water	(1845) 5-17-95	glass Plastic		HCL HNO3	601/602, 625, TAL Metals TSS		
73-AC1-DW04-01	Water	(2050) 5-17-95				601/602, 625, TCL PEST/PCB, TSS, TAL METALS	FOR LAB USE ONLY	
73-AC1-DW04-01D	Water							
73-AC1-DW04-01MS	Water						FOR LAB USE ONLY	
73-AC1-DW04-01MSD	Water							
73-AC1-DW04F-01		(2050) 5-17-95	~~Glass~~ PLASTIC		~~HCL~~ HNO3	DISSOLVED METALS		
73-AC1-DW04F-01D							FOR LAB USE ONLY	
73-AC1-DW04F-01MS						DO NOT ANA		
73-AC1-DW04F-01MSD							FOR LAB USE ONLY	
73-TB-23	Water	5-11-95	Glass		HCL	601/602, 524, TCL VOIS		
73-AC1-MW27-01	Water	(1255) 5-18-95	Glass PLASTIC		HCL HNO3	601/602, 625, TAL Metals, TSS	FOR LAB USE ONLY	
73-AC1-DW03-01	Water	(1200) 5-18-95	Glass PLASTIC		HCL HNO3	601/602, 625, TCL PEST/PCB TAL METALS, TSS		
73-AC1-MW29-01	Water	(1040) 5-18-95	Glass PLASTIC		HCL HNO3	601/602, 625, TCL PEST/PCB TAL METALS, TSS	FOR LAB USE ONLY	
73-AC1-MW13-01	Water	(1015) 5-18-95	Glass PLASTIC		HCL HNO3	601/602, TOC, Alkalinity, TSS, ACIDITY, TAL METALS, Microbial Count		
					H2SO4	TDS, COD, TKN, Phosphorous, 625, TCL Pest/PCB	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

Baker COC #13022

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325466
Page 1 of 1

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-18-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bld3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

White: To accompany samples
Yellow: Field copy

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-A47/3-08-01	Water	(1400) 5-17-95	Plastic		—	BOD		
73-ACI-MW13-01	Water	(1015) 5-18-95	Plastic		—	BOD	FOR LAB USE ONLY	
							FOR LAB USE ONLY	

COPY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5/18/95 Time: 1700	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

*See back of form for special instructions.

Baker WO# 73023

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325474

Page 1 of 2

Project Name/No.[1] CTO-312

Sample Team Members[2]

Profit Center No.[3]

Project Manager[4] Mal Petroccia

Purchase Order No.[6] 62470-312

Required Report Date[11]

Samples Shipment Date[7] 5-20-95

Lab Destination[8]

Lab Contact[9]

Project Contact/Phone[12]

Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bldg 3
Coraopolis, Pa
15108

Report to:[10] Mal Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-TK-3617	Water	(1530) 5-19-95	Plastic		—	TSS		
73-TK-615	Water	(1535) 5-19-95	Plastic		—	TSS	FOR LAB USE ONLY	
73-RB-26	Water	(1300) 5-19-95	Glass Plastic		HCl HNO3	601/602, TAL METALS, 625, TCL Pest/PCB	Holds for Analysis	
73-RB-25	Water	(1800) 5-18-95	Glass Plastic		HCl HNO3	601/602, 625, TAL METALS, TCL PEST/PCB	NOTE: 524 & TCL VOCs were not collected but NEED TO BE ANALYZED	
73-GW05-02D	Water	(1620) 5-19-95	Glass Plastic		HCl HNO3	524, 601/602, TAL METALS, 625, TSS		
73-GW05-02	Water	(1620) 5-19-95	Glass Plastic		HCl HNO3	524, 601/602, TAL METALS, 625, TSS	FOR LAB USE ONLY	
73-GW03-01	Water	(1040) 5-19-95	Glass Plastic		HCl HNO3	601/602, 625, TSS TAL METALS		
73-AC2-MW06B-01	Water	(1035) 5-19-95	Glass Plastic		HCl HNO3	601/602, 625, TSS TAL METALS		

COPY

Special Instructions:[23] 601/602 includes Xylenes, EDB, MTBE, & Isopropyl Ether. 601/602 & 524 requires 14-DAY TURN.

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Cuff	Date: 5-20-95 Time: 1200	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

Baker CoC # 73023

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.[30] 325474

Page 2 of 2

Project Name CTO-312

Project No. 62470-312

Samples Shipment Date 5-20-95

ONE CONTAINER PER LINE

Sample[14] Number	Sample[15] Description/Type	Date/Time[16] Collected	Container[17] Type	Sample[18] Volume	Pre-[19] servative	Requested Testing[20] Program	Condition on[21] Receipt	Disposal[22] Record No.
73-GW03-01	Water	(1035) 5-19-95	Glass PLASTIC		HCL HNO3	601/602, 625, TSS TAL Metals		
73-AC2-MW06-01	Water	(1040) 5-19-95	Glass PLASTIC		HCL HNO3	601/602, 625, TSS, TAL METALS	FOR LAB USE ONLY	
73-GW05-02MS	Water	(1620) 5-19-95	Glass PLASTIC		HCL HNO3	524, 601/602, TSS 625, TAL Metals		
73-GW05-02MSD	Water	(1620) 5-19-95	Glass PLASTIC		HCL HNO3	524, 601/602, TSS TAL Metals, 625	FOR LAB USE ONLY	
73-TB-24	Water	5-20-95	Glass		HCL	602/601, TCL VOCs, 524		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

White: To accompany samples Yellow: Field copy

*See back of form for special instructions.

MCA 3/15/91

INTERNATIONAL TECHNOLOGY CORPORATION

C.O.C. # 300001

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document # 325341

Page 1 of ____

Project Name/No.[1] CTO-312. | Samples Shipment Date[7] 5/22/95. | Bill to:[5] BAKER ENVIRONMENTAL INC.

Sample Team Members[2] | Lab Destination[8] |

Profit Center No.[3] | Lab Contact[9] |

Project Manager[4] | Project Contact/Phone[12] | Report to:[10] MAL PETROCCIA.

Purchase Order No.[6] | Carrier/Waybill No.[13] |

Required Report Date[11] 35 DAYS.

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-SD04-06	SEDIMENT	5/21/95 1650	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC, GRAIN SIZE.		
73-SD04-612	"	5/21/95 1648	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC.		
73-SD08-06	"	5/21/95 1425	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC, GRAIN SIZE.		
73-SD08-612	"	5/21/95 1423	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC.		
73-SD09-06.	"	5/21/95 1530	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC, GRAIN SIZE.		
73-SD09-612	"	5/21/95 1529	G	—	—	TCL-ORGANICS, TAL-METALS, TPH(GAS & DIESEL) TOC		
73-TB-50	LIQUID/TRIP BLANK.	5/22/95 1345	G	—	HCL.	TCL-~~ORGANICS~~ VOLATILES.		

COPY

FOR LAB USE ONLY

FOR LAB USE ONLY

Special Instructions:[23]

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive ____ (mos.)

Turnaround Time Required:[26] Normal ☐ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation) Debra Mowday	Date: 5/22/95. Time: 1615.	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3/15/91

C.O.C. # 7300002

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 325342
Page 1 of ____

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4]
Purchase Order No.[6]
Required Report Date[11] 30 DAYS

Samples Shipment Date[7] 5/23/95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] BAKER ENVIRONMENTAL INC
Report to:[10] MAL - DeTROCCIO

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-SD06-06	SEDIMENT	5/22/95 1050	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), TOC, GRAIN SIZE *	MS/MSD VOLUME PROVIDED	
73-SD06-612	"	5/22/95 1040	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), TOC, * MS/MSD	VOLUME PROVIDED	
73-SD06-06D	"	5/22/95 1040	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), FOR 1 DAY T.A.T.		
73-SD06-612D	"	5/22/95 1038	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), FOR 1 DAY T.A.T.		
73-TB-51	LIQUID / TRIP BLANK	5/22/95 1650	G	—	HCL	TCL-VOLATILES		
73-SD05-06	SEDIMENT	5/22/95 1130	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), TOC, GRAIN SIZE,		
73-SD05-612	SEDIMENT	5/22/95 1128	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & DIESEL), TOC		

Special Instructions:[23] MS/MSD VOLUME PROVIDED

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☒ Archive _____ (mos.)

Turnaround Time Required:[26] Normal ☒ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify):

1. Relinquished by[28] (Signature/Affiliation)	Date: 5/23/95 Time: 1600	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

MCA 3

C.O.C. #130000.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document 325343
Page 1 of ___

Project Name/No.[1] CTO-312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4]
Purchase Order No.[6]
Required Report Date[11] 35

Samples Shipment Date[7] 5/23/95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] BAKER ENVIRONMENTAL INC.
Report to:[10] MAL PETROCCIA

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-SD07-06	Sediment	5/22/95/1240	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & Diesel), TOC, GRAIN SIZE		
73-SD07-612	"	5/22/95/1232	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & Diesel), TOC		
73-SD03-06	"	5/22/95/1330	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & Diesel), TOC, GRAIN SIZE		
73-SD03-612	"	5/22/95/1328	G	—	—	TCL-ORGANICS, TAL-METALS, TPH (GAS & Diesel), TOC		
73-RS-27	RINSATE STAINLESS SEDIMENT CORER	5/22/95 1615	G/P	—	HCL/HNO3	TCL-ORGANICS, TAL-TOTAL METALS		
73-TB-52	Liquid/TRIP BLANK	5/22/95 1745	G	—	HCL	TCL-VOLATILES		

FOR LAB USE ONLY

FOR LAB USE ONLY

COPY

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☒ Archive ______ (mos.)

Turnaround Time Required:[26]
Normal ☒ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): ______

1. Relinquished by[28] (Signature/Affiliation) [signature]	Date: 5/23/95 Time: 1600	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples Yellow: Field copy See back of form for special instructions.

MCA 2

Quanterra
Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1089
Page 1 of 1

Project Name/No.[1] CTO - 312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mal Petraccia
Purchase Order No.[6]
Required Report Date[11]

Samples Shipment Date[7] 5/23/95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd Bldg
Coraopolis Pa
15108

Report to:[10] Mal Petraccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
72-poly-01	water	5/20/95 1100	Plastic & Glass		HCL HNO3	TCL VOA, TSS, TCL SVOA TAL Metals, TCL PEST/PCB		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions:[23] Sample Requires 7 Day TURN

Possible Hazard Identification:[24] Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25] Return to Client ☐ Disposal by Lab ☑ Archive ___ (mos.)

Turnaround Time Required:[26] Normal ☑ Rush ☐

QC Level:[27] I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5/23/95 Time: 1400	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples Yellow: Field copy *See back of form for special instructions.

Interra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

Reference Document No. 1096
Page 1 of 1

Project Name/No.[1] CTO-0312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mat Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-25-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd
Coraopolis, Pa
15108

Report to:[10] Mat Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Preservative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-MW12	Shelby Tube		Shelby Tube			grain size & hydrometer vertical hydraulic conductivity		
							FOR LAB USE ONLY	
							FOR LAB USE ONLY	

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required:[26]
Normal ☑ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐

Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S Culp	Date: 5-25-95 Time: 1300	1. Received by[28] (Signature/Affiliation)	Date: Time:
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

White: To accompany samples
Yellow: Field copy
*See back of form for special instructions.

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-3/2-001
Project Name: SITE 73, R.I.
Field Team: BAKER
SEND RESULTS TO: KAREN WOOD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Analytical Methods / Preservatives: TCL VOLATILES (HCL)	TCL SEMIVOLATILES	TPH (GRO)	TPH (DRO)	Type of Container(s) (3): 40ML	60ML	60ML	120ML	Number of Container(s)	Remarks
73ACI-MW27-02	2/20	1124	MW-27	✓		(2)									only 2 - 40ml collected
73ACI-MW26-02	2/20	1315	MW-26	✓		(2)									" " "
73-KB-101	2/20	1530	SPL. SPOON	✓		(3)									Split Spoon Sampler
73-SB10DW-00	2/20	1515	DW10	✓			(1)	(1)	(1)						
73-SB10DW-02	2/20	1630	DW10	✓			(1)	(1)	(1)						
73-SB08DW-00	2/21	0800	DW08	✓			(1)	(1)	(1)						
73-SB08DW-01	2/21	0850	DW08	✓			(1)	(1)	(1)						
73-SB07DW-00	2/21	1230	DW07	✓			(1)	(1)	(1)						
73-SB06DW-03 MS/MSD	2/20	1030	DW06	✓			(1)	(1)	(1)						~~MSD~~ MSD
73-SB06DW-03D	2/20	1030	DW06	✓			(1)	(1)	(1)						Duplicate
73-SB06DW-03	2/20	1030	DW06	✓			(1)	(1)	(1)						
73-SB06DW-03MS	2/20	1030	DW06	✓			(1)	(1)	(1)						MS
73ACI-DW03-02	2/21	1500	DW03	✓		(3)									
73ACI-MW13-02	2/21	1225	MW13	✓		(3)									

General Comments

Relinquished By: [signature] Date: 2/21/96 Time: 1654
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: No ☐
Analysis turnaround: Priority ☐ hrs. Regular ☑
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - Glass

White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Co

7/94

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

BAKER COC# 730201

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-312-recon
Project Name: Site 73 EI
Field Team: Baker
SEND RESULTS TO: KAREN WARD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Analytical Methods / Preservatives: TCL VOCs HCL	Type of Container(s) (3): 40ml	Number of Container(s)	Remarks
73-TW-01	3/21	1535	TW01	✓				(3)	24 Hour TURN - DAN
73ACA-MW19-02	3/21	0935	MW19	✓				(2)	Only 2 Bottles BKN

Relinquished By: [signature] Date: 3/21/96 Time: 1654
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: _____ No ☐
Analysis turnaround: Priority ☐ _____ hrs. Regular ☑
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: _____ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - Glass

White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Copy

Baker Coc # 730202

Baker

Baker Environmental, Inc.

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-812-0001
Project Name: Site 73 RI
Field Team: Baker
SEND RESULTS TO: Karen Wood

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	COM. (2)	Analytical Methods / Preservatives: TCL VOCs (HCl) — Type of Container(s) (3): 40 mL												General Comments / Remarks
						Number of Container(s)												
73AC1-DW02-02	2/23	1600	DW02	✓		(3)												
73AC1-MW09-02D	2/23	1500	MW09	✓		(3)												Duplicate
73AC1-MW09-02	2/23	1500	MW09	✓		(3)												
73AC1-MW11B-02	2/23	0945	MW11B	✓		(3)												
73AC1-MW11-02	2/23	0940	MW11	✓		(3)												
73AC5-MW20-02	2/23	1200	MW20	✓		(3)												
73AC1-DW02-02D	2/23	1400	DW02	✓		(3)												Duplicate
73AC5-DW05-02	2/23	1245	DW05	✓		(3)												
73AC3-MW02-02	2/22	1345	MW02	✓		(3)												
73-RB-103	2/22	1700	RB103	✓		(3)												Rinsate - [illegible]
73B1-MW01B-02	2/22	1010	MW01B	✓		(3)												
73B1-MW01-02	2/22	0940	MW01	✓		(3)												
73AC3-MW30-02	2/22	1605	MW30	✓		(3)												
73AC3-MW02B-02	2/22	1350	MW02B	✓		(3)												

Relinquished By: [signature] Date: 2/23/96 Time: 1200
Received By: ______ Date: ______ Time: ______
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: ______ Date: ______ Time: ______
Received By: ______ Date: ______ Time: ______
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: ______ Date: ______ Time: ______
Received By: ______ Date: ______ Time: ______
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☐ No ☐
Chain-of-custody seal on cooler: Yes ☒ Number: ______ No ☐
Analysis turnaround: Priority ☐ ______ hrs. Regular ☐
See Work Order ☒
See Analysis Request Form ☒
Sample Disposal: Return to Baker ☐ Lab Disposal ☐
Archive until: ______ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - [illegible]

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

Project Number: 62470.313.0001
Project Name: SWMU 73 RI
Field Team: Baker
SEND RESULTS TO: Karen Wood

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Number of Container(s)	Type of Container(s) (3)	Analytical Methods / Preservatives	Remarks
								TCL-VOLS (HCL) / TCL VOLS / TPH (GRO) / TPH (DRO)	
73BG-DW01-02	2/22	1130	DW01	✓		(3)	40ML		
73RB-102	2/21	1730	SWMU Spare	✓		(3)	40ML		HOLD FOR ANALYSIS
73-SB09DW-01	2/22	0825		✓		1	60ML	1	1
73-SB09DW-00	2/22	0815		✓		1	60ML	1	1
73-SB12DW-01	2/22	1040		✓		1	60ML	1	1
73-SB12DW-000	2/23	1040		✓		1	60ML	1	1
73-TB-102	2/22	—	TRIP BL	✓		(3)	40ML		TRIP BLANK

General Comments

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Sample Stored at 4°C: Yes ☒ No ☐
Chain-of-custody seal on cooler: Yes ☒ Number: _____ No ☐
Analysis turnaround: Priority ☐ _____ hrs. Regular ☒
See Work Order ☒
See Analysis Request Form ☒
Sample Disposal: Return to Baker ☐ Lab Disposal ☒
Archive until: _____ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - Glass

White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Copy

7/94

Baker
Baker Environmental, Inc.

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-312
Project Name: SITE 73, PHASE II RI
Field Team: Baker
SEND RESULTS TO: Karen Wood

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	COM. (2)	TCL VOCs	TPH (GRO)	TPH (DRO)	TCL VOCs (HCl)										Remarks
Type of Container(s) (3)						60ml	60ml	120ml	40ml										
73-SB13DW-00	2/25/96	0850	DW13	✓		1	1	1											
73-SB13DW-02	2/25/96	0900	DW13	✓		1	1	1											
73-RB105	2/25/96	1600	SPATULA	✓					3										
73-A47/3-19-02	2/24/96	1530	A47/3-19	✓					3										
73-RB-104	2/24/96	1620	PE TUBING	✓					3										HOLD FOR Analysis
73-AC1-MW14-02MS	2/24	1025	MW14	✓					3										MATRIX SPIKE
73A47/3-8-02	2/24	1245	A47	✓					3										
73AC1-MW14-02	2/24	1025	MW14	✓					3										
73AC1-MW14-02MSD	2/24	1025	MW14	✓					3										MATRIX SPIKE Duplicate
73-TB-203	2/26		TRIP	✓					3										

General Comments

Relinquished By: [signature] Date: 2/26/96 Time: 1700
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: ______ No ☐
Analysis turnaround: Priority ☐ ______ hrs. Regular ☑
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: ______ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - [illegible]

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-312
Project Name: Site 73 - PHASE II
Field Team: BAKER
SEND RESULTS TO: KAREN WOOD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Analytical Methods / Preservatives: TALP VALS.	TALP SEMI, PEST, PCB, METALS	IGNITABILITY CORROSIVITY	REACT. CYANIDE REACT. SULFIDE	TPH (DRO)	TPH (GRO)	OIL & GREASE	VOLS	VALS. (TCL)	.....	.....	.....	Remarks
						Type of Container(s) (3): 2-60 ML	250 ML	1-250 ML	250 ML	120 ML	60ML	60ML	60 ML	40 ML				
						Number of Container(s)												
73-TDW-101	3/12	1350	ROLL-OFF		X	2	1	1										4-DAY TURNAROUND
73-SB34MW-02	3/10	1420	MW-37	X					(SW)	1	1	1	1					
73-RB106	3/10	1600	RB SPLIT SPOON	X									(SW)	3				HOLD FOR ANALYSIS
73-TB-206	3/12	—	TRIP											3				

Relinquished By: [signature] Date: 3-12-96 Time: 1430
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: No ☐
Analysis turnaround: Priority ☐ hrs. Regular ☑
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - Glass

White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Copy

7/94

KEK # 730206

CHAIN-OF-CUSTODY RECORD

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

Project Number: 62470-312-0001
Project Name: SITE 73 - PHASE II
Field Team: BAKER
SEND RESULTS TO: K. WOOD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Number of Container(s) 40ML	TCL VOCs (HCL)	Remarks
73-GW31MW-01	3/20	0945	MW31	X		3		
73-GW02GW-01	3/19	1500	GW02	X		3		
73-GW03GW-01	3/19	1245	GW03	X		3		
73-GW03GW-01D	3/19	1245	GW03	X		3		DUPLICATE
73-GW03GW-01MS	3/19	1245	GW03	X		3		MATRIX SPIKE
73-GW03GW-01MSD	3/19	1245	GW03	X		3		MATRIX SPIKE DUP.
73-GW35MW-01	3/18	1740	MW35	X		3		
73-GW16DW-01	3/19	1510	MW16	X		3		
73-GW06DW-01	3/20	1100	DW06	X		3		
73-FB-201	3/20	1215	FIELD BLK	X		3		FIELD BLANK (DI)
73-RB107	3/19	1200	PP TUBING RINSATE	X		3		RINSATE BLANK
73-RB109	3/20	1100	PP TUBING	X		3		HELD FOR ANALYSIS
73-FB202	3/20	1230	FIELD BLK	X		3		DISTILLED H2O
73-RB109	3/21	1625	FIELD BLK	X		3		

Relinquished By: [signature] Date: 3/20/96 Time: 1645
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Relinquished By: _____ Date: _____ Time: _____
Received By: _____ Date: _____ Time: _____
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ _____

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: _____ No ☐
Analysis turnaround: Priority ☐ _____ hrs. Regular ☐
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: _____ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G -

Baker Environmental, Inc.
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

00206

CHAIN-OF-CUSTODY RECORD

Project Number: 62470-312-0001
Project Name: SITE 73
Field Team: BAKER
SEND RESULTS TO: K. WOOD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Analytical Methods / Preservatives: TCL VOLS (8260)	Type of Container(s) (3)	Number of Container(s)	Remarks
73GW08DW01	3/20	1520	DW08	X			40ML	3	
73GW33MW01	3/20	1200	MW-33	Y				3	
73TB207	3/20	—	TRIP BLK	Y				3	

General Comments

Relinquished By: [signature] Date: 3/20/96 Time: 1545
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: ____ No ☐
Analysis turnaround: Priority ☐ ____ hrs. Regular ☑
See Work Order ☐
See Analysis Request Form ☐
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: ____ (date)

NOTES:
(1) A - Air; GW - Groundwater; S - Spring; SO - Soil; SW - Surface water; W - Waste; WP - Wipe; WW - Wastewater
(2) GB - Grab; COM - Composite
(3) P - Plastic; G - Glass

Baker

Baker Environmental, Inc.

Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

CHAIN-OF-CUSTODY RECORD

H 730207

Project Number: 62470-312-0001
Project Name: SITE 73 - PHASE II
Field Team: BAKER
SEND RESULTS TO: K. WOOD

Sample Number	Date	Time	Sample Location	Matrix Type (1) GB (2)	Matrix Type (1) COM. (2)	Analytical Methods / Preservatives: TCL VOLS (HCL)	TPH (DRO)	TPH (GRO)	TCL VOLS	SVOC								Type of Container(s) (3): 40ML	120ML	60ML	60ML	1 LTR AMBER								Number of Container(s)								Remarks
73-SB36MW-02	3/21	1604	MW36	✓															1	1	1															
73-SB36MW-00	3/21	1555	MW36	✓															1	1	1															
73-GW32MW-01	3/21	1500	MW32	✓														3																			
73-GW32MW-01D	3/21	1500	MW32	✓														3																			
73-GW32MW-01MS	3/21	1500	MW-32	✓														3																			
73-GW32MW-01SD	3/21	1500	MW-32	✓														3																			
73-GW37MW-01	3/22	1490	MW-37	✓														3				2															
BB-44	3/21	0950	SUPPLY	✓														3																			
73-GW07DW-01	3/21	1430	DW07	✓														3																			
73-GW11DW-01	3/21	1050	DW11	✓														3																			
73-GW09DW-01	3/21	1055	DW-09	✓														3																			
73-GW01GW-01	3/22	1430	GW-01	✓														3																			
73-GW34MW-01	3/20	1735	MW-34	✓														3																			
73-TB2108	3/21		TRIP BLK	✓														3																			

General Comments

Relinquished By: James S. Cobb Date: 3/21/96 Time: 1715
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Relinquished By: Date: Time:
Received By: Date: Time:
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐

Sample Stored at 4°C: Yes ☑ No ☐
Chain-of-custody seal on cooler: Yes ☑ Number: ____ No ☐
Analysis turnaround: Priority ☐ ____ hrs. Regular ☑
See Work Order ☑
See Analysis Request Form ☑
Sample Disposal: Return to Baker ☐ Lab Disposal ☑
Archive until: ____ (date)

NOTES:
(1) A - Air, SW - Surface water, GW - Groundwater, W - Waste, S - Spring, WP - Wipe, SO - Soil, WW - Wastewater
(2) GB - Grab, COM - Composite
(3) P - , G -

White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Copy

7/94

APPENDIX E
WELL DEVELOPMENT RECORDS

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: A47/3-08
DATE: 5-3-95
GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1455
TIME FINISH	1643
INITIAL WATER LEVEL (FT)	4.40'
TOTAL WELL DEPTH (TD)	16.80'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 48 min.
AVERAGE FLOW (GPM)(B)	1.4 gal./min
TOTAL ESTIMATED WITHDRAWAL AxB=	156 gallons
(HNU)/OVA READING	2.5 to 7.0 ppm BG=.3 ppm .1 to

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1458	6.0	5.53	23.9	537	22.5	—	>200
1513	12.0	5.73	23.6	556	22.9	—	>200
1517	18.0	5.64	22.1	524	21.9	—	>200
1520	24.0	5.61	22.5	504	22.1	—	>200
1526	36.0	5.60	21.9	514	21.9	—	155
1529	42.0	5.64	22.4	515	22.2	—	>200
1540	60.0	5.59	21.7	515	21.6	—	88
1552	78.0	5.69	21.9	526	21.7	—	42
1609	102.0	5.66	21.4	515	21.6	—	16.3
1622	120.0	—	—	—	—	—	—
1628	132.0	5.66	21.2	520	21.2	—	11.4
1631	138.0	5.66	21.2	520	21.2	—	10.6
1634	144.0	5.66	21.2	520	21.2	—	10.7
1639	150.0	5.66	21.2	520	21.2	—	10.9
1643	156.0	5.66	21.2	520	21.2	—	9.3

Satisfied criteria for well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Elevated HNU readings occurred during well development. Organic odor (petroleum) was persistent.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: A47/3-09

DATE: 4-22-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1816
TIME FINISH	1852
INITIAL WATER LEVEL (FT)	16.70'
TOTAL WELL DEPTH (TD)	3.85'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	36 min
AVERAGE FLOW (GPM)(B)	2.5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	92 gallons
(HNU/OVA READING	1 ppm BG=.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1818	2.0	5.25	23.1	24	24.0	–	> 200
1819	4.0	5.20	21.4	22	22.0	–	> 200
1821	8.0	5.22	20.9	21	21.0	–	> 200
1826	20.0	5.25	20.9	21	21.0	–	> 200
1830	28.0	5.25	21.7	21	21.0	–	> 200
1833	36.0	5.25	21.1	21	21.0	–	98
1835	44.0	5.25	21.1	21	21.0	–	70
1841	60.0	5.25	21.1	21	21.0	–	38.5
1842	64.0	5.25	21.1	21	21.0	–	25.5
1844	72.0	5.25	21.1	21	21.0	–	15.4
1846	76.0	5.25	21.1	21	21.0	–	12.8
1847	80.0	5.25	21.1	21	21.0	–	11.3
1849	84.0	5.25	21.1	21	21.0	–	9.9
1850	88.0	5.25	21.1	21	21.0	–	8.1
1852	92.0	5.25	21.1	21	21.0	–	7.4

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: A47/3-11
DATE: 4-8-95
GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	DEVELOPMENT DATA
1334	
TIME FINISH: 1743	
INITIAL WATER LEVEL (FT): 6.86'	
TOTAL WELL DEPTH (TD): 18.22'	
WELL DIAMETER (INCHES): 2"	
CALCULATED WELL VOLUME: 2 gal (1)	
BOREHOLE DIAMETER (INCHES): —	
BOREHOLE VOLUME: —	
AMOUNT OF WATER ADDED DURING DRILLING: None	
DEVELOPMENT METHOD: Surge / pump	
PUMP TYPE: Centrifugal	
TOTAL TIME (A): 3 hrs (elapsed)	
AVERAGE FLOW (GPM)(B): 1.5 gal / min	
TOTAL ESTIMATED WITHDRAWAL AxB=: 282 gallons	
(HNU)/OVA READING: 0 ppm BG = 0 ppm	

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1334	2.0	6.03	24.9	510	25.0		>200
1343	4.0	6.01	21.3	490	23.0		>200
1345	6.0	6.00	22.0	410	24.0		>200
1417	42.0	6.02	20.5	500	22.0		>200
1420	46.0	6.01	20.4	490	21.5		>200
1424	50.0	6.02	21.0	490	21.8		>200
1517	148.0	6.03	21.0	510	21.0		49.5
1530	158.0	6.03	22.0	510	18.0		60.4
1532	168.0	6.03	21.1	510	22.0		87.1
1715	222.0	6.06	20.5	510	20.0		110.8
1720	232.0	6.04	20.6	490	20.0		100.4
1725	242.0	6.06	19.8	510	20.0		80.8
1734	262.0	6.05	20.2	510	20.0		69.3
1739	272.0	6.07	19.9	520	20.0		58.9
1743	282.0	6.04	20.2	510	20.0		43.1

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1600. Continued pumping at 1710. Strong organic odor occurred throughout well development. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: A47/3-13
DATE: 4-9* & 4-10** & 4-11-95 ***
GEOLOGIST/ENGINEER: T. L. Beckman

	DEVELOPMENT DATA							
TIME START: 1325 (4-9-95)	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
TIME FINISH: 1542 (4-11-95)	1333	2.0 *	7.73	-	700	34.0	-	>200
INITIAL WATER LEVEL (FT): 4.68'	1444	4.0**	6.72	-	180	33.5	-	>200
TOTAL WELL DEPTH (TD): 16.25'	1542	6.0***	6.88	-	610	26.5	-	>200
WELL DIAMETER (INCHES): 2"								
CALCULATED WELL VOLUME: 2 gal. (1)								
BOREHOLE DIAMETER (INCHES): -								
BOREHOLE VOLUME: -								
AMOUNT OF WATER ADDED DURING DRILLING: None								
DEVELOPMENT METHOD: Surge								
PUMP TYPE: -								
TOTAL TIME (A): 30 min.								
AVERAGE FLOW (GPM)(B): Not calculated								
TOTAL ESTIMATED WITHDRAWAL AxB=: 6 gallons								
(HNU)/OVA READING: 0ppm BG=0ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 3 days. Failed to meet turbidity criteria. Well was pumped dry after each well volume due to slow recharge.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: A47/3-16
DATE: 4-8-95
GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	0933
TIME FINISH	1110
INITIAL WATER LEVEL (FT)	5.36'
TOTAL WELL DEPTH (TD)	18.98'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 23 min
AVERAGE FLOW (GPM)(B)	.9 gal / min
TOTAL ESTIMATED WITHDRAWAL AxB=	127.5 gallons
(HNU)/OVA READING	.2 ppm BG=.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0933	2.5	5.80	19.0	501	19.0	—	>200
0935	5.0	5.95	19.4	502	18.9	—	>200
0937	7.5	5.94	19.4	502	18.9	—	>200
1010	4.4	6.13	20.9	508	21.0	—	168.4
1012	37.5	6.15	20.3	507	20.0	—	140.4
1015	42.5	6.16	20.4	508	20.0	—	88.7
1020	50.0	6.15	20.9	508	23.0	—	79.4
1027	57.5	6.12	21.9	509	21.0	—	46.7
1032	65.0	6.09	22.1	—	—	—	36.6
1035	72.5	6.14	22.5	600	22.0	—	12.8
1038	77.5	6.09	21.0	509	21.0	—	25.1
1045	85.0	6.09	21.7	509	21.0	—	25.6
1101	115.0	6.10	21.4	601	21.0	—	9.7
1107	122.5	6.08	22.0	600	21.5	—	11.9
1110	127.5	6.11	23.1	610	22.9	—	3.3

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW-7/3-22

DATE: 4-9* & 4-10** & 4-11-95***

GEOLOGIST/ENGINEER: T.L. Beckman

TIME START	1510 (4-9-95)
TIME FINISH	1051 (4-11-95)
INITIAL WATER LEVEL (FT)	8.58'
TOTAL WELL DEPTH (TD)	20.55'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge
PUMP TYPE	–
TOTAL TIME (A)	30 min
AVERAGE FLOW (GPM)(B)	Not calculated
TOTAL ESTIMATED WITHDRAWAL AxB=	8 gallons
(HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	
1516	4.0 *	6.88	-	225	28	–	>200
1343	6.0**	6.44	-	1000	34	–	>200
1051	8.0***	6.45	-	1300	24.5	–	>200

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 3 days. Failed to meet turbidity criteria. Well was pumped dry after each well volume due to slow recharge.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: DW02

DATE: 4-11-95

GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	1115
TIME FINISH	1434
INITIAL WATER LEVEL (FT)	12.25'
TOTAL WELL DEPTH (TD)	32.19'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	3.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3hr. 19 min.
AVERAGE FLOW (GPM)(B)	~.2 gal / min
TOTAL ESTIMATED WITHDRAWAL AxB=	
(HNU)/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1148	2.0	8.81	19.5	175	20.0	—	>200
1154	3.5	8.61	19.7	125	19.8	—	>200
1209	7.0	7.94	19.7	125	20.0	—	>200
1224	10.5	7.71	19.7	125	20.1	—	>200
1241	14.0	7.66	19.7	125	20.5	—	>200
1255	17.5	7.90	19.4	125	20.0	—	>200
1312	21.0	7.64	18.9	125	20.5	—	>200
1330	24.5	7.84	19.4	110	20.0	—	>200
1345	28.0	7.58	19.4	110	20.0	—	>200
1356	31.5	7.64	19.3	120	20.0	—	>200
1410	35.0	7.59	19.7	120	21.0	—	>200
1434	38.5	7.51	19.4	110	20.0	—	>200

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW08

DATE: 4-5-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0833
TIME FINISH	0929
INITIAL WATER LEVEL (FT)	6.31
TOTAL WELL DEPTH (TD)	17.39
WELL DIAMETER (INCHES)	4"
CALCULATED WELL VOLUME	7.3 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	56 min.
AVERAGE FLOW (GPM)(B)	2.1 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	117 gallons
(HNU)/OVA READING	0 ppm BG = 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	
0833	7.3	6.33	14.0	480	14.5	–	69
0834	14.6	5.98	13.5	355	14.5	–	>200
0836	21.9	5.67	14.6	290	15.0	–	109
0857	29.2	6.08	14.2	347	14.5	–	>200
0859	36.5	5.88	14.5	310	15.0	–	>200
0901	43.8	5.82	14.7	317	15.2	–	>20
0904	51.1	5.76	15.0	302	15.3	–	>200
0910	65.7	5.63	14.8	250	15.2	–	>200
0912	73.0	5.68	14.9	265	15.9	–	96
0915	80.3	5.71	14.8	272	15.5	–	39
0917	87.6	5.74	14.9	278	15.9	–	23
0921	94.9	5.77	15.3	280	15.9	–	16
0923	102.2	5.80	14.7	278	15.9	–	13
0926	109.5	5.79	15.1	275	16.0	–	11
0929	117.0	5.80	15.5	278	17.0	–	10

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW09

DATE: 4-6-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1334
TIME FINISH	1445
INITIAL WATER LEVEL (FT)	5.0'
TOTAL WELL DEPTH (TD)	12.93'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.35 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 12 min
AVERAGE FLOW (GPM)(B)	≈ 1 gal/min
TOTAL ESTIMATED WITHDRAWAL AxB=	74.25 gallons
(HNU)/OVA READING	0 ppm BG= 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1334	2.0	7.11	19.3	217	20.0	–	>200
1341	4.0	7.24	19.8	232	20.5	–	>200
1408	10.0	6.78	17.7	235	18.0	–	>200
1412	16.0	6.62	17.8	232	18.1	–	>200
1414	19.0	6.59	17.9	235	18.2	–	>200
1416	22.0	6.56	17.8	225	18.0	–	>200
1418	25.0	6.54	17.9	225	18.0	–	62
1419	28.0	6.55	17.9	235	18.0	–	150
1422	31.0	6.48	17.5	227	18.0	–	43
1426	34.0	6.57	17.2	230	18.0	–	34
1428	37.0	6.54	6.54	232	18.0	–	37
1430	40.0	6.48	6.48	220	18.0	–	40
1438	49.0	6.56	17.5	218	18.0	–	28
1440	52.0	6.56	17.5	218	18.0	–	16
1442	55.0	6.56	17.5	218	18.0	–	7.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW13

DATE: 4-6-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0850
TIME FINISH	1146
INITIAL WATER LEVEL (FT)	4.12
TOTAL WELL DEPTH (TD)	12.14'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.36 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 54 min.
AVERAGE FLOW (GPM)(B)	.73 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	124 gallons
HNU/OVA READING	0ppm BG: 0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0850	1.4	6.41	14.92	460	14.7	–	>200
0920	9.8	6.46	18.1	430	18.3	–	>200
0934	19.6	6.39	18.2	380	18.3	–	>200
0945	26.6	6.39	18.6	378	18.9	–	82
1004	39.2	–	–	–	–	–	108
1022	50.4	–	–	–	–	–	89
1033	58.8	–	–	–	–	–	18.5
1047	70.0	–	–	–	–	–	20
1101	81.2	–	–	–	–	–	24.5
1111	89.6	–	–	–	–	–	31.2
1125	100.8	–	–	–	–	–	14.3
1130	106.4	–	–	–	–	–	22.3
1138	114.8	–	–	–	–	–	34
1143	120.4	–	–	–	–	–	23.4
1146	123.2	–	–	–	–	–	19.3

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW16

DATE: 4-4-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1520
TIME FINISH	1724
INITIAL WATER LEVEL (FT)	5.77'
TOTAL WELL DEPTH (TD)	13.88'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.3 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 4 min.
AVERAGE FLOW (GPM)(B)	.37 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈50 gallons
(HNU)/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1525	1.3	8.74	25.6	280	27.0	–	> 200
1527	3.9	9.03	20.9	287	21.0	–	> 200
1553	7.8	9.16	19.8	300	19.5	–	> 200
1615	11.7	7.20	21.6	330	21.5	–	> 200
1640	15.6	6.91	19.7	332	19.3	–	> 200
1644	19.5	6.54	17.5	302	17.2	–	> 200
1650	23.4	6.51	16.4	300	16.5	–	160
1656	27.3	6.50	16.0	295	15.8	–	55
1702	31.2	–	–	–	–	–	25
1708	35.1	–	–	–	–	–	30
1714	39.0	–	–	–	–	–	30
1720	42.9	–	–	–	–	–	15
1724	47.0	–	–	–	–	–	19

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: MW18

DATE: 4-5-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1054
TIME FINISH	1301
INITIAL WATER LEVEL (FT)	6.68'
TOTAL WELL DEPTH (TD)	15.71'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.5 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 7 min.
AVERAGE FLOW (GPM)(B)	2.6 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	213 gallons
HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	
1054	1.5	6.08	-	220	16.5	-	>200
1116	13.5	5.87	-	205	15.5	-	>200
1117	16.5	6.83	-	197	15.8	-	>200
1118	19.5	5.82	-	192	15.8	-	>200
1120	24.0	5.81	-	196	15.8	-	>200
1122	28.5	5.84	-	194	15.8	-	>20
1125	33.0	5.85	-	198	16.0	-	>200
1132	46.5	5.80	-	195	16.0	-	>200
1134	51.0	5.81	-	195	15.8	-	>200
1137	55.5	5.81	-	195	15.8	-	>200
1139	60.0	5.81	-	195	15.8	-	>200
1255	204.0	5.81	-	195	15.8	-	19
1258	208.5	5.81	-	195	15.8	-	28
1301	213.0	5.81	-	195	15.8	-	27

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 1055. Begin pumping at 1105.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW01A

DATE: 4-20-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1448
TIME FINISH	1823
INITIAL WATER LEVEL (FT)	6.04'
TOTAL WELL DEPTH (TD)	20.02'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs.
AVERAGE FLOW (GPM)(B)	≈.45 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	80 gallons
(HNU)/OVA READING	.1 to .4 ppm BG=.1 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1448	5.0	6.15	24.5	112	24.3	-	>200
1500	10.0	6.09	24.1	100	24.0	-	>200
1514	15.0	6.04	23.9	91	24.0	-	>200
1545	20.0	5.85	22.0	78	22.0	-	>200
1559	30.0	5.99	20.9	80	21.5	-	>200
1616	35.0	5.90	22.7	70	22.5	-	>200
1630	40.0	5.81	24.4	70	24.0	-	>200
1645	45.0	5.81	24.5	69	25.0	-	152
1658	50.0	5.82	23.3	68	24.0	-	109
1713	55.0	5.80	23.5	69	23.5	-	76
1728	60.0	5.78	23.0	68	23.2	-	55
1741	65.0	5.74	22.8	66	23.0	-	48
1756	70.0	5.74	22.9	66	23.0	-	40
1809	75.0	5.74	22.9	66	23.0	-	35
1832	80.0	5.74	22.9	66	23.0	-	29.5

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW01B
DATE: 4-24-95
GEOLOGIST/ENGINEER: T. P. Valli

TIME START	1500
TIME FINISH	1820
INITIAL WATER LEVEL (FT)	12.98'
TOTAL WELL DEPTH (TD)	36.98'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 4 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	40 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hr. 20 min.
AVERAGE FLOW (GPM)(B)	≈ 1 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	204 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1500	52.0	6.60	–	194.4	18.2	–	52.1
1508	60.0	6.51	–	176.1	18.1	–	50.1
1512	68.0	6.51	–	171.6	18.1	–	40.8
1605	124.0	6.41	–	142.3	17.8	–	21.8
1614	132.0	6.41	–	139	17.7	–	21.3
1618	140.0	6.40	–	137.1	17.7	–	20.4
1640	164.0	6.38	–	133.3	17.6	–	19.1
1750	172.0	6.46	–	139.2	17.3	–	39.7
1800	180.0	6.40	–	133.6	17.5	–	37.8
1803	188.0	6.38	–	133.6	17.6	–	27.6
1815	196.0	6.38	–	130.4	17.5	–	26.7
1820	204.0	6.37	–	127.8	17.2	–	19.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 1640. Begin pumping at 1735.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW02A

DATE: 4-18 & 4-19-95 *

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1710 (4-18-95)
TIME FINISH	0902 (4-19-95)
INITIAL WATER LEVEL (FT)	5.91'
TOTAL WELL DEPTH (TD)	20.02'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.4 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 51 min
AVERAGE FLOW (GPM)(B)	1.9 gal / min
TOTAL ESTIMATED WITHDRAWAL AxB=	331.2 gallons
HNU/OVA READING	0 ppm BG = 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1710	7.20	6.35	18.4	167	18.0	–	> 200
1728	12.0	6.31	17.2	150	17.7	–	> 200
1732	21.6	6.27	16.6	150	17.1	–	> 200
1738	36.0	6.25	16.4	151	17.0	–	> 200
1750	60.0	6.26	16.7	155	17.0	–	> 200
1801	84.0	6.29	16.2	157	17.0	–	> 200
1813	108.0	6.27	16.7	158	17.0	–	> 200
1825	132.0	6.33	16.9	159	17.0	–	121
1836	156.0	6.33	16.9	159	17.0	–	40
0801	196.80*	6.29	15.7	158	16.0	–	> 200
0819	240.0*	6.31	16.2	162	17.0	–	> 200
0831	264.0*	6.29	16.3	160	17.0	–	61
0857	321.60*	6.29	16.3	160	17.0	–	16.9
0859	326.40*	6.29	16.3	160	17.0	–	10.9
0902	331.20*	6.29	16.3	160	17.0	–	9.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW02B
DATE: 5-16-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1427
TIME FINISH	1540
INITIAL WATER LEVEL (FT)	11.75'
TOTAL WELL DEPTH (TD)	31.52'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	3.3 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 13 min
AVERAGE FLOW (GPM)(B)	2.5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈13 gallons
(HNU)/OVA READING	.6ppm BG=.3ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1444	3.3	6.22	—	148.3	19.0	—	110.8
1459	6.6	6.43	—	160.4	18.8	—	43.6
1518	9.9	6.54	—	163.5	18.9	—	18.9
1530	13.2	6.55	—	163.1	18.3	—	13.4
1540	16.5	6.60	—	164.8	18.5	—	8.5

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW03

DATE: 4-17 & 4-18-96*

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1800 (4-17-95)
TIME FINISH	1546 (4-18-95)
INITIAL WATER LEVEL (FT)	4.87'
TOTAL WELL DEPTH (TD)	20.30'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 48 min
AVERAGE FLOW (GPM)(B)	≈.5 gal/min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈115 gallons
(HNU/OVA READING	1.0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1800	2.5	6.29	18.6	243	19.0	–	>200
1801	5.0	6.27	17.6	220	17.9	–	>200
1802	7.5	6.41	18.6	228	19.0	–	>200
0838	22.5 *	6.17	17.5	165	18.0	–	>200
0845	27.5 *	6.69	18.7	145	19.0	–	>200
1306	47.5 *	6.39	17.7	235	18.5	–	99
1310	52.5 *	6.36	17.6	207	18.0	–	89
1315	57.5 *	6.26	17.9	165	18.7	–	162
1337	67.5 *	6.54	19.8	232	20.3	–	110
1344	70.0 *	6.52	21.8	239	23.0	–	70
1349	72.5 *	6.49	21.5	235	22.3	–	59
1419	82.5 *	6.37	21.0	210	22.0	–	33
1425	85.0 *	6.37	21.2	220	21.5	–	28
1430	87.5 *	6.37	21.6	210	21.8	–	25
1546	115.0 *	–	–	–	–	–	19

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW04

DATE: 5-3-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1808
TIME FINISH	1918
INITIAL WATER LEVEL (FT)	3.30'
TOTAL WELL DEPTH (TD)	16.14'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 1.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 10 min.
AVERAGE FLOW (GPM)(B)	2.1 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	150 gallons
(HNU)/OVA READING	1.5 ppm BG=.1 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1826	3.0	6.03	24.9	163	20.8	–	>200
1828	7.5	5.97	24.3	166	20.7	–	>200
1831	13.5	5.99	24.2	165	20.7	–	>200
1833	19.5	5.94	23.9	157	20.7	–	>200
1835	25.5	5.80	23.6	140	20.4	–	>200
1837	31.5	5.84	23.2	146	20.2	–	>20
1839	37.5	5.83	23.8	141	20.1	–	>200
1841	43.5	5.79	23.9	139	20.2	–	>200
1843	49.5	5.79	23.7	137	19.5	–	>200
1845	55.5	5.70	23.8	136	20.2	–	>200
1847	61.5	5.69	23.8	134	20.2	–	134
1849	67.5	5.69	23.8	134	20.2	–	35
1914	139.5	5.69	23.8	134	20.2	–	12.3
1916	145.5	5.69	23.8	134	20.2	–	12.5
1918	150.0	5.69	23.8	134	20.2	–	11.5

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW05

DATE: 4-19-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	DEVELOPMENT DATA							
1446								
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1712	1447	5.0	6.32	20.8	212	21.0	–	>200
INITIAL WATER LEVEL (FT) 6.11'	1449	10.0	6.35	10.8	202	19.0	–	>200
TOTAL WELL DEPTH (TD) 20.0'	1451	15.0	6.33	17.9	187	18.2	–	>200
WELL DIAMETER (INCHES) 2"	1507	60.0	6.23	18.2	168	18.5	–	124
CALCULATED WELL VOLUME ≈ 2.5 gal (1)	1509	65.0	6.24	18.1	172	18.5	–	106
BOREHOLE DIAMETER (INCHES) –	1511	70.0	6.23	18.5	175	19.0	–	91
	1513	75.0	6.24	18.8	175	19.2	–	72
BOREHOLE VOLUME –	1530	125.0	6.24	18.5	173	19.0	–	40
AMOUNT OF WATER ADDED DURING DRILLING 30 gallons	1532	130.0	6.24	18.5	173	19.0	–	38
	1637	185.0	6.24	18.5	173	19.0	–	30
DEVELOPMENT METHOD Surge/pump	1638	190.0	6.24	18.5	173	19.0	–	25
PUMP TYPE Centrifugal	1652	230.0	6.24	18.5	173	19.0	–	15.5
TOTAL TIME (A) 2hrs. 49 min	1707	270.0	6.24	18.5	173	19.0	–	10.1
	1709	280.0	6.24	18.5	173	19.0	–	10.3
AVERAGE FLOW (GPM)(B) ≈ 1.6 gal./min.	1710	280.0	6.24	18.5	173	19.0	–	9.8
TOTAL ESTIMATED WITHDRAWAL AxB= 280 gallons	Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1532. Continued pumping at 1619. Strong organic odor is present.							
(HNU/OVA READING) .2 to 1.2 ppm BG=.2 to .4 ppm								

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW06A

DATE: 4-10 & 4-11-95*

GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	DEVELOPMENT DATA							
1617 (4-10-95)								
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1003 (4-11-95)								
INITIAL WATER LEVEL (FT)	1617	1.0	6.62	25.1	800	25.5	–	>200
6.69'	1621	2.0	6.50	20.7	450	21.0	–	>200
TOTAL WELL DEPTH (TD)	1624	3.0	6.48	19.4	410	20.0	–	>200
11.84'	1715	13.0	6.76	22.3	450	23.5	–	>200
WELL DIAMETER (INCHES)	1719	14.0	6.70	20.1	410	20.9	–	>200
2"	1721	15.0	6.64	19.5	420	20.0	–	>200
CALCULATED WELL VOLUME	1804	24.0	6.61	20.3	410	21.5	–	>200
1.0 gal (1)	0823	26.0 *	6.60	14.8	380	15.5	–	>200
BOREHOLE DIAMETER (INCHES)	0826	28.0 *	6.69	17.0	400	16.1	–	>200
—	0835	31.0 *	6.65	16.0	400	18.0	–	>200
BOREHOLE VOLUME	0849	34.0 *	6.69	18.4	410	19.0	–	>200
—	0902	37.0 *	6.67	18.9	410	19.0	–	62.3
AMOUNT OF WATER ADDED DURING DRILLING	0952	47.0 *	6.81	19.2	410	20.2	–	7.9
10 gallons	0959	48.0 *	6.85	20.1	400	20.0	–	8.5
DEVELOPMENT METHOD	1003	49.0 *	6.79	19.9	410	20.0	–	6.4
Surge/pump								
PUMP TYPE								
Centrifugal								
TOTAL TIME (A)								
3 hrs. 27 min								
AVERAGE FLOW (GPM)(B)								
.2 gal/min								
TOTAL ESTIMATED WITHDRAWAL AxB=								
49 gallons								
(HNU)/OVA READING								
.1ppm BG=0ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH specific conductance, temperature and turbidity). Not all readings taken during well developme appear on completed well development form. All readings are recorded in the field log book. Wel developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW06B
DATE: 5-6-95
GEOLOGIST/ENGINEER: G.R. Allen

TIME START	DEVELOPMENT DATA							
1328								
TIME FINISH 1753	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
INITIAL WATER LEVEL (FT) 5.15'	1328	25.0	7.81	–	284	19.8	–	17.5
TOTAL WELL DEPTH (TD) 43.50'	1337	40.0	7.86	–	280	19.3	–	17.4
	1345	54.0	7.87	–	281	19.3	–	18.6
WELL DIAMETER (INCHES) 2"	1400	80.0	7.89	–	280	19.4	–	17.5
CALCULATED WELL VOLUME 6.2 gal. (1)	1415	104.0	7.89	–	279	19.2	–	17.3
	1610	135.0	7.68	–	279	19.2	–	15.9
BOREHOLE DIAMETER (INCHES) –	1630	166.0	7.88	–	280	19.3	–	15.6
BOREHOLE VOLUME –	1730	300.0	7.85	–	277	18.7	–	14.5
AMOUNT OF WATER ADDED DURING DRILLING 120 gallons	1745	325.0	7.88	–	276	18.7	–	13.7
	1753	345.0	7.81	–	277	18.9	–	13.5
DEVELOPMENT METHOD Pump								
PUMP TYPE Waterra								
TOTAL TIME (A) 3 hr. 5 min.								
AVERAGE FLOW (GPM)(B) 1.86 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB= 345 gallons								
(HNU)/OVA READING .2 ppm BG=.2ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 1430. Begin pumping at 1550.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW07

DATE: 4-21-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0817
TIME FINISH	0951
INITIAL WATER LEVEL (FT)	8.68'
TOTAL WELL DEPTH (TD)	19.0'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	40 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	53 min
AVERAGE FLOW (GPM)(B)	.3 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	32 gallons
(HNU/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0825	4.0	5.81	18.8	178	19.0	–	>200
0837	8.0	6.09	21.3	189	21.5	–	>200
0900	12.0	6.26	22.9	200	23.5	–	>200
0946	15.0	6.37	24.7	210	25.5	–	>200
0951	16.0	6.63	23.1	205	23.5	–	>200

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 0905. Continued pumping at 0943. Third attempt at well development resulted in low production. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW08
DATE: 4-24 & 4-25-95*
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1758 (4-24-95)
TIME FINISH	0959 (4-25-95)
INITIAL WATER LEVEL (FT)	5.18'
TOTAL WELL DEPTH (TD)	13.10'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 1.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 18 min
AVERAGE FLOW (GPM)(B)	.4 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈ 63 gallons
HNU/OVA READING	.2 to .8 ppm BG=.6 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1818	3.0	6.18	18.1	144	18.2	—	>200
1820	6.0	6.21	17.7	150	17.4	—	>200
1823	9.0	6.29	18.1	150	18.1	—	>200
1832	18.0	6.42	19.0	147	18.9	—	>200
0820	21.0 *	6.14	16.4	146	17.0	—	>200
0825	24.0 *	6.19	17.2	145	17.7	—	>200
0834	27.0 *	6.47	18.6	152	18.9	—	>200
0840	30.0 *	6.50	19.0	154	18.9	—	>200
0848	33.0 *	6.52	19.8	157	19.5	—	>200
0907	39.0 *	6.47	19.5	158	20.3	—	38.9
0920	45.0 *	6.53	20.9	160	26.5	—	26.5
0933	51.0 *	6.47	20.9	160	20.6	—	16.4
0947	57.0 *	6.47	21.1	160	21.0	—	11.5
0953	60.0 *	6.50	21.3	160	20.6	—	10
0959	63.0 *	6.43	21.5	160	21.6	—	9.2

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW09
DATE: 4-24-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0919
TIME FINISH	1222
INITIAL WATER LEVEL (FT)	3.32'
TOTAL WELL DEPTH (TD)	10.40'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈1.2 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	10 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 3 min.
AVERAGE FLOW (GPM)(B)	≈.36 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈67 gallons
HNU/OVA READING	.1 to .2 ppm BG=.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0926	2.4	7.27	21.1	384	22.8	—	>200
0932	4.8	7.29	22.3	383	23.2	—	>200
0938	7.2	7.32	22.3	381	23.2	—	>200
0958	14.4	7.36	23.0	373	23.5	—	123
1030	26.4	7.28	23.2	368	24.2	—	63
1037	28.8	7.28	23.2	368	24.2	—	60
1056	36.0	7.28	23.2	368	24.2	—	55
1123	45.6	7.28	23.2	368	24.2	—	51
1140	52.8	7.28	23.2	368	24.2	—	47.8
1200	60.0	7.28	23.2	368	24.2	—	46.2
1209	62.4	7.28	23.2	368	24.2	—	46
1216	64.8	7.28	23.2	368	24.2	—	45.6
1222	67.2	7.28	23.2	368	24.2	—	43.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW10

DATE: 4-24-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1255
TIME FINISH	1425
INITIAL WATER LEVEL (FT)	2.60'
TOTAL WELL DEPTH (TD)	10.33'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 1.3 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 35 min
AVERAGE FLOW (GPM)(B)	≈.6 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈ 62.5 gallons
(HNU)/OVA READING	.5ppm BG=.5ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1315	2.6	6.36	20.7	342	20.9	—	>200
1317	5.2	6.30	19.9	309	20.0	—	>200
1319	7.8	6.29	19.6	305	19.7	—	>200
1331	20.8	6.63	20.2	330	20.8	—	>200
1344	33.8	6.62	20.8	333	20.9	—	149
1354	41.6	6.64	21.2	333	21.2	—	36
1358	44.2	6.64	21.2	333	21.2	—	25
1411	52.0	6.64	21.2	333	21.2	—	19.2
1417	57.2	6.64	21.2	333	21.2	—	14.2
1421	59.8	6.64	21.2	333	21.2	—	13.6
1425	62.4	6.64	21.2	333	21.2	—	9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW11A
DATE: 5-1 & 5-2-95*
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	DEVELOPMENT DATA
1524	

TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1700	1529	5.0	7.07	26.1	126	19.5	–	>200
INITIAL WATER LEVEL (FT) 5.03	1530	10.0	7.16	23.2	119	18.3	–	>200
TOTAL WELL DEPTH (TD) 20.05'	1531	15.0	7.19	24.1	113	18.5	–	>200
WELL DIAMETER (INCHES) 2"	1547	62.5	7.47	18.0	104	18.0	–	>200
CALCULATED WELL VOLUME ≈ 2.5 gal (1)	1550	72.5	7.54	–	–	–	–	>200
BOREHOLE DIAMETER (INCHES) –	1615	102.5	7.40	19.2	117	17.6	–	>20
BOREHOLE VOLUME –	1642	192.5	6.56	19.0	115	17.6	–	35
AMOUNT OF WATER ADDED DURING DRILLING 30 gallons	1649	212.5	6.50	18.9	114	17.4	–	35
DEVELOPMENT METHOD Surge	1700	250.0	6.50	18.9	114	17.4	–	15
PUMP TYPE Centrifugal	0856	260.0*	6.33	17.5	131	17.3	–	98
TOTAL TIME (A) 2 hrs. 17 min.	0901	280.0*	6.42	17.5	115	17.1	–	59
AVERAGE FLOW (GPM)(B) ≈2.7 gal./min.	0916	330.0*	6.47	17.5	119	17.3	–	15.2
TOTAL ESTIMATED WITHDRAWAL AxB= ≈370 gallons	0923	350.0*	6.47	17.5	119	17.3	–	10.9
(HNU)/OVA READING .4ppm BG=.2ppm	0925	360.0*	6.47	17.5	119	17.3	–	9.3
	0928	370.0*	6.47	17.5	119	17.3	–	8.8

Satisfied criteria for well development. No elevated HNU readings occurred during we development. The last three readings are shown prior to stabilization of water quality parameters (pl specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW11B
DATE: 5-5-95
GEOLOGIST/ENGINEER: G. R. Allen

TIME START	DEVELOPMENT DATA							
1750								
TIME FINISH 1925	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
INITIAL WATER LEVEL (FT) 10.55'	1800	20.0	7.35	–	273.1	19.9	–	41
TOTAL WELL DEPTH (TD) 38.90'	1815	45.0	7.11	–	251	19.7	–	23.3
WELL DIAMETER (INCHES) 2"	1828	65.0	7.12	–	242.8	19.9	–	20.6
CALCULATED WELL VOLUME	1845	95.0	7.07	–	211	19.7	–	17.1
	1858	115.0	7.06	–	236	19.5	–	15.5
BOREHOLE DIAMETER (INCHES) –	1908	135.0	7.06	–	234	19.3	–	15.7
	1920	151.0	7.00	–	234	19.4	–	13.7
BOREHOLE VOLUME –	1925	160.0	7.03	–	231	19.1	–	13.5
AMOUNT OF WATER ADDED DURING DRILLING 200 gallons								
DEVELOPMENT METHOD Pump								
PUMP TYPE Waterra								
TOTAL TIME (A) 1 hr. 35 min.								
AVERAGE FLOW (GPM)(B) ≈1.7 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB= 160 gallons								
HNU/OVA READING 0 ppm BG=0 ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW12

DATE: 5-8 & 5-9-95*

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1229 (5-8-95)
TIME FINISH	0933 (5-9-95)
INITIAL WATER LEVEL (FT)	4.46'
TOTAL WELL DEPTH (TD)	14.70'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 10 min.
AVERAGE FLOW (GPM)(B)	1.17 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	224 gallons
HNU/OVA READING	1.3ppm BG=1.6ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1231	6.0	6.39	26.0	260	25.0	—	>200
1235	12.0	6.36	24.5	236	23.6	—	>200
1243	18.0	6.60	27.5	260	26.9	—	>200
1251	24.0	6.66	26.8	261	26.8	—	>200
1327	54.0	6.68	26.4	254	26.0	—	119
1334	60.0	6.63	26.8	254	26.4	—	94
1350	76.0	6.53	26.3	252	25.9	—	52
1407	92.0	6.59	26.1	249	25.1	—	32
1424	108.0	6.62	26.1	249	25.3	—	28
1441	124.0	6.67	25.9	254	25.7	—	40
1003	164.0*	6.49	25.6	240	23.7	—	70
1013	184.0*	6.66	25.6	249	24.9	—	50
1033	224.0*	6.69	24.7	244	24.0	—	28

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW13

DATE: 5-7-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1315
TIME FINISH	1833
INITIAL WATER LEVEL (FT)	3.65'
TOTAL WELL DEPTH (TD)	17.77'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs
AVERAGE FLOW (GPM)(B)	1.8 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	335.0 gallons
(HNU)/OVA READING	2.4 ppm BG=1.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1318	5.0	5.68	25.9	405	23.7		>200
1320	10.0	5.59	23.1	360	21.8		>200
1322	15.0	5.56	22.7	357	21.8		>200
1329	25.0	5.61	23.3	373	23.0		>200
1346	60.0	5.54	22.9	362	21.9		>200
1402	90.0	5.60	22.4	360	21.7		111
1413	110.0	5.60	22.4	360	21.7		71
1429	140.0	5.60	22.4	360	21.7		55
1447	165.0	5.60	22.4	360	21.7		35
1502	195.0	5.60	22.4	360	21.7		60
1728	205.0	5.61	24.4	364	21.8		102
1803	275.0	5.55	22.4	354	21.4		46
1813	295.0	5.55	22.3	354	21.4		30.8
1823	315.0	5.56	22.5	349	21.4		17
1833	335.0	5.56	22.5	349	21.3		10.7

Satisfied criteria for well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Elevated HNU readings occurred during well development. 1503 stopped pumping. 1725 continued pumping.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW14

DATE: 4-23-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	0920
TIME FINISH	1308
INITIAL WATER LEVEL (FT)	16.95'
TOTAL WELL DEPTH (TD)	3.80'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hr. 30 min
AVERAGE FLOW (GPM)(B)	2 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	324 gallons
(HNU)/OVA READING	.4 to .8 ppm BG=.3 to .6 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0923	4.0	6.34	21.5	650	22.0	—	>200
0938	8.0	6.45	22.2	695	22.5	—	>200
0940	12.0	6.50	21.5	620	22.0	—	>200
1000	52.0	5.91	20.1	429	19.5	—	>200
1028	112.0	5.96	20.3	400	21.0	—	133
1030	120.0	5.96	20.3	400	21.0	—	146
1153	172.0	6.20	21.0	600	20.9	—	20.3
1155	180.0	5.95	19.9	445	19.9	—	109
1200	192.0	5.94	19.6	436	19.7	—	113
1202	196.0	5.94	19.6	436	19.7	—	122
1230	252.0	5.94	19.6	436	19.7	—	22
1300	308.0	5.94	19.6	436	19.7	—	32.9
1304	316.0	5.94	19.6	436	19.7	—	24.1
1306	320.0	5.94	19.6	436	19.7	—	23.8
1308	3240	5.94	19.6	436	19.7	—	22.6

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW15A
DATE: 5-4-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	DEVELOPMENT DATA							
0853								
TIME FINISH 1438	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
INITIAL WATER LEVEL (FT) 3.77'	0855	2.5	6.67	18.8	1399	18.9	–	>200
TOTAL WELL DEPTH (TD) 11.08'	0857	5.0	6.57	19.5	2388	19.4	–	>200
	0900	7.5	6.56	19.8	2962	19.4	–	>200
WELL DIAMETER (INCHES) 2"	1017	15.0	–	–	1586	–	–	>200
CALCULATED WELL VOLUME ≈1.25 gal (1)	1022	20.0	6.91	24.0	2098	22.9	–	>200
	1035	25.0	7.36	26.9	2126	26.7	–	>200
BOREHOLE DIAMETER (INCHES) –	1135	27.5	7.47	32.0	2005	31.5	–	>200
BOREHOLE VOLUME –	1212	32.5	7.22	32.6	2434	32.2	–	>200
AMOUNT OF WATER ADDED DURING DRILLING None	1244	42.5	7.24	26.9	2206	26.1	–	38
	1316	50.0	7.81	28.3	2344	28.6	–	37
DEVELOPMENT METHOD Surge/pump	1339	55.0	7.77	28.0	2333	28.9	–	25.7
PUMP TYPE Centrifugal	1352	57.5	7.51	27.0	2349	26.9	–	29
TOTAL TIME (A) 3 hrs.	1410	60.0	7.56	27.0	2306	27.7	–	22.7
	1424	62.5	7.46	26.5	2226	25.9	–	19.6
AVERAGE FLOW (GPM)(B) 2.76 gal./min.	1438	65.0	7.51	29.2	2313	28.5	–	20.0
TOTAL ESTIMATED WITHDRAWAL AxB= 65 gallons	Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping to let well recharge at 0916. Stopped pumping to let well recharge at 1036. Began pumping at 1134. Stopped pumping to let well recharge at 1140. Begain pumping at 1210. Failed to meet turbidity criteria.							
(HNU)/OVA READING .0 to .6ppm BG=.4ppm .2 to								

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW15B

DATE: 5-3 & 5-4-95*

GEOLOGIST/ENGINEER: G. R. Allen

TIME START	1700 (5-3-95)
TIME FINISH	1107 (5-4-95)
INITIAL WATER LEVEL (FT)	2.65'
TOTAL WELL DEPTH (TD)	43.18'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	6.6 gal. (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	40 gallons
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	3 hrs. 20 min.
AVERAGE FLOW (GPM)(B)	2.1 gal./min
TOTAL ESTIMATED WITHDRAWAL AxB=	435 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1715	65.0	7.39	-	374	19.5	-	>200
1733	100.0	7.41	-	367	19.1	-	>200
1748	120.0	7.40	-	363	19.0	-	176
0906	215.0 *	7.62	-	355	20.0	-	49
0920	245.0 *	7.63	-	346	20.4	-	37
0930	270.0 *	7.62	-	350	20.8	-	35
1035	395.0 *	7.71	-	340	20.3	-	34
1050	415.0 *	7.74	-	349	21.0	-	26
1105	435.0 *	7.72	-	341	20.3	-	22

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW16

DATE: 5-4-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1615
TIME FINISH	1712
INITIAL WATER LEVEL (FT)	3.15'
TOTAL WELL DEPTH (TD)	13.94'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 3 min.
AVERAGE FLOW (GPM)(B)	≈ 1.4 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	88 gallons
HNU/OVA READING	5.0 to 8.0 ppm BG=.3ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY (NTU'S)
1647	8.0	6.56	22.2	432	21.7	> 200
1649	16.0	6.63	22.1	391	21.3	> 200
1651	24.0	6.65	21.7	382	21.0	> 200
1654	32.0	6.61	21.5	351	20.6	> 200
1656	40.0	6.61	21.3	355	20.8	> 200
1658	48.0	6.52	21.7	355	20.8	94
1701	56.0	6.62	21.4	355	20.9	> 200
1704	64.0	6.63	21.0	369	20.7	26.9
1707	72.0	6.63	21.0	369	20.7	14.6
1709	80.0	6.63	21.0	369	20.7	9.3
1712	88.0	6.63	21.0	369	20.7	7.8

Satisfied criteria for well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Elevated HNU readings occurred during well development.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW17

DATE: 5-7-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1019
TIME FINISH	1058
INITIAL WATER LEVEL (FT)	5.99'
TOTAL WELL DEPTH (TD)	17.90'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	39 min
AVERAGE FLOW (GPM)(B)	2.6 gal. /min.
TOTAL ESTIMATED WITHDRAWAL AxB=	102.0 gallons
(HNU/OVA READING	1.9 ppm BG=1.9 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1022	6.0	6.55	21.9	564	21.6	-	
1024	12.0	6.58	21.2	572	21.1	-	
1026	18.0	6.59	21.2	570	21.3	-	
1033	42.0	6.65	21.5	610	21.3	-	
1036	48.0	6.68	21.6	627	21.2	-	
1039	54.0	6.68	21.5	624	21.2	-	16ε
1041	60.0	6.68	21.5	626	21.7	-	94
1044	66.0	6.69	21.3	630	21.1	-	60
1046	72.0	6.71	21.3	632	21.2	-	37
1053	90.0	6.71	21.3	632	21.2	-	10.2
1056	96.0	6.71	21.3	632	21.2	-	7.5
1058	102.0	6.71	21.3	632	21.2	-	7.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW18

DATE: 4-21 & 4-22-95*

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1752 (4-21-95)
TIME FINISH	1002 (4-22-95)
INITIAL WATER LEVEL (FT)	4.40'
TOTAL WELL DEPTH (TD)	18.9'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 24 min.
AVERAGE FLOW (GPM)(B)	3.3 gal/min
TOTAL ESTIMATED WITHDRAWAL AxB=	280 gallons
HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1755	10.0	5.95	19.4	155	19.5	-	>200
1759	20.0	5.86	18.1	178	18.0	-	>200
1801	30.0	5.86	18.1	151	18.0	-	>200
1811	60.0	5.88	18.3	150	18.0	-	>200
1815	80.0	5.89	18.3	157	18.0	-	51
1824	110.0	5.89	18.3	157	18.0	-	23
1836	150.0	5.89	18.3	157	18.0	-	13.2
1839	160.0	5.89	18.3	157	18.0	-	>100
0932	170.0*	5.79	-	132	18.2	-	18.2
0935	180.0*	5.76	-	175	18.9	-	18.9
0937	190.0*	5.81	-	160	18.5	-	18.5
0953	250.0*	5.87	-	152	18.6	-	18.6
1000	270.0*	5.87	-	152	18.6	-	18.6
1002	280.0*	5.87	-	152	18.6	-	18.6

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW19

DATE: 4-10-95

GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	0807
TIME FINISH	1215
INITIAL WATER LEVEL (FT)	6.33'
TOTAL WELL DEPTH (TD)	20.29'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.4 to 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	4 hrs. 8 min.
AVERAGE FLOW (GPM)(B)	.26 gal / min
TOTAL ESTIMATED WITHDRAWAL AxB=	62.5 gallons
(HNU)/OVA READING	.2 ppm BG = 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0807	2.5	6.30	20.3	320	20.2	–	>200
0810	5.0	6.17	19.9	300	20.2	–	>200
0815	7.5	6.29	20.8	300	21.0	–	>200
0923	10.0	6.25	20.6	290	21.0	–	>200
0932	12.5	5.98	20.5	250	21.0	–	>200
1040	17.5	5.81	23.2	250	23.8	–	>200
1049	20.0	5.92	23.0	220	25.0	–	>200
1054	25.0	5.79	24.8	250	25.0	–	>200
1059	27.5	5.77	25.4	250	26.0	–	>200
1104	30.0	5.79	25.9	250	26.5	–	>200
1120	37.5	5.86	26.1	260	27.0	–	>200
1134	45.0	5.83	27.4	250	28.0	–	13.6
1206	57.5	5.75	28.2	210	28.2	–	10.4
1210	60.0	5.84	32.0	220	34.0	–	6.6
1215	62.5	5.82	32.6	220	28.0	–	6.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW20

DATE: 4-22-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1211
TIME FINISH	1543
INITIAL WATER LEVEL (FT)	3.45'
TOTAL WELL DEPTH (TD)	20.05'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 3.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	40 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 30 min.
AVERAGE FLOW (GPM)(B)	1.7 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	258. gallons
HNU/OVA READING	0 to 2 ppm BG=.2 ppm 0 to

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1213	6.0	5.18	19.8	82	19.5	—	>200
1218	12.0	5.17	19.4	78	18.5	—	>200
1221	18.0	5.22	19.0	82	18.5	—	>200
1241	54.0	5.25	18.8	82	18.7	—	>200
1252	72.0	5.22	19.4	100	18.7	—	>200
1255	78.0	5.22	19.4	87	18.7	—	133
1323	126.0	5.22	19.4	87	18.7	—	74
1426	132.0	5.22	19.4	87	18.7	—	63.2
1438	150.0	5.22	19.4	87	18.7	—	109
1457	168.0	5.22	19.4	87	18.7	—	35
1508	198.0	5.22	19.4	87	18.7	—	31.5
1518	216.0	5.22	19.4	87	18.7	—	15
1535	246.0	5.22	19.4	87	18.7	—	19.3
1539	252.0	5.22	19.4	87	18.7	—	11
1543	258.0	5.22	19.4	87	18.7	—	7.3

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1324. Began pumping at 1423.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW21

DATE: 4-23-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1656
TIME FINISH	1753
INITIAL WATER LEVEL (FT)	4.2'
TOTAL WELL DEPTH (TD)	22.1'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	3 gal (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	57 min
AVERAGE FLOW (GPM)(B)	2.1 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	120 gallons
HNU/OVA READING	.5ppm BG=.5ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1659	6.0	5.08	16.6	270	17.0	-	>200
1702	12.0	5.08	16.2	273	17.0	-	>200
1705	18.0	5.08	16.6	271	16.4	-	>200
1717	42.0	5.04	16.8	267	16.4	-	>200
1720	48.0	5.07	16.4	272	16.4	-	>200
1722	54.0	5.03	16.7	267	16.5	-	>20
1725	60.0	5.03	16.8	268	16.5	-	>200
1727	66.0	5.03	16.7	262	16.5	-	>200
1730	72.0	5.04	16.7	262	16.5	-	>200
1733	78.0	5.06	16.2	260	16.3	-	>200
1736	84.0	5.06	16.2	259	16.4	-	91.2
1739	90.0	5.06	16.2	259	16.4	-	57
1747	108.0	5.06	16.2	259	16.4	-	12.2
1750	114.0	5.06	16.2	259	16.4	-	3.9
1753	120.0	5.06	16.2	259	16.4	-	2.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW22

DATE: 4-19-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1027
TIME FINISH	1123
INITIAL WATER LEVEL (FT)	3.44'
TOTAL WELL DEPTH (TD)	11.75'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 1.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1hr 4 min
AVERAGE FLOW (GPM)(B)	≈.9 gal/min
TOTAL ESTIMATED WITHDRAWAL AxB=	57.0 gallons
HNU/OVA READING	.4 ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1041	3.0	6.33	22.5	260	23.7	–	>200
1043	6.0	6.17	20.5	251	21.0	–	>200
1045	9.0	6.09	19.0	210	19.5	–	>200
1054	21.0	6.13	20.0	219	20.0	–	>200
1056	24.0	6.09	20.0	212	20.0	–	>200
1059	27.0	6.11	19.9	201	20.0	–	130
1102	30.0	6.08	20.2	208	20.1	–	83
1104	33.0	6.15	19.9	212	20.0	–	49
1106	36.0	6.12	20.3	215	20.0	–	35
1108	39.0	6.12	20.3	215	20.0	–	26
1111	42.0	6.12	20.3	215	20.0	–	20
1113	45.0	6.12	20.3	215	20.0	–	18.3
1118	51.0	6.12	20.3	215	20.0	–	11.6
1120	54.0	6.12	20.3	215	20.0	–	10.3
1123	57.0	6.12	20.3	215	20.0	–	8.0

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW23

DATE: 4-21-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1225
TIME FINISH	1529
INITIAL WATER LEVEL (FT)	4.50'
TOTAL WELL DEPTH (TD)	20.0'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	40 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 4 min
AVERAGE FLOW (GPM)(B)	.6 gal./ min.
TOTAL ESTIMATED WITHDRAWAL AxB=	112.5 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1227	5.0	5.37	21.6	123	21.5	–	>200
1230	10.0	5.42	19.7	120	19.5	–	>200
1234	15.0	5.69	19.5	141	19.0	–	>200
1249	25.0	5.54	21.8	120	21.2	–	>200
1256	30.0	5.59	20.5	125	20.1	–	>200
1304	35.0	5.57	22.1	125	21.3	–	>200
1313	40.0	5.44	22.4	119	22.0	–	>200
1322	45.0	5.46	21.8	116	21.2	–	>200
1330	50.0	5.45	21.9	113	21.0	–	>200
1406	70.0	5.33	22.1	115	22.3	–	70
1413	75.0	5.32	21.6	112	21.8	–	61
1448	95.0	5.32	22.0	112	22.0	–	45
1508	105.0	5.32	22.0	112	22.0	–	37
1518	110.0	5.32	22.0	112	22.0	–	50
1529	112.5	5.32	22.0	112	22.0	–	61

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW24

DATE: 5-3-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0851
TIME FINISH	1318
INITIAL WATER LEVEL (FT)	3.72'
TOTAL WELL DEPTH (TD)	21.0'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 3.0 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 42 min
AVERAGE FLOW (GPM)(B)	≈ 2.5 gal / min
TOTAL ESTIMATED WITHDRAWAL AxB=	≈ 417 gallons
(HNU)/OVA READING	.2ppm BG=.2ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0859	6.0	5.17	15.6	87.4	15.9	–	>200
0901	12.0	5.15	15.9	88.7	16.1	–	>200
0902	18.0	5.14	16.1	87.5	16.3	–	>200
0930	81.0	5.06	16.4	85.7	16.4	–	>200
1000	144.0	5.05	16.7	85.4	16.7	–	36.2
1002	153.0	5.05	16.7	85.4	16.7	–	37.6
1012	180.0	–	–	–	–	–	27.0
1202	189.0	5.05	19.0	92.2	18.9	–	91.1
1230	261.0	5.07	19.3	88.9	19.0	–	39.2
1301	342.0	5.06	18.7	86.4	18.2	–	31.7
1304	351.0	5.03	20.5	86.8	19.4	–	16.5
1308	360.0	5.03	20.5	86.8	19.4	–	13.5
1311	369.0	5.03	20.5	86.8	19.4	–	12.0
1315	378.0	5.03	20.5	86.8	19.4	–	10.5
1318	387.0	5.03	20.5	86.8	19.4	–	9.6

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. 1012 stopped pumping. 1157 continued pumping.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW25

DATE: 5-8-95

GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0820
TIME FINISH	1028
INITIAL WATER LEVEL (FT)	4.48'
TOTAL WELL DEPTH (TD)	10.5'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 1.0 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 2 min.
AVERAGE FLOW (GPM)(B)	.5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	75.0 gallons
(HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0826	3.0	6.31	20.1	185.3	19.6	–	>200
0831	6.0	6.38	21.0	193.6	20.5	–	>200
0834	9.0	6.43	22.0	183	21.4	–	>200
0859	24.0	6.64	23.5	163	23.2	–	66
0904	27.0	6.54	24.0	165	23.5	–	52
0909	30.0	6.51	24.6	168	23.8	–	40
0936	45.0	6.52	25.6	171	25.0	–	29
0942	48.0	6.51	26.2	171	25.2	–	23.8
0947	51.0	6.53	25.9	170	24.9	–	17.4
0952	54.0	6.51	25.7	170	25.0	–	13.8
1003	60.0	6.55	25.4	173	25.7	–	13.2
1014	66.0	6.56	26.2	176	26.3	–	12.1
1017	69.0	6.56	26.2	176	26.3	–	11.4
1022	72.0	6.56	26.2	176	26.3	–	11.3
1028	75.0	6.56	26.2	176	26.3	–	10.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW26

DATE: 5-1-95

GEOLOGIST/ENGINEER: G.R. Allen

TIME START	1452
TIME FINISH	1751
INITIAL WATER LEVEL (FT)	7.43'
TOTAL WELL DEPTH (TD)	18.0'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.7 gal. (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	2 hrs. 59 min.
AVERAGE FLOW (GPM)(B)	1.3 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	240 gallons
(HNU)/OVA READING	.6 ppm BG=.4ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1527	35.0	6.58	-	316	19.0	-	>200
1610	95.0	6.53	-	171	19.2	-	197
1625	115.0	6.54	-	148	19.1	-	182
1639	130.0	6.41	-	283	18.9	-	161
1649	150.0	6.51	-	307	18.9	-	150
1724	200.0	6.54	-	308	18.8	-	129
1736	220.0	6.58	-	309	18.8	-	125
1751	240.0	6.54	-	305	18.7	-	127

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW27
DATE: 5-2-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1113
TIME FINISH	1251
INITIAL WATER LEVEL (FT)	4.20'
TOTAL WELL DEPTH (TD)	16.95'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1hr. 38 min.
AVERAGE FLOW (GPM)(B)	1.5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈ 152 gallons
HNU/OVA READING	.8 to 1.5 ppm BG=.3ppm .1 to

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1146	8.0	5.99	24.1	392.5	22.5	—	>200
1150	16.0	5.94	23.7	307	22.9	—	>200
1154	24.0	5.94	23.1	331	22.2	—	>200
1208	56.0	5.87	23.0	286	22.1	—	>200
1212	64.0	5.86	23.4	278	22.6	—	>200
1216	72.0	5.90	23.6	286	22.6	—	119
1219	80.0	5.89	23.1	285	22.4	—	67
1222	88.0	5.87	23.1	288	22.4	—	45
1226	96.0	5.87	23.1	288	22.4	—	29.8
1230	104.0	5.87	23.1	288	22.4	—	21.7
1234	112.0	5.87	23.1	288	22.4	—	17.8
1238	120.0	5.87	23.1	288	22.4	—	14.7
1244	136.0	5.87	23.1	288	22.4	—	11.1
1248	144.0	5.87	23.1	288	22.4	—	10.1
1251	152.0	5.87	23.1	288	22.4	—	9.2

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Strong organic odor present during well development.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW28
DATE: 4-25-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	DEVELOPMENT DATA							
1020								
TIME FINISH 1158	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
INITIAL WATER LEVEL (FT) 6.35'	1042	2.2	6.19	21.7	199	21.5	–	>200
TOTAL WELL DEPTH (TD) 13.01'	1043	4.4	6.25	20.6	200	20.2	–	>200
WELL DIAMETER (INCHES) 2"	1045	6.6	6.38	19.8	203	19.6	–	>200
CALCULATED WELL VOLUME 1.19al (1)	1100	17.6	6.64	21.0	221	21.4	–	>200
BOREHOLE DIAMETER (INCHES) –	1115	28.6	6.74	21.7	234	21.5	–	86
BOREHOLE VOLUME –	1128	35.2	6.77	21.3	237	21.9	–	29.8
AMOUNT OF WATER ADDED DURING DRILLING None	1131	37.4	6.77	21.7	237	21.8	–	25.4
DEVELOPMENT METHOD Surge/pump	1154	50.6	6.77	21.7	237	21.8	–	11.6
PUMP TYPE Centrifugal	1156	52.8	6.77	21.7	237	21.8	–	10.3
TOTAL TIME (A) 1 hr. 38 min.	1158	55.0	6.77	21.7	237	21.8	–	9.6
AVERAGE FLOW (GPM)(B) .5 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB= 55 gallons								
HNU/OVA READING .9 to 1.0 ppm BG=.5 ppm .1 to								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW29
DATE: 5-2-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	1520
TIME FINISH	1821
INITIAL WATER LEVEL (FT)	3.37'
TOTAL WELL DEPTH (TD)	17.85'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs
AVERAGE FLOW (GPM)(B)	.8 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈145 gallons
(HNU)/OVA READING	.4 to 3.0 ppm .1 to BG=.3 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
1524	5.0	5.84	23.7	383	22.1		>200
1528	10.0	5.73	23.4	390	22.3		>200
1532	15.0	5.79	23.6	382	22.3		>200
1622	60.0	5.85	23.1	401	22.4		67
1628	65.0	5.81	–	–	–		50.8
1635	70.0	5.84	22.5	399	21.5		49..
1645	75.0	5.87	21.9	400	21.4		40.1
1654	80.0	5.87	21.4	393	21.3		34.8
1700	85.0	5.87	21.4	393	21.3		31.5
1707	90.0	5.87	21.4	393	21.3		27.7
1714	95.0	5.87	21.4	393	21.3		23.5
1720	100.0	5.87	21.4	393	21.3		29.7
1808	135.0	5.87	21.4	393	21.3		16.7
1815	140.0	5.87	21.4	393	21.3		13.8
1821	145.0	5.87	21.4	393	21.3		12.4

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW30
DATE: 5-5-95
GEOLOGIST/ENGINEER: K. A. Thomas

TIME START	0910
TIME FINISH	1327
INITIAL WATER LEVEL (FT)	4.95'
TOTAL WELL DEPTH (TD)	20.20'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	30 gallons
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centifugal
TOTAL TIME (A)	3 hrs.
AVERAGE FLOW (GPM)(B)	2.2 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	397.5 gallons
(HNU)OVA READING	0 to 2.0 ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0914	7.5	5.16	16.8	125	16.6	–	>200
0918	15.0	5.22	16.7	127	16.6	–	>200
0922	22.5	5.25	16.6	129	16.6	–	>200
0946	75.0	5.18	17.4	126	17.1	–	>200
1023	150.0	5.23	17.3	124	17.0	–	61
1048	202.5	5.11	17.4	123	16.9	–	32
1206	225.0	5.12	17.4	127	17.4	–	>200
1229	277.5	5.12	17.6	124	17.2	–	83
1233	285.0	5.12	17.4	124	17.4	–	69
1237	292.5	5.12	17.4	124	17.4	–	54
1255	330.0	5.12	17.4	124	17.4	–	54
1306	352.5	5.12	17.4	124	17.4	–	26
1319	382.5	5.12	17.4	124	17.4	–	18.4
1323	390.0	5.12	17.4	124	17.4	–	17.8
1327	397.5	5.12	17.4	124	17.4	–	20.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. 1049 stopped pumping. 1158 continued pumping.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW01

DATE: 5-2-95

GEOLOGIST/ENGINEER: G. R. Allen

TIME START	0830
TIME FINISH	1255
INITIAL WATER LEVEL (FT)	13.16'
TOTAL WELL DEPTH (TD)	58.56'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	7.4 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	3hrs. 25 min.
AVERAGE FLOW (GPM)(B)	1.75 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	360 gallons
HNU/OVA READING	oppm BG=oppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU'S)
0844	30.0	7.98	–	281	18.0	–	–
0858	45.0	7.91	–	258	18.0	–	–
0906	65.0	7.71	–	290	18.0	–	–
0935	135.0	7.69	–	294	18.2	–	–
0948	165.0	7.68	–	259	18.0	–	–
1000	180.0	7.67	–	295	18.0	–	20
1040	240.0	7.73	–	301	18.0	–	35.6
1200	260.0	7.67	–	304	18.6	–	–
1215	290.0	7.66	–	301	18.6	–	–
1240	340.0	7.63	–	303	18.8	–	–
1255	360.0	7.64	–	309	19.6	–	–

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 1040. Begin pumping at 1145.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW02

DATE: 5-5-95

GEOLOGIST/ENGINEER: G. R. Allen

TIME START	0916
TIME FINISH	1210
INITIAL WATER LEVEL (FT)	12.65'
TOTAL WELL DEPTH (TD)	31.55'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	3.0 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	150 gallons
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	2 hrs. 54 min.
AVERAGE FLOW (GPM)(B)	≈1.5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	120 gallons
HNU/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	
1125	50.0	11.96	–	1530	21.9	–	8.9
1130	60.0	11.71	–	1604	21.8	–	3.9
1135	65.0	11.98	–	1525	22.4	–	2.7
1200	102.0	11.95	–	1260	22.1	–	3.6
1205	110.0	11.98	–	1239	22.1	–	4.4
1210	120.0	11.97	–	1201	22.3	–	3.4

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-DW03
DATE: 5-3-95
GEOLOGIST/ENGINEER: G.R. Allen

TIME START	0800
TIME FINISH	1145
INITIAL WATER LEVEL (FT)	5.94'
TOTAL WELL DEPTH (TD)	68.40'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈10 gal. (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	3 hrs. 45 min.
AVERAGE FLOW (GPM)(B)	≈1.50 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	335 gallons
(HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0830	50.0	7.17	-	541	19.5	-	42.1
0835	60.0	7.20	-	546	19.9	-	40.5
0840	70.0	7.19	-	546	19.7	-	-
0930	180.0	7.25	-	546	19.9	-	34.7
0952	235.0	7.25	-	554	20.0	-	17
1100	245.0	7.32	-	564	20.8	-	20.3
1130	305.0	7.35	-	553	20.8	-	13
1140	330.0	7.35	-	556	20.7	-	10.2
1145	335.0	7.34	-	556	20.6	-	9.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 0952. Begin pumping at 1055.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW04

DATE: 5-8-95

GEOLOGIST/ENGINEER: G.R. Allen

TIME START	1825
TIME FINISH	2143
INITIAL WATER LEVEL (FT)	2.67'
TOTAL WELL DEPTH (TD)	54.30'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	8.4 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	150 gallons
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	3 hrs. 7 min.
AVERAGE FLOW (GPM)(B)	.9 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	200 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1836	11.0	9.28	–	215	18.1	–	93.6
1846	23.0	8.71	–	213	18.1	–	77.5
1856	35.0	8.72	–	212	18.0	–	85
1916	55.0	8.63	–	214	18.1	–	65
1926	65.0	8.67	–	214	18.1	–	60
1937	75.0	8.61	–	214	18.0	–	60
2127	185.0	8.76	–	212	17.8	–	58
2135	192.0	8.59	–	214	17.6	–	58
2143	200.0	8.55	–	214	17.8	–	61

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW05

DATE: 4-23 & 4-24-95*

GEOLOGIST/ENGINEER: T. P. Valli

TIME START	1640 (4-23-95)
TIME FINISH	1126 (4-24-95)
INITIAL WATER LEVEL (FT)	4.62'
TOTAL WELL DEPTH (TD)	54.92'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈8.5 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	4 hr. 5 min.
AVERAGE FLOW (GPM)(B)	≈.7 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	357 gallons
(HNU)/OVA READING	.2 ppm BG=.2ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1640	0	-	-	-	-	-	-
1647	17.0	16.71	-	943.3	17.6	-	>200
1701	34.0	15.06	-	572.7	17.7	-	127.5
1739	102.0	12.69	-	264.3	17.5	-	111.2
1750	119.0	12.30	-	269.4	17.5	-	156.2
1800	131.2	12.21	-	265.7	17.6	-	127
0841	153.0 *	9.94	-	265	18.2	-	121.2
0848	170.0 *	9.72	-	276	18.1	-	55.2
0859	187.0 *	9.62	-	278	18.2	-	33.2
0935	255.0 *	9.28	-	279	18.0	-	18.6
0944	272.0 *	9.28	-	282	18.0	-	18.6
1002	306.0 *	9.14	-	282	18.0	-	14.7
1108	323.0 *	9.20	-	279	17.9	-	29.7
1117	340.0 *	9.12	-	283	17.9	-	17.1
1126	357.0 *	9.03	-	281	17.9	-	10.1

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1002. Begin pumping at 1108. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73GW-02

DATE: 4-7-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	0810
TIME FINISH	1117
INITIAL WATER LEVEL (FT)	5.10'
TOTAL WELL DEPTH (TD)	21.85
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.95 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 7 min
AVERAGE FLOW (GPM)(B)	.2 gal/min.
TOTAL ESTIMATED WITHDRAWAL AxB=	51 gallons
(HNU)/OVA READING	.2ppm BG= 0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0822	1.0	6.67	16.9	172	17.3	—	>200
0829	2.0	6.46	17.1	172	18.5	—	>200
0835	3.0	6.44	16.8	168	18.5	—	>200
0944	5.0	6.52	24.5	187	27.0	—	>200
0945	6.0	6.10	21.0	162	20.5	—	>200
0956	7.0	6.44	24.2	188	25.0	—	>200
1003	8.0	6.23	22.2	168	23.0	—	>200
1012	9.0	6.19	22.4	168	23.5	—	76
1021	10.0	6.18	22.5	168	23.0	—	40
1029	11.0	6.16	23.5	170	23.0	—	35
1037	12.0	6.16	23.7	170	23.5	—	24
1045	13.0	6.15	23.8	170	24.5	—	21.8
1101	15.0	6.21	23.9	173	24.7	—	13.7
1110	16.0	6.21	23.9	173	24.7	—	14.3
1117	17.0	6.21	23.9	173	24.7	—	10.7

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73GW-03
DATE: 4-9-95
GEOLOGIST/ENGINEER: T. L. Beckman

TIME START	0830
TIME FINISH	1135
INITIAL WATER LEVEL (FT)	7.85'
TOTAL WELL DEPTH (TD)	22.10'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.5 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / Pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs.
AVERAGE FLOW (GPM)(B)	≈3 gal/min
TOTAL ESTIMATED WITHDRAWAL AxB=	62.5 gallons
(HNU/OVA READING	.2 ppm BG = 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
0830	2.5	6.60	18.4	650	18.9	—	>200
0840	5.0	6.47	20.7	520	21.5	—	>200
0845	7.5	6.46	21.7	510	22.5	—	42.5
0942	22.5	6.51	23.6	510	25.0	—	122.7
0950	25.0	6.50	23.7	510	25.5	—	110.3
0957	27.5	6.54	24.7	510	25.0	—	103.[illegible]
1003	30.0	6.51	24.6	500	26.0	—	98.0
1010	32.5	6.50	24.6	500	22.0	—	93.0
1016	35.0	6.53	24.8	500	26.0	—	85.3
1025	37.5	6.52	25.3	500	25.0	—	85.6
1034	40.0	6.54	25.6	490	26.0	—	79.4
1039	42.5	6.50	25.1	500	22.0	—	75.3
1122	57.5	6.54	26.1	490	27.5	—	62.4
1128	60.0	6.55	26.1	500	27.0	—	62.8
1135	62.5	6.54	26.6	490	28.0	—	59.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear or completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73GW-05

DATE: 4-5-95

GEOLOGIST/ENGINEER: K.A. Thomas

TIME START	1502
TIME FINISH	1649
INITIAL WATER LEVEL (FT)	4.55'
TOTAL WELL DEPTH (TD)	27.85'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	3.8 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 47 min.
AVERAGE FLOW (GPM)(B)	1.85 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	≈198 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	
1502	3.8	5.96	14.6	40	15.0	–	>200
1527	19.0	5.97	14.5	45	15.0	–	>200
1534	34.2	5.92	14.3	43	14.3	–	>200
1541	49.4	5.91	14.4	43	14.8	–	>200
1548	64.6	5.91	14.4	42	14.8	–	>200
1554	79.8	5.92	14.4	42	14.8	–	129
1600	95.0	–	–	–	–	–	87
1606	110.2	–	–	–	–	–	60
1613	125.4	–	–	–	–	–	43
1619	140.6	–	–	–	–	–	49
1627	155.8	–	–	–	–	–	22
1635	171.0	–	–	–	–	–	18
1642	186.2	–	–	–	–	–	13.8
1647	193.8	–	–	–	–	–	12.5
1649	197.6	–	–	–	–	–	12.1

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-GW01
DATE: 3-20-96
GEOLOGIST/ENGINEER: R. M. Lewis

TIME START	1410
TIME FINISH	1655
INITIAL WATER LEVEL (FT)	18.0'
TOTAL WELL DEPTH (TD)	150.5'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈21.5 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2 hrs. 45 min.
AVERAGE FLOW (GPM)(B)	.8 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	200 gallons
(HNU)/OVA READING	0ppm BG: 0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY —	(NTU's)
1410	0	8.75	—	1250	17.0	—	>200
1425	20.0	8.46	—	1675	18.5	—	163
1520	45.0	8.24	—	1350	17.0	—	87.7
1545	75.0	12.09	—	1496	15.8	—	5.34
1555	90.0	12.29	—	1502	17.2	—	5.94
1625	145.0	11.78	—	1437	17.7	—	10.91
1638	170.0	11.41	—	1424	17.6	—	9.56
1655	200.0	10.99	—	1430	17.7	—	10.02

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-GW02

DATE: 3-9-96

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	0830
TIME FINISH	1115
INITIAL WATER LEVEL (FT)	5.0'
TOTAL WELL DEPTH (TD)	150.40'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	23.63 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Waterra
TOTAL TIME (A)	2 hr. 45 min.
AVERAGE FLOW (GPM)(B)	1.3 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	220 gallons
(HNU)/OVA READING	0 ppm BG = 0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0830	0	11.68	–	850	15.9	–	>200
0843	19.0	9.72	–	761	16.9	–	132
0852	38.0	8.93	–	2036	17.2	–	73
0932	93.0	8.35	–	2212	17.4	–	18
0941	110.0	8.32	–	2212	17.0	–	28
1005	129.0	8.47	–	2179	15.3	–	44
1012	148.0	8.12	–	2594	15.7	–	17
1048	193.0	8.04	–	2712	16.7	–	2.3
1058	203.0	7.95	–	2719	17.5	–	3
1115	220.0	8.01	–	2617	16.1	–	10.6

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-GW03

DATE: 3-5-96

GEOLOGIST/ENGINEER: K. A. Tua

TIME START: 0915

TIME FINISH: 1245

INITIAL WATER LEVEL (FT): 3.14

TOTAL WELL DEPTH (TD): 153.3'

WELL DIAMETER (INCHES): 2"

CALCULATED WELL VOLUME: 24.50 gal (1)

BOREHOLE DIAMETER (INCHES): —

BOREHOLE VOLUME: —

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Surge / pump

PUMP TYPE: Centifugal

TOTAL TIME (A): 3 hrs. 30 min.

AVERAGE FLOW (GPM)(B): 1.0 gal./min.

TOTAL ESTIMATED WITHDRAWAL AxB=: 220 gallons

HNU/OVA READING: 0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0915	0	10.95	—	1217	19.2	—	195
0946	55.0	8.78	—	1856	19.7	—	120
0958	74.0	8.66	—	1875	19.8	—	42
1109	93.0	8.94	—	1812	20.0	—	179
1119	110.0	8.76	—	1809	20.2	—	25
1137	129.0	8.52	—	1938	20.3	—	8.1
1201	165.0	8.32	—	1979	20.3	—	5.3
1217	184.0	8.12	—	1980	20.0	—	4.0
1232	203.0	8.29	—	1979	19.8	—	4.9
1245	220.0	8.11	—	1980	20.0	—	6.4

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameter (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1000. Began pumping at 1100.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-GW04

DATE: 3-21-96

GEOLOGIST/ENGINEER: M.K. De John

TIME START	0751
TIME FINISH	1301
INITIAL WATER LEVEL (FT)	5.97'
TOTAL WELL DEPTH (TD)	153.62
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	23.6 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	5 hrs. 10 min.
AVERAGE FLOW (GPM)(B)	1.17 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	400 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0802	20.0	12.26	–	624	15.7	–	>200
0813	40.0	11.06	–	408	17.8	–	125
0824	55.0	10.55	–	373	18.5	–	>200
0900	110.0	9.64	–	425	17.9	–	94
0938	130.0	9.83	–	401	18.0	–	>200
1000	185.0	9.47	–	441	18.6	–	168
1027	220.0	9.21	–	455	18.6	–	103
1048	260.0	9.09	–	474	19.6	–	71
1110	295.0	8.51	–	478	19.5	–	24.8
1125	315.0	8.83	–	476	19.5	–	42.9
1153	350.0	8.65	–	471	19.1	–	46.3
1212	360.0	8.75	–	451	18.0	–	39
1238	380.0	8.64	–	447	18.2	–	63
1249	390.0	8.62	–	449	18.1	–	64
1259	400.0	8.67	–	456	18.6	–	75

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 0902. Began pumping at 0930.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-GW05

DATE: 3-22-96

GEOLOGIST/ENGINEER: M.K. DeJohn

TIME START	1125
TIME FINISH	1657
INITIAL WATER LEVEL (FT)	9.03'
TOTAL WELL DEPTH (TD)	150.60'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	22.7 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	5 hr. 32 min
AVERAGE FLOW (GPM)(B)	1.12 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	375 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1143	25.0	13.16	–	4420	20.1	–	>200
1157	50.0	12.86	–	2188	20.6	–	102
1217	75.0	12.79	–	1663	20.7	–	23
1258	100.0	12.83	–	1512	18.6	–	99
1311	125.0	12.50	–	887	19.6	–	25.2
1325	150.0	12.06	–	423	18.5	–	56
1347	175.0	11.81	–	336	18.5	–	68
1400	200.0	11.12	–	223	18.7	–	121
1440	225.0	10.67	–	187	18.5	–	103
1505	250.0	10.51	–	185	18.4	–	105
1630	325.0	10.06	–	228	18.4	–	136
1642	350.0	9.87	–	248	18.3	–	109
1655	375.0	9.87	–	268	18.5	–	79

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameter (pH, specific conductance, temperature). Not all readings taken during well development appe on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 1219. Began pumping at 1253. Stopped pumping at 1540. Began pumping at 1550.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-TW01

DATE: 2-21-96

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1031
TIME FINISH	1530
INITIAL WATER LEVEL (FT)	13.78'
TOTAL WELL DEPTH (TD)	147.12'
WELL DIAMETER (INCHES)	1"
CALCULATED WELL VOLUME	≈5.50 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	4hrs. 59 min.
AVERAGE FLOW (GPM)(B)	≈ 5 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	60.0 gallons
HNU/OVA READING	0 ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1031	0	9.12	—	715	18.6	—	>1000
1125	5.5	8.29	—	619	20.5	—	>200
1151	11.0	7.71	—	1404	20.3	—	>200
1241	22.0	7.57	—	2076	19.8	—	>200
1304	27.5	7.59	—	2145	20.3	—	>200
1333	33.0	7.63	—	2173	20.0	—	>200
1359	38.5	7.61	—	2143	19.6	—	>200
1445	49.5	7.65	—	2141	17.8	—	104
1512	55.0	7.59	—	2128	18.0	—	148
1530	60.0	7.56	—	2135	17.7	—	125

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW06

DATE: 3-7-96

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1000
TIME FINISH	1321
INITIAL WATER LEVEL (FT)	10.02'
TOTAL WELL DEPTH (TD)	73.05'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	10.27 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hr. 21 min.
AVERAGE FLOW (GPM)(B)	.8 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	165 gallons
HNU/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU'S
1010	0	12.15	—	1686	18.5	—	>200
1033	19.0	11.83	—	1093	18.5	—	93
1053	38.0	11.55	—	770	18.7	—	57
1133	74.0	10.83	—	501	18.6	—	30
1155	93.0	10.51	—	460	18.5	—	26
1227	129.0	10.27	—	446	18.3	—	37
1254	148.0	10.00	—	464	18.6	—	25
1321	165.0	10.28	—	460	18.6	—	3.4

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW07

DATE: 3-19-96

GEOLOGIST/ENGINEER: M. K. DeJohn

	DEVELOPMENT DATA							
TIME START: 1346	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
TIME FINISH: 1507	1355	20.0	12.24	–	3990	21.5	–	14.4
INITIAL WATER LEVEL (FT): 3.85	1408	40.0	12.17	–	2726	21.7	–	3.3
TOTAL WELL DEPTH (TD): 54.07'	1451	60.0	12.95	–	2635	19.8	–	48
WELL DIAMETER (INCHES): 2"	1459	80.0	12.85	–	1774	19.7	–	5.7
CALCULATED WELL VOLUME: 8.0 gal (1)	1505	90.0	12.67	–	1467	19.8	–	4.3
BOREHOLE DIAMETER (INCHES): –								
BOREHOLE VOLUME: –								
AMOUNT OF WATER ADDED DURING DRILLING: None								
DEVELOPMENT METHOD: Surge / pump								
PUMP TYPE: Centrifugal								
TOTAL TIME (A): 1 hr. 21 min.								
AVERAGE FLOW (GPM)(B): 1.11 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB=: 90 gallons								
(HNU)/OVA READING: 0 ppm BG = 0 ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1410. Begin pumping at 1446.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-DW08
DATE: 3-18-96
GEOLOGIST/ENGINEER: R. M. Lewis

TIME START	1350
TIME FINISH	1547
INITIAL WATER LEVEL (FT)	10.97'
TOTAL WELL DEPTH (TD)	59.07'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 8.0 gal (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 57 min.
AVERAGE FLOW (GPM)(B)	.9 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	130 gallons
HNU/OVA READING	0 ppm BG=0 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	(NTU's)
1415	19.0	13.22	-	237	20.1	-	199.2
1430	35.0	12.68	-	1459	20.4	-	28.6
1506	55.0	12.74	-	1820	19.5	-	40.1
1513	70.0	12.57	-	1185	18.9	-	25.4
1521	85.0	11.65	-	880	19.2	-	17.7
1529	100.0	11.58	-	733	19.2	-	13.2
1538	115.0	11.50	-	600	18.6	-	11
1547	130.0	11.42	-	513	19.1	-	8.8

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1440. Begin pumping at 1500.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW09

DATE: 3-11 & 3-12-96 *

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	DEVELOPMENT DATA							
1552 (3-11-96)	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTu's
TIME FINISH: 1235 (3-12-96)*	1552	0	13.19	–	1500	15.8	–	>200
INITIAL WATER LEVEL (FT): 9.47'	1600	19.0	12.82	–	1335	15.6	–	88
TOTAL WELL DEPTH (TD): 64.90'	1042	19.0 *	12.84	–	2077	17.9	–	125
WELL DIAMETER (INCHES): 2"	1205	38.0 *	12.47	–	846	19.3	–	4.2
CALCULATED WELL VOLUME: 9.03 gal. (1)	1214	55.0 *	11.82	–	400	19.3	–	3.3
BOREHOLE DIAMETER (INCHES): –	1226	91.0 *	11.17	–	283	19.1	–	2.4
BOREHOLE VOLUME: –	1230	110.0 *	10.95	–	271	19.9	–	2.5
AMOUNT OF WATER ADDED DURING DRILLING: None	1235	127.0 *	10.97	–	263	19.3	–	2.3
DEVELOPMENT METHOD: Pump								
PUMP TYPE: Centrifugal								
TOTAL TIME (A): 2 hr. 1 min.								
AVERAGE FLOW (GPM)(B): 1 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB=: 127 gallons								
HNU/OVA READING: 0 ppm BG=0 ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW10

DATE: 3-12 & 3-13-96*

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	DEVELOPMENT DATA							
1450 (3-12-96)								
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU'S
1118 (3-13-96)*	1450	0	13.24	–	3411	16.6	–	>200
INITIAL WATER LEVEL (FT) 10.95'	1525	19.0	12.42	–	1583	19.4	–	79
TOTAL WELL DEPTH (TD) 63.54'	1542	38.0	12.36	–	1234	18.9	–	26
WELL DIAMETER (INCHES) 2"	1600	74.0	12.20	–	1050	18.2	–	88
CALCULATED WELL VOLUME 8.57 gal. (1)	1606	93.0	12.50	–	927	17.5	–	30
BOREHOLE DIAMETER (INCHES) –	1610	110.0	12.37	–	849	17.5	–	3C
	0755	110.0 *	12.88	–	1849	15.9	–	>200
BOREHOLE VOLUME –	0927	129.0 *	12.80	–	1536	18.9	–	>200
AMOUNT OF WATER ADDED DURING DRILLING None	0941	148.0 *	12.43	–	979	19.3	–	78
	1030	239.0 *	11.91	–	393	18.4	–	38
DEVELOPMENT METHOD Pump	1046	294.0 *	11.80	–	324	18.3	–	32
PUMP TYPE Centrifugal	1058	330.0 *	11.83	–	325	18.3	–	16
TOTAL TIME (A) 4hr. 43 min.	1105	349.0 *	11.81	–	325	18.6	–	11
	1111	368.0 *	11.82	–	326	18.4	–	9.6
AVERAGE FLOW (GPM)(B) 1.36 gal./min.	1118	385.0 *	11.81	–	325	18.5	–	8.4
TOTAL ESTIMATED WITHDRAWAL AxB= 385 gallons	Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality paramet (pH, specific conductance, temperature and turbidity). Not all readings taken during we... development appear on completed well development form. All readings are recorded in the field log book. Well developed over 2 days.							
HNU/OVA READING 0ppm BG=0ppm								

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW11

DATE: 3-18-96

GEOLOGIST/ENGINEER: M. K. DeJohn

TIME START	1630
TIME FINISH	1733
INITIAL WATER LEVEL (FT)	13.16'
TOTAL WELL DEPTH (TD)	57.82'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	7.14 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 3 min
AVERAGE FLOW (GPM)(B)	2.46 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	155 gallons
HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1634	20.0	9.07	—	785	19.2	—	>200
1640	40.0	8.44	—	297	20.3	—	59.5
1707	55.0	7.93	—	290	19.7	—	>200
1710	70.0	7.99	—	293	19.8	—	35.5
1715	90.0	7.75	—	293	20.4	—	20
1720	105.0	7.71	—	289	19.8	—	15.9
1724	120.0	7.65	—	290	19.5	—	12.3
1729	140.0	7.63	—	291	19.5	—	11.3
1733	155.0	7.59	—	292	19.9	—	9.5

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1642. Begin pumping at 1702.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW12

DATE: 3-19-96

GEOLOGIST/ENGINEER: M.K. De John

TIME START	1621
TIME FINISH	1753
INITIAL WATER LEVEL (FT)	3.74'
TOTAL WELL DEPTH (TD)	75.85'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	11.5 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	1 hr. 32 min.
AVERAGE FLOW (GPM)(B)	1.5 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	140 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1624	5.0	12.52	—	1,370	19.1	—	>200
1640	20.0	11.95	—	562	18.2	—	71.2
1707	40.0	10.88	—	270	18.0	—	>200
1714	55.0	10.35	—	250	18.7	—	55.9
1735	110.0	9.98	—	242	18.4	—	33.4
1742	130.0	9.95	—	241	18.1	—	42.[illegible]
1749	140.0	9.85	—	235	18.0	—	27.8
1753	—	—	—	—	—	—	9.3

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality paramet (pH, specific conductance, temperature and turbidity). Not all readings taken during w development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1642. Begin pumping at 1702.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-DW13

DATE: 3-20-96

GEOLOGIST/ENGINEER: M.K. DeJohn

TIME START	0812
TIME FINISH	1034
INITIAL WATER LEVEL (FT)	5.91'
TOTAL WELL DEPTH (TD)	47.70'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	6.7 gal (1)
BOREHOLE DIAMETER (INCHES)	-
BOREHOLE VOLUME	-
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2hrs. 22 min.
AVERAGE FLOW (GPM)(B)	1.3 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	190 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0821	20.0	10.28	-	212	18.2	-	>200
0824	40.0	10.27	-	217	18.5	-	190
0831	55.0	9.93	-	200	18.3	-	>200
0910	95.0	9.97	-	191	18.2	-	>200
0914	110.0	9.73	-	194	19.1	-	117.6
0918	130.0	9.52	-	194	18.6	-	41.4
0927	165.0	9.31	-	195	18.8	-	12.3
0931	185.0	9.28	-	195	18.6	-	10.4
1034	190.0	-	-	-	-	-	8.9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 0853. Began pumping at 0908.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW31

DATE: 3-7 & 3-8-96*

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1520 (3-7-96)
TIME FINISH	1007 (3-8-96)
INITIAL WATER LEVEL (FT)	9.0'
TOTAL WELL DEPTH (TD)	13.50'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈.75 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	2hr. 51 min.
AVERAGE FLOW (GPM)(B)	≈.3 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	50 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU'S
1520	0	7.26	—	314	15.6	—	>200
1528	5.0	6.89	—	294	15.4	—	>200
1540	10.0	6.78	—	297	15.6	—	192
0820	25.0 *	7.50	—	325	12.3	—	>200
0845	30.0 *	7.51	—	292	12.5	—	78
0921	40.0 *	6.65	—	295	13.1	—	35
0942	45.0 *	6.67	—	299	13.3	—	13
1007	50.0 *	6.75	—	301	13.0	—	5.6

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (p[illegible] specific conductance, temperature and turbidity). Not all readings taken during well developm[illegible] appear on completed well development form. All readings are recorded in the field log book. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW32

DATE: 3-9 & 3-10-96*

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1430 (3-9-96)
TIME FINISH	1140 (3-10-96)
INITIAL WATER LEVEL (FT)	3.60'
TOTAL WELL DEPTH (TD)	11.80'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	1.33 gal. (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hr. 3 min
AVERAGE FLOW (GPM)(B)	1.1 gal. / min.
TOTAL ESTIMATED WITHDRAWAL AxB=	349 gallons
(HNU)/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1435	0	6.75	–	125	12.8	–	>200
1446	19.0	6.14	–	103	14.9	–	124
1459	38.0	5.71	–	100	14.0	–	199
1531	93.0	5.60	–	99	14.5	–	96
1541	110.0	5.64	–	100	14.0	–	62
1633	148.0	5.56	–	96	13.7	–	199
1642	165.0	5.57	–	96	13.5	–	176
0905	184.0*	5.89	–	86	12.2	–	>200
0910	203.0*	5.85	–	88	11.8	–	>200
0926	222.0*	5.99	–	90	11.7	–	187
1003	258.0*	5.80	–	94	13.3	–	60
1048	294.0*	5.75	–	93	14.4	–	56
1107	313.0*	5.73	–	94	15.8	–	20
1123	332.0*	5.77	–	92	15.2	–	12
1140	349.0*	5.67	–	94	16.1	–	9

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 1005. Began pumping at 1015. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW33

DATE: 3-8-96

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1111
TIME FINISH	1640
INITIAL WATER LEVEL (FT)	5.28'
TOTAL WELL DEPTH (TD)	14.35'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2 gal. (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Pump
PUMP TYPE	Parastaltic
TOTAL TIME (A)	4 hr. 14 min
AVERAGE FLOW (GPM)(B)	1 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	264 gallons
(HNU/OVA READING	oppm BG=oppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1111	0	6.45	—	170	13.5	—	>200
1310	57.0	6.65	—	166	13.6	—	172
1317	112.0	6.53	—	170	14.6	—	168
1321	129.0	6.55	—	176	14.2	—	122
1326	148.0	6.31	—	185	14.5	—	52
1518	244.0	6.49	—	181	13.2	—	26
1537	249.0	6.27	—	152	12.9	—	67
1558	254.0	6.26	—	136	12.8	—	43
1619	259.0	6.26	—	143	12.7	—	25
1640	264.0	6.27	—	145	12.6	—	10

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during w development appear on completed well development form. All readings are recorded in the fie log book. Stopped pumping at 1300. Began pumping at 1310. Stopped pumping at 1355. Began pumping at 1500.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW34

DATE: 3-10 / 3-11 & 3-12-96 *

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	DEVELOPMENT DATA							
1400 (3-10-96)								
TIME FINISH	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0931 (3-12-96)*	1400	0	5.98	–	63	14.4	–	>200
INITIAL WATER LEVEL (FT) 5.90'	1403	20.0	6.01	–	63	15.0	–	>200
TOTAL WELL DEPTH (TD) 19.45'	1406	40.0	5.86	–	63	14.0	–	>200
WELL DIAMETER (INCHES) 2"	1432	203.0	5.66	–	68	14.8	–	99
CALCULATED WELL VOLUME 2.20 gal. (1)	1435	220.0	5.62	–	68	14.1	–	90
BOREHOLE DIAMETER (INCHES) –	1030	220.0	5.65	–	56	14.2	–	111
	1043	239.0	5.53	–	58	14.3	–	>200
BOREHOLE VOLUME –	1051	258.0	5.51	–	60	14.1	–	>200
AMOUNT OF WATER ADDED DURING DRILLING None	1126	330.0	5.53	–	62	13.4	–	198
	1239	404.0	5.55	–	64	15.1	–	147
DEVELOPMENT METHOD Surge/pump	1319	440.0	5.52	–	63	14.0	–	136
PUMP TYPE Centrifugal/ waterra	0826	440.0*	12.04	–	326	11.9	–	>200
TOTAL TIME (A)	0902	495.0*	6.10	–	62	14.5	–	13
4 hr. 29 min.	0918	514.0*	5.92	–	64	13.1	–	11
AVERAGE FLOW (GPM)(B) ≈2.0 gal./min.	0931	533.0*	5.68	–	64	13.2	–	10
TOTAL ESTIMATED WITHDRAWAL AxB= 533 gallons	Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Well developed over 3 days.							
HNU/OVA READING 0ppm BG=0ppm								

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW35

DATE: 3-5 & 3-6-95

GEOLOGIST/ENGINEER: K. A. Tua

TIME START	1525 (3-5-96)
TIME FINISH	1648 (3-6-96)
INITIAL WATER LEVEL (FT)	7.85'
TOTAL WELL DEPTH (TD)	20.95'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	2.13 gal (1)
BOREHOLE DIAMETER (INCHES)	–
BOREHOLE VOLUME	–
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge/pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	10 hrs. 3 min.
AVERAGE FLOW (GPM)(B)	1.0 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	605 gallons
HNU/OVA READING	0ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
1525	0	6.38	–	95	17.6	–	>200
1544	2.0	5.61	–	63	15.4	–	>200
1558	10.0	5.37	–	60	15.3	–	>200
1643	40.0	5.49	–	59	15.0	–	198
1705	55.0	5.38	–	61	15.0	–	199
0825	74.0 *	5.39	–	61	15.2	–	199
0855	93.0 *	5.49	–	59	15.6	–	198
0914	110.0 *	5.49	–	59	15.6	–	199
1008	165.0 *	5.38	–	60	15.5	–	196
1104	220.0 *	5.55	–	60	15.6	–	193
1216	239.0 *	5.50	–	62	15.8	–	193
1357	313.0 *	5.49	–	62	17.0	–	74
1637	569.0 *	5.33	–	62	16.6	–	16
1643	588.0 *	5.34	–	62	16.6	–	16
1648	605.0 *	5.34	–	62	16.6	–	16

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameter (pH, specific conductance, temperature). Not all readings taken during well development appe on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Well developed over 2 days.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility
CTO NO.: 0312 WELL NO.: 73-MW36
DATE: 3-22-96
GEOLOGIST/ENGINEER: M. K. De John

TIME START	DEVELOPMENT DATA							
0818	TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
TIME FINISH 1033	0824	10.0	7.19	–	376	13.0	–	>200
INITIAL WATER LEVEL (FT) 6.31'	0828	20.0	7.19	–	348	14.5	–	>200
TOTAL WELL DEPTH (TD) 14.66'	0836	30.0	7.06	–	306	14.6	–	41.4
WELL DIAMETER (INCHES) 2"	0904	40.0	7.05	–	321	13.2	–	>200
CALCULATED WELL VOLUME 1.3 gal. (1)	0909	50.0	7.13	-	355	14.1	–	>200
BOREHOLE DIAMETER (INCHES) –	0916	55.0	7.06	-	307	14.5	–	179
BOREHOLE VOLUME –	0923	65.0	7.03	-	299	14.5	–	62
AMOUNT OF WATER ADDED DURING DRILLING None	0931	75.0	6.93	-	286	13.7	–	36.6
DEVELOPMENT METHOD Surge/pump	1016	120.0	6.82	-	279	14.0	–	16.9
PUMP TYPE Centrifugal	1022	130.0	6.84	–	281	13.9	–	12
TOTAL TIME (A) 2 hr. 15 min.	1032	140.0	6.85	–	281	14.0	–	9.8
AVERAGE FLOW (GPM)(B) ≈1.0 gal./min.								
TOTAL ESTIMATED WITHDRAWAL AxB= 140 gallons								
HNU/OVA READING 0ppm BG=0ppm								

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature and turbidity). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Stopped pumping at 0838. Began pumping at 0900.

Baker
Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Amphibious Vehicle Maintenance Facility

CTO NO.: 0312 WELL NO.: 73-MW37

DATE: 3-19-96

GEOLOGIST/ENGINEER: M. K. DeJohn

TIME START	0757
TIME FINISH	1129
INITIAL WATER LEVEL (FT)	5.59'
TOTAL WELL DEPTH (TD)	17.93'
WELL DIAMETER (INCHES)	2"
CALCULATED WELL VOLUME	≈ 2.0 gal (1)
BOREHOLE DIAMETER (INCHES)	—
BOREHOLE VOLUME	—
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Surge / pump
PUMP TYPE	Centrifugal
TOTAL TIME (A)	3 hrs. 30 min
AVERAGE FLOW (GPM)(B)	1.78 gal./min.
TOTAL ESTIMATED WITHDRAWAL AxB=	375 gallons
HNU/OVA READING	0 ppm BG=0ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY	NTU's
0801	10.0	6.32	—	287	16.8	—	>200
0805	20.0	6.23	—	282	17.2	—	>200
0809	30.0	6.13	—	250	17.2	—	>200
0838	95.0	6.04	—	219	17.1	—	>200
0847	110.0	6.04	—	202	17.4	—	>200
0853	130.0	5.94	—	200	17.9	—	>20
0900	150.0	6.03	—	207	17.7	—	>200
0916	190.0	5.96	—	203	18.0	—	138.7
0932	225.0	5.88	—	204	17.9	—	95.8
1004	245.0	5.89	—	211	18.1	—	>200
1029	315.0	5.90	—	224	19.4	—	>200
1058	345.0	5.94	—	233	19.5	—	>200
1108	355.0	5.98	—	237	19.9	—	69.1
1118	365.0	5.99	—	228	19.6	—	49.1
1128	375.0	5.97	—	226	19.5	—	111.2

Satisfied criteria for well development. No elevated HNU readings occurred during well development. The last three readings are shown prior to stabilization of water quality parameters (pH, specific conductance, temperature). Not all readings taken during well development appear on completed well development form. All readings are recorded in the field log book. Failed to meet turbidity criteria. Stopped pumping at 0935. Began pumping at 1000.

APPENDIX F
GEOPHYSICAL SURVEY REPORT

FINAL REPORT

GEOPHYSICAL SURVEY
AT
CAMP LEJEUNE, NORTH CAROLINA
SITE 73

GC-FR-96-2758-016

Prepared for

Baker Environmental, Inc.
Airport Office Park - Building 3
420 Rouser Road
Coraopolis, PA 15108

Prime Contract No. N62470-89-D-4814
Subcontract Agreement - 19001-94-SRN-02
Delivery Order - 312-6100

Prepared by

GEO-CENTERS, INC.
7 Wells Avenue
Newton Center, MA 02159

June 1996

GEO-CENTERS, INC.

INTRODUCTION

GEO-CENTERS, INC. of Newton, MA, under subcontract from Baker Environmental, Inc. of Coraopolis, Pennsylvania, conducted a geophysical survey using electromagnetic induction at Site 73, Camp Lejeune, NC, for the purpose of detecting a 10,000-gallon underground storage tank (UST). The equipment used consisted of a Geonics, Ltd. model EM61 pulsed electromagnetic induction sensor.

This survey was conducted on May 14 and 15, 1996, and consisted of surveying two areas on a concrete pad of approximately 6 acres in size. These areas are shown in Figure 1. This concrete pad is used by the U.S. Marine Corps as a parking and storage area for amphibious vehicles. The original plan was to survey the entire pad, but these plans were amended to surveying the above-mentioned two areas where the UST was suspected of being located. The change in plans was necessitated by the presence of approximately 40 amphibious vehicles on the pad.

Geophysical Equipment

As mentioned above, the equipment used in the survey consisted of a Geonics, Ltd model EM61 pulsed electromagnetic induction sensor. The system consists of two one-meter square antennas mounted to a wheel assembly in a top and bottom configuration. The antennas are connected to a battery and an electronic unit mounted in a backpack, which provide power and pulse control, respectively. In addition, the antennas are connected to a hand-held recorder. The unit, as deployed at Site 73, is shown in Figure 2.

The basic physical principle of the EM61 system is an electronic pulse which is transmitted at a 75 Hz rate, i.e., 75 pulses per second. Each individual pulse decays rapidly. If ferrous or nonferrous metal objects are present in the ground, eddy currents are induced in these objects, which in turn generate a secondary electromagnetic field. The recorder then samples this secondary field after a short time delay after the initial pulse is transmitted, allowing for the primary field to decay and assuring that any recorded electromagnetic field is due to the secondary field. In actuality, the system uses the principle of stacking to enhance signal-to-noise ratio. This involves summing the secondary fields from 25 consecutive cycles, thereby canceling-out any incoherent noise present in the data. Thus the actual sampling rate is 3 Hz.

At the Site-73 survey, the unit was employed in wheel mode, where the sampling of the electromagnetic field was triggered by an encoder mounted in the wheel assembly, so that the field is actually sampled along a constant interval along the line of survey. This interval is calibrated to be 0.193 m, but it can vary due to several factors, including varying air pressure in the tires of the wheel assembly, deviation of the survey track from a straight line, and deviation of the survey track due to elevation changes along the survey line.

The standard data outputs of the EM61 system are in 4 different channels: the top antenna output, the bottom antenna output, the difference between top and bottom, given by:

(difference) = (top) - (bottom),

and a channel which attempts to reduce the noise, which is given by the formula:

(reduced noise channel) = (bottom channel) - 0.28 * (top channel).

Data Processing

The data at site 73 were collected in two areas. The first of these consisted of a 96 m by 82 m area immediately to the south of the main building, and designated as AREA 1 (Figure 1). The second consisted of a 28 m by 27 m area in the northeast corner of the pad and designated as AREA 2 (Figure 1). These areas were chosen because the UST was suspected to be in one of them. The data were collected along 2-meter wide survey lines. In AREA 1, the lines were run in a north-south direction, between the building and the fence along the water. In AREA 2, the lines were run in an east-west direction. For each area, a coordinate system was established, with the origin coincident with the start of the first line of each survey. These are shown in Figure 1.

The data in AREA 1 were extremely noisy, with EM readings typically oscillating between 3500 millivolts (mV) on the low end to 9500 mV on the high end. An example of these data is shown in Figure 3. These noise levels are believed to be caused by steel reinforcing bars in the subsurface. The noise levels in the second area were low, and it is believed that no reinforcing bars are present at this location. An example of the data in this area is shown in Figure 4.

In an attempt to improve data quality, some standard signal processing techniques were applied to the data in both areas, but specifically addressed to noise reduction in AREA 1. First, there was some variation in the sampling along the lines for both data sets, due to the above-mentioned deviations of the survey track due to elevation changes and slight deviations of the survey track. To correct this, the data were resampled spatially at a constant sample rate of 0.2 m. Secondly, for AREA 1, the data were filtered in two dimensions (i.e., in both the in-track and cross-track directions). The filtering was performed using a Butterworth filter applied in both the forward and reverse directions for both the in-track and cross-track directions in order to eliminate any phase distortion. The Butterworth filter used was a low-pass filter designed to eliminate the "ringing" caused by the reinforcing bars.

Data Analysis

Contour maps of the raw data and of the filtered data for AREA 1 are shown in Figure 5 (top channel, raw data), Figure 6 (top channel, filtered data), Figure 7 (bottom channel, raw data), Figure

8 (bottom channel, filtered data), Figure 9 (difference channel, raw data), Figure 10 (difference channel, filtered data), Figure 11 (reduced-noise channel, raw data), and Figure 12 (reduced-noise channel, filtered data). Fiducial markers (drains and monitor wells) are also shown in the plots. The raw data are so noisy that they are unusable for interpretation purposes. In the filtered data, there is a relatively large anomaly located at x=75 m and y=30 m in the local coordinate system for AREA 1. However, the background electromagnetic field levels are relatively high, so it is difficult to say whether the anomaly is the result of a buried object such as a UST or whether it is just the low-frequency signature of the background field, i.e, the residual low-frequency artifact of the "ringing" caused by the reinforcing bars.

Contour maps of the raw data for AREA 2 are shown in Figure 13 (top channel), Figure 14 (bottom channel), Figure 15 (difference channel), and Figure 16 (reduced-noise channel). These data were not filtered because the noise levels were relatively low. The relatively high values of the electromagnetic field observed at the edges of the survey area are caused by the presence of amphibious vehicles, which were located very close to the boundary of the survey area. There is a relatively small anomaly located at x=11 m and y=9 m in the local coordinate system for AREA 2, and it is small enough that it is not believed to be the result of a UST.

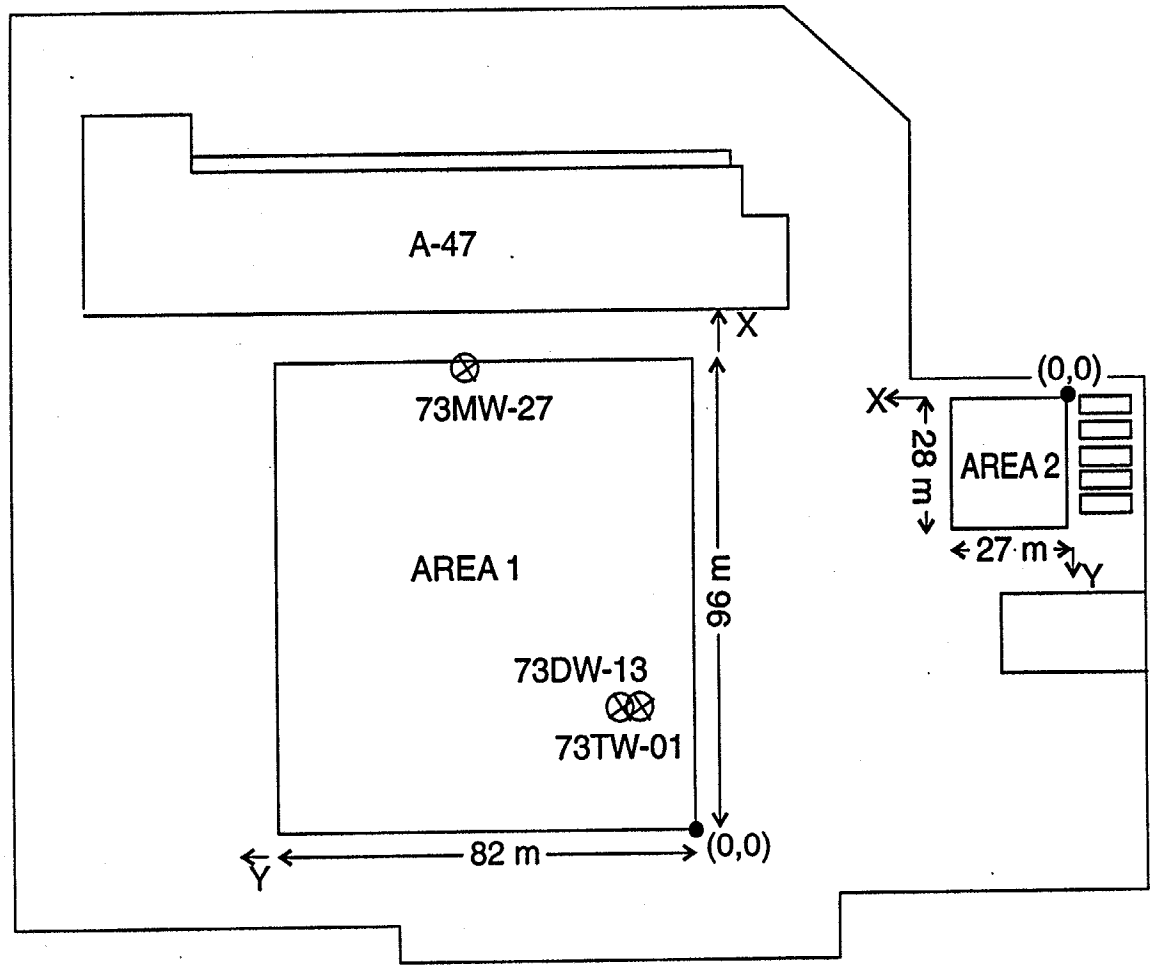


Figure 1. Map Showing the locations of AREA 1 and AREA 2 at Site 73. Local coordinate systems have been established for both areas and the origins, x-axis, and y-axis are indicated.

GEO-CENTERS, INC.

Figure 2. Geonics, Ltd. EM61 electromagnetic induction unit shown as deployed at Site 73.

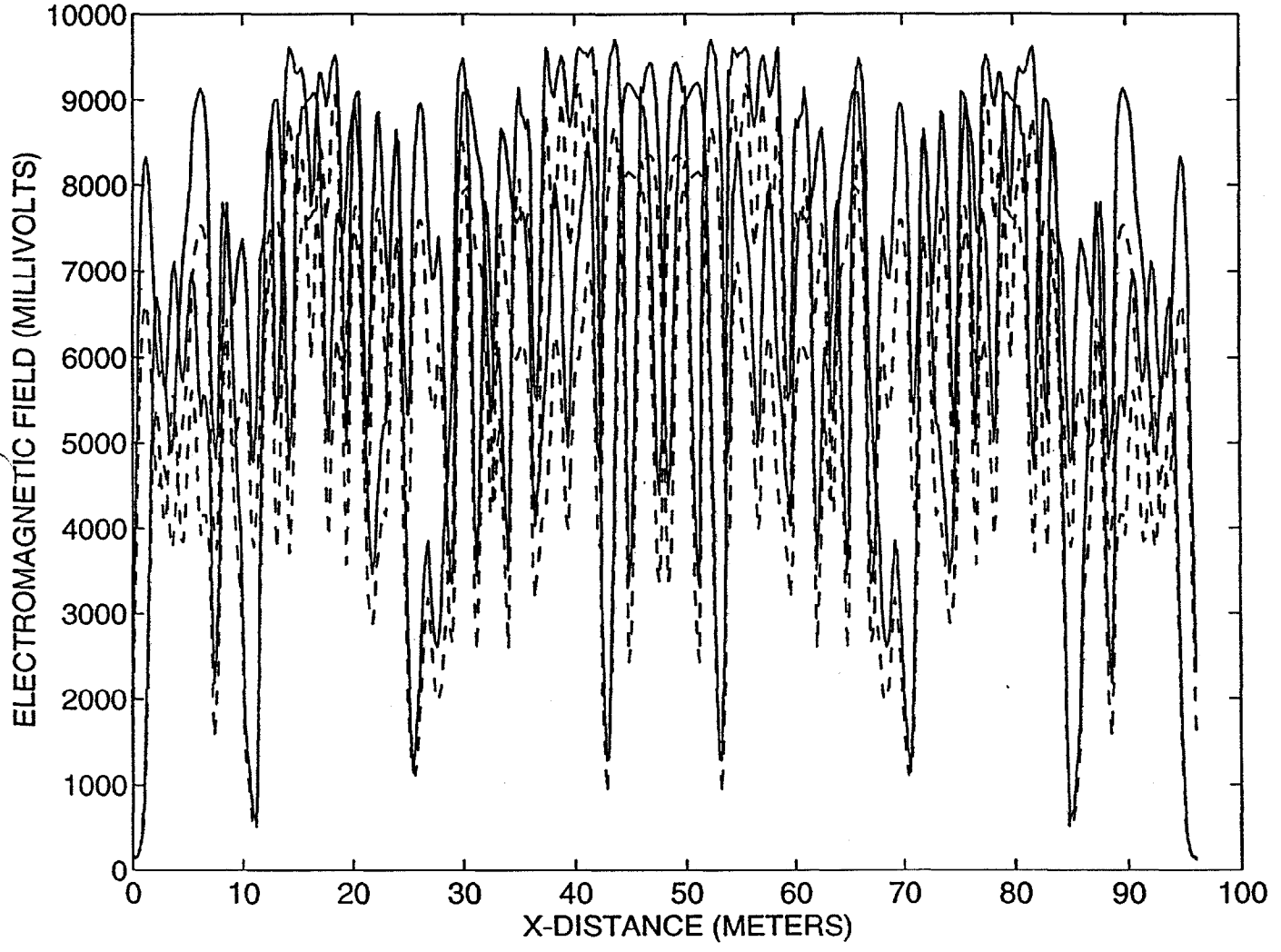


Figure 3. Sample survey line from AREA 1. The solid line represents the electromagnetic field recorded on the top channel, and the dashed line represents that recorded on the bottom channel.

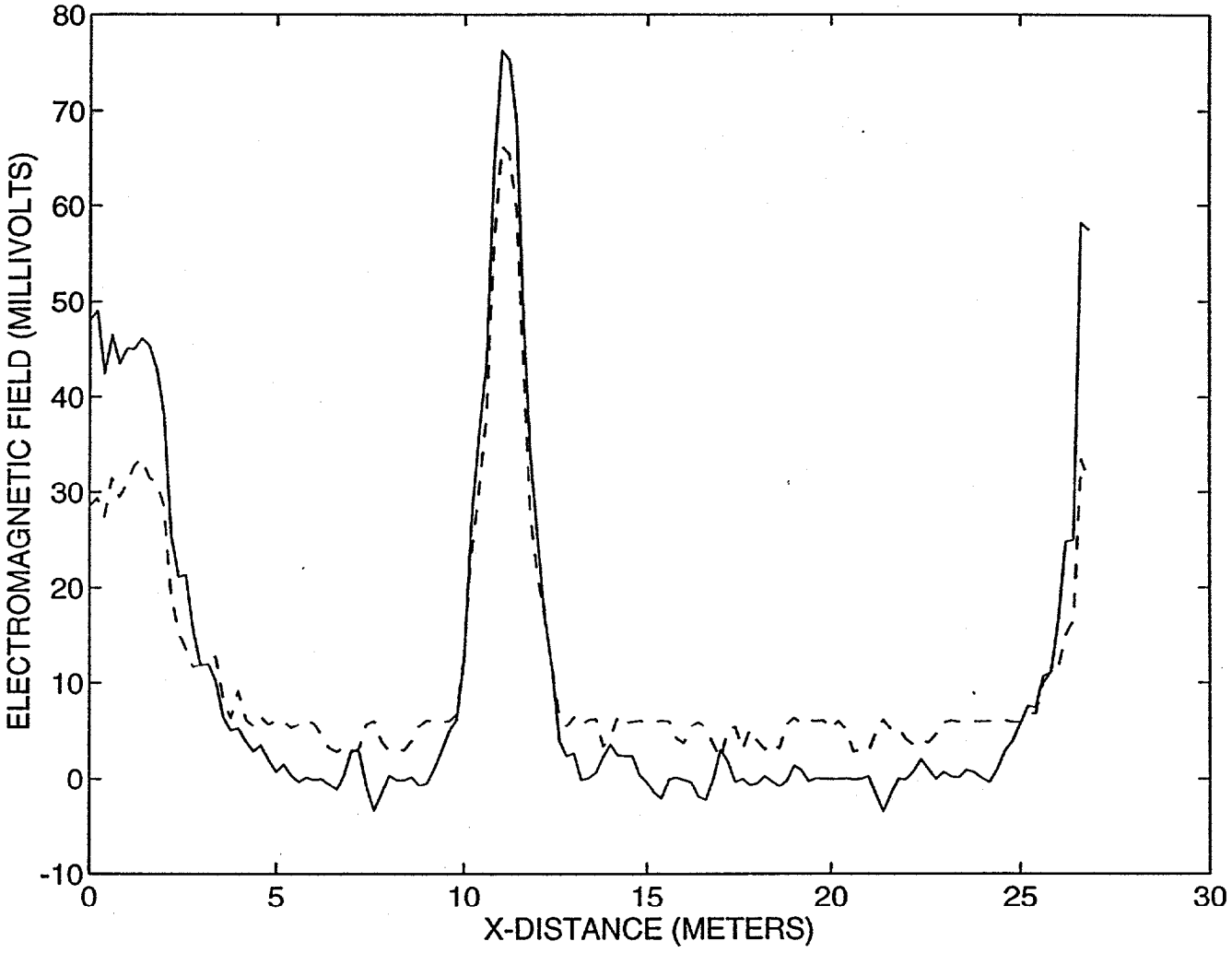


Figure 4. Sample survey line from AREA 2. The solid line represents the electromagnetic field recorded on the top channel, and the dashed line represents that recorded on the bottom channel.

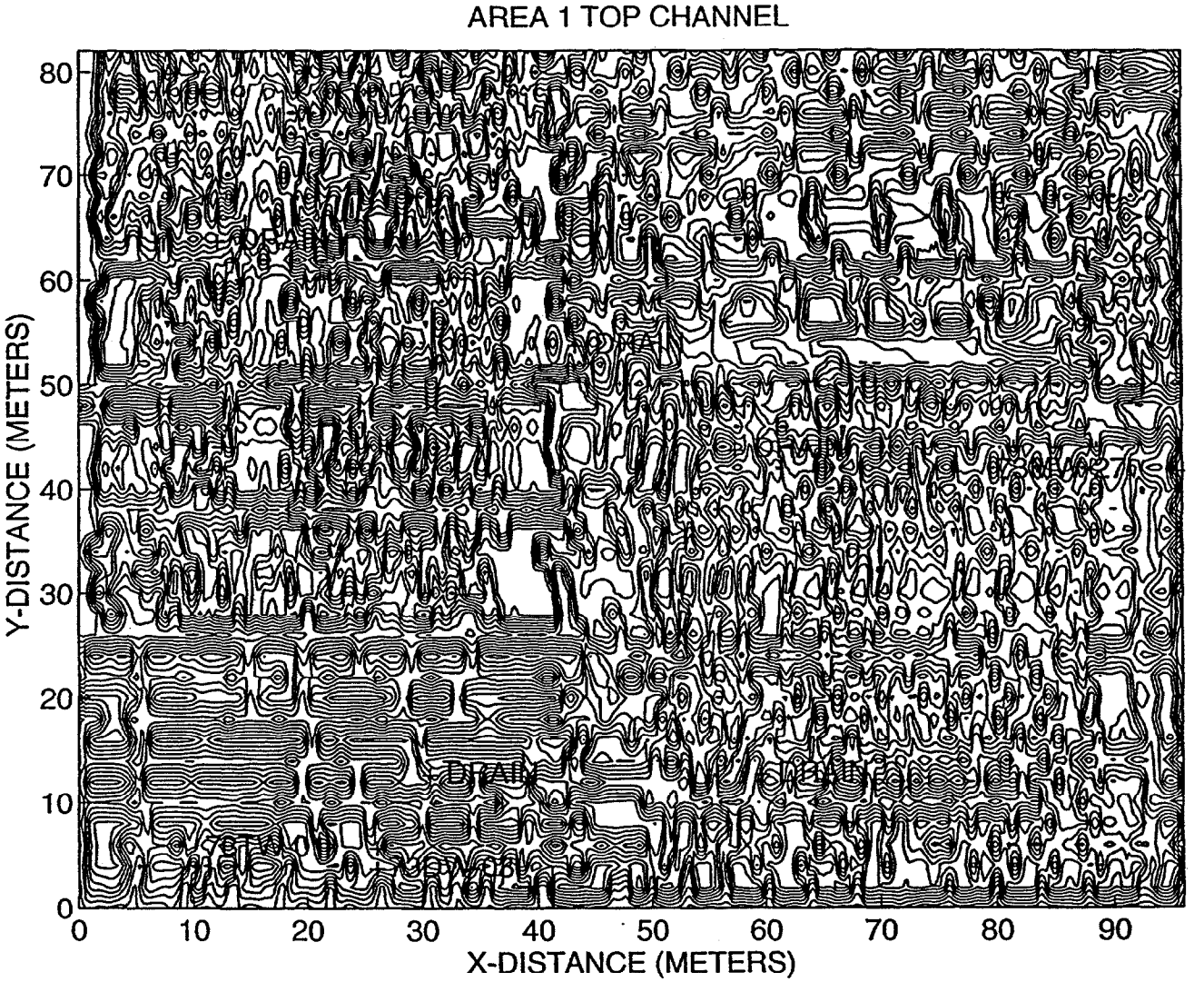


Figure 5. Contour map showing the raw data from the top channel in AREA 1. The data are so noisy that the contour intervals cannot be displayed without further obscuring the plot. Note that the data are so noisy that they are essentially unusable for interpretation purposes.

GEO-CENTERS, INC.

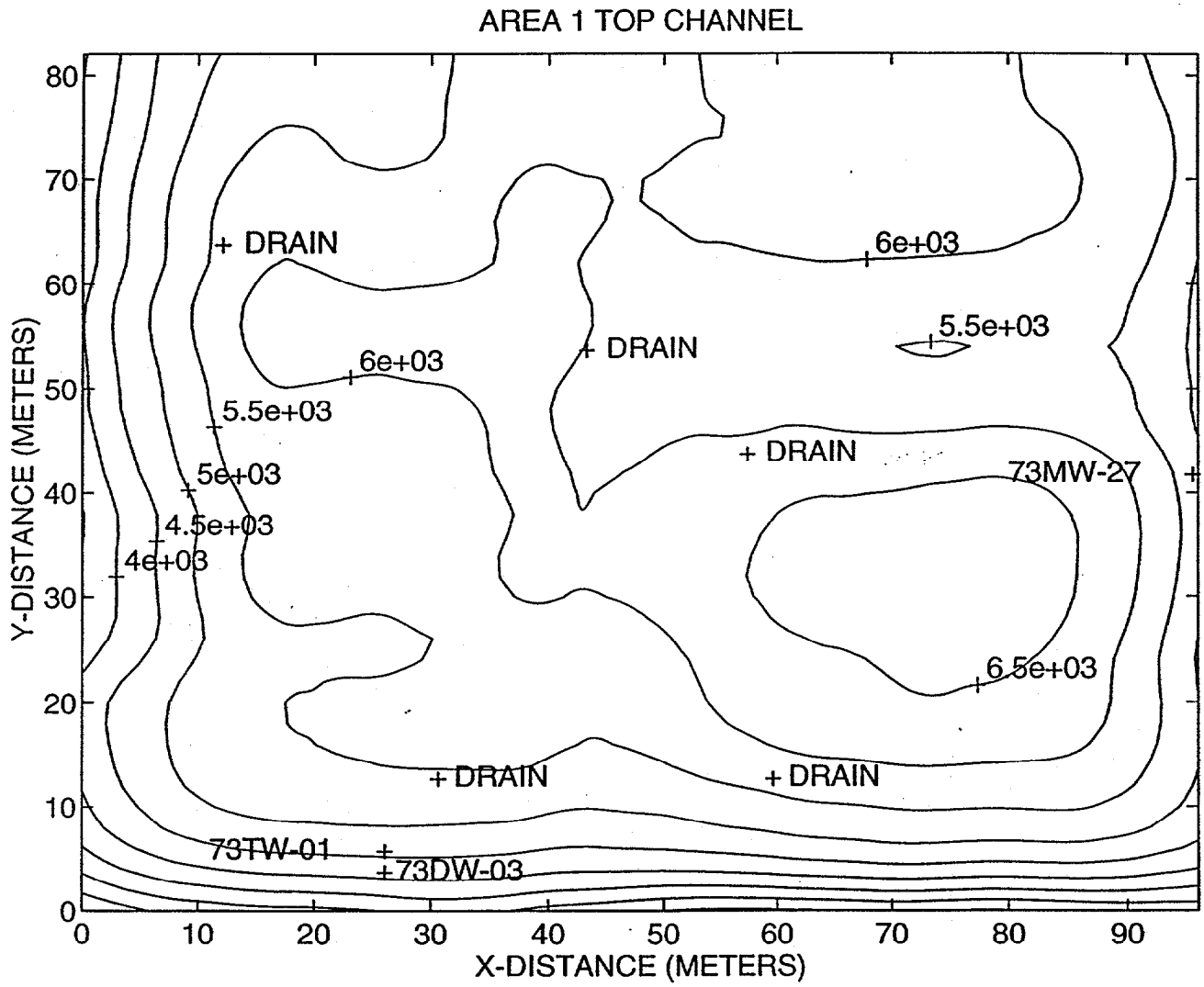


Figure 6. Contour map showing the filtered data from the top channel in AREA 1. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=75 m and y=30 m.

GEO-CENTERS, INC.

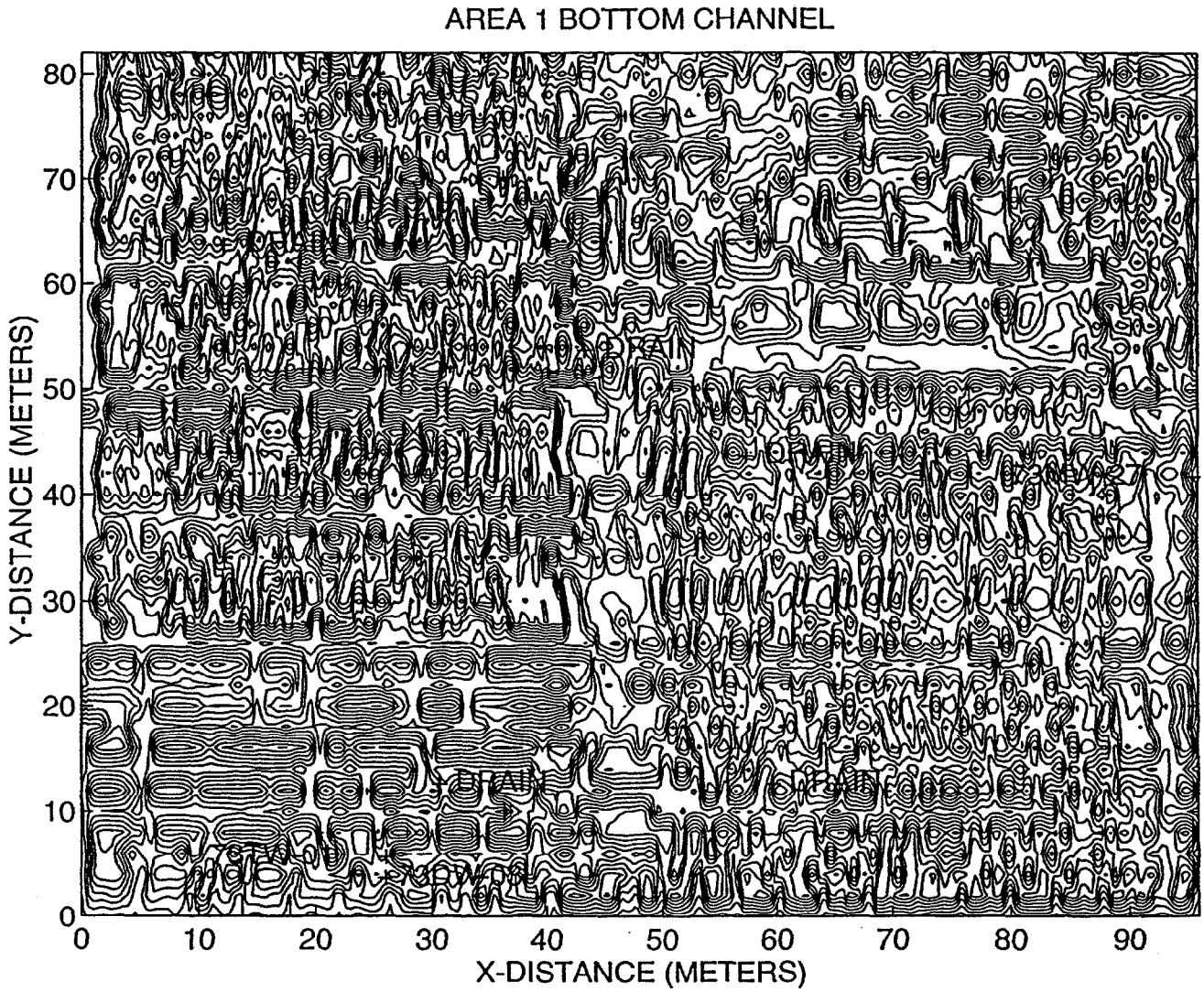


Figure 7. Contour map showing the raw data from the bottom channel in AREA 1. The data are so noisy that the contour intervals cannot be displayed without further obscuring the plot. Note that the data are so noisy that they are essentially unusable for interpretation purposes.

GEO-CENTERS, INC.

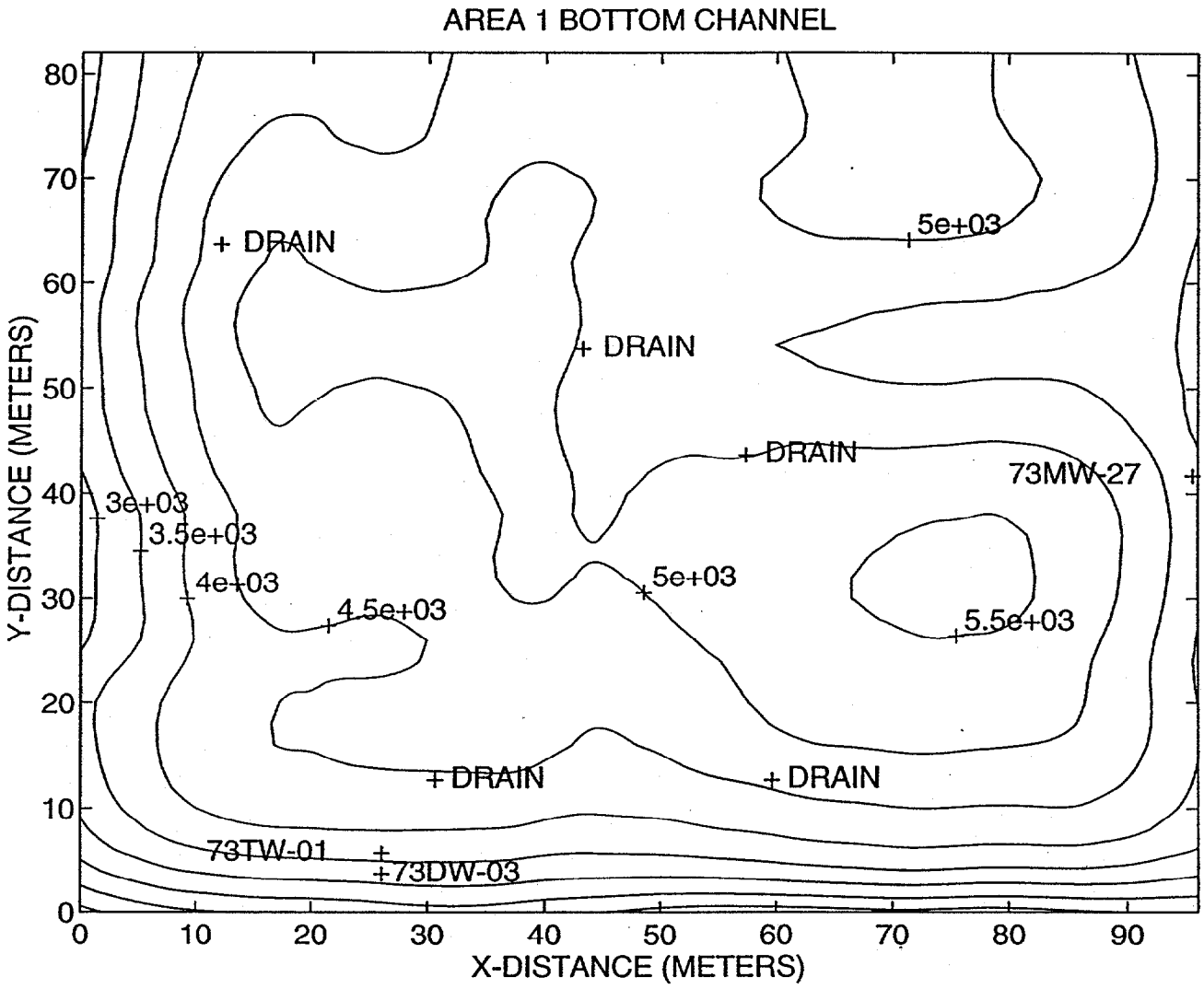


Figure 8. Contour map showing the filtered data from the bottom channel in AREA 1. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=75 m and y=30 m.

GEO-CENTERS, INC.

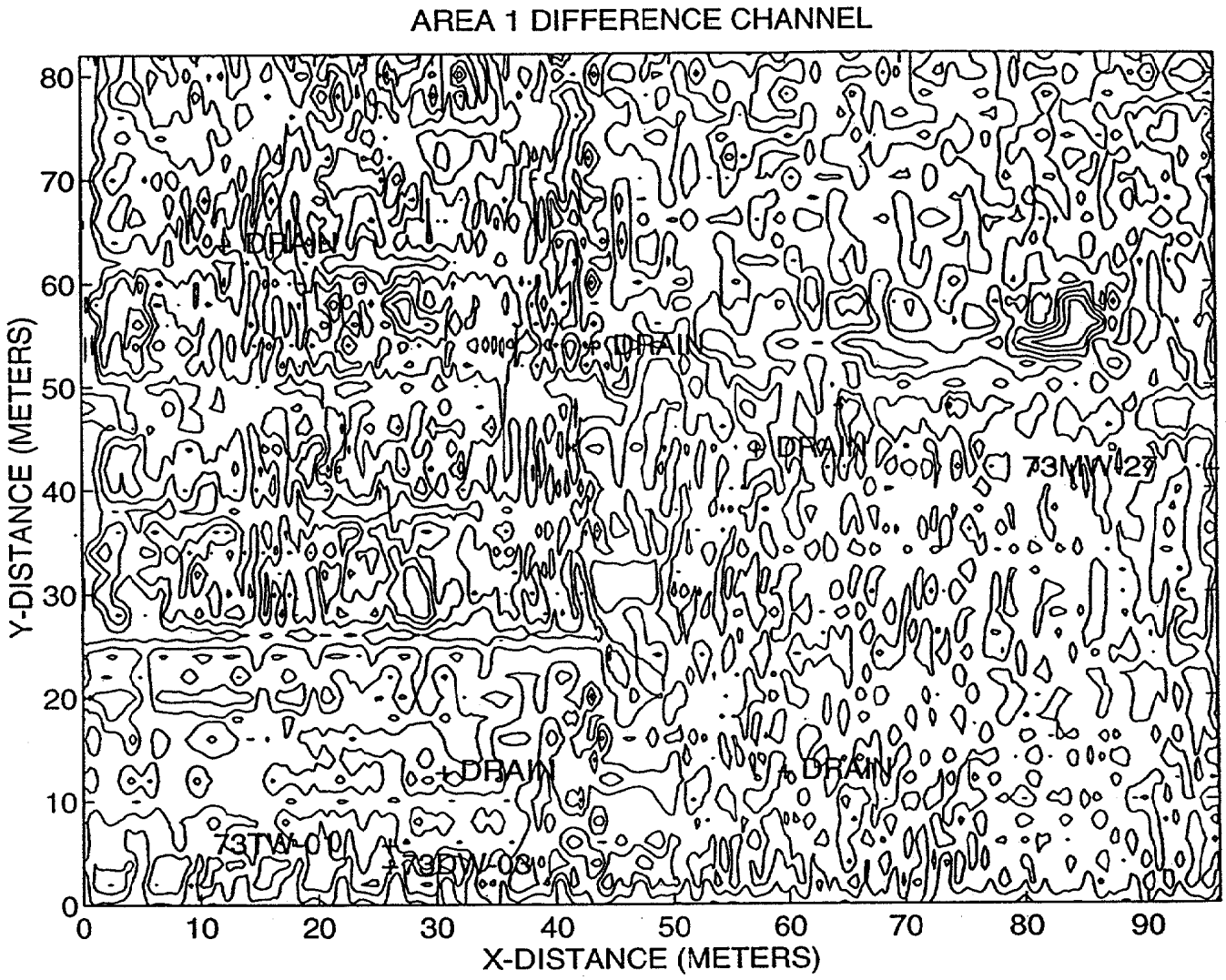


Figure 9. Contour map showing the raw data from the difference channel in AREA 1. The data are so noisy that the contour intervals cannot be displayed without further obscuring the plot. Note that the data are so noisy that they are essentially unusable for interpretation purposes.

GEO-CENTERS, INC.

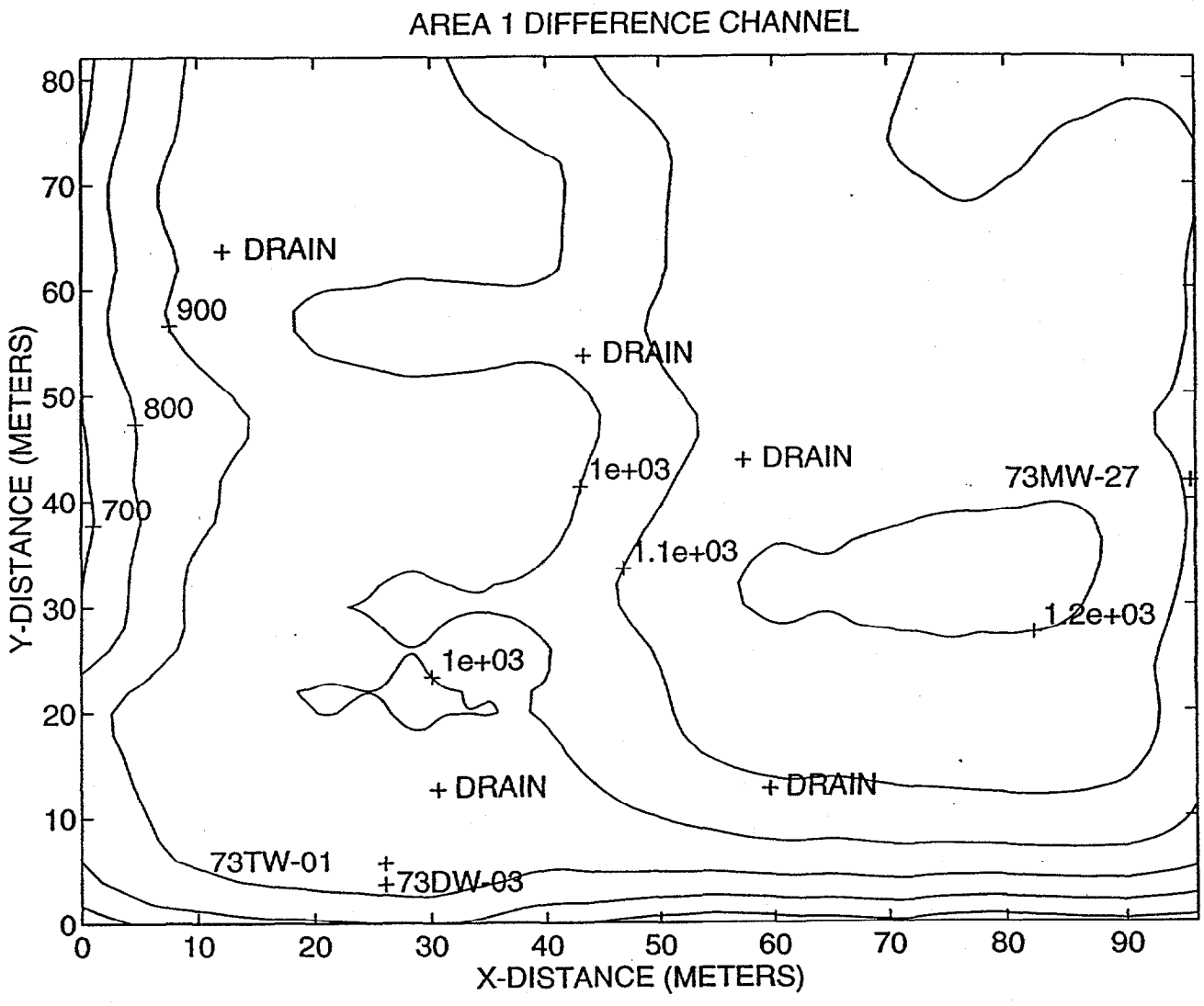


Figure 10. Contour map showing the filtered data from the difference channel in AREA 1. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=75 m and y=30 m.

GEO-CENTERS, INC.

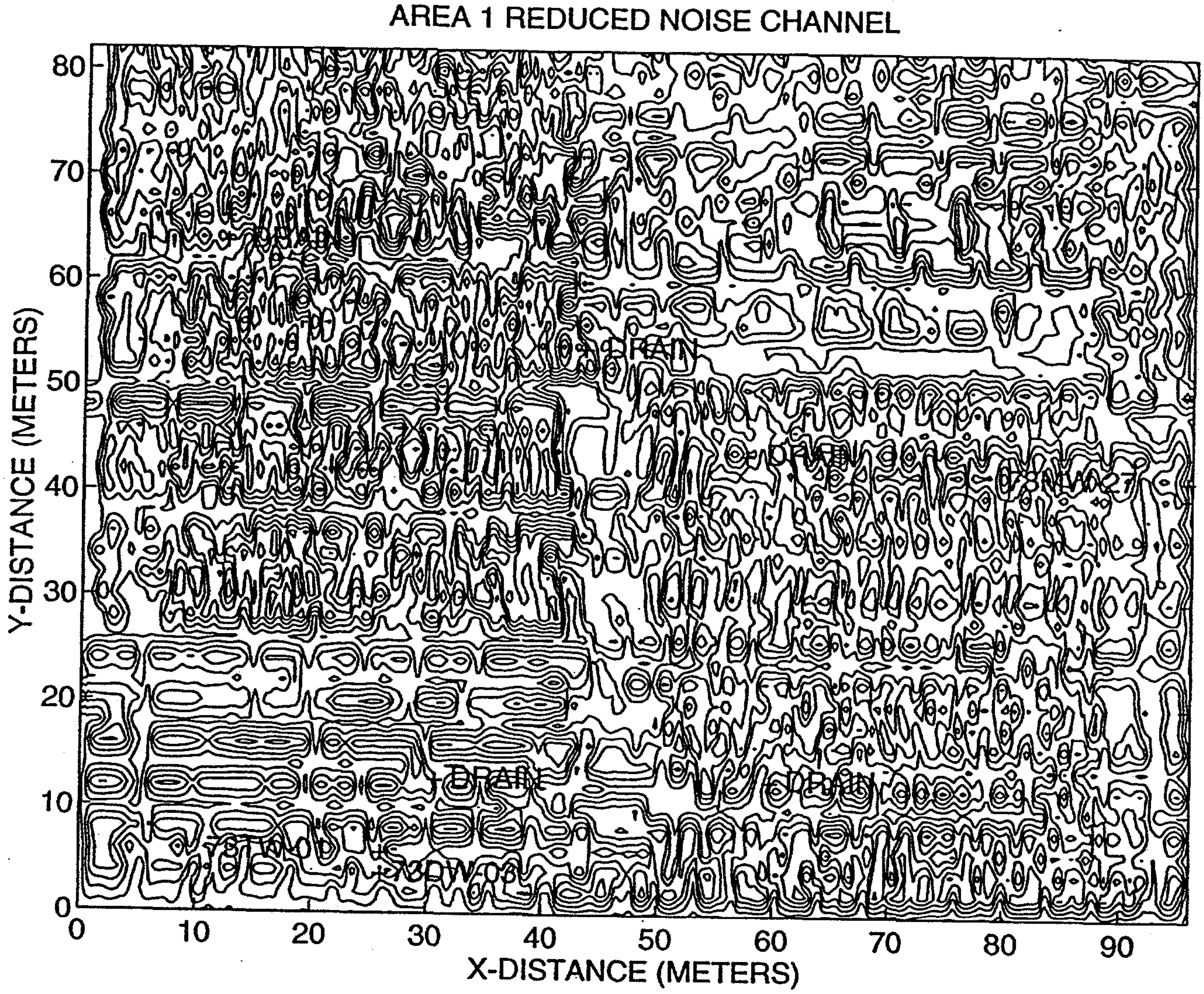


Figure 11. Contour map showing the raw data from the reduced-noise channel in AREA 1. The data are so noisy that the contour intervals cannot be displayed without further obscuring the plot. Note that the data are so noisy that they are essentially unusable for interpretation purposes.

GEO-CENTERS, INC.

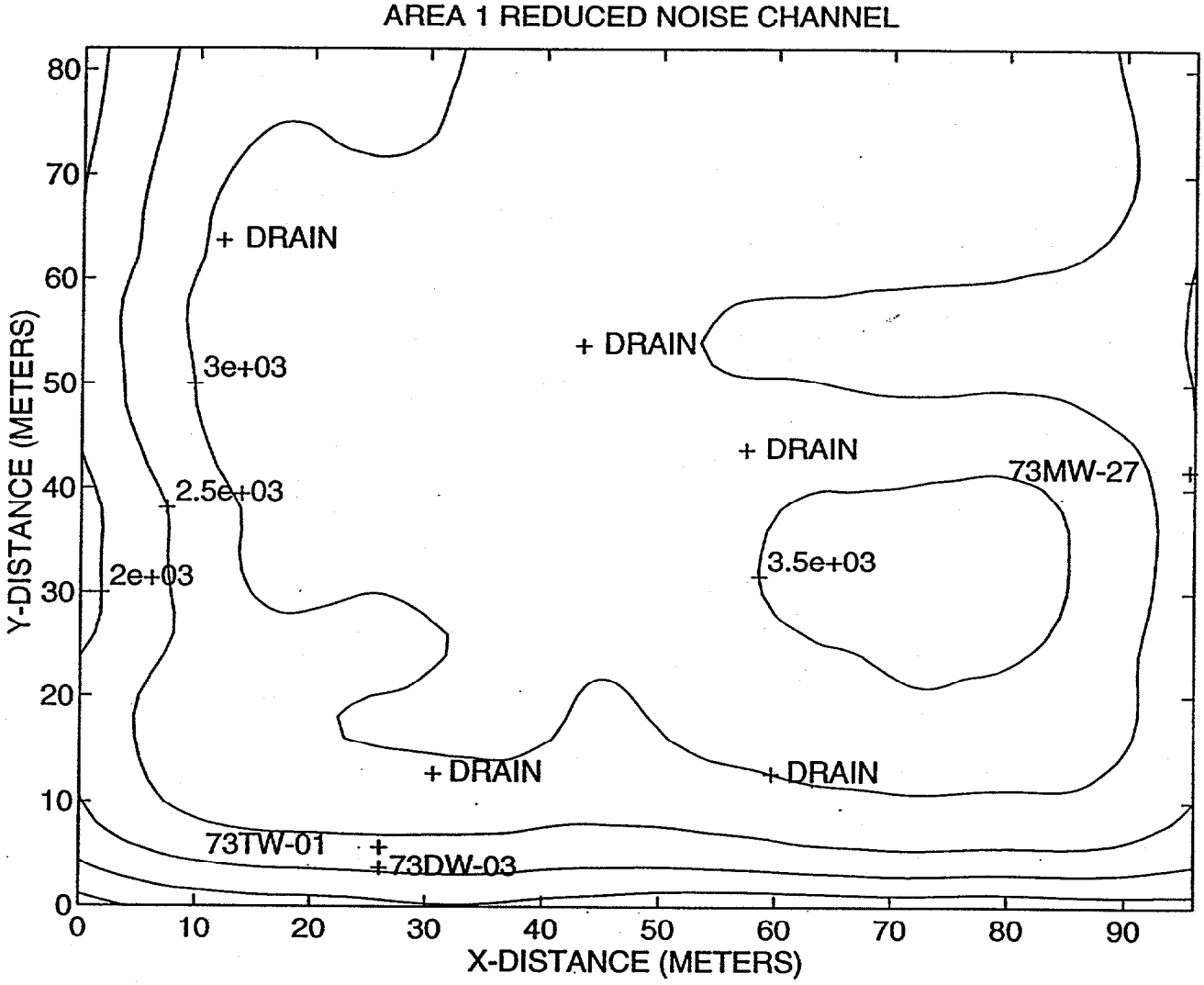


Figure 12. Contour map showing the filtered data from the reduced noise channel in AREA 1. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=75 m and y=30 m.

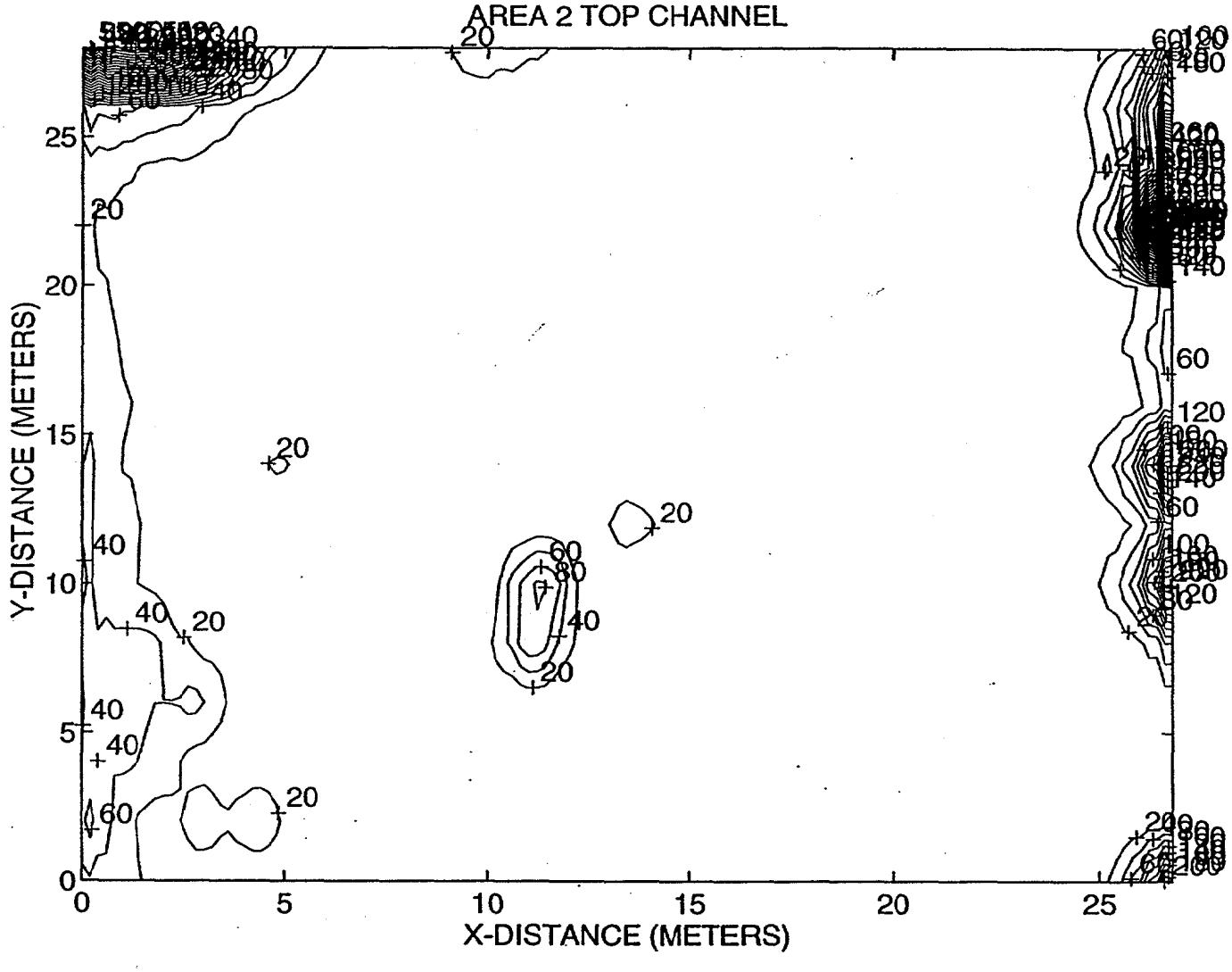


Figure 13. Contour map showing the raw data from the top channel in AREA 2. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=11 m and y= 9 m.

GEO-CENTERS, INC.

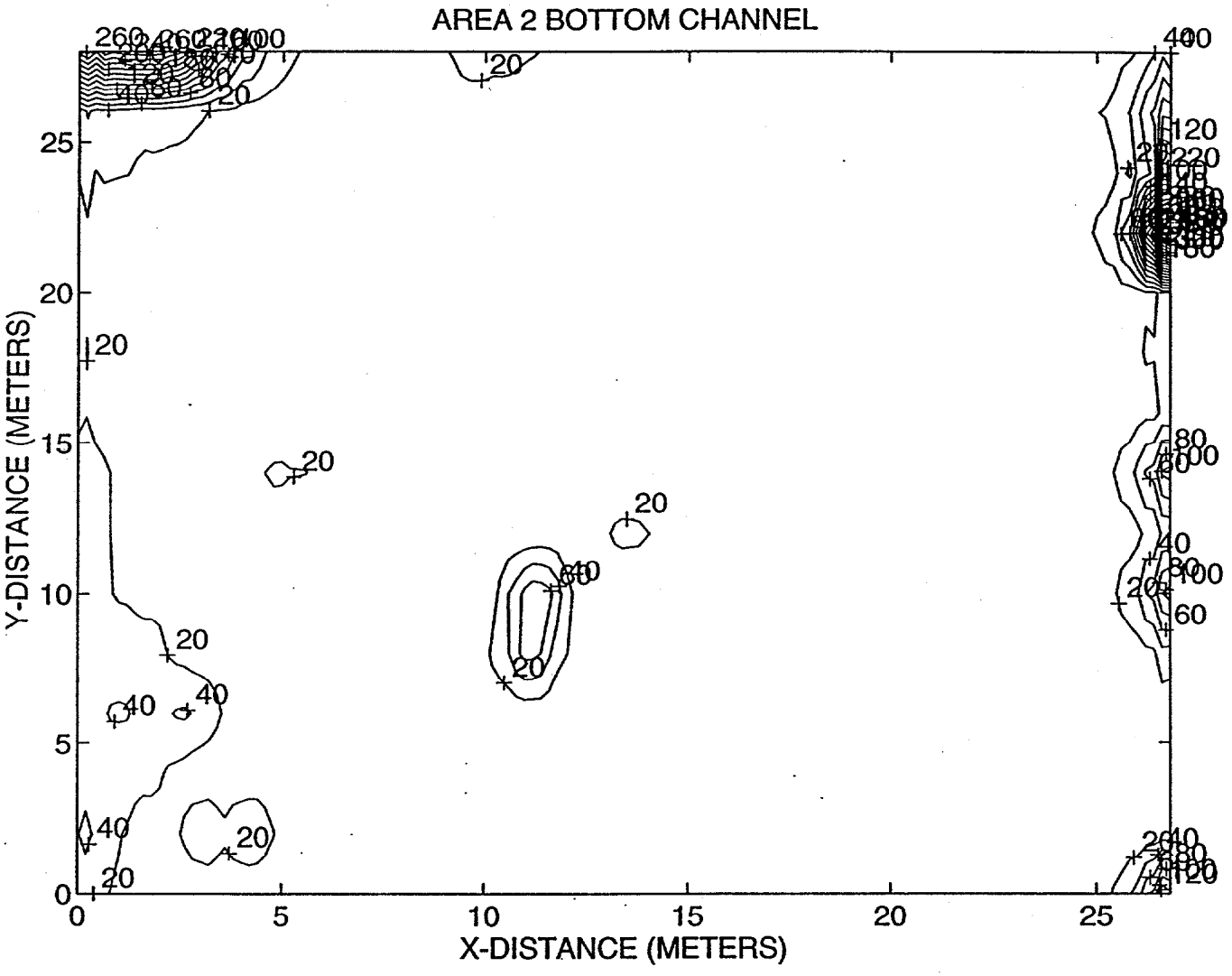


Figure 14. Contour map showing the raw data from the bottom channel in AREA 2. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=11 m and y= 9 m.

GEO-CENTERS, INC.

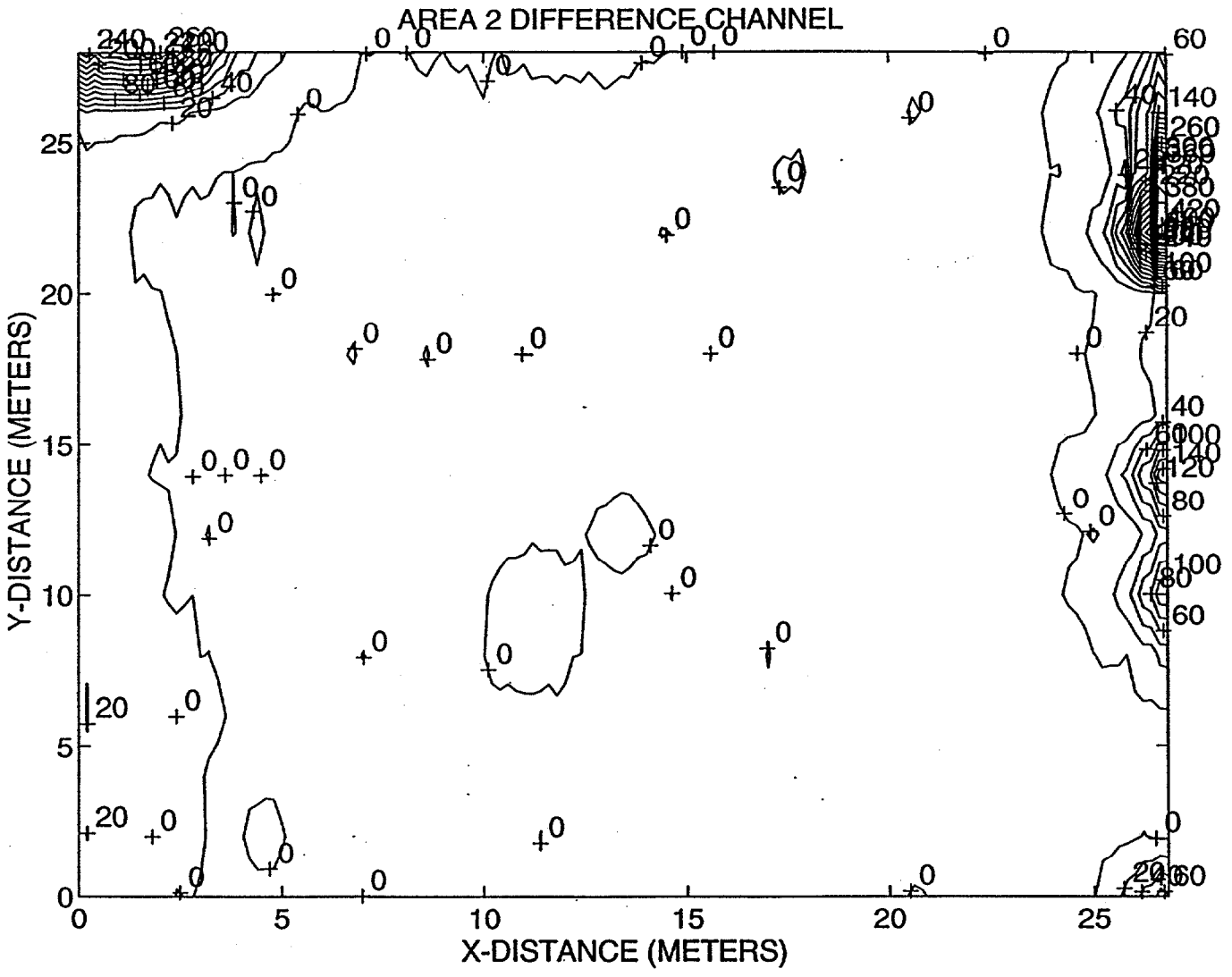


Figure 15. Contour map showing the raw data from the difference channel in AREA 2. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=11 m and y= 9 m.

GEO-CENTERS, INC.

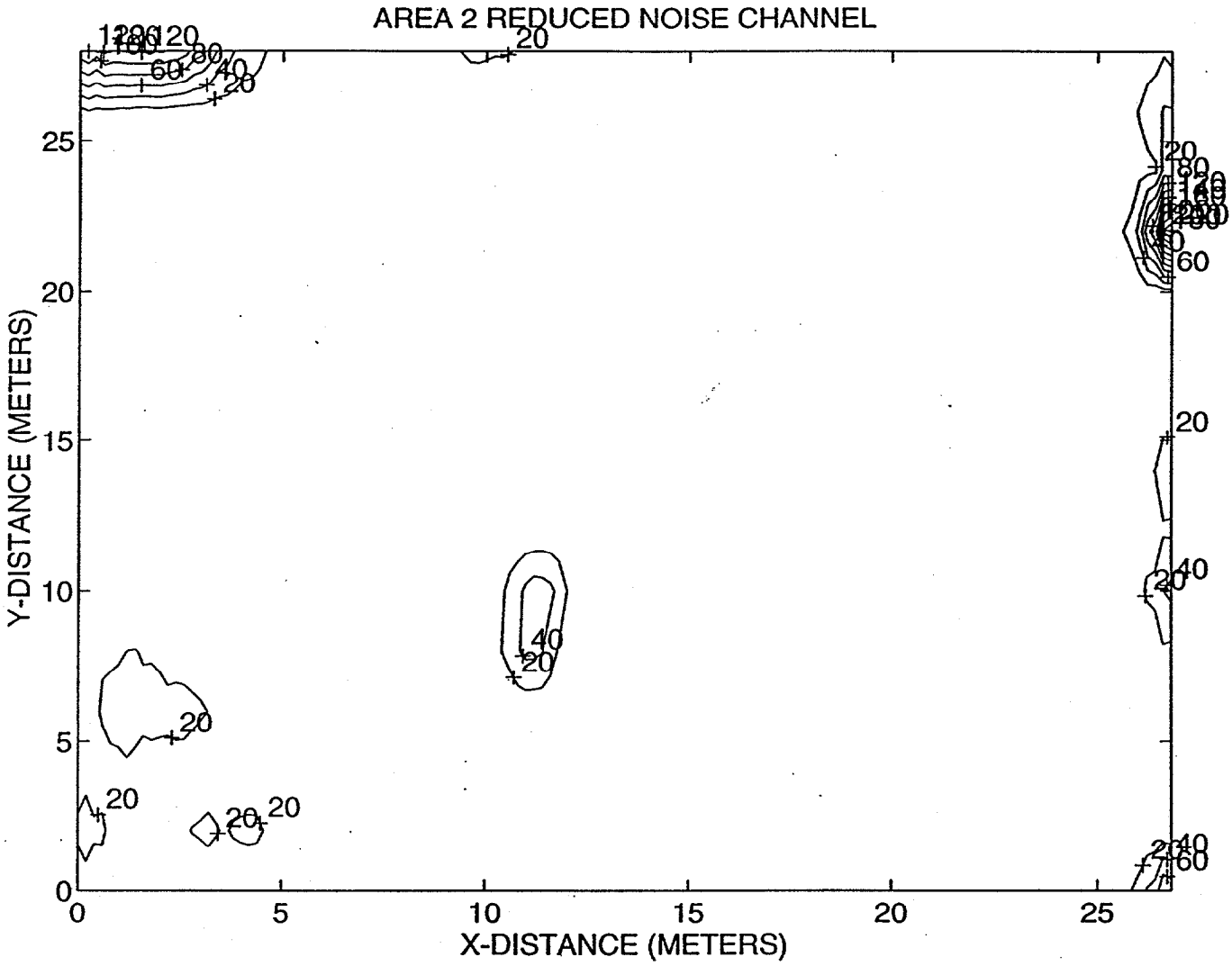


Figure 16. Contour map showing the raw data from the reduced-noise channel in AREA 2. The contour interval for the electromagnetic field is in millivolts. Note that there is an anomaly located at approximately x=11 m and y= 9 m.

GEO-CENTERS, INC.

APPENDIX G
IDW MANAGEMENT AND DISPOSAL INFORMATION

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

September 12, 1995

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-6299

Attn: Mr. Lance Laughmiller
Navy Technical Representative
Code 18235

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0312
IDW Removal
Operable Unit No. 9 (Site 73)
MCB, Camp Lejeune, North Carolina

Dear Mr. Laughmiller:

This letter report summarizes the investigative-derived waste (IDW) disposal activities conducted at Operable Unit No. 9 (Site 73), Marine Corps Base, Camp Lejeune, North Carolina. The IDW was generated during the remedial investigation activities conducted from April 3 through May 25, 1995, and was contained in two (6,500-gallon) tankers, one (1,000 gallon) polyethylene tanker, and one roll-off box (20 cubic yards).

The water in one of the tankers, was discharged on-site on June 20, 1995, since no contaminants were detected which would result in increased human health or ecological risks.

In a letter dated August 2, 1995, Baker Environmental provided details concerning sample collection and analytical findings of the remaining IDW, and provided conclusions and recommendations with respect to handling and disposal. The recommendations were subsequently approved by the Navy/Marine Corps. One addition to the recommendations was that the water contained in the remaining tankers was unable to be treated by the Hadnot Point Shallow Aquifer Remedial Action System. However, this water was able to be taken off-base as a nonhazardous waste water and transported to HOH Corporation, a Treatment Storage Disposal Facility (TSDF) located in Winston-Salem North Carolina. The remainder of this letter report provides a summary of the disposal activities conducted under this CTO.

DISPOSAL

Based on LANTDIV/MCB Camp Lejeune approval, Baker arranged for the disposal of the following:

- 6,678 gallons of nonhazardous well development and purge water
- 20 cubic yards of nonhazardous drilling and mud cuttings

Based on the nonhazardous determination of the IDW, the roll-off box contents were emptied on site and then graded. The roll-off box was then removed from Site 73. The development and purge water was removed via a vacuum truck and transported to HOH Corporation for disposal. Two trips were necessary to deplete all of the waste water. Both the 6,500-gallon and the 1,000-gallon polyethylene tankers were removed from Site 73. The Nonhazardous Profile Sheet, along with the Nonhazardous Waste Manifests, are provided in Attachment A.

Baker appreciates the opportunity to serve LANTDIV on this important project. If you have any questions, please do not hesitate to call me at (412) 269-4695.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Malcolm W. Petroccia
Project Manager

MWP/PAM/lq

Attachments

cc: Mr. Neal Paul, IRP Director, MCB Camp Lejeune (w/attachments)
Mr. John Riggs Environmental Control Specialist, MCB Camp Lejeune (w/attachments)
Ms. Lee Ann Rapp, Code 1832 (w/o attachments)
Ms. Beth Collier, Code 02115 (w/o attachments)

Attachment A

MATERIAL PROFILE

1701 Vargrave St., Winston-Salem, NC 27107 • 910-727-4644 • Fax 910-727-8840

Name of Waste Stream Groundwater (Ref. 73 TK615 / 73 POLY 01)

Approved ☐ Yes ☐ No Date _____ Initials _____

Generator Name Marine Corps Base - Camp Lejeune
Facility Address Sneads Ferry Base
Camp Lejeune
Site 73
City Camp Lejeune
State NC Zip 28542
EPA Identification Number NC6170022580
County: Onslow

Technical Contact John Riggs / Ken Webb c/o Shamrock Env. Corp
Title EMD - MCB Camp Lejeune
Phone (910) 451-5068 Ext. 910 375 1589
Fax (910) 451-3948 Ext. 910 375 1801
Billing Address Shamrock Environmental Corp.
PO Box 14987
City Greensboro
State NC Zip 27415

Physical Characteristics at 70°F

Physical State: Liquid ✓ Semisolid _____ Solid _____
Layers: None ✓ Two _____ Multilayers _____
Free Liquids (%) 100 Precipitated Solids (%) <1
Viscosity: Low ✓ Medium _____ High _____
Is Material Pumpable? Yes ✓ No _____ Polymerizable? Yes _____ No ✓
Specific Weight (lbs/gal) 8.34 or Specific Gravity (g/cc) _____
Appearance clear (slight sediment) Odor NA
Flash Point (cc): Exact _____ ≤60°F _____ 61°F - 100°F _____ 101°F - 140°F _____
141°F - 200°F _____ >200°F X
BTU/lb. NONE Ash (%) <1 % Water (%) >99 %
pH (avg) 7 Range _____ to _____
Reactivity (Reactive with): NA

Is Sample Available Upon Request?
Yes ✓
No _____

Process Generating Waste
Rate of Generation one time Container Type/Size 5000 gal tanker EPA Waste No. NONE State Waste No. NONE

1. Does this waste contain spent solvents? (F001 through F005) Y _____ N ✓
2. Is this waste listed for Dioxin as defined in 40 CFR 262.31? (F020 and F026-28) Y _____ N ✓
3. Is this waste INFECTIOUS? Y _____ N ✓
   Is it RADIOACTIVE? Y _____ N ✓
   Does it contain PCB's > 50 ppm? Y _____ N ✓
4. If you answered yes to questions 1, 2 or 3, DO NOT CONTINUE.
   Please contact your HOH Technical Sales Representative for assistance.

1701 Vargrave St., Winston-Salem, NC 27107 • 910-727-4644 • Fax 910-727-8840

All below Regulatory Limits

Metals (ppm)		Metals (ppm)		Metals (ppm)	
Total	TCLP	Total	TCLP	Total	Total
As		CR (Total)		Be	Si
Ag		CR (Hex)		Ti	Na
Cd		Hg		Sb	Ni
Ba		Se		S	Cu
Pb		Other		P	Zn

Chemical Constituents (Must Total 100%)

Water, from groundwater	>99%		
Sediment	<1%		
(from monitoring well development)			

(Please Attach All MSDS's, Sample Analysis and Additional Info.)

Other: (Specify in PPM)

Free Cyanide 0 PCB's 0

Free Sulfide 0

Phenolics 0

Total Organic Halogens (%)

Fluorine 0 Bromine 0

Chlorine 0

Frequency of Generation

7000-8000 Gallons per

Tons per

Drums per

Other

Week

Month

Quarter

Year

One Time

I certify that all information on this form is complete and factual (including attached information) and is an accurate representation of the known and suspected hazards of the waste to be disposed.

Generator's Signature

9508/16
Date

NON-HAZARDOUS WASTE MANIFEST

HOH Corp Environmental Management
1701 Vargrave St., Winston-Salem, NC 27107 • 910-727-4644 • Fax 910-727-8840

Bill to: Shamrock Env. Corp (Return manifest to K. Webb)
Job # 95-R0012

Manifest # 091501 Date: 8/15/95

Generator: Marine Corps Base, Camp Lejeune Phone No: (910) 451-5068
IR Division - EMD Building 67 EPA ID No: NC6170022580
MCB Camp Lejeune, NC 28542 Contact: John Riggs - MCB/EMD

Process which generated waste:

I certify that the materials described below are properly described, classified, packaged, marked and labeled, and are in proper condition to be transported in commerce under the applicable regulations of the State, the Environmental Protection Agency and the Department of Transportation. I certify that the waste described below is non-hazardous. I certify that the specific waste was delivered to the carrier named below for legal treatment, storage, or disposal at the site indicated.

Date 8/15/95 Signature [signature]

Description of Waste	Circle Form	Quantity	Circle Units	Container No.	Container Type
Groundwater from	Solid		Cu. Yards/Drums/Tons		
development of	(Liquid)	5230	(Gallons) Drums	1	TT
monitoring wells	Gas		Pounds		
(Lab ID 73TK615 73POLY01)	Sludge		Cu. Yards/Drums/Tons		

Transporter: Unit Numbers: RT3/RT2
Shamrock Environmental Corp. Phone No: (910) 375-1989
PO Box 14987 Greensboro, NC 27415 EPA ID No: NC0000942144
Vehicle License Tag Number(s) LE 5016 NC Container: tanker RT2

I certify that the specified waste was transferred in a registered (licensed) vehicle to the disposal treatment, storage, or disposal facility named below and was accepted.

[signature] 8-15-95 [signature] 8-15-95
Pick-up Driver's Signature *Date* *Delivering Driver's Signature* *Date*

Facility: HOH Corp Phone No: 910-727-4644
1701 Vargrave St. Permit No: 34-11TP
Winston-Salem, NC 27107 Contact: David Bryant
Handling Method:

I certify that the Transporter above delivered the specified material to this facility and was accepted and properly handled in the above manner. We are authorized and qualified by the State of NC to handle this material.

Date 8/15/95 Signature [signature]

ORIGINAL - Destination Retain (WHITE) COPY 2 - Return to Generator (YELLOW) COPY 3 - Transporter Retain (PINK) COPY 4 - Generator Retain (GOLDENROD)

NON-HAZARDOUS WASTE MANIFEST

HOH CORP Environmental Management

1701 Vargrave St., Winston-Salem, NC 27107 • 910-727-4644 • Fax 910-727-8640

Bill to: Shamrock Environmental Corp.
Job # 95-R0012

Manifest # 081601 Date: 8/16/95

Generator: Marine Corps Base, Camp Lejeune Phone No: (910) 451-5068
IR Division - EMD Building 67 EPA ID No: NC 6170022590
MCB Camp Lejeune, NC 28542 Contact: John Riggi - MCB/EMD

Process which generated waste:

I certify that the materials described below are properly described, classified, packaged, marked and labeled, and are in proper condition to be transported in commerce under the applicable regulations of the State, the Environmental Protection Agency and the Department of Transportation. I certify that the waste described below is non-hazardous. I certify that the specific waste was delivered to the carrier named below for legal treatment, storage, or disposal at the site indicated.

Date 8/16/95 Signature [signature]

Description of Waste	Circle Form	Quantity	Circle Units	Container No.	Container Type
Groundwater from	Solid		Cu. Yards/Drums/Tons		
development of	(Liquid)	1,448	(Gallons)/Drums	1	TT
monitoring wells	Gas		Pounds		
(Lab ID# 73TK615)	Sludge		Cu. Yards/Drums/Tons		

Transporter: Shamrock Environmental Corp. Unit Numbers:
PO Box 14987 Greensboro, NC 27415 Phone No: (910) 375 1949
Vehicle License Tag Number(s) LX-1561 EPA ID No: NC 0000 942144
Container: VT-2 Vac Truck

I certify that the specified waste was transferred in a registered (licensed) vehicle to the disposal treatment, storage, or disposal facility named below and was accepted.

[signature] 8-16-95
Pick-up Driver's Signature *Date* *Delivering Driver's Signature* *Date*

Facility: HOH Corp Phone No: 910-727-4644
1701 Vargrave St. Permit No: 34-11TP
Winston-Salem, NC 27107 Contact: David Bryant

Handling Method:

I certify that the Transporter above delivered the specified material to this facility and was accepted and properly handled in the above manner. We are authorized and qualified by the State of NC to handle this material.

Date 8/16/95 Signature [signature]

ORIGINAL - Destination Retain WHITE | COPY 2 - Return to Generator YELLOW | COPY 3 - Transporter Retain PINK | COPY 4 - Generator Retain GOLDENROD

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

March 22, 1996

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-6299

Attn: Ms. Beth Collier
Contract Specialist
Code 02115

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0312
IDW Removal
Operable Unit No. 9 (Site 73)
MCB, Camp Lejeune, North Carolina

Dear Ms. Collier:

This letter requests concurrence in the disposal of investigative-derived waste (IDW) generated during Phase II operations at Operable Unit No. 9 (Site 73), Marine Corps Base, Camp Lejeune, North Carolina. The IDW was generated during the remedial investigation activities conducted from February 20 through March 22, 1996, and is contained in one roll-off box (4 cubic yards).

DISPOSAL

Baker has arranged for the disposal of the following:

- 4 cubic yards of nonhazardous drilling and mud cuttings

Based on the nonhazardous determination of the IDW, the roll-off box contents will be emptied on the outer edges of the site, beyond the tree line, and then graded. The roll-off box will be removed from Site 73. Baker has contracted Parrott-Wolff, Inc. to grade the cuttings emptied from the roll-off box. Baker would like to complete this disposal effort by March 28, 1996; therefore, your concurrence is needed by March 26, 1996. The results of the TCLP analyses are provided in Attachment A.

CONCURRENCE

If LANTDIV concurs with this request for disposal, please sign below and return the signed copy to Mr. Daniel L. Bonk:

_____ _____
Beth Collier Date
Contract Specialist

_____ _____
Lance Laughmiller Date
Naval Technical Representative

Baker appreciates the opportunity to serve LANTDIV on this important project. If you have any questions, please do not hesitate to call me at (412) 269-2063, or Matthew Bartman (Activity Coordinator) at (412) 269-2053.

Sincerely,

BAKER ENVIRONMENTAL, INC.

for

Daniel L. Bonk
Project Manager

DLB/KTW/lq

Attachments

cc: Mr. Neal Paul, IRP Director, MCB Camp Lejeune (w/attachments)
Mr. John Riggs Environmental Control Specialist, MCB Camp Lejeune (w/attachments)
Ms. Lee Ann Rapp, Code 18312 (w/o attachments)
Mr. Lance Laughmiller, Code 18236 (w/o attachments)

ATTACHMENT A

Baker Environmental Inc

73-IDW-101

WO # : C39HN105
LAB # : H6C130108-001
MATRIX: SOLID
DILUTION FACTOR: 1.00

DATE SAMPLED : 3/12/96
TIME SAMPLED : 13:50
DATE RECEIVED: 3/13/96
TCLP DATE: 3/13/96

GC/MS Volatiles

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PARAMETER	RESULT (mg/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Benzene	ND	0.050	SW846 8240A	03/18/96	6078232
Carbon tetrachloride	ND	0.050	SW846 8240A	03/18/96	6078232
Chlorobenzene	ND	10	SW846 8240A	03/18/96	6078232
Chloroform	ND	0.60	SW846 8240A	03/18/96	6078232
1,2-Dichloroethane	ND	0.050	SW846 8240A	03/18/96	6078232
1,1-Dichloroethylene	ND	0.070	SW846 8240A	03/18/96	6078232
Methyl ethyl ketone	ND	20	SW846 8240A	03/18/96	6078232
Tetrachloroethylene	ND	0.070	SW846 8240A	03/18/96	6078232
Trichloroethylene	ND	0.050	SW846 8240A	03/18/96	6078232
Vinyl chloride	ND	0.020	SW846 8240A	03/18/96	6078232

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
1,2-Dichloroethane-d4	115 *	(78 - 114)
Toluene-d8	99	(88 - 110)
Bromofluorobenzene	92	(86 - 114)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT
* SURROGATES OUT OF CONTROL

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.: IDW101

Lab Name: ITAS-KNOXVILLE Contract: _____

Lab Code: ITSTU Case No.: CD108 SAS No.: _____ SDG No.: BAKER

Matrix: (soil/water) WATER Lab Sample ID: C39HN105

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VC39HN

Level: (low/med) LOW Date Received: 03/13/96

% Moisture: not dec. ____ Date Analyzed: 03/18/96

Column (pack/cap) CAP Dilution Factor: 1.0

Number TICs found: 4 CONCENTRATION UNITS: (ug/L or ug/Kg) ~~UG~~/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-09-2	METHANE, DICHLORO-	3.97	0.13	BJ
2. 109-60-4	ACETIC ACID, PROPYL ESTER	8.87	0.08	BJ
3. 637-78-5	PROPANOIC ACID, 1-METHYLETHY	9.80	0.13	BJ
4. 638-11-9	BUTANOIC ACID, 1-METHYLETHYL	11.87	0.21	BJ

Baker Environmental Inc

73-IDW-101

WO # : C39HN106
LAB # : H6C130108-001
MATRIX: SOLID
DILUTION FACTOR: 1.00

DATE SAMPLED : 3/12/96
TIME SAMPLED : 13:50
DATE RECEIVED: 3/13/96
TCLP DATE: 3/14/96

GC/MS Semi-Volatiles

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PARAMETER	RESULT (mg/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
o-Cresol	ND	0.050	SW846 8270A	03/15-03/19/96	607513
m-Cresol & p-Cresol	ND	0.10	SW846 8270A	03/15-03/19/96	607513
1,4-Dichlorobenzene	ND	0.050	SW846 8270A	03/15-03/19/96	607513
2,4-Dinitrotoluene	ND	0.050	SW846 8270A	03/15-03/19/96	607513
Hexachlorobenzene	ND	0.050	SW846 8270A	03/15-03/19/96	607513
Hexachlorobutadiene	ND	0.050	SW846 8270A	03/15-03/19/96	607513
Hexachloroethane	ND	0.050	SW846 8270A	03/15-03/19/96	607513
Nitrobenzene	ND	0.050	SW846 8270A	03/15-03/19/96	607513
Pentachlorophenol	ND	0.25	SW846 8270A	03/15-03/19/96	607513
Pyridine	ND	0.10	SW846 8270A	03/15-03/19/96	607513
2,4,5-Trichlorophenol	ND	0.25	SW846 8270A	03/15-03/19/96	607513
2,4,6-Trichlorophenol	ND	0.050	SW846 8270A	03/15-03/19/96	607513

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
2-Fluorophenol	62	(11 - 121)
Phenol-d5	57	(19 - 125)
Nitrobenzene-d5	77	(49 - 124)
2-Fluorobiphenyl	71	(46 - 120)
2,4,6-Tribromophenol	86	(36 - 144)
Terphenyl-d14	96	(22 - 152)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

DRAFT REPORT

DRAFT REPORT

Baker Environmental Inc

73-IDW-101

WO # : C39HN107
LAB # : H6C130108-001
MATRIX: SOLID
DILUTION FACTOR: 1.00

DATE SAMPLED : 3/12/96
TIME SAMPLED : 13:50
DATE RECEIVED: 3/13/96
TCLP DATE: 3/14/96

GC Semi-Volatiles

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PARAMETER	RESULT (mg/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
Lindane	ND	0.00050	SW846 8080	03/14-03/19/96	6074133
Chlordane (technical)	ND	0.0050	SW846 8080	03/14-03/19/96	6074133
Endrin	ND	0.00050	SW846 8080	03/14-03/19/96	6074133
Heptachlor	ND	0.00050	SW846 8080	03/14-03/19/96	6074133
Heptachlor epoxide	ND	0.00050	SW846 8080	03/14-03/19/96	6074133
Methoxychlor	ND	0.0010	SW846 8080	03/14-03/19/96	6074133
Toxaphene	ND	0.020	SW846 8080	03/14-03/19/96	6074133

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
Tetrachloro-m-xylene	87	(33 - 138)
Decachlorobiphenyl	102	(60 - 150)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

DRAFT REPORT

Baker Environmental Inc

73-IDW-101

WO # : C39HN115
LAB # : E6C130108-001
MATRIX: SOLID
DILUTION FACTOR: 1.00

DATE SAMPLED : 3/12/96
TIME SAMPLED : 13:50
DATE RECEIVED: 3/13/96
TCLP DATE: 3/14/96

GC Semi-Volatiles

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PARAMETER	RESULT (mg/L)	REPORTING LIMIT	METHOD	EXTRACTION-ANALYSIS DATE	QC BATCH
2,4-D	ND	0.50	SW846 8150A	03/18-03/19/96	6078200
2,4,5-TP (Silvex)	ND	0.10	SW846 8150A	03/18-03/19/96	6078200

SURROGATE RECOVERY	%	ACCEPTABLE LIMITS
2,4-Dichlorophenylacetic acid	76	(1 - 171)

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Baker Environmental Inc

73-IDW-101

WO # : C39HN
LAB # : H6C130108-001
MATRIX: SOLID

DATE SAMPLED : 3/12/96
TIME SAMPLED : 13:50
DATE RECEIVED: 3/13/96
TCLP DATE: 3/14/96

- - - - - - - - - - - - - - - - - - REQUESTED METALS - - - - - - - - - - - - - - - - - -

Analysis performed in accordance with USEPA Toxicity Characteristic Leaching Procedure Method 1311 (55 FR 26986)

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
- - TCLP METALS - -						
Silver	ND	0.50	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Arsenic	ND	0.50	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Barium	ND	10.0	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Cadmium	ND	0.10	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Chromium	ND	0.50	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Lead	ND	0.50	mg/L	SW846 6010A	3/15- 3/18/96	6075126
Selenium	ND	0.25	mg/L	SW846 6010A	3/15- 3/18/96	6075126

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

73-IDW-101

Lab Name: QUANTERRA_KNOXVILLE Contract: BAKER_ENVI
Lab Code: ITSTU Case No.: CD108 SAS No.: N/A SDG No.: CD108
Matrix (soil/water): WATER Lab Sample ID: C39HNT
Level (low/med): LOW Date Received: 03/13/96
% Solids: 0.0

Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7440-38-2	Arsenic	500	U		P
7440-39-3	Barium	10000	U		P
7440-43-9	Cadmium	100	U		P
7440-47-3	Chromium	500	U		P
7439-92-1	Lead	500	U		P
7439-97-6	Mercury	2.0	U		CV
7782-49-2	Selenium	250	U		P
7440-22-4	Silver	100	U		P

Color Before: Clarity Before: Texture:
Color After: Clarity After: Artifacts:

Comments:

Quanterra Inc - Knoxville Lab

73-IDW-101

WO #: A64E0
LAB #: C6C140008-001
MATRIX: SOLID

DATE SAMPLED: 3/12/96
TIME SAMPLED: 13:50
DATE RECEIVED: 3/14/96

INORGANIC ANALYTICAL REPORT

PARAMETER	RESULT	REPORTING LIMIT	UNIT	METHOD	PREPARATION - ANALYSIS DATE	QC BATCH
Flash Point Closed Cup	>200		deg F	SW846 1010	3/14/96	6074019
pH Non-Aqueous	8.8		su	SW846 9045	3/15/96	6075015
Reactive Cyanide	ND	250	mg/kg	SW846 7.3.3.2	3/14- 3/15/96	6075014
Sulfide Reactive	ND	500	mg/kg	SW846 7.3.4.2	3/14- 3/15/96	6075010

NOTE: AS RECEIVED
ND NOT DETECTED AT THE STATED REPORTING LIMIT

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

April 30, 1996

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Katherine Landman
Navy Technical Representative
Code 18232

Re: Contract N62470-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0312
Disposal of Investigation Derived Waste
Operable Unit No. 9 (Site 73)
MCB, Camp Lejeune, North Carolina

Dear Ms. Landman:

The purpose of this letter is to solicit approval for the disposal of investigation derived waste (IDW) generated during the CTO-0312 field investigation. Approximately 5,500 gallons of liquid (purge water, development water, and decontamination fluids) were generated during the field investigation at Site 73. Upon completion of the sampling program, a composite liquid sample was obtained from the on-site tanker to determine the proper IDW disposal alternative. The liquid sample was analyzed for full target compound list (TCL) organics (i.e., volatiles, semivolatiles, PCBs, and pesticides) and target analyte list (TAL) metals.

Analytical results (attached) indicate that the liquid sample is non-hazardous. In light of these results, Baker proposes to empty the contents of the tanker onto the ground surface at Site 73. The proposed disposal alternative is consistent with LANTDIV IDW Management Plans and with the USEPA's Guide to Management of IDW. Pending LANTDIV's concurrence, Baker will discuss the proposed disposal alternative with personnel from the Environmental Management Department at MCB, Camp Lejeune.

Baker appreciates the opportunity to serve LANTDIV on this important project. If you have any questions, please do not hesitate to contact me at (412) 269-2063 or Mr. Matthew Bartman (Activity Coordinator) at (412) 269-2053.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Daniel L. Bonk, P.E.
Project Manager

DLB/lq

Attachment: IDW Analytical Results

cc: Ms. Lee Anne Rapp, Code 18312 (Letter only)
Ms. Beth Collier, Code 02115 (Letter only)
Mr. Neal Paul, MCB Camp Lejeune

IDW ANALYTICAL RESULTS

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

IDWAQDL

Lab Name: OES-KNOXVILLE Contract: 39984

Lab Code: ISTSU Case No.: CR103 SAS No.: _____ SDG No.: BAKER

Matrix: (soil/water) WATER Lab Sample ID: C3F6C201

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: VC3F6CD

Level: (low/med) LOW Date Received: 03/27/96

% Moisture: not dec. _____ Date Analyzed: 03/28/96

GC Column: RTX624 ID: 0.530 (mm) Dilution Factor: 5.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl Chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene Chloride	21	BDJ
67-64-1	Acetone	560	D
75-15-0	Carbon Disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
540-59-0	1,2-Dichloroethene (total)	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon Tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-Pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylene (total)	50	U

1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

IDWAQ

Lab Name: QES-KNOXVILLE Contract: 39984

Lab Code: ISTSU Case No.: CR103 SAS No.: _____ SDG No.: 73IDWA

Matrix: (soil/water) WATER Lab Sample ID: C3F6C102

Sample wt/vol: 1000 (g/mL) ML Lab File ID: C3F6C

Level: (low/med) LOW Date Received: 03/27/96

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/28/96

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/08/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-Di-n-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

IDWAQ

Lab Name: QES-KNOXVILLE Contract: 39984

Lab Code: ISTSU Case No.: CR103 SAS No.: _____ SDG No.: 73IDWA

Matrix: (soil/water) WATER Lab Sample ID: C3F6C102

Sample wt/vol: 1000 (g/mL) ML Lab File ID: C3F6C

Level: (low/med) LOW Date Received: 03/27/96

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/28/96

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/08/96

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-n-Octyl Phthalate	10	U
205-99-2	Benzo(b)Fluoranthene	10	U
207-08-9	Benzo(k)Fluoranthene	10	U
50-32-8	Benzo(a)Pyrene	10	U
193-39-5	Indeno(1,2,3-cd)Pyrene	10	U
53-70-3	Dibenz(a,h)Anthracene	10	U
191-24-2	Benzo(g,h,i)Perylene	10	U

(1) - Cannot be separated from Diphenylamine

1D

PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

IDWAQ

Lab Name: ITAS-KNOXVILLE Contract: 14257

Lab Code: _____ Case No.: CQ103 SAS No.: _____ SDG No.: CLJ06

Matrix: (soil/water) WATER Lab Sample ID: C3F6C-103

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) ___ Date Received: 03/26/96

Extraction: (SepF/Cont/Sonc) CONT Date Extracted: 03/28/96

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 04/05/96

Injection Volume: 1.00 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

IDWAQ

Lab Name: QUANTERRA_KNOXVILLE Contract: BAKER
Lab Code: ITSTU Case No.: CR103 SAS No.: SDG No.: N/A
Matrix (soil/water): WATER Lab Sample ID: C3F6C
Level (low/med): LOW Date Received: 03/27/96
% Solids: 0.0

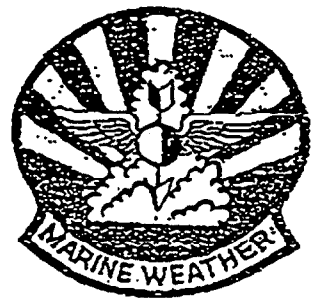
Concentration Units (ug/L or mg/kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	5830			P
7440-36-0	Antimony	26.7	U		P
7440-38-2	Arsenic	3.5	B		P
7440-39-3	Barium	26.1	B		P
7440-41-7	Beryllium	0.55	B		P
7440-43-9	Cadmium	2.8	U		P
7440-70-2	Calcium	28100			P
7440-47-3	Chromium	10.2			P
7440-48-4	Cobalt	12.5	U		P
7440-50-8	Copper	8.1	B		P
7439-89-6	Iron	2320			P
7439-92-1	Lead	4.0			P
7439-95-4	Magnesium	1960	B		P
7439-96-5	Manganese	15.4			P
7439-97-6	Mercury	0.20	U		CV
7440-02-0	Nickel	8.0	U		P
7440-09-7	Potassium	8720			P
7782-49-2	Selenium	1.8	U		P
7440-22-4	Silver	3.4	U		P
7440-23-5	Sodium	68100			P
7440-28-0	Thallium	12.8			P
7440-62-2	Vanadium	31.6	B		P
7440-66-6	Zinc	43.7			P

Color Before: COLORLESS Clarity Before: CLEAR Texture: N/A
Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:
COMPLETE_CLIENT_ID_NO._IS_73-IDW-AQ.

APPENDIX H
RAINFALL DATA FROM MCAS NEW RIVER



Weather Service
H&HS MCAS New River
Jacksonville, NC 28545-1002
(910)451-6828/6968 DSN 484-6828/6968
Fax: (910)451-6351 DSN 484-6351

FAX TRANSMISSION COVER SHEET

Date: 950911

To: JAMES CULP

Fax: (412) 269-2001

Subject: RAINFALL DATA

Sender: CPL LYNN, WEATHER ADMIN CLERK

YOU SHOULD RECEIVE [4] PAGE(S), INCLUDING THIS COVER SHEET. IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL (910)451-6828/6968 DSN 484-6828/6968

NOTES:

[redacted]

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL LYNN Month: JUNE Year: 1995

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	86	64	75	0.00		SE	5	14	0.00	0.00	0.00	24.00	69	84
2	85	70	77.5	0.05	R	S	4	14	1.63	0.00	0.00	24.00	80	87
3	79	71	75	1.35	R	SW	3	14	1.07	0.00	3.53	20.47	83	93
4	89	71	80	0.00		SW	3	13	0.00	0.00	0.00	24.00	78	90
5	78	72	75	2.54	R	SE	7	22	0.00	0.00	7.47	16.53	86	93
6	79	71	75	1.87	R	W	10	30	1.08	0.00	11.30	12.70	86	90
7	94	68	81	0.44	R	WSW	6	34	1.87	0.00	3.32	20.68	77	94
8	96	71	83.5	0.00		W	6	28	0.00	0.00	0.00	24.00	66	87
9	96	71	83.5	0.28	R	NNW	6	22	2.67	0.00	0.20	23.80	66	85
10	88	71	79.5	0.15	R	SE	5	14	0.00	0.00	0.00	24.00	77	87
11	89	73	81	0.01	R	S	6	18	1.18	0.00	4.40	19.60	77	90
12	88	68	78	0.54	R	S	7	27	8.95	0.00	0.47	23.53	80	87
13	74	62	68	T	L	N	8	21	0.00	0.00	5.00	19.00	74	87
14	83	56	69.5	0.00		W	6	21	0.00	0.00	0.00	24.00	58	81
15	88	58	73	0.00		SE	3	14	0.00	0.00	0.00	24.00	59	80
16	85	64	74.5	0.00		NE	6	13	0.00	0.00	0.00	24.00	58	81
17	84	62	73	0.17	R	N	5	23	0.75	0.00	0.00	24.00	64	81
18	77	68	72.5	0.79	R	NE	6	18	0.50	0.00	0.00	24.00	75	87
19	83	68	75.5	0.55	R	E	8	23	3.48	0.00	8.75	15.25	79	89
20	85	68	76.5	0.00		SW	5	14	0.00	0.00	0.00	24.00	73	88
21	78	71	74.5	0.13	R	SE	4	15	0.00	0.00	0.62	23.38	83	87
22	80	71	75.5	0.02	R,L	E	5	17	0.00	0.30	5.52	18.18	83	90
23	90	71	80.5	T	L	SSW	3	13	0.00	0.00	0.00	24.00	75	91
24	90	71	80.5	0.05	R	SE	4	13	0.00	1.23	1.27	21.50	78	94
25	90	73	81.5	T	R	SW	3	16	1.75	0.00	4.00	20.00	78	90
26	91	72	81.5	0.03	R	S	4	16	1.50	0.00	0.00	24.00	76	94
27	90	71	80.5	0.15	R	VRB	4	28	2.33	2.84	2.88	18.28	82	91
28	87	73	80	0.42	R	E	5	16	1.58	0.00	3.43	20.57	78	90
29	86	73	79.5	T	R	SE	5	10	0.00	0.00	0.00	24.00	77	87
30	90	69	79.5	0.00		E	3	7	0.00	0.00	0.00	24.00	69	87
31			ERR											

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	96	56	9.54			34	30.34	4.37	62.16	653.47		94
Average	86	69	0.32	SSE	5			0.15	2.07	21.08	74.80	

* : R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL LYNN Month: JULY Year: 1995

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	90	71	80.5	0.21	R	SSW	5	22	2.00	0.00	0.48	23.52	77	87
2	88	72	80	0.31	R	NW	3	14	0.00	0.00	2.42	21.58	74	87
3	89	73	81	0.20	R	SE	3	15	4.85	0.00	0.00	24.00	79	87
4	91	72	81.5	0.00		E	4	16	0.42	0.00	0.00	24.00	75	90
5	91	73	82	0.20	R	SE	4	18	1.30	0.00	0.00	24.00	73	90
6	91	71	81	T	R	E	5	26	0.32	0.00	0.00	24.00	69	84
7	87	70	78.5	0.19	R	SW	4	28	1.08	0.00	0.55	23.45	75	84
8	93	72	82.5	0.00		W	5	14	0.00	0.00	0.00	24.00	68	87
9	93	71	82	0.00		NW	3	12	0.00	0.00	0.00	24.00	69	87
10	91	70	80.5	0.01	R	E	4	25	3.52	0.00	0.00	24.00	77	87
11	93	71	82	0.06	R	S	4	16	1.83	0.00	0.30	23.70	78	87
12	90	74	82	0.00		E	5	17	0.00	0.00	0.00	24.00	71	88
13	90	72	81	0.05	R	E	3	19	0.00	0.00	2.00	22.00	75	87
14	91	73	82	0.28	R	S	5	19	0.92	0.00	0.00	24.00	77	87
15	94	74	84	0.00		SSW	7	15	0.00	0.00	0.00	24.00	74	91
16	93	76	84.5	T	R	S	4	15	0.00	0.00	0.00	24.00	79	88
17	91	77	84	0.53	R	S	4	16	1.15	0.00	0.50	23.50	77	87
18	91	74	82.5	0.00		SW	5	17	3.50	0.00	0.00	24.00	78	88
19	91	73	82	0.02	R	SW	1	6	0.00	0.00	0.00	24.00	78	87
20	97	74	85.5	0.00		S	2	16	0.00	0.00	0.00	24.00	72	87
21	93	75	84	0.05	R	SSW	6	22	2.68	0.00	0.00	24.00	76	87
22	94	74	84	0.26	R	SW	5	16	3.00	0.00	0.00	24.00	76	88
23	97	79	88	0.00		SW	6	23	0.00	0.00	2.00	22.00	72	90
24	97	72	84.5	0.00		SW	6	18	0.60	0.00	0.00	24.00	72	85
25	93	73	83	0.00		S	8	21	0.00	0.00	0.00	24.00	73	87
26	94	78	86	0.00		SW	7	24	0.00	0.00	0.00	24.00	76	87
27	91	78	84.5	T	R	S	6	19	0.48	0.00	0.00	24.00	75	85
28	91	75	83	0.00		S	5	18	0.00	0.00	0.00	24.00	72	87
29	93	74	83.5	0.00		S	6	17	0.00	0.00	0.00	24.00	74	88
30	95	74	84.5	0.00		SE	4	17	0.00	0.00	0.00	24.00	70	87
31	93	76	84.5	T	R	SE	3	15	0.00	0.00	0.00	24.00	71	84

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	97	70	2.37			28	27.65	0.00	8.25	735.75		91
Average	92	74	0.08	SSW	5			0.00	0.27	23.73	74.26	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL LYNN Month: AUGUST Year: 1995

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	94	74	84	0.00		SE	5	14	0.00	0.00	0.00	24.00	66	91
2	92	75	83.5	T	R	SSE	6	24	0.85	0.00	0.00	24.00	70	84
3	93	76	84.5	0.03	R	ESE	6	20	0.00	0.00	0.00	24.00	75	84
4	93	74	83.5	0.00		SSE	5	16	0.00	0.00	0.00	24.00	72	87
5	95	75	85	0.00		SW	6	18	0.00	0.00	0.00	24.00	72	87
6	98	78	88	0.17	R	SW	8	27	0.00	0.00	0.00	24.00	67	86
7	86	69	77.5	0.00		NE	7	18	0.00	0.00	0.00	24.00	70	88
8	85	65	75	0.00		NNE	6	18	0.00	0.00	0.00	24.00	68	79
9	88	71	79.5	2.91	R	NNE	5	18	1.50	0.00	6.37	17.63	83	90
10	86	74	80	0.06	R,L	NE	6	23	0.92	0.00	1.13	22.87	80	90
11	89	71	80	0.02	L	NNW	9	19	0.00	0.00	5.02	18.98	73	87
12	95	68	81.5	0.00		SW	4	13	0.00	0.00	0.00	24.00	71	87
13	100	75	87.5	0.00		SW	4	12	0.00	0.00	0.00	24.00	73	87
14	95	77	86	0.00		ESE	4	13	0.00	0.00	0.32	23.68	71	87
15	92	72	82	0.00		NNE	7	19	0.00	0.00	0.00	24.00	59	91
16	91	70	80.5	T	R	NW	10	26	0.00	0.00	4.15	19.85	68	89
17	97	77	87	0.00		NW	7	20	0.00	0.00	0.00	24.00	65	85
18	96	75	85.5	0.00		N	5	17	0.00	0.00	0.00	24.00	65	88
19	99	69	79	0.00		NW	9	18	0.00	0.00	0.00	24.00	59	75
20	87	63	75	0.00		NNW	5	16	0.00	0.00	0.00	24.00	66	84
21	89	65	77	0.00		SW	4	19	0.00	0.00	0.00	24.00	67	89
22	92	69	80.5	0.00		S	5	14	0.00	0.00	0.00	24.00	70	89
23	88	74	81	0.03	R	SE	6	20	0.00	0.00	1.08	22.92	77	90
24	92	75	83.5	0.00		ESE	8	18	0.00	0.00	0.00	24.00	73	87
25	91	74	82.5	0.07	R	SE	6	18	0.00	0.00	0.00	24.00	74	90
26	79	75	77	1.96	R	E	8	21	0.00	0.00	3.20	20.80	86	90
27	83	75	79	1.87	R	SSE	6	20	3.37	0.00	2.32	21.68	83	90
28	82	72	77	0.35	R,L	NNE	8	23	0.00	0.00	7.33	16.67	84	94
29	88	70	79	0.00		NNE	7	19	0.00	0.00	0.00	24.00	70	84
30	89	67	78	0.00		NE	5	14	0.00	0.00	0.00	24.00	66	84
31	89	69	79	0.00		S	4	14	0.00	0.00	0.00	24.00	72	87

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	100	63	7.49			27	6.64	0.00	30.92	713.08		94
Average	90	72	0.24	E	6			0.00	1.00	23.00	71.52	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL HAYES Month: JANUARY Year: 1996

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	58	50	54	0.16	R, L	NE	3	7	0.00	0.00	24.00	0.00	87	100
2	65	49	57	T	L	SW	4	6	0.00	0.00	21.00	3.00	84	90
3	68	49	58.5	0.00		SW	8	14	0.00	0.00	0.00	24.00	60	87
4	49	29	39	T	R	SW	3	17	0.00	0.00	0.00	24.00	57	96
5	53	27	40	0.00		NW	7	17	0.00	0.00	0.00	24.00	71	100
6	46	32	39	0.08	R	NE	10	21	0.00	0.00	1.18	22.82	76	100
7	44	25	34.5	0.48	R, L	WNW	10	31	0.00	0.00	17.00	7.00	95	100
8	35	24	29.5	T	S	WNW	15	34	0.00	0.00	1.33	22.67	62	89
9	49	22	35.5	0.00		SW	7	20	0.00	0.00	0.00	24.00	48	77
10	46	31	38.5	0.00		NW	9	24	0.00	0.00	0.00	24.00	57	82
11	37	24	30.5	0.00		NE	8	15	0.00	0.00	1.00	23.00	65	92
12	56	28	42	0.67	R,TRW	WNW	13	24	0.65	0.00	4.65	19.35	94	100
13	50	28	39	0.00		NW	7	16	0.00	0.00	0.00	24.00	84	100
14	62	30	46	0.00		SW	5	13	0.00	0.00	0.00	24.00	80	100
15	69	44	56.5	0.00		SW	8	17	0.00	0.00	0.00	24.00	74	96
16	58	38	48	0.00		NW	7	14	0.00	0.00	2.15	21.85	93	100
17	65	35	50	0.00		N	5	12	0.00	0.18	4.22	19.60	94	100
18	67	47	57	0.98	R	SE	8	24	0.00	0.00	11.02	12.98	97	100
19	69	36	52.5	0.32	R	S	14	39	0.00	0.80	4.45	18.75	83	100
20	41	26	33.5	0.00		NE	10	18	0.00	0.00	0.00	24.00	71	89
21	45	32	38.5	0.04	R	N	9	19	0.00	0.00	0.00	24.00	92	100
22	44	29	36.5	0.00		NNE	8	16	0.00	0.00	0.00	24.00	85	100
23	64	33	48.5	0.00		E	5	13	0.00	0.00	0.00	24.00	76	96
24	69	47	58	0.14	R	S	10	32	0.00	0.00	0.00	24.00	73	90
25	48	35	41.5	0.00		N	9	21	0.00	0.00	0.00	24.00	49	72
26	63	32	47.5	T	R	E	9	22	0.00	0.00	0.00	24.00	52	85
27	65	43	54	1.17	R	S	14	31	0.00	0.00	1.60	22.40	68	97
28	46	31	38.5	0.00		NW	8	23	0.00	0.00	0.00	24.00	42	66
29	56	36	46	0.01	R	N	6	12	0.00	0.00	0.00	24.00	52	93
30	49	41	45	0.02	R	NNE	3	11	0.00	0.00	6.43	17.57	88	96
31	56	37	46.5	0.46	R,L	NNE	8	19	0.00	0.00	10.32	13.68	91	97

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	69	22	4.53			39	0.65	0.98	110.35	632.67		100
Average	55	35	0.15	SW	8			0.03	3.56	20.41	74.19	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL

ZL - FREEZING DRIZZLE
ZR
IP -

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▸ 5

To Jim Culp	From Paul Humphrey
Dept./Agency Baker	Phone # 910-451-5063
Fax # 412-269-2002	Fax # 910-451-5[illegible]997

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL HAYES Month: FEBUARY Year: 1996

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	39	34	36.5			NE	9	18				24.00	67	75
2	37	33	35	0.57	R,L	NE	9	19	0.50		19.00	5.00	85	96
3	35	22	28.5	0.29	ZR,ZL,S	NNE	12	25			15.00	9.00	90	92
4	23	15	19	0.06	S	N	10	21			1.00	23.00	79	88
5	29	9	19			NW	5	10				24.00	62	84
6	40	16	28			N	4	14				24.00	61	92
7	50	21	35.5			E	4	10				24.00	70	92
8	65	32	48.5	T	R	SW	7	21				24.00	47	76
9	68	37	52.5	0.01	R	NW	13	30				24.00	52	86
10	65	30	47.5			SW	6	14				24.00	52	92
11	75	45	60			W	12	34				24.00	57	86
12	46	34	40			WNW	10	25				24.00	43	61
13	45	25	35			NW	8	24				24.00	41	62
14	61	42	51.5			SW	10	26				24.00	41	62
15	63	44	53.5	0.06	R	WSW	7	16				24.00	58	86
16	47	29	38	0.11	R,L,S	NW	11	25			8.50	15.50	89	96
17	42	24	33	T	S	NW	12	21				24.00	49	85
18	51	28	39.5			W	7	19				24.00	54	96
19	64	27	45.5			ESE	4	11				24.00	59	92
20	63	39	51	0.35	R	SE	5	20	1.18		3.10	20.90	76	96
21	69	47	58			NW	6	12		5.68	12.00	6.32	88	100
22	71	44	57.5	T	R	SE	4	11		2.50	2.17	19.33	84	100
23	75	47	61			SSE	5	13		2.52	5.90	15.58	85	100
24	76	41	58.5			W	9	25			5.00	19.00	58	100
25	75	31	53			SW	5	14				24.00	46	96
26	80	48	64			SW	7	16				24.00	35	75
27	75	51	63			E	5	12				24.00	73	96
28	78	59	68.5	0.02	R	SW	10	25				24.00	81	90
29	61	40	50.5			N	9	18				24.00	37	61
30			ERR											
31			ERR											

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	80	9	1.47			34	1.68	10.70	71.67	613.63		100
Average	58	34	0.13	SSW	8			3.57	7.96	21.16	59.69	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL HAYES Month: MARCH Year: 1996

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	43	39	41	0.37	R,S	NE	8	16			9.78	14.22	61	73
2	49	40	44.5	0.39	R	NW	7	14			14.00	10.00	47	70
3	62	39	50.5			NE	9	24				24.00	38	62
4	53	30	41.5			E	7	14				24.00	55	82
5	71	34	52.5	0.03	R	SW	6	28				24.00	48	92
6	73	61	67	0.05	R	SW	9	25				24.00	78	93
7	70	59	64.5	1.34	R	SW	9	16	1.37		6.93	17.07	95	96
8	59	27	43	0.46	R,S	NW	12	28			0.85	23.15	55	96
9	38	22	30			NE	9	22				24.00	42	60
10	44	24	34			NE	13	25				24.00	60	78
11	46	31	38.5	T	R	N	16	31				24.00	65	81
12	59	30	44.5			NW	12	28				24.00	46	81
13	67	25	46			W	4	16				24.00	50	92
14	74	38	56			SW	8	19				24.00	39	70
15	79	54	66.5	0.26	R	WSW	9	31	0.85		0.13	23.87	43	86
16	65	49	57	0.21	R	SE	9	19	0.70		0.13	23.87	74	96
17	61	54	57.5	0.44	R	NE	4	22	2.00		15.18	8.82	95	96
18	54	50	52	0.08	R	NE	7	16			24.00	0.00	95	100
19	72	46	59	T	R	SW	14	38		1.88	6.62	15.50	68	96
20	54	40	47			SW	14	29				24.00	44	52
21	54	35	44.5			NW	12	25				24.00	48	67
22	55	31	43			NW	11	25				24.00	41	66
23	60	26	43			N	8	24				24.00	48	88
24	64	27	45.5			SSE	5	15				24.00	49	88
25	74	39	56.5			S	8	25				24.00	57	80
26	72	57	64.5	0.05	R	SW	5	13				24.00	85	96
27	59	42	50.5	0.04	R	NE	13	28				24.00	59	93
28	66	42	54	0.62	R,L	NNW	10	35	1.33		17.62	6.38	94	100
29	57	41	49	0.01	R	NW	8	18			11.15	12.85	85	96
30	57	40	48.5			NE	7	19			4.00	20.00	76	89
31	57	45	51	0.42	R,L	NE	7	14			12.37	11.63	91	100

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	79	22	4.77			38	6.25	1.88	122.76	619.36		100
Average	60	39	0.28	SSE	9			1.88	9.44	19.98	62.29	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL HAYES Month: APRIL Year: 1996

	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	69	53	61	0.61	R	W	7	19	3.65	4.00	7.40	12.60	87	100
2	61	39	50	T	R	NW	12	32				24.00	59	92
3	73	36	54.5			SW	6	21				24.00	55	96
4	81	55	68			SW	10	22				24.00	55	74
5	79	51	65			W	9	20				24.00	65	86
6	54	43	48.5	0.33	R	NNE	10	20			8.55	15.45	80	100
7	58	37	47.5	0.03	R	NW	9	23			5.02	18.98	72	100
8	60	40	50	T	R	E	7	15				24.00	54	89
9	57	37	47			NW	10	27			3.33	20.67	68	100
10	56	31	43.5			NW	10	28				24.00	51	78
11	72	34	53			W	10	26				24.00	59	78
12	83	49	66			WSW	9	22				24.00	55	74
13	82	55	68.5	T	R	SW	10	27				24.00	58	80
14	83	56	69.5	0.13	R	W	8	22				24.00	70	93
15	77	56	66.5	T	R	SSE	10	29		2.27	3.01	18.72	85	100
16	69	47	58	0.14	R	W	12	31				24.00	65	96
17	69	41	55			NW	7	22				24.00	65	93
18	79	41	60			SW	8	19			0.65	23.35	69	100
19	76	58	67	T	R	SW	8	23				24.00	68	80
20	79	64	71.5	T	R	SW	10	25				24.00	75	87
21	85	64	74.5			SW	7	20				24.00	79	93
22	83	62	72.5			SW	8	19				24.00	82	100
23	82	62	72	0.30	R	SW	9	22			0.27	23.73	76	96
24	69	51	60	0.01	R	NW	10	24				24.00	65	96
25	73	47	60			S	7	22				24.00	72	93
26	82	58	70	0.43	R	SW	10	38				24.00	82	100
27	76	54	65			NW	7	17				24.00	75	100
28	76	54	65			ESE	9	21				24.00	78	100
29	82	65	73.5	0.28	R	SW	8	23			0.38	23.62	85	93
30	75	56	65.5	0.80	R	SW	9	33			1.62	22.38	90	100
31			ERR											

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	85	31	3.06			38	3.65	6.27	30.23	683.50		100
Average	73	50	0.19	WSW	9			3.14	3.36	22.78	69.97	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

Weather Service Section

MCAS New River
Jacksonville, NC

Compiler: CPL LYNN Month: MAY Year: 1996

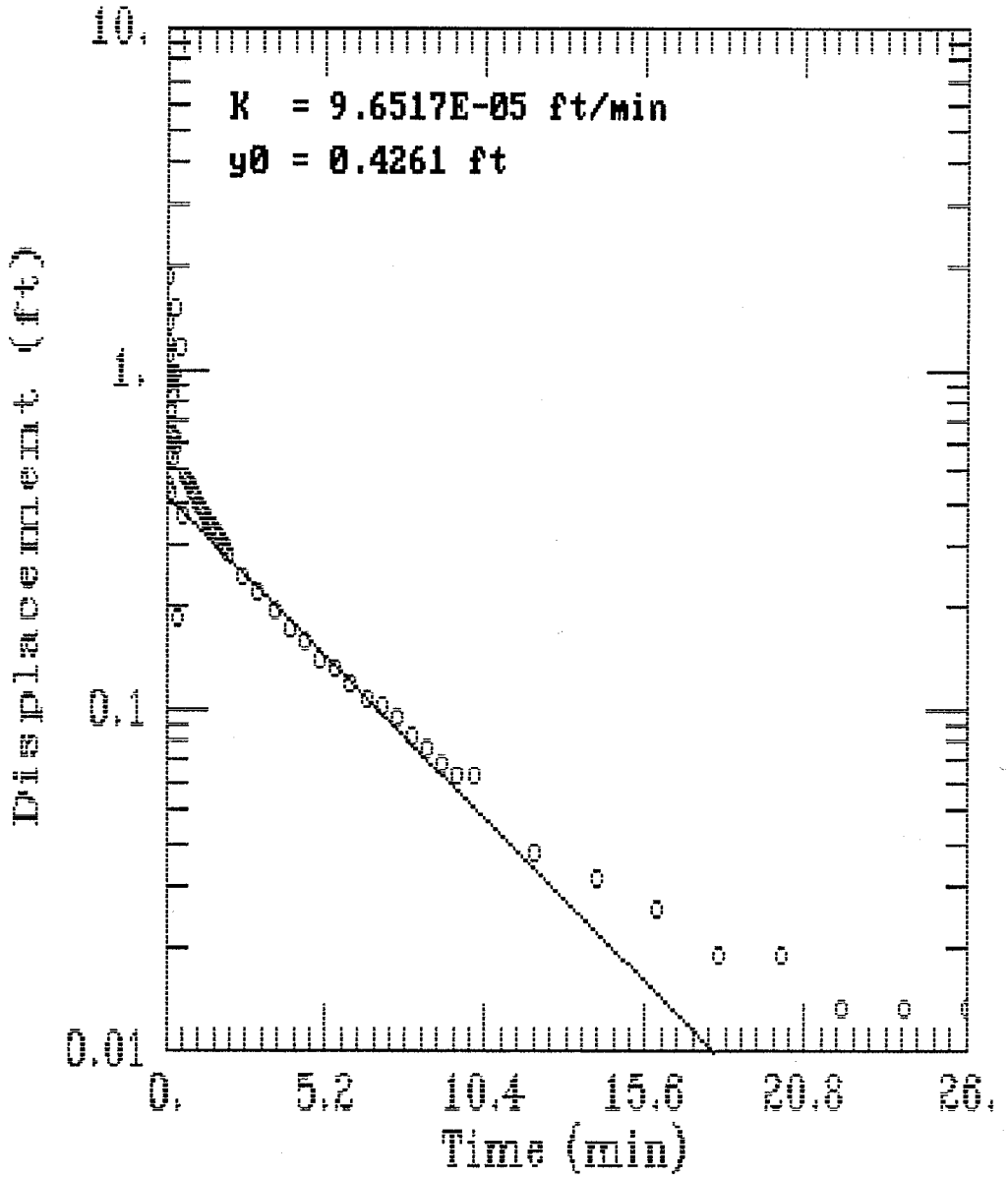
	Temperatures			Precip.		Wind Summary			TRW	Field Summary			RH%	
	High	Low	Avg	Amt	Type*	Avg Dir	Avg Speed	Peak Speed	Hours	Hrs BM	Hrs IFR	Hrs VFR	Avg	High
1	73	48	60.5	0.00		VRB	6	17		0.00	0.00	24.00	73	93
2	78	50	64	0.00		SE	7	16		0.00	0.00	24.00	72	96
3	80	50	65	0.00		SW	5	19		0.00	0.00	24.00	78	100
4	86	62	74	0.00		SW	6	18		0.00	0.00	24.00	77	96
5	86	68	77	0.00		S	7	15		0.00	0.00	24.00	82	97
6	90	64	77	0.45	R	W	7	24	3.03	0.00	0.68	23.32	76	93
7	64	57	60.5	T	L,R	NNE	7	21		0.00	15.33	8.67	91	100
8	82	57	69.5	T	L	W	7	17		0.00	9.50	14.50	90	100
9	89	64	76.5	0.00		W	8	20		0.00	0.00	24.00	78	97
10	88	63	75.5	0.00		S	5	15		0.00	0.00	24.00	81	100
11	86	66	76	1.08	R	SW	8	24	3.18	0.00	0.42	23.58	72	100
12	73	51	62	0.19	R	NNW	10	22	0.28	0.00	0.78	23.22	71	100
13	62	51	56.5	0.02	R	NNE	6	15		0.00	0.00	24.00	72	96
14	68	49	58.5	0.00		NE	7	21		0.00	0.00	24.00	69	96
15	70	48	59	0.03	R	NE	6	15		0.00	0.00	24.00	81	100
16	72	62	67	0.09	R	SW	3	11		0.00	0.50	23.50	94	100
17	87	67	77	T	R	SW	6	14		0.00	0.00	24.00	85	100
18	93	68	80.5	0.00		SW	7	12		0.00	0.00	24.00	81	100
19	95	69	82	0.00		SW	6	13		0.00	0.00	24.00	79	97
20	93	68	80.5	0.00		SW	7	14		0.00	0.00	24.00	87	100
21	90	71	80.5	T	R	SW	7	20		0.00	0.00	24.00	88	100
22	85	69	77	T	R	NE	8	20		0.00	0.00	24.00	92	100
23	85	60	72.5	0.00		NE	6	15		0.00	0.00	24.00	81	100
24	87	61	74	0.00		SW	4	15		0.00	0.00	24.00	89	100
25	86	66	76	0.00		N	8	17		0.00	0.00	24.00	89	97
26	80	61	70.5	0.04	R	SE	6	11	0.27	0.00	0.00	24.00	87	100
27	90	69	79.5	0.00		W	7	15		0.00	2.00	22.00	89	100
28	84	69	76.5	0.83	R	VRB	6	19	0.53	0.00	4.92	19.08	88	100
29	82	66	74	0.10	R, L	SE	6	16	1.72	0.00	9.72	14.28	87	97
30	75	57	66	0.11	R, L	NE	12	24	1.50	0.00	5.92	18.08	67	97
31	76	51	63.5	0.00		NE	7	20		0.00	0.00	24.00	58	86

	Temp		Precip.	Winds			TRW	BM	IFR	VFR	RH%	
	High	Low	Amount	Avg Dir.	Avg Spd.	Peak Spd.	Total Hrs.	Total Hrs.	Total Hrs.	Total Hrs.	Avg.	High
Absolute	95	48	2.94			24	10.51	0.00	49.77	694.23		100
Average	82	61	0.09	SW	7			0.00	1.61	22.39	80.77	

*: R - RAIN OR RAIN SHOWERS
L - DRIZZLE
S - SNOW OR SNOW SHOWERS
H - HAIL
ZL - FREEZING DRIZZLE
ZR - FREEZING RAIN
IP - ICE PELLETS

APPENDIX I
HYDRAULIC CONDUCTIVITY DATA

SITE 73 - 73MW-01A FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 15:05:46

==

TEST DESCRIPTION

Data set........... A:\73mw1af.dat
Data set title..... SITE 73 - 73MW-01A FALLING HEAD TEST

Knowns and Constants:
- No. of data points.................. 69
- Radius of well casing............... 0.083
- Radius of well...................... 0.875
- Aquifer saturated thickness......... 12.97
- Well screen length.................. 15
- Static height of water in well...... 12.97
- Log(Re/Rw).......................... 2.002
- A, B, C............................. 0.000, 0.000, 1.571

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	9.6517E-005	+/-	2.7541E-006
y0 =	4.2614E-001	+/-	1.0695E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 38
- Number of estimated parameters.... 2
- Degrees of freedom................ 36
- Residual mean..................... 0.0224
- Residual standard deviation....... 0.04885
- Residual variance................. 0.002387

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.75	0.452	0.36405	0.087953	1
0.8333	0.433	0.35773	0.075265	1
0.9166	0.421	0.35153	0.069468	1
1	0.402	0.34543	0.056571	1
1.0833	0.395	0.33944	0.055561	1

1.1666	0.383	0.33355	0.049447	1
1.25	0.37	0.32776	0.042238	1
1.3333	0.352	0.32208	0.029921	1
1.4166	0.345	0.31649	0.028506	1
1.5	0.339	0.311	0.028001	1
1.5833	0.333	0.30561	0.027393	1
1.6666	0.32	0.30031	0.019693	1
1.75	0.314	0.29509	0.018906	1
1.8333	0.301	0.28998	0.011023	1
1.9166	0.301	0.28495	0.016051	1
2	0.289	0.28	0.0089982	6
2.5	0.245	0.25209	-0.0070937	6
3	0.22	0.22697	-0.0069672	6
3.5	0.195	0.20435	-0.0093451	6
4	0.17	0.18398	-0.013978	6
4.5	0.157	0.16564	-0.0086405	6
5	0.138	0.14913	-0.011131	6
5.5	0.132	0.13427	-0.0022669	6
6	0.12	0.12088	-0.00088436	6
6.5	0.107	0.10884	-0.0018357	6
7	0.101	0.097988	0.0030121	6
7.5	0.095	0.088221	0.0067787	6
8	0.082	0.079428	0.0025718	6
8.5	0.076	0.071512	0.0044885	6
9	0.069	0.064384	0.0046161	6
9.5	0.063	0.057967	0.0050333	6
10	0.063	0.052189	0.010811	6
12	0.038	0.034291	0.0037087	6
14	0.032	0.022531	0.0094686	6
16	0.026	0.014804	0.011196	6
18	0.019	0.0097274	0.0092726	6
20	0.019	0.0063915	0.012609	6
22	0.013	0.0041996	0.0088004	6

==

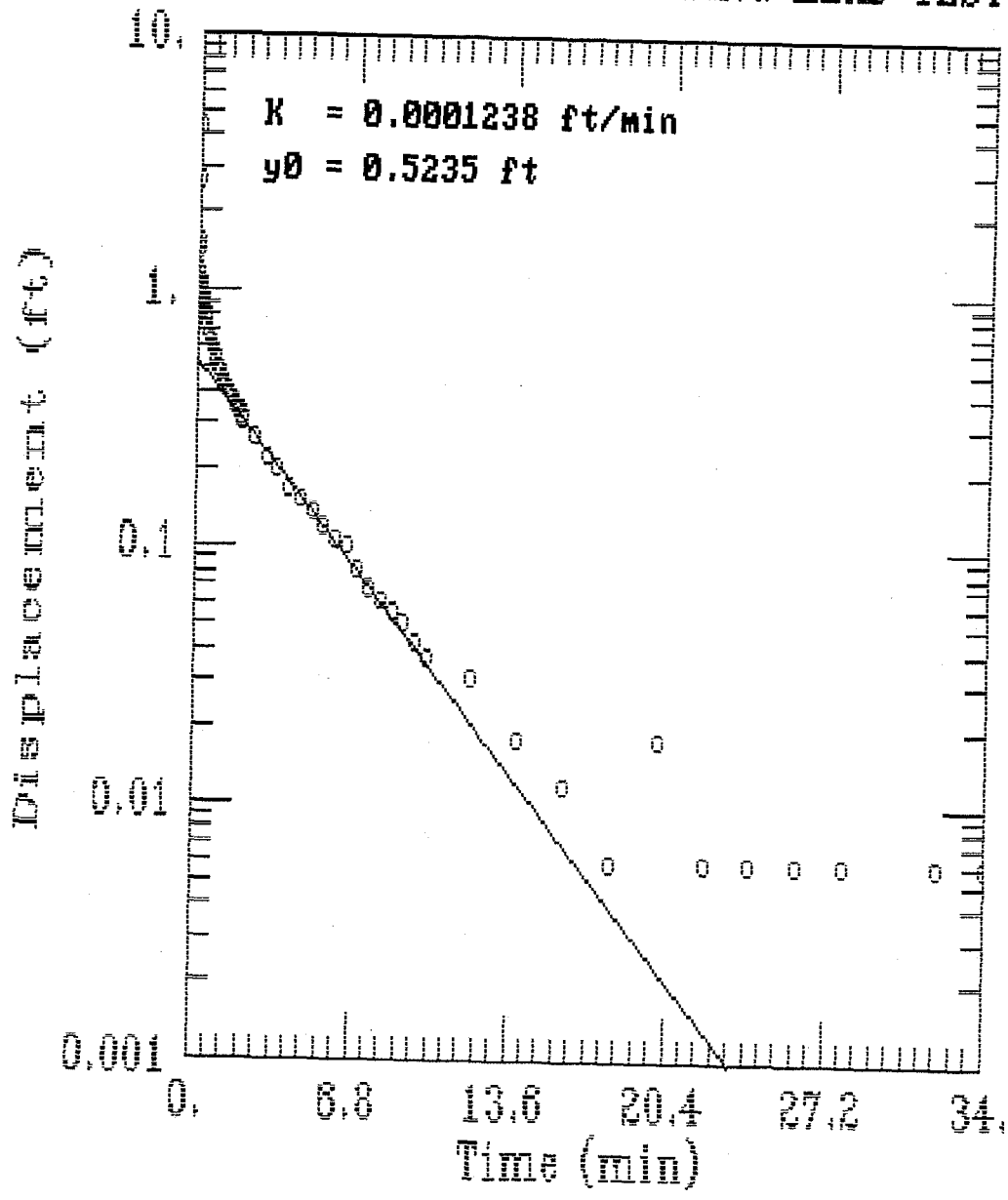
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	9.6517E-005
y0 =	4.2614E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-01A RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 15:09:48

==

TEST DESCRIPTION

Data set........... A:\73mw1ar.dat
Data set title..... SITE 73 - 73MW-01A RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 72
- Radius of well casing............... 0.083
- Radius of well...................... 0.875
- Aquifer saturated thickness......... 12.97
- Well screen length.................. 15
- Static height of water in well...... 12.97
- Log(Re/Rw).......................... 2.002
- A, B, C............................. 0.000, 0.000, 1.571

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.2377E-004	+/-	2.3224E-006
y0 =	5.2354E-001	+/-	9.8593E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 33
- Number of estimated parameters.... 2
- Degrees of freedom................ 31
- Residual mean..................... 0.01467
- Residual standard deviation....... 0.03386
- Residual variance................. 0.001146

Model Residuals:

Time	Observed	Calculated	Residual	Weight
1	0.47	0.39995	0.070049	1
1.0833	0.451	0.39108	0.059921	1
1.1666	0.432	0.3824	0.049595	1
1.25	0.419	0.37391	0.045087	1
1.3333	0.401	0.36562	0.035381	1

1.4166	0.382	0.35751	0.024491	1
1.5	0.376	0.34957	0.02643	1
1.5833	0.369	0.34182	0.027184	1
1.6666	0.351	0.33423	0.016766	1
1.75	0.338	0.32681	0.011189	1
1.8333	0.332	0.31956	0.012438	1
1.9166	0.319	0.31247	0.0065258	1
2	0.307	0.30553	0.001465	6
2.5	0.263	0.26705	-0.0040473	6
3	0.225	0.23341	-0.0084079	6
3.5	0.2	0.20401	-0.0040059	6
4	0.169	0.17831	-0.0093077	6
4.5	0.15	0.15585	-0.0058466	6
5	0.137	0.13621	0.00078512	6
5.5	0.119	0.11906	-5.6143E-005	6
6	0.106	0.10406	0.0019411	6
6.5	0.1	0.090951	0.0090492	6
7	0.081	0.079494	0.0015061	6
7.5	0.068	0.06948	-0.0014802	6
8	0.062	0.060728	0.0012721	6
8.5	0.056	0.053078	0.0029219	6
9	0.05	0.046392	0.003608	6
9.5	0.043	0.040548	0.002452	6
10	0.037	0.03544	0.0015597	6
12	0.031	0.020683	0.010317	6
14	0.018	0.01207	0.0059298	6
16	0.012	0.0070441	0.0049559	6
18	0.006	0.0041109	0.0018891	6

==

RESULTS FROM VISUAL CURVE MATCHING

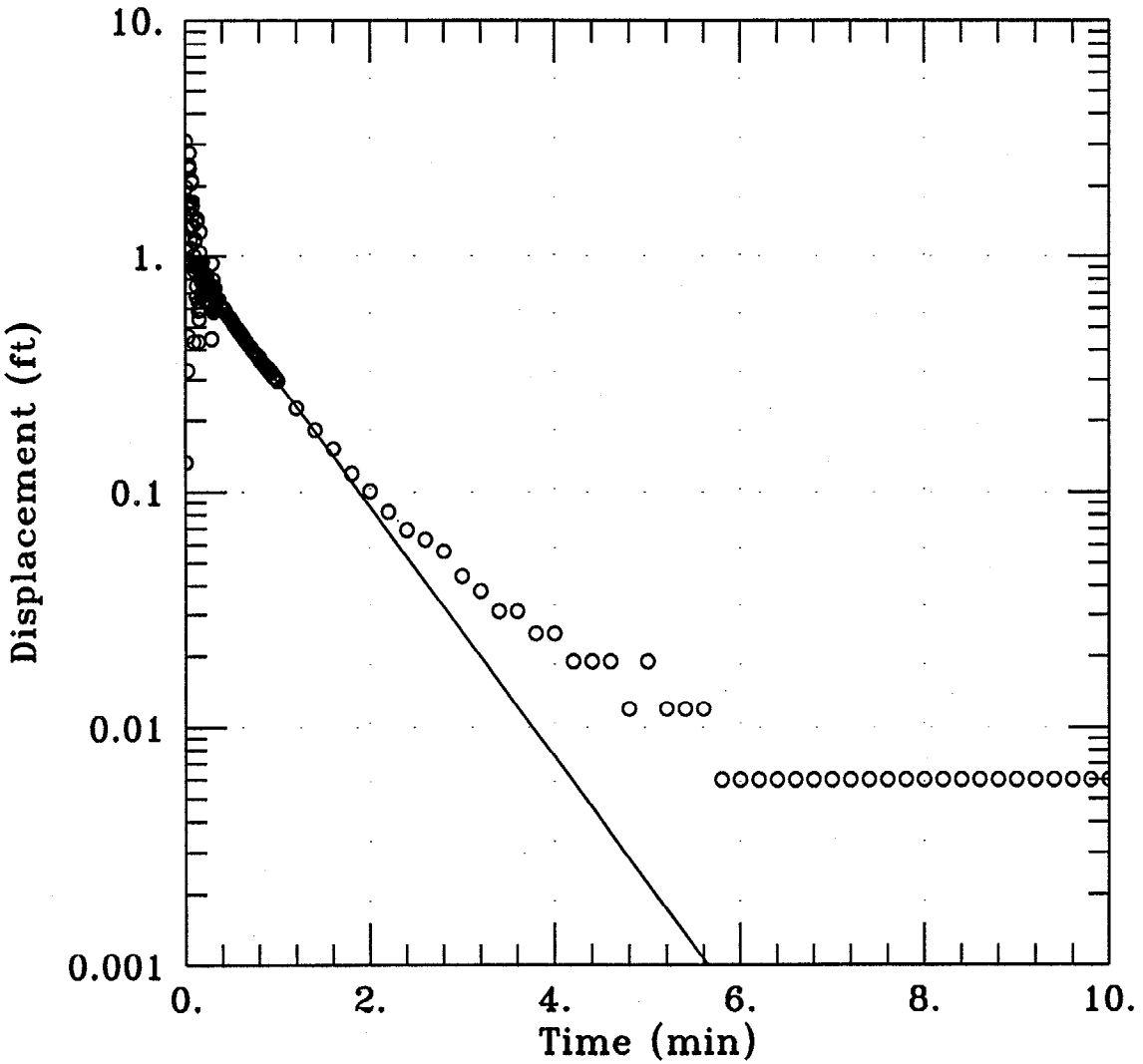
VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.2377E-004
y0 =	5.2354E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>

Client: **LANTDIV**	Company: **BAKER ENVIRONMENTAL, INC.**
Location: **SITE 73, MCB CAMP LEJEUNE**	Project: **62470-312**

73MW-03 FALLING HEAD TEST



DATA SET:
73MW03F.DAT
05/06/96

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: FEBRUARY 26, 1996
test well: 73MW-03

TEST DATA:
H0 = 3.08 ft
rc = 0.083 ft
rw = 0.417 ft
L = 13.78 ft
b = 14.78 ft
H = 4.22 ft

PARAMETER ESTIMATES:
K = 0.001721 cm/sec
y0 = 0.9909 ft

AQTESOLV

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V R E S U L T S
Version 2.01

Developed by Glenn M. Duffield

05/06/96 14:20:05

==

TEST DESCRIPTION

```
Data set........... 73MW03F.DAT
Output file........ 73MW03F.OUT
Data set title..... 73MW-03 FALLING HEAD TEST
Company............ BAKER ENVIRONMENTAL, INC.
Project............ 62470-312
Client............. LANTDIV
Location........... SITE 73, MCB CAMP LEJEUNE
Test date.......... FEBRUARY 26, 1996
Test well.......... 73MW-03

Units of Measurement
   Length.......... ft
   Time............ min

Test Well Data
   Initial displacement in well..... 3.08
   Radius of well casing............ 0.083
   Radius of wellbore............... 0.417
   Aquifer saturated thickness...... 14.78
   Well screen length............... 13.78
   Static height of water in well... 4.22
   Gravel pack porosity............. 0.23
   Effective well casing radius..... 0.2128
   Effective wellbore radius........ 0.417
   Log(Re/Rw)....................... 1.688
   Constants A, B and C............. 2.539 ,  0.413,  0.000
   No. of observations.............. 179
```

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

```
           Estimate          Std.  Error
   K  =   1.7210E-003 +/-   6.3372E-005 cm/sec
   y0 =   9.9091E-001 +/-   1.7822E-002 ft
```

ANALYSIS OF MODEL RESIDUALS

residual = observed - calculated
weighted residual = residual * weight

```
Weighted Residual Statistics:
   Number of residuals............... 96
   Number of estimated parameters.... 2
```

Degrees of freedom..... 94
Residual mean..... 0.001169
Residual standard deviation..... 0.04874
Residual variance..... 0.002375

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.19	0.774	0.7857	-0.011697	1
0.1933	0.724	0.78254	-0.058536	1
0.1966	0.679	0.77939	-0.10039	1
0.2	0.724	0.77616	-0.052159	1
0.2033	0.831	0.77304	0.057963	1
0.2066	0.831	0.76993	0.061072	1
0.21	0.824	0.76674	0.057262	1
0.2133	0.786	0.76365	0.022346	1
0.2166	0.761	0.76058	0.00041804	1
0.22	0.692	0.75743	-0.06543	1
0.2233	0.724	0.75438	-0.030384	1
0.2266	0.761	0.75135	0.0096506	1
0.23	0.774	0.74824	0.025764	1
0.2333	0.78	0.74523	0.034774	1
0.2366	0.831	0.74223	0.088771	1
0.24	0.73	0.73915	-0.0091532	1
0.2433	0.724	0.73618	-0.01218	1
0.2466	0.705	0.73322	-0.028219	1
0.25	0.698	0.73018	-0.032181	1
0.2533	0.73	0.72724	0.0027563	1
0.2566	0.749	0.72432	0.024681	1
0.26	0.742	0.72132	0.020683	1
0.2633	0.736	0.71842	0.017584	1
0.2666	0.724	0.71553	0.0084738	1
0.27	0.711	0.71256	-0.0015612	1
0.2733	0.698	0.7097	-0.011695	1
0.2766	0.705	0.70684	-0.0018405	1
0.28	0.635	0.70391	-0.068911	1
0.2833	0.447	0.70108	-0.25408	1
0.2866	0.742	0.69826	0.04374	1
0.29	0.931	0.69537	0.23563	1
0.2933	0.749	0.69257	0.05643	1
0.2966	0.724	0.68978	0.034216	1
0.3	0.793	0.68693	0.10607	1
0.3033	0.692	0.68416	0.0078371	1
0.3066	0.579	0.68141	-0.10241	1
0.31	0.598	0.67859	-0.080587	1
0.3133	0.667	0.67586	-0.0088579	1
0.3166	0.711	0.67314	0.037861	1
0.32	0.736	0.67035	0.06565	1
0.3233	0.73	0.66765	0.062346	1
0.3266	0.679	0.66497	0.014032	1
0.33	0.629	0.66221	-0.033213	1
0.3333	0.61	0.65955	-0.049549	1
0.35	0.648	0.64623	0.0017666	1
0.3666	0.654	0.63326	0.020736	1
0.3833	0.61	0.62048	-0.010479	1
0.4	0.598	0.60795	-0.0099515	1
0.4166	0.598	0.59575	0.0022499	1
0.4333	0.585	0.58372	0.0012777	1
0.45	0.566	0.57194	-0.0059373	1
0.4666	0.554	0.56046	-0.0064587	1
0.4833	0.547	0.54914	-0.0021434	1
0.5	0.535	0.53806	-0.0030566	1
0.5166	0.522	0.52726	-0.005258	1
0.5333	0.51	0.51661	-0.006613	1

0.55	0.497	0.50618	-0.0091829	1
0.5666	0.491	0.49602	-0.005024	1
0.5833	0.478	0.48601	-0.0080096	1
0.6	0.472	0.4762	-0.0041974	1
0.6166	0.459	0.46664	-0.0076403	1
0.6333	0.453	0.45722	-0.0042191	1
0.65	0.44	0.44799	-0.0079882	1
0.6666	0.434	0.439	-0.0049972	1
0.6833	0.421	0.43013	-0.0091341	1
0.7	0.415	0.42145	-0.00645	1
0.7166	0.409	0.41299	-0.0039916	1
0.7333	0.396	0.40465	-0.0086536	1
0.75	0.39	0.39648	-0.0064839	1
0.7666	0.384	0.38853	-0.0045266	1
0.7833	0.377	0.38068	-0.0036825	1
0.8	0.371	0.373	-0.0019968	1
0.8166	0.358	0.36551	-0.0075109	1
0.8333	0.352	0.35813	-0.0061315	1
0.85	0.346	0.3509	-0.004901	1
0.8666	0.34	0.34386	-0.0038586	1
0.8833	0.333	0.33692	-0.0039163	1
0.9	0.333	0.33011	0.0028858	1
0.9166	0.321	0.32349	-0.0024889	1
0.9333	0.321	0.31696	0.0040421	1
0.95	0.308	0.31056	-0.0025587	1
0.9666	0.308	0.30433	0.0036741	1
0.9833	0.302	0.29818	0.0038183	1
1	0.296	0.29216	0.0038384	1
1.2	0.226	0.22884	-0.0028449	1
1.4	0.182	0.17925	0.0027499	1
1.6	0.151	0.1404	0.010597	1
1.8	0.119	0.10998	0.0090246	1
2	0.101	0.086142	0.014858	1
2.2	0.082	0.067473	0.014527	1
2.4	0.069	0.052851	0.016149	1
2.6	0.063	0.041397	0.021603	1
2.8	0.056	0.032425	0.023575	1
3	0.044	0.025398	0.018602	1
3.2	0.038	0.019894	0.018106	1
3.4	0.031	0.015583	0.015417	1

==

RESULTS FROM VISUAL CURVE MATCHING

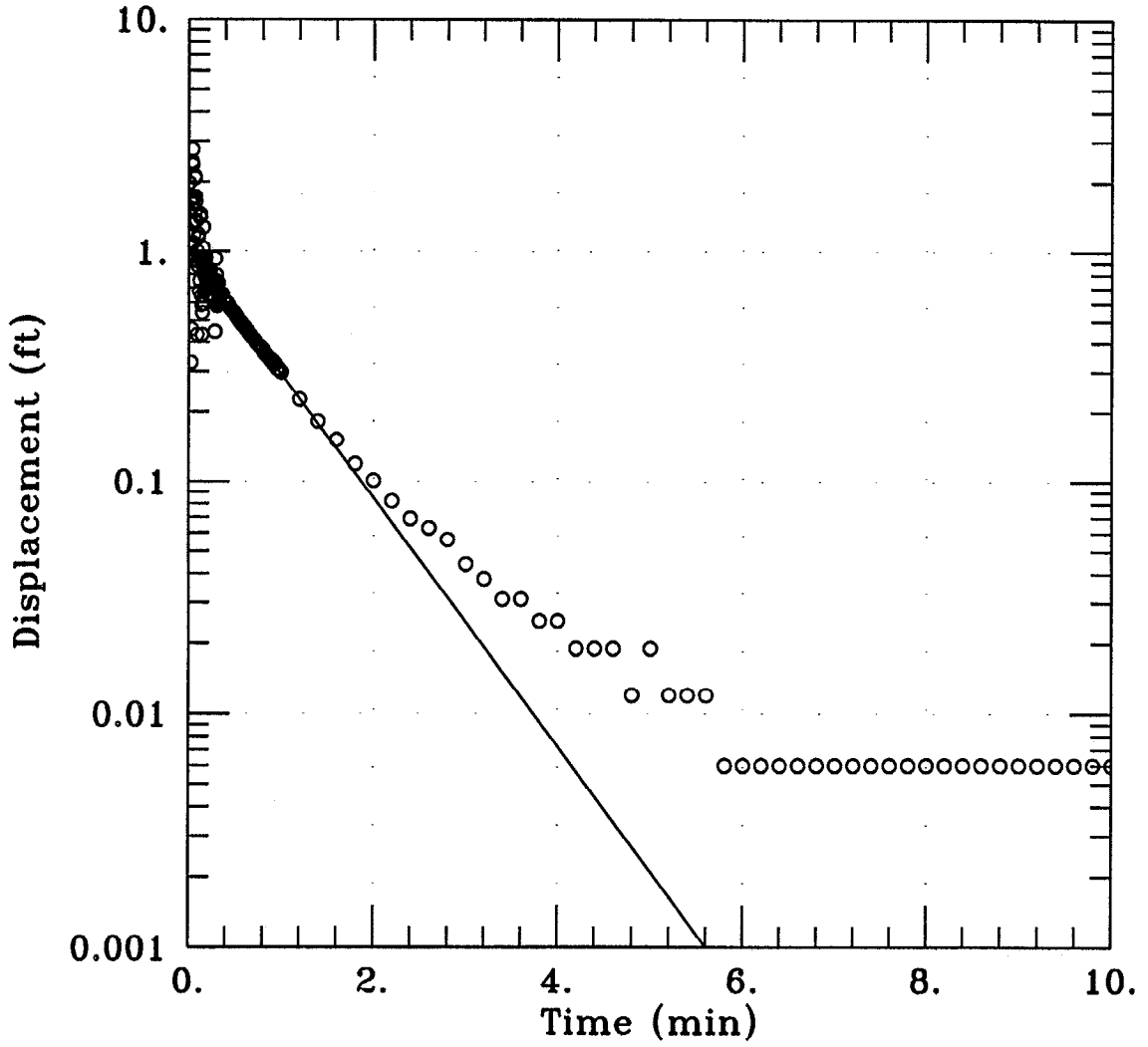
VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
  K  =  1.7210E-003 cm/sec
  y0 =  9.9091E-001 ft
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

Client: **LANTDIV**	Company: **BAKER ENVIRONMENTAL**
Location: **SITE 73, MCB CAMP LEJEUNE**	Project: **62470-312**

73MW-03 RISING HEAD TEST



DATA SET:
73MW03R.DAT
05/06/96

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: 26, FEBRUARY 1996
test well: 73MW-03

TEST DATA:
H0 = 1.97 ft
rc = 0.083 ft
rw = 0.417 ft
L = 13.78 ft
b = 14.78 ft
H = 4.22 ft

PARAMETER ESTIMATES:
K = 0.001737 cm/sec
y0 = 0.9958 ft

AQTESOLV

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 2.01

Developed by Glenn M. Duffield
(c) 1988-1995 Geraghty & Miller, Inc.

05/06/96 14:21:11

==

TEST DESCRIPTION

Data set........... 73MW03R.DAT
Output file........ 73MW03R.OUT
Data set title..... 73MW-03 RISING HEAD TEST
Company............ BAKER ENVIRONMENTAL
Project............ 62470-312
Client............. LANTDIV
Location........... SITE 73, MCB CAMP LEJEUNE
Test date.......... 26, FEBRUARY 1996
Test well.......... 73MW-03

Units of Measurement
   Length.......... ft
   Time............ min

Test Well Data
   Initial displacement in well..... 1.97
   Radius of well casing............ 0.083
   Radius of wellbore............... 0.417
   Aquifer saturated thickness...... 14.78
   Well screen length............... 13.78
   Static height of water in well... 4.22
   Gravel pack porosity............. 0.23
   Effective well casing radius..... 0.2128
   Effective wellbore radius........ 0.417
   Log(Re/Rw)....................... 1.688
   Constants A, B and C............. 2.539 , 0.413, 0.000
   No. of observations.............. 178

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error	
K =	1.7370E-003	+/-	3.3686E-005	cm/sec
y0 =	9.9578E-001	+/-	1.3919E-002	ft

ANALYSIS OF MODEL RESIDUALS

residual = observed - calculated
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals.............. 53
   Number of estimated parameters.... 2

Degrees of freedom..... 51
Residual mean..... 0.001146
Residual standard deviation..... 0.01711
Residual variance..... 0.0002928

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.32	0.736	0.67122	0.064785	1
0.3233	0.73	0.66849	0.061509	1
0.3266	0.679	0.66578	0.013223	1
0.33	0.629	0.66299	-0.033993	1
0.3333	0.61	0.6603	-0.050301	1
0.35	0.648	0.64685	0.001152	1
0.3666	0.654	0.63375	0.020253	1
0.3833	0.61	0.62083	-0.010835	1
0.4	0.598	0.60819	-0.010186	1
0.4166	0.598	0.59587	0.0021321	1
0.4333	0.585	0.58373	0.0012725	1
0.45	0.566	0.57183	-0.0058344	1
0.4666	0.554	0.56025	-0.0062527	1
0.4833	0.547	0.54884	-0.001838	1
0.5	0.535	0.53766	-0.0026558	1
0.5166	0.522	0.52677	-0.0047663	1
0.5333	0.51	0.51603	-0.0060338	1
0.55	0.497	0.50552	-0.00852	1
0.5666	0.491	0.49528	-0.0042814	1
0.5833	0.478	0.48519	-0.0071904	1
0.6	0.472	0.4753	-0.003305	1
0.6166	0.459	0.46568	-0.0066784	1
0.6333	0.453	0.45619	-0.0031905	1
0.65	0.44	0.4469	-0.0068959	1
0.6666	0.434	0.43784	-0.0038447	1
0.6833	0.421	0.42892	-0.0079239	1
0.7	0.415	0.42018	-0.0051849	1
0.7166	0.409	0.41167	-0.0026747	1
0.7333	0.396	0.40329	-0.0072871	1
0.75	0.39	0.39507	-0.0050704	1
0.7666	0.384	0.38707	-0.0030688	1
0.7833	0.377	0.37918	-0.0021825	1
0.8	0.371	0.37146	-0.00045696	1
0.8166	0.358	0.36393	-0.0059336	1
0.8333	0.352	0.35652	-0.0045187	1
0.85	0.346	0.34925	-0.0032549	1
0.8666	0.34	0.34218	-0.0021813	1
0.8833	0.333	0.33521	-0.0022096	1
0.9	0.333	0.32838	0.0046201	1
0.9166	0.321	0.32173	-0.00072903	1
0.9333	0.321	0.31517	0.005826	1
0.95	0.308	0.30875	-0.00075257	1
0.9666	0.308	0.3025	0.0055008	1
0.9833	0.302	0.29634	0.005664	1
1	0.296	0.2903	0.0057016	1
1.2	0.226	0.22687	-0.00087192	1
1.4	0.182	0.1773	0.0046967	1
1.6	0.151	0.13856	0.012435	1
1.8	0.119	0.10829	0.01071	1
2	0.101	0.08463	0.01637	1
2.2	0.082	0.06614	0.01586	1
2.4	0.069	0.051689	0.017311	1
2.6	0.063	0.040396	0.022604	1

==========

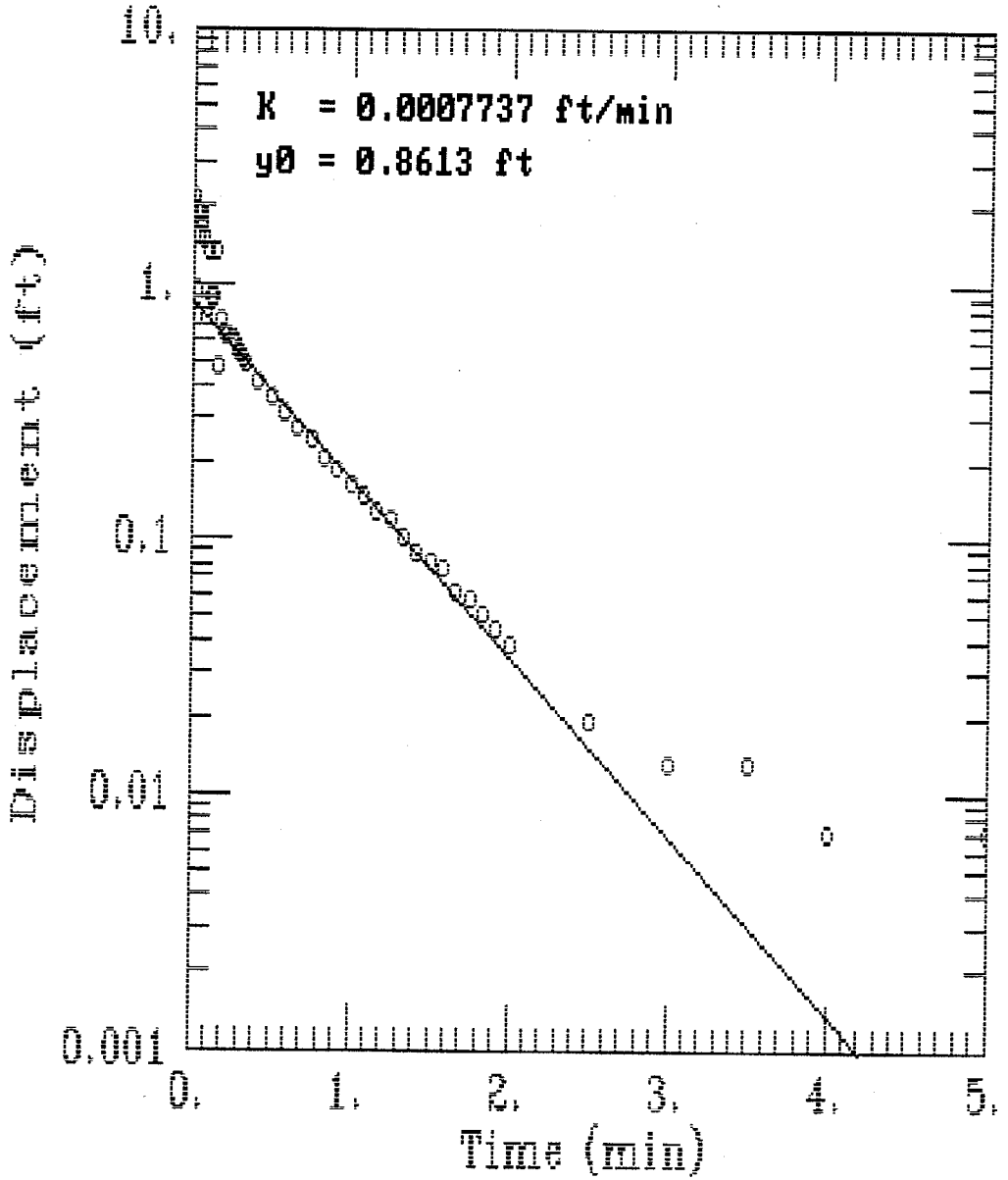
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.7370E-003 cm/sec
y0 =	9.9578E-001 ft

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-11A FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 15:26:21

==

TEST DESCRIPTION

Data set........... A:\73mw11af.dat
Data set title..... SITE 73 - 73MW-11A FALLING HEAD TEST

Knowns and Constants:
- No. of data points.................. 50
- Radius of well casing............... 0.083
- Radius of well...................... 0.875
- Aquifer saturated thickness......... 15.35
- Well screen length.................. 15
- Static height of water in well...... 15.35
- Log(Re/Rw).......................... 2.103
- A, B, C............................. 0.000, 0.000, 1.571

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	7.7373E-004	+/-	1.3372E-005
y0 =	8.6131E-001	+/-	1.2696E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 29
- Number of estimated parameters.... 2
- Degrees of freedom................ 27
- Residual mean..................... 0.000529
- Residual standard deviation....... 0.01556
- Residual variance................. 0.0002422

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.2333	0.622	0.59264	0.029363	1
0.25	0.597	0.57699	0.020013	1
0.2666	0.578	0.56184	0.01616	1
0.2833	0.553	0.547	0.0059967	1
0.3	0.534	0.53256	0.0014419	1

0.3166	0.515	0.51858	-0.0035775	1
0.3333	0.496	0.50488	-0.0088831	1
0.4166	0.421	0.44179	-0.02079	1
0.5	0.364	0.38652	-0.022519	1
0.5833	0.314	0.33822	-0.024217	1
0.6666	0.277	0.29595	-0.018951	1
0.75	0.245	0.25893	-0.013926	1
0.8333	0.208	0.22657	-0.018569	1
0.9166	0.189	0.19826	-0.009255	1
1	0.164	0.17345	-0.009452	1
1.0833	0.145	0.15178	-0.0067763	1
1.1666	0.126	0.13281	-0.0068093	1
1.25	0.12	0.11619	0.003806	1
1.3333	0.101	0.10167	-0.00067362	1
1.4166	0.088	0.088968	-0.00096782	1
1.5	0.082	0.077837	0.0041627	1
1.5833	0.076	0.06811	0.0078897	1
1.6666	0.063	0.059599	0.0034012	1
1.75	0.057	0.052143	0.0048574	1
1.8333	0.051	0.045626	0.0053735	1
1.9166	0.044	0.039925	0.0040753	1
2	0.038	0.03493	0.0030701	6
2.5	0.019	0.015675	0.0033251	6
3	0.013	0.0070342	0.0059658	6

==

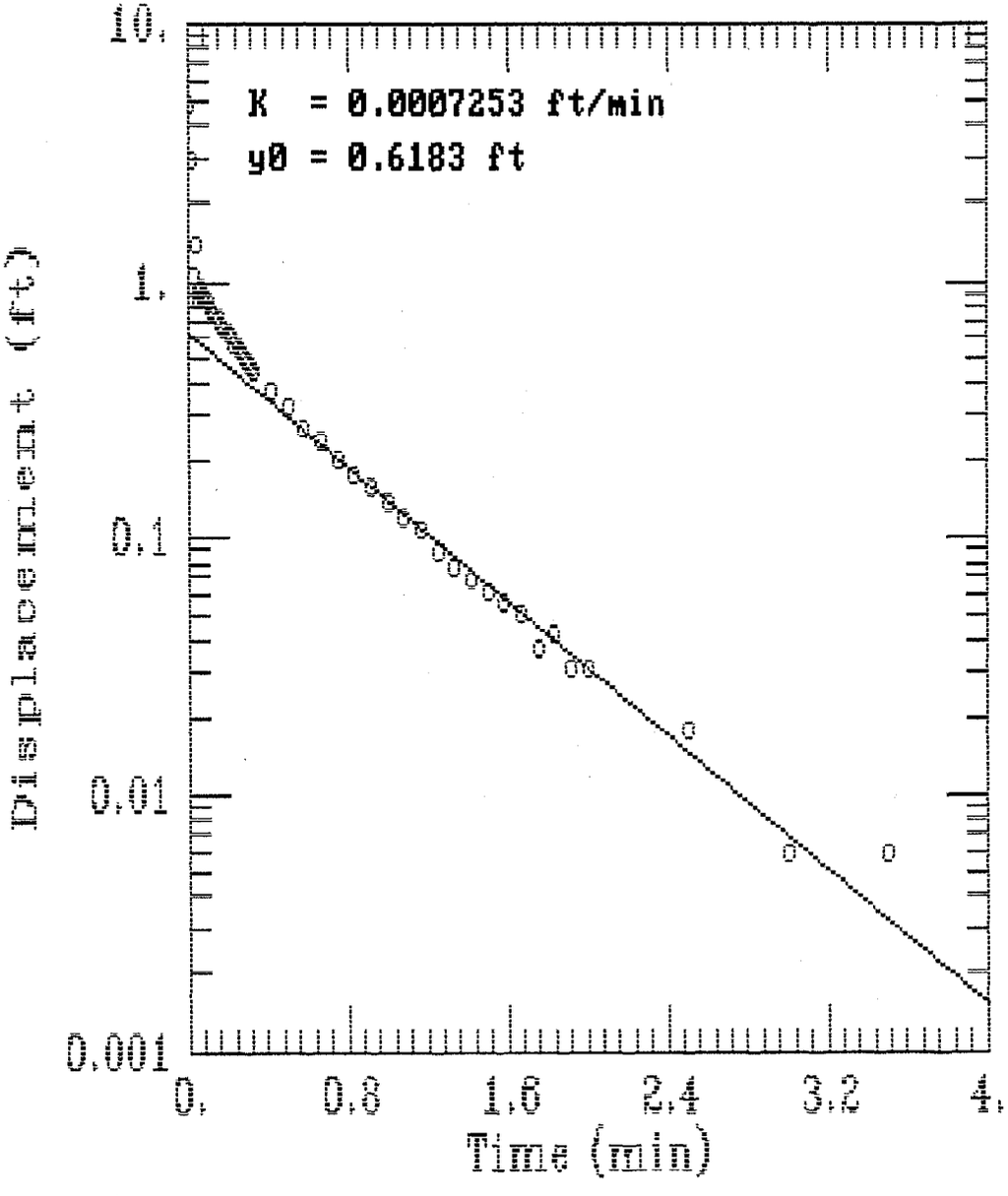
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
         Estimate
K   =    7.7373E-004
y0  =    8.6131E-001
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-11A RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 15:29:30

TEST DESCRIPTION

Data set.......... A:\73mw11ar.dat
Data set title..... SITE 73 - 73MW-11A RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 47
- Radius of well casing............... 0.083
- Radius of well...................... 0.875
- Aquifer saturated thickness......... 15.35
- Well screen length.................. 15
- Static height of water in well...... 15.35
- Log(Re/Rw)........................... 2.103
- A, B, C............................. 0.000, 0.000, 1.571

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	7.2525E-004	+/-	1.3956E-005
y0 =	6.1832E-001	+/-	2.2842E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 19
- Number of estimated parameters.... 2
- Degrees of freedom................ 17
- Residual mean..................... -0.001018
- Residual standard deviation....... 0.008102
- Residual variance................. 6.564E-005

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.6666	0.238	0.22717	0.010835	1
0.75	0.2	0.20042	-0.0004166	1
0.8333	0.175	0.17684	-0.0018442	1
0.9166	0.156	0.15604	-4.4399E-005	1
1	0.138	0.13767	0.00032972	1

1.0833	0.119	0.12148	-0.0024779	1
1.1666	0.106	0.10719	-0.0011901	1
1.25	0.087	0.094569	-0.0075685	1
1.3333	0.075	0.083446	-0.0084457	1
1.4166	0.069	0.073631	-0.0046311	1
1.5	0.062	0.064961	-0.0029611	1
1.5833	0.056	0.057321	-0.0013206	2
1.6666	0.05	0.050579	-0.00057871	2
1.75	0.037	0.044623	-0.0076231	2
1.8333	0.043	0.039375	0.0036253	2
1.9166	0.031	0.034744	-0.0037436	2
2	0.031	0.030653	0.00034747	6
2.5	0.018	0.014464	0.0035363	6
3	0.006	0.0068248	-0.00082484	6

==

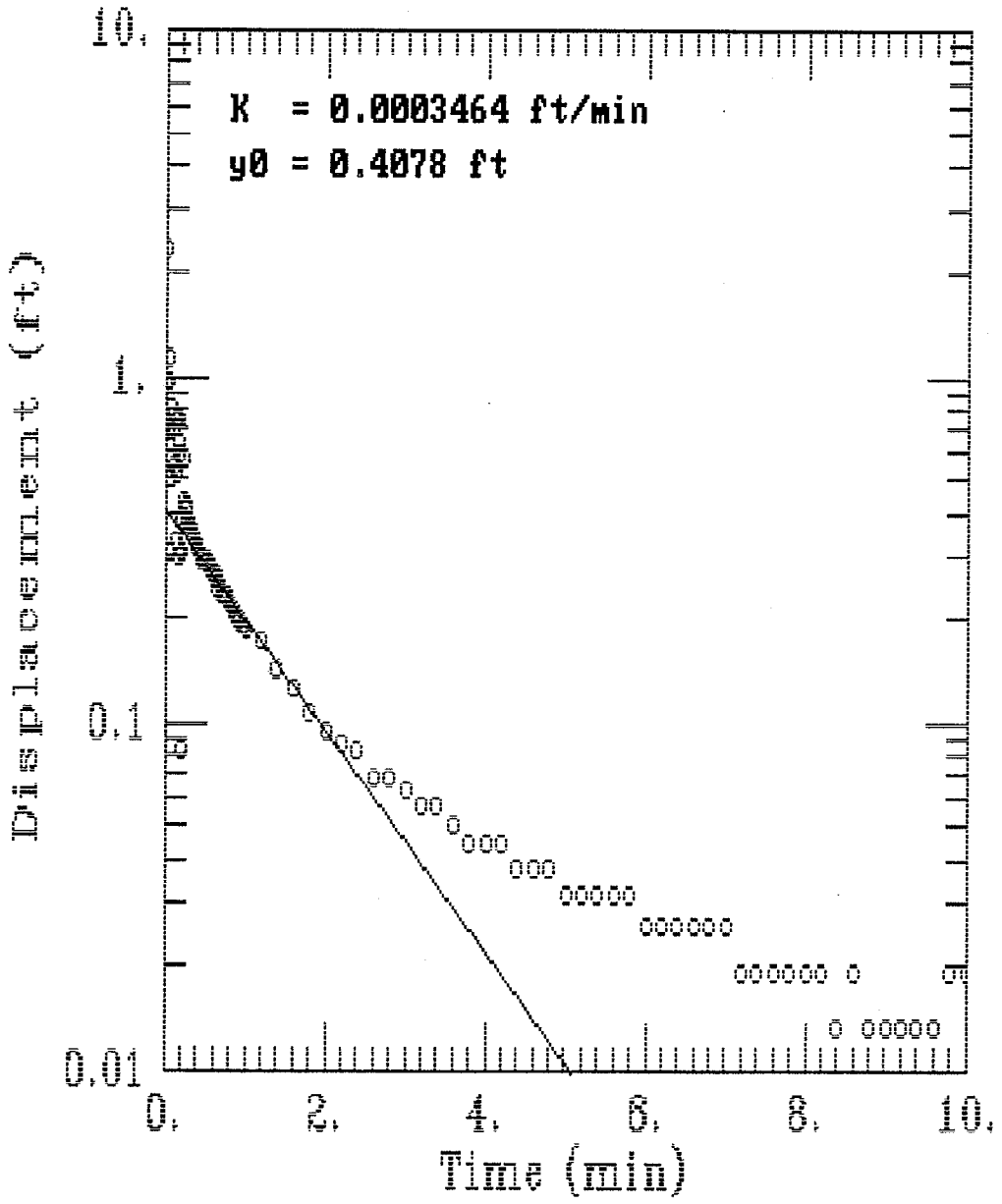
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	7.2525E-004
y0 =	6.1832E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-13 FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

06/19/95 15:50:09

TEST DESCRIPTION

Data set........... a:\73mw13f.dat
Data set title..... SITE 73 - 73MW-13 FALLING HEAD TEST

Knowns and Constants:

- No. of data points.................. 123
- Radius of well casing............... 0.083
- Radius of well...................... 0.875
- Aquifer saturated thickness......... 14.28
- Well screen length.................. 15
- Static height of water in well...... 14.28
- Log(Re/Rw).......................... 2.06
- A, B, C............................. 0.000, 0.000, 1.571

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	3.4640E-004	+/-	1.0692E-005
y0 =	4.0779E-001	+/-	7.0697E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:

- Number of residuals............... 51
- Number of estimated parameters.... 2
- Degrees of freedom................ 49
- Residual mean..................... 0.001472
- Residual standard deviation....... 0.01076
- Residual variance................. 0.0001158

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.4	0.32	0.30423	0.01577	1
0.4166	0.313	0.30055	0.012447	1
0.4333	0.313	0.2969	0.016101	1
0.45	0.301	0.29329	0.0077104	1
0.4666	0.295	0.28975	0.0052548	1

0.4833	0.295	0.28622	0.0087773	1
0.5	0.295	0.28274	0.012257	1
0.5166	0.288	0.27933	0.008674	1
0.5333	0.282	0.27593	0.0060699	1
0.55	0.276	0.27258	0.0034245	1
0.5666	0.276	0.26928	0.0067185	1
0.5833	0.27	0.26601	0.0039923	1
0.6	0.263	0.26277	0.00022623	1
0.6166	0.263	0.2596	0.0034019	1
0.6333	0.263	0.25644	0.0065579	1
0.65	0.245	0.25332	-0.0083245	1
0.6666	0.251	0.25026	0.00073697	1
0.6833	0.251	0.24722	0.0037795	1
0.7	0.232	0.24421	-0.012215	1
0.7166	0.238	0.24126	-0.0032636	1
0.7333	0.232	0.23833	-0.0063305	1
0.75	0.232	0.23543	-0.003433	1
0.7666	0.226	0.23259	-0.0065878	1
0.7833	0.22	0.22976	-0.0097601	1
0.8	0.22	0.22697	-0.0069669	1
0.8166	0.213	0.22422	-0.011224	1
0.8333	0.213	0.2215	-0.008498	1
0.85	0.207	0.21881	-0.011805	1
0.8666	0.207	0.21616	-0.0091609	1
0.8833	0.207	0.21353	-0.006533	1
0.9	0.201	0.21094	-0.009937	1
0.9166	0.201	0.20839	-0.0073878	1
0.9333	0.195	0.20585	-0.010854	1
0.95	0.188	0.20335	-0.015352	1
0.9666	0.188	0.20089	-0.012894	1
0.9833	0.188	0.19845	-0.010452	1
1	0.182	0.19604	-0.014039	1
1.2	0.17	0.16933	0.00067411	1
1.4	0.144	0.14625	-0.0022527	1
1.6	0.126	0.12632	-0.00032354	1
1.8	0.107	0.10911	-0.00211	1
2	0.094	0.094242	-0.00024215	1
2.2	0.088	0.0814	0.0065998	1
2.4	0.082	0.070308	0.011692	1
2.6	0.069	0.060728	0.0082723	1
2.8	0.069	0.052453	0.016547	1
3	0.063	0.045305	0.017695	1
3.2	0.057	0.039132	0.017868	1
3.4	0.057	0.033799	0.023201	1
3.6	0.051	0.029194	0.021806	1
3.8	0.044	0.025216	0.018784	1

==

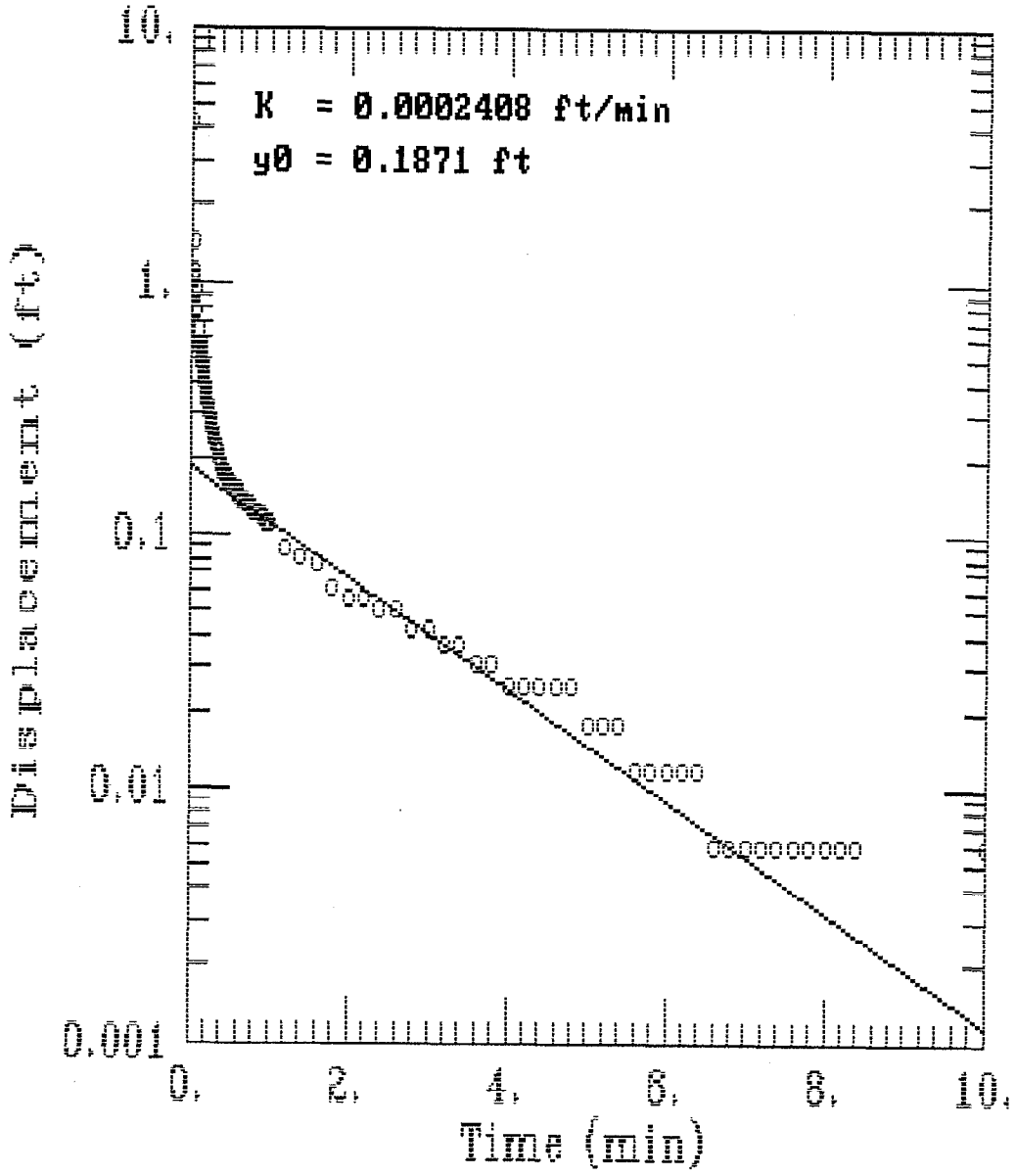
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
          Estimate
   K  =   3.4640E-004
   y0 =   4.0779E-001
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-13 RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 15:52:16

TEST DESCRIPTION

Data set........... a:\73mw13r.dat
Data set title..... SITE 73 - 73MW-13 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 117
Radius of well casing............... 0.083
Radius of well...................... 0.875
Aquifer saturated thickness......... 14.28
Well screen length.................. 15
Static height of water in well...... 14.28
Log(Re/Rw).......................... 2.06
A, B, C............................. 0.000, 0.000, 1.571

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.4079E-004	+/-	6.9486E-006
y0 =	1.8714E-001	+/-	4.6154E-003

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 63
Number of estimated parameters.... 2
Degrees of freedom................ 61
Residual mean..................... 0.004197
Residual standard deviation....... 0.0157
Residual variance................. 0.0002465

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.4166	0.181	0.15137	0.029628	1
0.4333	0.175	0.15009	0.02491	1
0.45	0.175	0.14882	0.02618	1
0.4666	0.168	0.14757	0.020433	1
0.4833	0.162	0.14632	0.015682	1

0.5	0.162	0.14508	0.016921	1
0.5166	0.156	0.14386	0.012142	1
0.5333	0.156	0.14264	0.01336	1
0.55	0.15	0.14143	0.0085676	1
0.5666	0.15	0.14024	0.0097579	1
0.5833	0.15	0.13905	0.010945	1
0.6	0.15	0.13788	0.012123	1
0.6166	0.143	0.13672	0.006283	1
0.6333	0.143	0.13556	0.0074405	1
0.65	0.137	0.13441	0.0025882	1
0.6666	0.137	0.13328	0.0037194	1
0.6833	0.137	0.13215	0.0048478	1
0.7	0.137	0.13103	0.0059667	1
0.7166	0.131	0.12993	0.0010695	1
0.7333	0.131	0.12883	0.0021695	1
0.75	0.131	0.12774	0.0032603	1
0.7666	0.131	0.12666	0.0043353	1
0.7833	0.125	0.12559	-0.00059224	1
0.8	0.125	0.12453	0.00047109	1
0.8166	0.125	0.12348	0.0015191	1
0.8333	0.125	0.12244	0.0025646	1
0.85	0.125	0.1214	0.0036012	1
0.8666	0.125	0.12038	0.0046229	1
0.8833	0.118	0.11936	-0.0013579	1
0.9	0.118	0.11835	-0.00034739	1
0.9166	0.118	0.11735	0.00064862	1
0.9333	0.118	0.11636	0.0016422	1
0.95	0.112	0.11537	-0.0033727	1
0.9666	0.112	0.1144	-0.0024017	1
0.9833	0.112	0.11343	-0.0014331	1
1	0.112	0.11247	-0.00047272	1
1.2	0.087	0.10158	-0.014584	3
1.4	0.081	0.091749	-0.010749	3
1.6	0.075	0.082866	-0.0078664	3
1.8	0.062	0.074844	-0.012844	3
2	0.056	0.067598	-0.011598	3
2.2	0.056	0.061053	-0.0050533	3
2.4	0.05	0.055142	-0.0051425	3
2.6	0.05	0.049804	0.00019609	3
2.8	0.043	0.044982	-0.0019822	3
3	0.043	0.040627	0.0023727	3
3.2	0.037	0.036694	0.00030605	3
3.4	0.037	0.033141	0.0038586	3
3.6	0.031	0.029933	0.0010671	4
3.8	0.031	0.027035	0.0039651	4
4	0.025	0.024418	0.00058242	4
4.2	0.025	0.022054	0.0029464	4
4.4	0.025	0.019918	0.0050815	4
4.6	0.025	0.01799	0.0070099	4
4.8	0.025	0.016248	0.0087516	4
5	0.018	0.014675	0.0033247	3
5.2	0.018	0.013255	0.0047455	3
5.4	0.018	0.011971	0.0060287	3
5.6	0.012	0.010812	0.0011877	3
5.8	0.012	0.0097655	0.0022345	3
6	0.012	0.0088201	0.0031799	3
6.2	0.012	0.0079662	0.0040338	3
6.4	0.012	0.0071949	0.0048051	3

==========

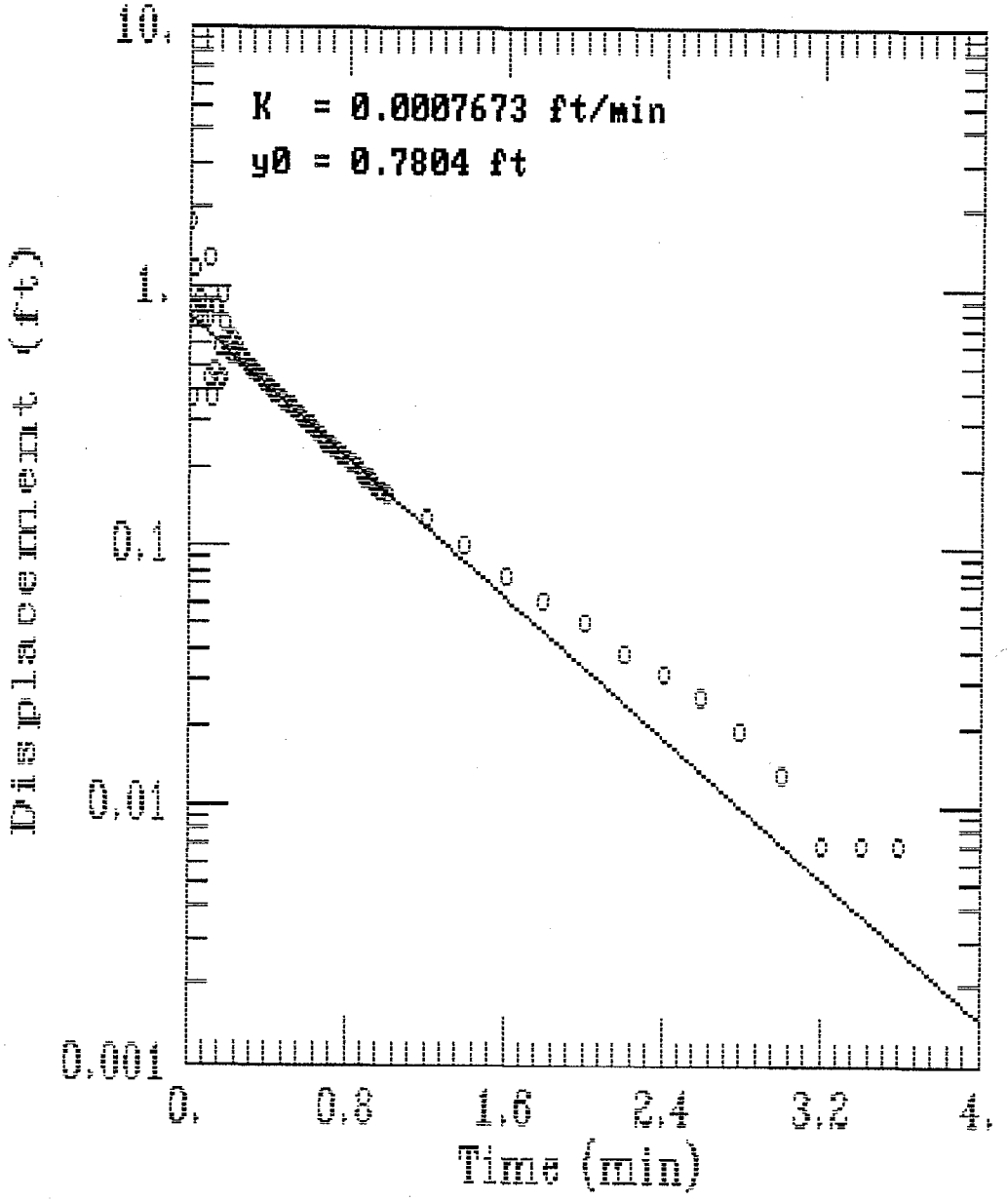
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
K	=	2.4079E-004
y0	=	1.8714E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

SITE 73 - 73MW-20 FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

[illegible]/19/95 16:15:20

==

TEST DESCRIPTION

Data set........... a:\73mw20f.dat
Data set title..... SITE 73 - 73MW-20 FALLING HEAD TEST

Knowns and Constants:

No. of data points....................	93
Radius of well casing...............	0.083
Radius of well......................	0.875
Aquifer saturated thickness.........	16.28
Well screen length..................	15
Static height of water in well......	16.28
Log(Re/Rw)..........................	2.137
A, B, C.............................	0.000, 0.000, 1.571

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	7.6729E-004	+/-	1.1820E-005
y0 =	7.8042E-001	+/-	1.0629E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:

Number of residuals................	57
Number of estimated parameters....	2
Degrees of freedom................	55
Residual mean.....................	0.001373
Residual standard deviation.......	0.01342
Residual variance.................	0.0001802

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.2833	0.52	0.50116	0.018841	1
0.2916	0.514	0.4947	0.019302	1
0.3	0.501	0.48824	0.012756	1
0.3083	0.495	0.48195	0.013051	1
0.3166	0.489	0.47574	0.013264	1

0.325	0.476	0.46953	0.0064711	1
0.3333	0.47	0.46348	0.0065245	1
0.35	0.458	0.45153	0.0064687	1
0.3666	0.445	0.43996	0.0050364	1
0.3833	0.433	0.42863	0.0043746	1
0.4	0.42	0.41758	0.0024207	1
0.4166	0.407	0.40688	0.00011856	1
0.4333	0.389	0.3964	-0.0073957	1
0.45	0.382	0.38618	-0.0041802	1
0.4666	0.37	0.37629	-0.0062868	1
0.4833	0.364	0.36659	-0.0025895	1
0.5	0.351	0.35714	-0.0061421	1
0.5166	0.345	0.34799	-0.0029926	1
0.5333	0.332	0.33902	-0.0070245	1
0.55	0.32	0.33029	-0.010288	1
0.5666	0.314	0.32183	-0.007826	1
0.5833	0.307	0.31353	-0.0065322	1
0.6	0.295	0.30545	-0.010452	1
0.6166	0.289	0.29763	-0.0086269	1
0.6333	0.282	0.28996	-0.0079568	1
0.65	0.276	0.28248	-0.0064843	1
0.6666	0.263	0.27525	-0.012247	1
0.6833	0.257	0.26815	-0.011154	1
0.7	0.251	0.26124	-0.010243	1
0.7166	0.245	0.25455	-0.0095507	1
0.7333	0.238	0.24799	-0.0099907	1
0.75	0.232	0.2416	-0.0095998	1
0.7666	0.226	0.23541	-0.0094103	1
0.7833	0.226	0.22934	-0.0033435	1
0.8	0.213	0.22343	-0.010433	1
0.8166	0.207	0.21771	-0.010709	1
0.8333	0.207	0.2121	-0.0050985	1
0.85	0.201	0.20663	-0.0056325	1
0.8666	0.195	0.20134	-0.0063389	1
0.8833	0.188	0.19615	-0.0081502	1
0.9	0.182	0.1911	-0.0090952	1
0.9166	0.182	0.1862	-0.0041996	1
0.9333	0.176	0.1814	-0.005401	1
0.95	0.17	0.17673	-0.0067261	1
0.9666	0.163	0.1722	-0.0091987	1
0.9833	0.163	0.16776	-0.0047609	1
1	0.157	0.16344	-0.0064376	2
1.2	0.126	0.11955	0.0064482	2
1.4	0.101	0.08745	0.01355	2
1.6	0.076	0.063968	0.012032	2
1.8	0.063	0.046792	0.016208	2
2	0.051	0.034227	0.016773	2
2.2	0.038	0.025037	0.012963	2
2.4	0.032	0.018314	0.013686	2
2.6	0.026	0.013396	0.012604	2
2.8	0.019	0.0097992	0.0092008	2
3	0.013	0.007168	0.005832	2

==

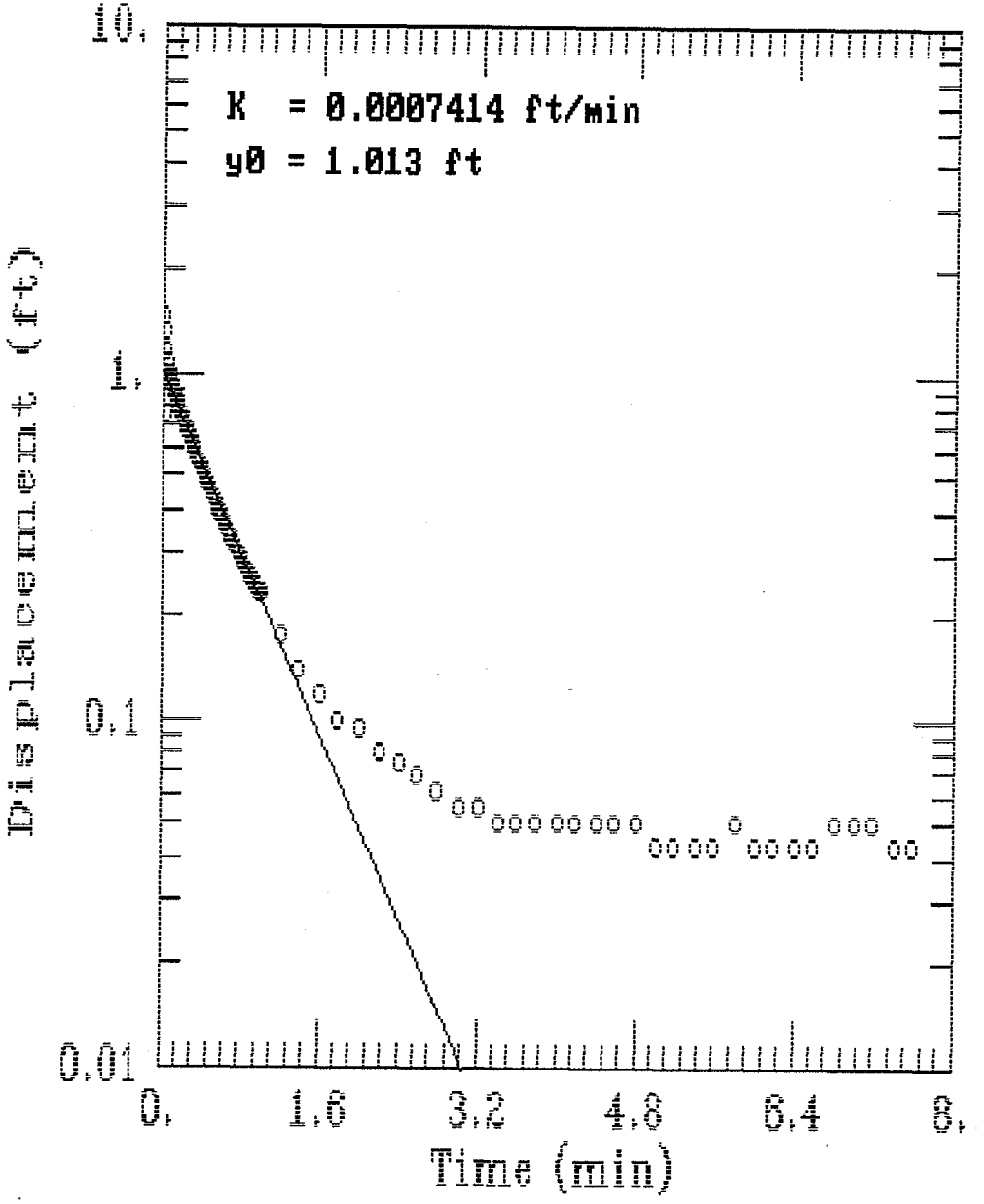
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
   K  =   7.6729E-004
   y0 =   7.8042E-001
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-20 RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V R E S U L T S
Version 1.10

06/19/95 16:12:25

==

TEST DESCRIPTION

Data set........... a:\73mw20r.dat
Data set title..... SITE 73 - 73MW-20 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 112
Radius of well casing............... 0.083
Radius of well...................... 0.875
Aquifer saturated thickness......... 16.28
Well screen length.................. 15
Static height of water in well...... 16.28
Log(Re/Rw).......................... 2.137
A, B, C............................. 0.000, 0.000, 1.571

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	7.4136E-004	+/-	1.4407E-005
y0 =	1.0134E+000	+/-	1.1507E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals................ 82
Number of estimated parameters.... 2
Degrees of freedom................ 80
Residual mean..................... 0.00552
Residual standard deviation....... 0.03391
Residual variance................. 0.00115

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0833	0.932	0.89362	0.038379	1
0.0916	0.926	0.88249	0.043513	1
0.1	0.92	0.87136	0.04864	1
0.1083	0.895	0.8605	0.034496	1
0.1166	0.876	0.84978	0.026218	1

0.125	0.863	0.83907	0.023932	1
0.1333	0.851	0.82861	0.022387	1
0.1416	0.838	0.81829	0.019711	1
0.15	0.826	0.80797	0.018028	1
0.1583	0.813	0.7979	0.015095	1
0.1666	0.801	0.78796	0.013037	1
0.175	0.788	0.77803	0.0099718	1
0.1833	0.776	0.76833	0.0076656	1
0.1916	0.763	0.75876	0.0042386	1
0.2	0.751	0.74919	0.0018055	1
0.2083	0.738	0.73986	-0.0018599	1
0.2166	0.732	0.73064	0.0013583	1
0.225	0.719	0.72143	-0.0024293	1
0.2333	0.707	0.71244	-0.0054407	1
0.2416	0.694	0.70356	-0.0095641	1
0.25	0.688	0.69469	-0.0066931	1
0.2583	0.676	0.68604	-0.010038	1
0.2666	0.669	0.67749	-0.00849	1
0.275	0.657	0.66895	-0.011948	1
0.2833	0.651	0.66061	-0.0096131	1
0.2916	0.638	0.65238	-0.014382	1
0.3	0.632	0.64416	-0.012157	1
0.3083	0.619	0.63613	-0.017131	1
0.3166	0.613	0.6282	-0.015205	1
0.325	0.607	0.62028	-0.013284	1
0.3333	0.601	0.61256	-0.011556	1
0.35	0.575	0.5973	-0.022296	1
0.3666	0.563	0.58251	-0.019505	1
0.3833	0.544	0.56799	-0.023994	1
0.4	0.532	0.55385	-0.021845	1
0.4166	0.519	0.54013	-0.02113	1
0.4333	0.507	0.52667	-0.019675	1
0.45	0.488	0.51355	-0.025555	1
0.4666	0.475	0.50084	-0.025837	1
0.4833	0.463	0.48836	-0.025361	1
0.5	0.45	0.4762	-0.026195	1
0.5166	0.444	0.4644	-0.020403	1
0.5333	0.431	0.45283	-0.021834	1
0.55	0.419	0.44155	-0.022554	1
0.5666	0.406	0.43062	-0.024619	1
0.5833	0.4	0.41989	-0.019892	1
0.6	0.388	0.40943	-0.021432	1
0.6166	0.381	0.39929	-0.018293	1
0.6333	0.369	0.38935	-0.020346	1
0.65	0.363	0.37965	-0.016647	1
0.6666	0.356	0.37025	-0.014246	1
0.6833	0.344	0.36102	-0.017023	1
0.7	0.338	0.35203	-0.014029	1
0.7166	0.331	0.34331	-0.012312	1
0.7333	0.319	0.33476	-0.01576	1
0.75	0.313	0.32642	-0.01342	1
0.7666	0.306	0.31834	-0.012337	1
0.7833	0.3	0.31041	-0.010407	1
0.8	0.294	0.30267	-0.0086744	1
0.8166	0.287	0.29518	-0.0081791	1
0.8333	0.281	0.28783	-0.0068259	1
0.85	0.275	0.28066	-0.0056559	1
0.8666	0.269	0.27371	-0.0047058	1
0.8833	0.262	0.26689	-0.0048875	1
0.9	0.256	0.26024	-0.0042391	1
0.9166	0.256	0.25379	0.0022054	1
0.9333	0.25	0.24747	0.0025276	1
0.95	0.244	0.24131	0.0026924	1
0.9666	0.237	0.23533	0.0016681	1
0.9833	0.231	0.22947	0.0015304	1
1	0.231	0.22375	0.0072467	2

1.2	0.175	0.16541	0.0095895	2
1.4	0.137	0.12228	0.01472	2
1.6	0.118	0.090396	0.027604	2
1.8	0.1	0.066826	0.033174	2
2	0.093	0.049401	0.043599	2
2.2	0.081	0.03652	0.04448	2
2.4	0.075	0.026998	0.048002	2
2.6	0.068	0.019958	0.048042	2
2.8	0.062	0.014754	0.047246	2
3	0.056	0.010907	0.045093	2
3.2	0.056	0.0080631	0.047937	2

==

RESULTS FROM VISUAL CURVE MATCHING

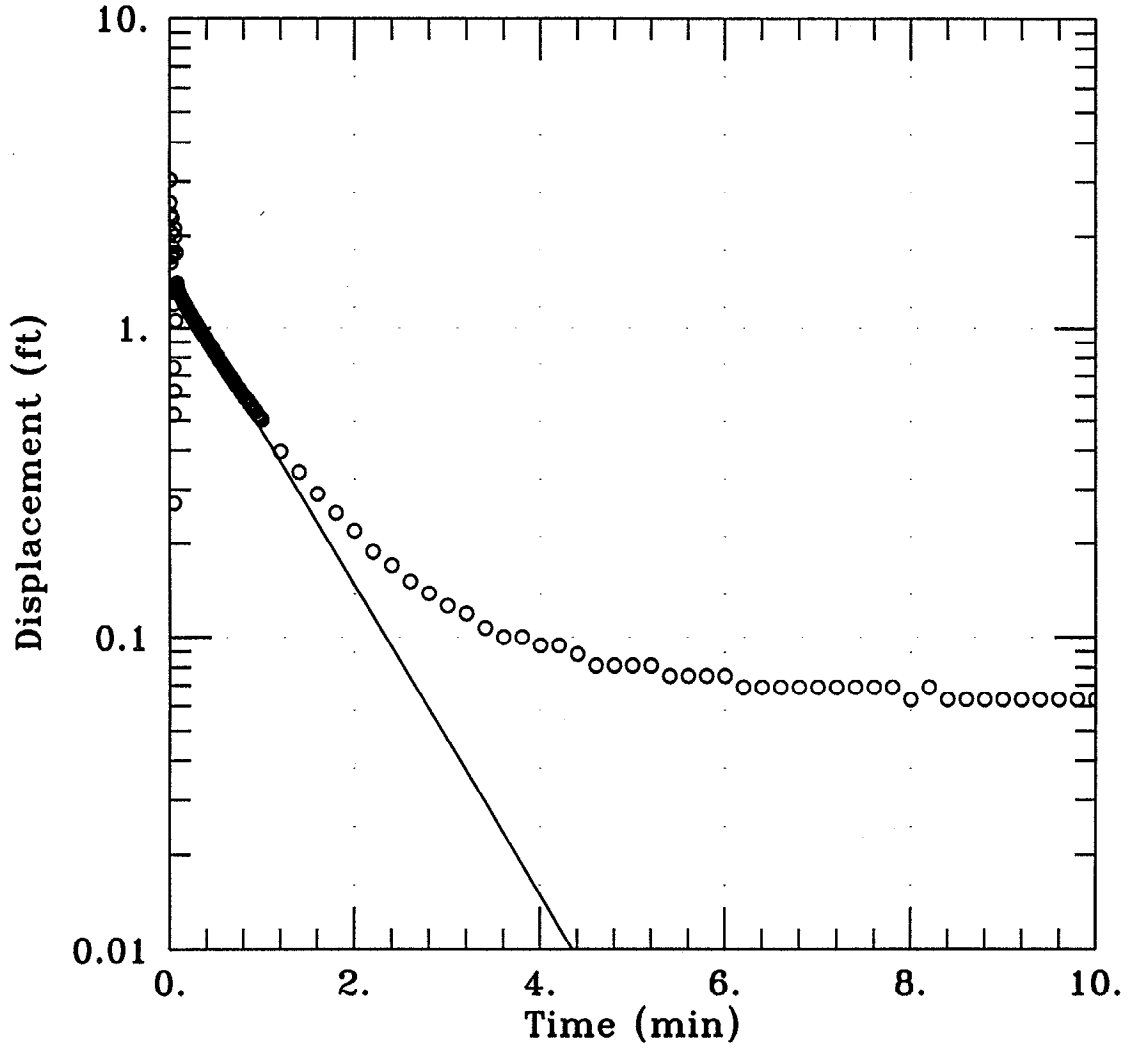
VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
K  =   7.4136E-004
y0 =   1.0134E+000
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

Client: **LANTDIV**	Company: **BAKER ENVIRONMENTAL, INC.**
Location: **SITE 73 - MCB CAMP LEJEUNE**	Project: **62470-312**

73MW-21 RISING HEAD TEST



DATA SET:
73MW21R.DAT
05/06/96

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: FEBRUARY 26, 1996
test well: 73MW-21

TEST DATA:
H0 = 3.03 ft
rc = 0.083 ft
rw = 0.417 ft
L = 15. ft
b = 36.38 ft
H = 3.62 ft

PARAMETER ESTIMATES:
K = 0.001384 cm/sec
y0 = 1.448 ft

AQTESOLV

```
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

                    A Q T E S O L V    R E S U L T S
                              Version 2.01

                     Developed by Glenn M. Duffield
                  (c) 1988-1995  Geraghty & Miller, Inc.

05/06/96                                                                14:22:15

================================================================================
                              TEST DESCRIPTION

Data set........... 73MW21R.DAT
Output file........ 73MW21R.OUT
Data set title..... 73MW-21 RISING HEAD TEST
Company............ BAKER ENVIRONMENTAL, INC.
Project............ 62470-312
Client............. LANTDIV
Location........... SITE 73 - MCB CAMP LEJEUNE
Test date.......... FEBRUARY 26, 1996
Test well.......... 73MW-21

Units of Measurement
   Length.......... ft
   Time............ min

Test Well Data
   Initial displacement in well..... 3.03
   Radius of well casing............ 0.083
   Radius of wellbore............... 0.417
   Aquifer saturated thickness...... 36.38
   Well screen length............... 15
   Static height of water in well... 3.62
   Gravel pack porosity............. 0.23
   Effective well casing radius..... 0.2128
   Effective wellbore radius........ 0.417
   Log(Re/Rw)....................... 1.577
   Constants A, B and C............. 2.632 ,   0.428,   0.000
   No. of observations.............. 185

================================================================================
                             ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

================================================================================
                   RESULTS FROM STATISTICAL CURVE MATCHING


STATISTICAL MATCH PARAMETER ESTIMATES

           Estimate            Std.  Error
   K  =    1.3845E-003 +/-    1.1585E-005 cm/sec
   y0 =    1.4482E+000 +/-    3.9327E-003 ft


ANALYSIS OF MODEL RESIDUALS

residual = observed - calculated
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals............... 106
   Number of estimated parameters.... 2
```

Degrees of freedom..... 104
Residual mean..... 0.0002896
Residual standard deviation..... 0.01533
Residual variance..... 0.000235

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.08	1.404	1.3215	0.082497	1
0.0833	1.366	1.3165	0.049478	1
0.0866	1.328	1.3116	0.016441	1
0.09	1.341	1.3065	0.034535	1
0.0933	1.335	1.3015	0.03346	1
0.0966	1.316	1.2966	0.019366	1
0.1	1.316	1.2916	0.024402	1
0.1033	1.309	1.2867	0.022271	1
0.1066	1.297	1.2819	0.015121	1
0.11	1.29	1.2769	0.0131	1
0.1133	1.284	1.2721	0.011913	1
0.1166	1.278	1.2673	0.010708	1
0.12	1.272	1.2624	0.0096302	1
0.1233	1.265	1.2576	0.0073889	1
0.1266	1.259	1.2529	0.0061297	1
0.13	1.253	1.248	0.0049954	1
0.1333	1.246	1.2433	0.0027	1
0.1366	1.24	1.2386	0.0013868	1
0.14	1.234	1.2338	0.00019715	1
0.1433	1.228	1.2292	-0.0011518	1
0.1466	1.221	1.2245	-0.0035184	1
0.15	1.215	1.2198	-0.0047627	1
0.1533	1.209	1.2152	-0.0061647	1
0.1566	1.209	1.2106	-0.0015839	1
0.16	1.202	1.2059	-0.0038824	1
0.1633	1.196	1.2013	-0.0053366	1
0.1666	1.19	1.1968	-0.006808	1
0.17	1.183	1.1922	-0.00916	1
0.1733	1.183	1.1877	-0.004666	1
0.1766	1.177	1.1832	-0.0061889	1
0.18	1.171	1.1786	-0.0075938	1
0.1833	1.164	1.1742	-0.010151	1
0.1866	1.158	1.1697	-0.011725	1
0.19	1.152	1.1652	-0.013182	1
0.1933	1.152	1.1608	-0.0087896	1
0.1966	1.146	1.1564	-0.010414	1
0.2	1.139	1.1519	-0.012923	1
0.2033	1.139	1.1476	-0.0085803	1
0.2066	1.133	1.1433	-0.010254	1
0.21	1.127	1.1388	-0.011814	1
0.2133	1.12	1.1345	-0.014521	1
0.2166	1.12	1.1302	-0.010245	1
0.22	1.114	1.1259	-0.011855	1
0.2233	1.108	1.1216	-0.013611	1
0.2266	1.108	1.1174	-0.0093829	1
0.23	1.102	1.113	-0.011043	1
0.2333	1.095	1.1088	-0.013848	1
0.2366	1.095	1.1047	-0.0096676	1
0.24	1.089	1.1004	-0.011377	1
0.2433	1.083	1.0962	-0.013229	1
0.2466	1.076	1.0921	-0.016097	1
0.25	1.076	1.0879	-0.011856	1
0.2533	1.07	1.0838	-0.013755	1
0.2566	1.07	1.0797	-0.0096694	1
0.26	1.064	1.0755	-0.011476	1
0.2633	1.057	1.0714	-0.014422	1

0.2666	1.057	1.0674	-0.010383	1
0.27	1.051	1.0632	-0.012238	1
0.2733	1.051	1.0592	-0.0082299	1
0.2766	1.045	1.0552	-0.010237	1
0.28	1.039	1.0511	-0.012139	1
0.2833	1.039	1.0472	-0.0081763	1
0.2866	1.032	1.0432	-0.011229	1
0.29	1.032	1.0392	-0.0071773	1
0.2933	1.026	1.0353	-0.0092599	1
0.2966	1.02	1.0314	-0.011357	1
0.3	1.02	1.0274	-0.0073519	1
0.3033	1.013	1.0235	-0.010479	1
0.3066	1.007	1.0196	-0.012621	1
0.31	1.007	1.0157	-0.0086611	1
0.3133	1.001	1.0118	-0.010832	1
0.3166	1.001	1.008	-0.0070182	1
0.32	0.995	1.0041	-0.0091034	1
0.3233	0.995	1.0003	-0.0053182	1
0.3266	0.988	0.99655	-0.0085474	1
0.33	0.982	0.99268	-0.010677	1
0.3333	0.982	0.98894	-0.0069351	1
0.35	0.963	0.97021	-0.0072132	1
0.3666	0.944	0.95195	-0.0079548	1
0.3833	0.932	0.93393	-0.001933	1
0.4	0.913	0.91625	-0.0032525	1
0.4166	0.894	0.89901	-0.0050095	1
0.4333	0.881	0.88199	-0.00099006	1
0.45	0.862	0.86529	-0.0032928	1
0.4666	0.85	0.84901	0.00099113	1
0.4833	0.831	0.83294	-0.001936	1
0.5	0.818	0.81717	0.00083254	1
0.5166	0.806	0.80179	0.0042108	1
0.5333	0.787	0.78661	0.00038974	1
0.55	0.774	0.77172	0.0022813	1
0.5666	0.762	0.7572	0.0048043	1
0.5833	0.749	0.74286	0.006139	1
0.6	0.736	0.7288	0.0072023	1
0.6166	0.724	0.71508	0.0089176	1
0.6333	0.711	0.70154	0.009455	1
0.65	0.699	0.68826	0.010736	1
0.6666	0.692	0.67531	0.016689	1
0.6833	0.68	0.66253	0.017473	1
0.7	0.667	0.64998	0.017016	1
0.7166	0.655	0.63775	0.017248	1
0.7333	0.642	0.62568	0.016321	1
0.75	0.636	0.61383	0.022166	1
0.7666	0.623	0.60228	0.020718	1
0.7833	0.61	0.59088	0.01912	1
0.8	0.604	0.57969	0.024306	1
0.8166	0.591	0.56878	0.022215	1

==

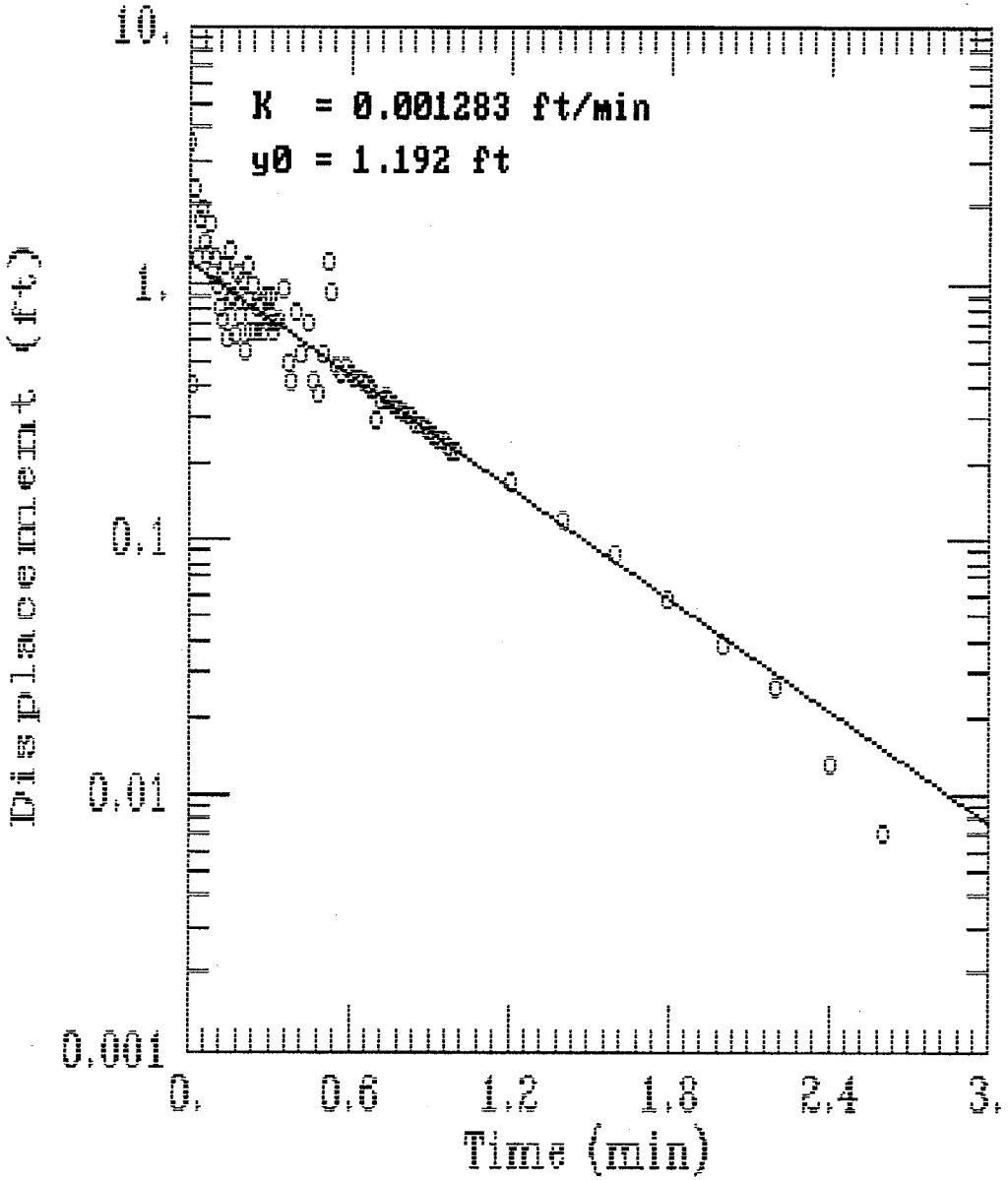
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.3845E-003 cm/sec
y0 =	1.4482E+000 ft

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-22 FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/19/95 16:16:41

==

TEST DESCRIPTION

Data set........... a:\73mw22f.dat
Data set title..... SITE 73 - 73MW-22 FALLING HEAD TEST

Knowns and Constants:
No. of data points.................. 86
Radius of well casing............... 0.083
Radius of well...................... 0.875
Aquifer saturated thickness......... 7.98
Well screen length.................. 7
Static height of water in well...... 7.98
Log(Re/Rw).......................... 1.558
A, B, C............................. 0.000, 0.000, 1.155

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.2832E-003	+/-	5.0651E-005
y0 =	1.1924E+000	+/-	6.1978E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 32
Number of estimated parameters.... 2
Degrees of freedom................ 30
Residual mean..................... -0.0004292
Residual standard deviation....... 0.01517
Residual variance................. 0.0002303

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.6166	0.432	0.4247	0.0072976	1
0.6333	0.426	0.41299	0.013007	1
0.65	0.413	0.40161	0.011394	1
0.6666	0.395	0.3906	0.0044016	1
0.6833	0.388	0.37983	0.008171	1

0.7	0.295	0.36936	-0.074357	1
0.7166	0.345	0.35923	-0.014233	1
0.7333	0.363	0.34933	0.013672	1
0.75	0.345	0.3397	0.0053031	1
0.7666	0.338	0.33039	0.0076138	1
0.7833	0.326	0.32128	0.004723	1
0.8	0.313	0.31242	0.0005811	1
0.8166	0.307	0.30386	0.0031441	1
0.8333	0.301	0.29548	0.0055219	1
0.85	0.288	0.28733	0.00066863	1
0.8666	0.282	0.27946	0.002544	1
0.8833	0.276	0.27175	0.004249	1
0.9	0.263	0.26426	-0.0012584	1
0.9166	0.257	0.25702	-1.5417E-005	1
0.9333	0.251	0.24993	0.0010709	1
0.95	0.245	0.24304	0.0019618	1
0.9666	0.232	0.23638	-0.0043768	1
0.9833	0.226	0.22986	-0.0038596	1
1	0.219	0.22352	-0.004522	1
1.2	0.169	0.15992	0.0090798	1
1.4	0.119	0.11442	0.0045841	1
1.6	0.088	0.08186	0.0061405	1
1.8	0.057	0.058567	-0.0015669	1
2	0.038	0.041902	-0.003902	1
2.2	0.026	0.029979	-0.0039791	1
2.4	0.013	0.021449	-0.0084487	1
2.6	0.007	0.015346	-0.0083456	1

==

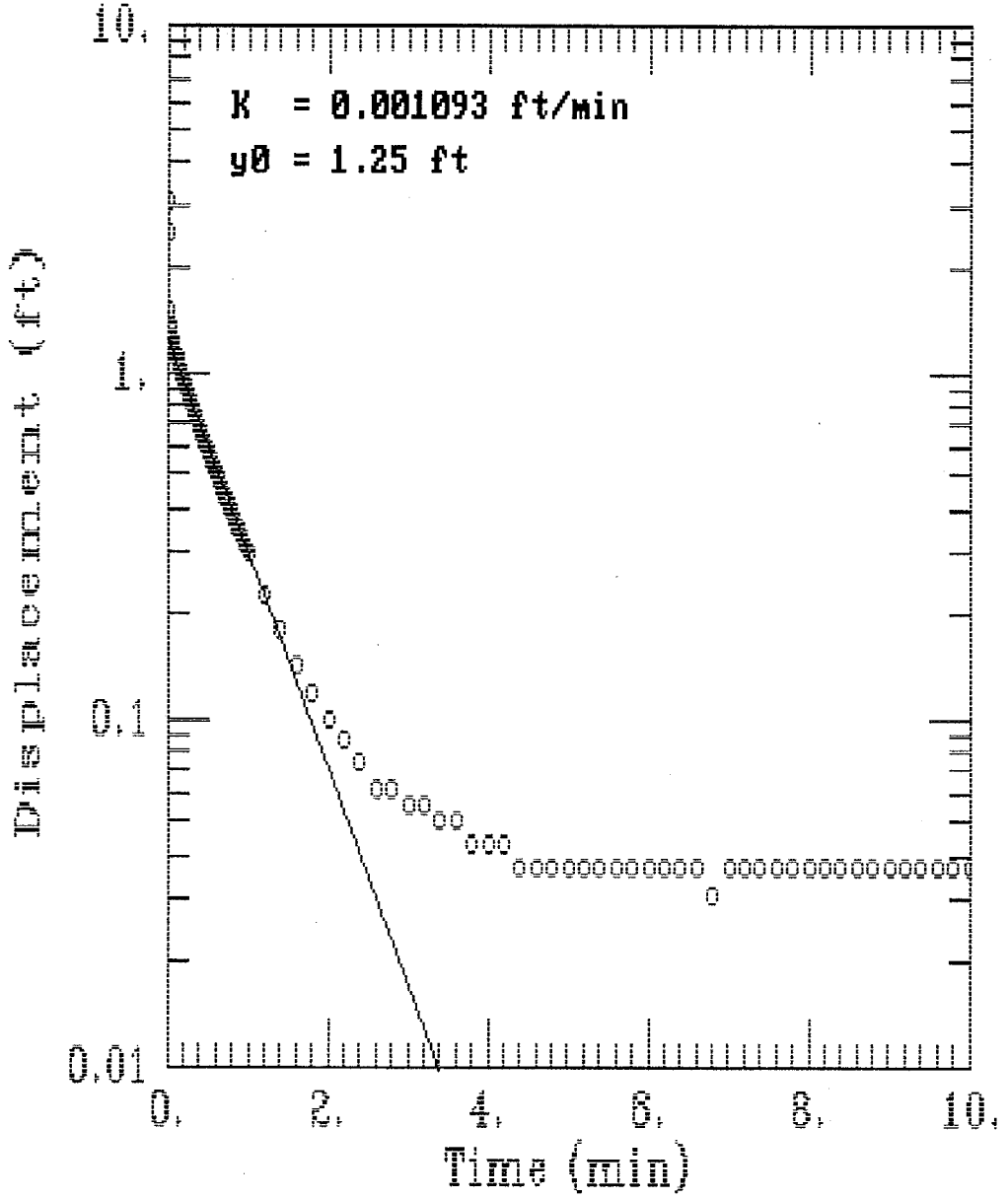
RESULTS FROM VISUAL CURVE MATCHING

UAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.2832E-003
y0 =	1.1924E+000

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-22 RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

06/19/95 16:37:06

==

TEST DESCRIPTION

Data set........... a:\73mw22r.dat
Data set title..... SITE 73 - 73MW-22 RISING HEAD TEST

Knowns and Constants:

No. of data points.................. 125
Radius of well casing............... 0.083
Radius of well...................... 0.875
Aquifer saturated thickness......... 7.98
Well screen length.................. 7
Static height of water in well...... 7.98
Log(Re/Rw).......................... 1.558
A, B, C............................. 0.000, 0.000, 1.155

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.0930E-003	+/-	1.6705E-005
y0 =	1.2496E+000	+/-	1.1827E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:

Number of residuals............... 80
Number of estimated parameters.... 2
Degrees of freedom................ 78
Residual mean..................... 0.006616
Residual standard deviation....... 0.03102
Residual variance................. 0.0009622

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.125	1.088	1.0456	0.042437	1
0.1333	1.069	1.0333	0.03574	1
0.1416	1.05	1.0211	0.028898	1
0.15	1.038	1.0089	0.029057	1
0.1583	1.025	0.99707	0.027929	1

0.1666	1.007	0.98534	0.021662	1
0.175	0.994	0.9736	0.020395	1
0.1833	0.975	0.96215	0.012851	1
0.1916	0.963	0.95083	0.012173	1
0.2	0.95	0.9395	0.010495	1
0.2083	0.938	0.92845	0.0095504	1
0.2166	0.925	0.91752	0.0074755	1
0.225	0.913	0.9066	0.0064012	1
0.2333	0.9	0.89593	0.0040691	1
0.2416	0.888	0.88539	0.0026115	1
0.25	0.875	0.87485	0.00015456	1
0.2583	0.863	0.86455	-0.0015512	1
0.2666	0.857	0.85438	0.0026219	1
0.275	0.844	0.8442	-0.00020424	1
0.2833	0.832	0.83427	-0.0022705	1
0.2916	0.819	0.82445	-0.0054537	1
0.3	0.807	0.81464	-0.0076362	1
0.3083	0.8	0.80505	-0.0050505	1
0.3166	0.788	0.79558	-0.0075775	1
0.325	0.782	0.7861	-0.0041038	1
0.3333	0.769	0.77685	-0.0078538	1
0.35	0.744	0.75857	-0.014571	1
0.3666	0.725	0.74082	-0.015824	1
0.3833	0.706	0.72339	-0.017389	1
0.4	0.688	0.70636	-0.018364	1
0.4166	0.669	0.68984	-0.020838	1
0.4333	0.65	0.6736	-0.023603	1
0.45	0.638	0.65775	-0.01975	1
0.4666	0.619	0.64236	-0.023362	1
0.4833	0.606	0.62724	-0.021244	1
0.5	0.588	0.61248	-0.024482	1
0.5166	0.575	0.59815	-0.023153	1
0.5333	0.563	0.58408	-0.021075	1
0.55	0.55	0.57033	-0.020329	1
0.5666	0.538	0.55699	-0.018986	1
0.5833	0.525	0.54388	-0.018878	1
0.6	0.513	0.53108	-0.018078	1
0.6166	0.5	0.51865	-0.018653	1
0.6333	0.487	0.50645	-0.019447	1
0.65	0.475	0.49453	-0.019528	1
0.6666	0.469	0.48296	-0.013958	1
0.6833	0.456	0.47159	-0.015592	1
0.7	0.444	0.46049	-0.016493	1
0.7166	0.437	0.44972	-0.012719	1
0.7333	0.425	0.43914	-0.014135	1
0.75	0.419	0.4288	-0.0098005	1
0.7666	0.406	0.41877	-0.012769	1
0.7833	0.4	0.40891	-0.0089129	1
0.8	0.387	0.39929	-0.012289	1
0.8166	0.381	0.38995	-0.0089478	1
0.8333	0.375	0.38077	-0.0057705	1
0.85	0.362	0.37181	-0.0098091	1
0.8666	0.356	0.36311	-0.0071105	1
0.8833	0.35	0.35456	-0.0045648	1
0.9	0.344	0.34622	-0.0022202	1
0.9166	0.337	0.33812	-0.0011203	1
0.9333	0.331	0.33016	0.00083728	1
0.95	0.319	0.32239	-0.0033924	1
0.9666	0.319	0.31485	0.0041501	1
0.9833	0.306	0.30744	-0.00144	1
1	0.3	0.3002	-0.00020453	2
1.2	0.225	0.22571	-0.00070793	2
1.4	0.181	0.1697	0.011302	2
1.6	0.143	0.12759	0.015413	2
1.8	0.118	0.095926	0.022074	2
2	0.1	0.072122	0.027878	2

2.2	0.087	0.054224	0.032776	2
2.4	0.075	0.040768	0.034232	2
2.6	0.062	0.030652	0.031348	2
2.8	0.062	0.023045	0.038955	2
3	0.056	0.017327	0.038673	2
3.2	0.056	0.013027	0.042973	2
3.4	0.05	0.0097943	0.040206	2
3.6	0.05	0.0073638	0.042636	2
3.8	0.043	0.0055364	0.037464	2

==

RESULTS FROM VISUAL CURVE MATCHING

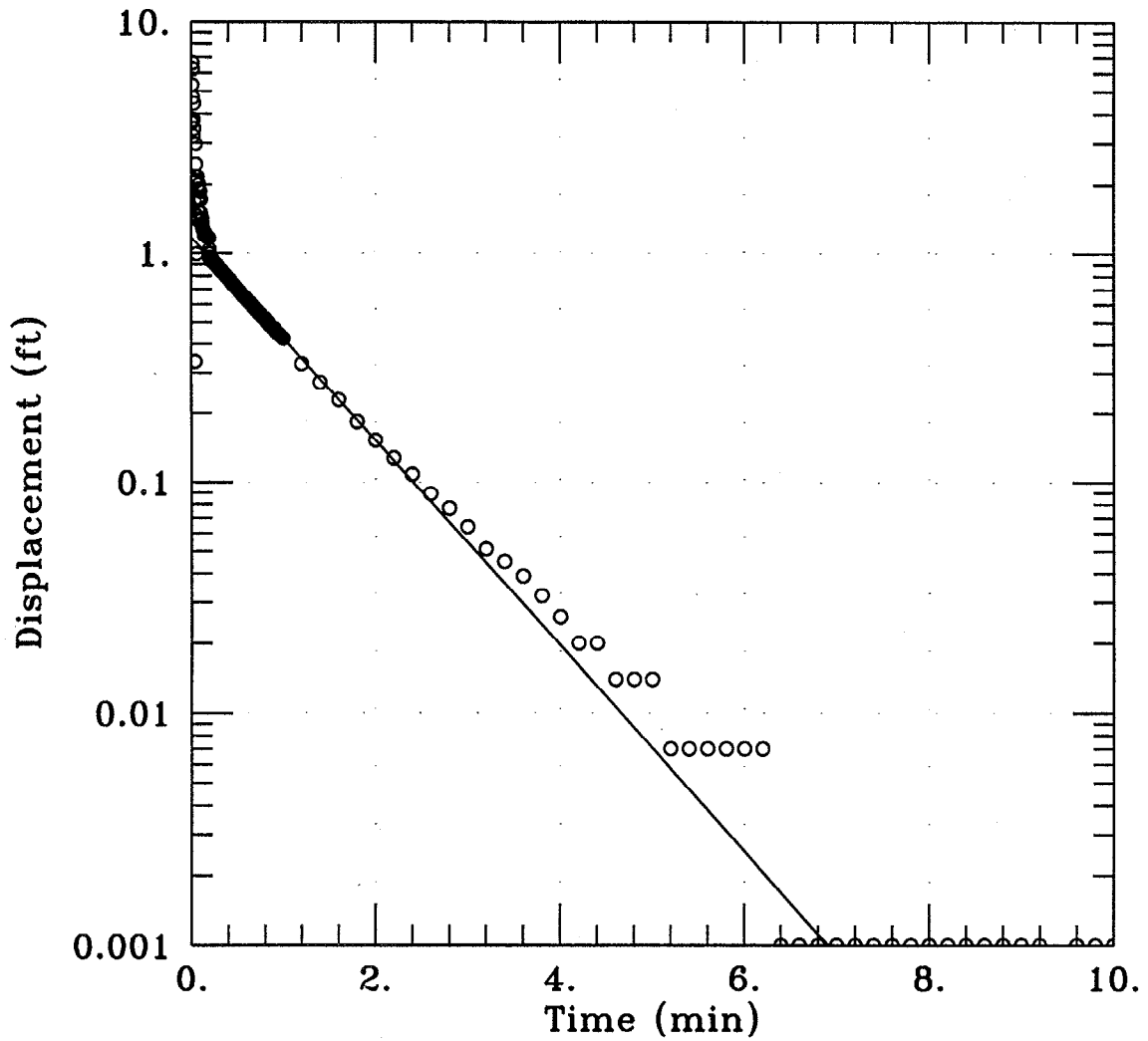
VISUAL MATCH PARAMETER ESTIMATES

```
           Estimate
   K  =   1.0930E-003
   y0 =   1.2496E+000
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

Client: LANTDIV	Company: BAKER ENVIRONMENTAL, INC
Location: SITE 73, MCB CAMP LEJEUNE	Project: 62470-312

73MW-23 RISING HEAD TEST



DATA SET:
73MW23R.DAT
05/06/96

AQUIFER MODEL:
Unconfined

SOLUTION METHOD:
Bouwer-Rice

PROJECT DATA:
test date: FEBRUARY 26, 1996
test well: 73MW-23

TEST DATA:
H0 = 3.7 ft
rc = 0.083 ft
rw = 0.421 ft
L = 13.94 ft
b = 13.94 ft
H = 4.06 ft

PARAMETER ESTIMATES:
K = 0.001427 cm/sec
y0 = 1.172 ft

AQTESOLV

```
<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>

                    A Q T E S O L V   R E S U L T S
                              Version 2.01

                    Developed by Glenn M. Duffield
                (c) 1988-1995  Geraghty & Miller, Inc.

05/06/96                                                                 14:23:22

==================================================================================
                              TEST DESCRIPTION

Data set........... 73MW23R.DAT
Output file........ 73MW23R.OUT
Data set title..... 73MW-23 RISING HEAD TEST
Company............ BAKER ENVIRONMENTAL, INC
Project............ 62470-312
Client............. LANTDIV
Location........... SITE 73, MCB CAMP LEJEUNE
Test date.......... FEBRUARY 26, 1996
Test well.......... 73MW-23

Units of Measurement
   Length.......... ft
   Time............ min

Test Well Data
   Initial displacement in well..... 3.7
   Radius of well casing............ 0.083
   Radius of wellbore............... 0.421
   Aquifer saturated thickness...... 13.94
   Well screen length............... 13.94
   Static height of water in well... 4.06
   Gravel pack porosity............. 0.23
   Effective well casing radius..... 0.2146
   Effective wellbore radius........ 0.421
   Log(Re/Rw)....................... 1.662
   Constants A, B and C............. 2.541 ,   0.414,   0.000
   No. of observations.............. 183

==================================================================================
                              ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==================================================================================
                   RESULTS FROM STATISTICAL CURVE MATCHING


STATISTICAL MATCH PARAMETER ESTIMATES

           Estimate           Std.  Error
   K  =   1.4272E-003 +/-    5.8215E-006 cm/sec
   y0 =   1.1724E+000 +/-    3.0970E-003 ft


ANALYSIS OF MODEL RESIDUALS

residual = observed - calculated
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals............... 88
   Number of estimated parameters.... 2
```

Degrees of freedom..... 86
Residual mean..... 0.001827
Residual standard deviation..... 0.01068
Residual variance..... 0.0001142

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.23	0.925	0.92663	-0.0016276	1
0.2333	0.931	0.92351	0.0074947	1
0.2366	0.931	0.92039	0.010606	1
0.24	0.925	0.9172	0.0078014	1
0.2433	0.919	0.91411	0.0048919	1
0.2466	0.912	0.91103	0.00097194	1
0.25	0.912	0.90787	0.0041345	1
0.2533	0.912	0.90481	0.0071935	1
0.2566	0.906	0.90176	0.0042422	1
0.26	0.9	0.89863	0.0013725	1
0.2633	0.9	0.8956	0.0044004	1
0.2666	0.894	0.89258	0.0014181	1
0.27	0.894	0.88948	0.0045166	1
0.2733	0.894	0.88649	0.0075137	1
0.2766	0.887	0.8835	0.0035007	1
0.28	0.881	0.88043	0.00056763	1
0.2833	0.881	0.87747	0.0035342	1
0.2866	0.875	0.87451	0.0004908	1
0.29	0.875	0.87147	0.0035266	1
0.2933	0.868	0.86854	-0.00053705	1
0.2966	0.868	0.86561	0.0023894	1
0.3	0.862	0.86261	-0.00060568	1
0.3033	0.862	0.8597	0.0023008	1
0.3066	0.862	0.8568	0.0051975	1
0.31	0.856	0.85383	0.0021718	1
0.3133	0.85	0.85095	-0.00095122	1
0.3166	0.85	0.84808	0.001916	1
0.32	0.85	0.84514	0.0048601	1
0.3233	0.844	0.84229	0.0017077	1
0.3266	0.844	0.83945	0.0045458	1
0.33	0.838	0.83654	0.0014599	1
0.3333	0.838	0.83372	0.0042785	1
0.35	0.825	0.8196	0.0053978	1
0.3666	0.806	0.8058	0.00019558	1
0.3833	0.794	0.79216	0.0018421	1
0.4	0.781	0.77874	0.0022575	1
0.4166	0.769	0.76563	0.0033674	1
0.4333	0.75	0.75267	-0.0026664	1
0.45	0.737	0.73992	-0.0029199	1
0.4666	0.725	0.72746	-0.0024635	1
0.4833	0.712	0.71514	-0.0031437	1
0.5	0.699	0.70303	-0.0040326	1
0.5166	0.687	0.6912	-0.0041973	1
0.5333	0.674	0.67949	-0.0054917	1
0.55	0.662	0.66798	-0.0059843	1
0.5666	0.649	0.65674	-0.007739	1
0.5833	0.643	0.64562	-0.0026169	1
0.6	0.63	0.63468	-0.0046833	1
0.6166	0.618	0.624	-0.0059986	1
0.6333	0.611	0.61343	-0.002431	1
0.65	0.599	0.60304	-0.0040424	1
0.6666	0.586	0.59289	-0.0068903	1
0.6833	0.58	0.58285	-0.0028496	1
0.7	0.567	0.57298	-0.0059789	1
0.7166	0.561	0.56333	-0.002333	1
0.7333	0.548	0.55379	-0.0057928	1

0.75	0.542	0.54441	-0.0024141	1
0.7666	0.53	0.53525	-0.0052491	1
0.7833	0.523	0.52618	-0.0031845	1
0.8	0.517	0.51727	-0.00027345	1
0.8166	0.504	0.50857	-0.0045653	1
0.8333	0.498	0.49995	-0.0019526	1
0.85	0.486	0.49149	-0.0054858	1
0.8666	0.479	0.48321	-0.0042118	1
0.8833	0.473	0.47503	-0.0020285	1
0.9	0.467	0.46698	1.6251E-005	1
0.9166	0.454	0.45912	-0.0051222	1
0.9333	0.448	0.45135	-0.0033469	1
0.95	0.441	0.4437	-0.0027032	1
0.9666	0.435	0.43623	-0.0012336	1
0.9833	0.429	0.42885	0.00015414	1
1	0.423	0.42158	0.0014168	3
1.2	0.328	0.34359	-0.015595	3
1.4	0.272	0.28003	-0.0080333	3
1.6	0.228	0.22823	-0.00023003	3
1.8	0.183	0.18601	-0.0030099	3
2	0.152	0.1516	0.00040004	3
2.2	0.127	0.12356	0.0034445	3
2.4	0.108	0.1007	0.0073009	3
2.6	0.089	0.082071	0.0069292	3
2.8	0.077	0.066889	0.010111	3
3	0.064	0.054515	0.0094851	3
3.2	0.051	0.04443	0.0065698	3
3.4	0.045	0.036211	0.0087889	3
3.6	0.039	0.029512	0.0094876	3
3.8	0.032	0.024053	0.0079471	3
4	0.026	0.019603	0.0063966	3
4.2	0.02	0.015977	0.0040231	3

==

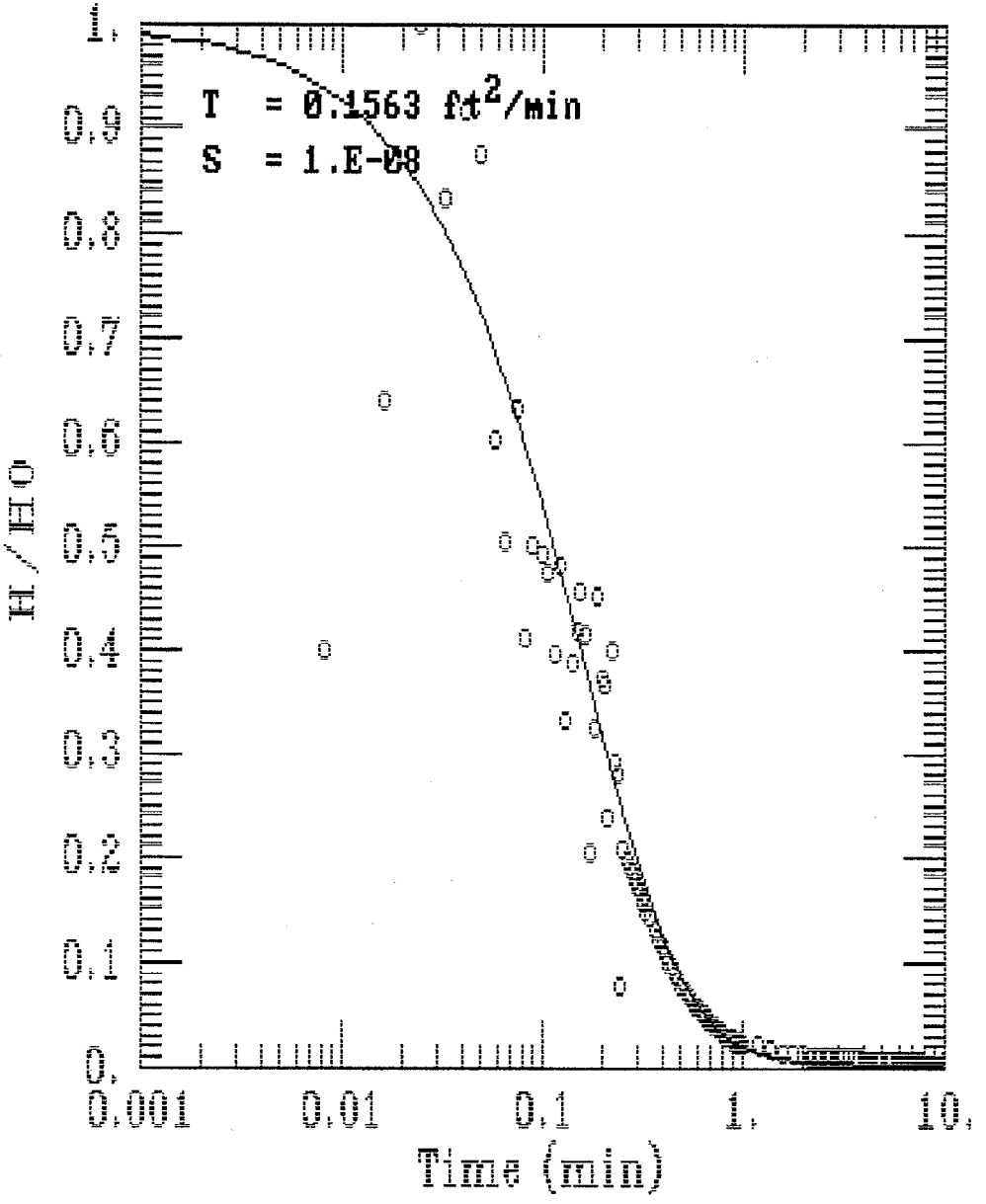
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
          Estimate
   K  =   1.4272E-003 cm/sec
   y0 =   1.1724E+000 ft
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-01B FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

06/20/95 09:14:17

==

TEST DESCRIPTION

Data set........... A:\73mw01bf.dat
Data set title..... SITE 73 - 73MW-01B FALLING HEAD TEST

Knowns and Constants:
- No. of data points................... 125
- Pumping rate......................... 1
- Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	1.5634E-001	+/-	8.8009E-003
S =	1.0000E-008	+/-	1.0002E-008

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 45
- Number of estimated parameters.... 2
- Degrees of freedom................ 43
- Residual mean..................... 0.009091
- Residual standard deviation....... 0.0183
- Residual variance................. 0.0003349

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.2416	1.185	1.0958	0.089226	1
0.6333	0.214	0.22487	-0.010866	1
0.65	0.207	0.21319	-0.0061945	1
0.6666	0.195	0.20242	-0.0074194	1
0.6833	0.188	0.19234	-0.0043436	1
0.7	0.176	0.18297	-0.0069723	1
0.7166	0.17	0.1743	-0.0042997	1
0.7333	0.163	0.16617	-0.0031697	1
0.75	0.157	0.15859	-0.0015894	1
0.7666	0.151	0.15156	-0.00055685	1

0.7833	0.145	0.14495	5.2004E-005	1
0.8	0.138	0.13877	-0.0007707	1
0.8166	0.132	0.13303	-0.0010255	1
0.8333	0.126	0.12761	-0.001613	1
0.85	0.126	0.12254	0.0034586	1
0.8666	0.12	0.11781	0.0021872	1
0.8833	0.113	0.11335	-0.00034707	1
0.9	0.113	0.10915	0.0038479	1
0.9166	0.107	0.10523	0.0017688	1
0.9333	0.101	0.10152	-0.00051912	1
0.95	0.101	0.098023	0.0029765	1
0.9666	0.094	0.094748	-0.00074807	1
0.9833	0.094	0.091639	0.0023606	1
1	0.088	0.088705	-0.00070483	1
1.2	0.082	0.063519	0.018481	1
1.4	0.069	0.049305	0.019695	1
1.6	0.057	0.040408	0.016592	1
1.8	0.051	0.03434	0.01666	1
2	0.051	0.029915	0.021085	1
2.2	0.044	0.026524	0.017476	1
2.4	0.044	0.023828	0.020172	1
2.6	0.038	0.021627	0.016373	1
2.8	0.038	0.019792	0.018208	1
3	0.038	0.018239	0.019761	1
3.2	0.032	0.016908	0.015092	1
3.4	0.032	0.015754	0.016246	1
3.6	0.032	0.014745	0.017255	1
3.8	0.032	0.013857	0.018143	1
4	0.026	0.013068	0.012932	1
4.2	0.026	0.012364	0.013636	1
4.4	0.026	0.011732	0.014268	1
4.6	0.026	0.011161	0.014839	1
4.8	0.026	0.010643	0.015357	1
5	0.026	0.010172	0.015828	1
5.2	0.026	0.0097413	0.016259	1

==

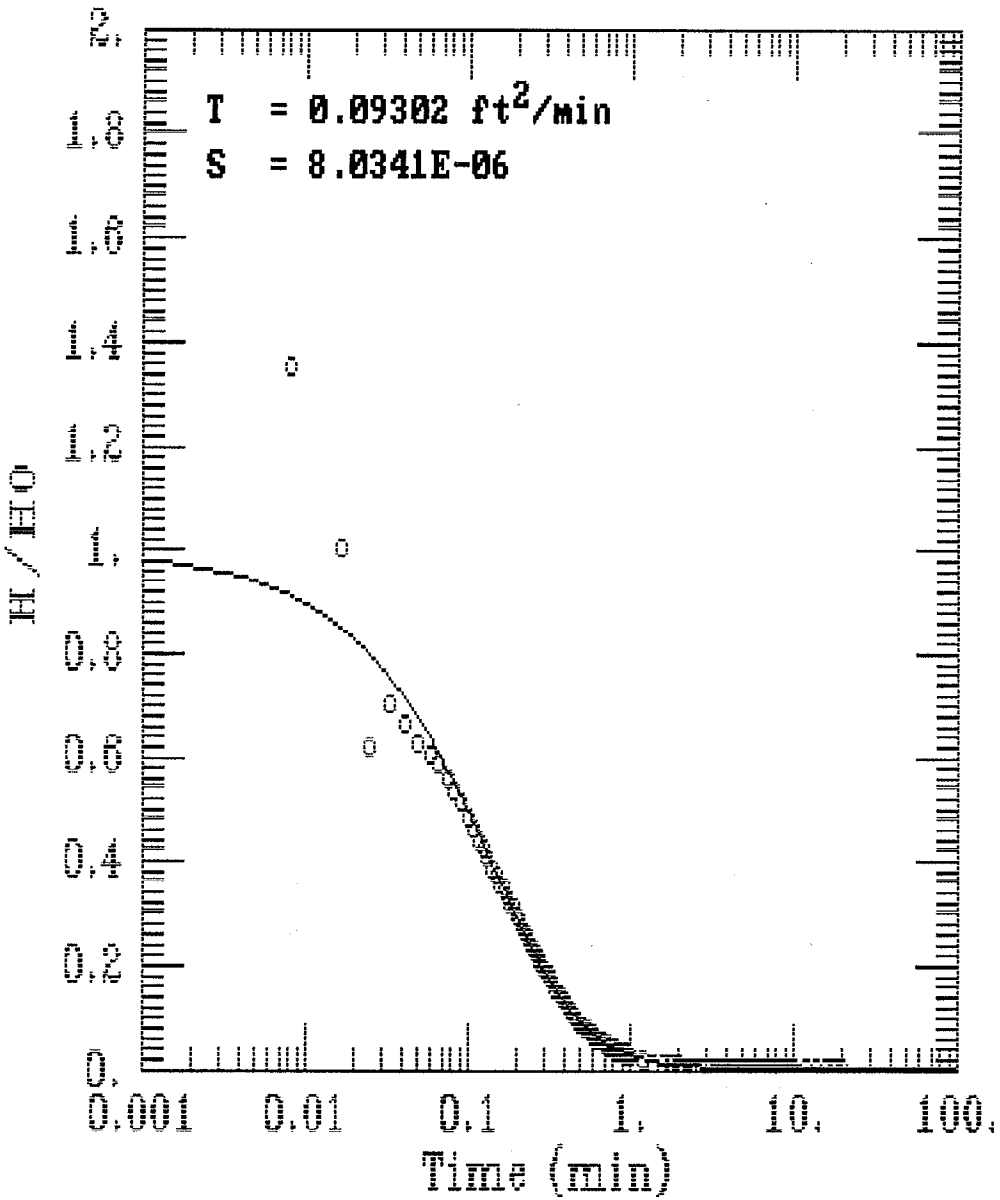
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
  T  =  1.5634E-001
  S  =  1.0000E-008
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-01B RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

06/20/95 09:12:44

==

TEST DESCRIPTION

Data set........... A:\73mw01br.dat
Data set title..... SITE 73 - 73MW-01B RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 130
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	9.3020E-002	+/-	1.4696E-003
S =	8.0341E-006	+/-	1.0693E-006

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals................ 70
Number of estimated parameters.... 2
Degrees of freedom................ 68
Residual mean..................... -0.003394
Residual standard deviation....... 0.01541
Residual variance................. 0.0002375

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.1083	1.923	1.9703	-0.047298	1
0.1166	1.841	1.8809	-0.039865	1
0.125	1.766	1.7959	-0.029857	1
0.1333	1.697	1.7169	-0.019865	1
0.1416	1.622	1.6425	-0.020462	1
0.15	1.559	1.5715	-0.012486	1
0.1583	1.497	1.5053	-0.0083141	1
0.1666	1.44	1.4428	-0.0027979	1
0.175	1.384	1.383	0.0010079	1
0.1833	1.334	1.3271	0.0069125	1

0.1916	1.284	1.2741	0.0098582	1
0.2	1.234	1.2234	0.010627	1
0.2083	1.19	1.1758	0.014188	1
0.2166	1.146	1.1307	0.015325	1
0.225	1.102	1.0873	0.014693	1
0.2333	1.064	1.0466	0.017398	1
0.2416	1.027	1.0079	0.019099	1
0.25	0.989	0.97065	0.018347	1
0.2583	0.952	0.93563	0.016368	1
0.2666	0.92	0.90228	0.017718	1
0.275	0.889	0.87013	0.018868	1
0.2833	0.858	0.83986	0.018141	1
0.2916	0.826	0.81099	0.015013	1
0.3	0.801	0.78312	0.017885	1
0.3083	0.776	0.75683	0.019167	1
0.3166	0.751	0.73173	0.019267	1
0.325	0.726	0.70747	0.01853	1
0.3333	0.701	0.68456	0.016438	1
0.35	0.651	0.64145	0.0095465	1
0.3666	0.613	0.60222	0.010779	1
0.3833	0.57	0.56603	0.0039714	1
0.4	0.538	0.5328	0.0052014	1
0.4166	0.507	0.50242	0.0045805	1
0.4333	0.476	0.47427	0.0017288	1
0.45	0.451	0.44832	0.0026831	1
0.4666	0.419	0.42449	-0.0054911	1
0.4833	0.4	0.40233	-0.002326	1
0.5	0.375	0.38181	-0.0068079	1
0.5166	0.357	0.3629	-0.0059003	1
0.5333	0.338	0.34524	-0.0072444	1
0.55	0.319	0.32884	-0.0098403	1
0.5666	0.3	0.31367	-0.013669	1
0.5833	0.288	0.29945	-0.011452	1
0.6	0.275	0.2862	-0.011198	1
0.6166	0.263	0.2739	-0.010898	1
0.6333	0.25	0.26233	-0.012333	1
0.65	0.238	0.25151	-0.013515	1
0.6666	0.231	0.24144	-0.010443	1
0.6833	0.219	0.23194	-0.012944	1
0.7	0.213	0.22303	-0.010031	1
0.7166	0.2	0.21471	-0.014707	1
0.7333	0.194	0.20683	-0.012832	1
0.75	0.187	0.19942	-0.012421	1
0.7666	0.181	0.19248	-0.01148	1
0.7833	0.175	0.18589	-0.010894	1
0.8	0.169	0.17968	-0.010678	1
0.8166	0.162	0.17384	-0.01184	1
0.8333	0.156	0.16829	-0.012286	1
0.85	0.15	0.16303	-0.01303	1
0.8666	0.144	0.15808	-0.01408	1
0.8833	0.144	0.15336	-0.0093587	1
0.9	0.137	0.14888	-0.011879	1
0.9166	0.131	0.14465	-0.013649	1
0.9333	0.131	0.1406	-0.0096047	1
0.95	0.125	0.13676	-0.011758	1
0.9666	0.125	0.13312	-0.008117	1
0.9833	0.119	0.12963	-0.010627	1
1	0.112	0.1263	-0.0143	1
1.2	0.075	0.096093	-0.021093	1
1.4	0.056	0.077229	-0.021229	1

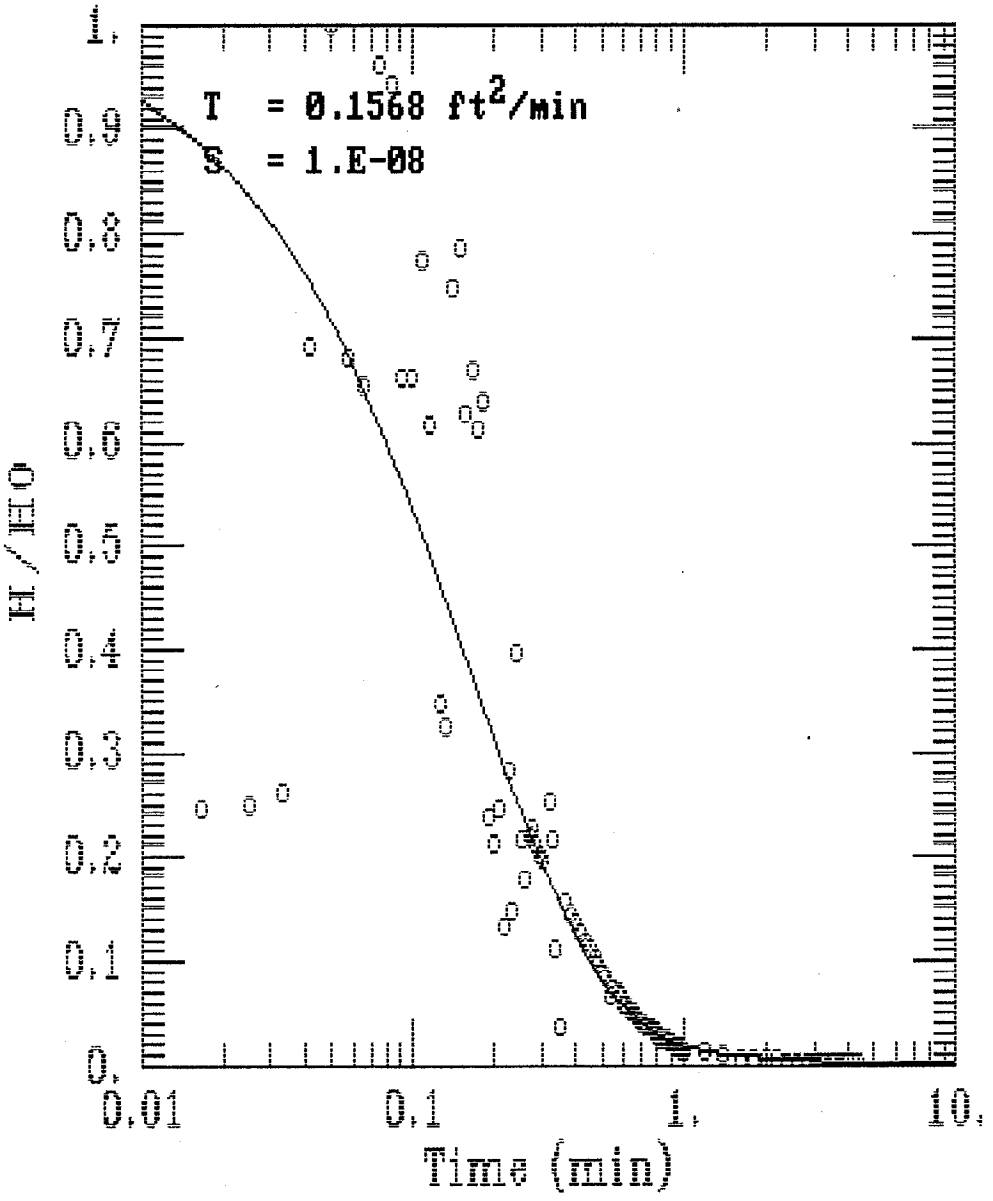
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
T	=	9.3020E-002
S	=	8.0341E-006

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-11B FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

06/20/95   08:28:09

==

TEST DESCRIPTION

Data set........... A:\73mw11bf.dat
Data set title..... SITE 73 - 73MW-11B FALLING HEAD TEST

Knowns and Constants:
   No. of data points................. 95
   Pumping rate....................... 1
   Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

		Estimate		Std. Error
T	=	1.5683E-001	+/-	1.2641E-002
S	=	1.0000E-008	+/-	1.4785E-008

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals................ 42
   Number of estimated parameters.... 2
   Degrees of freedom................ 40
   Residual mean..................... -0.005587
   Residual standard deviation....... 0.0185
   Residual variance................. 0.0003422

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.4166	0.49	0.45598	0.034019	1
0.4333	0.458	0.42579	0.032209	1
0.45	0.427	0.39807	0.028931	1
0.4666	0.396	0.37274	0.023262	1
0.4833	0.37	0.34929	0.020709	1
0.5	0.345	0.32771	0.017294	1
0.5166	0.327	0.30793	0.019069	1
0.5333	0.258	0.28958	-0.031581	1
0.55	0.283	0.27264	0.010356	1
0.5666	0.27	0.25709	0.012912	1

0.5833	0.251	0.24262	0.008384	1
0.6	0.233	0.22923	0.0037749	1
0.6166	0.22	0.2169	0.0031045	1
0.6333	0.201	0.2054	-0.0043962	1
0.65	0.195	0.19473	0.00027095	1
0.6666	0.182	0.18488	-0.0028827	1
0.6833	0.17	0.17568	-0.0056766	1
0.7	0.157	0.16712	-0.010115	1
0.7166	0.151	0.15919	-0.008193	1
0.7333	0.138	0.15177	-0.013767	1
0.75	0.132	0.14484	-0.012845	1
0.7666	0.126	0.13842	-0.012423	1
0.7833	0.12	0.13239	-0.012388	1
0.8	0.107	0.12675	-0.019748	1
0.8166	0.107	0.1215	-0.014503	1
0.8333	0.101	0.11656	-0.015562	1
0.85	0.095	0.11193	-0.016933	1
0.8666	0.088	0.10762	-0.019617	1
0.8833	0.082	0.10354	-0.021541	1
0.9	0.082	0.099713	-0.017713	1
0.9166	0.069	0.096135	-0.027135	1
0.9333	0.069	0.092747	-0.023747	1
0.95	0.063	0.089557	-0.026557	1
0.9666	0.063	0.086569	-0.023569	1
0.9833	0.057	0.083732	-0.026732	1
1	0.057	0.081055	-0.024055	1
1.2	0.044	0.058077	-0.014077	1
1.4	0.032	0.045105	-0.013105	1
1.6	0.026	0.036981	-0.010981	1
1.8	0.026	0.031436	-0.0054365	1
2	0.019	0.027391	-0.0083905	1
2.2	0.019	0.024288	-0.0052881	1

==

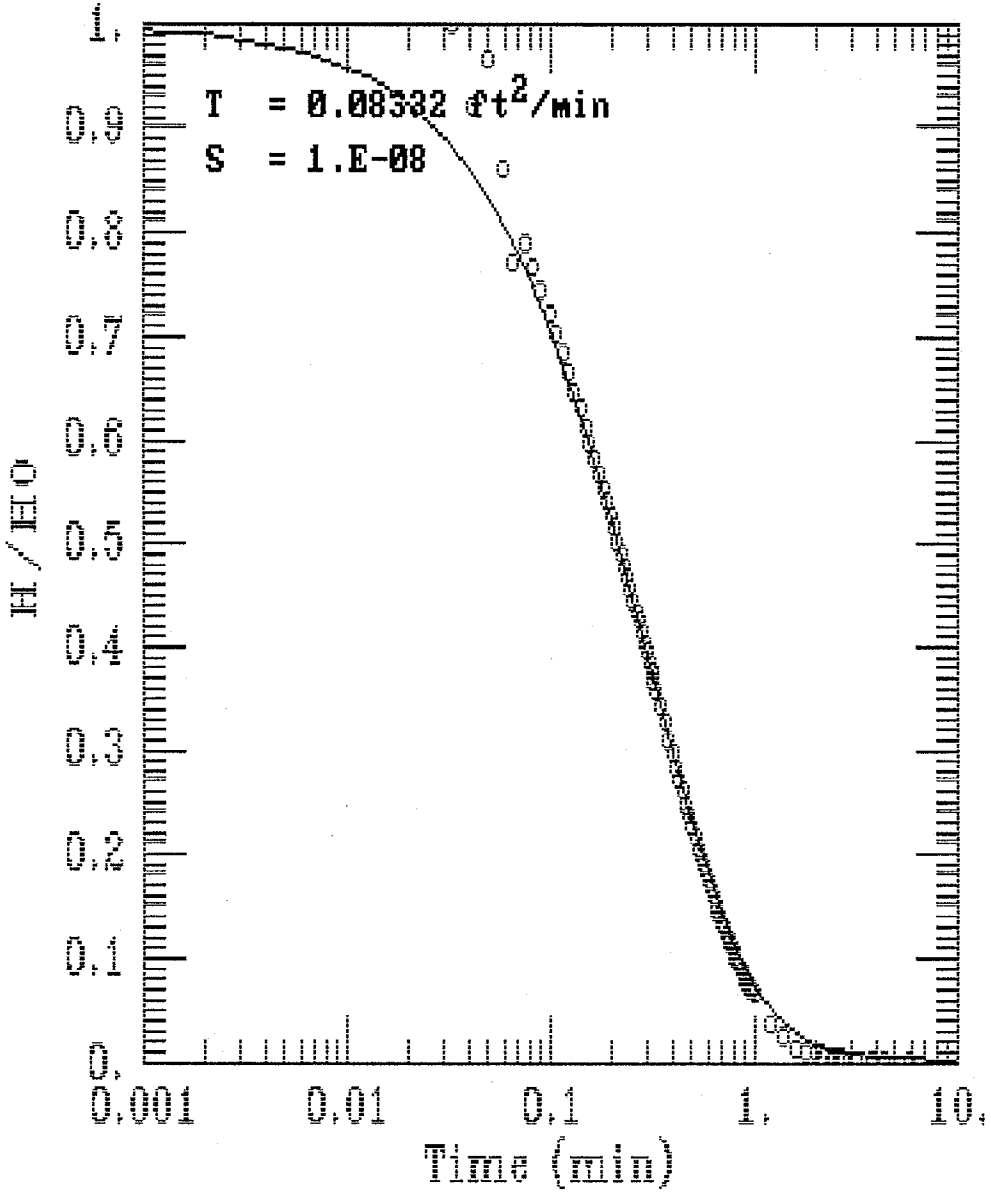
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

```
        Estimate
T  =   1.5683E-001
S  =   1.0000E-008
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-11B RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S

Version 1.10

07/19/95 11:43:02

==

TEST DESCRIPTION

Data set........... 73mw11br.dat
Data set title..... SITE 73 - 73MW-11B RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 90
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	8.3316E-002	+/-	3.3300E-003
S =	1.0000E-008	+/-	5.9243E-009

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals.............. 79
Number of estimated parameters.... 2
Degrees of freedom............... 77
Residual mean.................... -0.002577
Residual standard deviation....... 0.02613
Residual variance................ 0.000683

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.075	2.401	2.3337	0.067304	1
0.0833	2.332	2.2718	0.060214	1
0.0916	2.263	2.212	0.050955	1
0.1	2.2	2.1537	0.046337	1
0.1083	2.137	2.0979	0.039083	1
0.1166	2.087	2.044	0.042998	1
0.125	2.031	1.9912	0.039792	1
0.1333	1.975	1.9407	0.034288	1
0.1416	1.924	1.8918	0.032202	1
0.15	1.868	1.8438	0.024163	1

0.1583	1.824	1.7979	0.026094	1
0.1666	1.774	1.7534	0.020634	1
0.175	1.73	1.7096	0.020351	1
0.1833	1.686	1.6677	0.018257	1
0.1916	1.649	1.6271	0.021929	1
0.2	1.605	1.5871	0.017882	1
0.2083	1.567	1.5488	0.018208	1
0.2166	1.53	1.5116	0.018432	1
0.225	1.492	1.475	0.017021	1
0.2333	1.454	1.4399	0.014142	1
0.2416	1.417	1.4057	0.011273	1
0.25	1.385	1.3722	0.012841	1
0.2583	1.354	1.3399	0.014076	1
0.2666	1.323	1.3086	0.014421	1
0.275	1.291	1.2777	0.013264	1
0.2833	1.26	1.2481	0.011899	1
0.2916	1.229	1.2193	0.0097247	1
0.3	1.204	1.1909	0.013101	1
0.3083	1.172	1.1636	0.0083775	1
0.3166	1.147	1.1371	0.0099199	1
0.325	1.116	1.1109	0.005079	1
0.3333	1.091	1.0858	0.0052136	1
0.35	1.041	1.0372	0.0037837	1
0.3666	0.997	0.99145	0.0055454	1
0.3833	0.947	0.94789	-0.0008852	1
0.4	0.903	0.90648	-0.0034804	1
0.4166	0.865	0.86742	-0.0024225	1
0.4333	0.827	0.83012	-0.0031195	1
0.45	0.79	0.79448	-0.0044821	1
0.4666	0.752	0.76103	-0.00903	1
0.4833	0.721	0.72905	-0.0080479	1
0.5	0.69	0.69865	-0.008649	1
0.5166	0.658	0.67026	-0.012259	1
0.5333	0.627	0.64277	-0.015765	1
0.55	0.602	0.61661	-0.014608	1
0.5666	0.577	0.59186	-0.014861	1
0.5833	0.552	0.56781	-0.015811	1
0.6	0.527	0.54524	-0.018236	1
0.6166	0.508	0.52386	-0.015861	1
0.6333	0.483	0.50337	-0.020369	1
0.65	0.464	0.48406	-0.020058	1
0.6666	0.445	0.46555	-0.020554	1
0.6833	0.426	0.4478	-0.021801	1
0.7	0.407	0.43087	-0.023868	1
0.7166	0.395	0.41473	-0.019732	1
0.7333	0.376	0.39931	-0.023312	1
0.75	0.364	0.38459	-0.020594	1
0.7666	0.345	0.37064	-0.025635	1
0.7833	0.332	0.35721	-0.025212	1
0.8	0.32	0.34439	-0.024389	1
0.8166	0.307	0.33221	-0.025209	1
0.8333	0.295	0.3205	-0.025497	1
0.85	0.282	0.3093	-0.0273	1
0.8666	0.269	0.29866	-0.029657	1
0.8833	0.263	0.28842	-0.025415	1
0.9	0.251	0.27862	-0.027617	1
0.9166	0.238	0.2693	-0.031297	1
0.9333	0.232	0.26032	-0.028321	1
0.95	0.226	0.25173	-0.025729	1
0.9666	0.213	0.24355	-0.030549	1
0.9833	0.207	0.23567	-0.028665	1
1	0.201	0.22811	-0.027113	1
1.2	0.113	0.15844	-0.045436	1
1.4	0.069	0.11523	-0.046231	1
1.6	0.044	0.087517	-0.043517	1
1.8	0.031	0.069126	-0.038126	1

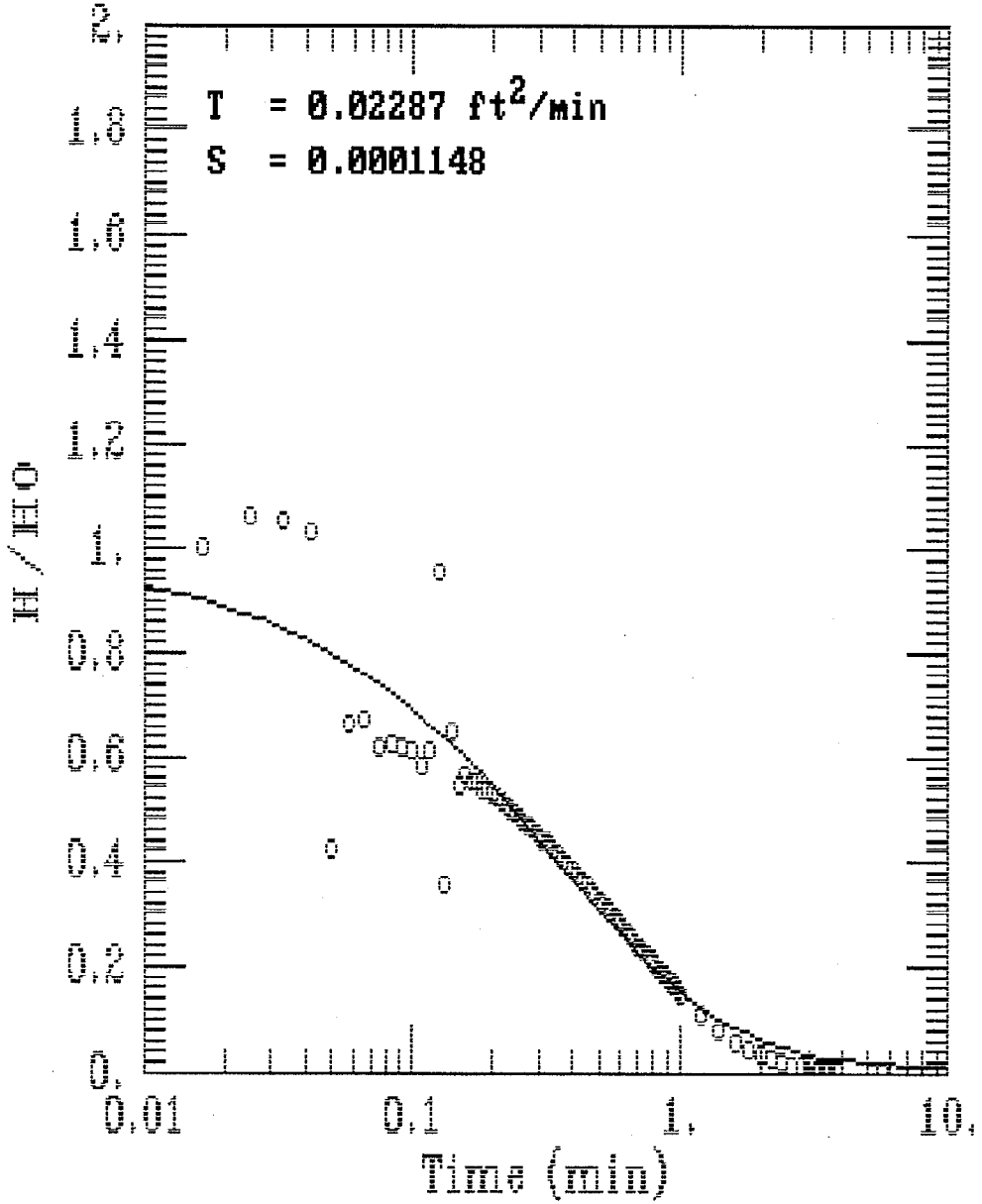
2	0.025	0.056503	-0.031503	1
2.2	0.012	0.047545	-0.035545	1
5.8	0.006	0.012657	-0.0066567	1

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
T	=	8.3316E-002
S	=	1.0000E-008

SITE 73 - 73MW-15B FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

[illegible]/20/95 08:26:18

==

TEST DESCRIPTION

Data set........... A:\73mw15bf.dat
Data set title..... SITE 73 - 73MW-15B FALLING HEAD TEST

Knowns and Constants:
- No. of data points.................. 95
- Pumping rate........................ 1
- Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	2.2868E-002	+/-	1.0908E-003
S =	1.1484E-004	+/-	2.6803E-005

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals.............. 68
- Number of estimated parameters.... 2
- Degrees of freedom............... 66
- Residual mean.................... -0.005854
- Residual standard deviation....... 0.03338
- Residual variance................ 0.001114

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.1833	1.217	1.2855	-0.068507	1
0.1916	1.205	1.262	-0.056971	1
0.2	1.186	1.2389	-0.05287	1
0.2083	1.173	1.2167	-0.043719	1
0.2166	1.155	1.1952	-0.040207	1
0.225	1.142	1.1741	-0.032055	1
0.2333	1.123	1.1537	-0.030741	1
0.2416	1.111	1.134	-0.022983	1
0.25	1.098	1.1145	-0.016528	1
0.2583	1.079	1.0958	-0.016819	1

0.2666	1.067	1.0776	-0.010598	1
0.275	1.054	1.0596	-0.0056362	1
0.2833	1.042	1.0423	-0.0003423	1
0.2916	1.029	1.0255	0.0035174	1
0.3	1.01	1.0088	0.0011548	1
0.3083	0.998	0.99281	0.0051891	1
0.3166	0.985	0.97716	0.0078353	1
0.325	0.973	0.96171	0.011289	1
0.3333	0.96	0.9468	0.013195	1
0.35	0.935	0.91786	0.017142	1
0.3666	0.91	0.89039	0.019608	1
0.3833	0.891	0.86399	0.027006	1
0.4	0.866	0.83875	0.027246	1
0.4166	0.841	0.81474	0.026256	1
0.4333	0.822	0.79161	0.03039	1
0.45	0.803	0.76944	0.033558	1
0.4666	0.778	0.74831	0.029691	1
0.4833	0.759	0.72791	0.031093	1
0.5	0.741	0.70832	0.032682	1
0.5166	0.722	0.68961	0.03239	1
0.5333	0.703	0.67152	0.031484	1
0.55	0.684	0.65412	0.029884	1
0.5666	0.665	0.63747	0.027529	1
0.5833	0.646	0.62135	0.02465	1
0.6	0.634	0.60582	0.028178	1
0.6166	0.615	0.59095	0.024051	1
0.6333	0.596	0.57652	0.019478	1
0.65	0.584	0.56261	0.02139	1
0.6666	0.571	0.54927	0.021733	1
0.6833	0.552	0.53631	0.015691	1
0.7	0.54	0.5238	0.016202	1
0.7166	0.527	0.51178	0.015216	1
0.7333	0.509	0.50011	0.0088944	1
0.75	0.502	0.48882	0.013183	1
0.7666	0.49	0.47797	0.012034	1
0.7833	0.477	0.46741	0.0095935	1
0.8	0.465	0.45719	0.0078104	1
0.8166	0.452	0.44736	0.0046406	1
0.8333	0.44	0.43778	0.002216	1
0.85	0.427	0.42851	-0.0015108	1
0.8666	0.414	0.41958	-0.0055805	1
0.8833	0.408	0.41087	-0.002874	1
0.9	0.396	0.40243	-0.006435	1
0.9166	0.383	0.3943	-0.011301	1
0.9333	0.377	0.38636	-0.0093647	1
0.95	0.364	0.37867	-0.014666	1
0.9666	0.358	0.37124	-0.013239	1
0.9833	0.345	0.36399	-0.018987	1
1	0.333	0.35695	-0.023947	1
1.2	0.251	0.28655	-0.035554	1
1.4	0.182	0.2355	-0.053503	1
1.6	0.132	0.19747	-0.065467	1
1.8	0.101	0.16846	-0.067462	1
2	0.076	0.14589	-0.069887	1
2.2	0.057	0.12799	-0.070994	1
2.4	0.044	0.11358	-0.06958	1
2.6	0.032	0.1018	-0.069796	1
2.8	0.019	0.092033	-0.073033	1

==========

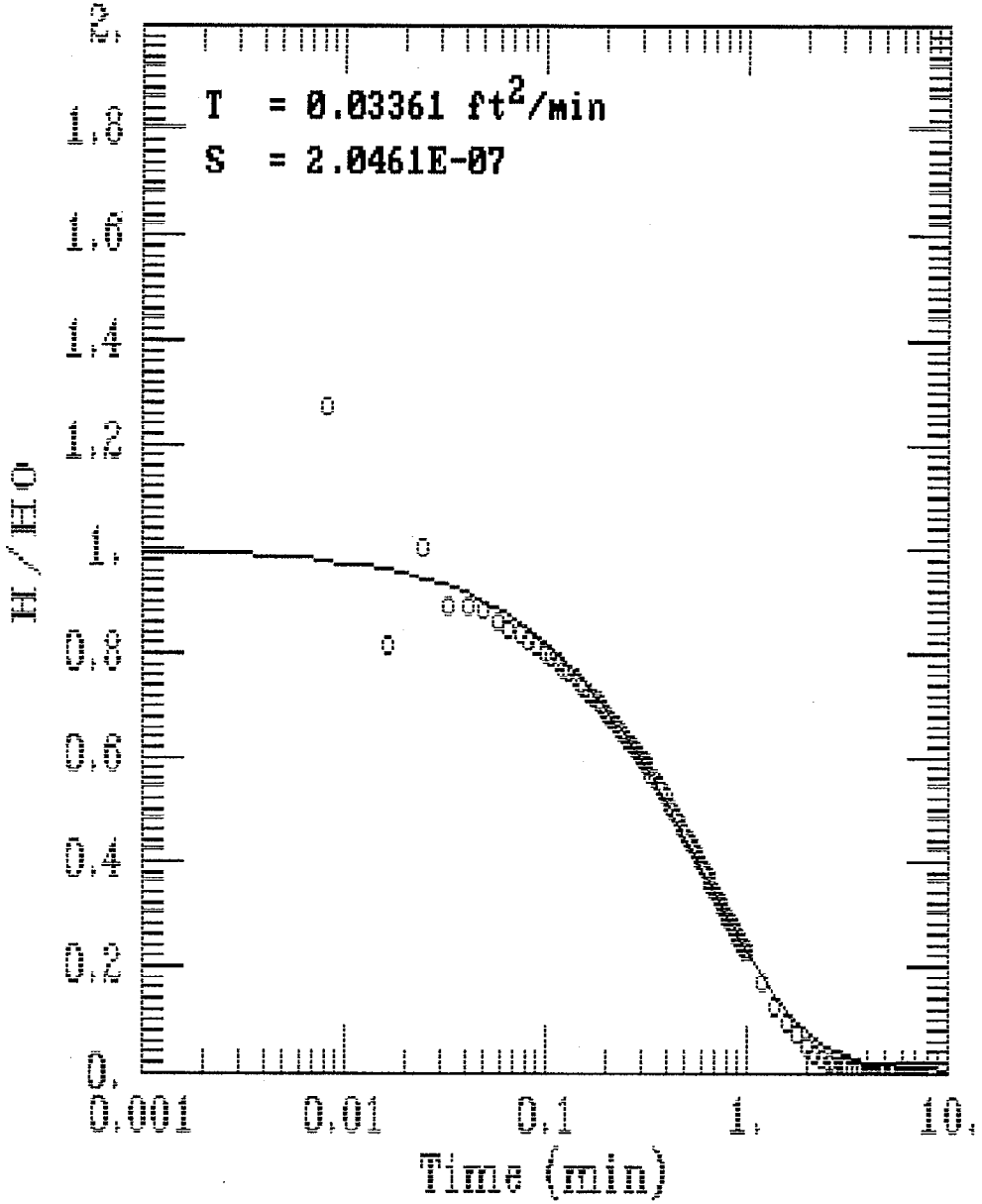
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
T	=	2.2868E-002
S	=	1.1484E-004

:<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

SITE 73 - 73MW-15B RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

[illegible]/19/95 16:09:59

==

TEST DESCRIPTION

Data set........... a:\73mw15br.dat
Data set title..... SITE 73 - 73MW-15B RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 113
Pumping rate........................ 1
Radius (distance) to obs. well...... 0.083

==

ANALYTICAL METHOD

Cooper et al. (Confined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
T =	3.3606E-002	+/-	2.0679E-003
S =	2.0461E-007	+/-	1.3918E-007

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 85
Number of estimated parameters.... 2
Degrees of freedom................ 83
Residual mean..................... -0.006949
Residual standard deviation....... 0.02554
Residual variance................. 0.0006525

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.0583	1.63	1.6769	-0.04694	1
0.0666	1.598	1.6516	-0.053622	1
0.075	1.58	1.6267	-0.046717	1
0.0833	1.554	1.6028	-0.048759	1
0.0916	1.536	1.5794	-0.043401	1
0.1	1.517	1.5563	-0.039333	1
0.1083	1.498	1.5341	-0.036069	1
0.1166	1.479	1.5123	-0.033304	1
0.125	1.46	1.4908	-0.030758	1
0.1333	1.442	1.4699	-0.027922	1

0.1416	1.429	1.4495	-0.020518	1
0.15	1.404	1.4293	-0.025288	1
0.1583	1.391	1.4097	-0.018699	1
0.1666	1.373	1.3905	-0.017492	1
0.175	1.36	1.3714	-0.011428	1
0.1833	1.341	1.3529	-0.01195	1
0.1916	1.323	1.3348	-0.011815	1
0.2	1.304	1.3168	-0.012801	1
0.2083	1.291	1.2993	-0.0083261	1
0.2166	1.272	1.2822	-0.010164	1
0.225	1.26	1.2651	-0.0051057	1
0.2333	1.247	1.2485	-0.0015474	1
0.2416	1.228	1.2323	-0.0042765	1
0.25	1.216	1.2161	-9.4496E-005	1
0.2583	1.203	1.2004	0.0026208	1
0.2666	1.191	1.1849	0.0060706	1
0.275	1.172	1.1696	0.002443	1
0.2833	1.16	1.1546	0.0053784	1
0.2916	1.147	1.1399	0.0070675	1
0.3	1.134	1.1253	0.0086886	1
0.3083	1.122	1.1111	0.010899	1
0.3166	1.109	1.0971	0.01188	1
0.325	1.097	1.0832	0.013801	1
0.3333	1.078	1.0697	0.0083362	1
0.35	1.059	1.0431	0.015923	1
0.3666	1.034	1.0175	0.016527	1
0.3833	1.009	0.99251	0.016489	1
0.4	0.984	0.96831	0.015687	1
0.4166	0.959	0.94499	0.014012	1
0.4333	0.94	0.92223	0.017774	1
0.45	0.915	0.90014	0.014858	1
0.4666	0.896	0.87884	0.017161	1
0.4833	0.877	0.85803	0.018966	1
0.5	0.852	0.83783	0.014165	1
0.5166	0.833	0.81834	0.014665	1
0.5333	0.815	0.79928	0.01572	1
0.55	0.802	0.78077	0.021231	1
0.5666	0.783	0.76289	0.020112	1
0.5833	0.765	0.7454	0.019596	1
0.6	0.746	0.72841	0.01759	1
0.6166	0.727	0.71199	0.015013	1
0.6333	0.714	0.69592	0.01808	1
0.65	0.696	0.6803	0.015704	1
0.6666	0.677	0.66519	0.011811	1
0.6833	0.664	0.6504	0.013597	1
0.7	0.652	0.63602	0.015982	1
0.7166	0.633	0.6221	0.010896	1
0.7333	0.62	0.60848	0.011521	1
0.75	0.608	0.59522	0.012781	1
0.7666	0.589	0.58239	0.0066131	1
0.7833	0.576	0.56982	0.0061821	1
0.8	0.564	0.55758	0.0064202	1
0.8166	0.551	0.54573	0.0052673	1
0.8333	0.539	0.53412	0.0048756	1
0.85	0.533	0.52282	0.010182	1
0.8666	0.514	0.51187	0.0021317	1
0.8833	0.507	0.50114	0.0058641	1
0.9	0.495	0.49068	0.0043211	1
0.9166	0.482	0.48055	0.0014507	1
0.9333	0.47	0.47062	-0.00061713	1
0.95	0.457	0.46094	-0.0039367	1
0.9666	0.445	0.45156	-0.0065564	1
0.9833	0.438	0.44236	-0.0043562	1
1	0.432	0.43339	-0.0013865	1
1.2	0.313	0.34167	-0.028673	1
1.4	0.238	0.27305	-0.035047	1

1.6	0.175	0.22109	-0.046089	1
1.8	0.131	0.18132	-0.050319	1
2	0.094	0.15056	-0.056563	1
2.2	0.068	0.12654	-0.05854	1
2.4	0.05	0.10759	-0.057595	1
2.6	0.037	0.092512	-0.055512	1
2.8	0.025	0.080395	-0.055395	1
3	0.025	0.07057	-0.04557	1
3.2	0.018	0.062533	-0.044533	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

		Estimate
T	=	3.3606E-002
S	=	2.0461E-007

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

APPENDIX J
SUMMARY OF GROUNDWATER DATA AND AQUIFER CHARACTERISTICS

SUMMARY OF GROUNDWATER DATA AND AQUIFER CHARACTERISTICS MARINE CORPS BASE, CAMP LEJEUNE JACKSONVILLE, NORTH CAROLINA

SUMMARY

This study examines the utility of exploratory aquifer tests (pump tests) at investigation sites across Marine Corps Base, Camp Lejeune (MCB-CL). The study reviews the available information on the relevant water-bearing layers, considers the general characteristics and applicability of aquifer tests, and concludes:

- That available information is satisfactorily complete to allow appropriate designs of groundwater systems in the main operating areas of MCB-CL;
- That quantified characterization of the water-bearing layers in explored areas of MCB-CL can be extended to other areas having similar geologic terrane;
- That exploratory tests are no longer routinely required or advisable;
- That reconnaissance testing (well-head tests or slug tests) of each newly installed or otherwise uncharacterized data station is highly advisable; and,
- That performance testing of groundwater extraction systems should be the recommended form of evaluating and adjusting withdrawal systems.

BACKGROUND

This study considers the aquifer characteristics (especially, the Coefficient of Transmissivity) and the production capacities (available discharge rates) of the two water-bearing layers relevant to the studies at MCB-CL. These water-bearing layers are the (shallow or surficial) water table and the Upper Castle Hayne Aquifer.

The water table at MCB-CL occupies the water-bearing zone within 25 to 35 feet of the surface; the Castle Hayne, immediately below this. However, the separation of the water table and the Castle Hayne is not always obvious. Usually, this separation is effected only by the low permeability material of the water table transiting to the significantly more permeable material of the Upper Castle Hayne; there is rarely an aquiclude or aquitard of vertically extensive clay separating the water table from the Castle Hayne.

The data available for this summary derive from three main sources:

- Assessment of Hydrologic and Hydrogeologic Data at Camp Lejeune Marine Corps Base, North Carolina; U.S. Geological Survey, Water-Resources Investigation Report 89-4096; 1989
- Wellhead Management Program Engineering Study 91-36; Geophex, Ltd.; 22Jan91
- Various site investigations by Baker Environmental, Inc., and reported to LANTDIV and MCB-CL

DISTRIBUTION OF DATA

The data available from the various sources have been compiled on Tables 1, 2 and 3, with Table 3 summarizing the relevant flow information. The accompanying map indicates the distribution of stations from which data are available.

The tabulated data indicate the main characteristics of each water-bearing layer:

- There is low available production from the water table.
- There is an excessive availability of production from the Castle Hayne compared to the probably acceptable levels of treatment volumes foreseeable in groundwater remediation systems.

The water table had production capacities of less than 5 gallons per minute (gpm) in all cases tested. The specific capacities of the discharge wells were always less than 1 gallon per minute per foot of drawdown (gpm/ft). The transmissivities calculated were generally near or below 1000 gallons per day per foot of drawdown (gpd/ft); only the deeper wells, which intercepted at least part of the Castle Hayne, had transmissivities in a range indicative of an acceptably producing zone. The hydraulic conductivity values were commonly in the range of tenths of feet per day (ft/d). The low production rates, low transmissivities and low hydraulic conductivities indicate that the water table is only marginally, at best, under Darcian conditions. Calculations based on these data would, therefore, be highly unreliable. However, the available information all indicate an expectably low rate of groundwater discharge, which in turn would produce only a narrow radius of effect around an individual production well:

> The standard equation for calculation of the radius of capture around an individual well is $r_c=720Q/\pi Ti$. With a discharge rate (Q) of 3 gpm, a transmissivity (T) of 500 gpd/ft and a representative gradient of 0.005, the radius of capture would be 275 ft. However, this calculation applies only to Darcian conditions in a homogeneous medium; the water table at MCB-CL is marginally Darcian and is highly non-homogeneous. The calculation of radius must, therefore, be in some degree of error, with no more usable data or calculation possible.

The Castle Hayne has production capacities generally ranging above 200 gpm. The estimated transmissivities are at least in the range of several tens of thousands gpd/ft, with specific capacities usually about 5 to 10 gpm/ft. The calculated hydraulic conductivities are usually in the scores of feet per day. The available discharge from the Castle Hayne is, therefore, much greater than that from the water table. The limiting factor in remediation schemes for the Castle Hayne then becomes the amount of water that can be treated by an affordable system, usually less than 500 gpm; this value of 500 gpm would be available from one or two wells in the Castle Hayne. The high values of aquifer parameters, the relatively low total discharge and the low number of production wells would conspire to limit the radius of effect available to a remediation scheme:

> The standard equation for calculation of the radius of capture around an individual well is $r_c=720Q/\pi Ti$. With a Q of 500 gpm, a T of 50000 gpd/ft and a representative gradient of 0.005, the radius of capture would be only 460 ft.

COMPARABILITY OF DATA ACROSS MCB-CL

The stratigraphic sequences of MCB-CL containing the water table and the Upper Castle Hayne have been well characterized. The available information indicates that the lithology and the hydrologic conditions can be correlated stratigraphically across the base (Tables 1 and 2). From these correlations, aquifer performance can be predicted sufficiently for an engineering design whose final criteria for suitability are performance-based.

The upper water-bearing zone is a highly variable layering and intercalation of clay, silt and sand. This variability, however, is found within recognizable limits. These limits correspond to the range of hydrologic characteristics described previously. Similar correlation is available for the lithology and hydrology of the Upper Castle Hayne.

In areas not near stations catalogued in Tables 1, 2 and 3, a reconnaissance comparison of well-head tests (slug tests) and an examination of lithologic descriptions will likely be sufficient to support the engineering evaluation of the site. There is ample demonstration that lithology has a significant influence on the hydrology of a site, and that, for a given geologic terrane, the influence is fairly consistent. The geologic terrane of MCB-CL has been broadly characterized and correlated between lithologic (stratigraphic descriptions) and hydrologic (aquifer tests and well-head tests) sequences. Lithologic descriptions can now provide a good indication of hydrologic conditions at MCB-CL in areas of similar terrane.

GENERAL APPLICABILITY OF AQUIFER TESTS

Aquifer (pump) tests are an extremely dangerous activity at contamination sites. While the information available from aquifer tests is required for engineering design of withdrawal systems, aquifer tests should not be a reconnaissance or an initial step in the investigation. Full consideration must be made of the redistribution of contaminants expectable from the test, of the change in structural support of disposal features by relaxation or increase of hydrostatic loading, and so forth.

Consideration must also be made of alternative sources of acceptable data on the aquifer. In the case of MCB-CL, alternatives to exploratory aquifer tests are available from the tabulation and correlation of aquifer characteristics, production performance and geologic terrane presently available.

From the available information and in light of the relative consistency of the geologic terrane of MCB-CL, exploratory tests at MCB-CL are not generally required. Therefore, exploratory tests are not advisable and should not form part of the initial investigation of a site. While they may be useful in certain circumstances after the initial investigation of a site, they should not, in the general case, be part of the investigation. Sufficiently satisfactory information is presently available to allow the initial engineering design of a groundwater response.

While exploratory aquifer tests are not advisable, performance tests of a newly installed system are highly recommended. These tests, to some extent, are a normal part of the initial operation of a system. Only minor additional monitoring and modification of the system during operation would provide data directly relevant to the long-term operation of that system.

In the Coastal Plain of MCB-CL, the information from an exploratory data station not coincident with the long-term extraction system is not fully transferable. That is, if the test station and the

recovery station are not the same, the aquifer parameters and calculations based on those parameters will differ. This means that data from an exploratory station are no more reliably usable that the data presently available, unless the exploratory station is collocated with the recovery system. However, if the exploratory and recovery stations are identical, and considering that alternative sources of acceptable data on the aquifer are available and that a performance test must be run as part of the initial operation of a recovery system, the exploratory test represents a superfluous duplication of effort.

TABLE 1
CAMP LEJEUNE PUMP TEST DATA

Well Number	Well Depth (ft,BGS)	Well Diameter (in)	Total Aquifer Thickness (ft)	Screened Length (ft)	Screened Interval (ft,BGS)	Water-level Drawdown During Pumping (ft,BGS)	Pumping Rate (Recovery wells) GPM	Duration of Pumping (min)	Specific Capacity (pumping rate/ drawdown)	T (square ft/ day)	K (ft/day)	S	Soils (ft,BGS)
013RW-01*	23	2	15	20	3-23	8.773	1	480	0.11	7.17	0.48	NA	0-10 silt/clay, 10-23 sand.
013MW-18	13	2	15	10	3-13	0.297	NA	480	NA	105.98	7.06	1.40E-02	0-7 silt/clay, 7-13 sand.
013MW-21	14	2	15	10	4-14	0.31	NA	480	NA	82.27	5.48	2.77E-02	0-4 silt/sand, 0-14 clay/silt
108RW-01*	15	2	9	9.1	2.45-11.55	6.38	0.5	485	0.08	5.30	0.59	NA	very fine sand
108MW-04		2	9				NA	485	NA	118.63	13.18	1.33E-02	
108MW-15	12.5	2	9	9.03	2.79-11.82		NA	485	NA	56.78	6.31	7.33E-03	0-8 sand/silt, 8-10 silt/clay
109MW-15		2	15			0.939	NA	460	NA	76.26	5.08	1.11E-02	
109MW-17	14.5	2	15	10	4.5-14.5	0.545	NA	460	NA	163.10	10.87	7.30E-03	0-15 fine sand
109RW-01*	15	2	15	9.5	2-11.5	6.265	3	460	0.48	7.80	0.52	NA	0-4 sand, 4-8 silt, 8-15 sand
110RW-01* (Drawdown,Theis)	21.8	2	50	19.2	2-21.2	9.53	3	475	0.31	200.02	4.00	NA	0-10.5 sand/silt, 10.5-15 sand/clay, 15-21.5 sand/clay, 21.5- sand
110RW-01* (Drawdown,Cooper)										161.86	3.24	NA	
110RW-01* Recovery(Theis)										106.06	2.12	NA	
110DW-01 (Drawdown,Theis)	30.3	2	50	4.8	24,9-29.7	0.02	3	475	NA	7080.48	142.00	4.52E-03	0-4 sand/silt, 4-10.5 clay, 10.5-15.5 sand/silt,15.5-20.5 clay, 20.5-on sand
110DW-01 (Drawdown,Cooper)									NA	7099.20	142	4.51E-03	
110DW-02 (Drawdown,Theis)	30	2	50	4.7	24,7-29.4	0.52	NA	475	NA	5398.56	108.00	1.51E-03	0-3 sand and silt with clay layers, 3-11 sand and silt, 11-30 sand with some limited clay layers
110DW-02 (Drawdown,Cooper)									NA	5400.00	108	1.51E-03	
110DW-03 (Drawdown,Theis)	30	2	50	4.9	24,5-29.4	0.47	NA	475	NA	2952.00	59.00	7.48E-02	0-6 sand and silt , 6-12 sand, 12-23 sand/clay, 23-30 sand
110DW-03 (Drawdown,Cooper)									NA	3225.60	64	5.85E-02	

T = Transmissivity
K = Hydraulic Conductivity
S = Storativity
* = Pumping well
NA - Not applicable

TABLE 2

HYDRAULIC CONDUCTIVITY TEST RESULTS (SLUG TEST)

Well Number	Well Depth (ft,BGS)	Well Diameter (in)	Saturated Aquifer Thickness* (ft)	Screened Length (ft)	Screened Interval (ft,BGS)	K Rising (ft/day)	Soils (ft,BGS)
013MW-03	14	2	1	9.8	4-13.8	0.75	0-6 clay, 6-14 silt
013MW-04	14	2	8.13	9.8	4-13.8	0.27	0-8 clay, 8-14 silt
013MW-11	16	2	9.14	10	6-16	0.37	0-4 sand/silt, 4-14 clay, 14-16 sand
013MW-21	14	2	9.2	10	4-14	0.46	0-4 silt/sand, 4-14 clay
108MW-08	12.8	2	8.83	9.7	2.7-12.4	0.59	0-8 very fine sand, 8-12 clayey peat, 12-13 sandy clay
108MW-09	12.8	2	7.81	9.7	2.8-12.5	0.53	0-13 silt/sand
108MW-13	10.8	2	NA	9.02	0.69-9.71	0.061	0-2 very fine sand, 8-9.5 sandy clay
108MW-17	13.1	2	NA	9.03	3.39-12.42	0.59	0-8 fine grained sand, 8-9 clayey peat, 9-12.5 sandy clay
109MW-17	14.5	2	9.04	10	4.5-14.5	9.00	0-15 fine sand
109MW-18	14	2	10.19	10	4.5-14.5	5.70	0-3 sand, 3-10 silt, 10-14 sand
110MW-07	11.96	2	9	9.8	1.5-11.3	0.0115	0-2 clay/silt, 2-4 clay/sand, 4-6 sand, 6-10 silt/clay, 10-14 silt /sand
110MW-09	14.2	2	9.47	9.8	3.8-13.6	0.16	0-6 sand/silt, 6-9 clay/silt, 9-12 sand/silt, 12-14 clay
110DW-03	30	6	22.04	4.9	24.5-29.4	1.07	0-3 sand, 3-4 clay, 4-10 sand/silt, 10-12 sand, 12-13 clay,13-22 silt/clay, 22-30 sand
41GW-07	20.5	2	12.03	10	10.5-20.5	1.15	1-5 silty sand, 5-9 clay, 9-10 silty sand, 10-12 fill, 12-16 silty sand with 1 ft clay layer,16-21 sand
41GW-08	15	2	9.48	10	5-15	0.14	0-1 silty sand, 1-6 sand, 6-14 clay with sand and silt, 14-16 silty sand
41GW-09	21	2	11.89	10	11-21	3.67	0-5 clay and sand, 5-21 silty sand
41GW-10	13	2	8.59	10	3-13	0.94	0-2 silty sand, 2-7 sand, 7-9 silty sand and clay, 9-12 lithified sandstone, 12-13 sand. 13-14 lithified sandstone
41GW-12	16	2	12.45	10	6-16	4.57	0-4 silty sand, 4-14 sand, 14-17 lithified sandstone
69GW-09	20.5	2	14.22	10	10.5-20.5	1.7	1-4 Sand/silt, 4-10 clay some sand, 10-21 sand/silt
69GW-10	16	2	10.5	10	6-16	0.17	1-17 sand/silt
69GW-12	12.5	2	11.27	10.5	2-12.5	0.12	0-13.5 sand/silt
69GW-02D	125	2	22.1	10	40-50	0.29	0-125 silty sand **
69GW-12D	58	2	53.83	10	48-58	6.66	0-58 silty sand **
74GW-03A	18	2	13.58	10	8-18	0.59	0-17 silty sand, 17-18.5 sandy clay
74GW-06	16.5	2	8.18	9.74	15.5-26	6.33	1-26 sand/silt
74GW-08	23	2	10.51	10	13-23	3.55	0-1 silty sand, 1-24 sand

* Values taken from AQTESOL results. (Bottom of screened interval- water level)

** Due to depth, soils were very generally described.

K = Hydraulic Conductivity

TABLE 3

B-CL5 CTO-232 CL5-1B1.wks 8SEP94 MCB-CAMP LEJEUNE

STATION	b ft	Q gpm	Sc gpm/ft	T ft-sq/d	T gpd/ft	K ft/d
013RW-01	15	1.0	0.11	7.2	54	0.5
013MW-1	15			106.0	793	7.1
013MW-2	15			82.3	615	5.5
013MW-03	1					0.8
013MW-04	8					0.3
013MW-11	9					0.4
013MW-21	8					0.5
41GW-07						1.2
41GW-08						0.1
41GW-09						3.7
41GW-10						0.9
41GW-12						4.6
69GW-09						1.7
69GW-10						0.2
69GW-12						0.1
69GW-02DW						0.3
69GW-12DW						6.7
74GW-03A						0.6
74GW-06						6.3
74GW-08						3.6
108RW-01	9	0.5	0.08	5.3	40	0.6
108MW-0	9			118.6	887	13.2
108MW-1	9			56.8	425	6.3
108MW-08	9					0.6
108MW-09	8					0.5
108MW-13	8					0.1
108MW-17	8					0.6
109MW-1	15			76.3	570	5.1
109MW-1	15			163.1	1220	10.9
109RW-01	15	3.0	0.48	7.8	58	0.5
109MW-17	15					9.0
109MW-18	15					5.7
110RW-01	50	3.0	0.31	200.0	1496	4.0
110RW-01	50	3.0	0.31	161.9	1211	3.2
110RW-01	50	3.0		106.1	793	2.1
110DW-01	50			7080	52962	142.0
110DW-01	50			7099	53102	142.0
110DW-02	50			5399	40381	108.0
110DW-02	50			5400	40392	108.0
110DW-03	50			2952	22081	59.0
110DW-03	50			3226	24127	64.0
110MW-07	9					0.1
110MW-09	9					0.2
110DW-03	22					5.8

STATION	b ft	Q gpm	Sc gpm/ft	T ft-sq/d	T gpd/ft	K ft/d
BB-43	275	170	5.0	8900	66572	32.4
BB-44	275	450	10.0	17900	133892	65.1
BB-222	275	329	9.4	10600	79288	38.5
HP-612	285	275	5.4	7900	59092	27.7
HP-614	285	323	4.9	6600	49368	23.2
HP-621	300	200	9.1	24500	183260	81.7
HP-628	320	160	3.4	6400	47872	20.0
HP-629	300	210	5.7	7900	59092	26.3
HP-634	300	163	4.5	4300	32164	14.3
HP-636	300	211	6.8	6900	51612	23.0
HP-643	295	278	5.3	9700	72556	32.9
HP-644	300	246	4.3	8100	60588	27.0
HP-646	305	304	10.6	20200	151096	66.2
HP-647	305	500	9.8	18700	139876	61.3
HP-648	310	250	2.9	5600	41888	18.1
HP-649	310	257	2.6	5000	37400	16.1
HP-651	305	270	3.8	7300	54604	23.9
HP-652	320	218	2.2	4400	32912	13.8
HP-663	325	350	4.8	6400	47872	19.7
HP-699	275	250	5.7	7700	57596	28.0
HP-700	270	250	6.8	11500	86020	42.6
HP-701	275	250	7.2	12400	92752	45.1
HP-705	295	250	9.0	13100	97988	44.4
HP-706	300	250	3.8	4700	35156	15.7
HP-709	310	200	4.4	8500	63580	27.4
HP-710	310	200	5.1	9900	74052	31.9
HP-711	320	200	6.8	10700	80036	33.4
LCH-4006	295	540	10.0	14500	108460	49.2
LCH-4007	295	275	11.8	13700	102476	46.4
M-267	260	170	7.7	10300	77044	39.6
M-628	260	70	3.0	6100	45628	23.5
RR-229	290	429	12.2	19400	145112	66.9
TT-25	280	150	5.0	7200	53856	25.7

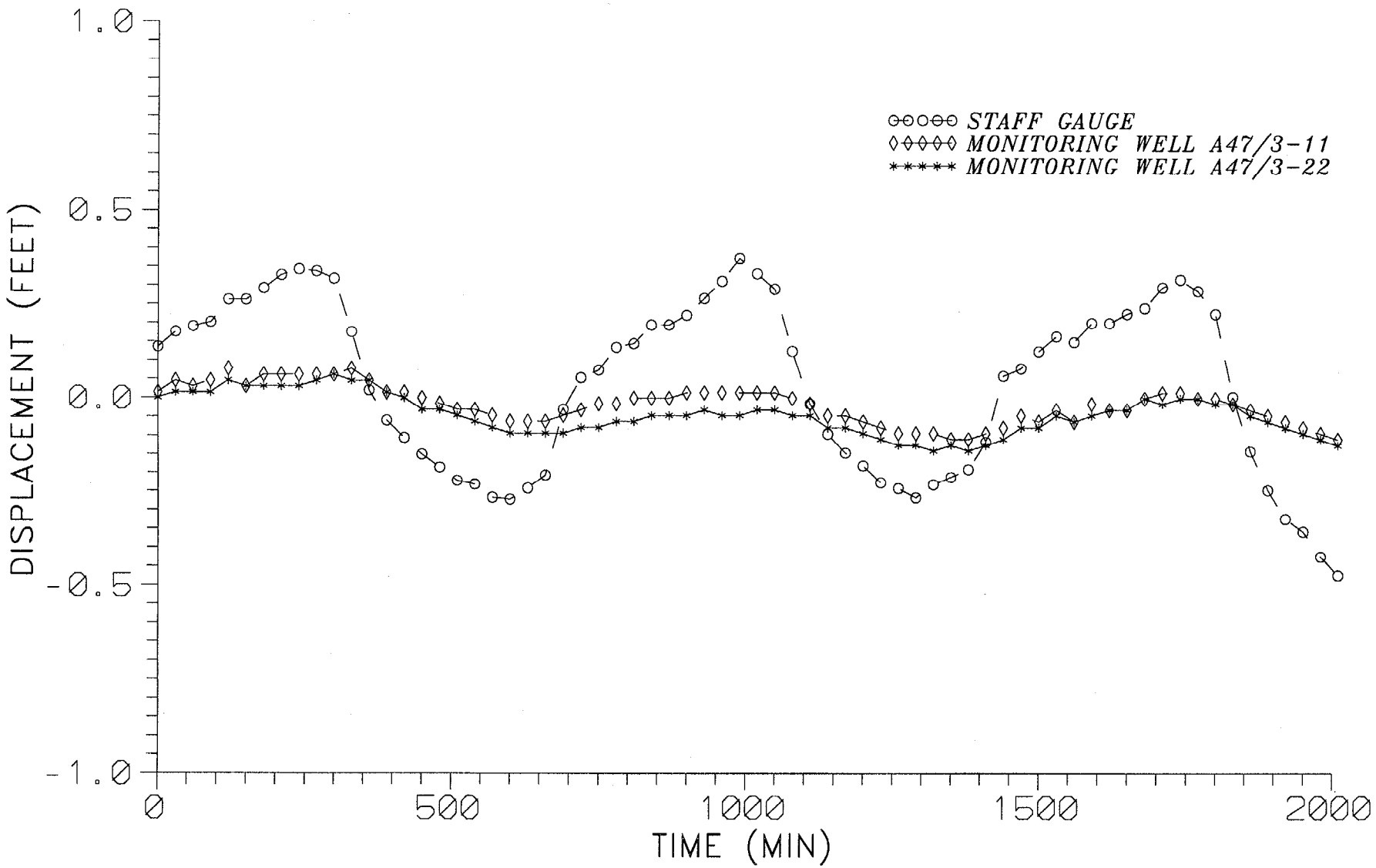
STATION	PUMPING LEVEL	Q gpm	Sc gpm/ft
HP-602	44	154	3.5
HP-603	30	129	4.3
HP-606	38	267	7.0
HP-607	46	246	5.3
HP-608	21	208	9.9
HP-609	45	199	4.4
HP-610	14	214	15.3
HP-613	17	157	9.2
HP-616	15	178	11.9
HP-620	9	224	24.9
HP-622	55	330	6.0
HP-623	30	210	7.0
HP-628	45	172	3.8
HP-629	45	216	4.8
HP-632	21	224	10.7
HP-633	18	205	11.4
HP-634	36	219	6.1
HP-635	33	151	4.6
HP-636	35	149	4.3
HP-637	40	130	3.3
HP-638	84	201	2.4
HP-639	52	[--]	0.0
HP-640	28	210	7.5
HP-641	44	351	8.0
HP-642	32	[--]	0.0
HP-643	35	269	7.7
HP-644	52	230	4.4
HP-645	40	192	4.8
HP-646	11	154	14.0
HP-647	26	302	11.6
HP-648	84	263	3.1
HP-649	80	100	1.3
HP-650	75	480	6.4
HP-651	69	242	3.5
HP-652	82	216	2.6
HP-653	29	197	6.8
HP-654	30	175	5.8
HP-655		[--]	ERR
HP-660		150	ERR
HP-661	37	275	7.4
HP-662	53	148	2.8
HP-663	23	100	4.3
HP-698	33	216	6.5
HP-699	21	140	6.7

STATION	PUMPING LEVEL	Q gpm	Sc gpm/ft
HP-700	39	192	4.9
HP-701	36	236	6.6
HP-703	33	293	8.9
HP-704	38	159	4.2
HP-705	25	214	8.6
HP-706	33	214	6.5
HP-707	51	50	1.0
HP-708	42	219	5.2
HP-709	52	239	4.6
HP-710	29	115	4.0
HP-711	56	235	4.2
HP-5186	38	336	8.8
LCH-4007	34	150	4.4
LCH-4009	22	349	15.9
TT-23	36	160	4.4
TT-25	22	130	5.9
TT-26	32	127	4.0
TT-31	28	111	4.0
TT-52	18	236	13.1
TT-54	20	119	6.0
TT-67	29	119	4.1
RR-45	11	192	17.5
RR-47	5	140	28.0
RR-97	14	170	12.1
RR-229	35	[--]	0.0
BB-44	11	125	11.4
BB-47	6	341	56.8
BB-218	17	192	11.3
BB-220	13	119	9.2
BB-221	19	230	12.1
TC-325	8	100	12.5
TC-502	1	180	180.0
TC-504	35	203	5.8
TC-600	32	172	5.4
TC-604	16	137	8.6
TC-700	28	125	4.5
TC-901	37	[--]	0.0
TC-1000	25	110	4.4
TC-1001	16	160	10.0
TC-1251	6	150	25.0
TC-1253	5	128	25.6
TC-1254	3	122	40.7
TC-1255	36	104	2.9
TC-1256	48	108	2.3

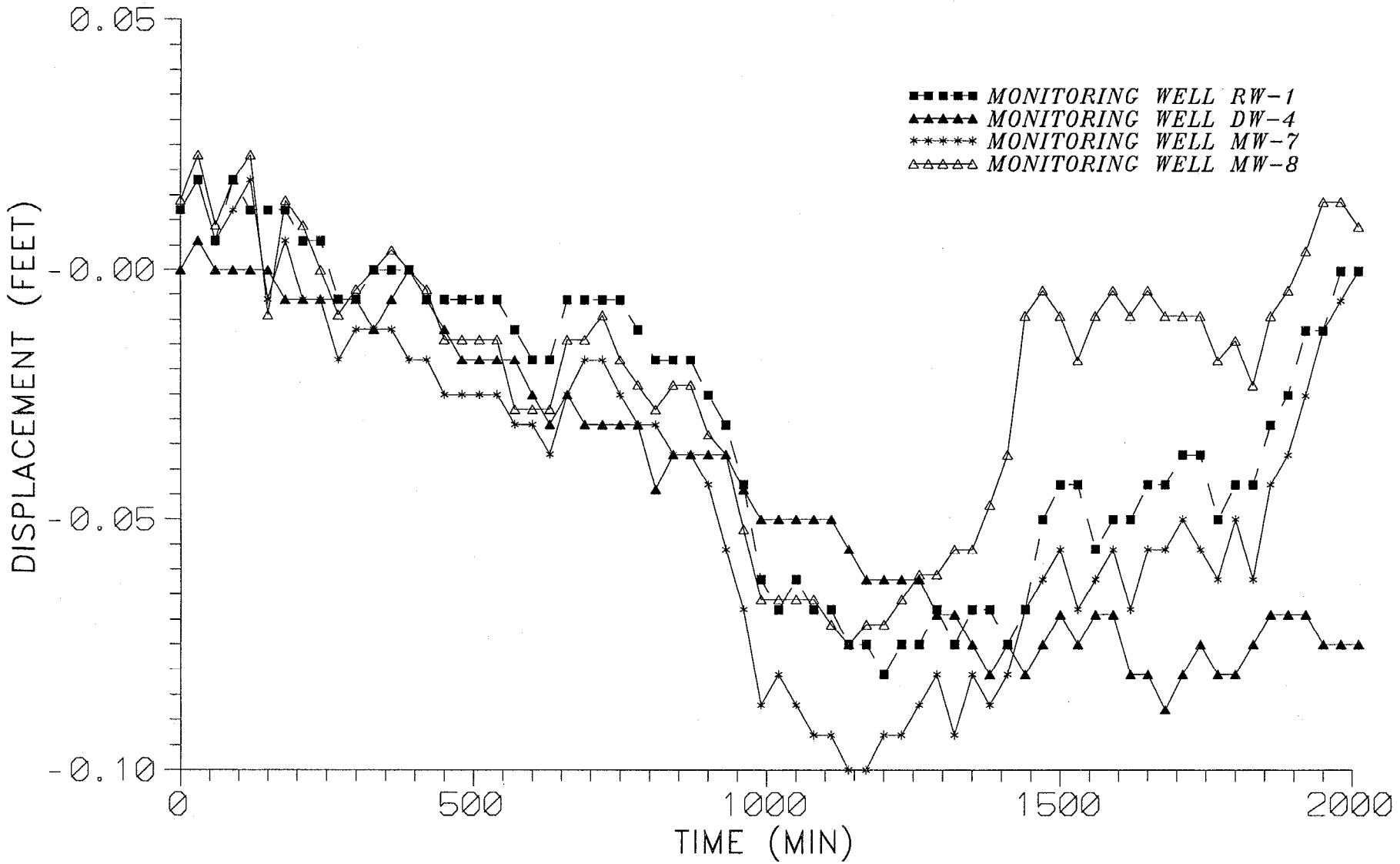
STATION	PUMPING LEVEL	Q gpm	Sc gpm/ft
AS-108	8	226	28.3
AS-131	11	310	28.2
AS-190	60	220	3.7
AS-191	16	220	13.8
AS-203	19	220	11.6
AS-4140	6	110	18.3
AS-4150	10	128	12.8
AS-5001	27	185	6.9
AS-5009	53	111	2.1
BA-164	21	214	10.2
BA-190	17	303	17.8

APPENDIX K
TIDAL STUDY DATA

TIDAL STUDY
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
CTO - 0312
MCB CAMP LEJEUNE
NORTH CAROLINA



TIDAL STUDY
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
CTO - 0312
MCB CAMP LEJEUNE
NORTH CAROLINA



APPENDIX L
GROUNDWATER FLOW MODEL FIGURES

Legend

N

500 feet

Site 73 - Simulated Groundwater Elevations - Surficial Unit

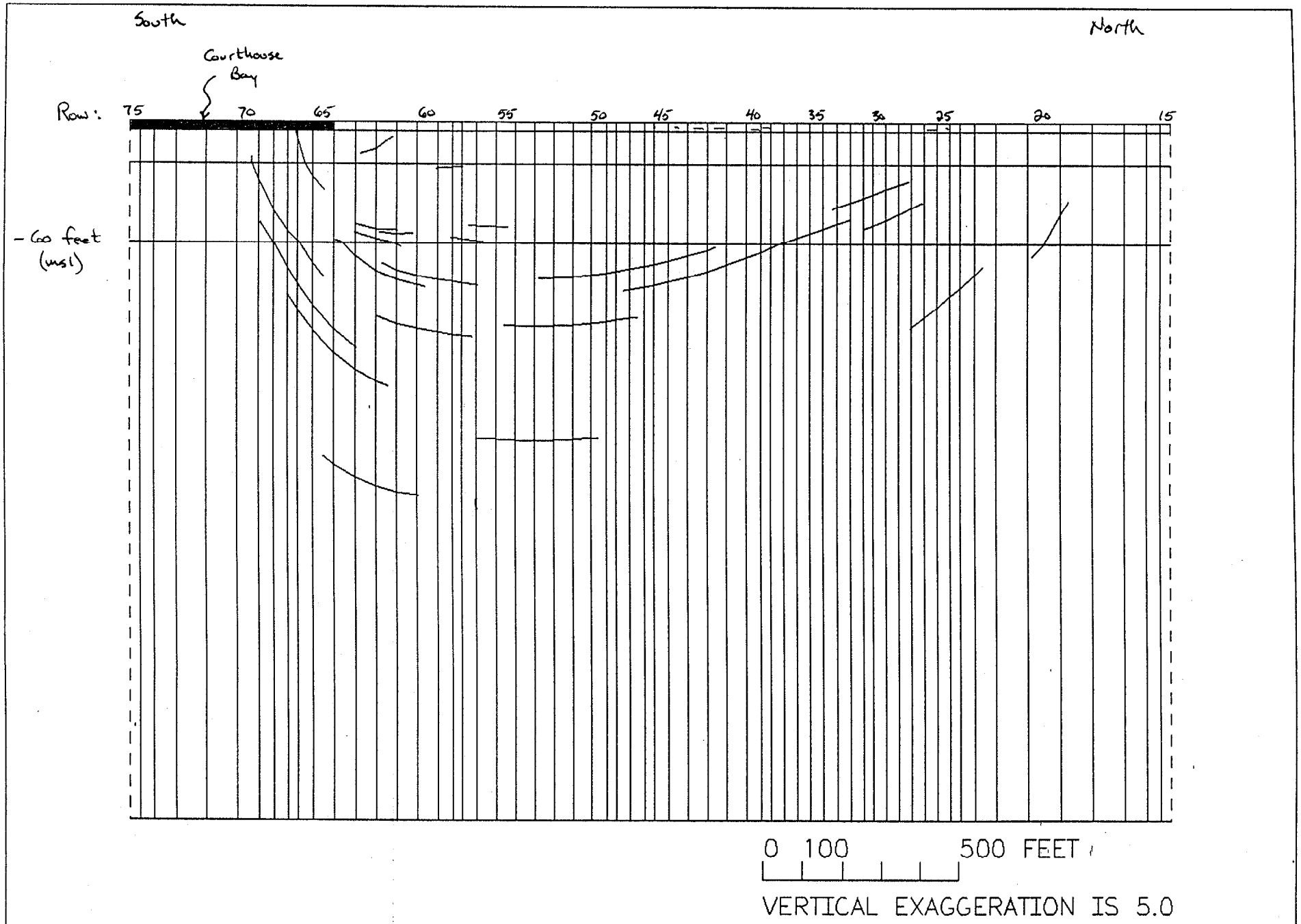
FIGURE A

Site 3 - Simulated Groundwater Elevati 5 - Upper Castle Hayne

FIGURE

Site 73 - Simulated Groundwater Elevations - Lower Castle Hayne

FIGURE C



Site 73 - S-N Cross-Section - Column 45

FIGURE D

APPENDIX M
BACKGROUND METALS CONCENTRATIONS
SURFACE VS. SUBSURFACE SOIL

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	6-201N-SB11-00	6-201N-SB12-00	6-201C-SB38-00	6-201C-SB39-00	78-BB-SB-00	41-BB-SB01-00	41-BB-SB02-00
Aluminum	1120	45.25	748	245	1490	528	1430
Antimony	4.7	4.8	1.4	1.3	0.33	2.07	0.865
Arsenic	0.28	0.29	0.91	0.28	0.22	0.356	0.317
Barium	2	2.05	16.5	3.5	8.6	1.525	4.06
Beryllium	0.095	0.1	0.03	0.03	0.11	0.1	0.09
Cadmium	0.285	0.295	0.58	0.175	0.55	0.392	0.349
Calcium	178	108	10700	402	941	18.3	54.6
Chromium	0.475	0.49	1.6	0.33	2.2	1.02	0.91
Cobalt	0.85	0.9	0.195	0.185	1.8	1.965	1.75
Copper	0.55	0.6	3.1	0.75	2	2	87.2
Iron	525	160	684	238	1020	83	970
Lead	2	3	62.9	25.1	20.4	2.59	10.9
Magnesium	11.65	10.1	200	26	118	8.85	39.1
Manganese	3.1	1	16	4.5	11.1	0.87	10.2
Mercury	0.01	0.01	0.05	0.06	0.05	0.0305	0.078
Nickel	1.6	1.65	0.8	0.75	2.2	3.55	3.15
Potassium	36.55	37.5	54.5	30.6	102	91.5	81.5
Selenium	0.47	0.485	0.5	0.465	0.31	0.311	0.277
Silver	0.95	1	0.195	0.185	0.33	0.1965	0.175
Sodium	19.65	15.85	14	4.7	67.5	44.1	39.3
Thallium	0.19	0.195	0.205	0.185	0.11	0.565	0.505
Vanadium	1.05	0.8	2.8	1.6	5.3	2.505	2.23
Zinc	0.55	0.8	23.1	4.6	28.3	2.66	6.11
Cyanide					0.265	1.23	1.09

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.
Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	41-BB-SB03-00	41-BB-SB04-00	69-BB-SB01-00	69-BB-SB02-00	69-BB-SB03-00	69-BB-SB04-00	74-BB-SB01-00
Aluminum	2100	5370	1310	4150	9570	5360	3110
Antimony	0.87	0.94	0.85	0.95	0.95	0.95	0.905
Arsenic	0.3205	0.345	0.31	0.345	0.79	0.35	0.3325
Barium	4.53	13.4	5.6	15.4	19.6	20.8	11.1
Beryllium	0.09	0.095	0.14	0.155	0.155	0.155	0.148
Cadmium	0.3525	0.38	0.26	0.285	0.29	0.29	0.2695
Calcium	79.2	46.3	28.2	43.6	282	53	181
Chromium	2.64	3.24	0.75	4	12.5	5.8	0.84
Cobalt	1.77	1.905	2.1	2.3	2.35	2.35	2.225
Copper	1.8	1.94	1.75	1.9	1.95	1.95	4.56
Iron	1120	2160	425	1430	9640	3890	1740
Lead	9.98	6.61	2.8	6	5.3	5.6	5.19
Magnesium	74	144	37.3	91.8	610	247	70
Manganese	11.6	11.8	15.1	12.7	12.3	8.3	9.44
Mercury	0.057	0.08	0.015	0.06	0.045	0.025	0.04
Nickel	3.2	3.45	2.9	1.6	1.65	1.65	1.56
Potassium	190	177	32.25	35.5	361	106	87.5
Selenium	0.2795	0.301	0.27	0.295	0.3	0.3	0.29
Silver	0.177	0.1905	0.045	0.045	4.3	0.39	0.046
Sodium	39.65	42.75	20	22	22.4	22.3	70.4
Thallium	0.51	0.55	0.495	0.55	0.55	0.55	0.53
Vanadium	2.255	2.43	1.8	1.95	13.5	5.6	5.21
Zinc	5.97	7.15	3.1	5.2	10.8	7.9	1.27
Cyanide	1.1	1.19	2.2	2.4	2.4	2.4	1.15

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	74-BB-SB02-00	74-BB-SB03-00	74-BB-SB04-00	1-BB-SB38-00	1-BB-SB39-00	1-GW13-00	28-BB-SB37-00	28-BB-SB38-00
Aluminum	1730	1000	2100	3920	4930	1600	2840	379
Antimony	0.925	0.855	0.96	3.6	3.15	8.0	3.55	2.9
Arsenic	0.339	0.314	0.352	0.315	0.28	0.29	0.31	0.255
Barium	1.6	3.12	16	9.6	9.3	2.8	5.1	1.8
Beryllium	0.151	0.14	0.1565	0.105	0.10	0.095	0.105	0.085
Cadmium	0.275	0.2545	0.285	0.315	0.28	0.285	0.31	0.255
Calcium	46.9	43.9	377	538	353	248	114	13.10
Chromium	2.7	0.795	1.98	3.5	4.7	4.1	2.0	0.60
Cobalt	2.27	2.1	2.355	0.42	0.375	0.38	0.415	0.34
Copper	3.92	1.755	1.965	1.6	0.6	1.9	0.6	0.50
Iron	401	787	1640	2270	1470	1000	1210	444
Lead	3.79	1.14	142	5.9	4.5	4.2	2.8	1.7
Magnesium	37.5	16.1	52.5	152	183	47.2	68.8	12.9
Manganese	3.13	7.37	4.61	10.6	4.2	5.9	2.7	3.3
Mercury	0.048	0.0305	0.05	0.03	0.025	0.03	0.025	0.025
Nickel	1.59	1.475	1.65	0.8	0.65	0.65	0.750	0.6
Potassium	89	82.5	92.5	149	153	20.650	29.75	8.35
Selenium	0.296	0.274	0.307	0.42	0.375	0.38	0.415	0.34
Silver	0.047	0.0435	0.0485	0.5	0.465	0.475	0.5	0.425
Sodium	71.8	87.6	122	11.0	17.2	7.25	28.5	18.2
Thallium	0.54	0.4985	0.56	0.42	0.38	0.38	0.415	0.34
Vanadium	1.94	1.8	4.69	7.9	6.1	3.5	3.6	2.1
Zinc	1.15	1.97	2.87	7.2	4.0	1.4	0.9	0.71
Cyanide	1.17	1.08	1.21					

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	28-GW09DW-00	30-BB-SB12-00	30-BB-SB13-00	30-BB-SB14-00	30-BB-SB15-00	30-BB-SB16-00	30-GW03-00	35-SS01-00
Aluminum	5460	54.6	24.9	49.2	37.5	196	17.7	2220.0
Antimony	3.35	3.2	3.2	3.3	3.5	3.650	3.9	2.45
Arsenic	1.8	0.28	0.29	0.29	0.31	0.325	0.34	0.065
Barium	11.6	1.8	0.7	0.7	0.7	3.100	0.8	15.6
Beryllium	0.10	0.095	0.10	0.10	0.10	0.110	0.12	0.11
Cadmium	0.295	0.28	0.29	0.29	0.31	0.325	0.34	0.04
Calcium	368	11.45	4.3	9.9	9.0	172	5.2	605.0
Chromium	6.0	1.6	0.7	1.9	0.7	0.75	0.8	1.9
Cobalt	0.91	0.375	0.38	0.38	0.41	0.43	0.45	0.60
Copper	2.9	0.55	0.6	0.6	0.6	0.65	0.7	3.9
Iron	2250	276	102	218	69.7	167	80.4	1250.0
Lead	11.6	3.3	0.47	2.4	0.73	4.4	0.86	3.60
Magnesium	157	6.5	2.6	2.6	2.8	37.1	3.1	71.6
Manganese	4.1	11.9	4.4	9.5	1.3	2.5	2.3	5.5
Mercury	0.025	0.06	0.02	0.03	0.05	0.03	0.03	0.065
Nickel	1.9	0.65	0.7	0.7	1.7	0.9	0.8	1.3
Potassium	158	8.25	11.1	3.8	1.0	29.6	1.2	129.5
Selenium	0.94	0.375	0.38	0.38	0.41	0.43	0.45	0.075
Silver	0.49	0.47	0.47	0.48	0.5	0.6	0.6	0.16
Sodium	15.0	14.8	26.0	4.9	5.2	18.2	5.8	126.00
Thallium	0.395	0.375	0.38	0.38	0.41	0.43	0.45	0.06
Vanadium	8.3	1.7	0.75	1.7	0.31	0.76	0.34	3.60
Zinc	6.6	0.35	0.30	0.48	1.7	2.0	1.2	7.4
Cyanide								

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	BB-SB02-00	BB-SB03-00	16-BB-SB01-00	16-BB-SB02-00	16-BB-SB03-00	80-BB-SB01-00	80-BB-SB02-00	80-BB-SB03-00
Aluminum	3630.0	1950.0	1710.0	3630	1950	2240.0	7770.0	2850.0
Antimony	5.00	5.55	5.05	5	5.55	1.35	1.40	1.40
Arsenic	1.000	1.100	1.000	1	1.1	0.250	3.200	0.265
Barium	7.4	7.0	4.1	7.4	7	9.9	13.0	11.6
Beryllium	0.10	0.11	0.23	0.1	0.11	0.020	0.10	0.06
Cadmium	0.50	0.55	1.00	0.5	0.55	0.165	0.175	0.175
Calcium	113.0	227.0	96.8	113	227	505	997.0	239.0
Chromium	3.3	2.5	1.0	3.3	2.5	1.200	10.0	2.0
Cobalt	1.00	1.10	1.00	1	1.1	0.205	1.30	0.45
Copper	1.0	1.1	1.0	1	1.1	1.3	2.2	0.92
Iron	2150.0	1610.0	1260.0	2150	1610	604.0	5550.0	1450.0
Lead	5.20	10.20	7.40	5.2	10.2	7.5	8.90	8.30
Magnesium	99.1	69.4	42.9	99.1	69.4	94.8	289.0	94.2
Manganese	7.4	5.5	6.9	7.4	5.5	66.0	30.7	12.8
Mercury	0.055	0.055	0.055	0.055	0.055	0.050	0.050	0.060
Nickel	2.0	2.25	2.00	2	2.25	1.4	2.70	1.40
Potassium	1.0	111.5	101.0	100	111.5	163.0	416.0	90.9
Selenium	0.500	0.550	0.500	0.5	0.55	0.285	0.300	0.300
Silver	0.50	0.55	0.50	0.5	0.55	0.220	0.23	0.23
Sodium	25.20	26.20	35.90	25.2	26.2	24.1	77.10	72.70
Thallium	1.00	1.10	1.00	1	1.1	0.435	0.46	0.465
Vanadium	5.40	3.10	4.50	5.4	3.1	2.3	14.70	4.30
Zinc	8.7	22.1	9.2	4.35	22.1	6.1	12.9	3.5
Cyanide								

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.
Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	7-BB-SB01-00	7-BB-SB02-00	7-BB-SB03-00	36-BB-SB01-00	36-BB-SB02-00	36-BB-SB03-00	43-BB-SB01-00	43-BB-SB02-00
Aluminum	7180.0	3770.0	5800.0	6950	2300	2380	3520	2510
Antimony	6.05	5.50	5.60	1.15	1.2	1.75	2.35	2.3
Arsenic	1.200	1.100	3.900	0.42	0.205	0.17	0.51	0.55
Barium	12.0	10.2	9.7	13.2	12.4	14	6.3	10.8
Beryllium	0.26	0.11	0.11	0.03	0.035	0.075	0.105	0.1
Cadmium	0.600	0.550	0.550	0.31	0.3	0.235	0.335	0.31
Calcium	397.0	69.5	615.0	462	897	1690	1180	908
Chromium	8.4	3.8	10.6	7.9	2.7	3.1	2.8	2.8
Cobalt	1.20	1.10	1.10	0.245	0.255	0.255	0.345	0.335
Copper	1.20	1.10	2.30	2.8	2.8	4.9	0.7	11.2
Iron	3050.0	2170.0	7510.0	6670	1750	1560	1050	2050
Lead	7.10	6.40	8.70	10.3	17.5	39.6	6.6	13.6
Magnesium	104.0	50.5	79.5	185	105	86	68.9	56.4
Manganese	3.25	3.1	1.8	6.9	14.3	21.4	3	5
Mercury	0.060	0.060	0.060	0.045	0.05	0.045	0.13	0.12
Nickel	2.40	2.20	2.25	0.45	1.6	0.9	1.25	1.2
Potassium	121.0	110.0	111.5	138	60.2	58	78.5	76
Selenium	0.600	0.550	1.300	0.12	0.16	0.135	0.195	0.17
Silver	0.60	0.55	0.55	0.265	0.275	0.255	0.345	0.335
Sodium	15.80	15.25	17.30	13.1	14.1	14.05	14.45	9.9
Thallium	1.200	1.100	1.100	0.055	0.075	0.1	0.12	0.105
Vanadium	9.70	5.40	18.20	15.4	8.3	6.4	1.6	3.7
Zinc	5.3	2.9	3.8	6	12.7	20.8	2.6	16.7
Cyanide								

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SURFACE SOILS
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	43-BB-SB03-00	44-BB-SB01-00	54-BB-SB01-00	54-BB-SB02-00	86-BB-SB01-00	65-DW04-00	MIN	MAX	AVG	2Xaverage
Aluminum	2730	4950	8990	4950	6590	773	17.7	9570	2928.041	5856.083
Antimony	2.2	1.2	1.25	1.3	1.95	5.55	0.33	8	2.727	5.455
Arsenic	0.67	1.3	1.1	1.2	0.45	1.1	0.065	3.9	0.661	1.322
Barium	13	14.9	18.7	13.3	13.9	6.9	0.65	20.8	8.646	17.292
Beryllium	0.095	0.08	0.0345	0.0375	0.085	0.11	0.02	0.26	0.103	0.205
Cadmium	0.3	0.325	0.335	0.34	0.265	0.55	0.04	1	0.348	0.696
Calcium	1610	668	1020	3590	3960	79.3	4.25	10700	686.488	1372.977
Chromium	2.9	5.9	9.2	6.8	6.5	1.1	0.33	12.5	3.303	6.607
Cobalt	0.32	0.43	0.375	0.41	0.285	4.15	0.185	4.15	1.023	2.046
Copper	0.75	2.5	2.1	4.2	2.2	1.1	0.5	87.2	3.552	7.104
Iron	1110	3220	4700	2780	4030	509	69.7	9640	1851.213	3702.427
Lead	13.8	19.6	3.95	12.3	21.5	2	0.47	142	11.685	23.370
Magnesium	60.5	189	371	259	233	30.3	2.55	610	101.480	202.960
Manganese	6.5	6.7	14.8	19.9	11.5	9.6	0.87	66	9.255	18.510
Mercury	0.05	0.06	0.041	0.04	0.04	0.055	0.01	0.13	0.047	0.094
Nickel	1.15	1.7	1.3	1.6	7.2	2.25	0.45	7.2	1.727	3.455
Potassium	73.5	220	223	175	160	111.5	1	416	100.030	200.060
Selenium	0.185	0.34	0.145	0.13	0.43	0.55	0.075	1.3	0.377	0.753
Silver	0.32	0.28	0.285	0.295	0.285	0.55	0.0435	4.3	0.440	0.880
Sodium	12.7	12.75	8.3	9.55	18.3	22.25	4.7	126	29.507	59.013
Thallium	0.11	0.065	0.065	0.06	0.13	1.1	0.055	1.2	0.462	0.924
Vanadium	4	11.8	13.4	9.1	48.6	1.1	0.305	48.6	5.723	11.447
Zinc	4.5	7.4	7.2	9.1	18.4	3.9	0.3	28.3	6.882	13.763
Cyanide							0.265	2.4	1.453	2.905

Concentrations are in millograms per kilogram (mg/kg).
Qualifiers have been removed per Baker's standards.
Qualifiers R, U, and UJ have been given one-half the detection value.

Qualifiers J, NJ, and B have been removed with no detection value change.

BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	6-201N-SB11-07	6-201N-SB12-02	6-201C-SB38-01	6-201C-SB39-04	78-BB-SB-01	2-GW09-01	1-BB-SB38-05	1-BB-SB39-04	1-BB-SB39-06	1-GW13-04
Aluminum	672	857	3620	2970	10200	8520	4580	6180	5980	4160
Antimony	4.7	4.85	1.4	1.25	0.355	1.6	4.2	3.25	2.95	6.9
Arsenic	0.31	0.315	0.033	0.305	0.24	0.47	1.1	0.29	0.26	0.285
Barium	2	2.05	7.6	6.5	10.9	6.6	7.5	11.800	8.600	7.500
Beryllium	0.095	0.1	0.03	0.025	0.12	0.23	0.125	0.095	0.085	0.095
Cadmium	0.285	0.295	0.57	0.17	0.6	1.2	0.370	0.290	0.260	0.285
Calcium	5.35	5.4	4410	12.1	81.3	10.6	35.600	12.250	19.700	52.400
Chromium	1.6	1.85	6	2.2	5.7	8.7	10.5	5.5	5.3	7.1
Cobalt	0.65	0.9	0.235	0.175	0.95	1.9	0.495	0.385	0.350	0.380
Copper	0.475	0.6	1.7	0.65	0.95	0.47	6.6	0.6	0.5	2.1
Iron	257	126	456	833	822	2840	4940	1510	1210	567
Lead	1.2	1.6	11.5	2.7	6.1	4.3	5.1	3.8	3.1	3.3
Magnesium	13.1	12.7	133	86.8	188	260	222	189	217	131
Manganese	0.475	0.395	7.5	2.6	2.4	5.2	4.1	4.9	5.4	2.0
Mercury	0.01	0.01	0.04	0.015	0.045	0.11	0.025	0.025	0.020	0.050
Nickel	1.6	1.7	0.8	0.7	2.4	4.7	0.850	2.300	0.600	0.650
Potassium	48.9	40.8	84.7	187	123	184	409	191	268	98
Selenium	0.5	0.5	0.55	0.5	0.29	0.115	0.495	0.385	0.350	0.380
Silver	0.95	1	0.195	0.175	0.355	0.7	0.600	0.480	0.435	0.475
Sodium	12.7	12.15	13.25	7.25	44.9	31.5	12.850	21.6	9.2	9.6
Thallium	0.205	0.21	0.22	0.2	0.12	0.23	0.495	0.385	0.350	0.380
Vanadium	0.75	1	3	4.7	7.4	13.4	12.200	6.500	6.100	3.500
Zinc	0.475	0.395	11.6	0.9	2.1	1.4	4.700	2.900	2.400	1.000

BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	1-GW13-08	28-BB-SB37-03	28-BB-SB38-04	28-GW09DW-01	30-BB-SB12-03	30-BB-SB13-01	30-BB-SB14-01	30-BB-SB15-01	30-BB-SB16-02	30-GW03-01
Aluminum	6600	5170	2830	5730	2970	17.1	25.7	42.6	777	16.9
Antimony	3.2	3.55	3.55	3.75	3.9	3.1	3.6	3.6	3.4	3.9
Arsenic	0.280	0.315	0.315	1.500	0.34	0.28	0.32	0.32	0.30	0.34
Barium	8.400	9.700	5.000	11.700	0.8	0.7	0.8	0.8	3.5	0.8
Beryllium	0.095	0.105	0.105	0.110	0.12	0.09	0.11	0.11	0.10	0.12
Cadmium	0.280	0.315	0.315	0.330	0.34	0.28	0.32	0.32	0.30	0.34
Calcium	92.600	23.450	6.850	441.000	7.0	6.9	4.8	6.3	116	6.6
Chromium	8.3	7.3	3.4	4.7	3.9	0.7	0.8	0.8	0.7	0.8
Cobalt	0.375	0.42	0.42	0.93	0.45	0.37	0.42	0.43	0.40	0.46
Copper	1.6	0.65	0.65	0.65	0.7	0.6	0.7	0.7	0.6	0.7
Iron	959	2090	749	2780	908	95.9	155	63.3	514	74.5
Lead	4.0	4.1	2.3	7.4	0.7	0.47	1.9	0.91	3.2	0.59
Magnesium	262	153	66	157	24.7	7.5	2.9	2.9	30.2	3.1
Manganese	4.5	3.2	1.5	5.3	1.7	4.3	6.7	1.1	3.7	1.7
Mercury	0.025	0.025	0.025	0.025	0.03	0.03	0.08	0.25	0.03	0.68
Nickel	0.650	0.750	0.750	1	0.8	0.7	0.8	2.2	1.7	0.8
Potassium	308	122	91.3	136	13.2	6.3	1.1	21.3	21.9	1.2
Selenium	0.375	0.420	0.420	0.440	0.45	0.37	0.42	0.43	0.40	0.46
Silver	0.470	0.500	0.550	0.550	0.6	0.46	0.6	0.6	0.50	0.6
Sodium	10.9	33.8	28.6	20.3	12.5	11.1	19.3	5.4	14.4	5.8
Thallium	0.375	0.420	0.420	0.440	0.45	0.37	0.42	0.43	0.40	0.46
Vanadium	10.100	6.4	2.8	8.5	6.2	0.73	1.0	0.84	1.6	0.34
Zinc	2.700	1.9	1.0	4.2	0.35	0.32	0.39	1.2	1.7	1.3

BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	35-GWDS01-03	BB-SB02-07	BB-SB03-05	80-BB-SB01-06	80-SS-SB01-03	80-BB-SB2-03	80-BB-SB02-06	80-BB-SB03-03	80-BB-SB03-06	7-BB-SB01-05
Aluminum	2910	888	2330	11000	2520	5950	9600	9500	1060	1400
Antimony	2.750	5.000	5.600	6.200	1.300	1.350	1.650	3.500	1.300	5.150
Arsenic	0.12	1.00	1.10	15.40	0.245	1.60	4.70	1.80	0.24	1.05
Barium	5.5	1.6	3.8	22.3	4.5	9.9	13.5	10.9	4.3	16.1
Beryllium	0.06	0.10	0.11	0.31	0.01	0.04	0.20	0.09	0.01	0.105
Cadmium	0.30	0.50	0.55	0.205	0.16	0.165	0.205	0.16	0.155	0.50
Calcium	456.0	74.2	290.0	257.0	105.0	323.0	210.0	142.0	34.2	38.95
Chromium	2.2	2.4	4.2	66.4	2.1	10.0	22.0	12.0	2.9	5.0
Cobalt	0.65	1	1.1	7	0.42	0.71	1.40	0.75	0.20	1.05
Copper	0.550	1	1.1	9.5	0.670	1.6	4.4	2.2	0.630	1.05
Iron	442	1220	1870	90500	795	2920	12800	3350	557	571
Lead	8.1	2.4	3.8	21.4	2.9	5	11.7	7.8	5.4	3
Magnesium	63.5	35.7	115.0	852.0	76.0	282.0	455.0	357.0	50.7	30.6
Manganese	5.6	2.7	2.4	14.9	1.8	19.9	7.4	6.2	5.4	1.95
Mercury	0.03	0.055	0.06	0.07	0.045	0.055	0.07	0.045	0.045	0.055
Nickel	1.050	2	2.250	0.600	0.455	1.4	0.6	2.2	0.450	2.050
Potassium	145	100.5	228	1250	161	297	1020	458	130	103
Selenium	0.085	0.500	0.550	2.400	0.275	0.285	0.355	0.275	0.275	0.50
Silver	0.39	0.50	0.55	0.275	0.21	0.22	0.275	0.21	0.21	0.50
Sodium	141.0	20.6	28.2	124.0	63.4	25.5	47.1	73.2	18.3	16.85
Thallium	0.06	1.00	1.10	2.70	0.425	0.44	0.55	0.42	0.42	1.05
Vanadium	3.0	3.9	4.9	69.4	2.3	10.8	18.4	13.5	2.4	2.3
Zinc	2.6	8.7	4.9	26.6	2.0	3.5	8.1	4.8	1.7	3.1

BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	7-BB-SB02-05	7-BB-SB03-09	16-BB-SB01-07	16-BB-SB02-07	16-BB-SB03-05	36-BB-SB01-02	36-BB-SB02-02	36-BB-SB03-03	43-BB-SB01-02	43-BB-SB02-01
Aluminum	1700	581	1940	888	2330	4480	8700	3810	4320	959
Antimony	5.150	5.750	5.8	5	5.6	1.15	1.2	1.9	2.3	1.75
Arsenic	1.05	1.15	1.15	1	1.1	0.155	0.69	0.185	0.44	0.115
Barium	22.6	10.8	3.7	0.8	3.8	13.9	13.7	5.5	8.9	2.2
Beryllium	0.105	0.115	0.115	0.1	0.11	0.032	0.035	0.08	0.1	0.075
Cadmium	0.50	0.550	0.6	0.5	0.55	0.31	0.315	0.255	0.31	0.235
Calcium	41.55	32.15	135	74.2	290	116	225	48.2	76.9	77.6
Chromium	6.2	3.9	4.7	2.4	4.2	4.2	13.5	3.7	5.5	1.2
Cobalt	1.05	1.15	1.15	1	1.1	0.245	0.25	0.275	0.335	0.255
Copper	1.05	1.15	1.15	1	1.1	0.43	0.98	0.175	0.21	0.16
Iron	709	1620	1150	1220	1870	2690	4080	976	2370	414
Lead	1.8	1.1	2.9	2.4	3.8	5.4	6.6	4	6.1	1.6
Magnesium	44.1	12.25	104	35.7	115	78.6	292	110	121	17.9
Manganese	2.65	2.1	5	2.7	2.4	2.5	6.7	3.6	3	1.3
Mercury	0.050	0.060	0.06	0.055	0.06	0.06	0.06	0.045	0.045	0.05
Nickel	2.050	2.300	2.3	2	2.25	1	9.1	1	1.2	0.9
Potassium	102.5	114.5	116	100.5	228	91.3	222	62.5	76	57.5
Selenium	0.50	0.55	0.6	0.5	0.55	0.12	0.175	0.145	0.185	0.155
Silver	0.50	0.55	0.6	0.5	0.55	0.27	0.27	0.275	0.335	0.255
Sodium	13.6	15.65	29.8	10.3	28.2	11.3	25.6	6.1	36.65	4.2
Thallium	1.05	1.15	1.15	1	1.1	0.055	0.085	0.105	0.11	0.095
Vanadium	3.1	2.5	4	3.9	4.9	8.2	17	2.05	5.9	0.9
Zinc	2.1	3.15	15	4.35	2.45	0.82	2.6	0.89	2.3	0.76

BASE BACKGROUND
SUBSURFACE SOIL
TAL INORGANICS
MCB CAMP LEJEUNE, NORTH CAROLINA

	43-BB-SB03-02	44-BB-SB01-03	54-BB-SB01-04	54-BB-SB02-04	86-BB-SB01-02	65-DW04-05	MIN	MAX	AVG	2Xaverage
Aluminum	2260	10300	1100	1040	2460	4560	16.900	11000.000	3706.615	7413.230
Antimony	2.25	1.15	1.25	1.25	2	5.25	0.355	6.900	3.249	6.498
Arsenic	0.31	1.2	0.16	0.195	0.22	1.05	0.033	15.400	0.985	1.971
Barium	9.1	12.5	1.15	1.05	4.4	10.9	0.650	22.600	7.185	14.370
Beryllium	0.1	0.065	0.06	0.0345	0.09	0.105	0.010	0.310	0.096	0.191
Cadmium	0.305	0.305	0.325	0.335	0.275	0.5	0.155	1.200	0.359	0.718
Calcium	295	20.9	24.6	14.7	50.8	111	4.750	4410.000	193.912	387.824
Chromium	2	11	1.15	1	3.1	5.7	0.650	66.400	6.268	12.537
Cobalt	0.33	0.495	0.26	0.305	0.29	3.2	0.175	7.000	0.805	1.611
Copper	0.265	0.86	0.45	0.46	0.185	1.05	0.160	9.500	1.205	2.410
Iron	507	4720	392	319	3160	925	63.300	90500.000	3567.320	7134.639
Lead	2.8	4.15	0.8	1.75	2.4	2.7	0.465	21.400	4.132	8.264
Magnesium	49.3	302	16.4	17.35	71.3	192	2.850	852.000	131.699	263.398
Manganese	2.5	3.9	0.5	0.6	1.8	5.6	0.395	19.900	3.995	7.990
Mercury	0.055	0.0425	0.11	0.05	0.055	0.05	0.010	0.680	0.065	0.129
Nickel	1.2	0.92	9.2	7.7	1.05	2.1	0.450	9.200	1.863	3.725
Potassium	75	207	29.9	14.45	66.5	105	1.050	1250.000	172.126	344.252
Selenium	0.17	0.155	0.145	0.17	0.175	0.5	0.085	2.400	0.403	0.806
Silver	0.33	0.26	0.28	0.29	0.29	0.5	0.175	1.000	0.434	0.869
Sodium	8.75	86.4	4.4	2.2	6.8	69.9	2.200	141.000	27.285	54.570
Thallium	0.105	0.07	0.065	0.08	0.13	1.05	0.055	2.700	0.490	0.980
Vanadium	1.7	17.1	0.85	0.8	1.85	4.1	0.340	69.400	6.670	13.340
Zinc	1.6	2.5	0.92	1.3	0.37	3.45	0.320	26.600	3.334	6.668

APPENDIX N
EVALUATION OF METALS IN GROUNDWATER

DRAFT

EVALUATION OF METALS IN GROUNDWATER

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0177

JUNE 3, 1994

Prepared for:

DEPARTMENT OF THE NAVY
ATLANTIC DIVISION
NAVAL FACILITIES
ENGINEERING COMMAND
Norfolk, Virginia

Under the:

LANTDIV CLEAN Program
Contract N62470-89-D-4814

Prepared by:

BAKER ENVIRONMENTAL, INC.
Coraopolis, Pennsylvania

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
2.0	STUDY OBJECTIVES	1
3.0	SCOPE OF WORK	2
4.0	DATA ANALYSIS	3
5.0	ANALYSIS OF STUDY OBJECTIVES	8
6.0	CONCLUSIONS	10
7.0	RECOMMENDATIONS	10

FIGURES

1 Site Location Map
2 Positive Detections Above Applicable Federal and State Standards for Total and Filtered Inorganic Analytes in Groundwater-Site 2
3 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Shallow Wells-Site 78
4 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Intermediate Wells-Site 78
5 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Deep Wells-Site 78

TABLES

1 Summary of Total Metals in Shallow Wells
2 Comparison of Repeat Sampling in Shallow Wells
3 Summary of Dissolved Metals in Shallow Wells
4 Summary of Total Metals in Upgradient Wells
5 Comparison of Inorganic Subsurface Soil Concentrations in "Clean" and "Contaminated" Wells
6 Total Metals in Deep Monitoring Wells
7 Summary of Field Parameters in Shallow, Deep, and Supply Wells

1.0 INTRODUCTION

Numerous groundwater investigations have been conducted at Marine Corps Base (MCB), Camp Lejeune under the Department of the Navy (DON) Installation Restoration Program (IRP). These studies have identified elevated levels of total metals in shallow groundwater at almost every site. The degree of contamination, based on dissolved metals analysis of groundwater samples, is limited. It is believed that the presence of elevated metals are not always related to past disposal activities for several reasons, which is the basis of this study.

Currently, Records of Decision (ROD) are being prepared for Operable Units No. 1 (Sites 21, 24, and 78) and No. 5 (Site 2). Both RODs are proposing to not remediate shallow groundwater which contains elevated levels of total metals above State groundwater standards (i.e., North Carolina Water Quality Standards) and/or Federal drinking water standards (i.e., Maximum Contaminant Levels). Specifically, remediation of shallow groundwater due to elevated total metals is not cost effective, or practical, due to the following: (1) the shallow aquifer is not used for potable supply; (2) the source of metals in groundwater cannot be correlated with soil data or previous disposal practices; (3) the extent of shallow groundwater contamination (based on total metals analysis) is widespread and in many cases undefinable, since there are no apparent contaminant plumes or patterns associated with the metals; and (4) deep groundwater, which is the source of potable water, is not significantly contaminated with metals above the standards.

2.0 STUDY OBJECTIVES

The DON/Marine Corps initiated a study on inorganics in groundwater throughout MCB Camp Lejeune to assess whether total metals in groundwater are related to disposal practices or to other factors. The overall goal of this study is to provide information that would be used in consideration of not remediating shallow groundwater at Operable Units No. 1 and No. 5, and possibly other operable units where total metals are elevated without cause. The following study objectives were identified:

(1) Determine whether the elevated total metals detected in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples;

(2) Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune;

(3) Determine whether there is a correlation between elevated total metals in groundwater and metals in soil; and

(4) Determine whether the concentrations of total metals (i.e., low versus high) is related to shallow and deep aquifer characteristics.

3.0 SCOPE OF WORK

Groundwater and soil data from a total of 21 sites were compiled as part of the overall study. Three of the 21 sites are located outside the boundary of the base. These sites include the ABC Cleaners Superfund Site, located along Route 24 in Jacksonville, and two sites located along Highway 17 (Off-site Properties No. 1 and No. 2). The two sites along Route 17 were investigated by the DON/Marine Corps as part of a real estate survey. The other 18 sites are located throughout various portions of MCB Camp Lejeune (see Figure 1).

Information from studies conducted by Baker and other consultants were obtained to evaluate metal concentrations in groundwater. The study focused on 14 metals of potential concern to human health and the environment. Some of the information was collected under the IR Program whereas other information was obtained during other investigations (e.g., ABC Cleaners RI/FS). The following data tables were then prepared to determine why total metals are generally elevated in shallow groundwater.

Table 1 - Total Metal Concentrations in Shallow Groundwater by Site

Table 2 - Summary of Repeat Sampling of Shallow Wells (Sites 2 and 78)

Table 3 - Dissolved Metal Concentrations in Shallow Groundwater by Site

Table 4 - Summary of Total Metal Concentrations in Upgradient Wells

Table 5 - Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells

Table 6 - Total Metal Concentrations in Deep Groundwater by Site

Table 7 - Summary of Field Parameters in Shallow Monitoring Wells, Deep Monitoring Wells, and Supply Wells

The tables are presented at the end of this report.

4.0 DATA ANALYSIS

The following discussion represents an analysis of the information contained in each of the previously mentioned tables.

Table 1 (Total Metal Concentrations in Shallow Groundwater)

All of the sites had at least one (and in most cases several) metal which exceeded either State water quality standards or Federal drinking water standards. The most frequently detected metals included chromium, lead, and manganese, which were detected at almost every site above drinking water standards. Other frequently detected metals which exceeded drinking water standards included arsenic, beryllium, cadmium, and nickel.

An analysis of the data from Table 1 indicates that elevated total metals are present in shallow groundwater at every site, including the three sites which are located off base. The two sites which did not exhibit significant contamination include the ABC Cleaners site (only chromium exceeded the standards) and Site 48 (only manganese exceeded the standards).

Total metals detected in shallow groundwater at Site 2 exceeded State and/or Federal standards in seven of the 11 shallow monitoring wells. Manganese was the most frequently detected metal (7/11). Lead (3/11), chromium (2/11), and cadmium (1/11) were also detected above the standards,, but less frequently (see Figure 2).

With the exception of Wells 78GW03 and 78GW19, total metals were detected at Site 78 (Hadnot Point Industrial Area) above Federal MCLs or NCWQS in every shallow well (see Figure 3). The extent of elevated total metals in groundwater is widespread, encompassing approximately one square mile (or approximately 660 acres) in total area. The distribution and concentration of total metals in shallow groundwater makes it virtually impossible to identify or illustrate contaminant plumes (see Figure 3).

An analysis of the total metals results indicates the following pattern. Samples exhibiting elevated levels of lead, chromium, or other contaminants of concern, also exhibited elevated levels of other metals such as aluminum, antimony, iron, and zinc. Samples which did not exhibit elevated levels of lead, chromium, or manganese also did not exhibit elevated levels of other metals. This pattern indicates that the elevated total metals are not limited to one or

two contaminants, which would be the case if a lead or chromium plume in the groundwater truly existed. In other words, if a site is impacted by a particular metal due to disposal activities (say chromium for example), then other metals such as aluminum, lead, or zinc should not be consistently elevated as in the case of samples collected from the shallow aquifer at MCB Camp Lejeune. This point is depicted in the data summary tables provided in Appendix A for Sites 2 and 78. These tables were taken from the Remedial Investigation Reports for Operable Units No. 1 and No. 5. As an example, note that sample numbers 78-MW08, 78-MW10, 78-MW11, and 78-MW12 all had elevated levels of total metals when compared to samples 78-MW09-2 and 78-MW09-3. It is clear that most of the metal concentrations in a particular sample follow a consistent pattern throughout.

Table 2 (Comparison of Repeat Sampling of Shallow Wells

Five wells from Sites 2 and 78 were randomly chosen to evaluate total metals concentrations between sampling rounds. The comparison was limited to only chromium, lead, and manganese since these contaminants were frequently detected throughout MCB Camp Lejeune. In several cases, metal concentrations were significantly different between the sampling rounds. If the shallow aquifer was impacted due to former disposal activities, a contaminant plume would be present and concentrations would not significantly deviate. The deviation in metal concentrations may indicate that sampling results are biased due to suspended particulates in the samples.

Table 3 (Dissolved Metal Concentration in Shallow Groundwater by Site)

The data base for Table 3 was limited to 12 sites since many of the previous investigations (i.e., prior to Navy CLEAN) did not analyze for dissolved metals. Nevertheless, an analysis of the 12 sites revealed that elevated levels of dissolved metals in groundwater is limited. Manganese was the most frequently detected metal above drinking water standards (10 of 12 sites exhibited elevated levels). Lead was detected at only one site (Site 21) above drinking water standards. Chromium was also detected at only one site (Site 78) above drinking water standards. No other metal was detected above the standards.

Literature searches have indicated that manganese is a naturally occurring metal in North Carolina. Therefore, the presence of manganese may not be attributable to site-related activities (Greenhorne & O'Mara, 1992).

An analysis of the data from Table 3 clearly shows a significant reduction in metal concentrations when compared to Table 1 (total metals in shallow groundwater). One possible reason for this reduction is that suspended solids or particles are not being introduced into the analysis of the sample due to filtering. A second possibility is that the metals are not significantly present in a dissolved state in shallow groundwater due to the species of metals under site conditions. It should be noted that calcium and sodium did not exhibit such a pattern since the salts of these metals are more soluble in water. For example, the concentrations of total calcium and total sodium versus dissolved calcium and dissolved sodium are similar and are not affected by the removal of the particulates during filtering. The fact that these salts do not exhibit the pattern that the other metals show supports the possibility that total metal concentrations are influenced by particulates in the sample.

Table 4 (Total Metals in Upgradient Shallow Wells)

The data base for Table 4 consists of groundwater results from 14 upgradient shallow monitoring wells (i.e., one well per site). These wells were installed to determine baseline groundwater quality to which on-site groundwater conditions could be compared. In some cases, the upgradient wells were located in areas where other base activities may have influenced groundwater quality.

The analysis of this data shows that manganese was the most frequently detected metal above Federal or State standards in upgradient shallow wells. Manganese was detected in 7 of the 14 upgradient wells above drinking water standards. Chromium and lead were also frequently detected above drinking water standards in upgradient (background) wells. These contaminants were detected in 6 of the 14 upgradient wells. At Site 2, samples collected from an upgradient well (2GW9) exhibited elevated levels of chromium (83µ/l), lead (27.2µ/l) and manganese (747µ/l). At Site 78, samples collected from upgradient wells 96W4 and 78GW26 did not exhibit elevated levels of total metals. The concentration range for metals detected above NC WQS and/of Federal MCLs in upgradient wells is provided below:

- beryllium (ND-46.5 µ/l)
- cadmium (ND-10 µ/l)
- chromium (ND-198 µ/l)
- lead (ND-78.8 µ/l)
- manganese (ND-747 µ/l)
- mercury (ND-1.6J µ/l)

Based on the above range representing upgradient wells, none of the on-site wells at Site 2 exhibited total metals above the maximum background concentrations. However, at Site 78, lead and chromium were detected above the maximum background in several on-site wells.

An analysis of the data from Table 4 indicates that shallow groundwater upgradient of some sites contains total metals above drinking water standards. A comparison of Table 4 data against Table 1 data indicates that shallow groundwater samples from upgradient wells are less contaminated than samples collected from on-site monitoring wells. However, it should be noted that the data base for Table 4 consists of only 14 wells whereas the data base for Table 1 consists of over 130 wells. Therefore, to assume that upgradient groundwater quality is better than on-site groundwater quality may not be justified due to the different data bases.

Table 5 (Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells)

The purpose of this table is to determine whether metal concentrations in soils correlate with the elevated levels of metals in shallow groundwater.

To evaluate this, metals in subsurface soils, representing an area of groundwater contamination, were compared to metals in subsurface soil in areas which did not exhibit groundwater contamination. If the elevated total metals in shallow groundwater are present due to former disposal activities, subsurface metals in soil representing an area of groundwater contamination would be expected to be elevated or higher than metals in subsurface soil representing a non-contaminated area. This evaluation assumes that the well exhibiting elevated total metals is within a source area and that the soil sample is representative of soil impacted by metal contamination.

As shown on Table 5, there is no clear pattern or correlation which indicates that elevated total metals are due to soil contamination. Note that in many cases, the concentration of metals which represent "non-contaminated" areas are greater than the metals which represent "contaminated" areas. Also note that the metals in subsurface soil are within or close to background subsurface metal concentrations. Therefore, this supports the possibility that in many cases at MCB Camp Lejeune, the elevated total metals in shallow groundwater cannot be attributable to a source or to past disposal practices.

Table 6 (Total Metals in Deep Monitoring Wells)

Table 6 presents total metal concentrations in deep groundwater for each site. The data base is limited to only 8 sites. Metal concentrations in supply wells were also included for comparison purposes.

As shown on Table 6, total metals in deep groundwater are below drinking water standards with a few exceptions. Arsenic and cadmium were detected above the standards in one deep monitoring well at Site 78 (see Figure 4). Manganese was detected in deep groundwater at three sites and a few of the supply wells. Lead was detected in one supply well at 16 µ/l, which is slightly above the drinking water standard of 15 µ/l.

Elevated total metals are not widespread in deep groundwater for two possible reasons. First, most metals are not very mobile in the environment. Second, deep groundwater samples may not have significant amounts of suspended particulates due to different geologic conditions. Soils in the deeper aquifer are more compacted and consist primarily of calcareous sands, clays, and limestone fragments. Soils in the shallow aquifer are loosely compacted and consist primarily of fine-grained sands, silts, and clays. This classification may support the possibility that suspended solids are collected during sampling, thereby influencing the analysis for total metals.

Table 7 (Summary of Field Parameters in Shallow, Deep, and Supply Wells)

Table 7 provides a range of pH and specific conductivity values representative of shallow and deep groundwater. In general, lower pH values were noted more often in shallow wells than in deep wells (including the supply wells). This condition may influence the leachability and speciation of metals in groundwater.

Deep groundwater usually exhibited higher specific conductivity values. High specific conductivity values are representative of high dissolved conditions. The fact that deep groundwater generally exhibited higher specific conductivity values indicates that most of the metals, if present, are in a dissolved state. The high specific conductivity values could also indicate less suspended particulates due to the geologic conditions of the deep aquifer. The lower specific conductivity values observed in shallow wells indicates that the metals in the shallow aquifer are not in a dissolved state. This also supports the possibility that suspended particulates in the shallow aquifer are influencing the analysis of total metals.

5.0 ANALYSIS OF THE STUDY OBJECTIVES

Each of the objectives identified for this study are analyzed below based on the information collected.

Objective No. 1 (Determine whether the elevated total metals in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples)

Based on the analysis of information provided in Tables 1 through 7 and Appendix A, it appears that suspended particulates in groundwater samples could influence the concentration of total metals in groundwater. Well construction factors and sampling techniques are probably not a significant factor since the data base is representative of data obtained by Baker, ESE (Site 28 and 30), Roy F. Weston (ABC Cleaners), and Halliburton NUS (Site 7). No particular pattern was noted between sites which Baker obtained the samples versus sites in which other consultants obtained the data. Sampling methods were also considered. For Sites 63 and 65 for example, samples were collected with a bailer. At Sites 2 and 78, samples were collected with a low flow pump. All four sites exhibited elevated levels of total metals in groundwater samples. In addition, due to the fact that deep groundwater quality is not significantly impacted with metals indicates that well construction or sampling techniques are probably not factors related to elevated total metals in groundwater.

With respect to past disposal practices, Table 5 clearly shows that soil concentrations do not correlate with elevated total metals in groundwater. Based on this analysis, and on many of the sites previously investigated, the source of total metals in groundwater cannot be attributable to soil contamination or disposal practices in many cases. This is based on both the history of the site as well as the analytical soil results. In some cases, total metals were detected at elevated levels even when the site history did not correlate with the contaminants found. For example, Sites 2 and 21 have a history of pesticide storage and handling, and there are no known disposal areas (i.e., buried debris) within the site boundary. Nevertheless, both of these sites exhibited several metals above drinking water standards that would not be expected to be present at high concentrations based on the historical use of the site. These metals included lead, chromium, beryllium, cadmium, and manganese.

Objective No. 2 (Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune)

Based on groundwater data obtained from both upgradient wells and off base wells, total metals were detected above drinking water standards in shallow groundwater in areas that would not be influenced by former disposal activities at the sites. Given that some of the upgradient wells are contaminated, it is apparent that total metals in shallow groundwater are elevated in certain areas of the base outside of the influence of site-related disposal activities. However, it is unknown whether the shallow aquifer upgradient of the sites is contaminated due to other base-related activities or whether the levels in groundwater samples are also elevated due to the influence of suspended fines in the samples.

Objective No. 3 (Determine whether there is a correlation between elevated total metals in groundwater and metals in soil)

An evaluation of the data presented in Table 5 shows that metals in soil samples collected in areas of groundwater contamination are not elevated when compared to metals in soil samples collected in areas that did not exhibit groundwater contamination. This supports the possibility that in many cases, elevated levels of total metals in shallow groundwater are not related to the disposal history at the site. As previously mentioned, sites which did not exhibit soil contamination (when compared to background soil levels) or did not have a history of disposal indicative of metals contamination still exhibited elevated levels of total metals in groundwater. Since there is no apparent correlation between metals in soil and total metals in groundwater, then the possibility exists that the elevated total metals in groundwater are biased high due to suspended particulates.

Objective No. 4 (Determine whether the concentrations of total metals in groundwater is related to shallow and deep aquifer characteristics)

There is some evidence that the geologic conditions of the shallow and deep aquifers influence the amount of total metals detected in groundwater samples. The fact that the deep aquifer generally exhibited higher specific conductivity values indicates that there is more dissolved constituents in the deep aquifer when compared to the shallow aquifer. This was evident when comparing Table 1 (total metals in shallow groundwater) to Table 6 (total metals in deep groundwater). Table 6 did not indicate significant levels of total metals in deep groundwater throughout MCB Camp Lejeune.

The geologic conditions of the shallow aquifer would tend to result in samples that may contain suspended particulates. The suspended particulates could influence the total metals concentrations in the samples.

6.0 CONCLUSIONS

1. Elevated levels of total metals in the shallow aquifer are probably influenced to some degree by the geologic conditions of the site.

2. There is no correlation between metal levels in soil and total metals in groundwater. Therefore, elevated total metals in groundwater cannot be attributable to soil contamination of past disposal practices.

3. Elevated levels of total metals in the shallow aquifer may be biased high due to suspended particulates in the samples.

4. Dissolved metals in groundwater were generally below Federal MCLs and NC WQS and therefore, do not present a significant problem at MCB Camp Lejeune.

5. Total and dissolved metal concentrations in the Castle Hayne aquifer were generally below drinking water standards and therefore, do not present a significant problem at MCB Camp Lejeune.

6. The presence of manganese in shallow and deep groundwater may be due to naturally occurring geologic conditions.

7.0 RECOMMENDATIONS

1. Remediation of total metals in the shallow aquifer at Operable Units 1 and 5 is not recommended based on the following:

   - Elevated metals in groundwater at both operable units does not appear to be related to soil contamination or past disposal practices;
   - The distribution of total metals in groundwater is not characteristic of a plume that would be present due to a source of contamination;
   - Remediation of total metals would not be practical from an engineering or cost standpoint; and
   - Currently, there is no human or environmental exposure to shallow groundwater.

2. Additional background wells should be installed at all sites in order to provide a baseline for comparing on-site groundwater quality.

Tables

TABLE 1
TOTAL METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number / Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	7.2 - 57.4	2.2 - 23.6	ND - 23.3	ND - 43.4J	ND	ND - 101	ND - 116J	5.4 - 13J	6.4 - 12J	2.4 - 36.3	ND - 23.4	ND - 570
Barium	2000	2000	335 - 833	46 - 1420	ND - 1020	427 - 641	ND - 1060	ND - 647	ND - 1120	78.8 - 576	60.1 - 396	55.2 - 999	220 - 745	315 - 3180
Beryllium	NE	4	2.7 J - 43.4	1 - 3	ND - 7.5	ND - 10.3J	ND	ND - 8	ND - 19	ND - 1.2J	ND - 2.4	0.80 - 42.8	1.5 - 4.2	1.4 - 36.6
Cadmium	5	5	ND - 12.9	7	ND	ND	ND	ND	ND - 12	3.3J - 17.3J	ND - 10.7J	3.2 - 110	ND - 6.9	ND - 32
Calcium	NA	NA	8850 - 726000	5710 - 450000	5430 - 64900	5050 - 51300	16100 - 90700	6130J - 63000J	ND - 151000	20200 - 160000	1730 - 11900	8750 - 828000	10300 - 91900	2430 - 191000
Chromium	50	100	172 - 627	11 - 117	ND - 201	47.8 - 220	ND - 214	ND - 348J	19 - 316	9.0J - 140	42.8 - 106J	10.5 - 244	161 - 249	126 - 895
Copper	1000	1300	44.6 - 117	3 - 23	ND - 175	17.7 - 36.4	ND - 39.7	ND - 84	ND - 52	18.8J - 75.4	15.8 - 42.5	16.3 - 1030	64.2 - 104	28.6 - 313
Lead	15	15	40.8J - 176J	2.7 - 44.8	ND - 200	23 - 37.3	ND - 127	ND - 2000J	5.1 - 89	20.3J - 234J	7.7J - 115J	4.8 - 9340	16.5 - 28.8	15.8 - 508
Manganese	50	50 (1)	125 - 1720	21 - 190	ND - 362	56.9 - 220	ND - 91.3	59 - 276J	29 - 518	82.2 - 304	78.5 - 578	56.6 - 2110	72.6 - 297	88 - 1730
Mercury	1.1	2	ND - 1.2J	ND	ND - .46	0.2 - 0.36	ND - 1.4	ND - 2.4J	ND - 3.2	ND - 1.4J	0.88J - 0.9J	0.13 - 0.92	ND - 0.24	ND - 1.1
Nickel	100	100	28.5 - 426	ND	ND - 41.9	ND	ND	ND - 123	ND - 140	ND - 59.8	17.1J - 52.6J	28.8 - 137	20.5 - 143	21.9 - 486
Sodium	NA	NA	9090 - 19000	ND - 103000	1110 - 68700	7040 - 156000	1390 - 4170	7950 - 15700	5230 - 19200	9480 - 74700	5320 - 8100	2080 - 40200	9160 - 22100	4060 - 12600
Vanadium	NE	NE	214 - 640	9 - 184	ND - 330	37.8 - 423	ND - 175	ND - 419	ND - 408	6.1 - 164	57 - 101	20.4 - 244	122 - 233	184 - 759
Zinc	2100	5000 (1)	ND - 1110	6 - 146	ND - 1620	83.6 - 133	ND - 118	27J - 487J	20 - 650	ND	79.2 - 104	25.7 - 5180	19 J - 661J	87.3 - 2800J

Site Number / Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	ND - 23.4	ND - 308	2.9 - 29.0	ND - 403J	ND - 67.8	ND - 12	10.3 - 160	ND
Barium	18 - 51.3	56.1 - 5410	105 - 638	46.5 - 850	ND - 1250	ND - 540	35 - 220	ND - 468	ND
Beryllium	ND	ND - 3.1	ND	1.3 - 10.6	ND - 19	ND	NA	ND - 8.5	ND
Cadmium	2.2 - 3.3	ND	ND	2.4 - 11.4	ND - 21	ND	NA	ND	ND
Calcium	30600 - 115000	2830 - 24300	33300 - 181000	2010 - 38700	ND - 642000	6580 - 60800	790 - 16000	ND - 22800	ND - 5200
Chromium	5.8 - 17.5	4.4 - 134	50.1 - 364	15.1 - 159	ND - 858J	ND - 174	ND - 57	52.8 - 636	ND - 94
Copper	3.1 - 13.5	10.7 - 126	28.2 - 127	16.2 - 70.8	ND - 699	ND - 29.3	ND - 89	ND - 140	ND
Lead	ND	4.3 J - 369	19.1 - 132	7.8 - 188	ND - 360J	ND - 89	ND - 10	12.3 - 345	6.3 - 62.3
Manganese	38.1 - 585	50.3 - 1020	56.2 - 474	13.0 - 912	26 - 714	26.9 - 283	4 - 44	56 - 973	ND - 60.1
Mercury	0.04 - 0.09	ND - 0.20	ND - 0.29	0.10 - 0.94	ND - 1.5	ND - 0.66	NA	ND	ND
Nickel	ND	19.8 - 54.2	19.4 - 84.3	13.6 - 99.8	ND - 234	ND - 34.6	ND - 77	40.2 - 380	ND
Sodium	5750 - 8760	3150 - 7100	3850 - 11700	4790 - 41300	ND - 42500	5670 - 36500	5800 - 33000	ND - 9390	ND - 7630
Vanadium	3.4 - 12.8	7.9 - 163	59.8 - 433	17.3 - 210	ND - 1700	ND - 256	ND - 45	70 - 739	ND - 64.7
Zinc	ND - 30.3	58.5J - 1110J	148J - 406J	36.2 - 12100	6J - 967J	ND - 204	14 - 220	ND - 736	ND - 40.8

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 2
COMPARISON OF REPEAT SAMPLING OF SHALLOW WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well	2GW01		2GW03		2GW06		2GW08		2GW09	
Date	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994
Chromium	18	ND	11	ND	15	ND	ND	ND	25	83
Lead	15.5 J	ND	3.5 J	ND	6.7 J	ND	ND	3.4	27.2 J	23.6
Manganese	55	47	21	ND	79	140	53	415	290	747

Well	78GW05		78GW08		78GW15		78GW16		78GW19	
Date	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994
Chromium	ND	17 J	91.8	491 J	21.4	215 J	209	353 J	13.8	ND
Lead	13.6	13.1 J	54.1	131 J	16.6	53	100	224	31.7	8.3
Manganese	162	161 J	46.5	213 J	18.3	115	98.3	150	79	26

NOTES:
J - Value is estimated..
ND - Not detected.

TABLE 3
DISSOLVED METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number / Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	NA	2.2 - 7.1	ND	NA	ND	ND - 10.6	ND - 16.3	NA	NA	2.2 - 4.7	NA	NA
Barium	2000	2000	NA	25 - 149	ND	NA	ND	ND	ND	NA	NA	12.4 - 451	NA	NA
Beryllium	NE	4	NA	1	ND	NA	ND	ND	ND	NA	NA	0.80 - 3.2	NA	NA
Cadmium	5	5	NA	ND	ND	NA	ND	ND - 5	ND	NA	NA	3.2 - 4.2	NA	NA
Calcium	NA	NA	NA	5800 - 441000	6230 - 57400	NA	15800 - 82400	35900	ND - 113000	NA	NA	4710 - 138000	NA	NA
Chromium	50	100	NA	10	ND	NA	ND	ND	ND	NA	NA	8.3 - 9.6	NA	NA
Copper	1000	1300	NA	2 - 9	ND	NA	ND	ND	ND	NA	NA	16.3 - 23.9	NA	NA
Lead	15	15	NA	2.1	ND	NA	ND	ND - 94	ND	NA	NA	1.0	NA	NA
Manganese	50	50 (1)	NA	17 - 129	ND - 92.7	NA	ND	40 - 134	ND - 320	NA	NA	7.1 - 521	NA	NA
Mercury	1.1	2	NA	ND	ND	NA	ND	ND	ND - 0.5	NA	NA	0.13 - 0.20	NA	NA
Nickel	100	100	NA	ND	ND	NA	ND	ND	ND - 57	NA	NA	28.8 - 31.2	NA	NA
Sodium	NA	NA	NA	ND - 103000	1420 - 70500	NA	1280 - 3860	16200	ND - 183000	NA	NA	2500 - 34200	NA	NA
Vanadium	NE	NE	NA	43	ND	NA	ND	ND	ND	NA	NA	20.4	NA	NA
Zinc	2100	5000 (1)	NA	8 - 35	ND - 350	NA	ND	6B - 50	ND - 437	NA	NA	10.6 - 125	NA	NA

Site Number / Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	NA	NA	2.9	ND - 21.6	ND	NA	ND - 18.8	ND
Barium	16.8 - 27.6	NA	NA	13.7 - 35.8	ND	ND	NA	ND	ND
Beryllium	ND	NA	NA	1.3	ND	ND	NA	ND	ND
Cadmium	ND - 3.1	NA	NA	2.4	ND	ND	NA	ND	ND
Calcium	72600 - 80700	NA	NA	764 - 10600	ND - 296000	15200 - 58500	NA	ND - 7710	ND
Chromium	ND	NA	NA	7.2	ND - 59	ND	NA	ND - 30.0	ND
Copper	2.6 - 7.6	NA	NA	16.2	ND - 121	ND	NA	ND - 10.7	ND
Lead	ND	NA	NA	1	ND - 17.2	ND	NA	ND - 15.8	ND
Manganese	39.7 - 539	NA	NA	8.5 - 139	ND - 152	21 - 127	NA	ND - 63.8	ND - 21.3
Mercury	0.05 - 0.09	NA	NA	0.1	ND - 0.6	ND	NA	ND	ND
Nickel	ND	NA	NA	13.6	ND	ND	NA	ND	ND
Sodium	6430 - 8920	NA	NA	5170 - 41100	ND - 42200	5980 - 36000	NA	ND - 9540	ND - 6750
Vanadium	ND	NA	NA	16.6	ND	ND	NA	ND	ND
Zinc	ND	NA	NA	7.0 - 7670	ND - 58	ND - 119	NA	ND - 468	ND - 222

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 4
SUMMARY OF TOTAL METALS IN UPGRADIENT WELLS
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well Number	NCWQS	FEDERAL MCL	Upgradient of Site 1	Upgradient of Site 2	Upgradient of Site 6	Upgradient of Site 7	Upgradient of Site 9	Upgradient of Sites 21 and 78	Upgradient of Site 24	Upgradient of Site 28	Upgradient of Site 30	Upgradient of Site 41	Upgradient of Site 43	Upgradient of Site 44
			1GW06	2GW09	6BP6S	7GW03	9GW4S	78GW26	24GW07	28GW04		41GW05		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L		
Arsenic	50	50	17.8 J	12.9	ND	ND	ND	ND	3.7 J	7.4 J		13.1		
Barium	2000	2000	548	328	257	428	71.3	ND	ND	576		55.7		
Beryllium	NE	4	3.2 J	3	ND	ND	ND	ND	ND	9.3 J		1.6		
Cadmium	5	5	ND	ND	ND	ND	ND	not reported	ND	3.3 J		10		
Chromium	50	100	193	75	198	124	ND	13	37	122		54.4		
Copper	1000	1300	64.8	25	35.6	36.4	ND	ND	ND	20.7 J		27		
Lead	15	15	78.8 J	27.2	64.4	30.3 J	ND	9	11.4	22.4 J		23.7		
Manganese	50	50 (1)	202	747	84.5	56.9 J	ND	ND	39	206		203		
Mercury	1.1	2	1.6 J	ND	ND	0.36	ND	ND	ND	ND		0.16		
Nickel	100	100	51.6	ND	ND	ND	ND	ND	ND	59.8		38		
Vanadium	NE	NE	214	86	209	152	ND	149	64	85.3		38.1		
Zinc	2100	5000 (1)	ND	103	56.6	86.4 J	ND	68.1	41	ND		173		

No Upgradient Well Sites

No Upgradient Well Sites

No Upgradient Well Sites

Well Number	Upgradient of Site 48	Upgradient of Site 63	Upgradient of Site 65	Upgradient of Site 69	Upgradient of Site 78	Upgradient of Site 82	Upgradient of ABC Cleaners	Upgradient of Offsite Property #1	Upgradient of Offsite Property #2
	48GW1			69GW07	9GW04	6MW3S	MW-S01		
Units	ug/L			ug/L	ug/L	ug/L	ug/L		
Arsenic	ND			2.9	ND	ND	ND		
Barium	29.4 J			46.5	ND	ND	35		
Beryllium	ND			1.3	ND	ND	NA		
Cadmium	2.5 J			2.4	ND	ND	NA		
Chromium	ND			15.8	ND	ND	ND		
Copper	ND			16.2	ND	ND	ND		
Lead	ND			7.8	ND	ND	3		
Manganese	70.6			13	ND	ND	10		
Mercury	ND			0.1	ND	ND	NA		
Nickel	ND			13.6	ND	ND	ND		
Vanadium	3.4 J			17.3	ND	ND	9		
Zinc	ND			36.2	ND	ND	23		

No Upgradient Well Sites

No Upgradient Well Sites

No Upgradient Well Sites

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Camp Lejeune Background Subsurface Soil Data	Site 1		Site 2		Site 6		Site 7		Site 9		Site 21	
		"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number		--	--	2GW07	2GW09	6GW18	6GW15	7GW03	7GW02	9GW5	9GW1	21GW03	21GW02
Soil Sample Number		--	--	2-GW07-01	2 - GW09-02	6-GW18-0303	6-GW15-03	GW03-002	GW02-7595	9-GW5-03	9-SB35-03	21-GW03	21-GW02
Arsenic	0.03 - 0.47	NA	NA	1.7 J	ND	ND	ND	1.5	ND	ND	ND	ND	0.55 J
Barium	2 - 11	NA	NA	12.5 J	ND	ND	ND	6.6	71	ND	ND	ND	4.4 J
Beryllium	0.03 - 0.23	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.17 - 1.2	NA	NA	ND	ND	ND	ND	1.3	4.5	ND	ND	ND	ND
Chromium	2 - 9	NA	NA	10.9 J	4.6	ND	2.6	5.2	6	ND	2.6 J	15.2	3.2 J
Copper	0.47 - 2	NA	NA	0.97 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	1 - 12	NA	NA	8 J	4.3	3.3 J	3.2	2.5	34.4	1.6	8.5	7.1	6.9 J
Manganese	0.40 - 8	NA	NA	4.3 J	4.1	ND	1.8 B	3	11.5	ND	3.7 J	9.8	3.4 J
Mercury	0.01 - 0.11	NA	NA	0.3 J	ND	ND	ND	10.13	0.48	ND	ND	ND	ND
Nickel	0.70 - 5.0	NA	NA	ND	ND	ND	ND	3.4	11.8	ND	ND	ND	ND
Vanadium	0.75 - 13	NA	NA	13.8 J	ND	ND	2.9 B	5.5	4.5	ND	ND	15.5	4.4 J
Zinc	0.40 - 12	NA	NA	ND	ND	ND	ND	1.3	ND	ND	6.1 J	5.7	3 J

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 24		Site 28		Site 30		Site 41		Site 43		Site 44	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	24GW10	24GW02	--	--	--	--	41GW04	41-GW11	43GW01	43GW02	44GW02	44GW01
Soil Sample Number	24-GW10	24-BDA-SB09	--	--	--	--	41-GW04-DW	41-GW11-01	43-GW01-00	43-GW02-00	44-GW02-035	--
Arsenic	ND	ND	NA	NA	NA	NA	0.51	1.6	ND	ND	ND	1.7
Barium	ND	ND	NA	NA	NA	NA	9.4	22.6	ND	ND	ND	17.9*
Beryllium	ND	ND	NA	NA	NA	NA	0.18	0.18	ND	ND*	ND*	ND*
Cadmium	ND	ND*	NA	NA	NA	NA	0.73	0.73*	8.3	ND*	ND	ND*
Chromium	11.2	9 J*	NA	NA	NA	NA	3.6	11.2*	8.3*	67*	3.6 J*	10 J*
Copper	ND	ND	NA	NA	NA	NA	3.7	22.5*	3.4	ND	6.2 J	25.4 J
Lead	4.6 J	6.2 J*	NA	NA	NA	NA	4.8	110*	9.8*	6.1*	5.5*	10.7*
Manganese	4.7	8.1 J*	NA	NA	NA	NA	5.7*	75.9*	31.2*	8.2*	3.4*	20.4*
Mercury	ND	ND*	NA	NA	NA	NA	0.06	0.31	ND	ND	ND	ND*
Nickel	ND	ND*	NA	NA	NA	NA	6.6	6.6*	7.6	7.1*	3.1	3.4*
Vanadium	18.4	10	NA	NA	NA	NA	6.8	9.3	7.2	5.8	5	14.7
Zinc	ND	7.8	NA	NA	NA	NA	7.7	130*	20.1	3	3.2	34.9*

(* = shaded cell)

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 48		Site 63		Site 65		Site 69		Site 78		Site 82	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	48-GW01	48-GW03	63MW03	63MW02	65MW03	65MW02	69-GW11	69-GW03	78GW34	78GW24-1	6-GW28	82MW3
Soil Sample Number	48-GW1A-01	48-C3-03	63-MW03-04	63-MW02-06	65-MW03-11	65-MW02-06	69-GW11-04	69-CSA-SB23-00	78-GW34	78-B903-SB03	6-GW28-09	6-GW27D-06
Arsenic	1.3	0.77 J	ND	ND	ND	13	0.68	0.63	ND	ND	0.31	15.9
Barium	21.1	15	ND	ND	3.4	6.8	5.6	3	ND	ND	ND	ND
Beryllium	0.2	0.19	ND	ND	ND	ND	0.3	0.28	ND	ND	ND	ND
Cadmium	1.4	1.8 J	ND	ND	NA	NA	0.56	0.52	ND	ND	ND	ND
Chromium	18.2	18.6	7.7	ND	5.9	14.7	6.8	17	18.5	9.5	2.6	31
Copper	3.5	3.8	ND	ND	1.5	3.1	3.8	3.5	3.4 B	ND	ND	ND
Lead	32.3	14.3	4.2	2.5	10	10	4.3	11	4.5 J	2.6 J	2.7	43
Manganese	411	7	4.9	18.3	3.5	6.9	4	12	9.2	ND	ND	ND
Mercury	ND	ND	ND	ND	NA	NA	0.06	0.05	ND	ND	ND	ND
Nickel	2.2	1.9 J	ND	ND	ND	ND	3.2	3	ND	ND	ND	ND
Vanadium	28.3	20.8 J	ND	ND	4.4	3	4.4	3.6	18.7	19.2	ND	ND
Zinc	ND	ND	ND	ND	2.7	5	3.2	13	7.9	ND	ND	ND

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	ABC Cleaners		Offsite Property #1		Offsite Property #2	
Units	"Clean" mg/kg	"Contaminated" mg/kg	"Clean" mg/kg	"Contaminated" mg/kg	"Clean" mg/kg	"Contaminated" mg/kg
Well Number	--	--	--	--	--	--
Soil Sample Number	--	--	--	--	--	--
Arsenic	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 6
TOTAL METALS BY SITE
DEEP MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 1	Site 2	Site 6	Site 7	Site 9	Site 21	Site 24	Site 28	Site 30	Site 41	Site 43	Site 44	Site 48	Site 63	Site 65	Site 69	Site 78	Site 82	ABC Cleaners	Base Supply Wells (1)
Arsenic	No Deep Wells	ND	ND	No Deep Wells	ND	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 9.6	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 3.5	2 - 118 J	ND	ND - 14	ND
Barium		1420	ND		ND					22.6 - 186						42.3 - 58.0	ND - 547	ND	4 - 36	ND
Beryllium		ND	ND		ND					3.2						0.80 - 0.89	ND	ND	NA	NA
Cadmium		ND	ND		ND					4.2 - 4.7						3.2	ND - 21	ND	NA	ND
Chromium		16	ND		ND					9.6 - 40.5						8.3 - 20.7	ND - 10	ND	ND - 32	ND
Copper		ND	ND		ND					23.9						16.3	ND	ND	ND - 41	ND - 130
Lead		ND	ND		ND					1.0 - 11.1						3.1 - 6.8	ND	ND	ND - 10	ND - 16
Manganese		ND	ND - 33.5		ND					16.9 - 101						53.7 - 114	ND - 591	ND - 21.6	ND - 45	10 - 120
Mercury		ND	ND		ND					0.15 - 0.17						0.16 - 0.17	ND - 0.3	ND	NA	ND
Nickel		ND	ND		ND					31.2						28.8	ND	ND	ND - 14	NA
Vanadium		ND	ND		ND					20.4 - 49.8						20.4	ND - 24 J	ND	ND - 15	NA
Zinc		ND	ND		ND					17.8 - 83.8						31.1 - 48.7	ND - 181 J	ND	58 - 390	ND - 120

NOTES:
J - Value is estimated..
NA - Not analyzed.
ND - Not detected.
(1) - Range is based on 67 supply wells located throughout MCB, Camp Lejeune, NC.

TABLE 7
SUMMARY OF FIELD PARAMETERS IN SHALLOW, DEEP, AND SUPPLY WELLS MCB, CAMP LEJEUNE, NORTH CAROLINA

	Shallow Wells		Deep Wells		Supply Wells	
	Range (1)	Average Maximum	Range (2)	Average Maximum	Range (3)	Average Maximum
pH (standard units)	4.5 - 7.28	6.08	7.52 - 11.34	8.88	6.91 - 7.45	7.32
Specific Conductivity (micromhos/cm)	40 - 580	267	149 - 525	350	212 - 511	353

(1) - Based on data from 11 sites.
(2) - Based on data from 6 sites.
(3) - Based on data from 9 supply wells.

Figures

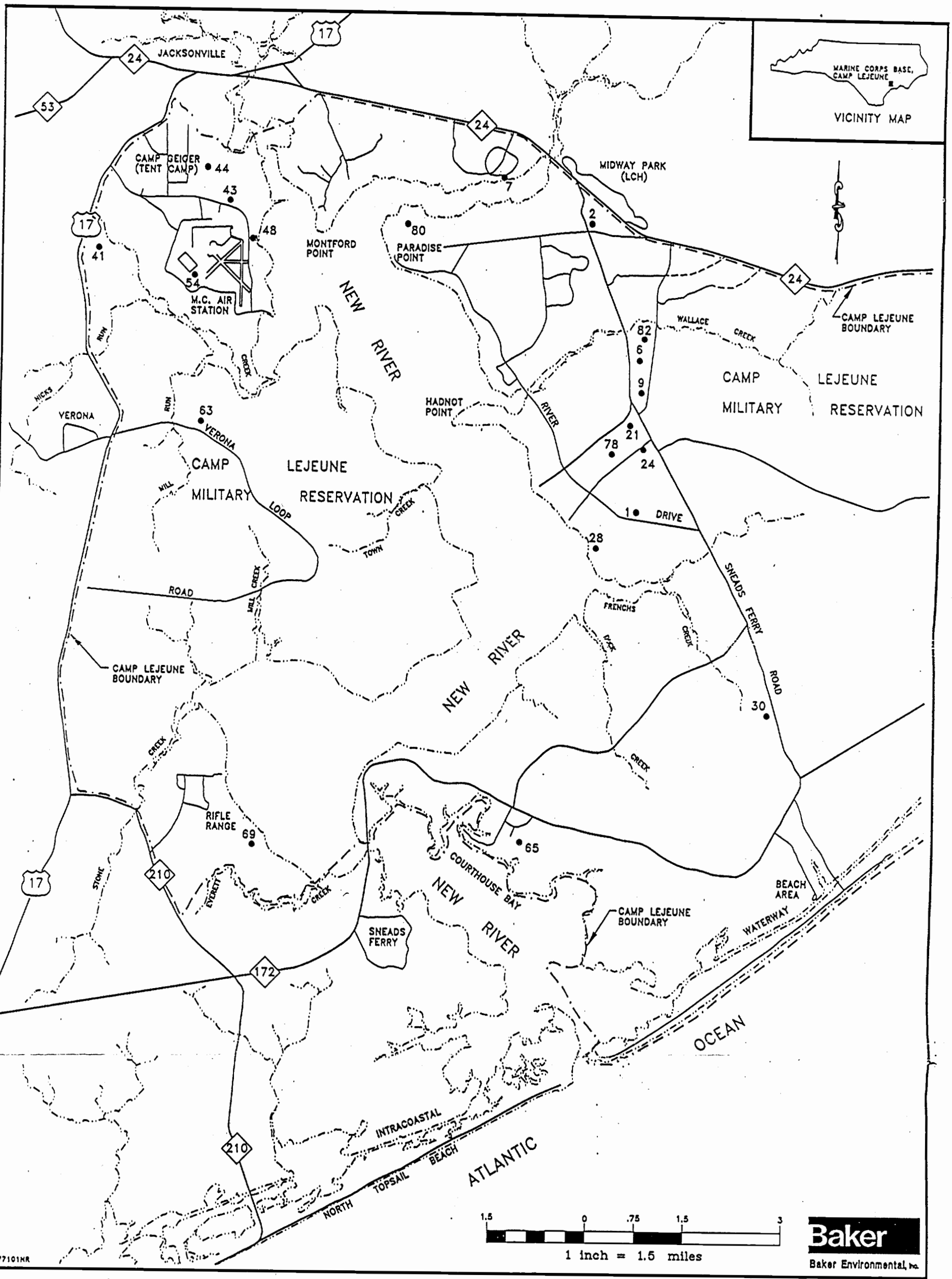
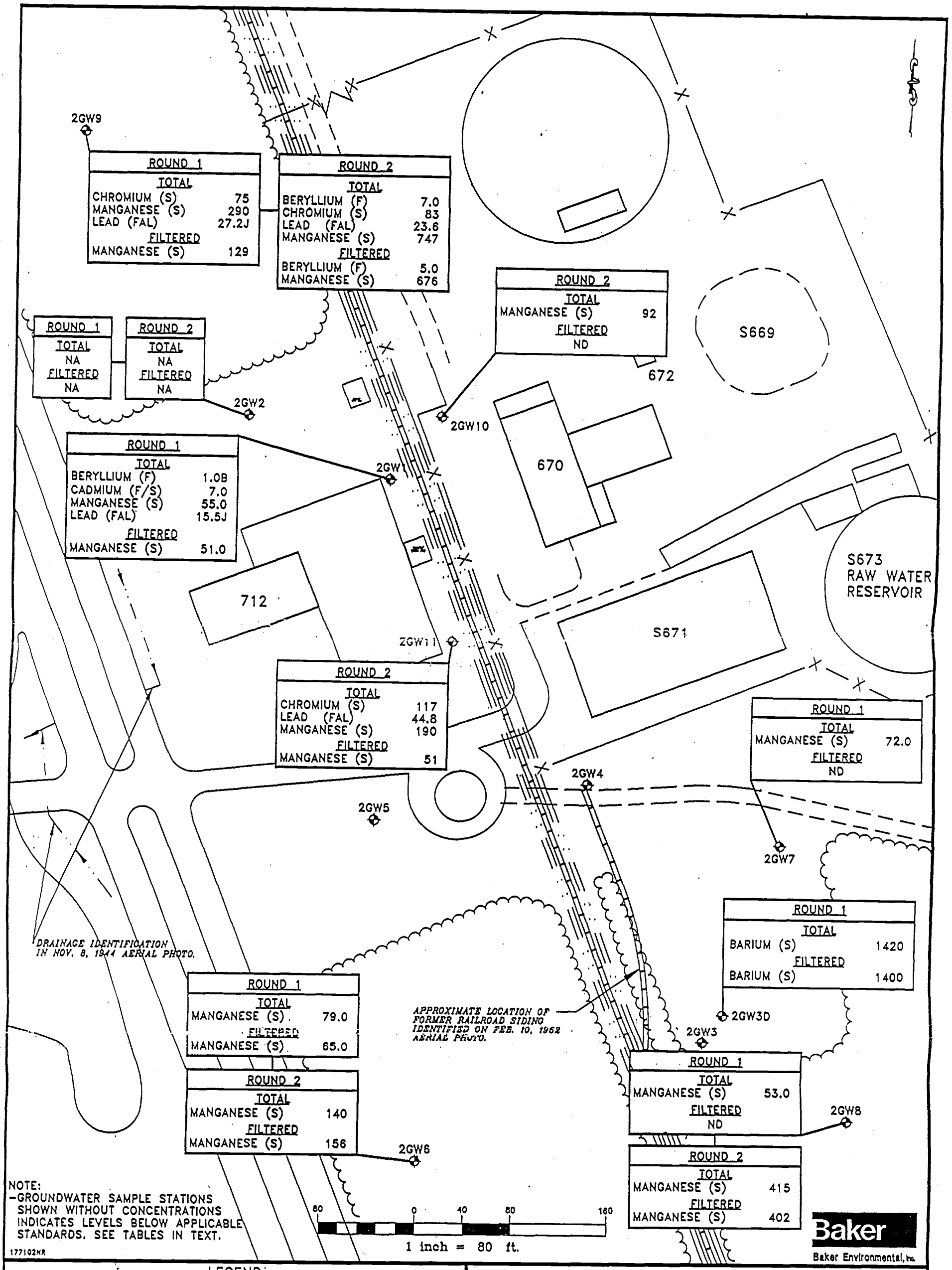


FIGURE 1
SITE LOCATION MAP
INORGANIC GROUNDWATER STUDY

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

017680012

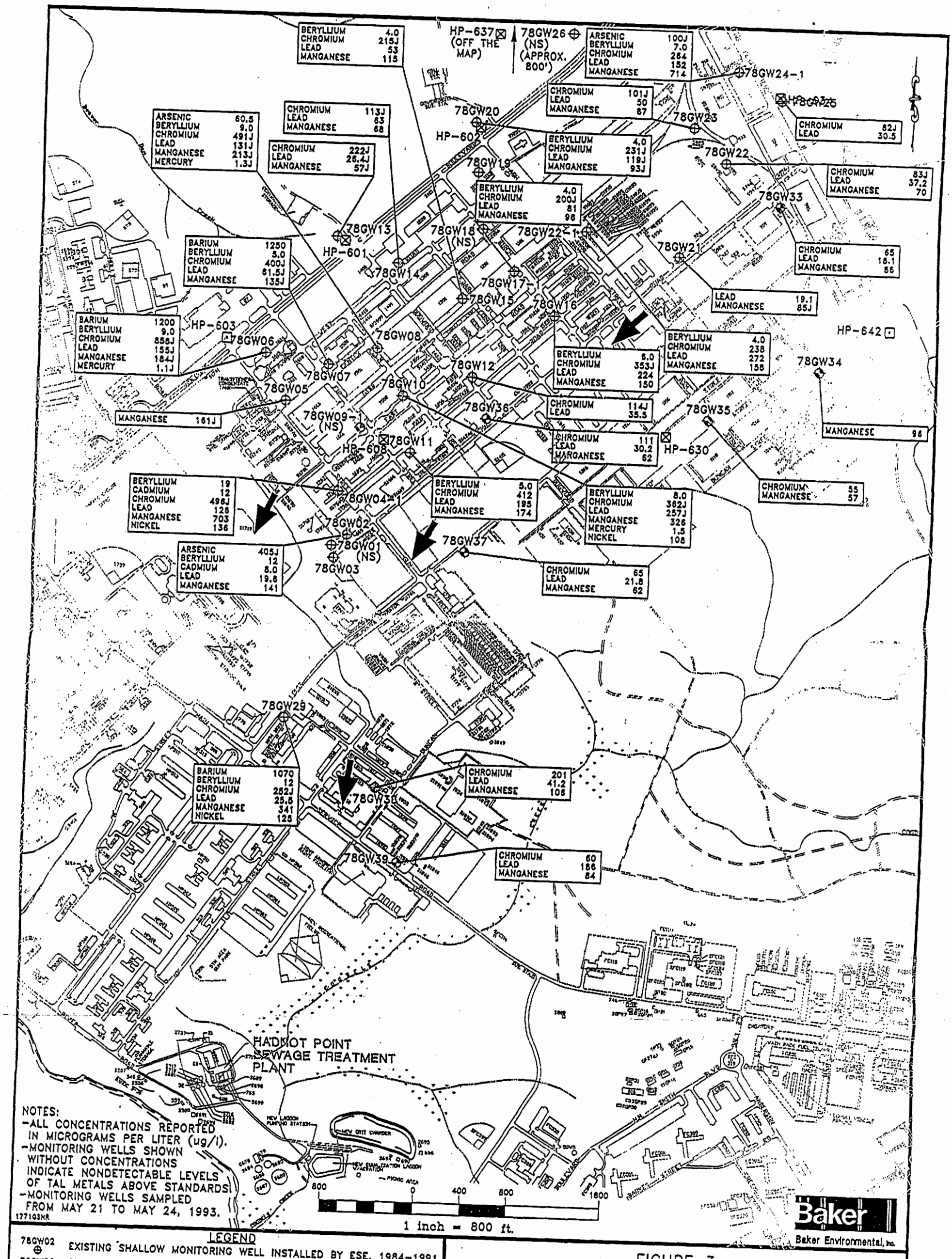


LEGEND

2GW1 ◈ GROUNDWATER WELL
(F) EXCEEDS FEDERAL STANDARD
(S) EXCEEDS STATE STANDARD
(FAL) FEDERAL ACTION LEVEL
ND NOT DETECTED ABOVE APPLICABLE STANDARDS
NA NOT ANALYZED
J ESTIMATED CONCENTRATIONS
CONCENTRATIONS EXPRESSED IN ug/l(ppb)
SOURCE: LANTDIV, FEB. 1992

FIGURE 2
POSITIVE DETECTIONS ABOVE APPLICABLE FEDERAL AND STATE STANDARDS FOR TOTAL AND FILTERED INORGANIC ANALYTES IN GROUNDWATER
SITE 2
REMEDIAL INVESTIGATION CTO-0174
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01768 Q02Z



NOTES:
- ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (ug/l).
- MONITORING WELLS SHOWN WITHOUT CONCENTRATIONS INDICATE NONDETECTABLE LEVELS OF TAL METALS ABOVE STANDARDS.
- MONITORING WELLS SAMPLED FROM MAY 21 TO MAY 24, 1993.

177103NR

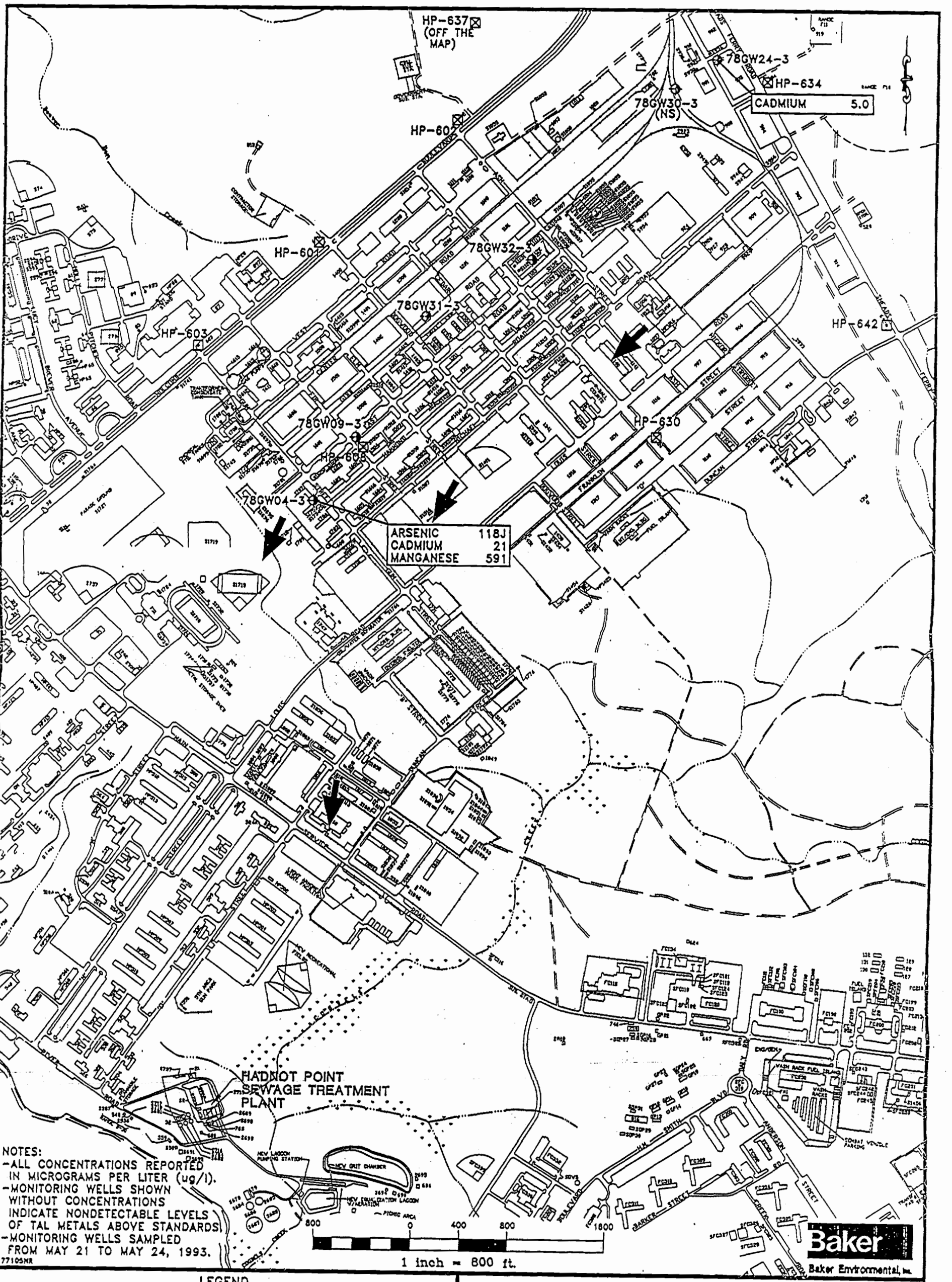
LEGEND

- 78GW02 ⊕ EXISTING SHALLOW MONITORING WELL INSTALLED BY ESE, 1984-1991
- 78GW33 ◈ SHALLOW MONITORING WELL INSTALLED BY BAKER ENVIRONMENTAL, INC., 1993
- → APPROXIMATE DIRECTION OF GROUNDWATER FLOW
- (NS) NOT SAMPLED FOR TAL METALS
- HP-603 ⊡ WATER SUPPLY WELL (ACTIVE)-NOT SAMPLED
- HP-601 ⊠ WATER SUPPLY WELL (INACTIVE)-NOT SAMPLED

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 3
POSITIVE DETECTIONS OF TAL METALS ABOVE FEDERAL MCLs AND/OR NCWQS IN SHALLOW WELLS
SITE 78
REMEDIAL INVESTIGATION CTO-0177
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01768Q03Z



LEGEND

78GW04-3	EXISTING DEEP MONITORING WELL INSTALLED BY ESE, 1991
→	APPROXIMATE DIRECTION OF GROUNDWATER FLOW
(NS)	NOT SAMPLED FOR TAL METALS
HP-603	WATER SUPPLY WELL (ACTIVE)–NOT SAMPLED
HP-601	WATER SUPPLY WELL (INACTIVE)–NOT SAMPLED

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 4
POSITIVE DETECTIONS OF TAL METALS ABOVE FEDERAL MCLs AND/OR NCWQS IN DEEP WELLS
SITE 78
REMEDIAL INVESTIGATION CTO-0177
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01768Q042

APPENDIX O
FREQUENCY OF DETECTION SUMMARIES

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW13-00	73-AC1-MW14-00	73-AC1-MW29-00	73-AC2-MW05-00	73-AC2-MW06-00
METHOD	8240A	8240A	8240A	8240A	8240	8240
DATE SAMPLED	04/19/95	05/04/95	04/21/95	04/24/95	04/07/95	04/06/95
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,1,2,2-TETRACHLOROETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,1,2-TRICHLOROETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,1-DICHLOROETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,1-DICHLOROETHENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,2-DICHLOROBENZENE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
1,2-DICHLOROETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,2-DICHLOROETHENE (TOTAL)	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,2-DICHLOROPROPANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
1,3-DICHLOROBENZENE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
1,4-DICHLOROBENZENE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
2-BUTANONE	56 U	110 U	6 U	110 UJ	12 U	10 U
2-CHLOROETHYL VINYL ETHER	11 U	11 U	5 U	11 U	NA	NA
2-HEXANONE	56 U	56 U	11 U	55 U	12 U	10 U
4-METHYL-2-PENTANONE	56 U	56 U	11 U	55 U	12 U	10 U
ACETONE	56 U	110 U	38 U	110 U	12 U	10 U
ACROLEIN	110 U	110 U	11 U	110 U	NA	NA
ACRYLONITRILE	56 U	56 U	11 U	55 U	NA	NA
BENZENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
BROMODICHLOROMETHANE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
BROMOFORM	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
BROMOMETHANE	11 U	11 U	11 U	11 U	12 U	10 U
CARBON DISULFIDE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
CARBON TETRACHLORIDE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
CHLOROBENZENE	5.6 U	5.6 U	1 J	5.5 U	12 U	10 U
CHLOROETHANE	11 U	11 U	11 U	11 U	12 U	10 U
CHLOROFORM	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
CHLOROMETHANE	11 U	11 U	11 U	11 U	12 U	10 U
CIS-1,2-DICHLOROETHENE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
CIS-1,3-DICHLOROPROPENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
DIBROMOCHLOROMETHANE	NA	NA	5 U	NA	12 U	10 U
DIBROMOMETHANE	5.6 U	5.6 U	NA	5.5 U	NA	NA
ETHYLBENZENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
M AND/OR P-XYLENE	NA	NA	5 U	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW13-00	73-AC1-MW14-00	73-AC1-MW29-00	73-AC2-MW05-00	73-AC2-MW06-00
METHOD	8240A	8240A	8240A	8240A	8240	8240
DATE SAMPLED	04/19/95	05/04/95	04/21/95	04/24/95	04/07/95	04/06/95
VOLATILES (ug/kg) cont						
M-XYLENE & P-XYLENE	5.6 U	5.6 U	NA	5.5 U	NA	NA
METHYLENE CHLORIDE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
O-XYLENE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
STYRENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
TETRACHLOROETHENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
TOLUENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
TRANS-1,3-DICHLOROPROPENE	5.6 U	5.6 U	5 U	5.5 U	12 U	10 U
TRICHLOROETHENE	5.6 U	5.6 U	5 U	5.5 U	2 J	10 U
TRICHLOROFLUOROMETHANE	5.6 U	5.6 U	5 U	5.5 U	NA	NA
VINYL ACETATE	5.6 U	56 U	10 U	55 U	NA	NA
VINYL CHLORIDE	11 U	11 U	11 U	11 U	12 U	10 U
XYLENES (TOTAL)	NA	NA	NA	NA	12 U	2 J

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-00	73-AC2-MW22-00	73-AC3-MW02-00	73-AC3-MW03-00	73-AC3-MW23-00	73-AC3-MW30-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/06/95	04/06/95	04/07/95	04/07/95	04/05/95	05/03/95
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
1,1,2-TRICHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
1,1-DICHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
1,1-DICHLOROETHENE	12 U	12 U	11 U	12 U	12 U	12 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	12 U	12 U	11 U	12 U	12 U	12 U
1,2-DICHLOROPROPANE	12 U	12 U	11 U	12 U	12 U	12 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-BUTANONE	12 U	12 U	11 U	12 U	12 U	12 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-HEXANONE	12 U	12 U	11 U	12 U	12 U	12 U
4-METHYL-2-PENTANONE	12 U	12 U	11 U	12 U	12 U	12 U
ACETONE	12 U	12 U	11 U	12 U	12 U	12 U
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
BENZENE	12 U	12 U	11 U	12 U	12 U	12 U
BROMODICHLOROMETHANE	12 U	12 U	11 U	12 U	12 U	12 U
BROMOFORM	12 U	12 U	11 U	12 U	12 U	12 U
BROMOMETHANE	12 U	12 U	11 U	12 U	12 U	12 U
CARBON DISULFIDE	12 U	12 U	11 U	12 U	12 U	12 U
CARBON TETRACHLORIDE	12 U	12 U	11 U	12 U	12 U	12 U
CHLOROBENZENE	12 U	12 U	11 U	12 U	12 U	12 U
CHLOROETHANE	12 U	12 U	11 U	12 U	12 U	12 U
CHLOROFORM	12 U	12 U	11 U	12 U	12 U	12 U
CHLOROMETHANE	12 U	12 U	11 U	12 U	12 U	12 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	12 U	12 U	11 U	12 U	12 U	12 U
DIBROMOCHLOROMETHANE	12 U	12 U	11 U	12 U	12 U	12 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	12 U	12 U	11 U	12 U	12 U	12 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-00	73-AC2-MW22-00	73-AC3-MW02-00	73-AC3-MW03-00	73-AC3-MW23-00	73-AC3-MW30-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/06/95	04/06/95	04/07/95	04/07/95	04/05/95	05/03/95
VOLATILES (ug/kg) cont						
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	12 U	12 U	11 U	12 U	12 U	12 U
O-XYLENE	NA	NA	NA	NA	NA	NA
STYRENE	12 U	12 U	11 U	12 U	12 U	12 U
TETRACHLOROETHENE	12 U	12 U	11 U	12 U	12 U	12 U
TOLUENE	12 U	12 U	11 U	12 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	12 U	12 U	11 U	12 U	12 U	12 U
TRICHLOROETHENE	12 U	12 U	11 U	12 U	12 U	12 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	12 U	12 U	11 U	12 U	12 U	12 U
XYLENES (TOTAL)	1 J	2 J	11 U	12 U	3 J	12 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00	73-AC4-MW24-00	73-AC4-SB13-00	73-AC4-SB14-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/18/95	04/04/95	04/05/95	04/04/95	04/09/95	04/09/95
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
1,1,2,2-TETRACHLOROETHANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
1,1,2-TRICHLOROETHANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
1,1-DICHLOROETHANE	11 U	14 U	12 U	15 U	11 U	14 U
1,1-DICHLOROETHENE	11 U	14 U	12 U	15 U	11 U	14 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	11 U	14 U	12 U	15 U	11 U	14 U
1,2-DICHLOROETHENE (TOTAL)	11 U	14 U	12 U	15 U	11 U	14 U
1,2-DICHLOROPROPANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-BUTANONE	11 U	3 J	12 U	2 J	11 U	14 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-HEXANONE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
4-METHYL-2-PENTANONE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
ACETONE	11 U	48 U	12 U	33 U	11 U	24
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
BENZENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
BROMODICHLOROMETHANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
BROMOFORM	11 U	14 UJ	12 U	15 UJ	11 U	14 U
BROMOMETHANE	11 U	14 U	12 U	15 U	11 U	14 U
CARBON DISULFIDE	11 U	14 U	12 U	15 U	11 U	14 U
CARBON TETRACHLORIDE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
CHLOROBENZENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
CHLOROETHANE	11 U	14 U	12 U	15 U	11 U	14 U
CHLOROFORM	11 U	14 U	12 U	15 U	11 U	14 U
CHLOROMETHANE	11 U	14 U	12 U	15 U	11 U	14 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
DIBROMOCHLOROMETHANE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00	73-AC4-MW24-00	73-AC4-SB13-00	73-AC4-SB14-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/18/95	04/04/95	04/05/95	04/04/95	04/09/95	04/09/95
VOLATILES (ug/kg) cont						
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	11 U	14 U	12 U	15 U	11 U	14 U
O-XYLENE	NA	NA	NA	NA	NA	NA
STYRENE	11 U	2 J	12 U	15 UJ	11 U	14 U
TETRACHLOROETHENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
TOLUENE	11 U	14 U	12 U	15 UJ	11 U	14 U
TRANS-1,3-DICHLOROPROPENE	11 U	14 UJ	12 U	NA	11 U	14 U
TRICHLOROETHENE	11 U	14 UJ	12 U	15 UJ	11 U	14 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	11 U	14 U	12 U	15 U	11 U	14 U
XYLENES (TOTAL)	11 U	2 U	12 U	15 UJ	11 U	14 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00	73-AC5-MW21-00	73-AC5-SB08-00	73-AC5-SB09-00	73-AC5-SB11-00	73-AC5-SB12-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/08/95	04/05/95	04/09/95	04/18/95	04/09/95	04/09/95
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,1,2,2-TETRACHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,1,2-TRICHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,1-DICHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,1-DICHLOROETHENE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,2-DICHLOROETHENE (TOTAL)	18 UJ	11 U	11 U	10 U	11 U	12 U
1,2-DICHLOROPROPANE	18 UJ	11 U	11 U	10 U	11 U	12 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-BUTANONE	18 UJ	11 U	11 U	10 U	11 U	12 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-HEXANONE	18 UJ	11 U	11 U	10 U	11 U	12 U
4-METHYL-2-PENTANONE	18 UJ	11 U	11 U	10 U	11 U	12 U
ACETONE	29 J	11 U	11 U	10 U	11 U	12 U
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
BENZENE	18 UJ	11 U	11 U	10 U	11 U	12 U
BROMODICHLOROMETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
BROMOFORM	18 UJ	11 U	11 U	10 U	11 U	12 U
BROMOMETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
CARBON DISULFIDE	18 UJ	11 U	11 U	10 U	11 U	12 U
CARBON TETRACHLORIDE	18 UJ	11 U	11 U	10 U	11 U	12 U
CHLOROBENZENE	18 UJ	11 U	11 U	10 U	11 U	12 U
CHLOROETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
CHLOROFORM	18 UJ	11 U	11 U	10 U	11 U	12 U
CHLOROMETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	18 UJ	11 U	11 U	10 U	11 U	12 U
DIBROMOCHLOROMETHANE	18 UJ	11 U	11 U	10 U	11 U	12 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	8 J	11 U	11 U	10 U	11 U	12 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00	73-AC5-MW21-00	73-AC5-SB08-00	73-AC5-SB09-00	73-AC5-SB11-00	73-AC5-SB12-00
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/08/95	04/05/95	04/09/95	04/18/95	04/09/95	04/09/95
VOLATILES (ug/kg) cont						
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	18 UJ	11 U	11 U	10 U	11 U	12 U
O-XYLENE	NA	NA	NA	NA	NA	NA
STYRENE	18 UJ	11 U	11 U	10 U	11 U	12 U
TETRACHLOROETHENE	18 UJ	11 U	11 U	10 U	11 U	12 U
TOLUENE	18 UJ	11 U	11 U	10 U	11 U	12 U
TRANS-1,3-DICHLOROPROPENE	18 UJ	11 U	11 U	10 U	11 U	12 U
TRICHLOROETHENE	18 UJ	11 U	11 U	10 U	11 U	12 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	18 UJ	11 U	11 U	10 U	11 U	12 U
XYLENES (TOTAL)	18 UJ	2 J	2 J	2 J	1 J	12 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC6-SB07-00	73-ACI-DW03-00	73-BB-DW01-00	73-SB06DW-00	73-SB07DW-00	73-SB08DW-00
METHOD	8240	8240A	8240	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	04/22/95	04/22/95	04/08/95	02/20/96	02/21/96	02/21/96
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	11 U	6 U	11 U	11 U	13 U	11 U
1,1,2,2-TETRACHLOROETHANE	11 U	6 U	11 U	11 U	13 UJ	11 U
1,1,2-TRICHLOROETHANE	11 U	6 U	11 U	11 U	13 U	11 U
1,1-DICHLOROETHANE	11 U	6 U	11 U	11 U	13 U	11 U
1,1-DICHLOROETHENE	11 U	5.6 U	11 U	11 U	13 U	11 U
1,2-DICHLOROBENZENE	NA	6 U	NA	11 U	13 U	11 U
1,2-DICHLOROETHANE	2 J	5.6 U	11 U	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	11 U	6 U	11 U	11 U	13 U	11 U
1,2-DICHLOROPROPANE	1 J	6 U	11 U	11 U	13 U	11 U
1,3-DICHLOROBENZENE	NA	6 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	5.6 U	NA	NA	NA	NA
2-BUTANONE	2 J	4.2 J	11 U	11 U	13 U	11 U
2-CHLOROETHYL VINYL ETHER	NA	11 U	NA	NA	NA	NA
2-HEXANONE	11 U	56 U	11 U	11 U	13 UJ	11 U
4-METHYL-2-PENTANONE	11 U	56 U	11 U	11 U	13 UJ	11 U
ACETONE	11 U	60 U	11 U	11 U	13 U	11 U
ACROLEIN	NA	110 U	NA	NA	NA	NA
ACRYLONITRILE	NA	60 U	NA	NA	NA	NA
BENZENE	11 U	6 U	11 U	11 U	13 U	11 U
BROMODICHLOROMETHANE	11 U	6 U	11 U	11 U	13 U	11 U
BROMOFORM	11 U	5.6 U	11 U	11 U	13 U	11 U
BROMOMETHANE	11 U	12 U	11 U	11 U	13 U	11 U
CARBON DISULFIDE	11 U	6 U	11 U	11 U	13 U	11 U
CARBON TETRACHLORIDE	11 U	5.6 U	11 U	11 U	13 U	11 U
CHLOROBENZENE	11 U	6 U	11 U	11 U	13 UJ	11 U
CHLOROETHANE	11 U	12 U	11 U	11 U	13 U	11 U
CHLOROFORM	11 U	5.6 U	11 U	11 U	13 U	11 U
CHLOROMETHANE	11 U	11 U	11 U	11 U	13 U	11 U
CIS-1,2-DICHLOROETHENE	NA	5.6 U	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	5.6 U	11 U	11 U	13 U	11 U
DIBROMOCHLOROMETHANE	11 U	NA	11 U	11 U	13 U	11 U
DIBROMOMETHANE	NA	5.6 U	NA	NA	NA	NA
ETHYLBENZENE	11 U	5.6 U	11 U	11 U	13 UJ	11 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC6-SB07-00	73-ACI-DW03-00	73-BB-DW01-00	73-SB06DW-00	73-SB07DW-00	73-SB08DW-00
METHOD	8240	8240A	8240	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	04/22/95	04/22/95	04/08/95	02/20/96	02/21/96	02/21/96
VOLATILES (ug/kg) cont						
M-XYLENE & P-XYLENE	NA	5.6 U	NA	NA	NA	NA
METHYLENE CHLORIDE	11 U	6 U	11 U	11 U	13 U	11 U
O-XYLENE	NA	6 U	NA	NA	NA	NA
STYRENE	11 U	5.6 U	11 U	11 U	13 UJ	11 U
TETRACHLOROETHENE	11 U	5.6 U	11 U	11 U	13 UJ	11 U
TOLUENE	11 U	5.6 U	1 J	11 U	13 UJ	11 U
TRANS-1,3-DICHLOROPROPENE	11 U	6 U	11 U	11 U	13 U	11 U
TRICHLOROETHENE	11 U	6 U	11 U	11 U	13 U	11 U
TRICHLOROFLUOROMETHANE	NA	6 U	NA	NA	NA	NA
VINYL ACETATE	NA	5.6 U	NA	NA	NA	NA
VINYL CHLORIDE	11 U	12 U	11 U	11 U	13 U	11 U
XYLENES (TOTAL)	11 U	NA	2 J	11 U	13 UJ	11 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SB09DW-00	73-SB10DW-00	73-SB12DW-00	73-SB13DW-00	73-SB36MW-00
METHOD	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	02/22/96	02/20/96	02/23/96	02/25/96	03/21/96
VOLATILES (ug/kg)					
1,1,1-TRICHLOROETHANE	2 J	11 U	14 U	13 U	15 UJ
1,1,2,2-TETRACHLOROETHANE	11 UJ	11 U	14 UJ	13 U	15 UJ
1,1,2-TRICHLOROETHANE	11 UJ	11 U	14 U	13 U	15 UJ
1,1-DICHLOROETHANE	11 U	11 U	14 U	13 U	15 U
1,1-DICHLOROETHENE	11 U	11 U	14 U	13 U	15 U
1,2-DICHLOROBENZENE	11 U	11 U	14 U	13 U	15 U
1,2-DICHLOROETHANE	NA	NA	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	11 U	11 U	14 U	13 U	15 U
1,2-DICHLOROPROPANE	11 UJ	11 U	14 U	13 U	15 UJ
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA
2-BUTANONE	11 U	11 U	14 U	13 U	15 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA
2-HEXANONE	11 UJ	11 U	14 UJ	13 U	15 UJ
4-METHYL-2-PENTANONE	11 UJ	11 U	14 U	13 U	15 UJ
ACETONE	11 U	11 U	14 U	13 U	15 U
ACROLEIN	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA
BENZENE	11 UJ	11 U	14 U	13 U	15 UJ
BROMODICHLOROMETHANE	11 UJ	11 U	14 U	13 U	15 UJ
BROMOFORM	11 UJ	11 U	14 U	13 U	15 UJ
BROMOMETHANE	11 U	11 U	14 U	13 U	15 U
CARBON DISULFIDE	11 U	11 U	14 U	13 U	15 U
CARBON TETRACHLORIDE	11 UJ	11 U	14 U	13 U	15 UJ
CHLOROBENZENE	11 UJ	11 U	14 UJ	13 U	15 UJ
CHLOROETHANE	11 U	11 U	14 U	13 U	15 U
CHLOROFORM	11 U	11 U	14 U	13 U	15 U
CHLOROMETHANE	11 U	11 U	14 U	13 U	15 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	11 UJ	11 U	14 U	13 U	15 UJ
DIBROMOCHLOROMETHANE	11 UJ	11 U	14 U	13 U	15 UJ
DIBROMOMETHANE	NA	NA	NA	NA	NA
ETHYLBENZENE	11 UJ	11 U	14 UJ	13 U	15 UJ
M AND/OR P-XYLENE	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SB09DW-00	73-SB10DW-00	73-SB12DW-00	73-SB13DW-00	73-SB36MW-00
METHOD	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	02/22/96	02/20/96	02/23/96	02/25/96	03/21/96
VOLATILES (ug/kg) cont					
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA
METHYLENE CHLORIDE	11 U	11 U	14 U	13 U	15 U
O-XYLENE	NA	NA	NA	NA	NA
STYRENE	11 UJ	11 U	14 UJ	13 U	15 UJ
TETRACHLOROETHENE	11 UJ	11 U	14 UJ	13 U	15 UJ
TOLUENE	11 UJ	11 U	14 UJ	13 U	15 UJ
TRANS-1,3-DICHLOROPROPENE	11 UJ	11 U	14 U	13 U	15 UJ
TRICHLOROETHENE	11 UJ	11 U	14 U	13 U	15 UJ
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA
VINYL CHLORIDE	11 U	11 U	14 U	13 U	15 U
XYLENES (TOTAL)	11 UJ	11 U	14 UJ	13 U	4 J

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
1,1,1-TRICHLOROETHANE	5 U	18 UJ	2 J	2 J	73-SB09DW-00	1/35	2.00	2.00
1,1,2,2-TETRACHLOROETHANE	5 U	18 UJ	ND	ND		0/35	NA	NA
1,1,2-TRICHLOROETHANE	5 U	18 UJ	ND	ND		0/35	NA	NA
1,1-DICHLOROETHANE	5 U	18 UJ	ND	ND		0/35	NA	NA
1,1-DICHLOROETHENE	5 U	18 UJ	ND	ND		0/35	NA	NA
1,2-DICHLOROBENZENE	5 U	15 U	ND	ND		0/13	NA	NA
1,2-DICHLOROETHANE	5 U	18 UJ	2 J	2 J	73-AC6-SB07-00	1/27	2.00	2.00
1,2-DICHLOROETHENE (TOTAL)	5 U	18 UJ	ND	ND		0/35	NA	NA
1,2-DICHLOROPROPANE	5 U	18 UJ	1 J	1 J	73-AC6-SB07-00	1/35	1.00	1.00
1,3-DICHLOROBENZENE	5 U	6 U	ND	ND		0/5	NA	NA
1,4-DICHLOROBENZENE	5 U	5.6 U	ND	ND		0/5	NA	NA
2-BUTANONE	6 U	110 U	2 J	4.2 J	73-ACI-DW03-00	4/35	2.80	2.50
2-CHLOROETHYL VINYL ETHER	5 U	11 U	ND	ND		0/5	NA	NA
2-HEXANONE	10 U	56 U	ND	ND		0/35	NA	NA
4-METHYL-2-PENTANONE	10 U	56 U	ND	ND		0/35	NA	NA
ACETONE	10 U	110 U	24	29 J	73-AC5-MW20-00	2/35	26.50	26.50
ACROLEIN	11 U	110 U	ND	ND		0/5	NA	NA
ACRYLONITRILE	11 U	60 U	ND	ND		0/5	NA	NA
BENZENE	5 U	18 UJ	ND	ND		0/35	NA	NA
BROMODICHLOROMETHANE	5 U	18 UJ	ND	ND		0/35	NA	NA
BROMOFORM	5 U	18 UJ	ND	ND		0/35	NA	NA
BROMOMETHANE	10 U	18 UJ	ND	ND		0/35	NA	NA
CARBON DISULFIDE	5 U	18 UJ	ND	ND		0/35	NA	NA
CARBON TETRACHLORIDE	5 U	18 UJ	ND	ND		0/35	NA	NA
CHLOROBENZENE	5.5 U	18 UJ	1 J	1 J	73-AC1-MW14-00	1/35	1.00	1.00
CHLOROETHANE	10 U	18 UJ	ND	ND		0/35	NA	NA
CHLOROFORM	5 U	18 UJ	ND	ND		0/35	NA	NA
CHLOROMETHANE	10 U	18 UJ	ND	ND		0/35	NA	NA
CIS-1,2-DICHLOROETHENE	5 U	5.6 U	ND	ND		0/5	NA	NA
CIS-1,3-DICHLOROPROPENE	5 U	18 UJ	ND	ND		0/35	NA	NA
DIBROMOCHLOROMETHANE	5 U	18 UJ	ND	ND		0/31	NA	NA
DIBROMOMETHANE	5.5 U	5.6 U	ND	ND		0/4	NA	NA
ETHYLBENZENE	5 U	15 UJ	8 J	8 J	73-AC5-MW20-00	1/35	8.00	8.00
M AND/OR P-XYLENE	5 U	5 U	ND	ND		0/1	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg) cont								
M-XYLENE & P-XYLENE	5.5 U	5.6 U	ND	ND		0/4	NA	NA
METHYLENE CHLORIDE	5 U	18 UJ	ND	ND		0/35	NA	NA
O-XYLENE	5 U	6 U	ND	ND		0/5	NA	NA
STYRENE	5 U	18 UJ	2 J	2 J	73-AC4-MW18-00	1/35	2.00	2.00
TETRACHLOROETHENE	5 U	18 UJ	ND	ND		0/35	NA	NA
TOLUENE	5 U	18 UJ	1 J	1 J	73-BB-DW01-00	1/35	1.00	1.00
TRANS-1,3-DICHLOROPROPENE	5 U	18 UJ	ND	ND		0/34	NA	NA
TRICHLOROETHENE	5 U	18 UJ	2 J	2 J	73-AC2-MW05-00	1/35	2.00	2.00
TRICHLOROFLUOROMETHANE	5 U	6 U	ND	ND		0/5	NA	NA
VINYL ACETATE	5.6 U	56 U	ND	ND		0/5	NA	NA
VINYL CHLORIDE	10 U	18 UJ	ND	ND		0/35	NA	NA
XYLENES (TOTAL)	2 U	18 UJ	1 J	4 J	73-SB36MW-00	10/30	2.10	2.00

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW12-00	73-AC1-MW13-00	73-AC1-MW14-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/20/95	04/19/95	05/05/95	05/04/95	04/21/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
1,2,4-TRICHLOROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
1,3-DICHLOROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
1,4-DICHLOROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
2-CHLORONAPHTHALENE	360 U	680 U	360 U	7600 U	7100 U	350 U
2-CHLOROPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2-METHYLNAPHTHALENE	360 U	680 U	360 U	7600 U	7100 U	350 U
2-METHYLPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2-NITROANILINE	870 U	1700 U	860 U	18000 U	17000 U	840 U
2-NITROPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	680 U	360 U	7600 U	7100 U	350 U
2,4-DICHLOROPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2,4-DIMETHYLPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2,4-DINITROPHENOL	870 U	1700 U	860 U	18000 U	17000 U	840 U
2,4-DINITROTOLUENE	360 U	680 U	360 U	7600 U	7100 U	350 U
2,4,5-TRICHLOROPHENOL	870 U	1700 U	860 U	18000 U	17000 U	840 U
2,4,6-TRICHLOROPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
2,6-DINITROTOLUENE	360 U	680 U	360 U	7600 U	7100 U	350 U
3-NITROANILINE	870 U	1700 U	860 U	18000 U	17000 U	840 U
3,3'-DICHLOROBENZIDINE	360 U	680 U	360 U	7600 U	7100 U	350 U
4-BROMOPHENYL PHENYL ETHER	360 U	680 U	360 U	7600 U	7100 U	350 U
4-CHLORO-3-METHYLPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
4-CHLOROANILINE	360 U	680 U	360 U	7600 U	7100 U	350 U
4-CHLOROPHENYL PHENYL ETHER	360 U	680 U	360 U	7600 U	7100 U	350 U
4-METHYLPHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
4-NITROANILINE	870 U	1700 U	860 U	18000 U	17000 U	840 U
4-NITROPHENOL	870 U	1700 U	860 U	18000 U	17000 U	840 U
4,6-DINITRO-2-METHYLPHENOL	870 U	1700 U	860 U	18000 U	17000 U	840 U
ACENAPHTHENE	360 U	680 U	360 U	7600 U	7100 U	350 U
ACENAPHTHYLENE	360 U	680 U	360 U	7600 U	7100 U	350 U
ANTHRACENE	360 U	680 U	360 U	7600 U	7100 U	350 U
BENZO(A)ANTHRACENE	360 U	680 U	360 U	7600 U	7100 U	350 U
BENZO(A)PYRENE	360 U	680 U	360 U	7600 U	7100 U	350 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW12-00	73-AC1-MW13-00	73-AC1-MW14-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/20/95	04/19/95	05/05/95	05/04/95	04/21/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(B)FLUORANTHENE	360 U	680 U	360 U	7600 U	7100 U	350 U
BENZO(G,H,I)PERYLENE	360 U	680 U	360 U	7600 U	7100 U	350 U
BENZO(K)FLUORANTHENE	360 U	680 U	360 U	7600 U	7100 U	350 U
BIS(2-CHLOROETHOXY)METHANE	360 U	680 U	360 U	7600 U	7100 U	350 U
BIS(2-CHLOROETHYL) ETHER	360 U	680 U	360 U	7600 U	7100 U	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	410 U
BUTYL BENZYL PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	350 U
CARBAZOLE	360 U	680 U	360 U	7600 U	7100 U	350 U
CHRYSENE	360 U	680 U	360 U	7600 U	7100 U	70 J
DIBENZOFURAN	360 U	680 U	360 U	7600 U	7100 U	350 U
DIBENZ(A,H)ANTHRACENE	360 U	680 U	360 U	7600 U	7100 U	350 U
DIETHYL PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	350 U
DIMETHYL PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	350 U
DI-N-BUTYL PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	350 U
DI-N-OCTYL PHTHALATE	360 U	680 U	360 U	7600 U	7100 U	350 U
FLUORANTHENE	360 U	680 U	360 U	7600 U	7100 U	160 J
FLUORENE	360 U	680 U	360 U	7600 U	7100 U	350 U
HEXACHLOROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
HEXACHLOROBUTADIENE	360 U	680 U	360 U	7600 U	7100 U	350 U
HEXACHLOROCYCLOPENTADIENE	360 U	680 U	360 U	7600 U	7100 U	350 U
HEXACHLOROETHANE	360 U	680 U	360 U	7600 U	7100 U	350 U
INDENO(1,2,3-CD)PYRENE	360 U	680 U	360 U	7600 U	7100 U	350 U
ISOPHORONE	360 U	680 U	360 U	7600 U	7100 U	350 U
NAPHTHALENE	360 U	680 U	360 U	7600 U	7100 U	350 U
NITROBENZENE	360 U	680 U	360 U	7600 U	7100 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	680 U	360 U	7600 U	7100 U	350 U
N-NITROSODIPHENYLAMINE	360 U	680 U	360 U	7600 U	7100 U	350 U
PENTACHLOROPHENOL	870 U	1700 U	860 U	18000 U	17000 U	840 U
PHENANTHRENE	360 U	680 U	360 U	7600 U	7100 U	350 U
PHENOL	360 U	680 U	360 U	7600 U	7100 U	350 U
PYRENE	360 U	680 U	360 U	7600 U	7100 U	210 J

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-00	73-AC1-MW29-00	73-AC1-SB03-00	73-AC1-SB04-00	73-AC1-SB05-00	73-AC1-SB06-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/24/95	04/19/95	04/22/95	04/22/95	04/22/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
1,2,4-TRICHLOROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
1,3-DICHLOROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
1,4-DICHLOROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
2-CHLORONAPHTHALENE	8500 U	370 U	360 U	360 U	380 U	1900 U
2-CHLOROPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2-METHYLNAPHTHALENE	8500 U	370 U	360 U	360 U	380 U	1900 U
2-METHYLPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2-NITROANILINE	21000 U	890 U	870 U	880 U	930 U	4700 U
2-NITROPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2,2'-OXYBIS(1-CHLOROPROPANE)	8500 U	370 U	360 U	360 U	380 U	1900 U
2,4-DICHLOROPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2,4-DIMETHYLPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2,4-DINITROPHENOL	21000 U	890 U	870 U	880 U	930 U	4700 U
2,4-DINITROTOLUENE	8500 U	370 U	360 U	360 U	380 U	1900 U
2,4,5-TRICHLOROPHENOL	21000 U	890 U	870 U	880 U	930 U	4700 U
2,4,6-TRICHLOROPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
2,6-DINITROTOLUENE	8500 U	370 U	360 U	360 U	380 U	1900 U
3-NITROANILINE	21000 U	890 U	870 U	880 U	930 U	4700 U
3,3'-DICHLOROBENZIDINE	8500 U	370 U	360 U	360 U	380 U	1900 U
4-BROMOPHENYL PHENYL ETHER	8500 U	370 U	360 U	360 U	380 U	1900 U
4-CHLORO-3-METHYLPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
4-CHLOROANILINE	8500 U	370 U	360 U	360 U	380 U	1900 U
4-CHLOROPHENYL PHENYL ETHER	8500 U	370 U	360 U	360 U	380 U	1900 U
4-METHYLPHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
4-NITROANILINE	21000 U	890 R	870 R	880 U	930 U	4700 U
4-NITROPHENOL	21000 U	890 U	870 U	880 UJ	930 UJ	4700 U
4,6-DINITRO-2-METHYLPHENOL	21000 U	890 U	870 U	880 U	930 U	4700 U
ACENAPHTHENE	8500 U	370 U	360 U	360 U	380 U	1900 U
ACENAPHTHYLENE	8500 U	370 U	360 U	360 U	380 U	1900 U
ANTHRACENE	8500 U	370 U	360 U	360 U	380 U	1900 U
BENZO(A)ANTHRACENE	8500 U	370 U	360 U	360 U	380 U	1900 U
BENZO(A)PYRENE	8500 U	370 U	360 U	360 U	380 U	1900 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-00	73-AC1-MW29-00	73-AC1-SB03-00	73-AC1-SB04-00	73-AC1-SB05-00	73-AC1-SB06-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/24/95	04/19/95	04/22/95	04/22/95	04/22/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(B)FLUORANTHENE	8500 U	370 U	360 U	360 U	380 U	1900 U
BENZO(G,H,I)PERYLENE	8500 U	370 U	360 U	140 J	380 U	1900 U
BENZO(K)FLUORANTHENE	8500 U	370 U	360 U	360 U	380 U	1900 U
BIS(2-CHLOROETHOXY)METHANE	8500 U	370 U	360 U	360 U	380 U	1900 U
BIS(2-CHLOROETHYL) ETHER	8500 U	370 U	360 U	360 U	380 U	1900 U
BIS(2-ETHYLHEXYL)PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
BUTYL BENZYL PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
CARBAZOLE	8500 U	370 U	360 U	360 U	380 U	1900 U
CHRYSENE	8500 U	370 U	360 U	360 U	380 U	1900 U
DIBENZOFURAN	8500 U	370 U	360 U	360 U	380 U	1900 U
DIBENZ(A,H)ANTHRACENE	8500 U	370 U	360 U	360 U	380 U	1900 U
DIETHYL PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
DIMETHYL PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
DI-N-BUTYL PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
DI-N-OCTYL PHTHALATE	8500 U	370 U	360 U	360 U	380 U	1900 U
FLUORANTHENE	8500 U	42 J	360 U	360 U	380 U	1900 U
FLUORENE	8500 U	370 U	360 U	360 U	380 U	1900 U
HEXACHLOROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
HEXACHLOROBUTADIENE	8500 U	370 U	360 U	360 U	380 U	1900 U
HEXACHLOROCYCLOPENTADIENE	8500 UJ	370 U	360 U	360 U	380 U	1900 U
HEXACHLOROETHANE	8500 U	370 U	360 U	360 U	380 U	1900 U
INDENO(1,2,3-CD)PYRENE	8500 U	370 U	360 U	360 U	380 U	1900 U
ISOPHORONE	8500 U	370 U	360 U	360 U	380 U	1900 U
NAPHTHALENE	8500 U	370 U	360 U	360 U	380 U	1900 U
NITROBENZENE	8500 U	370 U	360 U	360 U	380 U	1900 U
N-NITROSO-DI-N-PROPYLAMINE	8500 U	370 U	360 U	360 U	380 U	1900 U
N-NITROSODIPHENYLAMINE	8500 U	370 U	360 U	360 U	380 U	1900 U
PENTACHLOROPHENOL	21000 U	890 U	870 U	880 U	930 U	4700 U
PHENANTHRENE	8500 U	370 U	360 U	360 U	380 U	1900 U
PHENOL	8500 U	370 U	360 U	360 U	380 U	1900 U
PYRENE	8500 U	41 J	360 U	360 U	380 U	1900 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-00	73-AC2-MW06-00	73-AC2-MW07-00	73-AC2-MW22-00	73-AC3-MW02-00	73-AC3-MW03-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/17/95	04/06/95	04/06/95	04/06/95	04/07/95	04/07/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
1,2,4-TRICHLOROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
1,3-DICHLOROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
1,4-DICHLOROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
2-CHLORONAPHTHALENE	380 U	340 U	380 U	390 U	360 U	400 U
2-CHLOROPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2-METHYLNAPHTHALENE	380 U	340 U	380 U	390 U	360 U	400 U
2-METHYLPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2-NITROANILINE	930 U	820 U	930 U	950 U	870 U	970 U
2-NITROPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2,2'-OXYBIS(1-CHLOROPROPANE)	380 U	340 U	380 U	390 U	360 U	400 U
2,4-DICHLOROPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2,4-DIMETHYLPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2,4-DINITROPHENOL	930 U	56 J	920 R	58 J	870 U	970 U
2,4-DINITROTOLUENE	380 U	340 U	380 U	390 U	360 U	400 U
2,4,5-TRICHLOROPHENOL	930 U	820 U	920 U	950 U	870 U	970 U
2,4,6-TRICHLOROPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
2,6-DINITROTOLUENE	380 U	340 U	380 U	390 U	360 U	400 U
3-NITROANILINE	930 U	820 U	930 U	950 U	870 U	970 U
3,3'-DICHLOROBENZIDINE	380 U	340 U	380 U	390 U	360 U	400 U
4-BROMOPHENYL PHENYL ETHER	380 U	340 U	380 U	390 U	360 U	400 U
4-CHLORO-3-METHYLPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
4-CHLOROANILINE	380 U	340 U	380 U	390 U	360 U	400 U
4-CHLOROPHENYL PHENYL ETHER	380 U	340 U	380 U	390 U	360 U	400 U
4-METHYLPHENOL	380 U	340 U	380 U	390 U	360 U	400 U
4-NITROANILINE	930 U	820 U	920 U	950 U	870 U	970 U
4-NITROPHENOL	930 U	820 U	920 U	950 U	870 U	970 U
4,6-DINITRO-2-METHYLPHENOL	930 U	820 U	920 UJ	950 UJ	870 U	970 U
ACENAPHTHENE	380 U	340 U	40 J	390 U	360 U	400 U
ACENAPHTHYLENE	380 U	340 U	380 U	390 U	360 U	400 U
ANTHRACENE	380 U	340 U	50 J	390 U	360 U	400 U
BENZO(A)ANTHRACENE	380 U	340 U	220 J	390 U	360 U	400 U
BENZO(A)PYRENE	380 U	340 U	160 J	390 U	360 U	400 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-00	73-AC2-MW06-00	73-AC2-MW07-00	73-AC2-MW22-00	73-AC3-MW02-00	73-AC3-MW03-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/17/95	04/06/95	04/06/95	04/06/95	04/07/95	04/07/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(B)FLUORANTHENE	380 U	340 U	260 J	390 U	360 U	400 U
BENZO(G,H,I)PERYLENE	380 U	340 U	380 U	390 U	360 U	400 U
BENZO(K)FLUORANTHENE	380 U	340 U	380 U	390 U	360 U	400 U
BIS(2-CHLOROETHOXY)METHANE	380 U	340 U	380 U	390 U	360 U	400 U
BIS(2-CHLOROETHYL) ETHER	380 U	340 U	380 U	390 U	360 U	400 U
BIS(2-ETHYLHEXYL)PHTHALATE	78 J	430 U	380 U	390 U	70 J	400 U
BUTYL BENZYL PHTHALATE	380 U	340 U	380 U	390 U	360 U	400 U
CARBAZOLE	380 U	340 U	380 U	390 U	360 U	400 U
CHRYSENE	380 U	340 U	190 J	390 U	360 U	60 J
DIBENZOFURAN	380 U	340 U	380 U	390 U	360 U	400 U
DIBENZ(A,H)ANTHRACENE	380 U	340 U	380 U	390 U	360 U	400 U
DIETHYL PHTHALATE	380 U	340 U	380 U	390 U	360 U	400 U
DIMETHYL PHTHALATE	380 U	340 U	380 U	390 U	360 U	400 U
DI-N-BUTYL PHTHALATE	510	340 U	380 U	390 U	440	480
DI-N-OCTYL PHTHALATE	380 U	340 U	380 U	390 U	360 U	400 U
FLUORANTHENE	380 U	340 U	380 J	390 U	360 U	400 U
FLUORENE	380 U	340 U	380 U	390 U	360 U	400 U
HEXACHLOROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
HEXACHLOROBUTADIENE	380 U	340 U	380 U	390 U	360 U	400 U
HEXACHLOROCYCLOPENTADIENE	380 U	340 U	380 U	390 U	360 U	400 U
HEXACHLOROETHANE	380 U	340 U	380 U	390 U	360 U	400 U
INDENO(1,2,3-CD)PYRENE	380 U	340 U	380 U	390 U	360 U	400 U
ISOPHORONE	380 U	340 U	380 U	390 U	360 U	400 U
NAPHTHALENE	380 U	340 U	380 U	390 U	360 U	400 U
NITROBENZENE	380 U	340 U	380 U	390 U	360 U	400 U
N-NITROSO-DI-N-PROPYLAMINE	380 U	340 U	380 U	390 U	360 U	400 U
N-NITROSODIPHENYLAMINE	380 U	340 U	380 U	390 U	360 U	400 U
PENTACHLOROPHENOL	930 U	820 U	920 U	950 U	870 U	970 U
PHENANTHRENE	380 U	340 U	260 J	390 U	360 U	400 U
PHENOL	380 U	340 U	380 U	390 U	360 U	400 U
PYRENE	380 U	340 U	450	50 J	360 U	400 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW23-00	73-AC3-MW30-00	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	04/05/95	05/03/95	04/18/95	04/04/95	04/05/95
SEMIVOLATILES (ug/kg)					
1,2-DICHLOROBENZENE	390 U	410 U	1800 U	460 U	410 U
1,2,4-TRICHLOROBENZENE	390 U	410 U	1800 U	460 U	410 U
1,3-DICHLOROBENZENE	390 U	410 U	1800 U	460 U	410 U
1,4-DICHLOROBENZENE	390 U	410 U	1800 U	460 U	410 U
2-CHLORONAPHTHALENE	390 U	410 U	1800 U	460 U	410 U
2-CHLOROPHENOL	390 U	410 U	1800 U	460 U	410 U
2-METHYLNAPHTHALENE	390 U	410 U	1800 U	460 U	410 U
2-METHYLPHENOL	390 U	410 U	1800 U	460 U	410 U
2-NITROANILINE	950 U	990 U	4400 U	1100 U	990 U
2-NITROPHENOL	390 U	410 U	1800 U	460 U	410 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	410 U	1800 U	460 U	410 U
2,4-DICHLOROPHENOL	390 U	410 U	1800 U	460 U	410 U
2,4-DIMETHYLPHENOL	390 U	410 U	1800 U	460 U	410 U
2,4-DINITROPHENOL	200 J	990 U	4400 U	1100 U	990 U
2,4-DINITROTOLUENE	390 U	410 U	1800 U	460 U	410 U
2,4,5-TRICHLOROPHENOL	950 U	990 U	4400 U	1100 U	990 U
2,4,6-TRICHLOROPHENOL	390 U	410 U	1800 U	460 U	410 U
2,6-DINITROTOLUENE	390 U	410 U	1800 U	460 U	410 U
3-NITROANILINE	950 U	990 U	4400 U	1100 U	990 U
3,3'-DICHLOROBENZIDINE	390 U	410 U	1800 U	460 U	410 U
4-BROMOPHENYL PHENYL ETHER	390 U	410 U	1800 U	460 U	410 U
4-CHLORO-3-METHYLPHENOL	390 U	410 U	1800 U	460 U	410 U
4-CHLOROANILINE	390 U	410 U	1800 U	460 U	410 U
4-CHLOROPHENYL PHENYL ETHER	390 U	410 U	1800 U	460 U	410 U
4-METHYLPHENOL	390 U	410 U	1800 U	460 U	410 U
4-NITROANILINE	950 U	990 U	4400 U	1100 U	990 U
4-NITROPHENOL	950 U	990 U	4400 U	1100 U	990 U
4,6-DINITRO-2-METHYLPHENOL	950 UJ	990 U	4400 U	1100 U	990 U
ACENAPHTHENE	390 U	410 U	1800 U	460 U	410 U
ACENAPHTHYLENE	390 U	410 U	1800 U	460 U	410 U
ANTHRACENE	390 U	410 U	1800 U	460 U	410 U
BENZO(A)ANTHRACENE	390 U	410 U	1800 U	460 U	410 U
BENZO(A)PYRENE	390 U	410 U	1800 U	460 U	410 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW23-00	73-AC3-MW30-00	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	04/05/95	05/03/95	04/18/95	04/04/95	04/05/95
SEMIVOLATILES (ug/kg) (cont)					
BENZO(B)FLUORANTHENE	390 U	410 U	1800 U	460 U	410 U
BENZO(G,H,I)PERYLENE	390 U	410 U	1800 U	460 U	410 U
BENZO(K)FLUORANTHENE	390 U	410 U	1800 U	460 U	410 U
BIS(2-CHLOROETHOXY)METHANE	390 U	410 U	1800 U	460 U	410 U
BIS(2-CHLOROETHYL) ETHER	390 U	410 U	1800 U	460 U	410 U
BIS(2-ETHYLHEXYL)PHTHALATE	390 U	400 U	1800 U	83 J	83 J
BUTYL BENZYL PHTHALATE	390 U	410 U	1800 U	460 U	410 U
CARBAZOLE	390 U	410 U	1800 U	460 U	410 U
CHRYSENE	390 U	410 U	1800 U	460 U	410 U
DIBENZOFURAN	390 U	410 U	1800 U	460 U	410 U
DIBENZ(A,H)ANTHRACENE	390 U	410 U	1800 U	460 U	410 U
DIETHYL PHTHALATE	390 U	410 U	1800 U	460 U	410 U
DIMETHYL PHTHALATE	390 U	410 U	1800 U	460 U	410 U
DI-N-BUTYL PHTHALATE	390 U	350 J	1800 U	460 U	530 U
DI-N-OCTYL PHTHALATE	390 U	410 U	1800 U	460 U	410 U
FLUORANTHENE	390 U	410 U	1800 U	460 U	410 U
FLUORENE	390 U	410 U	1800 U	460 U	410 U
HEXACHLOROBENZENE	390 U	410 U	1800 U	460 U	410 U
HEXACHLOROBUTADIENE	390 U	410 U	1800 U	460 U	410 U
HEXACHLOROCYCLOPENTADIENE	390 U	410 U	1800 U	460 U	410 U
HEXACHLOROETHANE	390 U	410 U	1800 U	460 U	410 U
INDENO(1,2,3-CD)PYRENE	390 U	410 U	1800 U	460 U	410 U
ISOPHORONE	390 U	410 U	1800 U	460 U	410 U
NAPHTHALENE	390 U	410 U	1800 U	460 U	410 U
NITROBENZENE	390 U	410 U	1800 U	460 U	410 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	410 U	1800 U	460 U	410 U
N-NITROSODIPHENYLAMINE	390 U	410 U	1800 U	460 U	410 U
PENTACHLOROPHENOL	950 U	990 U	4400 U	1100 U	990 U
PHENANTHRENE	390 U	410 U	1800 U	460 U	410 U
PHENOL	390 U	410 U	1800 U	460 U	410 U
PYRENE	390 U	410 U	1800 U	460 U	410 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-00	73-AC4-SB13-00	73-AC4-SB14-00	73-AC5-MW20-00	73-AC5-MW21-00	73-AC5-SB08-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/04/95	04/09/95	04/09/95	04/08/95	04/05/95	04/09/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
1,2,4-TRICHLOROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
1,3-DICHLOROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
1,4-DICHLOROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
2-CHLORONAPHTHALENE	490 U	360 U	460 U	580 U	360 U	360 U
2-CHLOROPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2-METHYLNAPHTHALENE	490 U	360 U	460 U	580 U	360 U	360 U
2-METHYLPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2-NITROANILINE	1200 U	860 U	1100 U	1400 U	860 U	870 U
2-NITROPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2,2'-OXYBIS(1-CHLOROPROPANE)	490 U	360 U	460 U	580 U	360 U	360 U
2,4-DICHLOROPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2,4-DIMETHYLPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2,4-DINITROPHENOL	1200 U	860 U	1100 U	1400 U	140 J	870 U
2,4-DINITROTOLUENE	490 U	360 U	460 U	580 U	360 U	360 U
2,4,5-TRICHLOROPHENOL	1200 U	860 U	1100 U	1400 U	860 U	870 U
2,4,6-TRICHLOROPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
2,6-DINITROTOLUENE	490 U	360 U	460 U	580 U	360 U	360 U
3-NITROANILINE	1200 U	860 U	1100 U	1400 U	860 U	870 U
3,3'-DICHLOROBENZIDINE	490 U	360 U	460 U	580 U	360 U	360 U
4-BROMOPHENYL PHENYL ETHER	490 U	360 U	460 U	580 U	360 U	360 U
4-CHLORO-3-METHYLPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
4-CHLOROANILINE	490 U	360 U	460 U	580 U	360 U	360 U
4-CHLOROPHENYL PHENYL ETHER	490 U	360 U	460 U	580 U	360 U	360 U
4-METHYLPHENOL	490 U	360 U	460 U	580 U	360 U	360 U
4-NITROANILINE	1200 U	860 U	1100 U	1400 U	860 U	870 U
4-NITROPHENOL	1200 U	860 U	1100 U	1400 U	860 U	870 U
4,6-DINITRO-2-METHYLPHENOL	1200 U	860 U	1100 U	1400 U	860 UJ	870 U
ACENAPHTHENE	490 U	360 U	460 U	580 U	360 U	360 U
ACENAPHTHYLENE	490 U	360 U	460 U	580 U	360 U	360 U
ANTHRACENE	490 U	360 U	460 U	580 U	360 U	360 U
BENZO(A)ANTHRACENE	490 U	360 U	460 U	580 U	360 U	360 U
BENZO(A)PYRENE	490 U	360 U	460 U	580 U	360 U	360 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-00	73-AC4-SB13-00	73-AC4-SB14-00	73-AC5-MW20-00	73-AC5-MW21-00	73-AC5-SB08-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/04/95	04/09/95	04/09/95	04/08/95	04/05/95	04/09/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(B)FLUORANTHENE	490 U	360 U	460 U	580 U	360 U	360 U
BENZO(G,H,I)PERYLENE	490 U	360 U	460 U	580 U	360 U	360 U
BENZO(K)FLUORANTHENE	490 U	360 U	460 U	580 U	360 U	360 U
BIS(2-CHLOROETHOXY)METHANE	490 U	360 U	460 U	580 U	360 U	360 U
BIS(2-CHLOROETHYL) ETHER	490 U	360 U	460 U	580 U	360 U	360 U
BIS(2-ETHYLHEXYL)PHTHALATE	83 J	360 U	71 J	70 J	360 U	360 U
BUTYL BENZYL PHTHALATE	490 U	360 U	460 U	580 U	360 U	360 U
CARBAZOLE	490 U	360 U	460 U	580 U	360 U	360 U
CHRYSENE	490 U	360 U	460 U	580 U	360 U	360 U
DIBENZOFURAN	490 U	360 U	460 U	580 U	360 U	360 U
DIBENZ(A,H)ANTHRACENE	490 U	360 U	460 U	580 U	360 U	360 U
DIETHYL PHTHALATE	490 U	360 U	460 U	580 U	360 U	360 U
DIMETHYL PHTHALATE	490 U	360 U	460 U	580 U	360 U	360 U
DI-N-BUTYL PHTHALATE	490 U	190 J	140 J	460 J	360 U	200 J
DI-N-OCTYL PHTHALATE	490 U	360 U	460 U	580 U	360 U	360 U
FLUORANTHENE	490 U	360 U	460 U	580 U	360 U	360 U
FLUORENE	490 U	360 U	460 U	580 U	360 U	360 U
HEXACHLOROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
HEXACHLOROBUTADIENE	490 U	360 U	460 U	580 U	360 U	360 U
HEXACHLOROCYCLOPENTADIENE	490 U	360 U	460 U	580 U	360 U	360 U
HEXACHLOROETHANE	490 U	360 U	460 U	580 U	360 U	360 U
INDENO(1,2,3-CD)PYRENE	490 U	360 U	460 U	580 U	360 U	360 U
ISOPHORONE	490 U	360 U	460 U	580 U	360 U	360 U
NAPHTHALENE	490 U	360 U	460 U	580 U	360 U	360 U
NITROBENZENE	490 U	360 U	460 U	580 U	360 U	360 U
N-NITROSO-DI-N-PROPYLAMINE	490 U	360 U	460 U	580 U	360 U	360 U
N-NITROSODIPHENYLAMINE	490 U	360 U	460 U	580 U	360 U	360 U
PENTACHLOROPHENOL	1200 U	860 U	1100 U	1400 U	860 U	870 U
PHENANTHRENE	490 U	360 U	460 U	580 U	360 U	360 U
PHENOL	490 U	360 U	460 U	580 U	360 U	360 U
PYRENE	490 U	360 U	460 U	580 U	360 U	360 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB09-00	73-AC5-SB10-00	73-AC5-SB11-00	73-AC5-SB12-00	73-AC6-SB07-00	73-BB-DW01-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/18/95	04/18/95	04/09/95	04/09/95	04/22/95	04/08/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
1,2,4-TRICHLOROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
1,3-DICHLOROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
1,4-DICHLOROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
2-CHLORONAPHTHALENE	340 U	350 U	350 U	390 U	1700 U	350 U
2-CHLOROPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2-METHYLNAPHTHALENE	340 U	350 U	350 U	390 U	1700 U	350 U
2-METHYLPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2-NITROANILINE	820 U	850 U	860 U	950 U	4200 U	840 U
2-NITROPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	350 U	350 U	390 U	1700 U	350 U
2,4-DICHLOROPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2,4-DIMETHYLPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2,4-DINITROPHENOL	870 U	850 U	860 U	950 U	4200 U	840 U
2,4-DINITROTOLUENE	340 U	350 U	350 U	390 U	1700 U	350 U
2,4,5-TRICHLOROPHENOL	820 U	850 U	860 U	950 U	4200 U	840 U
2,4,6-TRICHLOROPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
2,6-DINITROTOLUENE	340 U	350 U	350 U	390 U	1700 U	350 U
3-NITROANILINE	820 U	850 U	860 U	950 U	4200 U	840 U
3,3'-DICHLOROBENZIDINE	340 U	350 U	350 U	390 U	1700 U	350 U
4-BROMOPHENYL PHENYL ETHER	340 U	350 U	350 U	390 U	1700 U	350 U
4-CHLORO-3-METHYLPHENOL	36 J	350 U	350 U	390 U	1700 U	350 U
4-CHLOROANILINE	340 U	350 U	350 U	390 U	1700 U	350 U
4-CHLOROPHENYL PHENYL ETHER	340 U	350 U	350 U	390 U	1700 U	350 U
4-METHYLPHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
4-NITROANILINE	870 U	850 U	860 U	950 U	4200 U	840 U
4-NITROPHENOL	870 U	850 U	860 U	950 U	4200 UJ	840 U
4,6-DINITRO-2-METHYLPHENOL	870 U	850 U	860 U	950 U	4200 U	840 U
ACENAPHTHENE	340 U	350 U	350 U	390 U	1700 U	350 U
ACENAPHTHYLENE	340 U	350 U	350 U	390 U	1700 U	350 U
ANTHRACENE	340 U	350 U	350 U	390 U	1700 U	350 U
BENZO(A)ANTHRACENE	340 U	350 U	350 U	390 U	1700 U	350 U
BENZO(A)PYRENE	340 U	350 U	350 U	390 U	1700 U	350 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB09-00	73-AC5-SB10-00	73-AC5-SB11-00	73-AC5-SB12-00	73-AC6-SB07-00	73-BB-DW01-00
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/18/95	04/18/95	04/09/95	04/09/95	04/22/95	04/08/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(B)FLUORANTHENE	340 U	350 U	350 U	390 U	330 J	350 U
BENZO(G,H,I)PERYLENE	340 U	350 U	350 U	390 U	1700 U	350 U
BENZO(K)FLUORANTHENE	340 U	350 U	350 U	390 U	1700 U	350 U
BIS(2-CHLOROETHOXY)METHANE	340 U	350 U	350 U	390 U	1700 U	350 U
BIS(2-CHLOROETHYL) ETHER	340 U	350 U	350 U	390 U	1700 U	350 U
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	350 U	350 U	84 J	1700 U	42 J
BUTYL BENZYL PHTHALATE	340 U	350 U	110 J	390 U	1700 U	350 U
CARBAZOLE	340 U	350 U	350 U	390 U	1700 U	350 U
CHRYSENE	340 U	350 U	350 U	390 U	1700 U	350 U
DIBENZOFURAN	340 U	350 U	350 U	390 U	1700 U	350 U
DIBENZ(A,H)ANTHRACENE	340 U	350 U	350 U	390 U	1700 U	350 U
DIETHYL PHTHALATE	340 U	350 U	350 U	390 U	1700 U	350 U
DIMETHYL PHTHALATE	340 U	350 U	350 U	390 U	1700 U	350 U
DI-N-BUTYL PHTHALATE	340 U	350 U	170 J	110 J	1700 U	240 J
DI-N-OCTYL PHTHALATE	340 U	350 U	350 U	390 U	1700 U	350 U
FLUORANTHENE	340 U	350 U	350 U	390 U	260 J	350 U
FLUORENE	340 U	350 U	350 U	390 U	1700 U	350 U
HEXACHLOROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
HEXACHLOROBUTADIENE	340 U	350 U	350 U	390 U	1700 U	350 U
HEXACHLOROCYCLOPENTADIENE	340 UJ	350 U	350 U	390 U	1700 U	350 U
HEXACHLOROETHANE	340 U	350 U	350 U	390 U	1700 U	350 U
INDENO(1,2,3-CD)PYRENE	340 U	350 U	350 U	390 U	1700 U	350 U
ISOPHORONE	340 U	350 U	350 U	390 U	1700 U	350 U
NAPHTHALENE	340 U	350 U	350 U	390 U	1700 U	350 U
NITROBENZENE	340 U	350 U	350 U	390 U	1700 U	350 U
N-NITROSO-DI-N-PROPYLAMINE	340 U	350 U	350 U	390 U	1700 U	350 U
N-NITROSODIPHENYLAMINE	340 U	350 U	350 U	390 U	1700 U	350 U
PENTACHLOROPHENOL	870 U	850 U	860 U	950 U	4200 U	840 U
PHENANTHRENE	340 U	350 U	350 U	390 U	1700 U	350 U
PHENOL	340 U	350 U	350 U	390 U	1700 U	350 U
PYRENE	340 U	350 U	350 U	390 U	290 J	350 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
1,2-DICHLOROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
1,2,4-TRICHLOROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
1,3-DICHLOROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
1,4-DICHLOROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
2-CHLORONAPHTHALENE	340 U	8500 U	ND	ND		0/35	NA	NA
2-CHLOROPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2-METHYLNAPHTHALENE	340 U	8500 U	ND	ND		0/35	NA	NA
2-METHYLPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2-NITROANILINE	820 U	21000 U	ND	ND		0/35	NA	NA
2-NITROPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	8500 U	ND	ND		0/35	NA	NA
2,4-DICHLOROPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2,4-DIMETHYLPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2,4-DINITROPHENOL	840 U	21000 U	56 J	200 J	73-AC3-MW23-00	4/34	113.50	99.00
2,4-DINITROTOLUENE	340 U	8500 U	ND	ND		0/35	NA	NA
2,4,5-TRICHLOROPHENOL	820 U	21000 U	ND	ND		0/35	NA	NA
2,4,6-TRICHLOROPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
2,6-DINITROTOLUENE	340 U	8500 U	ND	ND		0/35	NA	NA
3-NITROANILINE	820 U	21000 U	ND	ND		0/35	NA	NA
3,3'-DICHLOROBENZIDINE	340 U	8500 U	ND	ND		0/35	NA	NA
4-BROMOPHENYL PHENYL ETHER	340 U	8500 U	ND	ND		0/35	NA	NA
4-CHLORO-3-METHYLPHENOL	340 U	8500 U	36 J	36 J	73-AC5-SB09-00	1/35	36.00	36.00
4-CHLOROANILINE	340 U	8500 U	ND	ND		0/35	NA	NA
4-CHLOROPHENYL PHENYL ETHER	340 U	8500 U	ND	ND		0/35	NA	NA
4-METHYLPHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
4-NITROANILINE	820 U	21000 U	ND	ND		0/33	NA	NA
4-NITROPHENOL	820 U	21000 U	ND	ND		0/35	NA	NA
4,6-DINITRO-2-METHYLPHENOL	820 U	21000 U	ND	ND		0/35	NA	NA
ACENAPHTHENE	340 U	8500 U	40 J	40 J	73-AC2-MW07-00	1/35	40.00	40.00
ACENAPHTHYLENE	340 U	8500 U	ND	ND		0/35	NA	NA
ANTHRACENE	340 U	8500 U	50 J	50 J	73-AC2-MW07-00	1/35	50.00	50.00
BENZO(A)ANTHRACENE	340 U	8500 U	220 J	220 J	73-AC2-MW07-00	1/35	220.00	220.00
BENZO(A)PYRENE	340 U	8500 U	160 J	160 J	73-AC2-MW07-00	1/35	160.00	160.00

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
BENZO(B)FLUORANTHENE	340 U	8500 U	260 J	330 J	73-AC6-SB07-00	2/35	295.00	295.00
BENZO(G,H,I)PERYLENE	340 U	8500 U	140 J	140 J	73-AC1-SB04-00	1/35	140.00	140.00
BENZO(K)FLUORANTHENE	340 U	8500 U	ND	ND		0/35	NA	NA
BIS(2-CHLOROETHOXY)METHANE	340 U	8500 U	ND	ND		0/35	NA	NA
BIS(2-CHLOROETHYL) ETHER	340 U	8500 U	ND	ND		0/35	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	8500 U	42 J	84 J	73-AC5-SB12-00	9/35	73.78	78.00
BUTYL BENZYL PHTHALATE	340 U	8500 U	110 J	110 J	73-AC5-SB11-00	1/35	110.00	110.00
CARBAZOLE	340 U	8500 U	ND	ND		0/35	NA	NA
CHRYSENE	340 U	8500 U	60 J	190 J	73-AC2-MW07-00	3/35	106.67	70.00
DIBENZOFURAN	340 U	8500 U	ND	ND		0/35	NA	NA
DIBENZ(A,H)ANTHRACENE	340 U	8500 U	ND	ND		0/35	NA	NA
DIETHYL PHTHALATE	340 U	8500 U	ND	ND		0/35	NA	NA
DIMETHYL PHTHALATE	340 U	8500 U	ND	ND		0/35	NA	NA
DI-N-BUTYL PHTHALATE	340 U	8500 U	110 J	510	73-AC2-MW05-00	11/35	299.09	240.00
DI-N-OCTYL PHTHALATE	340 U	8500 U	ND	ND		0/35	NA	NA
FLUORANTHENE	340 U	8500 U	42 J	380 J	73-AC2-MW07-00	4/35	210.50	210.00
FLUORENE	340 U	8500 U	ND	ND		0/35	NA	NA
HEXACHLOROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
HEXACHLOROBUTADIENE	340 U	8500 U	ND	ND		0/35	NA	NA
HEXACHLOROCYCLOPENTADIENE	340 U	8500 UJ	ND	ND		0/35	NA	NA
HEXACHLOROETHANE	340 U	8500 U	ND	ND		0/35	NA	NA
INDENO(1,2,3-CD)PYRENE	340 U	8500 U	ND	ND		0/35	NA	NA
ISOPHORONE	340 U	8500 U	ND	ND		0/35	NA	NA
NAPHTHALENE	340 U	8500 U	ND	ND		0/35	NA	NA
NITROBENZENE	340 U	8500 U	ND	ND		0/35	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	340 U	8500 U	ND	ND		0/35	NA	NA
N-NITROSODIPHENYLAMINE	340 U	8500 U	ND	ND		0/35	NA	NA
PENTACHLOROPHENOL	820 U	21000 U	ND	ND		0/35	NA	NA
PHENANTHRENE	340 U	8500 U	260 J	260 J	73-AC2-MW07-00	1/35	260.00	260.00
PHENOL	340 U	8500 U	ND	ND		0/35	NA	NA
PYRENE	340 U	8500 U	41 J	450	73-AC2-MW07-00	5/35	208.20	210.00

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW12-00	73-AC1-MW13-00	73-AC1-MW14-00
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/19/95	04/20/95	04/19/95	05/05/95	05/04/95	04/21/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	3.6 U	3.4 U	3.6 U	15 J	30 J	82
4,4'-DDE	3.6 U	3.4 U	3.6 U	3.8 U	3.9 NJ	3.5 U
4,4'-DDT	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ALDRIN	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
ALPHA-BHC	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
ALPHA-CHLORDANE	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
AROCLOR-1016	36 U	34 U	36 U	38 U	36 UJ	35 U
AROCLOR-1221	73 U	69 U	73 U	77 U	74 UJ	72 U
AROCLOR-1232	36 U	34 U	36 U	38 U	36 UJ	35 U
AROCLOR-1242	36 U	34 U	36 U	38 U	36 UJ	35 U
AROCLOR-1248	36 U	34 U	36 U	38 U	36 UJ	35 U
AROCLOR-1254	36 U	34 U	36 U	38 U	36 UJ	35 U
AROCLOR-1260	36 U	34 U	36 U	38 U	36 UJ	35 U
BETA-BHC	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
DELTA-BHC	1.9 UJ	1.8 UJ	1.8 UJ	2 U	1.9 UJ	1.8 UJ
DIELDRIN	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ENDOSULFAN I	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
ENDOSULFAN II	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ENDOSULFAN SULFATE	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ENDRIN	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ENDRIN ALDEHYDE	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
ENDRIN KETONE	3.6 U	3.4 U	3.6 U	3.8 U	3.6 UJ	3.5 U
GAMMA-BHC (LINDANE)	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
GAMMA-CHLORDANE	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
HEPTACHLOR	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
HEPTACHLOR EPOXIDE	1.9 U	1.8 U	1.8 U	2 U	1.9 UJ	1.8 U
METHOXYCHLOR	19 U	18 U	18 U	20 UJ	19 UJ	18 U
TOXAPHENE	190 U	180 U	180 U	200 U	190 UJ	180 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-00	73-AC1-MW29-00	73-AC1-SB03-00	73-AC1-SB04-00	73-AC1-SB05-00	73-AC1-SB06-00
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/19/95	04/24/95	04/19/95	04/22/95	04/22/95	04/22/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	9.1	3.6 U	3.6 U	3.7 U	3.9 U	4 U
4,4'-DDE	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
4,4'-DDT	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ALDRIN	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
ALPHA-BHC	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
ALPHA-CHLORDANE	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
AROCLOR-1016	33 U	36 U	36 U	37 U	39 U	40 U
AROCLOR-1221	68 U	74 U	73 U	74 U	78 U	80 U
AROCLOR-1232	33 U	36 U	36 U	37 U	39 U	40 U
AROCLOR-1242	33 U	36 U	36 U	37 U	39 U	40 U
AROCLOR-1248	33 U	36 U	36 U	37 U	39 U	40 U
AROCLOR-1254	33 U	36 U	36 U	37 U	39 U	40 U
AROCLOR-1260	33 U	36 U	36 U	37 U	39 U	40 U
BETA-BHC	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
DELTA-BHC	1.7 UJ	1.9 UJ	1.9 UJ	1.9 U	2 U	2 U
DIELDRIN	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ENDOSULFAN I	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
ENDOSULFAN II	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ENDOSULFAN SULFATE	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ENDRIN	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ENDRIN ALDEHYDE	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
ENDRIN KETONE	3.3 U	3.6 U	3.6 U	3.7 U	3.9 U	4 U
GAMMA-BHC (LINDANE)	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
GAMMA-CHLORDANE	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
HEPTACHLOR	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
HEPTACHLOR EPOXIDE	1.7 U	1.9 U	1.9 U	1.9 U	2 U	2 U
METHOXYCHLOR	17 U	19 UJ	19 U	19 U	20 U	20 U
TOXAPHENE	170 U	190 U	190 U	190 U	200 U	200 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-00	73-AC3-MW03-00	73-AC3-MW30-00	73-AC3-SB01-00	73-AC4-MW18-00
METHOD	8080	8080	8080	8080	8080
DATE SAMPLED	04/17/95	07/07/95	05/03/95	04/18/95	04/04/95
PESTICIDE/PCBS (ug/kg)					
4,4'-DDD	3.9 U	17	4 U	3.6 U	4.7 UJ
4,4'-DDE	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
4,4'-DDT	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ALDRIN	2 U	2 U	2.1 U	1.9 U	2.4 UJ
ALPHA-BHC	2 U	2 U	2.1 U	1.9 U	2.4 UJ
ALPHA-CHLORDANE	2 U	2 U	2.1 U	1.9 U	2.4 UJ
AROCLOR-1016	39 U	39 U	40 U	36 U	47 UJ
AROCLOR-1221	78 U	79 U	82 U	74 U	95 UJ
AROCLOR-1232	39 U	39 U	40 U	36 U	47 UJ
AROCLOR-1242	39 U	39 U	40 U	36 U	47 UJ
AROCLOR-1248	39 U	39 U	40 U	36 U	47 UJ
AROCLOR-1254	39 U	39 U	40 U	36 U	47 UJ
AROCLOR-1260	39 U	39 U	40 U	36 U	47 UJ
BETA-BHC	2 U	2 U	2.1 U	1.9 U	2.4 UJ
DELTA-BHC	2 U	2 U	2.1 U	1.9 U	2.4 UJ
DIELDRIN	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ENDOSULFAN I	2 U	2 U	2.1 U	1.9 U	2.4 UJ
ENDOSULFAN II	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ENDOSULFAN SULFATE	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ENDRIN	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ENDRIN ALDEHYDE	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
ENDRIN KETONE	3.9 U	3.9 U	4 U	3.6 U	4.7 UJ
GAMMA-BHC (LINDANE)	2 U	2 U	2.1 U	1.9 U	2.4 UJ
GAMMA-CHLORDANE	2 U	2 U	2.1 U	1.9 U	2.4 UJ
HEPTACHLOR	2 U	2 U	2.1 U	1.9 U	2.4 UJ
HEPTACHLOR EPOXIDE	2 U	2 U	2.1 U	1.9 U	2.4 UJ
METHOXYCHLOR	20 U	20 U	21 UJ	19 U	24 UJ
TOXAPHENE	200 U	200 U	210 U	190 U	240 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW19-00	73-AC4-MW24-00	73-AC4-SB13-00	73-AC4-SB14-00	73-AC5-MW20-00
METHOD	8080	8080	8080	8080	8080
DATE SAMPLED	04/05/95	04/04/95	04/09/95	04/09/95	04/08/95
PESTICIDE/PCBS (ug/kg)					
4,4'-DDD	7	5 U	3.6 U	4.7 U	5.8 UJ
4,4'-DDE	4 U	5 U	3.6 U	4.7 U	11 J
4,4'-DDT	4 U	5 U	3.6 U	4.7 U	15 J
ALDRIN	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
ALPHA-BHC	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
ALPHA-CHLORDANE	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
AROCLOR-1016	40 U	50 U	36 U	47 U	140 NJ
AROCLOR-1221	82 U	100 U	72 U	95 U	120 UJ
AROCLOR-1232	40 U	50 U	36 U	47 U	58 UJ
AROCLOR-1242	40 U	50 U	36 U	47 U	58 UJ
AROCLOR-1248	40 U	50 U	36 U	47 U	58 UJ
AROCLOR-1254	40 U	50 U	36 U	47 U	58 UJ
AROCLOR-1260	40 U	50 U	36 U	47 U	170 J
BETA-BHC	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
DELTA-BHC	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
DIELDRIN	4 U	5 U	3.6 U	4.7 U	5.8 UJ
ENDOSULFAN I	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
ENDOSULFAN II	4 U	5 U	3.6 U	4.7 U	5.8 UJ
ENDOSULFAN SULFATE	4 U	5 U	3.6 U	4.7 U	5.8 UJ
ENDRIN	4 U	5 U	3.6 U	4.7 U	5.8 UJ
ENDRIN ALDEHYDE	4 U	5 U	3.6 U	4.7 U	5.8 UJ
ENDRIN KETONE	4 U	5 U	3.6 U	4.7 U	7 NJ
GAMMA-BHC (LINDANE)	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
GAMMA-CHLORDANE	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
HEPTACHLOR	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
HEPTACHLOR EPOXIDE	2.1 U	2.6 U	1.8 U	2.4 U	3 UJ
METHOXYCHLOR	21 U	26 U	18 U	24 U	30 UJ
TOXAPHENE	210 U	260 U	180 U	240 U	300 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB08-00	73-AC5-SB09-00	73-AC5-SB10-00	73-AC5-SB11-00	73-AC5-SB12-00	73-AC6-SB07-00
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/09/95	04/18/95	04/18/95	04/09/95	04/09/95	04/22/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	25
4,4'-DDE	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	6.3
4,4'-DDT	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	2.8 NJ
ALDRIN	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
ALPHA-BHC	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
ALPHA-CHLORDANE	1.8 U	2.5 NJ	1.8 U	1.8 U	2 U	1.8 U
AROCLOR-1016	35 U	34 U	35 U	35 U	39 U	35 U
AROCLOR-1221	72 U	69 U	72 U	72 U	80 U	71 U
AROCLOR-1232	35 U	34 U	35 U	35 U	39 U	35 U
AROCLOR-1242	35 U	34 U	35 U	35 U	39 U	35 U
AROCLOR-1248	35 U	34 U	35 U	35 U	39 U	35 U
AROCLOR-1254	35 U	34 U	35 U	35 U	39 U	35 U
AROCLOR-1260	35 U	34 U	35 U	35 U	39 U	35 UJ
BETA-BHC	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
DELTA-BHC	1.8 U	1.8 UJ	1.8 UJ	1.8 U	2 U	1.8 UJ
DIELDRIN	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
ENDOSULFAN I	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
ENDOSULFAN II	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
ENDOSULFAN SULFATE	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
ENDRIN	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
ENDRIN ALDEHYDE	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
ENDRIN KETONE	3.5 U	3.4 U	3.5 U	3.5 U	3.9 U	3.5 U
GAMMA-BHC (LINDANE)	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
GAMMA-CHLORDANE	1.8 U	6.8 J	1.8 U	1.8 U	2 U	3.3 J
HEPTACHLOR	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
HEPTACHLOR EPOXIDE	1.8 U	1.8 U	1.8 U	1.8 U	2 U	1.8 U
METHOXYCHLOR	18 U	18 U	18 U	18 U	20 U	18 UJ
TOXAPHENE	180 U	180 U	180 U	180 U	200 U	180 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BB-DW01-00
METHOD	8080
DATE SAMPLED	04/08/95

PESTICIDE/PCBS (ug/kg)	
4,4'-DDD	3.5 U
4,4'-DDE	3.5 U
4,4'-DDT	3.5 U
ALDRIN	1.8 U
ALPHA-BHC	1.8 U
ALPHA-CHLORDANE	1.8 U
AROCLOR-1016	35 U
AROCLOR-1221	70 U
AROCLOR-1232	35 U
AROCLOR-1242	35 U
AROCLOR-1248	35 U
AROCLOR-1254	35 U
AROCLOR-1260	35 U
BETA-BHC	1.8 U
DELTA-BHC	1.8 U
DIELDRIN	3.5 U
ENDOSULFAN I	1.8 U
ENDOSULFAN II	3.5 U
ENDOSULFAN SULFATE	3.5 U
ENDRIN	3.5 U
ENDRIN ALDEHYDE	3.5 U
ENDRIN KETONE	3.5 U
GAMMA-BHC (LINDANE)	1.8 U
GAMMA-CHLORDANE	1.8 U
HEPTACHLOR	1.8 U
HEPTACHLOR EPOXIDE	1.8 U
METHOXYCHLOR	18 U
TOXAPHENE	180 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
4,4'-DDD	3.4 U	5.8 UJ	7	82	73-AC1-MW14-00	7/29	26.44	17.00
4,4'-DDE	3.3 U	5 U	3.9 NJ	11 J	73-AC5-MW20-00	3/29	7.07	6.30
4,4'-DDT	3.3 U	5 U	2.8 NJ	15 J	73-AC5-MW20-00	2/29	8.90	8.90
ALDRIN	1.7 U	3 UJ	ND	ND		0/29	NA	NA
ALPHA-BHC	1.7 U	3 UJ	ND	ND		0/29	NA	NA
ALPHA-CHLORDANE	1.7 U	3 UJ	2.5 NJ	2.5 NJ	73-AC5-SB09-00	1/29	2.50	2.50
AROCLOR-1016	33 U	50 U	140 NJ	140 NJ	73-AC5-MW20-00	1/29	140.00	140.00
AROCLOR-1221	68 U	120 UJ	ND	ND		0/29	NA	NA
AROCLOR-1232	33 U	58 UJ	ND	ND		0/29	NA	NA
AROCLOR-1242	33 U	58 UJ	ND	ND		0/29	NA	NA
AROCLOR-1248	33 U	58 UJ	ND	ND		0/29	NA	NA
AROCLOR-1254	33 U	58 UJ	ND	ND		0/29	NA	NA
AROCLOR-1260	33 U	50 U	170 J	170 J	73-AC5-MW20-00	1/29	170.00	170.00
BETA-BHC	1.7 U	3 UJ	ND	ND		0/29	NA	NA
DELTA-BHC	1.7 UJ	3 UJ	ND	ND		0/29	NA	NA
DIELDRIN	3.3 U	5.8 UJ	ND	ND		0/29	NA	NA
ENDOSULFAN I	1.7 U	3 UJ	ND	ND		0/29	NA	NA
ENDOSULFAN II	3.3 U	5.8 UJ	ND	ND		0/29	NA	NA
ENDOSULFAN SULFATE	3.3 U	5.8 UJ	ND	ND		0/29	NA	NA
ENDRIN	3.3 U	5.8 UJ	ND	ND		0/29	NA	NA
ENDRIN ALDEHYDE	3.3 U	5.8 UJ	ND	ND		0/29	NA	NA
ENDRIN KETONE	3.3 U	5 U	7 NJ	7 NJ	73-AC5-MW20-00	1/29	7.00	7.00
GAMMA-BHC (LINDANE)	1.7 U	3 UJ	ND	ND		0/29	NA	NA
GAMMA-CHLORDANE	1.7 U	3 UJ	3.3 J	6.8 J	73-AC5-SB09-00	2/29	5.05	5.05
HEPTACHLOR	1.7 U	3 UJ	ND	ND		0/29	NA	NA
HEPTACHLOR EPOXIDE	1.7 U	3 UJ	ND	ND		0/29	NA	NA
METHOXYCHLOR	17 U	30 UJ	ND	ND		0/29	NA	NA
TOXAPHENE	170 U	300 UJ	ND	ND		0/29	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04-00	73-AC1-MW04-00	73-AC1-MW10-00	73-AC1-MW12-00	73-AC1-MW13-00	73-AC1-MW14-00
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/19/95	04/20/95	04/19/95	05/05/95	05/04/95	04/21/95
METALS (mg/kg)						
ALUMINUM	2570	2120	327	2160	2030	1760
ANTIMONY	11.2 U	10.5 U	10.9 U	10.8 U	11 U	10.9 U
ARSENIC	2.2 U	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U
BARIUM	4.2	6.2	2.8	6.7	10.6	9.4
BERYLLIUM	0.22 U	0.21 U	0.22 U	0.22 U	0.22 U	0.22 U
CADMIUM	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.9
CALCIUM	5930 J	5280 J	12600 J	1040	40200	18700
CHROMIUM	5.9	3	2.3	4.4	11.9	6.6
COBALT	4.8	4.2 U	4.3 U	4.3 U	4.4 U	4.8
COPPER	4.3	2.1 U	2.2 U	2.4	3	4.9
IRON	3140	826	315	1290	2120	1750
LEAD	7.9	2.8	2	10	26.6	7.9
MAGNESIUM	460	130	206	84.4	710	288
MANGANESE	11.5	5.6	5.8	6	14.8	12.7
MERCURY	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
NICKEL	4.5 U	4.2 U	4.3 U	4.3 U	4.4 U	4.4 U
POTASSIUM	320	211 U	217 U	216 U	228	247
SELENIUM	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
SILVER	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
SODIUM	268	42.1 U	54.5	44.8	94.8	96.5
THALLIUM	2.2 U	2.1 U	2.2 U	2.2 U	2.2 U	2.2 U
VANADIUM	4.6	2.6	2.2 U	3.2	4.3	3.4
ZINC	11.5	10.3	6.7	197	22.6	19.1

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-00	73-AC1-MW29-00	73-AC1-SB03-00	73-AC1-SB04-00	73-AC1-SB05-00	73-AC1-SB06-00
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/19/95	04/24/95	04/19/95	04/22/95	04/22/95	04/22/95
METALS (mg/kg)						
ALUMINUM	2620	3600	10600	2640	4430	3020
ANTIMONY	10.2 U	11.3 U	11.2 U	11 UJ	12.9 UJ	10.9 UJ
ARSENIC	2 U	2.3 U	2.2 U	2.2 U	2.6 U	2.2 U
BARIUM	11.5	2.7	19.2	7.5	11.6	8.9
BERYLLIUM	0.2 U	0.23 U	0.22 U	0.22 U	0.26 U	0.22 U
CADMIUM	1.6	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U
CALCIUM	2370 J	168	1390 J	5200 J	2580 J	4750 J
CHROMIUM	6.8	3.9	11.8	3.7 J	13.5 J	6.5 J
COBALT	4.4	7.2	4.5 U	4.4 U	5.2 U	4.4 U
COPPER	9.2	2.3 U	2.7	2.2 U	2.6 U	2.2 U
IRON	2440	1690	5800	1330 J	8310 J	3720 J
LEAD	28.1	2.2	6.2	3.1 J	27 J	9.5 J
MAGNESIUM	190	59.7	286	157	789	294
MANGANESE	12.2	2.2	9.4	9.5 J	38.8 J	12.6 J
MERCURY	0.1 U	0.11 U	0.11 U	0.11 U	0.13 U	0.11 U
NICKEL	4.1 U	4.5 U	4.5 U	4.4 U	5.2 U	4.4 U
POTASSIUM	215	226 U	380	220 U	473	218 U
SELENIUM	1 U	1.1 U	1.1 U	1.1 U	1.3 U	1.1 U
SILVER	1 U	1.1 U	1.1 U	1.1 UJ	1.3 UJ	1.1 UJ
SODIUM	67.1	52.8	66.4	45.2	297	49.3
THALLIUM	2 U	2.3 U	2.2 U	2.2 U	2.6 U	2.2 U
VANADIUM	4.7	4.2	14.8	3.8	9.2	5.9
ZINC	123	8.3	6.4	5.9 J	22.7 J	14.8 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-00	73-AC2-MW06-00	73-AC2-MW07-00	73-AC2-MW22-00	73-AC3-MW02-00	73-AC3-MW03-00
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/17/95	04/06/95	04/06/95	04/06/95	04/07/95	04/07/95
METALS (mg/kg)						
ALUMINUM	1830	1050	1460	914	1520	1810
ANTIMONY	11.9 U	10.5 U	11.7 U	12.1 U	10.9 U	12.1 U
ARSENIC	2.4 U	2.1 U	2.3 U	2.4 U	2.2 U	2.4 U
BARIUM	5	9.1	9	3.9	6.8	6.2
BERYLLIUM	0.24 U	0.21 U	0.23 U	0.24 U	0.22 U	0.24 U
CADMIUM	1.2 U	1 U	1.2 U	1.2 U	1.1 U	1.2 U
CALCIUM	801 J	1380	695	1190	1590 J	992 J
CHROMIUM	3.5	4.4	5.3	3.8	4.6	4.9
COBALT	4.8 U	4.2 U	4.7 U	7.5 U	8.1 U	4.8 U
COPPER	2.4 U	2.5	3.5	4	2.2 U	2.4 U
IRON	1030 J	695	1210	625	1110 J	1100 J
LEAD	8.3	31.3	38.2	7.8	14	9.8
MAGNESIUM	73.9	70.7	73.6	56.3	54.4	73
MANGANESE	7.5	5.8	10.6	5.2	7.4	5.5
MERCURY	0.12 U	0.1 U	0.12 U	0.12 U	0.11 U	0.12 U
NICKEL	4.8 U	4.2 U	4.7 U	4.8 U	4.4 U	4.8 U
POTASSIUM	238 U	209 U	233 U	242 U	218 U	242 U
SELENIUM	1.2 U	1 U	1.2 U	1.2 U	1.1 U	1.2 U
SILVER	1.2 U	1 U	1.2 U	1.2 U	1.1 U	1.2 U
SODIUM	47.7 U	41.9 U	46.7 U	48.3 U	43.6 U	48.5 U
THALLIUM	2.4 U	2.1 U	2.3 U	2.4 U	2.2 U	2.4 U
VANADIUM	2.4 U	2.1 U	2.3 U	2.4 U	2.2 U	2.7
ZINC	17.6	25	51.7	10.2	18.3	15.4

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW23-00	73-AC3-MW30-00	73-AC3-SB01-00	73-AC4-MW18-00	73-AC4-MW19-00	73-AC4-MW24-00
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/05/95	05/03/95	04/18/95	04/04/95	04/05/95	04/04/95
METALS (mg/kg)						
ALUMINUM	309	4460	2030	147	3270	565
ANTIMONY	12 U	12.4 U	11 U	14.3 U	12.5 U	15.2 U
ARSENIC	2.4 U	2.5 U	2.2 U	2.9 U	2.5 U	3 U
BARIUM	21.6	13.5	7.7	6.7	9.8	23.5
BERYLLIUM	0.24 U	0.25 U	0.22 U	0.29 U	0.25 U	0.3 U
CADMIUM	1.2 U	1.2 U	1.4	1.4 U	1.2 U	1.5 U
CALCIUM	163	926	1260	269	7150	174
CHROMIUM	2.4 U	5.3	4	2.9 U	9.2	3 U
COBALT	4.8 U	5 U	4.4 U	7 U	5 U	7.5 U
COPPER	2.4 U	2.5 U	2.8	2.9 U	2.5 U	3 U
IRON	209	784	1380	182	2250	350
LEAD	6.2	4.3	23.1	2.8	10.7	7.9
MAGNESIUM	35.9	103	62.3	57.1	204	84.4
MANGANESE	5.6	3	5.8	7.1	10.8	4.3
MERCURY	0.12 U	0.12 U	0.11 U	0.14 U	0.12 U	0.15 U
NICKEL	4.8 U	5 U	4.4 U	5.7 U	5 U	6.1 U
POTASSIUM	240 U	248 U	221 U	286 U	259	305 U
SELENIUM	1.2 U	1.2 U	1.1 U	1.4 U	1.2 U	1.5 U
SILVER	1.2 U	1.2 U	1.1 U	1.4 U	1.2 U	1.5 U
SODIUM	48.1 U	49.7 U	44.2 U	85.3	61.3	74.8
THALLIUM	2.4 U	2.5 U	2.2 U	2.9 U	2.5 U	3 U
VANADIUM	2.4 U	3.6	2.6	2.9 U	5.5	3 U
ZINC	4 U	7.3	43.2	10.8 U	10.5 U	5.4 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-SB13-00	73-AC4-SB14-00	73-AC5-MW20-00	73-AC5-MW21-00	73-AC5-SB08-00	73-AC5-SB09-00
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/09/95	04/09/95	04/08/95	04/05/95	04/09/95	04/08/95
METALS (mg/kg)						
ALUMINUM	1590	1330	4760	374	283	2660
ANTIMONY	10.9 U	14.1 U	17.7 U	10.9 U	10.8 U	10.5 U
ARSENIC	2.2 U	2.8 U	3.5 U	2.2 U	2.2 U	2.1 U
BARIUM	7.2	6.6	46.3	10.7	5.1	9.9
BERYLLIUM	0.22 U	0.28 U	0.35 U	0.22 U	0.22 U	0.21 U
CADMIUM	1.1 UJ	1.4 UJ	1.8 J	1.1 U	1.1 UJ	1 U
CALCIUM	630	301	2980	400	69.3	5380 J
CHROMIUM	5.6	2.8 U	10.8	2.2 U	2.2 U	6.9
COBALT	4.4 UJ	5.6 UJ	7.1 UJ	5.3 U	4.3 UJ	4.2 U
COPPER	2.5	2.8 U	8.2	2.2 U	2.2 U	2.7
IRON	1500	633	3630	275	179	2200
LEAD	10.5	5.2	36.6	1.2	3.9	12.4
MAGNESIUM	57	49.8	348	33.8	14	158
MANGANESE	9.6	5.9	7.8	4.7	1.9	11.5
MERCURY	0.11 U	0.14 U	0.18 U	0.11 U	0.11 U	0.1 U
NICKEL	4.4 U	5.6 U	7.1 U	4.4 U	4.3 U	4.2 U
POTASSIUM	218 U	282 U	354 U	218 U	216 U	209 U
SELENIUM	1.1 U	1.4 U	1.8 U	1.1 U	1.1 U	1 U
SILVER	1.1 U	1.4 U	1.8 U	1.1 U	1.1 U	1 U
SODIUM	43.7 U	56.4 U	137	51.6	43.2 U	41.8 U
THALLIUM	2.2 U	2.8 U	3.5 U	2.2 U	2.2 U	2.1 U
VANADIUM	2.7	2.8 U	8	2.2 U	2.2 U	3.9
ZINC	8.8 J	4.7 J	28.7 J	3.7 U	2.9 J	26.6

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB10-00	73-AC5-SB11-00	73-AC5-SB12-00	73-AC6-SB07-00	73-BB-DW01-00
METHOD	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/18/95	04/09/95	04/09/95	04/22/95	04/08/95
METALS (mg/kg)					
ALUMINUM	2250	2090	477	2270	1080
ANTIMONY	10.7 U	10.8 U	11.9 U	10.7 UJ	10.5 U
ARSENIC	2.1 U	2.2 U	2.4 U	2.1 U	2.1 U
BARIUM	8.1	7.5	5	10.4	2.3
BERYLLIUM	0.21 U	0.22 U	0.24 U	0.21 U	0.21 U
CADMIUM	1.1 U	1.1 UJ	1.2 UJ	1.1	1.1 UJ
CALCIUM	2680 J	2640	218	18900 J	70.2
CHROMIUM	5.7	4.2	2.4 U	7.4 J	2.1 U
COBALT	4.3 U	4.3 UJ	4.7 UJ	4.3 U	4.2 UJ
COPPER	4.3	2.2 U	2.4 U	4	2.1 U
IRON	1850	1890	174	1760 J	572
LEAD	6.8	5.6	3.1	27.6 J	3.7
MAGNESIUM	134	92.1	39.5	385	23
MANGANESE	9.1	6.6	1.3	12.6 J	0.97
MERCURY	0.11 U	0.11 U	0.12 U	0.11 U	0.11 U
NICKEL	4.3 U	4.3 U	4.7 U	4.3 U	4.2 U
POTASSIUM	215 U	216 U	237 U	215 U	211 U
SELENIUM	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U
SILVER	1.1 U	1.1 U	1.2 U	1.1 UJ	1.1 U
SODIUM	44	43.2 U	47.4 U	63.3	42.1 U
THALLIUM	2.1 U	2.2 U	2.4 U	2.1 U	2.1 U
VANADIUM	3.8	3.4	2.4 U	3.4	2.1 U
ZINC	18	7 J	3.2 J	29.6 J	6 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	NA	NA	147	10600	73-AC1-SB03-00	35/35	2183.03	2030.00
ANTIMONY	10.2 U	17.7 U	ND	ND		0/35	NA	NA
ARSENIC	2 U	3.5 U	ND	ND		0/35	NA	NA
BARIUM	NA	NA	2.3	46.3	73-AC5-MW20-00	35/35	9.81	7.70
BERYLLIUM	0.2 U	0.35 U	ND	ND		0/35	NA	NA
CADMIUM	1 U	1.5 U	1.1	1.9	73-AC1-MW14-00	5/35	1.56	1.60
CALCIUM	NA	NA	69.3	40200	73-AC1-MW13-00	35/35	4316.19	1380.00
CHROMIUM	2.1 U	3 U	2.3	13.5 J	73-AC1-SB05-00	27/35	6.14	5.30
COBALT	4.2 U	8.1 U	4.4	7.2	73-AC1-MW29-00	4/35	5.30	4.80
COPPER	2.1 U	3 U	2.4	9.2	73-AC1-MW28-00	15/35	4.07	3.50
IRON	NA	NA	174	8310 J	73-AC1-SB05-00	35/35	1666.26	1290.00
LEAD	NA	NA	1.2	38.2	73-AC2-MW07-00	35/35	11.84	7.90
MAGNESIUM	NA	NA	14	789	73-AC1-SB05-00	35/35	169.63	84.40
MANGANESE	NA	NA	0.97	38.8 J	73-AC1-SB05-00	35/35	8.33	7.10
MERCURY	0.1 U	0.18 U	ND	ND		0/35	NA	NA
NICKEL	4.1 U	7.1 U	ND	ND		0/35	NA	NA
POTASSIUM	209 U	354 U	215	473	73-AC1-SB05-00	7/35	303.14	259.00
SELENIUM	1 U	1.8 U	ND	ND		0/35	NA	NA
SILVER	1 U	1.8 U	ND	ND		0/35	NA	NA
SODIUM	41.8 U	56.4 U	44	297	73-AC1-SB05-00	18/35	91.87	64.85
THALLIUM	2 U	3.5 U	ND	ND		0/35	NA	NA
VANADIUM	2.1 U	3 U	2.6	14.8	73-AC1-SB03-00	21/35	4.78	3.80
ZINC	3.7 U	10.8 U	2.9 J	197	73-AC1-MW12-00	30/35	25.75	15.10

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW14-02	73-AC1-MW15-01	73-AC2-MW05-01	73-AC2-MW06-01	73-AC2-MW07-03	73-AC3-MW02-01
METHOD	8240A	8240A	8240	8240	8240	8240
DATE SAMPLED	04/21/95	04/19/95	04/07/95	04/06/95	04/06/95	07/07/95
VOLATILES (ug/kg)						
1,1-DICHLOROETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,1-DICHLOROETHENE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,1,1-TRICHLOROETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,1,2-TRICHLOROETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,1,2,2-TETRACHLOROETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,2-DICHLOROBENZENE	6 U	5.7 U	NA	NA	NA	NA
1,2-DICHLOROETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,2-DICHLOROETHENE (TOTAL)	6 U	5.7 U	11 U	10 U	11 U	12 U
1,2-DICHLOROPROPANE	6 U	5.7 U	11 U	10 U	11 U	12 U
1,3-DICHLOROBENZENE	6 U	5.7 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	6 U	5.7 U	NA	NA	NA	NA
2-BUTANONE	17 U	57 U	11 U	10 U	11 U	12 U
2-CHLOROETHYL VINYL ETHER	6 U	11 U	NA	NA	NA	NA
2-HEXANONE	11 U	57 U	11 U	10 U	11 U	12 U
4-METHYL-2-PENTANONE	11 U	57 U	11 U	10 U	11 U	12 U
ACETONE	70 U	57 U	11 U	10 U	250	12 U
ACROLEIN	11 U	110 U	NA	NA	NA	NA
ACRYLONITRILE	11 U	57 U	NA	NA	NA	NA
BENZENE	6 U	5.7 U	11 U	10 U	11 U	12 U
BROMODICHLOROMETHANE	6 U	5.7 U	11 U	10 U	11 U	12 U
BROMOFORM	6 U	5.7 U	11 U	10 U	11 U	12 U
BROMOMETHANE	11 U	11 U	11 U	10 U	11 U	12 U
CARBON DISULFIDE	6 U	5.7 U	11 U	10 U	11 U	12 U
CARBON TETRACHLORIDE	6 U	5.7 U	11 U	10 U	11 U	12 U
CHLOROBENZENE	6 U	5.7 U	11 U	10 U	11 U	12 U
CHLOROETHANE	11 U	11 U	11 U	10 U	11 U	12 U
CHLOROFORM	6 U	5.7 U	11 U	10 U	11 U	12 U
CHLOROMETHANE	11 U	11 U	11 U	10 U	11 U	12 U
CIS-1,2-DICHLOROETHENE	6 U	5.7 U	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	6 U	5.7 U	11 U	10 U	11 U	12 U
DIBROMOCHLOROMETHANE	6 U	NA	11 U	10 U	11 U	12 U
DIBROMOMETHANE	NA	5.7 U	NA	NA	NA	NA
ETHYLBENZENE	6 U	5.7 U	11 U	10 U	11 U	12 U
M AND/OR P-XYLENE	6 U	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW14-02	73-AC1-MW15-01	73-AC2-MW05-01	73-AC2-MW06-01	73-AC2-MW07-03	73-AC3-MW02-01
METHOD	8240A	8240A	8240	8240	8240	8240
DATE SAMPLED	04/21/95	04/19/95	04/07/95	04/06/95	04/06/95	07/07/95
VOLATILES (ug/kg) cont.						
METHYLENE CHLORIDE	6 U	5.7 U	11 U	10 U	11 U	12 U
M-XYLENE & P-XYLENE	NA	5.7 U	NA	NA	NA	NA
O-XYLENE	3 J	5.7 U	NA	NA	NA	NA
STYRENE	6 U	5.7 U	11 U	10 U	11 U	12 U
TETRACHLOROETHENE	6 U	5.7 U	11 U	10 U	11 U	12 U
TOLUENE	6 U	5.7 U	11 U	10 U	11 U	12 U
TRANS-1,3-DICHLOROPROPENE	6 U	5.7 U	11 U	10 U	11 U	12 U
TRICHLOROETHENE	6 U	5.7 U	11 U	10 U	11 U	12 U
TRICHLOROFLUOROMETHANE	6 U	5.7 U	NA	NA	NA	NA
VINYL ACETATE	11 U	5.7 U	NA	NA	NA	NA
VINYL CHLORIDE	11 U	11 U	11 U	10 U	11 U	12 U
XYLENES (TOTAL)	NA	NA	11 U	2 J	11 U	1 J

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01	73-AC4-MW19-02	73-AC4-MW24-01	73-AC4-SB13-01
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/07/95	04/06/95	04/18/95	04/05/95	04/04/95	04/09/95
VOLATILES (ug/kg)						
1,1-DICHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
1,1-DICHLOROETHENE	11 U	13 U	13 U	12 U	13 U	11 U
1,1,1-TRICHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
1,1,2-TRICHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
1,1,2,2-TETRACHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
1,2-DICHLOROETHENE (TOTAL)	11 U	13 U	13 U	12 U	13 U	11 U
1,2-DICHLOROPROPANE	11 U	13 U	13 U	12 U	13 U	11 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-BUTANONE	5 J	13 U	13 U	12 U	3 J	11 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-HEXANONE	11 U	13 U	13 U	12 U	13 U	11 U
4-METHYL-2-PENTANONE	11 U	13 U	13 U	12 U	13 U	11 U
ACETONE	38	13 U	71	18 U	390	11 U
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
BENZENE	11 U	13 U	13 U	12 U	13 U	11 U
BROMODICHLOROMETHANE	11 U	13 U	13 U	12 U	13 U	11 U
BROMOFORM	11 U	13 U	13 U	12 U	13 U	11 U
BROMOMETHANE	11 U	13 U	13 U	12 U	13 U	11 U
CARBON DISULFIDE	11 U	13 U	13 U	12 U	13 U	11 U
CARBON TETRACHLORIDE	11 U	13 U	13 U	12 U	13 U	11 U
CHLOROBENZENE	11 U	13 U	13 U	12 U	13 U	11 U
CHLOROETHANE	11 U	13 U	13 U	12 U	13 U	11 U
CHLOROFORM	11 U	13 U	13 U	12 U	13 U	11 U
CHLOROMETHANE	11 U	13 U	13 U	12 U	13 U	11 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	13 U	13 U	12 U	13 U	11 U
DIBROMOCHLOROMETHANE	11 U	13 U	13 U	12 U	13 U	11 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	11 U	13 U	13 U	12 U	13 U	11 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01	73-AC4-MW19-02	73-AC4-MW24-01	73-AC4-SB13-01
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/07/95	04/06/95	04/18/95	04/05/95	04/04/95	04/09/95
VOLATILES (ug/kg) cont.						
METHYLENE CHLORIDE	11 U	13 U	13 U	12 U	13 U	11 U
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA	NA
STYRENE	11 U	13 U	13 U	12 U	13 U	11 U
TETRACHLOROETHENE	11 U	13 U	1 J	12 U	13 U	11 U
TOLUENE	11 U	13 U	13 U	12 U	13 U	11 U
TRANS-1,3-DICHLOROPROPENE	11 U	13 U	13 U	12 U	13 U	11 U
TRICHLOROETHENE	11 U	6 J	13 U	12 U	13 U	11 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	11 U	13 U	13 U	12 U	13 U	11 U
XYLENES (TOTAL)	11 U	3 J	13 U	12 U	13 U	11 J

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-SB14-01	73-AC5-MW21-03	73-AC5-SB08-01	73-AC5-SB10-03	73-AC5-SB11-02	73-AC5-SB12-01
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/09/95	04/05/95	04/09/95	04/18/95	04/09/95	04/09/95
VOLATILES (ug/kg)						
1,1-DICHLOROETHANE	12 U	15 U	11 U	12 U	12 U	12 U
1,1-DICHLOROETHENE	12 U	15 U	11 U	12 U	12 U	12 U
1,1,1-TRICHLOROETHANE	12 U	15 U	11 U	12 U	12 U	12 U
1,1,2-TRICHLOROETHANE	12 U	15 U	11 U	12 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	12 U	15 U	11 U	12 U	12 UJ	12 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROETHANE	12 U	15 U	11 U	120 U	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	12 U	15 U	11 U	12 U	12 U	12 U
1,2-DICHLOROPROPANE	12 U	15 U	11 U	12 U	12 U	12 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-BUTANONE	12 U	15 U	2 J	7 J	3 J	12 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
2-HEXANONE	12 U	15 U	11 U	12 U	12 UJ	12 U
4-METHYL-2-PENTANONE	12 U	15 U	11 U	12 U	12 UJ	12 U
ACETONE	12 U	23 U	11 U	75 U	26	12 U
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
BENZENE	12 U	15 U	11 U	12 U	12 U	12 U
BROMODICHLOROMETHANE	12 U	15 U	11 U	12 U	12 U	12 U
BROMOFORM	12 U	15 U	11 U	12 U	12 U	12 U
BROMOMETHANE	12 U	15 U	11 U	12 U	12 U	12 U
CARBON DISULFIDE	12 U	15 U	11 U	12 U	12 U	12 U
CARBON TETRACHLORIDE	12 U	15 U	11 U	12 U	12 U	12 U
CHLOROBENZENE	12 U	15 U	11 U	12 U	12 UJ	12 U
CHLOROETHANE	12 U	15 U	11 U	12 U	12 U	12 U
CHLOROFORM	12 U	15 U	11 U	12 U	12 U	12 U
CHLOROMETHANE	12 U	15 U	11 U	12 U	12 U	12 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	12 U	15 U	11 U	12 U	12 U	12 U
DIBROMOCHLOROMETHANE	12 U	15 U	11 U	12 U	12 U	12 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	12 U	15 U	11 U	12 U	1 J	12 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-SB14-01	73-AC5-MW21-03	73-AC5-SB08-01	73-AC5-SB10-03	73-AC5-SB11-02	73-AC5-SB12-01
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	04/09/95	04/05/95	04/09/95	04/18/95	04/09/95	04/09/95
VOLATILES (ug/kg) cont.						
METHYLENE CHLORIDE	12 U	15 U	11 U	12 U	12 U	12 U
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA	NA
STYRENE	12 U	15 U	11 U	12 U	12 UJ	12 U
TETRACHLOROETHENE	12 U	15 U	11 U	12 U	12 UJ	12 U
TOLUENE	12 U	15 U	11 U	12 U	12 UJ	12 U
TRANS-1,3-DICHLOROPROPENE	12 U	15 U	11 U	12 U	12 U	12 U
TRICHLOROETHENE	12 U	15 U	11 U	12 U	12 U	12 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA	NA	NA
VINYL CHLORIDE	12 U	15 U	11 U	12 U	12 U	12 U
XYLENES (TOTAL)	12 U	15 U	11 U	12 U	4 J	12 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC6-SB07-01	73-ACI-DW03-01	73-BB-DW01-01	73-SB06DW-03	73-SB08DW-01	73-SB09DW-02
METHOD	8240	8240A	8240	CLP	CLP	CLP
DATE SAMPLED	04/22/95	04/22/95	04/08/95	02/20/96	02/21/96	02/22/96
VOLATILES (ug/kg)						
1,1-DICHLOROETHANE	11 U	5.6 U	12 U	12 U	11 U	11 U
1,1-DICHLOROETHENE	11 U	5.6 U	12 U	12 U	11 U	11 U
1,1,1-TRICHLOROETHANE	11 U	5.6 U	12 U	12 U	11 U	21
1,1,2-TRICHLOROETHANE	11 U	5.6 U	12 U	12 U	11 U	11 U
1,1,2,2-TETRACHLOROETHANE	11 U	5.6 U	12 U	12 U	11 U	11 U
1,2-DICHLOROBENZENE	NA	5.6 U	12 U	12 U	11 U	11 U
1,2-DICHLOROETHANE	11 U	5.6 U	12 U	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	11 U	5.6 U	NA	12 U	11 U	11 U
1,2-DICHLOROPROPANE	11 U	5.6 U	12 U	12 U	11 U	11 U
1,3-DICHLOROBENZENE	NA	5.6 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	5.6 U	12 U	NA	NA	NA
2-BUTANONE	9 J	5 J	NA	12 U	11 U	11 U
2-CHLOROETHYL VINYL ETHER	NA	11 U	NA	NA	NA	NA
2-HEXANONE	11 U	56 U	12 U	12 U	11 U	11 U
4-METHYL-2-PENTANONE	11	56 U	12 U	12 U	11 U	11 U
ACETONE	81	22 J	77	50	70	11 U
ACROLEIN	NA	110 R	NA	NA	NA	NA
ACRYLONITRILE	NA	56 U	NA	NA	NA	NA
BENZENE	11 U	5.6 U	12 U	12 U	11 U	11 U
BROMODICHLOROMETHANE	11 U	5.6 U	12 U	12 U	11 U	11 U
BROMOFORM	11 U	5.6 U	12 U	12 U	11 U	11 U
BROMOMETHANE	11 U	11 U	12 U	12 U	11 U	11 U
CARBON DISULFIDE	11 U	5.6 U	12 U	12 U	11 U	2 J
CARBON TETRACHLORIDE	11 U	5.6 U	12 U	12 U	11 U	11 U
CHLOROBENZENE	11 U	5.6 U	12 U	12 U	11 U	11 U
CHLOROETHANE	11 U	11 U	12 U	12 U	11 U	11 U
CHLOROFORM	11 U	5.6 U	12 U	12 U	11 U	11 U
CHLOROMETHANE	11 U	11 U	12 U	12 U	11 U	11 U
CIS-1,2-DICHLOROETHENE	NA	5.6 U	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	11 U	5.6 U	12 U	12 U	11 U	11 U
DIBROMOCHLOROMETHANE	11 U	NA	12 U	12 U	11 U	11 U
DIBROMOMETHANE	NA	5.6 U	NA	NA	NA	NA
ETHYLBENZENE	11 U	5.6 U	12 U	12 U	11 U	11 U
M AND/OR P-XYLENE	NA	NA	NA	NA	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC6-SB07-01	73-ACI-DW03-01	73-BB-DW01-01	73-SB06DW-03	73-SB08DW-01	73-SB09DW-02
METHOD	8240	8240A	8240	CLP	CLP	CLP
DATE SAMPLED	04/22/95	04/22/95	04/08/95	02/20/96	02/21/96	02/22/96
VOLATILES (ug/kg) cont.						
METHYLENE CHLORIDE	11 U	5.6 U	12 U	12 U	11 U	11 U
M-XYLENE & P-XYLENE	NA	1.8 J	NA	NA	NA	NA
O-XYLENE	NA	0.89 J	NA	NA	NA	NA
STYRENE	11 U	5.6 U	12 U	12 U	11 U	11 U
TETRACHLOROETHENE	11 U	5.6 U	12 U	12 U	11 U	11 U
TOLUENE	11 U	5.6 U	12 U	12 U	11 U	11 U
TRANS-1,3-DICHLOROPROPENE	11 U	5.6 U	12 U	12 U	11 U	11 U
TRICHLOROETHENE	11 U	5.6 U	12 U	12 U	11 U	11 U
TRICHLOROFLUOROMETHANE	NA	5.6 U	NA	NA	NA	NA
VINYL ACETATE	NA	5.6 U	NA	NA	NA	NA
VINYL CHLORIDE	11 U	11 U	12 U	12 U	11 U	11 U
XYLENES (TOTAL)	11 U	NA	12 U	12 U	11 U	11 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SB10DW-02	73-SB13DW-02	73-SB36MW-02	73-SB37MW-02
METHOD	CLP	CLP	CLP	CLP
DATE SAMPLED	02/20/96	02/25/96	03/21/96	03/10/96
VOLATILES (ug/kg)				
1,1-DICHLOROETHANE	12 U	14 U	12 U	11 U
1,1-DICHLOROETHENE	12 U	14 U	12 U	11 U
1,1,1-TRICHLOROETHANE	12 U	14 U	12 U	11 U
1,1,2-TRICHLOROETHANE	12 U	14 U	12 U	11 U
1,1,2,2-TETRACHLOROETHANE	12 U	14 U	12 U	11 U
1,2-DICHLOROBENZENE	12 U	14 U	12 U	11 U
1,2-DICHLOROETHANE	NA	NA	NA	NA
1,2-DICHLOROETHENE (TOTAL)	12 U	14 U	12 U	11 U
1,2-DICHLOROPROPANE	12 U	14 U	12 U	11 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA
2-BUTANONE	12 U	14 U	12 U	11 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA
2-HEXANONE	12 U	14 U	12 U	11 U
4-METHYL-2-PENTANONE	12 U	14 U	12 U	11 U
ACETONE	530	27 U	61	86
ACROLEIN	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA
BENZENE	12 U	14 U	12 U	11 U
BROMODICHLOROMETHANE	12 U	14 U	12 U	11 U
BROMOFORM	12 U	14 U	12 U	11 U
BROMOMETHANE	12 U	14 U	12 U	11 U
CARBON DISULFIDE	12 U	14 U	12 U	11 U
CARBON TETRACHLORIDE	12 U	14 U	12 U	11 U
CHLOROBENZENE	12 U	14 U	12 U	11 U
CHLOROETHANE	12 U	14 U	12 U	11 U
CHLOROFORM	12 U	14 U	12 U	11 U
CHLOROMETHANE	12 U	14 U	12 U	11 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA
CIS-1,3-DICHLOROPROPENE	12 U	14 U	12 U	11 U
DIBROMOCHLOROMETHANE	12 U	14 U	12 U	11 U
DIBROMOMETHANE	NA	NA	NA	NA
ETHYLBENZENE	12 U	14 U	12 U	1 J
M AND/OR P-XYLENE	NA	NA	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SB10DW-02	73-SB13DW-02	73-SB36MW-02	73-SB37MW-02
METHOD	CLP	CLP	CLP	CLP
DATE SAMPLED	02/20/96	02/25/96	03/21/96	03/10/96
VOLATILES (ug/kg) cont.				
METHYLENE CHLORIDE	12 U	14 U	12 U	11 U
M-XYLENE & P-XYLENE	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA
STYRENE	12 U	14 U	12 U	11 U
TETRACHLOROETHENE	12 U	14 U	12 U	11 U
TOLUENE	12 U	14 U	12 U	11 U
TRANS-1,3-DICHLOROPROPENE	12 U	14 U	12 U	11 U
TRICHLOROETHENE	12 U	14 U	12 U	11 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA
VINYL ACETATE	NA	NA	NA	NA
VINYL CHLORIDE	12 U	14 U	12 U	11 U
XYLENES (TOTAL)	12 U	14 U	12 U	11 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
1,1-DICHLOROETHANE	5.6 U	15 U	ND	ND		0/28	NA	NA
1,1-DICHLOROETHENE	5.6 U	15 U	ND	ND		0/28	NA	NA
1,1,1-TRICHLOROETHANE	5.6 U	15 U	21	21	73-SB09DW-02	1/28	21.00	21.00
1,1,2-TRICHLOROETHANE	5.6 U	15 U	ND	ND		0/28	NA	NA
1,1,2,2-TETRACHLOROETHANE	5.6 U	15 U	ND	ND		0/28	NA	NA
1,2-DICHLOROBENZENE	5.6 U	14 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHANE	5.6 U	120 U	ND	ND		0/21	NA	NA
1,2-DICHLOROETHENE (TOTAL)	5.6 U	15 U	ND	ND		0/27	NA	NA
1,2-DICHLOROPROPANE	5.6 U	15 U	ND	ND		0/28	NA	NA
1,3-DICHLOROBENZENE	5.6 U	6 U	ND	ND		0/3	NA	NA
1,4-DICHLOROBENZENE	5.6 U	12 U	ND	ND		0/4	NA	NA
2-BUTANONE	10 U	57 U	2 J	9 J	73-AC6-SB07-01	7/27	4.86	5.00
2-CHLOROETHYL VINYL ETHER	6 U	11 U	ND	ND		0/3	NA	NA
2-HEXANONE	10 U	57 U	ND	ND		0/28	NA	NA
4-METHYL-2-PENTANONE	10 U	57 U	11	11	73-AC6-SB07-01	1/28	11.00	11.00
ACETONE	10 U	75 U	22 J	530	73-SB10DW-02	13/28	134.77	71.00
ACROLEIN	11 U	110 U	ND	ND		0/2	NA	NA
ACRYLONITRILE	11 U	57 U	ND	ND		0/3	NA	NA
BENZENE	5.6 U	15 U	ND	ND		0/28	NA	NA
BROMODICHLOROMETHANE	5.6 U	15 U	ND	ND		0/28	NA	NA
BROMOFORM	5.6 U	15 U	ND	ND		0/28	NA	NA
BROMOMETHANE	10 U	15 U	ND	ND		0/28	NA	NA
CARBON DISULFIDE	5.6 U	15 U	2 J	2 J	73-SB09DW-02	1/28	2.00	2.00
CARBON TETRACHLORIDE	5.6 U	15 U	ND	ND		0/28	NA	NA
CHLOROBENZENE	5.6 U	15 U	ND	ND		0/28	NA	NA
CHLOROETHANE	10 U	15 U	ND	ND		0/28	NA	NA
CHLOROFORM	5.6 U	15 U	ND	ND		0/28	NA	NA
CHLOROMETHANE	10 U	15 U	ND	ND		0/28	NA	NA
CIS-1,2-DICHLOROETHENE	5.6 U	6 U	ND	ND		0/3	NA	NA
CIS-1,3-DICHLOROPROPENE	5.6 U	15 U	ND	ND		0/28	NA	NA
DIBROMOCHLOROMETHANE	6 U	15 U	ND	ND		0/26	NA	NA
DIBROMOMETHANE	5.6 U	5.7 U	ND	ND		0/2	NA	NA
ETHYLBENZENE	5.6 U	15 U	1 J	1 J	73-SB37MW-02	2/28	1.00	1.00
M AND/OR P-XYLENE	6 U	6 U	ND	ND		0/1	NA	NA

FREQUENCY OF DETECTION
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg) cont.								
METHYLENE CHLORIDE	5.6 U	15 U	ND	ND		0/28	NA	NA
M-XYLENE & P-XYLENE	5.7 U	5.7 U	1.8 J	1.8 J	73-ACI-DW03-01	1/2	1.80	1.80
O-XYLENE	5.7 U	5.7 U	0.89 J	3 J	73-AC1-MW14-02	2/3	1.95	1.95
STYRENE	5.6 U	15 U	ND	ND		0/28	NA	NA
TETRACHLOROETHENE	5.6 U	15 U	1 J	1 J	73-AC3-SB01-01	1/28	1.00	1.00
TOLUENE	5.6 U	15 U	ND	ND		0/28	NA	NA
TRANS-1,3-DICHLOROPROPENE	5.6 U	15 U	ND	ND		0/28	NA	NA
TRICHLOROETHENE	5.6 U	15 U	6 J	6 J	73-AC3-MW23-01	1/28	6.00	6.00
TRICHLOROFLUOROMETHANE	5.6 U	6 U	ND	ND		0/3	NA	NA
VINYL ACETATE	5.6 U	11 U	ND	ND		0/3	NA	NA
VINYL CHLORIDE	10 U	15 U	ND	ND		0/28	NA	NA
XYLENES (TOTAL)	11 U	15 U	1 J	11 J	73-AC4-SB13-01	5/25	4.20	3.00

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW12-01	73-AC1-MW14-02	73-AC1-MW15IW-01	73-AC1-MW28-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/20/95	04/19/95	04/21/95	04/19/95	04/19/95	04/19/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
1,2,4-TRICHLOROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
1,3-DICHLOROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
1,4-DICHLOROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
2-CHLORONAPHTHALENE	360 U	370 U	380 U	360 U	3700 U	110000 U
2-CHLOROPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2-METHYLNAPHTHALENE	360 U	370 U	380 U	250 J	3700 U	110000 U
2-METHYLPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2-NITROANILINE	860 U	900 U	910 U	870 U	9000 U	260000 U
2-NITROPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	370 U	380 U	360 U	3700 U	110000 U
2,4-DICHLOROPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2,4-DIMETHYLPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2,4-DINITROPHENOL	860 U	900 U	910 U	870 U	9000 UJ	260000 UJ
2,4-DINITROTOLUENE	360 U	370 U	380 U	360 U	3700 U	110000 U
2,4,5-TRICHLOROPHENOL	860 U	900 U	910 U	870 U	9000 U	260000 U
2,4,6-TRICHLOROPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
2,6-DINITROTOLUENE	360 U	370 U	380 U	360 U	3700 U	110000 U
3-NITROANILINE	860 U	900 U	910 U	870 U	9000 U	260000 U
3,3'-DICHLOROBENZIDINE	360 U	370 U	380 U	360 UJ	3700 U	110000 U
4-BROMOPHENYL PHENYL ETHER	360 U	370 U	380 U	360 U	3700 U	110000 U
4-CHLORO-3-METHYLPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
4-CHLOROANILINE	360 U	370 U	380 U	360 U	3700 U	110000 U
4-CHLOROPHENYL PHENYL ETHER	360 U	370 U	380 U	360 U	3700 U	110000 U
4-METHYLPHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
4-NITROANILINE	860 U	900 U	910 U	870 U	9000 U	260000 U
4-NITROPHENOL	860 U	900 U	910 U	870 U	9000 U	260000 U
4,6-DINITRO-2-METHYLPHENOL	860 U	900 U	910 U	870 U	9000 U	260000 U
ACENAPHTHENE	360 U	370 U	380 U	51 J	490 J	110000 U
ACENAPHTHYLENE	360 U	370 U	380 U	360 U	3700 U	110000 U
ANTHRACENE	360 U	370 U	380 U	360 U	2000 J	110000 U
BENZO(A)ANTHRACENE	360 U	370 U	380 U	360 UJ	880 J	110000 U
BENZO(A)PYRENE	360 U	370 U	380 U	360 U	3700 U	110000 U
BENZO(B)FLUORANTHENE	360 U	370 U	380 U	360 U	690 J	110000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW12-01	73-AC1-MW14-02	73-AC1-MW15IW-01	73-AC1-MW28-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/20/95	04/19/95	04/21/95	04/19/95	04/19/95	04/19/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(G,H,I)PERYLENE	360 U	370 U	380 U	360 U	3700 U	110000 U
BENZO(K)FLUORANTHENE	360 U	370 U	380 U	360 U	3700 U	110000 U
BIS(2-CHLOROETHOXY)METHANE	360 U	370 U	380 U	360 U	3700 U	110000 U
BIS(2-CHLOROETHYL) ETHER	360 U	370 U	380 U	360 U	3700 U	110000 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	370 U	380 U	360 J	3700 U	110000 U
BUTYL BENZYL PHTHALATE	360 U	370 U	380 U	360 UJ	3700 U	110000 U
CARBAZOLE	360 U	370 U	380 U	360 U	3700 U	110000 U
CHRYSENE	360 U	370 U	380 U	360 UJ	930 J	110000 U
DIBENZOFURAN	360 U	370 U	380 U	360 U	3700 U	110000 U
DIBENZ(A,H)ANTHRACENE	360 U	370 U	380 U	360 U	3700 U	110000 U
DIETHYL PHTHALATE	360 U	370 U	380 U	360 U	3700 U	110000 U
DIMETHYL PHTHALATE	360 U	370 U	380 U	360 U	3700 U	110000 U
DI-N-BUTYL PHTHALATE	360 U	370 U	200 J	360 U	3700 U	110000 U
DI-N-OCTYL PHTHALATE	360 U	370 U	380 U	360 U	3700 U	110000 U
FLUORANTHENE	360 U	370 U	380 U	44 J	4000	110000 U
FLUORENE	360 U	370 U	380 U	100 J	3700 U	110000 U
HEXACHLOROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
HEXACHLOROBUTADIENE	360 U	370 U	380 U	360 U	3700 U	110000 U
HEXACHLOROCYCLOPENTADIENE	360 U	370 U	380 U	360 U	3700 U	110000 U
HEXACHLOROETHANE	360 U	370 U	380 U	360 U	3700 U	110000 U
INDENO(1,2,3-CD)PYRENE	360 U	370 U	380 U	360 U	3700 U	110000 U
ISOPHORONE	360 U	370 U	380 U	360 U	3700 U	110000 U
NAPHTHALENE	360 U	370 U	380 U	360 U	3700 U	110000 U
NITROBENZENE	360 U	370 U	380 U	360 U	3700 U	110000 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	370 U	380 U	360 U	3700 U	110000 U
N-NITROSODIPHENYLAMINE	360 U	370 U	380 U	360 U	3700 U	110000 U
PENTACHLOROPHENOL	860 U	900 U	910 U	870 U	9000 U	260000 U
PHENANTHRENE	360 U	370 U	380 U	190 J	3700 U	110000 U
PHENOL	360 U	370 U	380 U	360 U	3700 U	110000 U
PYRENE	360 U	370 U	380 U	100 J	3100 J	110000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-SB03-00	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC2-MW05-01	73-AC2-MW06-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/22/95	04/22/95	04/22/95	04/07/95	04/06/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
1,2,4-TRICHLOROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
1,3-DICHLOROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
1,4-DICHLOROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
2-CHLORONAPHTHALENE	360 U	370 R	370 U	730 U	350 U	340 U
2-CHLOROPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2-METHYLNAPHTHALENE	360 U	370 R	370 U	730 U	350 U	340 U
2-METHYLPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2-NITROANILINE	870 U	900 R	890 U	1800 U	860 U	830 U
2-NITROPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	370 R	370 U	730 U	350 U	340 U
2,4-DICHLOROPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2,4-DIMETHYLPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2,4-DINITROPHENOL	870 U	900 R	890 U	1800 U	860 U	830 U
2,4-DINITROTOLUENE	360 U	370 R	370 U	730 U	350 U	340 U
2,4,5-TRICHLOROPHENOL	870 U	900 R	890 U	1800 U	860 U	830 U
2,4,6-TRICHLOROPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
2,6-DINITROTOLUENE	360 U	370 R	370 U	730 U	350 U	340 U
3-NITROANILINE	870 U	900 R	890 U	1800 U	860 U	830 U
3,3'-DICHLOROBENZIDINE	360 U	370 R	370 U	730 U	350 U	340 U
4-BROMOPHENYL PHENYL ETHER	360 U	370 R	370 U	730 U	350 U	340 U
4-CHLORO-3-METHYLPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
4-CHLOROANILINE	360 U	370 R	370 U	730 U	350 U	340 U
4-CHLOROPHENYL PHENYL ETHER	360 U	370 R	370 U	730 U	350 U	340 U
4-METHYLPHENOL	360 U	370 R	370 U	730 U	350 U	340 U
4-NITROANILINE	870 R	900 R	890 U	1800 R	860 U	830 R
4-NITROPHENOL	870 U	900 R	890 U	1800 U	860 R	830 U
4,6-DINITRO-2-METHYLPHENOL	870 U	900 R	890 U	1800 U	860 U	830 U
ACENAPHTHENE	360 U	370 R	370 U	730 U	350 U	340 U
ACENAPHTHYLENE	360 U	370 R	370 U	730 U	350 U	340 U
ANTHRACENE	360 U	370 R	370 U	730 U	350 U	340 U
BENZO(A)ANTHRACENE	360 U	370 R	370 U	120 J	350 U	340 U
BENZO(A)PYRENE	360 U	370 R	370 U	140 J	350 U	340 U
BENZO(B)FLUORANTHENE	360 U	370 R	370 U	230 J	350 U	340 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-SB03-00	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC2-MW05-01	73-AC2-MW06-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/19/95	04/22/95	04/22/95	04/22/95	04/07/95	04/06/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(G,H,I)PERYLENE	360 U	370 R	370 U	730 U	350 U	340 U
BENZO(K)FLUORANTHENE	360 U	370 R	370 U	730 U	350 U	340 U
BIS(2-CHLOROETHOXY)METHANE	360 U	370 R	370 U	730 U	350 U	340 U
BIS(2-CHLOROETHYL) ETHER	360 U	370 R	370 U	730 U	350 U	340 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	720 R	370 U	730 U	64 J	340 U
BUTYL BENZYL PHTHALATE	360 U	370 R	370 U	730 U	350 U	340 U
CARBAZOLE	360 U	370 R	370 U	730 U	350 U	340 U
CHRYSENE	360 U	370 R	370 U	120 J	350 U	340 U
DIBENZOFURAN	360 U	370 R	370 U	730 U	350 U	340 U
DIBENZ(A,H)ANTHRACENE	360 U	370 R	370 U	730 U	350 U	340 U
DIETHYL PHTHALATE	360 U	370 R	370 U	730 U	350 U	340 U
DIMETHYL PHTHALATE	360 U	370 R	370 U	730 U	350 U	340 U
DI-N-BUTYL PHTHALATE	360 U	370 R	370 U	730 U	410	340 U
DI-N-OCTYL PHTHALATE	360 U	370 R	370 U	730 U	350 U	340 U
FLUORANTHENE	360 U	370 R	370 U	220 J	350 U	340 U
FLUORENE	360 U	370 R	370 U	730 U	350 U	340 U
HEXACHLOROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
HEXACHLOROBUTADIENE	360 U	370 R	370 U	730 U	350 U	340 U
HEXACHLOROCYCLOPENTADIENE	360 U	370 R	370 U	730 U	350 U	340 U
HEXACHLOROETHANE	360 U	370 R	370 U	730 U	350 U	340 U
INDENO(1,2,3-CD)PYRENE	360 U	370 R	370 U	730 U	350 U	340 U
ISOPHORONE	360 U	370 R	370 U	730 U	350 U	340 U
NAPHTHALENE	360 U	370 R	370 U	730 U	350 U	340 U
NITROBENZENE	360 U	370 R	370 U	730 U	350 U	340 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	370 R	370 U	730 U	350 U	340 U
N-NITROSODIPHENYLAMINE	360 U	370 R	370 U	730 U	350 U	340 U
PENTACHLOROPHENOL	870 U	900 R	890 U	1800 U	860 U	830 U
PHENANTHRENE	360 U	370 R	370 U	140 J	350 U	340 U
PHENOL	360 U	370 R	370 U	730 U	350 U	340 U
PYRENE	360 U	370 R	370 U	210 J	350 U	340 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-03	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01	73-AC4-MW19-02
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/06/95	04/07/95	04/07/95	04/06/95	04/18/95	04/05/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
1,2,4-TRICHLOROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
1,3-DICHLOROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
1,4-DICHLOROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
2-CHLORONAPHTHALENE	360 U	380 U	360 U	410 U	4200 U	400 U
2-CHLOROPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2-METHYLNAPHTHALENE	360 U	380 U	360 U	410 U	9400	400 U
2-METHYLPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2-NITROANILINE	860 U	930 U	880 U	1000 U	10000 U	960 U
2-NITROPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2,2'-OXYBIS(1-CHLOROPROPANE)	360 U	380 U	360 U	410 U	4200 U	400 U
2,4-DICHLOROPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2,4-DIMETHYLPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2,4-DINITROPHENOL	860 R	930 U	880 U	180 J	10000 U	960 U
2,4-DINITROTOLUENE	360 U	380 U	360 U	410 U	4200 U	400 U
2,4,5-TRICHLOROPHENOL	860 U	930 U	880 U	1000 U	10000 U	960 U
2,4,6-TRICHLOROPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
2,6-DINITROTOLUENE	360 U	380 U	360 U	410 U	4200 U	400 U
3-NITROANILINE	860 U	930 U	880 U	1000 U	10000 U	960 U
3,3'-DICHLOROBENZIDINE	360 U	380 U	360 U	410 U	4200 U	400 U
4-BROMOPHENYL PHENYL ETHER	360 U	380 U	360 U	410 U	4200 U	400 U
4-CHLORO-3-METHYLPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
4-CHLOROANILINE	360 U	380 U	360 U	410 U	4200 U	400 U
4-CHLOROPHENYL PHENYL ETHER	360 U	380 U	360 U	410 U	4200 U	400 U
4-METHYLPHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
4-NITROANILINE	860 U	930 U	880 U	1000 U	10000 U	960 U
4-NITROPHENOL	860 U	930 U	880 U	1000 U	10000 U	960 U
4,6-DINITRO-2-METHYLPHENOL	860 UJ	930 U	880 U	1000 UJ	10000 U	960 U
ACENAPHTHENE	360 U	380 U	360 U	410 U	830 J	400 U
ACENAPHTHYLENE	360 U	380 U	360 U	410 U	4200 U	400 U
ANTHRACENE	360 U	380 U	360 U	410 U	4200 U	400 U
BENZO(A)ANTHRACENE	360 U	380 U	360 U	410 U	4200 U	400 U
BENZO(A)PYRENE	360 U	380 U	360 U	410 U	4200 U	400 U
BENZO(B)FLUORANTHENE	360 U	380 U	360 U	410 U	4200 U	400 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-03	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01	73-AC4-MW19-02
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/06/95	04/07/95	04/07/95	04/06/95	04/18/95	04/05/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(G,H,I)PERYLENE	360 U	380 U	360 U	410 U	4200 U	400 U
BENZO(K)FLUORANTHENE	360 U	380 U	360 U	410 U	4200 U	400 U
BIS(2-CHLOROETHOXY)METHANE	360 U	380 U	360 U	410 U	4200 U	400 U
BIS(2-CHLOROETHYL) ETHER	360 U	380 U	360 U	410 U	4200 U	400 U
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	230 J	180 J	410 U	4200 U	76 J
BUTYL BENZYL PHTHALATE	360 U	380 U	360 U	410 U	4200 U	400 U
CARBAZOLE	360 U	380 U	360 U	410 U	4200 U	400 U
CHRYSENE	360 U	380 U	360 U	410 U	4200 U	400 U
DIBENZOFURAN	360 U	380 U	360 U	410 U	4200 U	400 U
DIBENZ(A,H)ANTHRACENE	360 U	380 U	360 U	410 U	4200 U	400 U
DIETHYL PHTHALATE	360 U	380 U	360 U	410 U	4200 U	400 U
DIMETHYL PHTHALATE	360 U	380 U	360 U	410 U	4200 U	400 U
DI-N-BUTYL PHTHALATE	360 U	430	380	410 U	4200 U	560 U
DI-N-OCTYL PHTHALATE	360 U	380 U	360 U	410 U	4200 U	400 U
FLUORANTHENE	360 U	380 U	360 U	410 U	4200 U	400 U
FLUORENE	360 U	380 U	360 U	410 U	1200 J	400 U
HEXACHLOROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
HEXACHLOROBUTADIENE	360 U	380 U	360 U	410 U	4200 U	400 U
HEXACHLOROCYCLOPENTADIENE	360 U	380 U	360 U	410 U	4200 U	400 U
HEXACHLOROETHANE	360 U	380 U	360 U	410 U	4200 U	400 U
INDENO(1,2,3-CD)PYRENE	360 U	380 U	360 U	410 U	4200 U	400 U
ISOPHORONE	360 U	380 U	360 U	410 U	4200 U	400 U
NAPHTHALENE	360 U	380 U	360 U	410 U	4200 U	400 U
NITROBENZENE	360 U	380 U	360 U	410 U	4200 U	400 U
N-NITROSO-DI-N-PROPYLAMINE	360 U	380 U	360 U	410 U	4200 U	400 U
N-NITROSODIPHENYLAMINE	360 U	380 U	360 U	410 U	4200 U	400 U
PENTACHLOROPHENOL	860 U	930 U	880 U	1000 U	10000 U	960 U
PHENANTHRENE	360 U	380 U	360 U	410 U	1600 J	400 U
PHENOL	360 U	380 U	360 U	410 U	4200 U	400 U
PYRENE	360 U	380 U	360 U	410 U	4200 U	400 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-01	73-AC4-SB13-01	73-AC4-SB14-01	73-AC5-MW21-03	73-AC5-SB08-01	73-AC5-SB10-03
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/04/95	04/09/95	04/09/95	04/05/95	04/09/95	04/18/95
SEMIVOLATILES (ug/kg)						
1,2-DICHLOROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
1,2,4-TRICHLOROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
1,3-DICHLOROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
1,4-DICHLOROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
2-CHLORONAPHTHALENE	430 U	360 U	390 U	480 U	370 U	390 U
2-CHLOROPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2-METHYLNAPHTHALENE	430 U	360 U	390 U	480 U	370 U	390 U
2-METHYLPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2-NITROANILINE	1000 U	870 U	950 U	1200 U	910 U	940 U
2-NITROPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	430 U	360 U	390 U	480 U	370 U	390 U
2,4-DICHLOROPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2,4-DIMETHYLPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2,4-DINITROPHENOL	1000 U	870 UJ	950 U	140 J	910 UJ	940 U
2,4-DINITROTOLUENE	430 U	360 U	390 U	480 U	370 U	390 U
2,4,5-TRICHLOROPHENOL	1000 U	870 U	950 U	1200 U	910 U	940 U
2,4,6-TRICHLOROPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
2,6-DINITROTOLUENE	430 U	360 U	390 U	480 U	370 U	390 U
3-NITROANILINE	1000 U	870 U	950 U	1200 U	910 U	940 U
3,3'-DICHLOROBENZIDINE	430 U	360 U	390 U	480 U	370 U	390 U
4-BROMOPHENYL PHENYL ETHER	430 U	360 U	390 U	480 U	370 U	390 U
4-CHLORO-3-METHYLPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
4-CHLOROANILINE	430 U	360 U	390 U	480 U	370 U	390 U
4-CHLOROPHENYL PHENYL ETHER	430 U	360 U	390 U	480 U	370 U	390 U
4-METHYLPHENOL	430 U	360 U	390 U	480 U	370 U	390 U
4-NITROANILINE	1000 U	870 U	950 U	1200 U	910 U	940 U
4-NITROPHENOL	1000 U	870 U	950 U	1200 U	910 U	940 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	870 U	950 U	1200 UJ	910 U	940 U
ACENAPHTHENE	430 U	360 U	390 U	480 U	370 U	390 U
ACENAPHTHYLENE	430 U	360 U	390 U	480 U	370 U	390 U
ANTHRACENE	430 U	360 U	390 U	480 U	370 U	390 U
BENZO(A)ANTHRACENE	430 U	360 U	390 U	480 U	370 U	390 U
BENZO(A)PYRENE	430 U	360 U	390 U	480 U	370 U	390 U
BENZO(B)FLUORANTHENE	430 U	360 U	390 U	480 U	370 U	390 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-01	73-AC4-SB13-01	73-AC4-SB14-01	73-AC5-MW21-03	73-AC5-SB08-01	73-AC5-SB10-03
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/04/95	04/09/95	04/09/95	04/05/95	04/09/95	04/18/95
SEMIVOLATILES (ug/kg) (cont)						
BENZO(G,H,I)PERYLENE	430 U	360 U	390 U	480 U	370 U	390 U
BENZO(K)FLUORANTHENE	430 U	360 U	390 U	480 U	370 U	390 U
BIS(2-CHLOROETHOXY)METHANE	430 U	360 U	390 U	480 U	370 U	390 U
BIS(2-CHLOROETHYL) ETHER	430 U	360 U	390 U	480 U	370 U	390 U
BIS(2-ETHYLHEXYL)PHTHALATE	63 J	67 J	80 J	480 U	130 J	390 U
BUTYL BENZYL PHTHALATE	430 U	360 U	390 U	480 U	370 U	390 U
CARBAZOLE	430 U	360 U	390 U	480 U	370 U	390 U
CHRYSENE	430 U	360 U	390 U	480 U	370 U	390 U
DIBENZOFURAN	430 U	360 U	390 U	480 U	370 U	390 U
DIBENZ(A,H)ANTHRACENE	430 U	360 U	390 U	480 U	370 U	390 U
DIETHYL PHTHALATE	430 U	360 U	390 U	480 U	370 U	390 U
DIMETHYL PHTHALATE	430 U	360 U	390 U	480 U	370 U	390 U
DI-N-BUTYL PHTHALATE	600 U	160 J	350 J	490 U	190 J	390 U
DI-N-OCTYL PHTHALATE	430 U	360 U	390 U	480 U	370 U	390 U
FLUORANTHENE	430 U	360 U	390 U	480 U	370 U	390 U
FLUORENE	430 U	360 U	390 U	480 U	370 U	390 U
HEXACHLOROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
HEXACHLOROBUTADIENE	430 U	360 U	390 U	480 U	370 U	390 U
HEXACHLOROCYCLOPENTADIENE	430 U	360 U	390 U	480 U	370 U	390 U
HEXACHLOROETHANE	430 U	360 U	390 U	480 U	370 U	390 U
INDENO(1,2,3-CD)PYRENE	430 U	360 U	390 U	480 U	370 U	390 U
ISOPHORONE	430 U	360 U	390 U	480 U	370 U	390 U
NAPHTHALENE	430 U	360 U	390 U	480 U	370 U	390 U
NITROBENZENE	430 U	360 U	390 U	480 U	370 U	390 U
N-NITROSO-DI-N-PROPYLAMINE	430 U	360 U	390 U	480 U	370 U	390 U
N-NITROSODIPHENYLAMINE	430 U	360 U	390 U	480 U	370 U	390 U
PENTACHLOROPHENOL	1000 U	870 U	950 U	1200 U	910 U	940 U
PHENANTHRENE	430 U	360 U	390 U	480 U	370 U	390 U
PHENOL	430 U	360 U	390 U	480 U	370 U	390 U
PYRENE	430 U	360 U	390 U	480 U	370 U	390 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB11-02	73-AC5-SB12-01	73-AC6-SB07-01	73-BB-DW01-01
METHOD	8270	8270	8270	8270
DATE SAMPLED	04/09/95	04/09/95	04/22/95	04/08/95
SEMIVOLATILES (ug/kg)				
1,2-DICHLOROBENZENE	390 U	410 U	7100 U	410 U
1,2,4-TRICHLOROBENZENE	390 U	410 U	7100 U	410 U
1,3-DICHLOROBENZENE	390 U	410 U	7100 U	410 U
1,4-DICHLOROBENZENE	390 U	410 U	7100 U	410 U
2-CHLORONAPHTHALENE	390 U	410 U	7100 U	410 U
2-CHLOROPHENOL	390 U	410 U	7100 U	410 U
2-METHYLNAPHTHALENE	390 U	410 U	7100 U	410 U
2-METHYLPHENOL	390 U	410 U	7100 U	410 U
2-NITROANILINE	950 U	990 U	17000 U	1000 U
2-NITROPHENOL	390 U	410 U	7100 U	410 U
2,2'-OXYBIS(1-CHLOROPROPANE)	390 U	410 U	7100 U	410 U
2,4-DICHLOROPHENOL	390 U	410 U	7100 U	410 U
2,4-DIMETHYLPHENOL	390 U	410 U	7100 U	410 U
2,4-DINITROPHENOL	950 U	990 UJ	17000 U	1000 U
2,4-DINITROTOLUENE	390 U	410 U	7100 U	410 U
2,4,5-TRICHLOROPHENOL	950 U	990 U	17000 U	1000 U
2,4,6-TRICHLOROPHENOL	390 U	410 U	7100 U	410 U
2,6-DINITROTOLUENE	390 U	410 U	7100 U	410 U
3-NITROANILINE	950 U	990 U	17000 U	1000 U
3,3'-DICHLOROBENZIDINE	390 U	410 U	7100 U	410 U
4-BROMOPHENYL PHENYL ETHER	390 U	410 U	7100 U	410 U
4-CHLORO-3-METHYLPHENOL	390 U	410 U	7100 U	410 U
4-CHLOROANILINE	390 U	410 U	7100 U	410 U
4-CHLOROPHENYL PHENYL ETHER	390 U	410 U	7100 U	410 U
4-METHYLPHENOL	390 U	410 U	7100 U	410 U
4-NITROANILINE	950 U	990 U	17000 U	1000 U
4-NITROPHENOL	950 U	990 U	17000 U	1000 U
4,6-DINITRO-2-METHYLPHENOL	950 U	990 U	17000 U	1000 U
ACENAPHTHENE	390 U	410 U	7100 U	410 U
ACENAPHTHYLENE	390 U	410 U	7100 U	410 U
ANTHRACENE	390 U	410 U	7100 U	410 U
BENZO(A)ANTHRACENE	390 U	410 U	7100 U	410 U
BENZO(A)PYRENE	390 U	410 U	7100 U	410 U
BENZO(B)FLUORANTHENE	390 U	410 U	7100 U	410 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB11-02	73-AC5-SB12-01	73-AC6-SB07-01	73-BB-DW01-01
METHOD	8270	8270	8270	8270
DATE SAMPLED	04/09/95	04/09/95	04/22/95	04/08/95
SEMIVOLATILES (ug/kg) (cont)				
BENZO(G,H,I)PERYLENE	390 U	410 U	7100 U	410 U
BENZO(K)FLUORANTHENE	390 U	410 U	7100 U	410 U
BIS(2-CHLOROETHOXY)METHANE	390 U	410 U	7100 U	410 U
BIS(2-CHLOROETHYL) ETHER	390 U	410 U	7100 U	410 U
BIS(2-ETHYLHEXYL)PHTHALATE	97 J	410 U	7100 U	62 J
BUTYL BENZYL PHTHALATE	390 U	410 U	7100 U	410 U
CARBAZOLE	390 U	410 U	7100 U	410 U
CHRYSENE	390 U	410 U	7100 U	410 U
DIBENZOFURAN	390 U	410 U	7100 U	410 U
DIBENZ(A,H)ANTHRACENE	390 U	410 U	7100 U	410 U
DIETHYL PHTHALATE	390 U	410 U	7100 U	410 U
DIMETHYL PHTHALATE	390 U	410 U	7100 U	410 U
DI-N-BUTYL PHTHALATE	160 J	110 J	7100 U	210 J
DI-N-OCTYL PHTHALATE	390 U	410 U	7100 U	410 U
FLUORANTHENE	390 U	410 U	7100 U	410 U
FLUORENE	390 U	410 U	7100 U	410 U
HEXACHLOROBENZENE	390 U	410 U	7100 U	410 U
HEXACHLOROBUTADIENE	390 U	410 U	7100 U	410 U
HEXACHLOROCYCLOPENTADIENE	390 U	410 U	7100 U	410 U
HEXACHLOROETHANE	390 U	410 U	7100 U	410 U
INDENO(1,2,3-CD)PYRENE	390 U	410 U	7100 U	410 U
ISOPHORONE	390 U	410 U	7100 U	410 U
NAPHTHALENE	390 U	410 U	7100 U	410 U
NITROBENZENE	390 U	410 U	7100 U	410 U
N-NITROSO-DI-N-PROPYLAMINE	390 U	410 U	7100 U	410 U
N-NITROSODIPHENYLAMINE	390 U	410 U	7100 U	410 U
PENTACHLOROPHENOL	950 U	990 U	17000 U	1000 U
PHENANTHRENE	390 U	410 U	7100 U	410 U
PHENOL	390 U	410 U	7100 U	410 U
PYRENE	390 U	410 U	7100 U	410 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
1,2-DICHLOROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
1,2,4-TRICHLOROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
1,3-DICHLOROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
1,4-DICHLOROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
2-CHLORONAPHTHALENE	340 U	110000 U	ND	ND		0/27	NA	NA
2-CHLOROPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2-METHYLNAPHTHALENE	340 U	110000 U	250 J	9400	73-AC3-SB01-01	2/27	4825.00	4825.00
2-METHYLPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2-NITROANILINE	830 U	260000 U	ND	ND		0/27	NA	NA
2-NITROPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	340 U	110000 U	ND	ND		0/27	NA	NA
2,4-DICHLOROPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2,4-DIMETHYLPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2,4-DINITROPHENOL	830 U	260000 UJ	140 J	180 J	73-AC3-MW23-01	2/26	160.00	160.00
2,4-DINITROTOLUENE	340 U	110000 U	ND	ND		0/27	NA	NA
2,4,5-TRICHLOROPHENOL	830 U	260000 U	ND	ND		0/27	NA	NA
2,4,6-TRICHLOROPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
2,6-DINITROTOLUENE	340 U	110000 U	ND	ND		0/27	NA	NA
3-NITROANILINE	830 U	260000 U	ND	ND		0/27	NA	NA
3,3'-DICHLOROBENZIDINE	340 U	110000 U	ND	ND		0/27	NA	NA
4-BROMOPHENYL PHENYL ETHER	340 U	110000 U	ND	ND		0/27	NA	NA
4-CHLORO-3-METHYLPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
4-CHLOROANILINE	340 U	110000 U	ND	ND		0/27	NA	NA
4-CHLOROPHENYL PHENYL ETHER	340 U	110000 U	ND	ND		0/27	NA	NA
4-METHYLPHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
4-NITROANILINE	860 U	260000 U	ND	ND		0/24	NA	NA
4-NITROPHENOL	830 U	260000 U	ND	ND		0/26	NA	NA
4,6-DINITRO-2-METHYLPHENOL	830 U	260000 U	ND	ND		0/27	NA	NA
ACENAPHTHENE	340 U	110000 U	51 J	830 J	73-AC3-SB01-01	3/27	457.00	490.00
ACENAPHTHYLENE	340 U	110000 U	ND	ND		0/27	NA	NA
ANTHRACENE	340 U	110000 U	2000 J	2000 J	73-AC1-MW15IW-01	1/27	2000.00	2000.00
BENZO(A)ANTHRACENE	340 U	110000 U	120 J	880 J	73-AC1-MW15IW-01	2/27	500.00	500.00
BENZO(A)PYRENE	340 U	110000 U	140 J	140 J	73-AC1-SB06-01	1/27	140.00	140.00
BENZO(B)FLUORANTHENE	340 U	110000 U	230 J	690 J	73-AC1-MW15IW-01	2/27	460.00	460.00

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
BENZO(G,H,I)PERYLENE	340 U	110000 U	ND	ND		0/27	NA	NA
BENZO(K)FLUORANTHENE	340 U	110000 U	ND	ND		0/27	NA	NA
BIS(2-CHLOROETHOXY)METHANE	340 U	110000 U	ND	ND		0/27	NA	NA
BIS(2-CHLOROETHYL) ETHER	340 U	110000 U	ND	ND		0/27	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	340 U	110000 U	62 J	360 J	73-AC1-MW14-02	11/27	128.09	80.00
BUTYL BENZYL PHTHALATE	340 U	110000 U	ND	ND		0/27	NA	NA
CARBAZOLE	340 U	110000 U	ND	ND		0/27	NA	NA
CHRYSENE	340 U	110000 U	120 J	930 J	73-AC1-MW15IW-01	2/27	525.00	525.00
DIBENZOFURAN	340 U	110000 U	ND	ND		0/27	NA	NA
DIBENZ(A,H)ANTHRACENE	340 U	110000 U	ND	ND		0/27	NA	NA
DIETHYL PHTHALATE	340 U	110000 U	ND	ND		0/27	NA	NA
DIMETHYL PHTHALATE	340 U	110000 U	ND	ND		0/27	NA	NA
DI-N-BUTYL PHTHALATE	340 U	110000 U	110 J	430	73-AC3-MW02-01	10/27	260.00	205.00
DI-N-OCTYL PHTHALATE	340 U	110000 U	ND	ND		0/27	NA	NA
FLUORANTHENE	340 U	110000 U	44 J	4000	73-AC1-MW15IW-01	3/27	1421.33	220.00
FLUORENE	340 U	110000 U	100 J	1200 J	73-AC3-SB01-01	2/27	650.00	650.00
HEXACHLOROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
HEXACHLOROBUTADIENE	340 U	110000 U	ND	ND		0/27	NA	NA
HEXACHLOROCYCLOPENTADIENE	340 U	110000 U	ND	ND		0/27	NA	NA
HEXACHLOROETHANE	340 U	110000 U	ND	ND		0/27	NA	NA
INDENO(1,2,3-CD)PYRENE	340 U	110000 U	ND	ND		0/27	NA	NA
ISOPHORONE	340 U	110000 U	ND	ND		0/27	NA	NA
NAPHTHALENE	340 U	110000 U	ND	ND		0/27	NA	NA
NITROBENZENE	340 U	110000 U	ND	ND		0/27	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	340 U	110000 U	ND	ND		0/27	NA	NA
N-NITROSODIPHENYLAMINE	340 U	110000 U	ND	ND		0/27	NA	NA
PENTACHLOROPHENOL	830 U	260000 U	ND	ND		0/27	NA	NA
PHENANTHRENE	340 U	110000 U	140 J	1600 J	73-AC3-SB01-01	3/27	643.33	190.00
PHENOL	340 U	110000 U	ND	ND		0/27	NA	NA
PYRENE	340 U	110000 U	100 J	3100 J	73-AC1-MW15IW-01	3/27	1136.67	210.00

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW12-01	73-AC1-MW14-02	73-AC1-MW15-01	73-AC1-MW15IW-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/22/95	04/19/95	04/21/95	04/19/95	04/19/95	04/19/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	3.7 U	3.7 U	3.8 U	41	210	22
4,4'-DDE	3.7 U	3.7 U	3.8 U	4.8 NJ	50	5.3 NJ
4,4'-DDT	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
ALDRIN	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
ALPHA-BHC	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
ALPHA-CHLORDANE	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
AROCLOR-1016	37 U	37 U	38 U	37 U	37 U	38 U
AROCLOR-1221	74 U	75 U	77 U	74 U	75 U	77 U
AROCLOR-1232	37 U	37 U	38 U	37 U	37 U	38 U
AROCLOR-1242	37 U	37 U	38 U	37 U	37 U	38 U
AROCLOR-1248	37 U	37 U	38 U	37 U	37 U	38 U
AROCLOR-1254	37 U	37 U	38 U	35 J	37 U	38 U
AROCLOR-1260	37 U	37 U	38 U	37 U	37 U	38 U
BETA-BHC	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
DELTA-BHC	1.9 UJ	1.9 UJ	2 U	1.9 UJ	1.9 UJ	1.9 UJ
DIELDRIN	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
ENDOSULFAN I	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
ENDOSULFAN II	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
ENDOSULFAN SULFATE	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
ENDRIN	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
ENDRIN ALDEHYDE	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.9
ENDRIN KETONE	3.7 U	3.7 U	3.8 U	3.7 U	3.7 U	3.8 U
GAMMA-BHC (LINDANE)	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
GAMMA-CHLORDANE	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
HEPTACHLOR	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
HEPTACHLOR EPOXIDE	1.9 U	1.9 U	2 U	1.9 U	1.9 U	1.9 U
METHOXYCHLOR	19 U	19 U	20 UJ	19 U	19 U	19 U
TOXAPHENE	190 U	190 U	200 U	190 U	190 U	190 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-01	73-AC1-SB03-00	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC2-MW05-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/19/95	04/19/95	04/22/95	04/22/95	04/22/95	04/07/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	9100	3.6 U	6.5 J	18	3.7 U	3.5 U
4,4'-DDE	76 U	3.6 U	3.7 UJ	3.6 U	3.7 U	3.5 U
4,4'-DDT	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ALDRIN	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
ALPHA-BHC	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
ALPHA-CHLORDANE	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
AROCLOR-1016	760 U	36 U	37 U	36 U	37 U	35 U
AROCLOR-1221	1500 U	73 U	75 U	74 U	75 U	72 U
AROCLOR-1232	760 U	36 U	37 U	36 U	37 U	35 U
AROCLOR-1242	760 U	36 U	37 U	36 U	37 U	35 U
AROCLOR-1248	760 U	36 U	37 U	36 U	37 U	35 U
AROCLOR-1254	760 U	36 U	37 U	36 U	37 U	35 U
AROCLOR-1260	760 U	36 U	37 U	36 U	37 U	35 U
BETA-BHC	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
DELTA-BHC	39 U	1.9 UJ	1.9 U	1.9 U	1.9 UJ	1.8 U
DIELDRIN	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ENDOSULFAN I	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
ENDOSULFAN II	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ENDOSULFAN SULFATE	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ENDRIN	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ENDRIN ALDEHYDE	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
ENDRIN KETONE	76 U	3.6 U	3.7 U	3.6 U	3.7 U	3.5 U
GAMMA-BHC (LINDANE)	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
GAMMA-CHLORDANE	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
HEPTACHLOR	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
HEPTACHLOR EPOXIDE	39 U	1.9 U	1.9 U	1.9 U	1.9 U	1.8 U
METHOXYCHLOR	390 UJ	19 U	19 U	19 U	19 UJ	18 U
TOXAPHENE	3900 U	190 U	190 U	190 U	190 U	180 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW06-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01	73-AC4-MW19-02
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/06/95	04/07/95	04/07/95	04/06/95	04/18/95	04/05/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	0.1 UJ	3.8 U	170	0.1 UJ	28	4 U
4,4'-DDE	0.1 UJ	3.8 U	9.3 J	0.1 UJ	4.2 U	4 U
4,4'-DDT	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ALDRIN	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
ALPHA-BHC	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
ALPHA-CHLORDANE	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
AROCLOR-1016	1 UJ	38 U	37 U	1 UJ	42 U	40 U
AROCLOR-1221	2 UJ	77 U	75 U	2 UJ	86 U	80 U
AROCLOR-1232	1 UJ	38 U	37 U	1 UJ	42 U	40 U
AROCLOR-1242	1 UJ	38 U	37 U	1 UJ	42 U	40 U
AROCLOR-1248	1 UJ	38 U	37 U	1 UJ	42 U	40 U
AROCLOR-1254	1 UJ	38 U	37 U	1 UJ	42 U	40 U
AROCLOR-1260	1 UJ	38 U	37 U	1 UJ	42 U	40 U
BETA-BHC	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
DELTA-BHC	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
DIELDRIN	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ENDOSULFAN I	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
ENDOSULFAN II	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ENDOSULFAN SULFATE	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ENDRIN	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ENDRIN ALDEHYDE	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
ENDRIN KETONE	0.1 UJ	3.8 U	3.7 U	0.1 UJ	4.2 U	4 U
GAMMA-BHC (LINDANE)	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
GAMMA-CHLORDANE	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
HEPTACHLOR	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
HEPTACHLOR EPOXIDE	0.05 UJ	2 U	1.9 U	0.05 UJ	2.2 U	2 U
METHOXYCHLOR	0.5 UJ	20 U	19 U	0.5 UJ	22 U	20 U
TOXAPHENE	5 UJ	200 U	190 U	5 UJ	220 U	200 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW24-01	73-AC4-SB13-01	73-AC4-SB14-01	73-AC5-SB08-01	73-AC5-SB10-03	73-AC5-SB11-02
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/04/95	04/09/95	04/09/95	04/09/95	04/18/95	04/09/95
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
4,4'-DDE	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
4,4'-DDT	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ALDRIN	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
ALPHA-BHC	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
ALPHA-CHLORDANE	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
AROCLOR-1016	43 U	36 U	39 U	37 U	39 U	40 U
AROCLOR-1221	86 U	73 U	80 U	76 U	80 U	81 U
AROCLOR-1232	43 U	36 U	39 U	37 U	39 U	40 U
AROCLOR-1242	43 U	36 U	39 U	37 U	39 U	40 U
AROCLOR-1248	43 U	36 U	39 U	37 U	39 U	40 U
AROCLOR-1254	43 U	36 U	39 U	37 U	39 U	40 U
AROCLOR-1260	43 U	36 U	39 U	37 U	39 U	40 U
BETA-BHC	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
DELTA-BHC	2.2 U	1.9 U	2 U	1.9 U	2 UJ	2 U
DIELDRIN	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ENDOSULFAN I	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
ENDOSULFAN II	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ENDOSULFAN SULFATE	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ENDRIN	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ENDRIN ALDEHYDE	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
ENDRIN KETONE	4.3 U	3.6 U	3.9 U	3.7 U	3.9 U	4 U
GAMMA-BHC (LINDANE)	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
GAMMA-CHLORDANE	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
HEPTACHLOR EPOXIDE	2.2 U	1.9 U	2 U	1.9 U	2 U	2 U
METHOXYCHLOR	22 U	19 U	20 U	19 U	20 U	20 U
TOXAPHENE	220 U	190 U	200 U	190 U	200 U	200 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB12-01	73-AC6-SB07-01	73-BB-DW01-01
METHOD	8080	8080	8080
DATE SAMPLED	04/09/95	04/22/95	04/08/95
PESTICIDE/PCBS (ug/kg)			
4,4'-DDD	4 U	540 J	4.1 U
4,4'-DDE	4 U	14 NJ	4.1 U
4,4'-DDT	4 U	17 J	4.1 U
ALDRIN	2 U	1.8 UJ	2.1 U
ALPHA-BHC	2 U	1.8 UJ	2.1 U
ALPHA-CHLORDANE	2 U	2.4 J	2.1 U
AROCLOR-1016	40 U	35 UJ	41 U
AROCLOR-1221	81 U	71 UJ	84 U
AROCLOR-1232	40 U	35 UJ	41 U
AROCLOR-1242	40 U	35 UJ	41 U
AROCLOR-1248	40 U	35 UJ	41 U
AROCLOR-1254	40 U	56 NJ	41 U
AROCLOR-1260	40 U	35 UJ	41 U
BETA-BHC	2 U	1.8 UJ	2.1 U
DELTA-BHC	2 U	1.8 UJ	2.1 U
DIELDRIN	4 U	6.6 J	4.1 U
ENDOSULFAN I	2 U	4.1 J	2.1 U
ENDOSULFAN II	4 U	3.5 UJ	4.1 U
ENDOSULFAN SULFATE	4 U	3.5 UJ	4.1 U
ENDRIN	4 U	3.5 UJ	4.1 U
ENDRIN ALDEHYDE	4 U	3.5 UJ	4.1 U
ENDRIN KETONE	4 U	3.5 UJ	4.1 U
GAMMA-BHC (LINDANE)	2 U	1.8 UJ	2.1 U
GAMMA-CHLORDANE	2 U	1.8 UJ	2.1 U
HEPTACHLOR	2 U	1.8 UJ	2.1 U
HEPTACHLOR EPOXIDE	2 U	1.8 UJ	2.1 U
METHOXYCHLOR	20 U	18 UJ	21 U
TOXAPHENE	200 U	180 UJ	210 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
4,4'-DDD	0.1 UJ	4.3 U	6.5 J	9100	73-AC1-MW28-01	9/27	1126.17	41.00
4,4'-DDE	0.1 UJ	76 U	4.8 NJ	50	73-AC1-MW15-01	5/27	16.68	9.30
4,4'-DDT	0.1 UJ	76 U	17 J	17 J	73-AC6-SB07-01	1/27	17.00	17.00
ALDRIN	0.05 UJ	39 U	ND	ND		0/27	NA	NA
ALPHA-BHC	0.05 UJ	39 U	ND	ND		0/27	NA	NA
ALPHA-CHLORDANE	0.05 UJ	39 U	2.4 J	2.4 J	73-AC6-SB07-01	1/27	2.40	2.40
AROCLOR-1016	1 UJ	760 U	ND	ND		0/27	NA	NA
AROCLOR-1221	2 UJ	1500 U	ND	ND		0/27	NA	NA
AROCLOR-1232	1 UJ	760 U	ND	ND		0/27	NA	NA
AROCLOR-1242	1 UJ	760 U	ND	ND		0/27	NA	NA
AROCLOR-1248	1 UJ	760 U	ND	ND		0/27	NA	NA
AROCLOR-1254	1 UJ	760 U	35 J	56 NJ	73-AC6-SB07-01	2/27	45.50	45.50
AROCLOR-1260	1 UJ	760 U	ND	ND		0/27	NA	NA
BETA-BHC	0.05 UJ	39 U	ND	ND		0/27	NA	NA
DELTA-BHC	0.05 UJ	39 U	ND	ND		0/27	NA	NA
DIELDRIN	0.1 UJ	76 U	6.6 J	6.6 J	73-AC6-SB07-01	1/27	6.60	6.60
ENDOSULFAN I	0.05 UJ	39 U	4.1 J	4.1 J	73-AC6-SB07-01	1/27	4.10	4.10
ENDOSULFAN II	0.1 UJ	76 U	ND	ND		0/27	NA	NA
ENDOSULFAN SULFATE	0.1 UJ	76 U	ND	ND		0/27	NA	NA
ENDRIN	0.1 UJ	76 U	ND	ND		0/27	NA	NA
ENDRIN ALDEHYDE	0.1 UJ	76 U	3.9	3.9	73-AC1-MW15IW-01	1/27	3.90	3.90
ENDRIN KETONE	0.1 UJ	76 U	ND	ND		0/27	NA	NA
GAMMA-BHC (LINDANE)	0.05 UJ	39 U	ND	ND		0/27	NA	NA
GAMMA-CHLORDANE	0.05 UJ	39 U	ND	ND		0/27	NA	NA
HEPTACHLOR	0.05 UJ	39 U	ND	ND		0/27	NA	NA
HEPTACHLOR EPOXIDE	0.05 UJ	39 U	ND	ND		0/27	NA	NA
METHOXYCHLOR	0.5 UJ	390 UJ	ND	ND		0/27	NA	NA
TOXAPHENE	5 UJ	3900 U	ND	ND		0/27	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW10-01	73-AC1-MW12-01	73-AC1-MW14-02	73-AC1-MW15-01	73-AC1-MW15IW-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/22/95	04/19/95	04/21/95	04/19/95	04/19/95	04/19/95
METALS (mg/kg)						
ALUMINUM	2070	1340	2000	1760	1940	1980
ANTIMONY	11.1 U	11.5 U	11.5 U	11 U	11.3 U	11.4 U
ARSENIC	2.2 U	2.3 U	2.3 U	2.2 U	2.3 U	2.3 U
BARIUM	8	3.3	2.8	12.2	23.6	10.1
BERYLLIUM	0.22 U	0.23 U	0.23 U	0.22 U	0.23 U	0.23 U
CADMIUM	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
CALCIUM	1090 J	623 J	227	5220	7650 J	7860
CHROMIUM	4.5	2.3	3.6	7.4	6.9	7.5
COBALT	4.4 U	5.3	4.6 U	4.4 U	4.5 U	4.9
COPPER	2.2 U	2.3 U	2.3 U	2.7	3.2	6
IRON	913	332	854	1800	2530	2960
LEAD	3.3	3	2.7	24.2	18.9	14
MAGNESIUM	63.8	55.9	74.2	133	302	325
MANGANESE	5.5	3	3.9	10.4	11.3	11.4
MERCURY	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
NICKEL	4.4 U	4.6 U	4.6 U	4.4 U	4.5 U	4.6 U
POTASSIUM	221 U	230 U	229 U	221 U	225 U	315
SELENIUM	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
SILVER	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
SODIUM	44.3 U	46 U	45.9 U	44.2	177	234
THALLIUM	2.2 U	2.3 U	2.3 U	2.2 U	2.3 U	2.3 U
VANADIUM	3.2	2.3 U	2.6	3.2	4.1	3.9
ZINC	5.3	3.2	87.7	17.2	18.4	23

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW28-01	73-AC1-SB03-00	73-AC1-SB04-01	73-AC1-SB05-01	73-AC1-SB06-01	73-AC2-MW05-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/19/95	04/19/95	04/22/95	04/22/95	04/22/95	04/07/95
METALS (mg/kg)						
ALUMINUM	1540	10600	2010	2320	3550	1180
ANTIMONY	11.6 U	11.2 U	11.5 UJ	11.3 UJ	11 UJ	10.9 U
ARSENIC	2.3 U	2.2 U	2.3 U	2.3 U	2.2 U	2.2 U
BARIUM	6.2	19.2	6.9	7.2	9.2	2.8
BERYLLIUM	0.23 U	0.22 U	0.23 U	0.23 U	0.22 U	0.22 U
CADMIUM	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
CALCIUM	466 J	1390 J	2110 J	1190 J	4220 J	297 J
CHROMIUM	2.8	11.8	11.3 J	5.2 J	7.6 J	2.2 U
COBALT	5.3	4.5 U	4.6 U	4.5 U	4.4 U	4.4 U
COPPER	2.3 U	2.7	2.3 U	2.3 U	2.7	2.2 U
IRON	861	5800	1140 J	1830 J	4620 J	692 J
LEAD	3.7	6.2	3.7 J	8.7 J	7.3 J	3.4
MAGNESIUM	54.4	286	91.6	173	334	38.4
MANGANESE	3.5	9.4	5.9 J	7.7 J	20 J	2.6
MERCURY	0.12 U	0.11 U	0.11 U	0.11 U	0.11 U	0.11 U
NICKEL	4.7 U	4.5 U	4.6 U	4.5 U	4.4 U	4.4 U
POTASSIUM	233 U	380	230 U	227 U	247	218 U
SELENIUM	1.2 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U
SILVER	1.2 U	1.1 U	1.1 UJ	1.1 UJ	1.1 UJ	1.1 U
SODIUM	46.6 U	66.4	46 U	109	62.9	43.6 U
THALLIUM	2.3 U	2.2 U	2.3 U	2.3 U	2.2 U	2.2 U
VANADIUM	3.7	14.8	2.6	4.4	7	2.2 U
ZINC	6.7	6.4	4.3 J	8.8 J	15 J	5.4

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW06-01	73-AC2-MW07-03	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-SB01-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/06/95	04/06/95	04/07/95	07/07/95	04/06/95	04/18/95
METALS (mg/kg)						
ALUMINUM	578	4310	3630	1160	141	1450
ANTIMONY	10.4 U	10.9 U	11.6 U	11.3 U	12.7 U	12.8 U
ARSENIC	2.1 U	2.2 U	2.3 U	2.3 U	2.5 U	2.6 U
BARIUM	14.1	6.8	5.4	6.3	4.2	11.2
BERYLLIUM	0.21 U	0.22 U	0.23 U	0.23 U	0.25 U	0.26 U
CADMIUM	1.3	1.1 U	1.2 U	1.1 U	1.3 U	1.3 U
CALCIUM	36300	283	1430 J	4180 J	77.5	2060
CHROMIUM	9.9	5.3	3	4.3	2.5 U	2.6 U
COBALT	6.4 U	6.7 U	4.6 U	4.5 U	5.1 U	5.1 U
COPPER	9.5	2.2 U	2.3 U	2.3 U	2.5 U	2.6 U
IRON	1150	921	1240 J	796 J	200	690
LEAD	71.8	1.9	3.8	17.6	0.91	5.8
MAGNESIUM	457	191	78.8	77.3	16.6	40.7
MANGANESE	6.3	5.1	5.1	4.3	8	7.8
MERCURY	0.1 U	0.11 U	0.12 U	0.11 U	0.13 U	0.13 U
NICKEL	4.2 U	4.4 U	4.6 U	4.5 U	5.1 U	5.1 U
POTASSIUM	208 U	218 U	232 U	227 U	254 U	255 U
SELENIUM	1 U	1.1 U	1.2 U	1.1 U	1.3 U	1.3 U
SILVER	1 U	1.1 U	1.2 U	1.1 U	1.3 U	1.3 U
SODIUM	68.6	45.3	46.4 U	45.3 U	50.9 U	51 U
THALLIUM	2.1 U	2.2 U	2.3 U	2.3 U	2.5 U	2.6 U
VANADIUM	2.1 U	3.7	3.2	2.3 U	2.5 U	2.6 U
ZINC	40	8.6 U	5.9	19.4	6.8 U	16

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW19-02	73-AC4-MW24-01	73-AC4-SB13-01	73-AC4-SB14-01	73-AC5-MW21-03	73-AC5-SB08-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/05/95	04/04/95	04/09/95	04/09/95	04/05/95	04/09/95
METALS (mg/kg)						
ALUMINUM	2020	3390	2320	2790	17200	2420
ANTIMONY	12.4 U	12.9 U	11 U	11.9 U	14.7 U	11.4 U
ARSENIC	2.5 U	2.6 U	2.2 U	2.4 U	2.9 U	2.3 U
BARIUM	4.5	3.1	9	4.3	26.3	4.6 U
BERYLLIUM	0.25 U	0.26 U	0.22 U	0.24 U	0.29 U	0.23 U
CADMIUM	1.2 U	1.3 U	1.1 UJ	1.2 UJ	1.5 U	1.1 UJ
CALCIUM	196	61.8	21400	72.6	207	61.8
CHROMIUM	3.6	6.2	8.4	3.5	28.7	2.3 U
COBALT	5 U	5.2 U	4.4 UJ	4.8 UJ	5.9 U	4.5 UJ
COPPER	2.5 U	2.6 U	2.2 U	2.4 U	2.9 U	2.3 U
IRON	966	277	1890	1820	9620	984
LEAD	2.3	2.7	13.6	2.1	8.2	1.5
MAGNESIUM	84.2	43.6	421	25.1	1090	25.3
MANGANESE	3.5	6	10.1	0.65	13.4	1.6
MERCURY	0.12 U	0.13 U	0.11 U	0.12 U	0.15 U	0.11 U
NICKEL	5 U	5.2 U	4.4 U	4.8 U	5.9 U	4.5 U
POTASSIUM	248 U	259 U	219 U	239 U	992	227 U
SELENIUM	1.2 U	1.3 U	1.1 U	1.2 U	1.5 U	1.1 U
SILVER	1.2 U	1.3 U	1.1 U	1.2 U	1.5 U	1.1 U
SODIUM	49.6 U	51.7 U	59.9	47.8 U	73.5	45.4 U
THALLIUM	2.5 U	2.6 U	2.2 U	2.4 U	2.9 U	2.3 U
VANADIUM	3.5	2.7	3.7	3.6	30.1	2.3 U
ZINC	7.1 U	3.7 U	7.6 J	1.4 J	11.9 U	2.2 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-SB10-03	73-AC5-SB11-02	73-AC5-SB12-01	73-AC6-SB07-01	73-BB-DW01-01
METHOD	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	04/18/95	04/09/95	04/09/95	04/22/95	04/08/95
METALS (mg/kg)					
ALUMINUM	1140	1710	2120	1800	1360
ANTIMONY	12.1 U	11.9 U	12.1 U	11.1 UJ	12.5 U
ARSENIC	2.4 U	2.4 U	2.4 U	2.2 U	2.5 U
BARIUM	5.6	18.7	2	24.2	3.6
BERYLLIUM	0.24 U	0.24 U	0.24 U	0.22 U	0.25 U
CADMIUM	1.2 U	1.2 UJ	1.2 UJ	1.6	1.2 UJ
CALCIUM	751 J	1840	104	35800 J	113
CHROMIUM	3.7	3.4	2.4 U	8.9 J	2.5 U
COBALT	4.8 U	4.7 UJ	4.8 UJ	4.4 U	5 UJ
COPPER	2.4 U	2.4 U	2.4 U	4.1	2.5 U
IRON	1020	1410	595	1340 J	703
LEAD	4.5	5	1.3	30.4 J	1.5
MAGNESIUM	99.1	134	29.5	541	35
MANGANESE	5.8	4.9	0.65	16.1 J	1.8
MERCURY	0.12 U	0.12 U	0.12 U	0.11 U	0.12 U
NICKEL	4.8 U	4.7 U	4.8 U	4.4 U	5 U
POTASSIUM	242 U	237 U	242 U	222 U	249 U
SELENIUM	1.2 U	1.2 U	1.2 U	1.1 U	1.2 U
SILVER	1.2 U	1.2 U	1.2 U	1.1 UJ	1.2 U
SODIUM	50	48.6	48.5 U	114	49.8 U
THALLIUM	2.4 U	2.4 U	2.4 U	2.2 U	2.5 U
VANADIUM	2.5	2.5	2.4 U	2.7	2.5 U
ZINC	12.1	5.4 J	3.3 J	28.3 J	3.8 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	NA	NA	141	17200	73-AC5-MW21-03	29/29	2821.69	2000.00
ANTIMONY	10.4 U	14.7 U	ND	ND		0/29	NA	NA
ARSENIC	2.1 U	2.9 U	ND	ND		0/29	NA	NA
BARIUM	4.6 U	4.6 U	2	26.3	73-AC5-MW21-03	28/29	9.31	6.85
BERYLLIUM	0.21 U	0.29 U	ND	ND		0/29	NA	NA
CADMIUM	1.1 U	1.5 U	1.3	1.6	73-AC6-SB07-01	2/29	1.45	1.45
CALCIUM	NA	NA	61.8	36300	73-AC2-MW06-01	29/29	4733.82	1090.00
CHROMIUM	2.2 U	2.6 U	2.3	28.7	73-AC5-MW21-03	23/29	6.95	5.30
COBALT	4.4 U	6.7 U	4.9	5.3	73-AC1-MW28-01	3/29	5.17	5.30
COPPER	2.2 U	2.9 U	2.7	9.5	73-AC2-MW06-01	7/29	4.41	3.20
IRON	NA	NA	200	9620	73-AC5-MW21-03	29/29	1722.55	1020.00
LEAD	NA	NA	0.91	71.8	73-AC2-MW06-01	29/29	9.45	3.80
MAGNESIUM	NA	NA	16.6	1090	73-AC5-MW21-03	29/29	183.47	84.20
MANGANESE	NA	NA	0.65	20 J	73-AC1-SB06-01	29/29	6.75	5.80
MERCURY	0.1 U	0.15 U	ND	ND		0/29	NA	NA
NICKEL	4.2 U	5.9 U	ND	ND		0/29	NA	NA
POTASSIUM	208 U	259 U	247	992	73-AC5-MW21-03	4/29	483.50	347.50
SELENIUM	1 U	1.5 U	ND	ND		0/29	NA	NA
SILVER	1 U	1.5 U	ND	ND		0/29	NA	NA
SODIUM	43.6 U	51.7 U	44.2	234	73-AC1-MW15IW-01	13/29	88.72	66.40
THALLIUM	2.1 U	2.9 U	ND	ND		0/29	NA	NA
VANADIUM	2.1 U	2.6 U	2.5	30.1	73-AC5-MW21-03	20/29	5.39	3.55
ZINC	3.7 U	11.9 U	1.4 J	87.7	73-AC1-MW12-01	24/29	14.45	7.15

PHASE I GROUNDWATER

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	-AC1-MW11B-01	73-AC1-MW15B-01	73-AC2-MW06B-01	73-BG-MW01B-01	73-DW02-01	73-A47/3-08-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/05/95	05/16/95	05/17/95	05/17/95	05/06/95	05/17/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	1.3 J	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.3 U	0.4	0.7 U	1.4 U	0.9 U	0.7 J
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	3.1 J
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	3.6 J	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	11	1 U	1 U	1 U	1 U	34 J
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	4.4 J
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.7	0.5 U	0.6	0.5 U	0.5 U	0.5 U
BENZENE	2 U	2 U	2 U	2 U	2 U	18 J
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	23 J
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	31	1.2 U	1.4	24 J	1.2 U	1.2 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-A47/3-09-01	73-A47/3-11-01	73-A47/3-13-01	73-A47/3-16-01	73-A47/3-22-01	73-AC1-MW08-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/17/95	05/07/95	05/17/95	05/07/95	05/07/95	05/07/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.5 J	1 U	0.3 U	0.8 U	0.9 U	0.8 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	72 J	1.3	1 U	1 U	1 U	2.1
TRANS-1,2-DICHLOROETHENE	4.5 J	1.7	1 U	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	2.2 J	7.6	2 U	2 U	2 U	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	1.8 J	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW09-01	73-AC1-MW11-01	73-AC1-MW12-01	73-AC1-MW13-01	73-AC1-MW14-01	73-AC1-MW15-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/08/95	05/16/95	05/17/95	05/18/95	04/25/95	05/16/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	1 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	1 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	1 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	1 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	NA	3 U
1,2-DICHLOROETHANE	0.5 U	0.3	0.6 J	0.4	1 U	0.5 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	NA	3 U
TOLUENE	2 U	2 U	2 U	2 U	1 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	1 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	1 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	1 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1.8	NA	1 U
CIS-1,2-DICHLOROETHENE	2	1 U	1.3 J	74	NA	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	3.1	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	NA	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	1 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	1 U	0.5 U
BENZENE	2 U	2 U	2 U	9.4	3	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	1 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	1 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	1 U	5.2 U
VINYL CHLORIDE	11	1.8 U	1.8 U	1.8 U	1.8 J	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	1 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	1 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	1 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	1 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	1 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	1 U	0.2 U
TRICHLOROETHENE	1.2 U	5.2 J	1.2 U	1.2 U	3.1 J	1.2 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	1 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW16-01	73-AC1-MW17-01	73-AC1-MW25-01	73-AC1-MW26-01	73-AC1-MW27-01	73-AC1-MW29-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/07/95	05/17/95	05/08/95	05/07/95	05/18/95	05/18/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.9 U	0.3	0.3 U	0.3 U	0.3 U	0.4
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1.2	2.5
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	5.4	9.3
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	2 U	2 U	2 U	2 U	4.5	4
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	1.2 U	1.2 U	1.2 U	1.2 U	24	1.8
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-01	73-AC2-MW06-01	73-AC2-MW07-01	73-AC2-MW22-01	73-AC3-MW23-01	73-AC4-MW18-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/04/95	05/04/95	04/04/95	05/04/95	05/06/95	05/05/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	1 U	0.8 U	0.9 U	0.9 U	0.8 U	0.9 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.7	0.5 U	0.5 U	0.5 U
BENZENE	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	2.5	2.4	2.2	1.2 U	2.9	1.4
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW19-01	73-AC4-MW24-01	73-AC5-MW20-01	73-AC5-MW21-01	73-BG-MW01-01	73-GW02-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/05/95	05/06/95	05/05/95	05/06/95	05/04/95	05/16/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.7 U	0.9 U	0.9 U	1 U	0.8 U	0.6 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	11	1.5	1.2 U	1.2 U	7.5	1.2 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW03-01	73-GW05-01RS	73-MW08-01	73-MW09-01	73-MW13-01	73-MW16-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/19/95	05/19/95	05/02/95	05/02/95	05/02/95	05/01/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	3.1	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.5 U	0.3 U	0.7 U	0.6	0.6 U	0.8 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	5.5	1 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
BENZENE	2 U	2 U	2 U	2 U	2 U	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-MW18-01	73-AC1-DW02-01	73-AC1-DW03-01	73-AC1-DW04-01	73-AC5-DW05-01	73-BG-DW01-01
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/02/95	05/08/95	05/18/95	05/17/95	05/05/95	05/05/95
VOLATILES (ug/L)						
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U	3 U
1,2-DICHLOROETHANE	0.6	0.3 U	0.7	0.6	1 U	1.1 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U	3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U	2 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	67	1 U	1 U	1 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1.8	1 U	1 U	1 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U	3 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROFORM	0.5 U	1 J	0.5 U	5.5 J	1.6 U	1.3
BENZENE	2 U	2 U	2.4	2 U	2 U	2 U
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U	15 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U	2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
TRICHLOROETHENE	1.2 U	25 J	110	4.3 J	19	3.2
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
ETHYLBENZENE	1 U	2 U	1.3 J	3.1	73-MW13-01	2/48	2.20	2.20
CIS-1,3-DICHLOROPROPENE	1 U	3.4 U	ND	ND		0/48	NA	NA
TRANS-1,3-DICHLOROPROPENE	1 U	3.4 U	ND	ND		0/48	NA	NA
1,4-DICHLOROBENZENE	1 U	2.4 U	ND	ND		0/48	NA	NA
1,2-DIBROMOETHANE	3 U	3 U	ND	ND		0/47	NA	NA
1,2-DICHLOROETHANE	0.3 U	1.4 U	0.3	0.7 J	73-AC1-DW03-01	12/48	0.51	0.55
ISOPROPYL ETHER	3 U	3 U	ND	ND		0/47	NA	NA
TOLUENE	1 U	2 U	3.1 J	3.1 J	73-A47/3-08-01	1/48	3.10	3.10
CHLOROBENZENE	1 U	2 U	ND	ND		0/48	NA	NA
2-CHLOROETHYL VINYL ETHER	1 U	1.3 U	ND	ND		0/48	NA	NA
DIBROMOCHLOROMETHANE	0.9 U	1 U	ND	ND		0/48	NA	NA
TETRACHLOROETHENE	0.3 U	1 U	ND	ND		0/48	NA	NA
XYLENES (TOTAL)	1 U	1 U	1.2	5.5	73-MW13-01	5/47	2.92	2.50
CIS-1,2-DICHLOROETHENE	1 U	1 U	1.3	74	73-AC1-MW13-01	11/47	25.40	9.30
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1.7	4.5 J	73-A47/3-09-01	5/48	3.10	3.10
METHYL TERT-BUTYLETHER	3 U	3 U	ND	ND		0/47	NA	NA
1,3-DICHLOROBENZENE	1 U	3.2 U	ND	ND		0/48	NA	NA
CARBON TETRACHLORIDE	1 U	1.2 U	ND	ND		0/48	NA	NA
CHLOROFORM	0.5 U	1.6 U	0.6	5.5 J	73-AC1-DW04-01	6/48	1.63	0.85
BENZENE	2 U	2 U	2.2 J	18 J	73-A47/3-08-01	8/48	6.39	4.25
1,1,1-TRICHLOROETHANE	0.3 U	1 U	ND	ND		0/48	NA	NA
BROMOMETHANE	1 U	1.2 U	ND	ND		0/48	NA	NA
CHLOROMETHANE	0.8 U	1 U	ND	ND		0/48	NA	NA
CHLOROETHANE	1 U	5.2 U	ND	ND		0/48	NA	NA
VINYL CHLORIDE	1.8 U	1.8 U	1.8 J	23 J	73-A47/3-08-01	3/48	11.93	11.00
METHYLENE CHLORIDE	1 U	15 U	ND	ND		0/48	NA	NA
BROMOFORM	1 U	2 U	ND	ND		0/48	NA	NA
BROMODICHLOROMETHANE	1 U	1 U	ND	ND		0/48	NA	NA
1,1-DICHLOROETHANE	0.7 U	1 U	ND	ND		0/48	NA	NA
1,1-DICHLOROETHENE	1 U	1.3 U	ND	ND		0/48	NA	NA
TRICHLOROFLUOROMETHANE	1 U	2 U	ND	ND		0/48	NA	NA
DICHLORODIFLUOROMETHANE	1 U	1.8 U	ND	ND		0/48	NA	NA
1,2-DICHLOROPROPANE	0.4 U	1 U	ND	ND		0/48	NA	NA
1,1,2-TRICHLOROETHANE	0.2 U	1 U	ND	ND		0/48	NA	NA
TRICHLOROETHENE	1.2 U	1.2 U	1.4	110	73-AC1-DW03-01	21/48	13.58	3.20
1,1,2,2-TETRACHLOROETHANE	0.3 U	1 U	ND	ND		0/48	NA	NA
1,2-DICHLOROBENZENE	1 U	1.5 U	ND	ND		0/48	NA	NA

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01B-01	73-AC3-MW02B-01	73-AC2-MW06B-01	73-AC1-MW11B-01	73-AC1-MW15B-01	73-DW02-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/05/95	05/16/95	05/19/95	05/17/95	05/17/95	05/06/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	1 J	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01B-01	73-AC3-MW02B-01	73-AC2-MW06B-01	73-AC1-MW11B-01	73-AC1-MW15B-01	73-DW02-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/05/95	05/16/95	05/19/95	05/17/95	05/17/95	05/06/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	3 J	2 J
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-A47/3-08-01	73-A47/3-09-01	73-A47/3-11-01	73-A47/3-13-01	73-A47/3-16-01	73-A47/3-22-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/17/95	05/17/95	05/07/95	05/17/95	05/07/95	05/07/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 UJ	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 UJ	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	2 J
BIS(2-CHLOROETHYL) ETHER	10 U	10 UJ	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 UJ	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 UJ	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 UJ	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 UJ	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 UJ	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 UJ	10 U	10 U	10 U	10 U
PYRENE	10 U	10 UJ	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 UJ	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 UJ	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 UJ	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 UJ	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 UJ	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 UJ	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 UJ	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 UJ	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 UJ	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 UJ	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 UJ	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 UJ	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-A47/3-08-01	73-A47/3-09-01	73-A47/3-11-01	73-A47/3-13-01	73-A47/3-16-01	73-A47/3-22-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/17/95	05/17/95	05/07/95	05/17/95	05/07/95	05/07/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 UJ	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 UJ	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 UJ	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 UJ	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 UJ	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 UJ	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 UJ	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 UJ	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 UJ	10 U	10 U	1 J	6 J
PHENANTHRENE	10 U	10 UJ	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 UJ	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 UJ	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 UJ	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 UJ	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 UJ	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 UJ	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 UJ	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 UJ	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 UJ	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW08-01	73-AC1-MW09-01	73-AC1-MW10-01	73-AC1-MW11-01	73-AC1-MW12-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/06/95	05/07/95	05/08/95	05/07/95	05/16/95	05/17/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01	73-AC1-MW08-01	73-AC1-MW09-01	73-AC1-MW10-01	73-AC1-MW11-01	73-AC1-MW12-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/06/95	05/07/95	05/08/95	05/07/95	05/16/95	05/17/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	2 J	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	1 J	10 U	5 J	10 U	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW13-01	73-AC1-MW14-01	73-AC1-MW15-01	73-AC1-MW16-01	73-AC1-MW17-01	73-AC1-MW25-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/18/95	04/25/95	05/16/95	05/07/95	05/17/95	05/08/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW13-01	73-AC1-MW14-01	73-AC1-MW15-01	73-AC1-MW16-01	73-AC1-MW17-01	73-AC1-MW25-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/18/95	04/25/95	05/16/95	05/07/95	05/17/95	05/08/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	4 J	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	3 J	2 J	10 U	6 J
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	1 J	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW26-01	73-AC1-MW27-01	73-AC1-MW28-01	73-AC1-MW29-01	73-AC2-MW05-01	73-AC2-MW06-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/07/95	05/18/95	05/07/95	05/18/95	05/04/95	05/04/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	31 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW26-01	73-AC1-MW27-01	73-AC1-MW28-01	73-AC1-MW29-01	73-AC2-MW05-01	73-AC2-MW06-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/07/95	05/18/95	05/07/95	05/18/95	05/04/95	05/04/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	3 J	10 U	10 U	10 U	10 U	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	6 J	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-01	73-AC2-MW22-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-MW30-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	04/04/95	05/04/95	05/04/95	05/04/95	05/06/95	05/16/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 R	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 R	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 R	10 U	10 U	10 U	10 U	10 U
PHENOL	10 R	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 R	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 R	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 R	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 R	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 R	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 R	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 R	10 U	10 U	10 U	10 U	10 U
PYRENE	10 R	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 R	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 R	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 R	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 R	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 R	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 R	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 R	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 R	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 R	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 R	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 R	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 R	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 R	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 R	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW07-01	73-AC2-MW22-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01	73-AC3-MW30-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	04/04/95	05/04/95	05/04/95	05/04/95	05/06/95	05/16/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 R	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 R	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 R	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 R	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 R	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 R	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 R	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 R	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 R	10 U	10 U	10 U	4 J	10 U
PHENANTHRENE	10 R	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 R	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 R	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 R	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 R	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 R	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 R	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 R	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 R	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 R	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 R	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 R	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW18-01	73-AC4-MW19-01	73-AC4-MW24-01	73-AC5-MW20-01	73-AC5-MW21-01	73-BG-MW01-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/05/95	05/05/95	05/06/95	05/05/95	05/06/95	05/04/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 R
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 R
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 R
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 R
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-MW18-01	73-AC4-MW19-01	73-AC4-MW24-01	73-AC5-MW20-01	73-AC5-MW21-01	73-BG-MW01-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/05/95	05/05/95	05/06/95	05/05/95	05/06/95	05/04/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	1 J	10 U	10 U	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 R
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 R
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW02-01	73-GW03-01	73-GW05-01RS	73-MW08-01	73-MW09-01	73-MW13-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/16/95	05/19/95	05/19/95	05/02/95	05/02/95	05/02/95
SEMIVOLATILES (ug/L)						
4-NITROPHENOL	50 U	50 U	50 R	50 U	50 U	500 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	100 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	100 U
PHENOL	10 U	10 U	10 U	10 U	10 U	100 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	100 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	100 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	50	10 U	2 J	10 U	100 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	100 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	100 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	100 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	100 U
PYRENE	10 U	10 U	10 U	10 U	10 U	100 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	100 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	100 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	100 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	100 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	100 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	100 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	100 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	100 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	100 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	500 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	100 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	500 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	100 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	100 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW02-01	73-GW03-01	73-GW05-01RS	73-MW08-01	73-MW09-01	73-MW13-01
METHOD	625	625	625	625	625	625
DATE SAMPLED	05/16/95	05/19/95	05/19/95	05/02/95	05/02/95	05/02/95
SEMIVOLATILES (cont)						
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	100 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	100 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	100 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	100 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	100 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	100 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	100 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	100 U
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	100 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	100 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	100 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	100 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	100 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	100 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	500 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	100 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	100 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	200 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	500 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	100 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	100 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-MW16-01	73-MW18-01	73-AC1-DW02-01	73-AC1-DW03-01	73-AC1-DW04-01	73-AC5-DW05-01	73-BG-DW01-01
METHOD	625	625	625	625	625	625	625
DATE SAMPLED	05/01/95	05/02/95	05/08/95	05/18/95	05/17/95	05/05/95	05/05/95
SEMIVOLATILES (ug/L)							
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	1 J	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	5 J	10 U	10 U	2 J	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-MW16-01	73-MW18-01	73-AC1-DW02-01	73-AC1-DW03-01	73-AC1-DW04-01	73-AC5-DW05-01	73-BG-DW01-01
METHOD	625	625	625	625	625	625	625
DATE SAMPLED	05/01/95	05/02/95	05/08/95	05/18/95	05/17/95	05/05/95	05/05/95
SEMIVOLATILES (cont)							
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	2 J	10 U	10 U	10 U	10 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U	20 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U	50 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
4-NITROPHENOL	50 U	500 U	ND	ND		0/52	NA	NA
4-BROMOPHENYL PHENYL ETHER	10 U	100 U	ND	ND		0/54	NA	NA
2,4-DIMETHYLPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
1,4-DICHLOROBENZENE	10 U	100 U	ND	ND		0/54	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	100 U	ND	ND		0/54	NA	NA
PHENOL	10 U	100 U	2 J	2 J	73-A47/3-22-01	1/53	2.00	2.00
BIS(2-CHLOROETHYL) ETHER	10 U	100 U	ND	ND		0/54	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	100 U	ND	ND		0/54	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	100 U	1 J	50	73-GW03-01	3/54	17.67	2.00
DI-N-OCTYL PHTHALATE	10 U	100 U	ND	ND		0/54	NA	NA
HEXACHLOROBENZENE	10 U	100 U	ND	ND		0/54	NA	NA
ANTHRACENE	10 U	100 U	ND	ND		0/54	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	100 U	1 J	5 J	73-AC1-DW02-01	3/54	2.67	2.00
2,4-DICHLOROPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
2,4-DINITROTOLUENE	10 U	100 U	ND	ND		0/54	NA	NA
1,2-DIPHENYLHYDRAZINE	10 U	100 U	ND	ND		0/54	NA	NA
PYRENE	10 U	100 U	ND	ND		0/54	NA	NA
DIMETHYL PHTHALATE	10 U	100 U	ND	ND		0/54	NA	NA
BENZO(G,H,I)PERYLENE	10 U	100 U	ND	ND		0/54	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	100 U	ND	ND		0/54	NA	NA
BENZO(B)FLUORANTHENE	10 U	100 U	ND	ND		0/54	NA	NA
FLUORANTHENE	10 U	100 U	ND	ND		0/54	NA	NA
BENZO(K)FLUORANTHENE	10 U	100 U	ND	ND		0/54	NA	NA
ACENAPHTHYLENE	10 U	100 U	ND	ND		0/54	NA	NA
CHRYSENE	10 U	100 U	ND	ND		0/54	NA	NA
BENZO(A)PYRENE	10 U	100 U	ND	ND		0/54	NA	NA
2,4-DINITROPHENOL	50 U	500 U	ND	ND		0/53	NA	NA
DIBENZ(A,H)ANTHRACENE	10 U	100 U	ND	ND		0/54	NA	NA
4,6-DINITRO-2-METHYLPHENOL	50 U	500 U	ND	ND		0/53	NA	NA
1,3-DICHLOROBENZENE	10 U	100 U	ND	ND		0/54	NA	NA
BENZO(A)ANTHRACENE	10 U	100 U	ND	ND		0/54	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
2,6-DINITROTOLUENE	10 U	100 U	ND	ND		0/54	NA	NA

FREQUENCY OF DETECTION
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (cont)								
N-NITROSODIMETHYLAMINE	10 U	100 U	ND	ND		0/54	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	100 U	ND	ND		0/54	NA	NA
HEXACHLOROETHANE	10 U	100 U	ND	ND		0/54	NA	NA
4-CHLOROPHENYL PHENYL ETHER	10 U	100 U	ND	ND		0/54	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	100 U	ND	ND		0/54	NA	NA
ISOPHORONE	10 U	100 U	ND	ND		0/54	NA	NA
ACENAPHTHENE	10 U	100 U	2 J	4 J	73-AC1-MW15-01	2/54	3.00	3.00
DIETHYL PHTHALATE	10 U	100 U	ND	ND		0/54	NA	NA
DI-N-BUTYL PHTHALATE	10 U	100 U	1 J	6 J	73-AC1-MW25-01	11/54	3.09	3.00
PHENANTHRENE	10 U	100 U	ND	ND		0/54	NA	NA
BUTYL BENZYL PHTHALATE	10 U	100 U	ND	ND		0/54	NA	NA
N-NITROSODIPHENYLAMINE	10 U	100 U	ND	ND		0/54	NA	NA
FLUORENE	10 U	100 U	1 J	1 J	73-AC1-MW15-01	1/54	1.00	1.00
HEXACHLOROBUTADIENE	10 U	100 U	ND	ND		0/54	NA	NA
PENTACHLOROPHENOL	50 U	500 U	ND	ND		0/53	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
2-NITROPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
NAPHTHALENE	10 U	100 U	2 J	6 J	73-AC1-MW29-01	3/54	3.67	3.00
2-CHLORONAPHTHALENE	10 U	100 U	ND	ND		0/54	NA	NA
3,3'-DICHLOROBENZIDINE	20 U	200 U	ND	ND		0/54	NA	NA
BENZIDINE	50 U	500 U	ND	ND		0/54	NA	NA
1,2-DICHLOROBENZENE	10 U	100 U	ND	ND		0/54	NA	NA
2-CHLOROPHENOL	10 U	100 U	ND	ND		0/53	NA	NA
NITROBENZENE	10 U	100 U	ND	ND		0/54	NA	NA

FREQUENCY OF DETECTION
DETECTED PESTICIDES/PCBs IN GROUNDWATER
VIA METHOD 8080 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01B-01	73-AC2-MW06B-01	73-AC1-MW11B-01	73-AC1-MW15B-01	73-A47/3-08-01	73-A47/3-09-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/05/95	05/19/95	05/17/95	05/17/95	05/17/95	05/17/95
PESTICIDE/PCBS (ug/L)						
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN SULFATE	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
AROCLOR-1260	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1254	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1221	2 UJ	2 U	2 UJ	2 UJ	2 UJ	2 UJ
AROCLOR-1232	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1248	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1016	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
ALDRIN	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ALPHA-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BETA-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DELTA-BHC	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN II	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ALPHA-CHLORDANE	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-CHLORDANE	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
AROCLOR-1242	1 UJ	1 U	1 UJ	1 UJ	1 UJ	1 UJ
ENDRIN KETONE	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DIELDRIN	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
METHOXYCHLOR	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
4,4'-DDD	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN ALDEHYDE	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
HEPTACHLOR	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
TOXAPHENE	5 UJ	5 U	5 UJ	5 UJ	5 UJ	5 UJ
ENDOSULFAN I	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ

FREQUENCY OF DETECTION
DETECTED PESTICIDES/PCBs IN GROUNDWATER
VIA METHOD 8080 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW11-01	73-AC1-MW12-01	73-AC1-MW13-01	73-AC1-MW14-01	73-AC1-MW15-01	73-AC1-MW29-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/16/95	05/17/95	05/18/95	04/25/95	05/16/95	05/18/95
PESTICIDE/PCBS (ug/L)						
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
AROCLOR-1260	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1254	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1221	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
AROCLOR-1232	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1248	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1016	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ALDRIN	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ALPHA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BETA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DELTA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN II	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
AROCLOR-1242	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ENDRIN KETONE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DIELDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
METHOXYCHLOR	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
4,4'-DDD	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
HEPTACHLOR	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
TOXAPHENE	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
ENDOSULFAN I	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ

FREQUENCY OF DETECTION
DETECTED PESTICIDES/PCBs IN GROUNDWATER
VIA METHOD 8080 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-01	73-AC2-MW06-01	73-AC2-MW07-01	73-AC2-MW22-01	73-AC3-MW23-01	73-AC4-MW18-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/04/95	05/04/95	05/04/95	05/04/95	05/06/95	05/05/95
PESTICIDE/PCBS (ug/L)						
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
AROCLOR-1260	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
AROCLOR-1254	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
AROCLOR-1221	2 UJ	2 UJ	2 U	2 UJ	2 UJ	2 U
AROCLOR-1232	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
AROCLOR-1248	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
AROCLOR-1016	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
ALDRIN	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
ALPHA-BHC	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
BETA-BHC	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
DELTA-BHC	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN II	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDT	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
AROCLOR-1242	1 UJ	1 UJ	1 U	1 UJ	1 UJ	1 U
ENDRIN KETONE	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
DIELDRIN	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
ENDRIN	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
METHOXYCHLOR	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ
4,4'-DDD	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
4,4'-DDE	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 UJ	0.1 U
HEPTACHLOR	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U
TOXAPHENE	5 UJ	5 UJ	5 U	5 UJ	5 UJ	5 U
ENDOSULFAN I	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 UJ	0.05 U

FREQUENCY OF DETECTION
DETECTED PESTICIDES/PCBs IN GROUNDWATER
VIA METHOD 8080 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01-01	73-GW02-01	73-GW03-01	73-GW05-01RS	73-AC1-DW03-01	73-AC1-DW04-01	73-BG-DW01-01
METHOD	8080	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/04/95	05/04/95	05/19/95	05/19/95	05/18/95	05/17/95	05/05/95
PESTICIDE/PCBS (ug/L)							
HEPTACHLOR EPOXIDE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
ENDOSULFAN SULFATE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
AROCLOR-1260	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
AROCLOR-1254	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
AROCLOR-1221	2 U	2 UJ	2 UJ	2 UJ	2 U	2 UJ	2 U
AROCLOR-1232	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
AROCLOR-1248	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
AROCLOR-1016	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
ALDRIN	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
ALPHA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
BETA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
DELTA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
ENDOSULFAN II	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
4,4'-DDT	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
AROCLOR-1242	1 U	1 UJ	1 UJ	1 UJ	1 U	1 UJ	1 U
ENDRIN KETONE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
DIELDRIN	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
ENDRIN	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
METHOXYCHLOR	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 U
4,4'-DDD	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
4,4'-DDE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 U	0.1 UJ	0.1 U
HEPTACHLOR	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U
TOXAPHENE	5 U	5 UJ	5 UJ	5 UJ	5 U	5 UJ	5 U
ENDOSULFAN I	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 U	0.05 UJ	0.05 U

FREQUENCY OF DETECTION
DETECTED PESTICIDES/PCBs IN GROUNDWATER
VIA METHOD 8080 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/L)								
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
AROCLOR-1260	1 UJ	1 UJ	ND	ND		0/25	NA	NA
AROCLOR-1254	1 UJ	1 UJ	ND	ND		0/25	NA	NA
AROCLOR-1221	2 UJ	2 UJ	ND	ND		0/25	NA	NA
AROCLOR-1232	1 UJ	1 UJ	ND	ND		0/25	NA	NA
AROCLOR-1248	1 UJ	1 UJ	ND	ND		0/25	NA	NA
AROCLOR-1016	1 UJ	1 UJ	ND	ND		0/25	NA	NA
ALDRIN	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
ALPHA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
BETA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
DELTA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
ENDOSULFAN II	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
4,4'-DDT	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
AROCLOR-1242	1 UJ	1 UJ	ND	ND		0/25	NA	NA
ENDRIN KETONE	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
DIELDRIN	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
ENDRIN	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
METHOXYCHLOR	0.5 UJ	0.5 UJ	ND	ND		0/25	NA	NA
4,4'-DDD	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
4,4'-DDE	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	ND	ND		0/25	NA	NA
HEPTACHLOR	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA
TOXAPHENE	5 UJ	5 UJ	ND	ND		0/25	NA	NA
ENDOSULFAN I	0.05 UJ	0.05 UJ	ND	ND		0/25	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01B-01	73-AC2-MW06B-01	73-AC3-MW02B-01	73-AC1-MW11B-01	73-AC1-MW15B-01	73-DW02-01	73-A47/3-08-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/05/95	05/19/95	05/16/95	05/17/95	05/17/95	05/06/95	05/17/95
METALS (ug/L)							
ALUMINUM	125	40 U	192	40 U	40 U	67.6 J	344
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	16.6	9.7	23.8	16.5	11.5	6.3	67.8
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	13500	48000	15000	41500	51300	12800	17300
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U	26.8	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	952	766	2010	869	913	984	3400
LEAD	3 U	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	1160	3260 U	1310	2230	1350	687	5970
MANGANESE	31.3	84.8	356	183	13.8	19.1	20.8
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1300	1210	1310	1380	1000 U	1000 U	4640
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	12000	12200	13700	16400	8310	7280	62300
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	11.6	5.1 U	26.4	14.5	46.8	38.9 J	61.9

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-A47/3-09-01	73-A47/3-11-01	73-A47/3-13-01	73-A47/3-16-01	73-A47/3-22-01	73-AC1-MW04-01	73-AC1-MW08-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/17/95	05/07/95	05/17/95	05/07/95	05/07/95	05/06/95	05/07/95
METALS (ug/L)							
ALUMINUM	94.8	497 J	40 U	81.4 J	684 J	602 J	852 J
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	10.2	24.4	102	64.2	116	16.8	24.6
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	5400	7460	114000	34200	41700	25700	19000
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	40.2	26.1	20 U	53.4	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	2040	711	19500	424	38800	831	927
LEAD	3.6	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	2070	7010	11600	18100	11600	1510	2410
MANGANESE	12.5	16.6	310	35.5	148	19.7	29.1
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1220	7380	13300	8450	15400	1000 U	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	16400	74300	134000	69100	149000	2570	11000
THALLIUM	10 U	10 U	10 U	10 U	10.8	10 U	10 U
VANADIUM	10 U	10.7	10 U	10 U	10 U	10 U	10 U
ZINC	39.1	13.7 J	154	14.5 J	67.7 J	48.8 J	17.2 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW09-01	73-AC1-MW10-01	73-AC1-MW11-01	73-AC1-MW12-01	73-AC1-MW13-01	73-AC1-MW14-01	73-AC1-MW15-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/08/95	05/07/95	05/16/95	05/17/95	05/18/95	04/25/95	05/16/95
METALS (ug/L)							
ALUMINUM	29700 J	52.7 J	118	135	225	216	40 U
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	68.8	21.6	13.1	17.6	46.5	60.1	99
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	48900	46800	24900	35700	22600	78500	148000
CHROMIUM	39.7	10 U	10 U	10 U	10 U	10.6	12.2
COBALT	26.5	20 U	20 U	20 U	20 U	25.6 U	34.8
COPPER	14.3	10 U	13.8	10 U	10 U	10 U	10 U
IRON	10700	4950	1390	969	2070	8720	9530
LEAD	14.9	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	2490	2710	1500	1690	2930	4150	25900
MANGANESE	46	54.1	29.1	27.4	24.9	124	248
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	2750	3860	3700	1760	2900	7530	10800
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	3520	13400	6870	5230	40000	30000	101000
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	41.7	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	59.8 J	14.2 J	10.4	43.4	59.5	39.1	20.5 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW16-01	73-AC1-MW17-01	73-AC1-MW25-01	73-AC1-MW26-01	73-AC1-MW27-01	73-AC1-MW28-01	73-AC1-MW29-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/07/95	05/17/95	05/08/95	05/07/95	05/18/95	05/07/95	05/18/95
METALS (ug/L)							
ALUMINUM	130 J	40 U	1210 J	40 U	341	204 J	828
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	37.7	54.8	13.6	12.9	37.7	20.2	38.5
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	81500	112000	20200	74000	39800	43300	25000
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	40.2	20 U	20 U	33.5	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	1270	3480	786	653	778	646	4440
LEAD	3 U	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	2370	5030	1030	1690	2380	1470	2550
MANGANESE	50.2	84.8	10.2	37.7	36.3	21.4	41.8
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	5510	2200	1860	1730	3990	1590	5100
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	6850	10100	7390	2710	15300	3990	44200
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	13.5 J	30	27.6 J	31.3 J	89.6	23.6 J	186

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-01	73-AC2-MW06-01	73-AC2-MW07-01	73-AC2-MW22-01	73-AC3-MW02-01	73-AC3-MW03-01	73-AC3-MW23-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/04/95	05/04/95	04/04/95	05/04/95	05/04/95	05/04/95	05/06/95
METALS (ug/L)							
ALUMINUM	141	120	62.7	119	57.2	258	699 J
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	15.4	63.5	91	14	23	14.8	42.5
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	36900	82000	14900	26900	29600	41600	3310
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U	20 U	33.5
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	1460	5290	171	1600	2710	1130	1460
LEAD	3 U	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	2200	6350	2960	2030	1900	2320	1450
MANGANESE	36.4	121	79.6	54.2	27.4	36.1	10.5
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	1930	1320	1070	1090	1000 U	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	8130	10300	15700	12100	2450	2840	8430
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	12.9	10.3	12.4	9.1	9.3	9.2	21.6 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW30-01	73-AC4-MW18-01	73-AC4-MW19-01	73-AC4-MW24-01	73-AC5-MW20-01	73-AC5-MW21-01	73-BG-MW01-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/16/95	05/05/95	05/05/95	05/06/95	05/05/95	05/06/95	05/04/95
METALS (ug/L)							
ALUMINUM	1050	65	40 U	368 J	63.2	139 J	180
ANTIMONY	55.8	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	31.6	13.8	49.3	31.2	18.6	42.6	21.8
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	4150	15100	54200	2700	5710	3640	4030
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	33.5	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	657	1180	3650	1400	1140	11600	414
LEAD	3 U	3 U	3 U	10.2	3 U	3 U	3 U
MAGNESIUM	1900	629	6720	1160	1050	5900	766
MANGANESE	4.8	8.9	34.9	6.9	6.6	10.8	34.4
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	15700	5450	8500	6850	4850	29100	5220
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	18.4 U	31.7	22.2	17.6 J	17.6	14.4 J	12.7

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW02-01	73-GW03-01	73-GW05-01RS	73-MW08-01	73-MW09-01	73-MW13-01	73-MW16-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/16/95	05/19/95	05/19/95	05/02/95	05/02/95	05/02/95	05/01/95
METALS (ug/L)							
ALUMINUM	98.9	121	49.9	121	104	40 U	40 U
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	20	30.5	13.5	61.8	21.4	42.2	23.4
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	16900	77400	3530	29700	46800	64600	57100
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	1370	1320	1880	5650	643	20500	1180
LEAD	3 U	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	1990	6030	2000	4100	689	3030	1730
MANGANESE	34.7	68.2	5	74	2 U	120	63.8
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	4350	1000 U	1550	1000 U	1880	1660
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	9140	22900	2450	19200	5170	4750	6610
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	43.1	8.6	5.1 U	8.5 U	9.8	26.5 U	25.8 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-MW18-01	73-AC1-DW02-01	73-AC1-DW03-01	73-AC1-DW04-01	73-AC5-DW05-01	73-BG-DW01-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/02/95	05/08/95	05/18/95	05/17/95	05/05/95	05/05/95
METALS (ug/L)						
ALUMINUM	128	808 J	40 U	52.1	305	2240
ANTIMONY	50 U	50 U	50 U	50 U	50 U	457
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	14.3	104	24.6	11.2	15.3	2050
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	52.3
CADMIUM	5 U	5 U	5 U	5 U	5 U	50.7
CALCIUM	29100	115000	99100	51800	34200	30500
CHROMIUM	10 U	10 U	10 U	10 U	10 U	210
COBALT	20 U	20 U	20 U	20 U	20 U	530
COPPER	10 U	10 U	10 U	10 U	10 U	269
IRON	1030	50.1 U	1340	363	74.4	2070
LEAD	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	2140	64.3	2730	1380	619	4190
MANGANESE	16.4	2 U	64.6	30.8	2.2	534
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	520
POTASSIUM	1000 U	9280	1000 U	1080	1650	11300
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	54.2
SODIUM	8720	35800	22600	14500	19800	10600
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	518
ZINC	10.4	11.4 J	68.4	47.2	13.6	541

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (ug/L)								
ALUMINUM	40 U	40 U	49.9	29700 J	73-AC1-MW09-01	44/55	1001.13	140.00
ANTIMONY	50 U	50 U	55.8	457	73-BG-DW01-01	2/55	256.40	256.40
ARSENIC	10 U	10 U	ND	ND		0/55	NA	NA
BARIUM	NA	NA	6.3	2050	73-BG-DW01-01	55/55	71.96	23.80
BERYLLIUM	1 U	1 U	52.3	52.3	73-BG-DW01-01	1/55	52.30	52.30
CADMIUM	5 U	5 U	50.7	50.7	73-BG-DW01-01	1/55	50.70	50.70
CALCIUM	NA	NA	2700	148000	73-AC1-MW15-01	55/55	40518.73	34200.00
CHROMIUM	10 U	10 U	10.6	210	73-BG-DW01-01	4/55	68.13	25.95
COBALT	20 U	25.6 U	26.1	530	73-BG-DW01-01	11/55	79.86	33.50
COPPER	10 U	10 U	13.8	269	73-BG-DW01-01	3/55	99.03	14.30
IRON	50.1 U	50.1 U	74.4	38800	73-A47/3-22-01	54/55	3607.25	1330.00
LEAD	3 U	3 U	3.6	14.9	73-AC1-MW09-01	3/55	9.57	10.20
MAGNESIUM	3260 U	3260 U	64.3	25900	73-AC1-MW15-01	54/55	3572.67	2170.00
MANGANESE	2 U	2 U	2.2	534	73-BG-DW01-01	53/55	67.97	34.90
MERCURY	0.2 U	0.2 U	ND	ND		0/55	NA	NA
NICKEL	20 U	20 U	520	520	73-BG-DW01-01	1/55	520.00	520.00
POTASSIUM	1000 U	1000 U	1070	15400	73-A47/3-22-01	36/55	4139.72	2065.00
SELENIUM	5 U	5 U	ND	ND		0/55	NA	NA
SILVER	5 U	5 U	54.2	54.2	73-BG-DW01-01	1/55	54.20	54.20
SODIUM	NA	NA	2450	149000	73-A47/3-22-01	55/55	21763.27	10600.00
THALLIUM	10 U	10 U	10.8	10.8	73-A47/3-22-01	1/55	10.80	10.80
VANADIUM	10 U	10 U	10.7	518	73-BG-DW01-01	3/55	190.13	41.70
ZINC	5.1 U	26.5 U	8.6	541	73-BG-DW01-01	48/55	44.53	21.90

PHASE II GROUNDWATER

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-A47/3-19-02	73-A47/3-8-02	73-AC1-MW09-02	73-AC1-MW11-02	73-AC1-MW14-02	73-AC1-MW15A-02
METHOD	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	02/24/96	02/24/96	02/23/96	02/23/96	02/24/96	02/27/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	43 J	22	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 UJ
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	44	2 J	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	27	10 U	10 U	3 J	4 J
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	2 J	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	3-AC1-MW26-02	73-AC1-MW27-02	73-AC3-MW02-02	73-AC3-MW30-02	73-AC4-MW19-02	73-AC5-MW20-02
METHOD	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	02/20/96	02/20/96	02/22/96	02/22/96	02/21/96	02/23/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	2 J	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	12	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	46	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-BG-MW01-02	73-GW31MW-01	73-GW32MW-01	73-GW33MW-01	73-GW34MW-01	73-GW35MW-01
METHOD	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9	OLM01.9
DATE SAMPLED	02/22/96	03/20/96	03/21/96	03/20/96	03/20/96	03/18/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	9 J	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	1 J	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW36MW-01	73-GW37MW-01	73-GW01GW-01	73-GW02GW-01	73-GW03GW-01	73-GW04GW-01
METHOD	OLM01.9	OLM01.9	CLP	CLP	CLP	CLP
DATE SAMPLED	03/23/96	03/21/96	03/22/96	03/19/96	03/19/96	03/25/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	4 J	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	2 J	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	3 J	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW05GW-01	73-TW-01	73-BG-DW01-02	73-AC1-DW02-02	73-AC1-DW03-02	73-AC1-DW04-02
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	03/23/96	02/21/96	02/22/96	02/23/96	02/21/96	02/27/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	4 J	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	3 J	10 U
METHYLENE CHLORIDE	10 U	10 UJ	10 U	10 U	10 U	10 UJ
ACETONE	2 J	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	120	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	320	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	3-AC5-DW05-02	73-GW06DW-01	73-GW07DW-01	73-GW08DW-01	73-GW09DW-01	73-GW10DW-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	02/23/96	03/20/96	03/21/96	03/20/96	03/21/96	03/18/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 U	14 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	1 J	2 J	1 J	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-GW11DW-01	73-GW12DW-01	73-GW13DW-01	BB-44	73-AC1-MW11B-02	73-AC3-MW02B-02
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	03/21/96	03/24/96	03/23/96	03/21/96	02/23/96	02/22/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	3 J	35
CHLOROFORM	2 J	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	9 J	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	3-BG-MW01B-02	73-AC1-MW15B-02
METHOD	CLP	CLP
DATE SAMPLED	02/22/96	02/27/96
VOLATILES (ug/L)		
CHLOROMETHANE	10 U	10 U
BROMOMETHANE	10 U	10 U
VINYL CHLORIDE	10 U	10 U
CHLOROETHANE	10 U	10 U
METHYLENE CHLORIDE	10 U	10 UJ
ACETONE	10 U	10 U
CARBON DISULFIDE	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U
CHLOROFORM	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U
2-BUTANONE	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U
TRICHLOROETHENE	9 J	10 U
DIBROMOCHLOROMETHANE	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U
BENZENE	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U
BROMOFORM	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U
2-HEXANONE	10 U	10 U
TETRACHLOROETHENE	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U
TOLUENE	10 U	10 U
CHLOROBENZENE	10 U	10 U
ETHYLBENZENE	10 U	10 U
STYRENE	10 U	10 U
XYLENES (TOTAL)	10 U	10 U

FREQUENCY OF DETECTION
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/44	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/44	NA	NA
VINYL CHLORIDE	10 U	10 U	4 J	43 J	73-A47/3-8-02	3/44	23.00	22.00
CHLOROETHANE	10 U	10 U	3 J	3 J	73-AC1-DW03-02	1/44	3.00	3.00
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/44	NA	NA
ACETONE	10 U	14 U	2 J	2 J	73-GW05GW-01	2/44	2.00	2.00
CARBON DISULFIDE	10 U	10 U	ND	ND		0/44	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/44	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/44	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	2 J	120	73-AC1-DW03-02	8/44	28.63	10.50
CHLOROFORM	10 U	10 U	1 J	2 J	73-GW11DW-01	5/44	1.60	2.00
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/44	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/44	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/44	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/44	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/44	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/44	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/44	NA	NA
TRICHLOROETHENE	10 U	10 U	1 J	320	73-AC1-DW03-02	6/44	64.67	9.00
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/44	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/44	NA	NA
BENZENE	10 U	10 U	3 J	27	73-A47/3-8-02	3/44	11.33	4.00
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/44	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/44	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/44	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/44	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/44	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/44	NA	NA
TOLUENE	10 U	10 U	2 J	2 J	73-A47/3-8-02	1/44	2.00	2.00
CHLOROBENZENE	10 U	10 U	ND	ND		0/44	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/44	NA	NA
STYRENE	10 U	10 U	ND	ND		0/44	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/44	NA	NA

SURFACE WATER

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE WATER
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW01-01	73-SW02-01	73-SW03-01	73-SW04-01	73-SW05-01	73-SW06-01
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	05/08/95	05/08/95	05/09/95	05/09/95	05/09/95	05/09/95
VOLATILES (ug/L)						
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	2 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	5 J	10 U	10 U	2 J	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	50	10 U	14 U	10 U	10 U	8 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	3 J
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE WATER
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW07-01	73-SW08-01	73-SW09-01	73-SW11-01	73-SW12-01
METHOD	8240	8240	8240	8240	8240
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95	05/09/95
VOLATILES (ug/L)					
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	2 J	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	14 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
BROMOFORM	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SURFACE WATER
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
ETHYLBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
STYRENE	10 U	10 U	ND	ND		0/11	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/11	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHANE	2 U	10 U	ND	ND		0/11	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/11	NA	NA
TOLUENE	10 U	10 U	2 J	5 J	73-SW01-01	3/11	3.00	2.00
CHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/11	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/11	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/11	NA	NA
ACETONE	8 U	14 U	50	50	73-SW01-01	1/11	50.00	50.00
CHLOROFORM	10 U	10 U	3 J	3 J	73-SW06-01	1/11	3.00	3.00
BENZENE	10 U	10 U	ND	ND		0/11	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
CHLOROMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/11	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/11	NA	NA
CARBON DISULFIDE	10 UJ	10 UJ	ND	ND		0/11	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/11	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/11	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/11	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW01-01	73-SW02-01	73-SW03-01	73-SW04-01	73-SW05-01	73-SW06-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/08/95	05/08/95	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/L)						
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW01-01	73-SW02-01	73-SW03-01	73-SW04-01	73-SW05-01	73-SW06-01
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/08/95	05/08/95	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/L) (cont)						
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 UJ	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 UJ	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 UJ	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 UJ	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 UJ	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 UJ	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 UJ	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW07-01	73-SW08-01	73-SW09-01	73-SW11-01	73-SW12-01
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/L)					
PHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U	25 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW07-01	73-SW08-01	73-SW09-01	73-SW11-01	73-SW12-01
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/L) (cont)					
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
PHENOL	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	ND	ND		0/11	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/11	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/11	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/11	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/11	NA	NA
DIMETHYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/11	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/11	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/11	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SURFACE WATER
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L) (cont)								
4-NITROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
DIBENZOFURAN	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/11	NA	NA
DIETHYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/11	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/11	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/11	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
N-NITROSODIPHENYLAMINE	10 U	10 U	ND	ND		0/11	NA	NA
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/11	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
CARBAZOLE	10 UJ	10 UJ	ND	ND		0/11	NA	NA
DI-N-BUTYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
BUTYL BENZYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/11	NA	NA
DI-N-OCTYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
DIBENZ(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE WATER
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW01-01	73-SW02-01	73-SW03-01	73-SW04-01	73-SW05-01	73-SW06-01
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/08/95	05/08/95	05/09/95	05/09/95	05/09/95	05/09/95
PESTICIDE/PCBS (ug/L)						
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
AROCLOR-1260	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1254	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1221	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
AROCLOR-1232	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1248	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1016	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ALDRIN	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ALPHA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BETA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DELTA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN II	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
AROCLOR-1242	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ENDRIN KETONE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DIELDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
METHOXYCHLOR	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
4,4'-DDD	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
HEPTACHLOR	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
TOXAPHENE	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
ENDOSULFAN I	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE WATER
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW07-01	73-SW08-01	73-SW09-01	73-SW11-01	73-SW12-01
METHOD	8080	8080	8080	8080	8080
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95	05/09/95
PESTICIDE/PCBS (ug/L)					
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
AROCLOR-1260	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1254	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1221	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
AROCLOR-1232	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1248	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1016	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ALDRIN	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ALPHA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BETA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DELTA-BHC	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN II	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
AROCLOR-1242	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
ENDRIN KETONE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DIELDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
METHOXYCHLOR	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
4,4'-DDD	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
HEPTACHLOR	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
TOXAPHENE	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ
ENDOSULFAN I	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE WATER
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/L)								
HEPTACHLOR EPOXIDE	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
ENDOSULFAN SULFATE	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
AROCLOR-1260	1 UJ	1 UJ	ND	ND		0/11	NA	NA
AROCLOR-1254	1 UJ	1 UJ	ND	ND		0/11	NA	NA
AROCLOR-1221	2 UJ	2 UJ	ND	ND		0/11	NA	NA
AROCLOR-1232	1 UJ	1 UJ	ND	ND		0/11	NA	NA
AROCLOR-1248	1 UJ	1 UJ	ND	ND		0/11	NA	NA
AROCLOR-1016	1 UJ	1 UJ	ND	ND		0/11	NA	NA
ALDRIN	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
ALPHA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
BETA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
DELTA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
ENDOSULFAN II	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
4,4'-DDT	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
ALPHA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
GAMMA-CHLORDANE	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
AROCLOR-1242	1 UJ	1 UJ	ND	ND		0/11	NA	NA
ENDRIN KETONE	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
GAMMA-BHC (LINDANE)	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
DIELDRIN	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
ENDRIN	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
METHOXYCHLOR	0.5 UJ	0.5 UJ	ND	ND		0/11	NA	NA
4,4'-DDD	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
4,4'-DDE	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
ENDRIN ALDEHYDE	0.1 UJ	0.1 UJ	ND	ND		0/11	NA	NA
HEPTACHLOR	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA
TOXAPHENE	5 UJ	5 UJ	ND	ND		0/11	NA	NA
ENDOSULFAN I	0.05 UJ	0.05 UJ	ND	ND		0/11	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE WATER
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW01-01	73-SW02-01	73-SW03-01	73-SW04-01	73-SW05-01	73-SW06-01
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/08/95	05/08/95	05/09/95	05/09/95	05/09/95	05/09/95
INORGANICS (ug/L)						
ALUMINUM	384	40 U	40 U	40 U	40 U	74.6
ANTIMONY	50 U	116	179	178	139	216
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	10.5	14.5 U	7.9	9.4	7.5	9.4
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	9410	235000	274000	268000	259000	278000
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	27.7 U	20 U	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U
IRON	4540	1000	534	550	385	638
LEAD	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	1550	916000	1310000	1260000	995000	1390000
MANGANESE	25.3	37.7	8.2	9.8	8.1	10.7
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	293000	365000	375000	357000	372000
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	6.4
SODIUM	10100	7290000	10400000	9990000	8270000	11100000
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	51.4	47	12	103	25.6	42.4

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE WATER
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SW07-01	73-SW08-01	73-SW09-01	73-SW11-01	73-SW12-01
METHOD	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95	05/09/95
INORGANICS (ug/L)					
ALUMINUM	40 U	40 U	40 U	500	324
ANTIMONY	170	151	189	152	159
ARSENIC	10 U	10 U	10 U	10 U	10 U
BARIUM	7.6	6.7	7.5	9.6	9
BERYLLIUM	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U
CALCIUM	268000	255000	281000	269000	283000
CHROMIUM	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U
IRON	322	245	283	883	761
LEAD	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	1270000	1080000	1230000	1160000	1210000
MANGANESE	8.4	5.8	7	11.3	10.7
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U
POTASSIUM	357000	363000	388000	345000	369000
SELENIUM	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U
SODIUM	10100000	8640000	9800000	9190000	9760000
THALLIUM	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U
ZINC	22.1	20.5	5.1 U	20	30.6

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SURFACE WATER
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
INORGANICS (ug/L)								
ALUMINUM	40 U	40 U	74.6	500	73-SW11-01	4/11	320.65	354.00
ANTIMONY	50 U	50 U	116	216	73-SW06-01	10/11	164.90	164.50
ARSENIC	10 U	10 U	ND	ND		0/11	NA	NA
BARIUM	14.5 U	14.5 U	6.7	10.5	73-SW01-01	10/11	8.51	8.45
BERYLLIUM	1 U	1 U	ND	ND		0/11	NA	NA
CADMIUM	5 U	5 U	ND	ND		0/11	NA	NA
CALCIUM	NA	NA	9410	283000	73-SW12-01	11/11	243582.73	268000.00
CHROMIUM	10 U	10 U	ND	ND		0/11	NA	NA
COBALT	20 U	27.7 U	ND	ND		0/11	NA	NA
COPPER	10 U	10 U	ND	ND		0/11	NA	NA
IRON	NA	NA	245	4540	73-SW01-01	11/11	921.91	550.00
LEAD	3 U	3 U	ND	ND		0/11	NA	NA
MAGNESIUM	NA	NA	1550	1390000	73-SW06-01	11/11	1074777.27	1210000.00
MANGANESE	NA	NA	5.8	37.7	73-SW02-01	11/11	13.00	9.80
MERCURY	0.2 U	0.2 U	ND	ND		0/11	NA	NA
NICKEL	20 U	20 U	ND	ND		0/11	NA	NA
POTASSIUM	1000 U	1000 U	293000	388000	73-SW09-01	10/11	358400.00	364000.00
SELENIUM	5 U	5 U	ND	ND		0/11	NA	NA
SILVER	5 U	5 U	6.4	6.4	73-SW06-01	1/11	6.40	6.40
SODIUM	NA	NA	10100	11100000	73-SW06-01	11/11	8595463.64	9760000.00
THALLIUM	10 U	10 U	ND	ND		0/11	NA	NA
VANADIUM	10 U	10 U	ND	ND		0/11	NA	NA
ZINC	5.1 U	5.1 U	12	103	73-SW04-01	10/11	37.46	28.10

SEDIMENT

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD01-06	73-SD01-612	73-SD02-06	73-SD02-612	73-SD03-06	73-SD03-612
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	05/08/95	05/08/95	05/08/95	05/08/95	05/22/95	05/22/95
VOLATILES (ug/kg)						
CHLOROMETHANE	14 U	14 U	14 U	14 U	12 U	12 U
BROMOMETHANE	14 U	14 U	14 U	14 U	12 U	12 U
VINYL CHLORIDE	14 U	14 U	14 U	14 U	12 U	12 U
CHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
METHYLENE CHLORIDE	14 U	14 U	14 U	14 U	12 U	12 U
ACETONE	32 U	80 U	35 U	38 U	12 U	12 U
CARBON DISULFIDE	14 U	14 U	14 U	4 J	12 U	4 J
1,1-DICHLOROETHENE	14 U	14 U	14 U	14 U	12 U	12 U
1,1-DICHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	14 U	14 U	14 U	14 U	12 U	12 U
CHLOROFORM	14 U	14 U	14 U	14 U	12 U	12 U
1,2-DICHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
2-BUTANONE	14 U	13 J	14 U	14 U	12 U	12 U
1,1,1-TRICHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
CARBON TETRACHLORIDE	14 U	14 U	14 U	14 U	12 U	12 U
BROMODICHLOROMETHANE	14 U	14 U	14 U	14 U	12 U	12 U
1,2-DICHLOROPROPANE	14 U	14 U	14 U	14 U	12 U	12 U
CIS-1,3-DICHLOROPROPENE	14 U	14 U	14 U	14 U	12 U	12 U
TRICHLOROETHENE	14 U	14 U	14 U	14 U	12 U	12 U
DIBROMOCHLOROMETHANE	14 U	14 U	14 U	14 U	12 U	12 U
1,1,2-TRICHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
BENZENE	14 U	14 U	14 U	14 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	14 U	14 U	14 U	14 U	12 U	12 U
BROMOFORM	14 U	14 U	14 U	14 U	12 U	12 U
4-METHYL-2-PENTANONE	14 U	14 U	14 U	14 U	12 U	12 U
2-HEXANONE	14 U	14 U	14 U	14 U	12 U	12 U
TETRACHLOROETHENE	14 U	14 U	14 U	14 U	12 U	12 U
1,1,2,2-TETRACHLOROETHANE	14 U	14 U	14 U	14 U	12 U	12 U
TOLUENE	14 U	14 U	14 U	14 U	12 U	12 U
CHLOROBENZENE	14 U	14 U	14 U	14 U	12 U	12 U
ETHYLBENZENE	14 U	14 U	14 U	14 U	12 U	12 U
STYRENE	14 U	14 U	14 U	14 U	12 U	12 U
XYLENES (TOTAL)	14 U	14 U	14 U	14 U	12 U	12 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD04-06	73-SD04-612	73-SD05-06	73-SD05-612	73-SD06-06	73-SD06-612
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	05/21/95	05/21/95	05/22/95	05/22/95	05/22/95	05/22/95
VOLATILES (ug/kg)						
CHLOROMETHANE	12 U	21 U	12 U	13 U	14 U	74 U
BROMOMETHANE	12 U	21 U	12 U	13 U	14 U	74 U
VINYL CHLORIDE	12 U	21 U	12 U	13 U	14 U	74 U
CHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
METHYLENE CHLORIDE	12 U	21 U	12 U	13 U	14 U	74 U
ACETONE	15	21 U	12 U	5 J	8 J	16 J
CARBON DISULFIDE	12 U	21 U	12 U	2 J	2 J	74 U
1,1-DICHLOROETHENE	12 U	21 U	12 U	13 U	14 U	74 U
1,1-DICHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
1,2-DICHLOROETHENE (TOTAL)	12 U	21 U	12 U	13 U	14 U	74 U
CHLOROFORM	12 U	21 U	12 U	13 U	14 U	74 U
1,2-DICHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
2-BUTANONE	12 U	21 U	4 J	13 U	14 U	74 U
1,1,1-TRICHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
CARBON TETRACHLORIDE	12 U	21 U	12 U	13 U	14 U	74 U
BROMODICHLOROMETHANE	12 U	21 U	12 U	13 U	14 U	74 U
1,2-DICHLOROPROPANE	12 U	21 U	12 U	13 U	14 U	74 U
CIS-1,3-DICHLOROPROPENE	12 U	21 U	12 U	13 U	14 U	74 U
TRICHLOROETHENE	12 U	21 U	12 U	13 U	14 U	74 U
DIBROMOCHLOROMETHANE	12 U	21 U	12 U	13 U	14 U	74 U
1,1,2-TRICHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
BENZENE	12 U	21 U	12 U	13 U	14 U	74 U
TRANS-1,3-DICHLOROPROPENE	12 U	21 U	12 U	13 U	14 U	74 U
BROMOFORM	12 U	21 U	12 U	13 U	14 U	74 U
4-METHYL-2-PENTANONE	12 U	21 U	12 U	13 U	14 U	74 U
2-HEXANONE	12 U	21 U	12 U	13 U	14 U	74 U
TETRACHLOROETHENE	12 U	21 U	12 U	13 U	14 U	74 U
1,1,2,2-TETRACHLOROETHANE	12 U	21 U	12 U	13 U	14 U	74 U
TOLUENE	12 U	21 U	12 U	1 J	14 U	74 U
CHLOROBENZENE	12 U	21 U	12 U	13 U	14 U	74 U
ETHYLBENZENE	12 U	21 U	12 U	13 U	14 U	74 U
STYRENE	12 U	21 U	12 U	13 U	14 U	74 U
XYLENES (TOTAL)	12 U	21 U	12 U	13 U	14 U	74 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD07-06	73-SD07-612	73-SD08-06	73-SD08-612	73-SD09-06	73-SD09-612
METHOD	8240	8240	8240	8240	8240	8240
DATE SAMPLED	05/22/95	05/22/95	05/21/95	05/21/95	05/21/95	05/21/95
VOLATILES (ug/kg)						
CHLOROMETHANE	13 U	13 U	15 U	15 U	40 U	38 U
BROMOMETHANE	13 U	13 U	15 U	15 U	40 U	38 U
VINYL CHLORIDE	13 U	13 U	15 U	15 U	40 U	38 U
CHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
METHYLENE CHLORIDE	13 U	13 U	15 U	15 U	40 U	38 U
ACETONE	13 U	13 U	13 J	15 U	280	38 U
CARBON DISULFIDE	13 U	3 J	2 J	3 J	36 J	75
1,1-DICHLOROETHENE	13 U	13 U	15 U	15 U	40 U	38 U
1,1-DICHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
1,2-DICHLOROETHENE (TOTAL)	13 U	13 U	15 U	15 U	40 U	38 U
CHLOROFORM	13 U	13 U	15 U	15 U	40 U	38 U
1,2-DICHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
2-BUTANONE	13 U	13 U	15 U	15 U	40 U	38 U
1,1,1-TRICHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
CARBON TETRACHLORIDE	13 U	13 U	15 U	15 U	40 U	38 U
BROMODICHLOROMETHANE	13 U	13 U	15 U	15 U	40 U	38 U
1,2-DICHLOROPROPANE	13 U	13 U	15 U	15 U	40 U	38 U
CIS-1,3-DICHLOROPROPENE	13 U	13 U	15 U	15 U	40 U	38 U
TRICHLOROETHENE	13 U	13 U	15 U	15 U	40 U	38 U
DIBROMOCHLOROMETHANE	13 U	13 U	15 U	15 U	40 U	38 U
1,1,2-TRICHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
BENZENE	13 U	13 U	15 U	15 U	40 U	38 U
TRANS-1,3-DICHLOROPROPENE	13 U	13 U	15 U	15 U	40 U	38 U
BROMOFORM	13 U	13 U	15 U	15 U	40 U	38 U
4-METHYL-2-PENTANONE	13 U	13 U	15 U	15 U	40 U	38 U
2-HEXANONE	13 U	13 U	15 U	15 U	40 U	38 U
TETRACHLOROETHENE	13 U	13 U	15 U	15 U	40 U	38 U
1,1,2,2-TETRACHLOROETHANE	13 U	13 U	15 U	15 U	40 U	38 U
TOLUENE	13 U	13 U	15 U	15 U	40 U	38 U
CHLOROBENZENE	13 U	13 U	15 U	15 U	40 U	38 U
ETHYLBENZENE	13 U	13 U	15 U	15 U	40 U	38 U
STYRENE	13 U	13 U	15 U	15 U	40 U	38 U
XYLENES (TOTAL)	13 U	13 U	15 U	15 U	40 U	38 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD11-06	73-SD11-612	73-SD12-06	73-SD12-612
METHOD	8240	8240	8240	8240
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95
VOLATILES (ug/kg)				
CHLOROMETHANE	62 U	53 U	29 U	24 U
BROMOMETHANE	62 U	53 U	29 U	24 U
VINYL CHLORIDE	62 U	53 U	29 U	24 U
CHLOROETHANE	62 U	53 U	29 U	24 U
METHYLENE CHLORIDE	62 U	7 J	29 U	24 U
ACETONE	140 U	160 J	140 U	100 U
CARBON DISULFIDE	10 J	14 J	15 J	8 J
1,1-DICHLOROETHENE	62 U	53 U	29 U	24 U
1,1-DICHLOROETHANE	62 U	53 U	29 U	24 U
1,2-DICHLOROETHENE (TOTAL)	62 U	53 U	29 U	24 U
CHLOROFORM	62 U	53 U	29 U	24 U
1,2-DICHLOROETHANE	62 U	53 U	29 U	24 U
2-BUTANONE	62 U	53 U	29 U	24 U
1,1,1-TRICHLOROETHANE	62 U	53 U	29 U	24 U
CARBON TETRACHLORIDE	62 U	53 U	29 U	24 U
BROMODICHLOROMETHANE	62 U	53 U	29 U	24 U
1,2-DICHLOROPROPANE	62 U	53 U	29 U	24 U
CIS-1,3-DICHLOROPROPENE	62 U	53 U	29 U	24 U
TRICHLOROETHENE	62 U	53 U	29 U	24 U
DIBROMOCHLOROMETHANE	62 U	53 U	29 U	24 U
1,1,2-TRICHLOROETHANE	62 U	53 U	29 U	24 U
BENZENE	62 U	53 U	29 U	24 U
TRANS-1,3-DICHLOROPROPENE	62 U	53 U	29 U	24 U
BROMOFORM	62 U	53 U	29 U	24 U
4-METHYL-2-PENTANONE	62 U	53 U	29 U	24 U
2-HEXANONE	62 U	53 U	29 U	24 U
TETRACHLOROETHENE	62 U	53 U	29 U	24 U
1,1,2,2-TETRACHLOROETHANE	62 U	53 U	29 U	24 U
TOLUENE	62 U	12 J	29 U	24 U
CHLOROBENZENE	62 U	53 U	29 U	24 U
ETHYLBENZENE	62 U	53 U	29 U	24 U
STYRENE	62 U	53 U	29 U	24 U
XYLENES (TOTAL)	62 U	9 J	29 U	24 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	12 U	74 U	ND	ND		0/22	NA	NA
BROMOMETHANE	12 U	74 U	ND	ND		0/22	NA	NA
VINYL CHLORIDE	12 U	74 U	ND	ND		0/22	NA	NA
CHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
METHYLENE CHLORIDE	12 U	74 U	7 J	7 J	73-SD11-612	1/22	7.00	7.00
ACETONE	12 U	140 U	5 J	280	73-SD09-06	7/22	71.00	15.00
CARBON DISULFIDE	12 U	74 U	2 J	75	73-SD09-612	13/22	13.69	4.00
1,1-DICHLOROETHENE	12 U	74 U	ND	ND		0/22	NA	NA
1,1-DICHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
1,2-DICHLOROETHENE (TOTAL)	12 U	74 U	ND	ND		0/22	NA	NA
CHLOROFORM	12 U	74 U	ND	ND		0/22	NA	NA
1,2-DICHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
2-BUTANONE	12 U	74 U	4 J	13 J	73-SD01-612	2/22	8.50	8.50
1,1,1-TRICHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
CARBON TETRACHLORIDE	12 U	74 U	ND	ND		0/22	NA	NA
BROMODICHLOROMETHANE	12 U	74 U	ND	ND		0/22	NA	NA
1,2-DICHLOROPROPANE	12 U	74 U	ND	ND		0/22	NA	NA
CIS-1,3-DICHLOROPROPENE	12 U	74 U	ND	ND		0/22	NA	NA
TRICHLOROETHENE	12 U	74 U	ND	ND		0/22	NA	NA
DIBROMOCHLOROMETHANE	12 U	74 U	ND	ND		0/22	NA	NA
1,1,2-TRICHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
BENZENE	12 U	74 U	ND	ND		0/22	NA	NA
TRANS-1,3-DICHLOROPROPENE	12 U	74 U	ND	ND		0/22	NA	NA
BROMOFORM	12 U	74 U	ND	ND		0/22	NA	NA
4-METHYL-2-PENTANONE	12 U	74 U	ND	ND		0/22	NA	NA
2-HEXANONE	12 U	74 U	ND	ND		0/22	NA	NA
TETRACHLOROETHENE	12 U	74 U	ND	ND		0/22	NA	NA
1,1,2,2-TETRACHLOROETHANE	12 U	74 U	ND	ND		0/22	NA	NA
TOLUENE	12 U	74 U	1 J	12 J	73-SD11-612	2/22	6.50	6.50
CHLOROBENZENE	12 U	74 U	ND	ND		0/22	NA	NA
ETHYLBENZENE	12 U	74 U	ND	ND		0/22	NA	NA
STYRENE	12 U	74 U	ND	ND		0/22	NA	NA
XYLENES (TOTAL)	12 U	74 U	9 J	9 J	73-SD11-612	1/22	9.00	9.00

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD01-06	73-SD01-612	73-SD02-06	73-SD02-612	73-SD03-06	73-SD03-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/08/95	05/08/95	05/08/95	05/08/95	05/22/95	05/22/95
SEMIVOLATILES (ug/kg)						
PHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BIS(2-CHLOROETHYL) ETHER	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2-CHLOROPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
1,3-DICHLOROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
1,4-DICHLOROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
1,2-DICHLOROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2-METHYLPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-METHYLPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
N-NITROSO-DI-N-PROPYLAMINE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
HEXACHLOROETHANE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
NITROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
ISOPHORONE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2-NITROPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4-DIMETHYLPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BIS(2-CHLOROETHOXY)METHANE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4-DICHLOROPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
1,2,4-TRICHLOROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
NAPHTHALENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-CHLOROANILINE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
HEXACHLOROBUTADIENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-CHLORO-3-METHYLPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2-METHYLNAPHTHALENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
HEXACHLOROCYCLOPENTADIENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4,6-TRICHLOROPHENOL	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4,5-TRICHLOROPHENOL	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
2-CHLORONAPHTHALENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2-NITROANILINE	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
DIMETHYL PHTHALATE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
ACENAPHTHYLENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,6-DINITROTOLUENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
3-NITROANILINE	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
ACENAPHTHENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4-DINITROPHENOL	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD01-06	73-SD01-612	73-SD02-06	73-SD02-612	73-SD03-06	73-SD03-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/08/95	05/08/95	05/08/95	05/08/95	05/22/95	05/22/95
SEMIVOLATILES (ug/kg) cont.						
4-NITROPHENOL	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
DIBENZOFURAN	460 U	470 U	2400 U	4600 U	3900 U	4000 U
2,4-DINITROTOLUENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
DIETHYL PHTHALATE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-CHLOROPHENYL PHENYL ETHER	460 U	470 U	2400 U	4600 U	3900 U	4000 U
FLUORENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-NITROANILINE	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
4,6-DINITRO-2-METHYLPHENOL	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
N-NITROSODIPHENYLAMINE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
4-BROMOPHENYL PHENYL ETHER	460 U	470 U	2400 U	4600 U	3900 U	4000 U
HEXACHLOROBENZENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
PENTACHLOROPHENOL	1100 U	1100 U	5800 U	11000 U	9500 U	9700 U
PHENANTHRENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
ANTHRACENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
CARBAZOLE	460 UJ	470 UJ	2400 U	4600 U	3900 U	4000 UJ
DI-N-BUTYL PHTHALATE	290 J	400 J	350 J	4600 U	3900 U	4000 U
FLUORANTHENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
PYRENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BUTYL BENZYL PHTHALATE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
3,3'-DICHLOROBENZIDINE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BENZO(A)ANTHRACENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
CHRYSENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
DI-N-OCTYL PHTHALATE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BENZO(B)FLUORANTHENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BENZO(K)FLUORANTHENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BENZO(A)PYRENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
INDENO(1,2,3-CD)PYRENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
DIBENZ(A,H)ANTHRACENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BENZO(G,H,I)PERYLENE	460 U	470 U	2400 U	4600 U	3900 U	4000 U
BIS(2-ETHYLHEXYL)PHTHALATE	53 J	60 J	2400 U	4600 U	3900 U	4000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD04-06	73-SD04-612	73-SD05-06	73-SD05-612	73-SD06-06	73-SD06-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/21/95	05/21/95	NA	05/22/95	05/22/95	05/22/95
SEMIVOLATILES (ug/kg)						
PHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BIS(2-CHLOROETHYL) ETHER	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2-CHLOROPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
1,3-DICHLOROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
1,4-DICHLOROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
1,2-DICHLOROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2-METHYLPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-METHYLPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
N-NITROSO-DI-N-PROPYLAMINE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
HEXACHLOROETHANE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
NITROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
ISOPHORONE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2-NITROPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4-DIMETHYLPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BIS(2-CHLOROETHOXY)METHANE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4-DICHLOROPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
1,2,4-TRICHLOROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
NAPHTHALENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-CHLOROANILINE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
HEXACHLOROBUTADIENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-CHLORO-3-METHYLPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2-METHYLNAPHTHALENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
HEXACHLOROCYCLOPENTADIENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4,6-TRICHLOROPHENOL	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4,5-TRICHLOROPHENOL	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
2-CHLORONAPHTHALENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2-NITROANILINE	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
DIMETHYL PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
ACENAPHTHYLENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,6-DINITROTOLUENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
3-NITROANILINE	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
ACENAPHTHENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4-DINITROPHENOL	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD04-06	73-SD04-612	73-SD05-06	73-SD05-612	73-SD06-06	73-SD06-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/21/95	05/21/95	NA	05/22/95	05/22/95	05/22/95
SEMIVOLATILES (ug/kg) cont.						
4-NITROPHENOL	21000 U	47000 U	19000 U	24000 U	22000 R	31000 U
DIBENZOFURAN	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
2,4-DINITROTOLUENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
DIETHYL PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-CHLOROPHENYL PHENYL ETHER	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
FLUORENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-NITROANILINE	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
4,6-DINITRO-2-METHYLPHENOL	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
N-NITROSODIPHENYLAMINE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
4-BROMOPHENYL PHENYL ETHER	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
HEXACHLOROBENZENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
PENTACHLOROPHENOL	21000 U	47000 U	19000 U	24000 U	22000 U	31000 U
PHENANTHRENE	940 J	19000 U	7900 U	9700 U	8900 U	12000 U
ANTHRACENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
CARBAZOLE	8200 R	19000 R	7900 R	9700 R	8900 R	12000 R
DI-N-BUTYL PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
FLUORANTHENE	1000 J	19000 U	7900 U	9700 U	8900 U	12000 U
PYRENE	880 J	19000 U	7900 U	9700 U	8900 U	12000 U
BUTYL BENZYL PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
3,3'-DICHLOROBENZIDINE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BENZO(A)ANTHRACENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
CHRYSENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
DI-N-OCTYL PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BENZO(B)FLUORANTHENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BENZO(K)FLUORANTHENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BENZO(A)PYRENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
INDENO(1,2,3-CD)PYRENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
DIBENZ(A,H)ANTHRACENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BENZO(G,H,I)PERYLENE	8200 U	19000 U	7900 U	9700 U	8900 U	12000 U
BIS(2-ETHYLHEXYL)PHTHALATE	8200 U	19000 U	7900 U	9700 U	8900 U	1900 J

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD07-06	73-SD07-612	73-SD08-06	73-SD08-612	73-SD09-06	73-SD09-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/22/95	05/22/95	05/21/95	05/21/95	05/21/95	05/21/95
SEMIVOLATILES (ug/kg)						
PHENOL	430 U	150 J	490 U	500 U	21000 U	21000 U
BIS(2-CHLOROETHYL) ETHER	430 U	430 U	490 U	500 U	21000 U	21000 U
2-CHLOROPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
1,3-DICHLOROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
1,4-DICHLOROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
1,2-DICHLOROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
2-METHYLPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	430 U	430 U	490 U	500 U	21000 U	21000 U
4-METHYLPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
N-NITROSO-DI-N-PROPYLAMINE	430 U	430 U	490 U	500 U	21000 U	21000 U
HEXACHLOROETHANE	430 U	430 U	490 U	500 U	21000 U	21000 U
NITROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
ISOPHORONE	430 U	430 U	490 U	500 U	21000 U	21000 U
2-NITROPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4-DIMETHYLPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
BIS(2-CHLOROETHOXY)METHANE	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4-DICHLOROPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
1,2,4-TRICHLOROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
NAPHTHALENE	430 U	430 U	490 U	500 U	21000 U	21000 U
4-CHLOROANILINE	430 U	430 U	490 U	500 U	21000 U	21000 U
HEXACHLOROBUTADIENE	430 U	430 U	490 U	500 U	21000 U	21000 U
4-CHLORO-3-METHYLPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
2-METHYLNAPHTHALENE	430 U	430 U	490 U	500 U	21000 U	21000 U
HEXACHLOROCYCLOPENTADIENE	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4,6-TRICHLOROPHENOL	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4,5-TRICHLOROPHENOL	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
2-CHLORONAPHTHALENE	430 U	430 U	490 U	500 U	21000 U	21000 U
2-NITROANILINE	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
DIMETHYL PHTHALATE	430 U	430 U	490 U	500 U	21000 U	21000 U
ACENAPHTHYLENE	430 U	430 U	490 U	500 U	21000 U	21000 U
2,6-DINITROTOLUENE	430 U	430 U	490 U	500 U	21000 U	21000 U
3-NITROANILINE	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
ACENAPHTHENE	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4-DINITROPHENOL	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD07-06	73-SD07-612	73-SD08-06	73-SD08-612	73-SD09-06	73-SD09-612
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	05/22/95	05/22/95	05/21/95	05/21/95	05/21/95	05/21/95
SEMIVOLATILES (ug/kg) cont.						
4-NITROPHENOL	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
DIBENZOFURAN	430 U	430 U	490 U	500 U	21000 U	21000 U
2,4-DINITROTOLUENE	430 U	430 U	490 U	500 U	21000 U	21000 U
DIETHYL PHTHALATE	430 U	430 U	490 U	500 U	21000 U	21000 U
4-CHLOROPHENYL PHENYL ETHER	430 U	430 U	490 U	500 U	21000 U	21000 U
FLUORENE	430 U	430 U	490 U	500 U	21000 U	21000 U
4-NITROANILINE	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
4,6-DINITRO-2-METHYLPHENOL	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
N-NITROSODIPHENYLAMINE	430 U	430 U	490 U	500 U	21000 U	21000 U
4-BROMOPHENYL PHENYL ETHER	430 U	430 U	490 U	500 U	21000 U	21000 U
HEXACHLOROBENZENE	430 U	430 U	490 U	500 U	21000 U	21000 U
PENTACHLOROPHENOL	1000 U	1000 U	1200 U	1200 U	53000 U	53000 U
PHENANTHRENE	430 U	430 U	490 U	500 U	21000 U	21000 U
ANTHRACENE	430 U	430 U	490 U	500 U	21000 U	21000 U
CARBAZOLE	430 UJ	430 U	490 UJ	500 UJ	21000 R	21000 R
DI-N-BUTYL PHTHALATE	350 J	430	590	420 J	21000 U	21000 U
FLUORANTHENE	430 U	430 U	490 U	500 U	21000 U	21000 U
PYRENE	430 U	430 U	490 U	500 U	21000 U	21000 U
BUTYL BENZYL PHTHALATE	430 U	430 U	490 U	500 U	21000 U	21000 U
3,3'-DICHLOROBENZIDINE	430 U	430 U	490 U	500 U	21000 U	21000 U
BENZO(A)ANTHRACENE	430 U	430 U	490 U	500 U	21000 U	21000 U
CHRYSENE	430 U	430 U	490 U	500 U	21000 U	21000 U
DI-N-OCTYL PHTHALATE	430 U	430 U	490 U	500 U	21000 U	21000 U
BENZO(B)FLUORANTHENE	430 U	430 U	490 U	500 U	21000 U	21000 U
BENZO(K)FLUORANTHENE	430 U	430 U	490 U	500 U	21000 U	21000 U
BENZO(A)PYRENE	430 U	430 U	490 U	500 U	21000 U	21000 U
INDENO(1,2,3-CD)PYRENE	430 U	430 U	490 U	500 U	21000 U	21000 U
DIBENZ(A,H)ANTHRACENE	430 U	430 U	490 U	500 U	21000 U	21000 U
BENZO(G,H,I)PERYLENE	430 U	430 U	490 U	500 U	21000 U	21000 U
BIS(2-ETHYLHEXYL)PHTHALATE	55 J	51 J	250 J	52 J	21000 U	21000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD11-06	73-SD11-612	73-SD12-06	73-SD12-612
METHOD	8270	8270	8270	8270
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/kg)				
PHENOL	2000 U	1700 U	940 U	780 U
BIS(2-CHLOROETHYL) ETHER	2000 U	1700 U	940 U	780 U
2-CHLOROPHENOL	2000 U	1700 U	940 U	780 U
1,3-DICHLOROBENZENE	2000 U	1700 U	940 U	780 U
1,4-DICHLOROBENZENE	2000 U	1700 U	940 U	780 U
1,2-DICHLOROBENZENE	2000 U	1700 U	940 U	780 U
2-METHYLPHENOL	2000 U	1700 U	940 U	780 U
2,2'-OXYBIS(1-CHLOROPROPANE)	2000 U	1700 U	940 U	780 U
4-METHYLPHENOL	2000 U	1700 U	940 U	780 U
N-NITROSO-DI-N-PROPYLAMINE	2000 U	1700 U	940 U	780 U
HEXACHLOROETHANE	2000 U	1700 U	940 U	780 U
NITROBENZENE	2000 U	1700 U	940 U	780 U
ISOPHORONE	2000 U	1700 U	940 U	780 U
2-NITROPHENOL	2000 U	1700 U	940 U	780 U
2,4-DIMETHYLPHENOL	2000 U	1700 U	940 U	780 U
BIS(2-CHLOROETHOXY)METHANE	2000 U	1700 U	940 U	780 U
2,4-DICHLOROPHENOL	2000 U	1700 U	940 U	780 U
1,2,4-TRICHLOROBENZENE	2000 U	1700 U	940 U	780 U
NAPHTHALENE	2000 U	1700 U	940 U	780 U
4-CHLOROANILINE	2000 U	1700 U	940 U	780 U
HEXACHLOROBUTADIENE	2000 U	1700 U	940 U	780 U
4-CHLORO-3-METHYLPHENOL	2000 U	1700 U	940 U	780 U
2-METHYLNAPHTHALENE	2000 U	1700 U	940 U	780 U
HEXACHLOROCYCLOPENTADIENE	2000 U	1700 U	940 U	780 U
2,4,6-TRICHLOROPHENOL	2000 U	1700 U	940 U	780 U
2,4,5-TRICHLOROPHENOL	5000 U	4200 U	2300 U	1900 U
2-CHLORONAPHTHALENE	2000 U	1700 U	940 U	780 U
2-NITROANILINE	5000 U	4200 U	2300 U	1900 U
DIMETHYL PHTHALATE	2000 U	1700 U	940 U	780 U
ACENAPHTHYLENE	2000 U	1700 U	940 U	780 U
2,6-DINITROTOLUENE	2000 U	1700 U	940 U	780 U
3-NITROANILINE	5000 U	4200 U	2300 U	1900 U
ACENAPHTHENE	2000 U	1700 U	940 U	780 U
2,4-DINITROPHENOL	5000 U	4200 U	2300 U	1900 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD11-06	73-SD11-612	73-SD12-06	73-SD12-612
METHOD	8270	8270	8270	8270
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95
SEMIVOLATILES (ug/kg) cont.				
4-NITROPHENOL	5000 U	4200 U	2300 U	1900 U
DIBENZOFURAN	2000 U	1700 U	940 U	780 U
2,4-DINITROTOLUENE	2000 U	1700 U	940 U	780 U
DIETHYL PHTHALATE	2000 U	1700 U	940 U	780 U
4-CHLOROPHENYL PHENYL ETHER	2000 U	1700 U	940 U	780 U
FLUORENE	2000 U	1700 U	940 U	780 U
4-NITROANILINE	5000 U	4200 U	2300 U	1900 U
4,6-DINITRO-2-METHYLPHENOL	5000 U	4200 U	2300 U	1900 U
N-NITROSODIPHENYLAMINE	2000 U	1700 U	940 U	780 U
4-BROMOPHENYL PHENYL ETHER	2000 U	1700 U	940 U	780 U
HEXACHLOROBENZENE	2000 U	1700 U	940 U	780 U
PENTACHLOROPHENOL	5000 U	4200 U	2300 U	1900 U
PHENANTHRENE	2000 U	1700 U	940 U	780 U
ANTHRACENE	2000 U	1700 U	940 U	780 U
CARBAZOLE	2000 UJ	1700 UJ	940 U	780 U
DI-N-BUTYL PHTHALATE	680 J	620 J	360 J	240 J
FLUORANTHENE	2000 U	1700 U	940 U	780 U
PYRENE	2000 U	1700 U	940 U	780 U
BUTYL BENZYL PHTHALATE	2000 U	1700 U	940 U	780 U
3,3'-DICHLOROBENZIDINE	2000 U	1700 U	940 U	780 U
BENZO(A)ANTHRACENE	2000 U	1700 U	940 U	780 U
CHRYSENE	2000 U	1700 U	940 U	780 U
DI-N-OCTYL PHTHALATE	2000 U	1700 U	940 U	780 U
BENZO(B)FLUORANTHENE	2000 U	1700 U	940 U	780 U
BENZO(K)FLUORANTHENE	2000 U	1700 U	940 U	780 U
BENZO(A)PYRENE	2000 U	1700 U	940 U	780 U
INDENO(1,2,3-CD)PYRENE	2000 U	1700 U	940 U	780 U
DIBENZ(A,H)ANTHRACENE	2000 U	1700 U	940 U	780 U
BENZO(G,H,I)PERYLENE	2000 U	1700 U	940 U	780 U
BIS(2-ETHYLHEXYL)PHTHALATE	2000 U	190 J	940 U	780 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	430 U	21000 U	150 J	150 J	73-SD07-612	1/22	150.00	150.00
BIS(2-CHLOROETHYL) ETHER	430 U	21000 U	ND	ND		0/22	NA	NA
2-CHLOROPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
1,3-DICHLOROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
1,4-DICHLOROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
1,2-DICHLOROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
2-METHYLPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	430 U	21000 U	ND	ND		0/22	NA	NA
4-METHYLPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	430 U	21000 U	ND	ND		0/22	NA	NA
HEXACHLOROETHANE	430 U	21000 U	ND	ND		0/22	NA	NA
NITROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
ISOPHORONE	430 U	21000 U	ND	ND		0/22	NA	NA
2-NITROPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
2,4-DIMETHYLPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
BIS(2-CHLOROETHOXY)METHANE	430 U	21000 U	ND	ND		0/22	NA	NA
2,4-DICHLOROPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
1,2,4-TRICHLOROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
NAPHTHALENE	430 U	21000 U	ND	ND		0/22	NA	NA
4-CHLOROANILINE	430 U	21000 U	ND	ND		0/22	NA	NA
HEXACHLOROBUTADIENE	430 U	21000 U	ND	ND		0/22	NA	NA
4-CHLORO-3-METHYLPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
2-METHYLNAPHTHALENE	430 U	21000 U	ND	ND		0/22	NA	NA
HEXACHLOROCYCLOPENTADIENE	430 U	21000 U	ND	ND		0/22	NA	NA
2,4,6-TRICHLOROPHENOL	430 U	21000 U	ND	ND		0/22	NA	NA
2,4,5-TRICHLOROPHENOL	1000 U	53000 U	ND	ND		0/22	NA	NA
2-CHLORONAPHTHALENE	430 U	21000 U	ND	ND		0/22	NA	NA
2-NITROANILINE	1000 U	53000 U	ND	ND		0/22	NA	NA
DIMETHYL PHTHALATE	430 U	21000 U	ND	ND		0/22	NA	NA
ACENAPHTHYLENE	430 U	21000 U	ND	ND		0/22	NA	NA
2,6-DINITROTOLUENE	430 U	21000 U	ND	ND		0/22	NA	NA
3-NITROANILINE	1000 U	53000 U	ND	ND		0/22	NA	NA
ACENAPHTHENE	430 U	21000 U	ND	ND		0/22	NA	NA
2,4-DINITROPHENOL	1000 U	53000 U	ND	ND		0/22	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) cont.								
4-NITROPHENOL	1000 U	53000 U	ND	ND		0/21	NA	NA
DIBENZOFURAN	430 U	21000 U	ND	ND		0/22	NA	NA
2,4-DINITROTOLUENE	430 U	21000 U	ND	ND		0/22	NA	NA
DIETHYL PHTHALATE	430 U	21000 U	ND	ND		0/22	NA	NA
4-CHLOROPHENYL PHENYL ETHER	430 U	21000 U	ND	ND		0/22	NA	NA
FLUORENE	430 U	21000 U	ND	ND		0/22	NA	NA
4-NITROANILINE	1000 U	53000 U	ND	ND		0/22	NA	NA
4,6-DINITRO-2-METHYLPHENOL	1000 U	53000 U	ND	ND		0/22	NA	NA
N-NITROSODIPHENYLAMINE	430 U	21000 U	ND	ND		0/22	NA	NA
4-BROMOPHENYL PHENYL ETHER	430 U	21000 U	ND	ND		0/22	NA	NA
HEXACHLOROBENZENE	430 U	21000 U	ND	ND		0/22	NA	NA
PENTACHLOROPHENOL	1000 U	53000 U	ND	ND		0/22	NA	NA
PHENANTHRENE	430 U	21000 U	940 J	940 J	73-SD04-06	1/22	940.00	940.00
ANTHRACENE	430 U	21000 U	ND	ND		0/22	NA	NA
CARBAZOLE	430 UJ	4600 U	ND	ND		0/14	NA	NA
DI-N-BUTYL PHTHALATE	3900 U	21000 U	240 J	680 J	73-SD11-06	11/22	430.00	400.00
FLUORANTHENE	430 U	21000 U	1000 J	1000 J	73-SD04-06	1/22	1000.00	1000.00
PYRENE	430 U	21000 U	880 J	880 J	73-SD04-06	1/22	880.00	880.00
BUTYL BENZYL PHTHALATE	430 U	21000 U	ND	ND		0/22	NA	NA
3,3'-DICHLOROBENZIDINE	430 U	21000 U	ND	ND		0/22	NA	NA
BENZO(A)ANTHRACENE	430 U	21000 U	ND	ND		0/22	NA	NA
CHRYSENE	430 U	21000 U	ND	ND		0/22	NA	NA
DI-N-OCTYL PHTHALATE	430 U	21000 U	ND	ND		0/22	NA	NA
BENZO(B)FLUORANTHENE	430 U	21000 U	ND	ND		0/22	NA	NA
BENZO(K)FLUORANTHENE	430 U	21000 U	ND	ND		0/22	NA	NA
BENZO(A)PYRENE	430 U	21000 U	ND	ND		0/22	NA	NA
INDENO(1,2,3-CD)PYRENE	430 U	21000 U	ND	ND		0/22	NA	NA
DIBENZ(A,H)ANTHRACENE	430 U	21000 U	ND	ND		0/22	NA	NA
BENZO(G,H,I)PERYLENE	430 U	21000 U	ND	ND		0/22	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	780 U	21000 U	51 J	1900 J	73-SD06-612	8/22	326.38	57.50

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD01-06	73-SD01-612	73-SD02-06	73-SD02-612	73-SD03-06	73-SD03-612
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/08/95	05/08/95	05/08/95	05/08/95	05/22/95	05/22/95
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
BETA-BHC	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
DELTA-BHC	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
GAMMA-BHC (LINDANE)	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
HEPTACHLOR	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
ALDRIN	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
HEPTACHLOR EPOXIDE	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
ENDOSULFAN I	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
DIELDRIN	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
4,4'-DDE	17 J	4.7 U	4.7 U	4.6 U	3.9 U	4 U
ENDRIN	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
ENDOSULFAN II	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
4,4'-DDD	28	4.7 U	4.7 U	6.8 J	3.9 UJ	4.2 J
ENDOSULFAN SULFATE	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
4,4'-DDT	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
METHOXYCHLOR	24 UJ	24 UJ	24 UJ	24 UJ	20 U	21 U
ENDRIN KETONE	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
ENDRIN ALDEHYDE	4.6 U	4.7 U	4.7 U	4.6 U	3.9 U	4 U
ALPHA-CHLORDANE	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
GAMMA-CHLORDANE	2.4 U	2.4 U	2.4 U	2.4 U	2 U	2.1 U
TOXAPHENE	240 U	240 U	240 U	240 U	200 U	210 U
AROCLOR-1016	46 U	47 U	47 U	46 U	39 U	40 U
AROCLOR-1221	93 U	96 U	96 U	94 U	80 U	81 U
AROCLOR-1232	46 U	47 U	47 U	46 U	39 U	40 U
AROCLOR-1242	46 U	47 U	47 U	46 U	39 U	40 U
AROCLOR-1248	46 U	47 U	47 U	46 U	39 U	40 U
AROCLOR-1254	46 U	47 U	47 U	46 U	39 U	40 U
AROCLOR-1260	46 U	47 U	47 U	46 U	39 U	40 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD04-06	73-SD04-612	73-SD05-06	73-SD05-612	73-SD06-06	73-SD06-612
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/21/95	05/21/95	05/22/95	05/22/95	05/22/95	05/22/95
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
BETA-BHC	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
DELTA-BHC	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
GAMMA-BHC (LINDANE)	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
HEPTACHLOR	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
ALDRIN	2.1 U	3.5 U	2.1 UJ	2.1 UJ	2.3 UJ	2.5 UJ
HEPTACHLOR EPOXIDE	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
ENDOSULFAN I	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
DIELDRIN	4 U	6.7 U	4.1 U	4.1 U	4.5 U	4.8 U
4,4'-DDE	6 J	9.8 J	4.1 U	4.1 U	4.5 U	17 J
ENDRIN	4.7	6.7 U	4.1 U	4.1 U	4.5 U	7.5 J
ENDOSULFAN II	4 U	6.7 U	4.1 U	4.1 U	4.5 U	4.8 U
4,4'-DDD	4 UJ	7.8 J	4.1 U	4.1 U	4.5 U	18 J
ENDOSULFAN SULFATE	4 U	6.7 U	4.1 U	4.1 U	4.5 U	4.8 U
4,4'-DDT	4 U	6.7 U	4.1 U	4.1 U	4.5 U	4.8 U
METHOXYCHLOR	21 U	35 U	21 U	21 U	23 U	25 U
ENDRIN KETONE	4 U	6.7 U	4.1 U	4.1 U	4.5 U	4.8 U
ENDRIN ALDEHYDE	4 U	6.7 U	4.1 UJ	4.1 UJ	4.5 UJ	4.8 UJ
ALPHA-CHLORDANE	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
GAMMA-CHLORDANE	2.1 U	3.5 U	2.1 U	2.1 U	2.3 U	2.5 U
TOXAPHENE	210 U	350 U	210 U	210 U	230 U	250 U
AROCLOR-1016	40 U	67 U	41 U	41 U	45 U	48 U
AROCLOR-1221	81 U	140 U	83 U	84 U	90 U	98 U
AROCLOR-1232	40 U	67 U	41 U	41 U	45 U	48 U
AROCLOR-1242	40 U	67 U	41 U	41 U	45 U	48 U
AROCLOR-1248	40 U	67 U	41 U	41 U	45 U	48 U
AROCLOR-1254	40 U	67 U	41 U	41 U	45 U	48 U
AROCLOR-1260	40 U	67 U	41 U	41 U	45 U	120 J

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD07-06	73-SD07-612	73-SD08-06	73-SD08-612	73-SD09-06	73-SD09-612
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	05/22/95	05/22/95	05/21/95	05/21/95	05/21/95	05/21/95
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
BETA-BHC	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
DELTA-BHC	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
GAMMA-BHC (LINDANE)	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
HEPTACHLOR	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
ALDRIN	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
HEPTACHLOR EPOXIDE	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
ENDOSULFAN I	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
DIELDRIN	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
4,4'-DDE	4.3 U	4.3 U	4.9 U	5.6 J	13 U	12 UJ
ENDRIN	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
ENDOSULFAN II	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
4,4'-DDD	4.3 UJ	4.3 UJ	4.9 UJ	12 J	13 UJ	12 UJ
ENDOSULFAN SULFATE	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
4,4'-DDT	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
METHOXYCHLOR	22 U	22 U	25 U	25 U	66 U	64 UJ
ENDRIN KETONE	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
ENDRIN ALDEHYDE	4.3 U	4.3 U	4.9 U	4.9 U	13 U	12 UJ
ALPHA-CHLORDANE	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
GAMMA-CHLORDANE	2.2 U	2.2 U	2.5 U	2.5 U	6.6 U	6.4 UJ
TOXAPHENE	220 U	220 U	250 U	250 U	660 U	640 UJ
AROCLOR-1016	43 U	43 U	49 U	49 U	130 U	120 UJ
AROCLOR-1221	87 U	87 U	99 U	100 U	260 U	250 UJ
AROCLOR-1232	43 U	43 U	49 U	49 U	130 U	120 UJ
AROCLOR-1242	43 U	43 U	49 U	49 U	130 U	120 UJ
AROCLOR-1248	43 U	43 U	49 U	49 U	130 U	120 UJ
AROCLOR-1254	43 U	43 U	49 U	49 U	130 U	120 UJ
AROCLOR-1260	43 U	43 U	49 U	49 U	130 U	120 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD11-06	73-SD11-612	73-SD12-06	73-SD12-612
METHOD	8080	8080	8080	8080
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95
PESTICIDE/PCBS (ug/kg)				
ALPHA-BHC	11 U	8.8 U	4.8 U	4 U
BETA-BHC	11 U	8.8 U	4.8 U	4 U
DELTA-BHC	11 U	8.8 U	4.8 U	4 U
GAMMA-BHC (LINDANE)	11 U	8.8 U	4.8 U	4 U
HEPTACHLOR	11 U	8.8 U	4.8 U	4 U
ALDRIN	11 U	8.8 U	4.8 U	4 U
HEPTACHLOR EPOXIDE	11 U	8.8 U	4.8 U	4 U
ENDOSULFAN I	11 U	8.8 U	4.8 U	4 U
DIELDRIN	21 U	17 U	9.2 U	7.7 U
4,4'-DDE	21 U	17 U	9.2 U	7.7 U
ENDRIN	21 U	17 U	9.2 U	7.7 U
ENDOSULFAN II	21 U	17 U	9.2 U	7.7 U
4,4'-DDD	21 U	17 U	9.2 U	7.7 U
ENDOSULFAN SULFATE	21 U	17 U	9.2 U	7.7 U
4,4'-DDT	21 U	17 U	9.2 U	7.7 U
METHOXYCHLOR	110 UJ	88 UJ	48 UJ	40 UJ
ENDRIN KETONE	21 U	17 U	9.2 U	7.7 U
ENDRIN ALDEHYDE	21 U	17 U	9.2 U	7.7 U
ALPHA-CHLORDANE	11 U	8.8 U	4.8 U	4 U
GAMMA-CHLORDANE	11 U	8.8 U	4.8 U	4 U
TOXAPHENE	1100 U	880 U	480 U	400 U
AROCLOR-1016	210 U	170 U	92 U	77 U
AROCLOR-1221	420 U	350 U	190 U	160 U
AROCLOR-1232	210 U	170 U	92 U	77 U
AROCLOR-1242	210 U	170 U	92 U	77 U
AROCLOR-1248	210 U	170 U	92 U	77 U
AROCLOR-1254	210 U	170 U	92 U	77 U
AROCLOR-1260	210 U	170 U	92 U	77 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
ALPHA-BHC	2 U	11 U	ND	ND		0/22	NA	NA
BETA-BHC	2 U	11 U	ND	ND		0/22	NA	NA
DELTA-BHC	2 U	11 U	ND	ND		0/22	NA	NA
GAMMA-BHC (LINDANE)	2 U	11 U	ND	ND		0/22	NA	NA
HEPTACHLOR	2 U	11 U	ND	ND		0/22	NA	NA
ALDRIN	2 U	11 U	ND	ND		0/22	NA	NA
HEPTACHLOR EPOXIDE	2 U	11 U	ND	ND		0/22	NA	NA
ENDOSULFAN I	2 U	11 U	ND	ND		0/22	NA	NA
DIELDRIN	3.9 U	21 U	ND	ND		0/22	NA	NA
4,4'-DDE	3.9 U	21 U	5.6 J	17 J	73-SD06-612	5/22	11.08	9.80
ENDRIN	3.9 U	21 U	4.7	7.5 J	73-SD06-612	2/22	6.10	6.10
ENDOSULFAN II	3.9 U	21 U	ND	ND		0/22	NA	NA
4,4'-DDD	3.9 UJ	21 U	4.2 J	28	73-SD01-06	6/22	12.80	9.90
ENDOSULFAN SULFATE	3.9 U	21 U	ND	ND		0/22	NA	NA
4,4'-DDT	3.9 U	21 U	ND	ND		0/22	NA	NA
METHOXYCHLOR	20 U	110 UJ	ND	ND		0/22	NA	NA
ENDRIN KETONE	3.9 U	21 U	ND	ND		0/22	NA	NA
ENDRIN ALDEHYDE	3.9 U	21 U	ND	ND		0/22	NA	NA
ALPHA-CHLORDANE	2 U	11 U	ND	ND		0/22	NA	NA
GAMMA-CHLORDANE	2 U	11 U	ND	ND		0/22	NA	NA
TOXAPHENE	200 U	1100 U	ND	ND		0/22	NA	NA
AROCLOR-1016	39 U	210 U	ND	ND		0/22	NA	NA
AROCLOR-1221	80 U	420 U	ND	ND		0/22	NA	NA
AROCLOR-1232	39 U	210 U	ND	ND		0/22	NA	NA
AROCLOR-1242	39 U	210 U	ND	ND		0/22	NA	NA
AROCLOR-1248	39 U	210 U	ND	ND		0/22	NA	NA
AROCLOR-1254	39 U	210 U	ND	ND		0/22	NA	NA
AROCLOR-1260	39 U	210 U	120 J	120 J	73-SD06-612	1/22	120.00	120.00

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD01-06	73-SD01-612	73-SD02-06	73-SD02-612	73-SD03-06	73-SD03-612
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/08/95	05/08/95	05/08/95	05/08/95	05/22/95	05/22/95
METALS (mg/kg)						
ALUMINUM	5040	1450	4410	8090	431	675
ANTIMONY	14 U	14.5 U	14.4 U	14.3 U	12.3 U	12.2 U
ARSENIC	2.8 U	2.9 U	3.4	6.9	2.5 U	2.4 U
BARIUM	8.2	3.2	6.2	13.3	1.6	2.1
BERYLLIUM	0.28 U	0.29 U	0.29 U	0.29 U	0.25 U	0.24 U
CADMIUM	1.4 U	1.5 U	1.4 U	1.4 U	1.2 U	1.2 U
CALCIUM	555	483	2570	3220	4400	1010
CHROMIUM	8.2	2.9 U	9.6	17.1	2.5 U	3.3
COBALT	5.6 U	5.8 U	5.8 U	7.8 U	4.9 U	4.9 U
COPPER	2.8 U	2.9 U	4.9	3.4	2.5 U	2.4 U
IRON	2680	1010	7490	11700	416	504
LEAD	5.8	3.3	15.9	9.6	5	11.6
MAGNESIUM	284	140	900	1700	359	318
MANGANESE	7.4	4.8	10.3	21.6	3.4	4.5
MERCURY	0.14 U	0.15 U	0.14 U	0.14 U	0.12 U	0.12 U
NICKEL	5.6 U	5.8 U	5.8 U	5.7 U	4.9 U	4.9 U
POTASSIUM	279 U	291 U	491	1240	245 U	244 U
SELENIUM	1.4 U	1.5 U	1.4 U	1.4 U	1.2 U	1.2 U
SILVER	1.4 U	1.5 U	1.4 U	1.4 U	1.2 U	1.2 U
SODIUM	88.8	74.8	887	505	2140	1690
THALLIUM	2.8 U	2.9 U	2.9 U	2.9 U	2.5 U	2.4 U
VANADIUM	8.5	3.1	11.6	22.8	2.5 U	2.4 U
ZINC	14.9	9.9	30.6	21.6	8	12.3

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD04-06	73-SD04-612	73-SD05-06	73-SD05-612	73-SD06-06	73-SD06-612
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/21/95	05/21/95	05/22/95	05/22/95	05/22/95	05/22/95
METALS (mg/kg)						
ALUMINUM	4940	9400	829	832	2430	5180
ANTIMONY	12.3 U	20.8 U	12.3 U	12.7 U	13.9 U	14.8 U
ARSENIC	3.3	5.8	2.5 U	2.5 U	2.8 U	3 U
BARIUM	5.6	11.3	1.6	2.1	5.7	10.3
BERYLLIUM	0.25 U	0.42 U	0.25 U	0.25 U	0.28 U	0.3 U
CADMIUM	1.2 U	2.1 U	1.2 UJ	1.3 UJ	2.7 J	6.1 J
CALCIUM	3190	27800	1540	1200	766	1180
CHROMIUM	11.7	23.2	2.5 U	4.2	8.4	15.8
COBALT	9.5	8.3 U	4.9 U	5.1 U	5.5 U	7.68
COPPER	7.4	18.8	5.6 J	2.5 U	11 J	16.5 J
IRON	6050	11700	969 J	754 J	4420 J	6710 J
LEAD	30.7	33.6	7 J	11.3 J	24 J	47.7 J
MAGNESIUM	2130	3920	500	469	808	671
MANGANESE	26.3	55.8	6.3 J	7.8 J	17.1 J	15.9 J
MERCURY	0.12 U	0.21 U	0.12 U	0.13 U	0.14 U	0.15 U
NICKEL	4.9 U	8.3 U	4.9 U	5.1 U	5.5 U	6
POTASSIUM	1080	1450	247 U	254 U	455	454
SELENIUM	1.2 U	2.1 U	1.2 U	1.3 U	1.4 U	1.5 U
SILVER	1.2 U	2.1 U	1.2 U	1.3 U	1.4 U	1.5 U
SODIUM	7090	10600	2590	2720	2160	951
THALLIUM	2.5 U	4.2 U	2.5 U	2.5 U	2.8 U	3 U
VANADIUM	10.1	17.4	2.5 U	2.5 U	5.6	9.9
ZINC	36.2	95.4	20.1 J	9.6 J	48.3 J	65.9 J

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD07-06	73-SD07-612	73-SD08-06	73-SD08-612	73-SD09-06	73-SD09-612
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	05/22/95	05/22/95	05/21/95	05/21/95	05/21/95	05/21/95
METALS (mg/kg)						
ALUMINUM	1030	969	3920	12.3 U	21700	28100
ANTIMONY	13.1 U	13.1 U	14.9 U	15.4 U	39.5 U	38 U
ARSENIC	2.6 U	2.6 U	3 U	4.2	14.1	11.9
BARIUM	2.1	1.3	4.6	0.62 U	22	27.8
BERYLLIUM	0.26 U	0.26 U	0.3 U	0.31 U	0.79 U	0.76 U
CADMIUM	1.3 U	1.3 U	1.5 U	1.5 U	4 U	3.8 U
CALCIUM	3930	655	2630	12.3 U	13000	10500
CHROMIUM	3.9	2.6 U	25.7	3.1 U	52.1	55.9
COBALT	5.2 U	5.2 U	11.5	6.2 U	15.8 U	15.2 U
COPPER	2.6 U	2.6 U	3.2	3.1 U	20.5	17.7
IRON	1060	1030	3970	3.7	27400	26000
LEAD	5.3	4.6	41.4	20.3	37	39.6
MAGNESIUM	587	526	1450	15.4 U	9430	8490
MANGANESE	7.9	5.9	20	0.62 U	137	125
MERCURY	0.13 U	0.13 U	0.15 U	0.15 U	0.4 U	0.38 U
NICKEL	5.2 U	5.2 U	5.9 U	6.2 U	18.1	19.7
POTASSIUM	305	316	665	308 U	4060	4390
SELENIUM	1.3 U	1.3 U	1.5 U	1.5 U	4 U	3.8 U
SILVER	1.3 U	1.3 U	1.5 U	1.5 U	4 U	3.8 U
SODIUM	2790	2390	5160	61.5 U	28500	24000
THALLIUM	2.6 U	2.6 U	3 U	3.1 U	7.9 U	7.6 U
VANADIUM	2.6 U	2.6	7.5	3.1 U	45	50.8
ZINC	8.1	10.4	44.8	1.6 U	95	100

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD11-06	73-SD11-612	73-SD12-06	73-SD12-612
METHOD	CLP	CLP	CLP	CLP
DATE SAMPLED	05/09/95	05/09/95	05/09/95	05/09/95
METALS (mg/kg)				
ALUMINUM	16000	18400	9710	11800
ANTIMONY	62.9 U	51.5 U	28.3 U	23.6 U
ARSENIC	12.6 U	10.3 U	6.9	7.1
BARIUM	13.2	17.1	8.1	10.1
BERYLLIUM	1.3 U	1 U	0.57 U	0.47 U
CADMIUM	6.3 U	5.2 U	2.8 U	2.4 U
CALCIUM	7180	7610	2970	4560
CHROMIUM	31.4	31.4	25.7	26.6
COBALT	25.2 U	20.6 U	11.3 U	16 U
COPPER	14.6	12.3	9.2	5.5
IRON	17300	17700	16000	16700
LEAD	41.6	36.8	18.7	10.5
MAGNESIUM	7560	6340	3920	4050
MANGANESE	45.5	51.2	51.4	71
MERCURY	0.63 U	0.52 U	0.28 U	0.24 U
NICKEL	25.2 U	20.6 U	12	10.6
POTASSIUM	3160	1840	2140	2310
SELENIUM	6.3 U	5.2 U	2.8 U	2.4 U
SILVER	6.3 U	5.2 U	2.8 U	2.4 U
SODIUM	17800	8000	11000	7850
THALLIUM	12.6 U	10.3 U	5.7 U	4.7 U
VANADIUM	37.8	36.5	21.9	23.7
ZINC	89.7	76.8	49.6	29.9

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	12.3 U	12.3 U	431	28100	73-SD09-612	21/22	7396.95	4940.00
ANTIMONY	12.2 U	62.9 U	ND	ND		0/22	NA	NA
ARSENIC	2.4 U	12.6 U	3.3	14.1	73-SD09-06	9/22	7.07	6.90
BARIUM	0.62 U	0.62 U	1.3	27.8	73-SD09-612	21/22	8.45	6.20
BERYLLIUM	0.24 U	1.3 U	ND	ND		0/22	NA	NA
CADMIUM	1.2 U	6.3 U	2.7 J	6.1 J	73-SD06-612	2/22	4.40	4.40
CALCIUM	12.3 U	12.3 U	483	27800	73-SD04-612	21/22	4807.10	2970.00
CHROMIUM	2.5 U	3.1 U	3.3	55.9	73-SD09-612	17/22	20.84	17.10
COBALT	4.9 U	25.2 U	7.68	11.5	73-SD08-06	3/22	9.56	9.50
COPPER	2.4 U	3.1 U	3.2	20.5	73-SD09-06	14/22	10.76	10.10
IRON	NA	NA	3.7	27400	73-SD09-06	22/22	8253.03	5235.00
LEAD	NA	NA	3.3	47.7 J	73-SD06-612	22/22	20.97	17.30
MAGNESIUM	15.4 U	15.4 U	140	9430	73-SD09-06	21/22	2597.71	900.00
MANGANESE	0.62 U	0.62 U	3.4	137	73-SD09-06	21/22	33.15	17.10
MERCURY	0.12 U	0.63 U	ND	ND		0/22	NA	NA
NICKEL	4.9 U	25.2 U	6	19.7	73-SD09-612	5/22	13.28	12.00
POTASSIUM	244 U	308 U	305	4390	73-SD09-612	15/22	1623.73	1240.00
SELENIUM	1.2 U	6.3 U	ND	ND		0/22	NA	NA
SILVER	1.2 U	6.3 U	ND	ND		0/22	NA	NA
SODIUM	61.5 U	61.5 U	74.8	28500	73-SD09-06	21/22	6618.41	2720.00
THALLIUM	2.4 U	12.6 U	ND	ND		0/22	NA	NA
VANADIUM	2.4 U	3.1 U	2.6	50.8	73-SD09-612	16/22	19.68	14.50
ZINC	1.6 U	1.6 U	8	100	73-SD09-612	21/22	41.77	30.60

FISH (FILLET AND WHOLE BODY)

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BF01F	73-FS01-SF01F	73-FS02-SF01F	73-FS02-SPM01F	73-FS02-SS01F	73-FS03-AC01F
METHOD	8240	8240	8240	8240	8240	8240
VOLATILES (ug/kg)						
CHLOROMETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
BROMOMETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
VINYL CHLORIDE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
CHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
METHYLENE CHLORIDE	4800 U	48000 U	48000 U	4800 U	4800 U	1100 J
ACETONE	17000	96000	140000	90000	74000 J	28000 J
CARBON DISULFIDE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHENE (TOTAL)	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
CHLOROFORM	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
2-BUTANONE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,1,1-TRICHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
CARBON TETRACHLORIDE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
BROMODICHLOROMETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,2-DICHLOROPROPANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
CIS-1,3-DICHLOROPROPENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
TRICHLOROETHENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
DIBROMOCHLOROMETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,1,2-TRICHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
BENZENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
TRANS-1,3-DICHLOROPROPENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
BROMOFORM	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
4-METHYL-2-PENTANONE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
2-HEXANONE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
TETRACHLOROETHENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
1,1,2,2-TETRACHLOROETHANE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
TOLUENE	4800 U	48000 U	48000 U	4800 U	4800 U	580 J
CHLOROBENZENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
ETHYLBENZENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
STYRENE	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U
XYLENES (TOTAL)	4800 U	48000 U	48000 U	4800 U	4800 U	4800 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS03-SF01F	73-FS03-SM01F
METHOD	8240	8240
VOLATILES (ug/kg)		
CHLOROMETHANE	4800 U	4800 U
BROMOMETHANE	4800 U	4800 U
VINYL CHLORIDE	4800 U	4800 U
CHLOROETHANE	4800 U	4800 U
METHYLENE CHLORIDE	4800 U	4800 U
ACETONE	62000 J	6400
CARBON DISULFIDE	4800 U	4800 U
1,1-DICHLOROETHENE	4800 U	4800 U
1,1-DICHLOROETHANE	4800 U	4800 U
1,2-DICHLOROETHENE (TOTAL)	4800 U	4800 U
CHLOROFORM	4800 U	4800 U
1,2-DICHLOROETHANE	4800 U	4800 U
2-BUTANONE	4800 U	4800 U
1,1,1-TRICHLOROETHANE	4800 U	4800 U
CARBON TETRACHLORIDE	4800 U	4800 U
BROMODICHLOROMETHANE	4800 U	4800 U
1,2-DICHLOROPROPANE	4800 U	4800 U
CIS-1,3-DICHLOROPROPENE	4800 U	4800 U
TRICHLOROETHENE	4800 U	4800 U
DIBROMOCHLOROMETHANE	4800 U	4800 U
1,1,2-TRICHLOROETHANE	4800 U	4800 U
BENZENE	4800 U	4800 U
TRANS-1,3-DICHLOROPROPENE	4800 U	4800 U
BROMOFORM	4800 U	4800 U
4-METHYL-2-PENTANONE	4800 U	4800 U
2-HEXANONE	4800 U	4800 U
TETRACHLOROETHENE	4800 U	4800 U
1,1,2,2-TETRACHLOROETHANE	4800 U	4800 U
TOLUENE	520 J	4800 U
CHLOROBENZENE	4800 U	4800 U
ETHYLBENZENE	4800 U	4800 U
STYRENE	4800 U	4800 U
XYLENES (TOTAL)	4800 U	4800 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
BROMOMETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
VINYL CHLORIDE	4800 U	48000 U	ND	ND		0/8	NA	NA
CHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
METHYLENE CHLORIDE	4800 U	48000 U	1100 J	1100 J	73-FS03-AC01F	1/8	1100.00	1100.00
ACETONE	NA	NA	6400	140000	73-FS02-SF01F	8/8	64175.00	68000.00
CARBON DISULFIDE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHENE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,1-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHENE (TOTAL)	4800 U	48000 U	ND	ND		0/8	NA	NA
CHLOROFORM	4800 U	48000 U	ND	ND		0/8	NA	NA
1,2-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
2-BUTANONE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,1,1-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
CARBON TETRACHLORIDE	4800 U	48000 U	ND	ND		0/8	NA	NA
BROMODICHLOROMETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,2-DICHLOROPROPANE	4800 U	48000 U	ND	ND		0/8	NA	NA
CIS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/8	NA	NA
TRICHLOROETHENE	4800 U	48000 U	ND	ND		0/8	NA	NA
DIBROMOCHLOROMETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,1,2-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
BENZENE	4800 U	48000 U	ND	ND		0/8	NA	NA
TRANS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/8	NA	NA
BROMOFORM	4800 U	48000 U	ND	ND		0/8	NA	NA
4-METHYL-2-PENTANONE	4800 U	48000 U	ND	ND		0/8	NA	NA
2-HEXANONE	4800 U	48000 U	ND	ND		0/8	NA	NA
TETRACHLOROETHENE	4800 U	48000 U	ND	ND		0/8	NA	NA
1,1,2,2-TETRACHLOROETHANE	4800 U	48000 U	ND	ND		0/8	NA	NA
TOLUENE	4800 U	48000 U	520 J	580 J	73-FS03-AC01F	2/8	550.00	550.00
CHLOROBENZENE	4800 U	48000 U	ND	ND		0/8	NA	NA
ETHYLBENZENE	4800 U	48000 U	ND	ND		0/8	NA	NA
STYRENE	4800 U	48000 U	ND	ND		0/8	NA	NA
XYLENES (TOTAL)	4800 U	48000 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BF01F	73-FS01-SF01F	73-FS02-SF01F	73-FS02-SPM01F	73-FS02-SS01F	73-FS03-AC01F
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)						
PHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BIS(2-CHLOROETHYL) ETHER	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2-CHLOROPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
1,3-DICHLOROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
1,4-DICHLOROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
1,2-DICHLOROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2-METHYLPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-METHYLPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
N-NITROSO-DI-N-PROPYLAMINE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
HEXACHLOROETHANE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
NITROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
ISOPHORONE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2-NITROPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4-DIMETHYLPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4-DICHLOROPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
1,2,4-TRICHLOROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
NAPHTHALENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-CHLOROANILINE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
HEXACHLOROBUTADIENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-CHLORO-3-METHYLPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2-METHYLNAPHTHALENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
HEXACHLOROCYCLOPENTADIENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4,6-TRICHLOROPHENOL	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4,5-TRICHLOROPHENOL	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
2-CHLORONAPHTHALENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2-NITROANILINE	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
DIMETHYL PHTHALATE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
ACENAPHTHYLENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,6-DINITROTOLUENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
3-NITROANILINE	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
ACENAPHTHENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4-DINITROPHENOL	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
4-NITROPHENOL	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BF01F	73-FS01-SF01F	73-FS02-SF01F	73-FS02-SPM01F	73-FS02-SS01F	73-FS03-AC01F
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (cont)						
DIBENZOFURAN	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
2,4-DINITROTOLUENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
DIETHYL PHTHALATE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-CHLOROPHENYL PHENYL ETHER	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
FLUORENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-NITROANILINE	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
4,6-DINITRO-2-METHYLPHENOL	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
N-NITROSODIPHENYLAMINE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
4-BROMOPHENYL PHENYL ETHER	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
HEXACHLOROBENZENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
PENTACHLOROPHENOL	2500 U	2500 U	2500 U	25000 U	20000 U	2500 U
PHENANTHRENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
ANTHRACENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
CARBAZOLE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
DI-N-BUTYL PHTHALATE	1000 U	1000 U	1000 U	10000 U	8000 U	4400
FLUORANTHENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
PYRENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BUTYL BENZYL PHTHALATE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
3,3'-DICHLOROBENZIDINE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BENZO(A)ANTHRACENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
CHRYSENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
DI-N-OCTYL PHTHALATE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BENZO(B)FLUORANTHENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BENZO(K)FLUORANTHENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BENZO(A)PYRENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
INDENO(1,2,3-CD)PYRENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
DIBENZ(A,H)ANTHRACENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BENZO(G,H,I)PERYLENE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U
BIS(2-CHLOROETHOXY)-METHANE	1000 U	1000 U	1000 U	10000 U	8000 U	1000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS03-SF01F	73-FS03-SM01F
METHOD	8270	8270
SEMIVOLATILES (ug/kg)		
PHENOL	4000 U	2000 U
BIS(2-CHLOROETHYL) ETHER	4000 U	2000 U
2-CHLOROPHENOL	4000 U	2000 U
1,3-DICHLOROBENZENE	4000 U	2000 U
1,4-DICHLOROBENZENE	4000 U	2000 U
1,2-DICHLOROBENZENE	4000 U	2000 U
2-METHYLPHENOL	4000 U	2000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	4000 U	2000 U
4-METHYLPHENOL	4000 U	2000 U
N-NITROSO-DI-N-PROPYLAMINE	4000 U	2000 U
HEXACHLOROETHANE	4000 U	2000 U
NITROBENZENE	4000 U	2000 U
ISOPHORONE	4000 U	2000 U
2-NITROPHENOL	4000 U	2000 U
2,4-DIMETHYLPHENOL	4000 U	2000 U
2,4-DICHLOROPHENOL	4000 U	2000 U
1,2,4-TRICHLOROBENZENE	4000 U	2000 U
NAPHTHALENE	4000 U	2000 U
4-CHLOROANILINE	4000 U	2000 U
HEXACHLOROBUTADIENE	4000 U	2000 U
4-CHLORO-3-METHYLPHENOL	4000 U	2000 U
2-METHYLNAPHTHALENE	4000 U	2000 U
HEXACHLOROCYCLOPENTADIENE	4000 U	2000 U
2,4,6-TRICHLOROPHENOL	4000 U	2000 U
2,4,5-TRICHLOROPHENOL	10000 UJ	5000 U
2-CHLORONAPHTHALENE	4000 U	2000 U
2-NITROANILINE	10000 U	5000 U
DIMETHYL PHTHALATE	4000 U	2000 U
ACENAPHTHYLENE	4000 U	2000 U
2,6-DINITROTOLUENE	4000 U	2000 U
3-NITROANILINE	10000 UJ	5000 UJ
ACENAPHTHENE	4000 U	2000 U
2,4-DINITROPHENOL	10000 U	5000 U
4-NITROPHENOL	10000 U	5000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS03-SF01F	73-FS03-SM01F
METHOD	8270	8270
SEMIVOLATILES (cont)		
DIBENZOFURAN	4000 U	2000 U
2,4-DINITROTOLUENE	4000 U	2000 U
DIETHYL PHTHALATE	4000 U	2000 U
4-CHLOROPHENYL PHENYL ETHER	4000 U	2000 U
FLUORENE	4000 U	2000 U
4-NITROANILINE	10000 U	5000 U
4,6-DINITRO-2-METHYLPHENOL	10000 U	5000 U
N-NITROSODIPHENYLAMINE	4000 U	2000 U
4-BROMOPHENYL PHENYL ETHER	4000 U	2000 U
HEXACHLOROBENZENE	4000 U	2000 U
PENTACHLOROPHENOL	10000 U	5000 U
PHENANTHRENE	4000 U	2000 U
ANTHRACENE	4000 U	2000 U
CARBAZOLE	4000 U	2000 U
DI-N-BUTYL PHTHALATE	4000 U	2000 U
FLUORANTHENE	4000 U	2000 U
PYRENE	4000 U	2000 U
BUTYL BENZYL PHTHALATE	4000 U	2000 U
3,3'-DICHLOROBENZIDINE	4000 U	2000 U
BENZO(A)ANTHRACENE	4000 U	2000 U
CHRYSENE	4000 U	2000 U
DI-N-OCTYL PHTHALATE	4000 U	2000 U
BENZO(B)FLUORANTHENE	4000 U	2000 U
BENZO(K)FLUORANTHENE	4000 U	2000 U
BENZO(A)PYRENE	4000 U	2000 U
INDENO(1,2,3-CD)PYRENE	4000 U	2000 U
DIBENZ(A,H)ANTHRACENE	4000 U	2000 U
BENZO(G,H,I)PERYLENE	4000 U	2000 U
BIS(2-CHLOROETHOXY)-METHANE	4000 U	2000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHYL) ETHER	1000 U	10000 U	ND	ND		0/8	NA	NA
2-CHLOROPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
1,3-DICHLOROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
1,4-DICHLOROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
1,2-DICHLOROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
2-METHYLPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 U	10000 U	ND	ND		0/8	NA	NA
4-METHYLPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	1000 U	10000 U	ND	ND		0/8	NA	NA
HEXACHLOROETHANE	1000 U	10000 U	ND	ND		0/8	NA	NA
NITROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
ISOPHORONE	1000 U	10000 U	ND	ND		0/8	NA	NA
2-NITROPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4-DIMETHYLPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4-DICHLOROPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
1,2,4-TRICHLOROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
NAPHTHALENE	1000 U	10000 U	ND	ND		0/8	NA	NA
4-CHLOROANILINE	1000 U	10000 U	ND	ND		0/8	NA	NA
HEXACHLOROBUTADIENE	1000 U	10000 U	ND	ND		0/8	NA	NA
4-CHLORO-3-METHYLPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
2-METHYLNAPHTHALENE	1000 U	10000 U	ND	ND		0/8	NA	NA
HEXACHLOROCYCLOPENTADIENE	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4,6-TRICHLOROPHENOL	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4,5-TRICHLOROPHENOL	2500 U	25000 U	ND	ND		0/8	NA	NA
2-CHLORONAPHTHALENE	1000 U	10000 U	ND	ND		0/8	NA	NA
2-NITROANILINE	2500 U	25000 U	ND	ND		0/8	NA	NA
DIMETHYL PHTHALATE	1000 U	10000 U	ND	ND		0/8	NA	NA
ACENAPHTHYLENE	1000 U	10000 U	ND	ND		0/8	NA	NA
2,6-DINITROTOLUENE	1000 U	10000 U	ND	ND		0/8	NA	NA
3-NITROANILINE	2500 U	25000 U	ND	ND		0/8	NA	NA
ACENAPHTHENE	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4-DINITROPHENOL	2500 U	25000 U	ND	ND		0/8	NA	NA
4-NITROPHENOL	2500 U	25000 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (cont)								
DIBENZOFURAN	1000 U	10000 U	ND	ND		0/8	NA	NA
2,4-DINITROTOLUENE	1000 U	10000 U	ND	ND		0/8	NA	NA
DIETHYL PHTHALATE	1000 U	10000 U	ND	ND		0/8	NA	NA
4-CHLOROPHENYL PHENYL ETHER	1000 U	10000 U	ND	ND		0/8	NA	NA
FLUORENE	1000 U	10000 U	ND	ND		0/8	NA	NA
4-NITROANILINE	2500 U	25000 U	ND	ND		0/8	NA	NA
4,6-DINITRO-2-METHYLPHENOL	2500 U	25000 U	ND	ND		0/8	NA	NA
N-NITROSODIPHENYLAMINE	1000 U	10000 U	ND	ND		0/8	NA	NA
4-BROMOPHENYL PHENYL ETHER	1000 U	10000 U	ND	ND		0/8	NA	NA
HEXACHLOROBENZENE	1000 U	10000 U	ND	ND		0/8	NA	NA
PENTACHLOROPHENOL	2500 U	25000 U	ND	ND		0/8	NA	NA
PHENANTHRENE	1000 U	10000 U	ND	ND		0/8	NA	NA
ANTHRACENE	1000 U	10000 U	ND	ND		0/8	NA	NA
CARBAZOLE	1000 U	10000 U	ND	ND		0/8	NA	NA
DI-N-BUTYL PHTHALATE	1000 U	10000 U	4400	4400	73-FS03-AC01F	1/8	4400.00	4400.00
FLUORANTHENE	1000 U	10000 U	ND	ND		0/8	NA	NA
PYRENE	1000 U	10000 U	ND	ND		0/8	NA	NA
BUTYL BENZYL PHTHALATE	1000 U	10000 U	ND	ND		0/8	NA	NA
3,3'-DICHLOROBENZIDINE	1000 U	10000 U	ND	ND		0/8	NA	NA
BENZO(A)ANTHRACENE	1000 U	10000 U	ND	ND		0/8	NA	NA
CHRYSENE	1000 U	10000 U	ND	ND		0/8	NA	NA
DI-N-OCTYL PHTHALATE	1000 U	10000 U	ND	ND		0/8	NA	NA
BENZO(B)FLUORANTHENE	1000 U	10000 U	ND	ND		0/8	NA	NA
BENZO(K)FLUORANTHENE	1000 U	10000 U	ND	ND		0/8	NA	NA
BENZO(A)PYRENE	1000 U	10000 U	ND	ND		0/8	NA	NA
INDENO(1,2,3-CD)PYRENE	1000 U	10000 U	ND	ND		0/8	NA	NA
DIBENZ(A,H)ANTHRACENE	1000 U	10000 U	ND	ND		0/8	NA	NA
BENZO(G,H,I)PERYLENE	1000 U	10000 U	ND	ND		0/8	NA	NA
BIS(2-CHLOROETHOXY)-METHANE	1000 U	10000 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (FILLET)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BF01F	73-FS01-SF01F	73-FS02-SF01F	73-FS02-SPM01F	73-FS02-SS01F	73-FS03-AC01F
METHOD	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
BETA-BHC	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
DELTA-BHC	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
GAMMA-BHC (LINDANE)	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
HEPTACHLOR	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
ALDRIN	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
HEPTACHLOR EPOXIDE	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
ENDOSULFAN I	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
DIELDRIN	9.9 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ	9.9 UJ
4,4'-DDE	9.9 UJ	9.9 UJ	9.9 UJ	9.9 UJ	6.4 UJ	9.9 UJ
ENDRIN	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 J	9.9 UJ
ENDOSULFAN II	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 UJ	9.9 UJ
4,4'-DDD	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 UJ	9.9 UJ
ENDOSULFAN SULFATE	9.9 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ	9.9 UJ
4,4'-DDT	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 UJ	9.9 UJ
METHOXYCHLOR	51 UJ	51 U	51 U	51 UJ	50 UJ	51 UJ
ENDRIN KETONE	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 UJ	9.9 UJ
ENDRIN ALDEHYDE	9.9 UJ	9.9 U	9.9 U	9.9 UJ	9.8 UJ	9.9 UJ
ALPHA-CHLORDANE	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
GAMMA-CHLORDANE	5.1 UJ	5.1 U	5.1 U	5.1 UJ	5 UJ	5.1 UJ
TOXAPHENE	510 UJ	510 U	510 U	510 UJ	500 UJ	510 UJ
AROCLOR-1016	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ
AROCLOR-1221	200 UJ	200 U	200 U	200 UJ	200 UJ	200 UJ
AROCLOR-1232	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ
AROCLOR-1242	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ
AROCLOR-1248	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ
AROCLOR-1254	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ
AROCLOR-1260	99 UJ	99 U	99 U	99 UJ	98 UJ	99 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (FILLET)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS03-SF01F	73-FS03-SM01F
METHOD	8080	8080
PESTICIDE/PCBS (ug/kg)		
ALPHA-BHC	5.1 U	5.1 UJ
BETA-BHC	5.1 U	5.1 UJ
DELTA-BHC	5.1 U	5.1 UJ
GAMMA-BHC (LINDANE)	5.1 U	5.1 UJ
HEPTACHLOR	5.1 U	5.1 UJ
ALDRIN	5.1 U	5.1 UJ
HEPTACHLOR EPOXIDE	5.1 U	5.1 UJ
ENDOSULFAN I	5.1 U	5.1 UJ
DIELDRIN	9.9 UJ	9.9 UJ
4,4'-DDE	9.9 UJ	9.9 UJ
ENDRIN	9.9 U	9.9 UJ
ENDOSULFAN II	9.9 U	9.9 UJ
4,4'-DDD	9.9 U	9.9 UJ
ENDOSULFAN SULFATE	9.9 UJ	9.9 UJ
4,4'-DDT	9.9 U	9.9 UJ
METHOXYCHLOR	51 U	51 UJ
ENDRIN KETONE	9.9 U	9.9 UJ
ENDRIN ALDEHYDE	9.9 U	9.9 UJ
ALPHA-CHLORDANE	5.1 U	5.1 UJ
GAMMA-CHLORDANE	5.1 U	5.1 UJ
TOXAPHENE	510 U	510 UJ
AROCLOR-1016	99 U	99 UJ
AROCLOR-1221	200 U	200 UJ
AROCLOR-1232	99 U	99 UJ
AROCLOR-1242	99 U	99 UJ
AROCLOR-1248	99 U	99 UJ
AROCLOR-1254	99 U	99 UJ
AROCLOR-1260	99 U	99 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (FILLET)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
ALPHA-BHC	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
BETA-BHC	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
DELTA-BHC	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
GAMMA-BHC (LINDANE)	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
HEPTACHLOR	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
ALDRIN	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
HEPTACHLOR EPOXIDE	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
ENDOSULFAN I	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
DIELDRIN	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
4,4'-DDE	6.4 UJ	9.9 UJ	ND	ND		0/8	NA	NA
ENDRIN	9.9 UJ	9.9 UJ	9.8 J	9.8 J	73-FS02-SS01F	1/8	9.80	9.80
ENDOSULFAN II	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
4,4'-DDD	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
ENDOSULFAN SULFATE	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
4,4'-DDT	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
METHOXYCHLOR	50 UJ	51 UJ	ND	ND		0/8	NA	NA
ENDRIN KETONE	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
ENDRIN ALDEHYDE	9.8 UJ	9.9 UJ	ND	ND		0/8	NA	NA
ALPHA-CHLORDANE	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
GAMMA-CHLORDANE	5 UJ	5.1 UJ	ND	ND		0/8	NA	NA
TOXAPHENE	500 UJ	510 UJ	ND	ND		0/8	NA	NA
AROCLOR-1016	98 UJ	99 UJ	ND	ND		0/8	NA	NA
AROCLOR-1221	200 UJ	200 UJ	ND	ND		0/8	NA	NA
AROCLOR-1232	98 UJ	99 UJ	ND	ND		0/8	NA	NA
AROCLOR-1242	98 UJ	99 UJ	ND	ND		0/8	NA	NA
AROCLOR-1248	98 UJ	99 UJ	ND	ND		0/8	NA	NA
AROCLOR-1254	98 UJ	99 UJ	ND	ND		0/8	NA	NA
AROCLOR-1260	98 UJ	99 UJ	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN FISH TISSUE (FILLET)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BF01F	73-FS01-SF01F	73-FS02-SF01F	73-FS02-SPM01F	73-FS02-SS01F	73-FS03-AC01F
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)						
ALUMINUM	0.99 U	1.3 U	1.5 U	1.2 U	2.6 U	3.1 U
ANTIMONY	1 U	1 U	1 U	1 U	1 U	1 U
ARSENIC	1.2 J	2.5 J	3.3 J	2.4 J	0.17 J	2.9 J
BARIUM	0.066 U	0.094 U	0.19 U	0.034 U	0.079 U	0.15 U
BERYLLIUM	0.015 U	0.02 U	0.015 U	0.015 U	0.015 U	0.015 U
CADMIUM	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
CALCIUM	1520 J	183 J	2310 J	202 J	562 J	4540 J
CHROMIUM	0.27 U	0.24 U	0.3 U	0.25 U	0.22 U	0.45 U
COBALT	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
COPPER	1.1	0.55 U	0.9	1.1	0.94	0.86
IRON	9 J	2.3 U	3.2 U	9 J	5 J	4.4 J
LEAD	0.07	0.06 U	0.054 U	0.054 U	0.054 U	0.054 U
MAGNESIUM	330 J	318 J	365 J	424 J	307 J	376 J
MANGANESE	0.18 J	0.1 J	0.36 J	0.11 J	0.82 J	0.57 J
MERCURY	0.11 J	0.063 J	0.04 UJ	0.18 J	0.04 UJ	0.094 J
NICKEL	0.86 U	0.88 U	0.86 U	0.86 U	0.86 U	0.87 U
POTASSIUM	3850 J	4030 J	4400 J	4790 J	4480 J	3920 J
SELENIUM	0.59	0.23	0.3	0.44	0.47	0.35
SILVER	0.094 U	0.1 U	0.094 U	0.094 U	0.094 U	0.094 U
SODIUM	1030	663	642	544	641	706
THALLIUM	0.11 U	0.12 U	0.11 U	0.11 U	0.11 U	0.11 U
VANADIUM	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
ZINC	12.4 J	8.2 J	10.3 J	7.1 J	4.2 J	9.2 J
BORON	0.7 U	0.72 U	0.78 U	0.7 U	0.7 U	0.71 U
MOLYBDENUM	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
TIN	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U
CYANIDE, TOTAL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN FISH TISSUE (FILLET)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS03-SF01F	73-FS03-SM01F
METHOD	CLP	CLP
METALS (mg/kg)		
ALUMINUM	1 U	1 U
ANTIMONY	1 U	1 U
ARSENIC	2.8 J	0.5 J
BARIUM	0.054 U	0.04
BERYLLIUM	0.02 U	0.02 U
CADMIUM	0.1 U	0.1 U
CALCIUM	734 J	326 J
CHROMIUM	0.24 U	0.18 U
COBALT	0.32 U	0.32 U
COPPER	0.55 U	0.43
IRON	1.6 U	4.8 J
LEAD	0.06 U	0.06 U
MAGNESIUM	325 J	243 J
MANGANESE	0.15 J	0.08 J
MERCURY	0.04 UJ	0.04 UJ
NICKEL	0.88 U	0.88 U
POTASSIUM	4110 J	3060 J
SELENIUM	0.31	0.12 UJ
SILVER	0.095 U	0.1 U
SODIUM	596	678
THALLIUM	0.12 U	0.12 U
VANADIUM	0.12 U	0.12 U
ZINC	8.3 J	7.2 J
BORON	1.1 U	0.72 U
MOLYBDENUM	0.12 U	0.12 U
TIN	9.6 U	9.6 U
CYANIDE, TOTAL	0.5 U	0.5 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN FISH TISSUE (FILLET)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	0.99 U	3.1 U	ND	ND		0/8	NA	NA
ANTIMONY	1 U	1 U	ND	ND		0/8	NA	NA
ARSENIC	NA	NA	0.17 J	3.3 J	73-FS02-SF01F	8/8	1.97	2.45
BARIUM	0.034 U	0.19 U	0.04	0.04	73-FS03-SM01F	1/8	0.04	0.04
BERYLLIUM	0.015 U	0.02 U	ND	ND		0/8	NA	NA
CADMIUM	0.1 U	0.1 U	ND	ND		0/8	NA	NA
CALCIUM	NA	NA	183 J	4540 J	73-FS03-AC01F	8/8	1297.13	648.00
CHROMIUM	0.18 U	0.45 U	ND	ND		0/8	NA	NA
COBALT	0.32 U	0.32 U	ND	ND		0/8	NA	NA
COPPER	0.55 U	0.55 U	0.43	1.1	73-FS02-SPM01F	6/8	0.89	0.92
IRON	1.6 U	3.2 U	4.4 J	9 J	73-FS02-SPM01F	5/8	6.44	5.00
LEAD	0.054 U	0.06 U	0.07	0.07	73-FS01-BF01F	1/8	0.07	0.07
MAGNESIUM	NA	NA	243 J	424 J	73-FS02-SPM01F	8/8	336.00	327.50
MANGANESE	NA	NA	0.08 J	0.82 J	73-FS02-SS01F	8/8	0.30	0.17
MERCURY	0.04 UJ	0.04 UJ	0.063 J	0.18 J	73-FS02-SPM01F	4/8	0.11	0.10
NICKEL	0.86 U	0.88 U	ND	ND		0/8	NA	NA
POTASSIUM	NA	NA	3060 J	4790 J	73-FS02-SPM01F	8/8	4080.00	4070.00
SELENIUM	0.12 UJ	0.12 UJ	0.23	0.59	73-FS01-BF01F	7/8	0.38	0.35
SILVER	0.094 U	0.1 U	ND	ND		0/8	NA	NA
SODIUM	NA	NA	544	1030	73-FS01-BF01F	8/8	687.50	652.50
THALLIUM	0.11 U	0.12 U	ND	ND		0/8	NA	NA
VANADIUM	0.12 U	0.12 U	ND	ND		0/8	NA	NA
ZINC	NA	NA	4.2 J	12.4 J	73-FS01-BF01F	8/8	8.36	8.25
BORON	0.7 U	1.1 U	ND	ND		0/8	NA	NA
MOLYBDENUM	0.12 U	0.12 U	ND	ND		0/8	NA	NA
TIN	9.6 U	9.6 U	ND	ND		0/8	NA	NA
CYANIDE, TOTAL	0.5 U	0.5 U	ND	ND		0/8	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-SF01W	73-FS02-PF01W	73-FS02-SF01W	73-FS02-YM01W	73-FS03-YM01W
METHOD	8240	8240	8240	8240	8240
VOLATILES (ug/kg)					
CHLOROMETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
BROMOMETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
VINYL CHLORIDE	48000 U	4800 U	4800 U	4800 U	4800 U
CHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
METHYLENE CHLORIDE	48000 U	4800 U	4800 U	4800 U	4800 U
ACETONE	540000	11000	26000	22000	60000 B
CARBON DISULFIDE	48000 U	4800 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHENE	48000 U	4800 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHENE (TOTAL)	48000 U	4800 U	4800 U	4800 U	4800 U
CHLOROFORM	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
2-BUTANONE	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,1-TRICHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
CARBON TETRACHLORIDE	48000 U	4800 U	4800 U	4800 U	4800 U
BROMODICHLOROMETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROPROPANE	48000 U	4800 U	4800 U	4800 U	4800 U
CIS-1,3-DICHLOROPROPENE	48000 U	4800 U	4800 U	4800 U	4800 U
TRICHLOROETHENE	48000 U	4800 U	4800 U	4800 U	4800 U
DIBROMOCHLOROMETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,2-TRICHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
BENZENE	48000 U	4800 U	4800 U	4800 U	4800 U
TRANS-1,3-DICHLOROPROPENE	48000 U	4800 U	4800 U	4800 U	4800 U
BROMOFORM	48000 U	4800 U	4800 U	4800 U	4800 U
4-METHYL-2-PENTANONE	48000 U	4800 U	4800 U	4800 U	4800 U
2-HEXANONE	48000 U	4800 U	4800 U	4800 U	4800 U
TETRACHLOROETHENE	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,2,2-TETRACHLOROETHANE	48000 U	4800 U	4800 U	4800 U	4800 U
TOLUENE	48000 U	4800 U	4800 U	4800 U	4800 U
CHLOROBENZENE	48000 U	4800 U	4800 U	4800 U	4800 U
ETHYLBENZENE	48000 U	4800 U	4800 U	4800 U	4800 U
STYRENE	48000 U	4800 U	4800 U	4800 U	4800 U
XYLENES (TOTAL)	48000 U	4800 U	4800 U	4800 U	4800 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
BROMOMETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
VINYL CHLORIDE	4800 U	48000 U	ND	ND		0/5	NA	NA
CHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
METHYLENE CHLORIDE	4800 U	48000 U	ND	ND		0/5	NA	NA
ACETONE	60000 B	60000 B	11000	540000	73-FS01-SF01W	4/5	149750.00	24000.00
CARBON DISULFIDE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHENE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,1-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHENE (TOTAL)	4800 U	48000 U	ND	ND		0/5	NA	NA
CHLOROFORM	4800 U	48000 U	ND	ND		0/5	NA	NA
1,2-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
2-BUTANONE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,1,1-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
CARBON TETRACHLORIDE	4800 U	48000 U	ND	ND		0/5	NA	NA
BROMODICHLOROMETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,2-DICHLOROPROPANE	4800 U	48000 U	ND	ND		0/5	NA	NA
CIS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/5	NA	NA
TRICHLOROETHENE	4800 U	48000 U	ND	ND		0/5	NA	NA
DIBROMOCHLOROMETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,1,2-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
BENZENE	4800 U	48000 U	ND	ND		0/5	NA	NA
TRANS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/5	NA	NA
BROMOFORM	4800 U	48000 U	ND	ND		0/5	NA	NA
4-METHYL-2-PENTANONE	4800 U	48000 U	ND	ND		0/5	NA	NA
2-HEXANONE	4800 U	48000 U	ND	ND		0/5	NA	NA
TETRACHLOROETHENE	4800 U	48000 U	ND	ND		0/5	NA	NA
1,1,2,2-TETRACHLOROETHANE	4800 U	48000 U	ND	ND		0/5	NA	NA
TOLUENE	4800 U	48000 U	ND	ND		0/5	NA	NA
CHLOROBENZENE	4800 U	48000 U	ND	ND		0/5	NA	NA
ETHYLBENZENE	4800 U	48000 U	ND	ND		0/5	NA	NA
STYRENE	4800 U	48000 U	ND	ND		0/5	NA	NA
XYLENES (TOTAL)	4800 U	48000 U	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-SF01W	73-FS02-PF01W	73-FS02-SF01W	73-FS02-YM01W	73-FS03-YM01W
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)					
PHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
BIS(2-CHLOROETHYL) ETHER	8000 U	6000 U	2000 U	20000 U	4000 U
2-CHLOROPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
1,3-DICHLOROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
1,4-DICHLOROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
1,2-DICHLOROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
2-METHYLPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	8000 U	6000 U	2000 U	20000 U	4000 U
4-METHYLPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
N-NITROSO-DI-N-PROPYLAMINE	8000 U	6000 U	2000 U	20000 U	4000 U
HEXACHLOROETHANE	8000 U	6000 U	2000 U	20000 U	4000 U
NITROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
ISOPHORONE	8000 U	6000 U	2000 U	20000 U	4000 U
2-NITROPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
2,4-DIMETHYLPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
2,4-DICHLOROPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
1,2,4-TRICHLOROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
NAPHTHALENE	8000 U	6000 U	2000 U	20000 U	4000 U
4-CHLOROANILINE	8000 U	6000 U	2000 U	20000 U	4000 U
HEXACHLOROBUTADIENE	8000 U	6000 U	2000 U	20000 U	4000 U
4-CHLORO-3-METHYLPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
2-METHYLNAPHTHALENE	8000 U	6000 U	2000 U	20000 U	4000 U
HEXACHLOROCYCLOPENTADIENE	8000 U	6000 U	2000 U	20000 U	4000 U
2,4,6-TRICHLOROPHENOL	8000 U	6000 U	2000 U	20000 U	4000 U
2,4,5-TRICHLOROPHENOL	20000 U	15000 U	5000 U	50000 U	10000 U
2-CHLORONAPHTHALENE	8000 U	6000 U	2000 U	20000 U	4000 U
2-NITROANILINE	20000 U	15000 U	5000 U	50000 U	10000 U
DIMETHYL PHTHALATE	8000 U	6000 U	2000 U	20000 U	4000 U
ACENAPHTHYLENE	8000 U	6000 U	2000 U	20000 U	4000 U
2,6-DINITROTOLUENE	8000 U	6000 U	2000 U	20000 U	4000 U
3-NITROANILINE	20000 U	15000 UJ	5000 UJ	50000 U	10000 U
ACENAPHTHENE	8000 U	6000 U	2000 U	20000 U	4000 U
2,4-DINITROPHENOL	20000 U	15000 U	5000 U	50000 U	10000 U
4-NITROPHENOL	20000 U	15000 U	5000 U	50000 U	10000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-SF01W	73-FS02-PF01W	73-FS02-SF01W	73-FS02-YM01W	73-FS03-YM01W
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)					
DIBENZOFURAN	8000 U	6000 U	2000 U	20000 U	4000 U
2,4-DINITROTOLUENE	8000 U	6000 U	2000 U	20000 U	4000 U
DIETHYL PHTHALATE	8000 U	6000 U	2000 U	20000 U	4000 U
4-CHLOROPHENYL PHENYL ETHER	8000 U	6000 U	2000 U	20000 U	4000 U
FLUORENE	8000 U	6000 U	2000 U	20000 U	4000 U
4-NITROANILINE	20000 U	15000 U	5000 U	50000 U	10000 U
4,6-DINITRO-2-METHYLPHENOL	20000 U	15000 U	5000 U	50000 U	10000 U
N-NITROSODIPHENYLAMINE	8000 U	6000 U	2000 U	20000 U	4000 U
4-BROMOPHENYL PHENYL ETHER	8000 U	6000 U	2000 U	20000 U	4000 U
HEXACHLOROBENZENE	8000 U	6000 U	2000 U	20000 U	4000 U
PENTACHLOROPHENOL	20000 U	15000 U	5000 U	50000 U	10000 U
PHENANTHRENE	8000 U	6000 U	2000 U	20000 U	4000 U
ANTHRACENE	8000 U	6000 U	2000 U	20000 U	4000 U
CARBAZOLE	8000 U	6000 U	2000 U	20000 U	4000 U
DI-N-BUTYL PHTHALATE	8000 U	6000 U	2000 U	20000 U	4000 U
FLUORANTHENE	8000 U	6000 U	2000 U	20000 U	4000 U
PYRENE	8000 U	6000 U	2000 U	20000 U	4000 U
BUTYL BENZYL PHTHALATE	8000 U	6000 U	2000 U	20000 U	4000 U
3,3'-DICHLOROBENZIDINE	8000 U	6000 U	2000 U	20000 U	4000 U
BENZO(A)ANTHRACENE	8000 U	6000 U	2000 U	20000 U	4000 U
CHRYSENE	8000 U	6000 U	2000 U	20000 U	4000 U
DI-N-OCTYL PHTHALATE	8000 U	6000 U	2000 U	20000 U	4000 U
BENZO(B)FLUORANTHENE	8000 U	6000 U	2000 U	20000 U	4000 U
BENZO(K)FLUORANTHENE	8000 U	6000 U	2000 U	20000 U	4000 U
BENZO(A)PYRENE	8000 U	6000 U	2000 U	20000 U	4000 U
INDENO(1,2,3-CD)PYRENE	8000 U	6000 U	2000 U	20000 U	4000 U
DIBENZ(A,H)ANTHRACENE	8000 U	6000 U	2000 U	20000 U	4000 U
BENZO(G,H,I)PERYLENE	8000 U	6000 U	2000 U	20000 U	4000 U
BIS(2-CHLOROETHOXY)-METHANE	8000 U	6000 U	2000 U	20000 U	4000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHYL) ETHER	2000 U	20000 U	ND	ND		0/5	NA	NA
2-CHLOROPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
1,3-DICHLOROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
1,4-DICHLOROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
1,2-DICHLOROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
2-METHYLPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	2000 U	20000 U	ND	ND		0/5	NA	NA
4-METHYLPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	2000 U	20000 U	ND	ND		0/5	NA	NA
HEXACHLOROETHANE	2000 U	20000 U	ND	ND		0/5	NA	NA
NITROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
ISOPHORONE	2000 U	20000 U	ND	ND		0/5	NA	NA
2-NITROPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4-DIMETHYLPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4-DICHLOROPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
1,2,4-TRICHLOROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
NAPHTHALENE	2000 U	20000 U	ND	ND		0/5	NA	NA
4-CHLOROANILINE	2000 U	20000 U	ND	ND		0/5	NA	NA
HEXACHLOROBUTADIENE	2000 U	20000 U	ND	ND		0/5	NA	NA
4-CHLORO-3-METHYLPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
2-METHYLNAPHTHALENE	2000 U	20000 U	ND	ND		0/5	NA	NA
HEXACHLOROCYCLOPENTADIENE	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4,6-TRICHLOROPHENOL	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4,5-TRICHLOROPHENOL	5000 U	50000 U	ND	ND		0/5	NA	NA
2-CHLORONAPHTHALENE	2000 U	20000 U	ND	ND		0/5	NA	NA
2-NITROANILINE	5000 U	50000 U	ND	ND		0/5	NA	NA
DIMETHYL PHTHALATE	2000 U	20000 U	ND	ND		0/5	NA	NA
ACENAPHTHYLENE	2000 U	20000 U	ND	ND		0/5	NA	NA
2,6-DINITROTOLUENE	2000 U	20000 U	ND	ND		0/5	NA	NA
3-NITROANILINE	5000 UJ	50000 U	ND	ND		0/5	NA	NA
ACENAPHTHENE	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4-DINITROPHENOL	5000 U	50000 U	ND	ND		0/5	NA	NA
4-NITROPHENOL	5000 U	50000 U	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
DIBENZOFURAN	2000 U	20000 U	ND	ND		0/5	NA	NA
2,4-DINITROTOLUENE	2000 U	20000 U	ND	ND		0/5	NA	NA
DIETHYL PHTHALATE	2000 U	20000 U	ND	ND		0/5	NA	NA
4-CHLOROPHENYL PHENYL ETHER	2000 U	20000 U	ND	ND		0/5	NA	NA
FLUORENE	2000 U	20000 U	ND	ND		0/5	NA	NA
4-NITROANILINE	5000 U	50000 U	ND	ND		0/5	NA	NA
4,6-DINITRO-2-METHYLPHENOL	5000 U	50000 U	ND	ND		0/5	NA	NA
N-NITROSODIPHENYLAMINE	2000 U	20000 U	ND	ND		0/5	NA	NA
4-BROMOPHENYL PHENYL ETHER	2000 U	20000 U	ND	ND		0/5	NA	NA
HEXACHLOROBENZENE	2000 U	20000 U	ND	ND		0/5	NA	NA
PENTACHLOROPHENOL	5000 U	50000 U	ND	ND		0/5	NA	NA
PHENANTHRENE	2000 U	20000 U	ND	ND		0/5	NA	NA
ANTHRACENE	2000 U	20000 U	ND	ND		0/5	NA	NA
CARBAZOLE	2000 U	20000 U	ND	ND		0/5	NA	NA
DI-N-BUTYL PHTHALATE	2000 U	20000 U	ND	ND		0/5	NA	NA
FLUORANTHENE	2000 U	20000 U	ND	ND		0/5	NA	NA
PYRENE	2000 U	20000 U	ND	ND		0/5	NA	NA
BUTYL BENZYL PHTHALATE	2000 U	20000 U	ND	ND		0/5	NA	NA
3,3'-DICHLOROBENZIDINE	2000 U	20000 U	ND	ND		0/5	NA	NA
BENZO(A)ANTHRACENE	2000 U	20000 U	ND	ND		0/5	NA	NA
CHRYSENE	2000 U	20000 U	ND	ND		0/5	NA	NA
DI-N-OCTYL PHTHALATE	2000 U	20000 U	ND	ND		0/5	NA	NA
BENZO(B)FLUORANTHENE	2000 U	20000 U	ND	ND		0/5	NA	NA
BENZO(K)FLUORANTHENE	2000 U	20000 U	ND	ND		0/5	NA	NA
BENZO(A)PYRENE	2000 U	20000 U	ND	ND		0/5	NA	NA
INDENO(1,2,3-CD)PYRENE	2000 U	20000 U	ND	ND		0/5	NA	NA
DIBENZ(A,H)ANTHRACENE	2000 U	20000 U	ND	ND		0/5	NA	NA
BENZO(G,H,I)PERYLENE	2000 U	20000 U	ND	ND		0/5	NA	NA
BIS(2-CHLOROETHOXY)-METHANE	2000 U	20000 U	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-SF01W	73-FS02-PF01W	73-FS02-SF01W	73-FS02-YM01W	73-FS03-YM01W
METHOD	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)					
ALPHA-BHC	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
BETA-BHC	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
DELTA-BHC	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
GAMMA-BHC (LINDANE)	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
HEPTACHLOR	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
ALDRIN	5 UJ	5.1 UJ	5.1 UJ	5.1 UJ	5 UJ
HEPTACHLOR EPOXIDE	5 UJ	5.1 UJ	5.1 UJ	5.1 UJ	5 UJ
ENDOSULFAN I	5 UJ	5.1 UJ	5.1 UJ	5.1 UJ	5 UJ
DIELDRIN	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
4,4'-DDE	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
ENDRIN	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
ENDOSULFAN II	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
4,4'-DDD	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
ENDOSULFAN SULFATE	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
4,4'-DDT	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
METHOXYCHLOR	50 UJ	51 UJ	51 UJ	51 UJ	50 UJ
ENDRIN KETONE	9.8 UJ	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ
ENDRIN ALDEHYDE	9.8 UJ	9.9 UJ	9.8 UJ	9.9 UJ	9.8 UJ
ALPHA-CHLORDANE	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
GAMMA-CHLORDANE	5 UJ	5.1 UJ	5 UJ	5.1 UJ	5 UJ
TOXAPHENE	500 UJ	510 UJ	510 UJ	510 UJ	500 UJ
AROCLOR-1016	98 UJ	99 UJ	99 UJ	99 UJ	98 UJ
AROCLOR-1221	200 UJ	200 UJ	200 UJ	200 UJ	200 UJ
AROCLOR-1232	98 UJ	99 UJ	98 UJ	99 UJ	98 UJ
AROCLOR-1242	98 UJ	99 UJ	99 UJ	99 UJ	98 UJ
AROCLOR-1248	98 UJ	99 UJ	98 UJ	99 UJ	98 UJ
AROCLOR-1254	98 UJ	99 UJ	99 UJ	99 UJ	98 UJ
AROCLOR-1260	98 UJ	99 UJ	99 UJ	99 UJ	98 UJ

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
ALPHA-BHC	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
BETA-BHC	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
DELTA-BHC	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
GAMMA-BHC (LINDANE)	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
HEPTACHLOR	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
ALDRIN	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
HEPTACHLOR EPOXIDE	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
ENDOSULFAN I	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
DIELDRIN	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
4,4'-DDE	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
ENDRIN	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
ENDOSULFAN II	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
4,4'-DDD	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
ENDOSULFAN SULFATE	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
4,4'-DDT	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
METHOXYCHLOR	50 UJ	51 UJ	ND	ND		0/5	NA	NA
ENDRIN KETONE	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
ENDRIN ALDEHYDE	9.8 UJ	9.9 UJ	ND	ND		0/5	NA	NA
ALPHA-CHLORDANE	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
GAMMA-CHLORDANE	5 UJ	5.1 UJ	ND	ND		0/5	NA	NA
TOXAPHENE	500 UJ	510 UJ	ND	ND		0/5	NA	NA
AROCLOR-1016	98 UJ	99 UJ	ND	ND		0/5	NA	NA
AROCLOR-1221	200 UJ	200 UJ	ND	ND		0/5	NA	NA
AROCLOR-1232	98 UJ	99 UJ	ND	ND		0/5	NA	NA
AROCLOR-1242	98 UJ	99 UJ	ND	ND		0/5	NA	NA
AROCLOR-1248	98 UJ	99 UJ	ND	ND		0/5	NA	NA
AROCLOR-1254	98 UJ	99 UJ	ND	ND		0/5	NA	NA
AROCLOR-1260	98 UJ	99 UJ	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN FISH TISSUE (WHOLE BODY)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-SF01W	73-FS02-PF01W	73-FS02-SF01W	73-FS02-YM01W	73-FS03-YM01W
METHOD	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)					
ALUMINUM	3.1 U	9.2 J	3.4 U	119 J	0.85 U
ANTIMONY	1 U	1 U	1 U	1 U	0.02 U
ARSENIC	0.4 J	1.8 J	1.4 J	2.4 J	0.88 J
BARIUM	0.19 U	0.65 J	0.34 J	1.5 J	0.02 U
BERYLLIUM	0.015 U	0.02 U	0.015 U	0.015 U	0.0003 U
CADMIUM	0.1 U	0.1 U	0.1 U	0.1 U	0.0021 U
CALCIUM	13500 J	15500 J	18300 J	12300 J	334 J
CHROMIUM	0.46 U	0.46 U	0.6 U	0.71	0.011
COBALT	0.32 U	0.32 U	0.32 U	0.32 U	0.0065 U
COPPER	0.68 U	1.1	0.66 U	1.3	0.02 U
IRON	9.9 J	38.3 J	9.5 J	137 J	1.1 U
LEAD	0.054 U	0.06 U	0.054 U	0.27	0.27
MAGNESIUM	518 J	506 J	550 J	515 J	10.1 J
MANGANESE	2 J	4.4 J	2.1 J	4.6 J	0.15 J
MERCURY	0.04 UJ	0.044 J	0.04 UJ	0.04 UJ	0.04 UJ
NICKEL	0.87 U	0.88 U	0.87 U	0.87 U	0.02 U
POTASSIUM	3140 J	3290 J	3340 J	3040 J	46.8 U
SELENIUM	0.34	0.69	0.35	0.5	0.46
SILVER	0.094 U	0.095 U	0.094 U	0.094 U	0.0019 U
SODIUM	1370	1580	1360	1370	50.5
THALLIUM	0.11 U	0.12 U	0.11 U	0.11 U	0.12
VANADIUM	0.12 U	0.12 U	0.12 U	2.3	0.022
ZINC	16.4 J	26.6 J	18.4 J	17.3 J	0.51 J
BORON	1.8 U	1.8 U	1.8 U	0.88 U	0.03 U
MOLYBDENUM	0.12 U	0.22	0.15	0.12 U	0.0024 U
TIN	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U
CYANIDE, TOTAL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN FISH TISSUE (WHOLE BODY)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	0.85 U	3.4 U	9.2 J	119 J	73-FS02-YM01W	2/5	64.10	64.10
ANTIMONY	0.02 U	1 U	ND	ND		0/5	NA	NA
ARSENIC	NA	NA	0.4 J	2.4 J	73-FS02-YM01W	5/5	1.38	1.40
BARIUM	0.02 U	0.19 U	0.34 J	1.5 J	73-FS02-YM01W	3/5	0.83	0.65
BERYLLIUM	0.0003 U	0.02 U	ND	ND		0/5	NA	NA
CADMIUM	0.0021 U	0.1 U	ND	ND		0/5	NA	NA
CALCIUM	NA	NA	334 J	18300 J	73-FS02-SF01W	5/5	11986.80	13500.00
CHROMIUM	0.46 U	0.6 U	0.011	0.71	73-FS02-YM01W	2/5	0.36	0.36
COBALT	0.0065 U	0.32 U	ND	ND		0/5	NA	NA
COPPER	0.02 U	0.68 U	1.1	1.3	73-FS02-YM01W	2/5	1.20	1.20
IRON	1.1 U	1.1 U	9.5 J	137 J	73-FS02-YM01W	4/5	48.68	24.10
LEAD	0.054 U	0.06 U	0.27	0.27	73-FS03-YM01W	2/5	0.27	0.27
MAGNESIUM	NA	NA	10.1 J	550 J	73-FS02-SF01W	5/5	419.82	515.00
MANGANESE	NA	NA	0.15 J	4.6 J	73-FS02-YM01W	5/5	2.65	2.10
MERCURY	0.04 UJ	0.04 UJ	0.044 J	0.044 J	73-FS02-PF01W	1/5	0.04	0.04
NICKEL	0.02 U	0.88 U	ND	ND		0/5	NA	NA
POTASSIUM	46.8 U	46.8 U	3040 J	3340 J	73-FS02-SF01W	4/5	3202.50	3215.00
SELENIUM	NA	NA	0.34	0.69	73-FS02-PF01W	5/5	0.47	0.46
SILVER	0.0019 U	0.095 U	ND	ND		0/5	NA	NA
SODIUM	NA	NA	50.5	1580	73-FS02-PF01W	5/5	1146.10	1370.00
THALLIUM	0.11 U	0.12 U	0.12	0.12	73-FS03-YM01W	1/5	0.12	0.12
VANADIUM	0.12 U	0.12 U	0.022	2.3	73-FS02-YM01W	2/5	1.16	1.16
ZINC	NA	NA	0.51 J	26.6 J	73-FS02-PF01W	5/5	15.84	17.30
BORON	0.03 U	1.8 U	ND	ND		0/5	NA	NA
MOLYBDENUM	0.0024 U	0.12 U	0.15	0.22	73-FS02-PF01W	2/5	0.19	0.19
TIN	9.6 U	9.6 U	ND	ND		0/5	NA	NA
CYANIDE, TOTAL	0.5 U	0.5 U	ND	ND		0/5	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BC01F	73-FS01-BC02F	73-FS02-BC01F	73-FS02-BC02F	73-FS03-BC01F	73-FS03-BC02F
DATE SAMPLED	NA	NA	NA	NA	NA	NA
METHOD	8240	8240	8240	8240	8240	8240
VOLATILES (ug/kg)						
CHLOROMETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
BROMOMETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
VINYL CHLORIDE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
CHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
METHYLENE CHLORIDE	17000 J	48000 U	4800 U	4800 U	1300 J	4800 U
ACETONE	290000	200000	4800 U	2500 J	40000 J	38000 J
CARBON DISULFIDE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,1-DICHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHENE (TOTAL)	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
CHLOROFORM	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
2-BUTANONE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,1-TRICHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
CARBON TETRACHLORIDE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
BROMODICHLOROMETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,2-DICHLOROPROPANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
CIS-1,3-DICHLOROPROPENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
TRICHLOROETHENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
DIBROMOCHLOROMETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,2-TRICHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
BENZENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
TRANS-1,3-DICHLOROPROPENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
BROMOFORM	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
4-METHYL-2-PENTANONE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
2-HEXANONE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
TETRACHLOROETHENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
1,1,2,2-TETRACHLOROETHANE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
TOLUENE	48000 U	48000 U	4800 U	4800 U	580 J	4800 U
CHLOROBENZENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
ETHYLBENZENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
STYRENE	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U
XYLENES (TOTAL)	48000 U	48000 U	4800 U	4800 U	4800 U	4800 U

FREQUENCY OF DETECTION SUMMARY
DETECTED VOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION DATE SAMPLED METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/kg)								
CHLOROMETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
BROMOMETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
VINYL CHLORIDE	4800 U	48000 U	ND	ND		0/6	NA	NA
CHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
METHYLENE CHLORIDE	4800 U	48000 U	1300 J	17000 J	73-FS01-BC01F	2/6	9150.00	9150.00
ACETONE	4800 U	4800 U	2500 J	290000	73-FS01-BC01F	5/6	114100.00	40000.00
CARBON DISULFIDE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,1-DICHLOROETHENE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,1-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,2-DICHLOROETHENE (TOTAL)	4800 U	48000 U	ND	ND		0/6	NA	NA
CHLOROFORM	4800 U	48000 U	ND	ND		0/6	NA	NA
1,2-DICHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
2-BUTANONE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,1,1-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
CARBON TETRACHLORIDE	4800 U	48000 U	ND	ND		0/6	NA	NA
BROMODICHLOROMETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,2-DICHLOROPROPANE	4800 U	48000 U	ND	ND		0/6	NA	NA
CIS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/6	NA	NA
TRICHLOROETHENE	4800 U	48000 U	ND	ND		0/6	NA	NA
DIBROMOCHLOROMETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,1,2-TRICHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
BENZENE	4800 U	48000 U	ND	ND		0/6	NA	NA
TRANS-1,3-DICHLOROPROPENE	4800 U	48000 U	ND	ND		0/6	NA	NA
BROMOFORM	4800 U	48000 U	ND	ND		0/6	NA	NA
4-METHYL-2-PENTANONE	4800 U	48000 U	ND	ND		0/6	NA	NA
2-HEXANONE	4800 U	48000 U	ND	ND		0/6	NA	NA
TETRACHLOROETHENE	4800 U	48000 U	ND	ND		0/6	NA	NA
1,1,2,2-TETRACHLOROETHANE	4800 U	48000 U	ND	ND		0/6	NA	NA
TOLUENE	4800 U	48000 U	580 J	580 J	73-FS03-BC01F	1/6	580.00	580.00
CHLOROBENZENE	4800 U	48000 U	ND	ND		0/6	NA	NA
ETHYLBENZENE	4800 U	48000 U	ND	ND		0/6	NA	NA
STYRENE	4800 U	48000 U	ND	ND		0/6	NA	NA
XYLENES (TOTAL)	4800 U	48000 U	ND	ND		0/6	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BC01F	73-FS01-BC02F	73-FS02-BC01F	73-FS02-BC02F	73-FS03-BC01F	73-FS03-BC02F
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)						
PHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BIS(2-CHLOROETHYL) ETHER	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2-CHLOROPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
1,3-DICHLOROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
1,4-DICHLOROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
1,2-DICHLOROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2-METHYLPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-METHYLPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
N-NITROSO-DI-N-PROPYLAMINE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
HEXACHLOROETHANE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
NITROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
ISOPHORONE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2-NITROPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4-DIMETHYLPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BIS(2-CHLOROETHOXY)METHANE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4-DICHLOROPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
1,2,4-TRICHLOROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
NAPHTHALENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-CHLOROANILINE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
HEXACHLOROBUTADIENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-CHLORO-3-METHYLPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2-METHYLNAPHTHALENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
HEXACHLOROCYCLOPENTADIENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4,6-TRICHLOROPHENOL	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4,5-TRICHLOROPHENOL	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
2-CHLORONAPHTHALENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2-NITROANILINE	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
DIMETHYL PHTHALATE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
ACENAPHTHYLENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,6-DINITROTOLUENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
3-NITROANILINE	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
ACENAPHTHENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4-DINITROPHENOL	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BC01F	73-FS01-BC02F	73-FS02-BC01F	73-FS02-BC02F	73-FS03-BC01F	73-FS03-BC02F
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)						
4-NITROPHENOL	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
DIBENZOFURAN	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
2,4-DINITROTOLUENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
DIETHYL PHTHALATE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-CHLOROPHENYL PHENYL ETHER	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
FLUORENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-NITROANILINE	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
4,6-DINITRO-2-METHYLPHENOL	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
N-NITROSODIPHENYLAMINE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
4-BROMOPHENYL PHENYL ETHER	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
HEXACHLOROBENZENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
PENTACHLOROPHENOL	2500 U	2500 U	2500 U	2500 U	2500 U	2500 U
PHENANTHRENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
ANTHRACENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
CARBAZOLE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
DI-N-BUTYL PHTHALATE	1000 U	1000 U	1000 U	1000 U	2000	2200
FLUORANTHENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
PYRENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BUTYL BENZYL PHTHALATE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
3,3'-DICHLOROBENZIDINE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BENZO(A)ANTHRACENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
CHRYSENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
DI-N-OCTYL PHTHALATE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BENZO(B)FLUORANTHENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BENZO(K)FLUORANTHENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BENZO(A)PYRENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
INDENO(1,2,3-CD)PYRENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
DIBENZ(A,H)ANTHRACENE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
BIS(2-CHLOROETHOXY)-METHANE	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg)								
PHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
BIS(2-CHLOROETHYL) ETHER	1000 U	1000 U	ND	ND		0/6	NA	NA
2-CHLOROPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
1,3-DICHLOROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
1,4-DICHLOROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
1,2-DICHLOROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
2-METHYLPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	1000 U	1000 U	ND	ND		0/6	NA	NA
4-METHYLPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	1000 U	1000 U	ND	ND		0/6	NA	NA
HEXACHLOROETHANE	1000 U	1000 U	ND	ND		0/6	NA	NA
NITROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
ISOPHORONE	1000 U	1000 U	ND	ND		0/6	NA	NA
2-NITROPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4-DIMETHYLPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
BIS(2-CHLOROETHOXY)METHANE	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4-DICHLOROPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
1,2,4-TRICHLOROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
NAPHTHALENE	1000 U	1000 U	ND	ND		0/6	NA	NA
4-CHLOROANILINE	1000 U	1000 U	ND	ND		0/6	NA	NA
HEXACHLOROBUTADIENE	1000 U	1000 U	ND	ND		0/6	NA	NA
4-CHLORO-3-METHYLPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
2-METHYLNAPHTHALENE	1000 U	1000 U	ND	ND		0/6	NA	NA
HEXACHLOROCYCLOPENTADIENE	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4,6-TRICHLOROPHENOL	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4,5-TRICHLOROPHENOL	2500 U	2500 U	ND	ND		0/6	NA	NA
2-CHLORONAPHTHALENE	1000 U	1000 U	ND	ND		0/6	NA	NA
2-NITROANILINE	2500 U	2500 U	ND	ND		0/6	NA	NA
DIMETHYL PHTHALATE	1000 U	1000 U	ND	ND		0/6	NA	NA
ACENAPHTHYLENE	1000 U	1000 U	ND	ND		0/6	NA	NA
2,6-DINITROTOLUENE	1000 U	1000 U	ND	ND		0/6	NA	NA
3-NITROANILINE	2500 U	2500 U	ND	ND		0/6	NA	NA
ACENAPHTHENE	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4-DINITROPHENOL	2500 U	2500 U	ND	ND		0/6	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED SEMIVOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/kg) (cont)								
4-NITROPHENOL	2500 U	2500 U	ND	ND		0/6	NA	NA
DIBENZOFURAN	1000 U	1000 U	ND	ND		0/6	NA	NA
2,4-DINITROTOLUENE	1000 U	1000 U	ND	ND		0/6	NA	NA
DIETHYL PHTHALATE	1000 U	1000 U	ND	ND		0/6	NA	NA
4-CHLOROPHENYL PHENYL ETHER	1000 U	1000 U	ND	ND		0/6	NA	NA
FLUORENE	1000 U	1000 U	ND	ND		0/6	NA	NA
4-NITROANILINE	2500 U	2500 U	ND	ND		0/6	NA	NA
4,6-DINITRO-2-METHYLPHENOL	2500 U	2500 U	ND	ND		0/6	NA	NA
N-NITROSODIPHENYLAMINE	1000 U	1000 U	ND	ND		0/6	NA	NA
4-BROMOPHENYL PHENYL ETHER	1000 U	1000 U	ND	ND		0/6	NA	NA
HEXACHLOROBENZENE	1000 U	1000 U	ND	ND		0/6	NA	NA
PENTACHLOROPHENOL	2500 U	2500 U	ND	ND		0/6	NA	NA
PHENANTHRENE	1000 U	1000 U	ND	ND		0/6	NA	NA
ANTHRACENE	1000 U	1000 U	ND	ND		0/6	NA	NA
CARBAZOLE	1000 U	1000 U	ND	ND		0/6	NA	NA
DI-N-BUTYL PHTHALATE	1000 U	1000 U	2000	2200	73-FS03-BC02F	2/6	2100.00	2100.00
FLUORANTHENE	1000 U	1000 U	ND	ND		0/6	NA	NA
PYRENE	1000 U	1000 U	ND	ND		0/6	NA	NA
BUTYL BENZYL PHTHALATE	1000 U	1000 U	ND	ND		0/6	NA	NA
3,3'-DICHLOROBENZIDINE	1000 U	1000 U	ND	ND		0/6	NA	NA
BENZO(A)ANTHRACENE	1000 U	1000 U	ND	ND		0/6	NA	NA
CHRYSENE	1000 U	1000 U	ND	ND		0/6	NA	NA
DI-N-OCTYL PHTHALATE	1000 U	1000 U	ND	ND		0/6	NA	NA
BENZO(B)FLUORANTHENE	1000 U	1000 U	ND	ND		0/6	NA	NA
BENZO(K)FLUORANTHENE	1000 U	1000 U	ND	ND		0/6	NA	NA
BENZO(A)PYRENE	1000 U	1000 U	ND	ND		0/6	NA	NA
INDENO(1,2,3-CD)PYRENE	1000 U	1000 U	ND	ND		0/6	NA	NA
DIBENZ(A,H)ANTHRACENE	1000 U	1000 U	ND	ND		0/6	NA	NA
BIS(2-CHLOROETHOXY)-METHANE	1000 U	1000 U	ND	ND		0/6	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BC01F	73-FS01-BC02F	73-FS02-BC01F	73-FS02-BC02F	73-FS03-BC01F	73-FS03-BC02F
METHOD	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
BETA-BHC	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
DELTA-BHC	5 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
GAMMA-BHC (LINDANE)	5 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
HEPTACHLOR	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
ALDRIN	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
HEPTACHLOR EPOXIDE	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
ENDOSULFAN I	5 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
DIELDRIN	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ	9.9 UJ	9.8 UJ
4,4'-DDE	9.9 UJ	9.9 UJ	9.9 UJ	9.8 UJ	9.9 UJ	9.8 UJ
ENDRIN	9.8 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
ENDOSULFAN II	9.8 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
4,4'-DDD	9.9 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
ENDOSULFAN SULFATE	9.8 UJ	9.9 UJ	9.9 UJ	9.8 UJ	9.9 UJ	9.8 UJ
4,4'-DDT	9.9 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
METHOXYCHLOR	51 U	51 U	51 UJ	50 U	51 U	50 U
ENDRIN KETONE	9.9 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
ENDRIN ALDEHYDE	9.9 U	9.9 U	9.9 UJ	9.8 U	9.9 U	9.8 U
ALPHA-CHLORDANE	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
GAMMA-CHLORDANE	5.1 U	5.1 U	5.1 UJ	5 U	5.1 U	5 U
TOXAPHENE	500 U	510 U	510 UJ	500 U	510 U	500 U
AROCLOR-1016	98 U	99 U	99 UJ	98 U	99 U	98 U
AROCLOR-1221	200 U	200 U	200 UJ	200 U	200 U	200 U
AROCLOR-1232	98 U	99 U	99 UJ	98 U	99 U	98 U
AROCLOR-1242	98 U	99 U	99 UJ	98 U	99 U	98 U
AROCLOR-1248	98 U	99 U	99 UJ	98 U	99 U	98 U
AROCLOR-1254	98 U	99 U	99 UJ	98 U	99 U	98 U
AROCLOR-1260	98 U	99 U	99 UJ	98 U	99 U	98 U

FREQUENCY OF DETECTION SUMMARY
DETECTED PESTICIDES AND PCBS IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDE/PCBS (ug/kg)								
ALPHA-BHC	5 U	5.1 U	ND	ND		0/6	NA	NA
BETA-BHC	5 U	5.1 U	ND	ND		0/6	NA	NA
DELTA-BHC	5 U	5.1 U	ND	ND		0/6	NA	NA
GAMMA-BHC (LINDANE)	5 U	5.1 U	ND	ND		0/6	NA	NA
HEPTACHLOR	5 U	5.1 U	ND	ND		0/6	NA	NA
ALDRIN	5 U	5.1 U	ND	ND		0/6	NA	NA
HEPTACHLOR EPOXIDE	5 U	5.1 U	ND	ND		0/6	NA	NA
ENDOSULFAN I	5 U	5.1 U	ND	ND		0/6	NA	NA
DIELDRIN	9.8 UJ	9.9 UJ	ND	ND		0/6	NA	NA
4,4'-DDE	9.8 UJ	9.9 UJ	ND	ND		0/6	NA	NA
ENDRIN	9.8 U	9.9 U	ND	ND		0/6	NA	NA
ENDOSULFAN II	9.8 U	9.9 U	ND	ND		0/6	NA	NA
4,4'-DDD	9.8 U	9.9 U	ND	ND		0/6	NA	NA
ENDOSULFAN SULFATE	9.8 UJ	9.9 UJ	ND	ND		0/6	NA	NA
4,4'-DDT	9.8 U	9.9 U	ND	ND		0/6	NA	NA
METHOXYCHLOR	50 U	51 U	ND	ND		0/6	NA	NA
ENDRIN KETONE	9.8 U	9.9 U	ND	ND		0/6	NA	NA
ENDRIN ALDEHYDE	9.8 U	9.9 U	ND	ND		0/6	NA	NA
ALPHA-CHLORDANE	5 U	5.1 U	ND	ND		0/6	NA	NA
GAMMA-CHLORDANE	5 U	5.1 U	ND	ND		0/6	NA	NA
TOXAPHENE	500 U	510 U	ND	ND		0/6	NA	NA
AROCLOR-1016	98 U	99 U	ND	ND		0/6	NA	NA
AROCLOR-1221	200 U	200 U	ND	ND		0/6	NA	NA
AROCLOR-1232	98 U	99 U	ND	ND		0/6	NA	NA
AROCLOR-1242	98 U	99 U	ND	ND		0/6	NA	NA
AROCLOR-1248	98 U	99 U	ND	ND		0/6	NA	NA
AROCLOR-1254	98 U	99 U	ND	ND		0/6	NA	NA
AROCLOR-1260	98 U	99 U	ND	ND		0/6	NA	NA

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FS01-BC01F	73-FS01-BC02F	73-FS02-BC01F	73-FS02-BC02F	73-FS03-BC01F	73-FS03-BC02F
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)						
ALUMINUM	3.7 U	3.4 U	3.1 U	2.9 U	2.5 U	3.3 U
ANTIMONY	1 U	1 U	1 U	1 U	1 U	1 U
ARSENIC	3.1 J	3.9 J	4.3 J	2.9 J	3.3 J	4.6 J
BARIUM	0.094 J	0.054 J	0.07 U	0.035 U	0.07 U	0.094 U
BERYLLIUM	0.015 U	0.015 U	0.02 U	0.015 U	0.02 U	0.02 U
CADMIUM	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
CALCIUM	1820 J	1060 J	1130 J	549 J	1330 J	1060 J
CHROMIUM	0.43 U	0.24 U	0.22 U	0.18 U	0.16 U	0.23 U
COBALT	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
COPPER	4.4	5.7	5	4.4	4.5	6.6
IRON	6.4 J	7.1 J	4.5 J	5.6 J	4.8 J	6.6 J
LEAD	0.055 U	0.062 B	0.06 U	0.054 U	0.06 U	0.08
MAGNESIUM	456 J	416 J	438 J	376 J	423 J	430 J
MANGANESE	0.46 J	0.22 J	0.26 J	0.15 J	0.22 J	0.26 J
MERCURY	0.04 U	0.04 UJ	0.05 J	0.04 UJ	0.042 J	0.05 J
NICKEL	0.87 U	0.88 U	0.88 U	0.87 U	0.88 U	0.88 U
POTASSIUM	2130 J	2580 J	2650 J	2410 J	2490 J	3090 J
SELENIUM	0.28	0.29	0.31	0.28	0.3	0.44
SILVER	0.12	0.19	0.24	0.094 U	0.19	0.25
SODIUM	4860	4500	4660	4780	3880	3400
THALLIUM	0.11 U	0.12 U	0.12 U	0.11 U	0.12 U	0.12 U
VANADIUM	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
ZINC	23.6 J	29 J	35.4 J	29.2 J	29.2 J	39.1 J
BORON	1.5 U	1.6 U	1.1 U	0.73 U	1.3 U	0.9 U
MOLYBDENUM	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
TIN	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U	9.6 U
CYANIDE, TOTAL	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U

FREQUENCY OF DETECTION SUMMARY
DETECTED METALS IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
METALS (mg/kg)								
ALUMINUM	2.5 U	3.7 U	ND	ND		0/6	NA	NA
ANTIMONY	1 U	1 U	ND	ND		0/6	NA	NA
ARSENIC	NA	NA	2.9 J	4.6 J	73-FS03-BC02F	6/6	3.68	3.60
BARIUM	0.035 U	0.094 U	0.054 J	0.094 J	73-FS01-BC01F	2/6	0.07	0.07
BERYLLIUM	0.015 U	0.02 U	ND	ND		0/6	NA	NA
CADMIUM	0.1 U	0.1 U	ND	ND		0/6	NA	NA
CALCIUM	NA	NA	549 J	1820 J	73-FS01-BC01F	6/6	1158.17	1095.00
CHROMIUM	0.16 U	0.43 U	ND	ND		0/6	NA	NA
COBALT	0.32 U	0.32 U	ND	ND		0/6	NA	NA
COPPER	NA	NA	4.4	6.6	73-FS03-BC02F	6/6	5.10	4.75
IRON	NA	NA	4.5 J	7.1 J	73-FS01-BC02F	6/6	5.83	6.00
LEAD	0.054 U	0.062 B	0.08	0.08	73-FS03-BC02F	1/6	0.08	0.08
MAGNESIUM	NA	NA	378 J	456 J	73-FS01-BC01F	6/6	423.50	426.50
MANGANESE	NA	NA	0.15 J	0.46 J	73-FS01-BC01F	6/6	0.26	0.24
MERCURY	0.04 U	0.04 U	0.042 J	0.05 J	73-FS03-BC02F	3/6	0.05	0.05
NICKEL	0.87 U	0.88 U	ND	ND		0/6	NA	NA
POTASSIUM	NA	NA	2130 J	3090 J	73-FS03-BC02F	6/6	2558.33	2535.00
SELENIUM	NA	NA	0.28	0.44	73-FS03-BC02F	6/6	0.32	0.30
SILVER	0.094 U	0.094 U	0.12	0.25	73-FS03-BC02F	5/6	0.20	0.19
SODIUM	NA	NA	3400	4860	73-FS01-BC01F	6/6	4346.67	4580.00
THALLIUM	0.11 U	0.12 U	ND	ND		0/6	NA	NA
VANADIUM	0.12 U	0.12 U	ND	ND -		0/6	NA	NA
ZINC	NA	NA	23.6 J	39.1 J	73-FS03-BC02F	6/6	30.92	29.20
BORON	0.73 U	1.6 U	ND	ND		0/6	NA	NA
MOLYBDENUM	0.12 U	0.12 U	ND	ND		0/6	NA	NA
TIN	9.6 U	9.6 U	ND	ND		0/6	NA	NA
CYANIDE, TOTAL	0.5 U	0.5 U	ND	ND		0/6	NA	NA

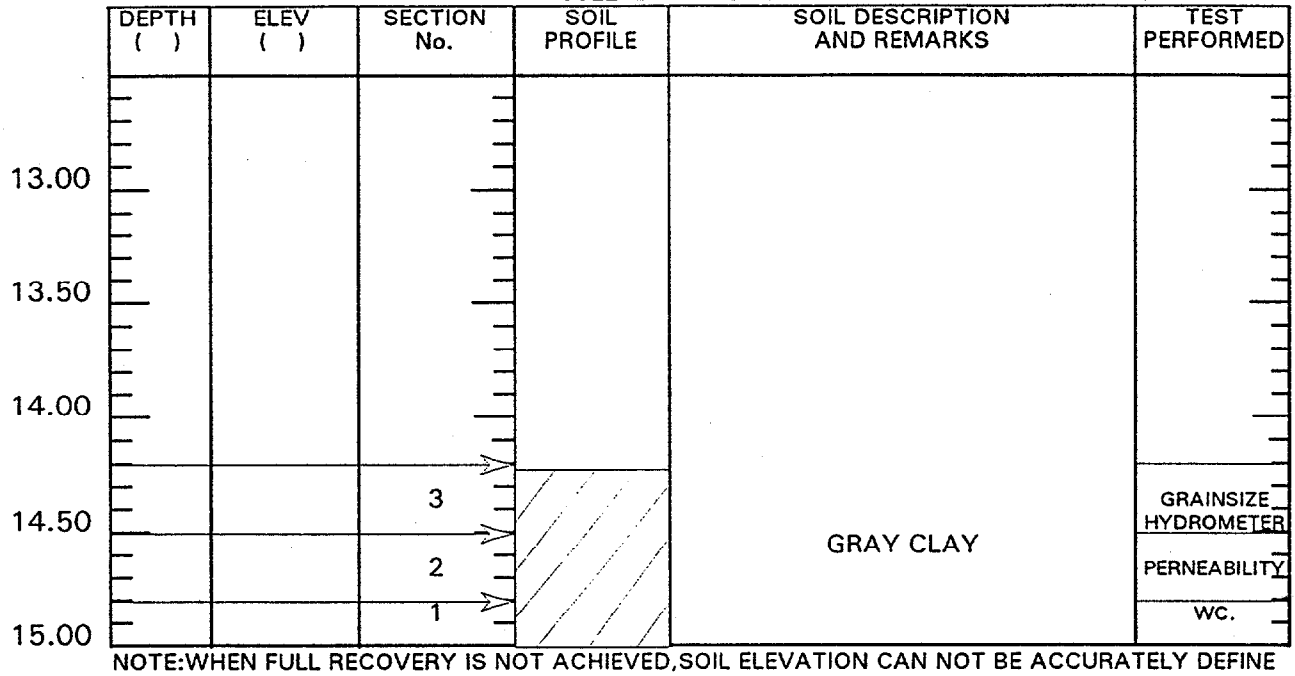
APPENDIX P
RESULTS OF ENGINEERING PARAMETERS

SHELBY TUBE UNIT WEIGHT

Geotechnics

Client	QUANTERRA	Tested By	JCM 6-15-95
Client Project	3753 / BAKER	Checked By	DB 6/26/95
Project No.	95170		
Boring No.	73-MW-12	Tube Recovery	2
Depth Pushed	13-15		
Shelby Tube No.	T-1		

SOIL PROFILE AND SAMPLING



NOTE:WHEN FULL RECOVERY IS NOT ACHIEVED,SOIL ELEVATION CAN NOT BE ACCURATELY DEFINE
INDICATE EACH CUT OF THE TUBE WITH AN ARROW
INDICATE DIVIDING LINE BETWEEN SOIL TYPES BY A SOLID LINE
INDICATE WAX BY CROSS-HATCHING
INDICATE SOIL TYPES BY STANDARD SYMBOLS

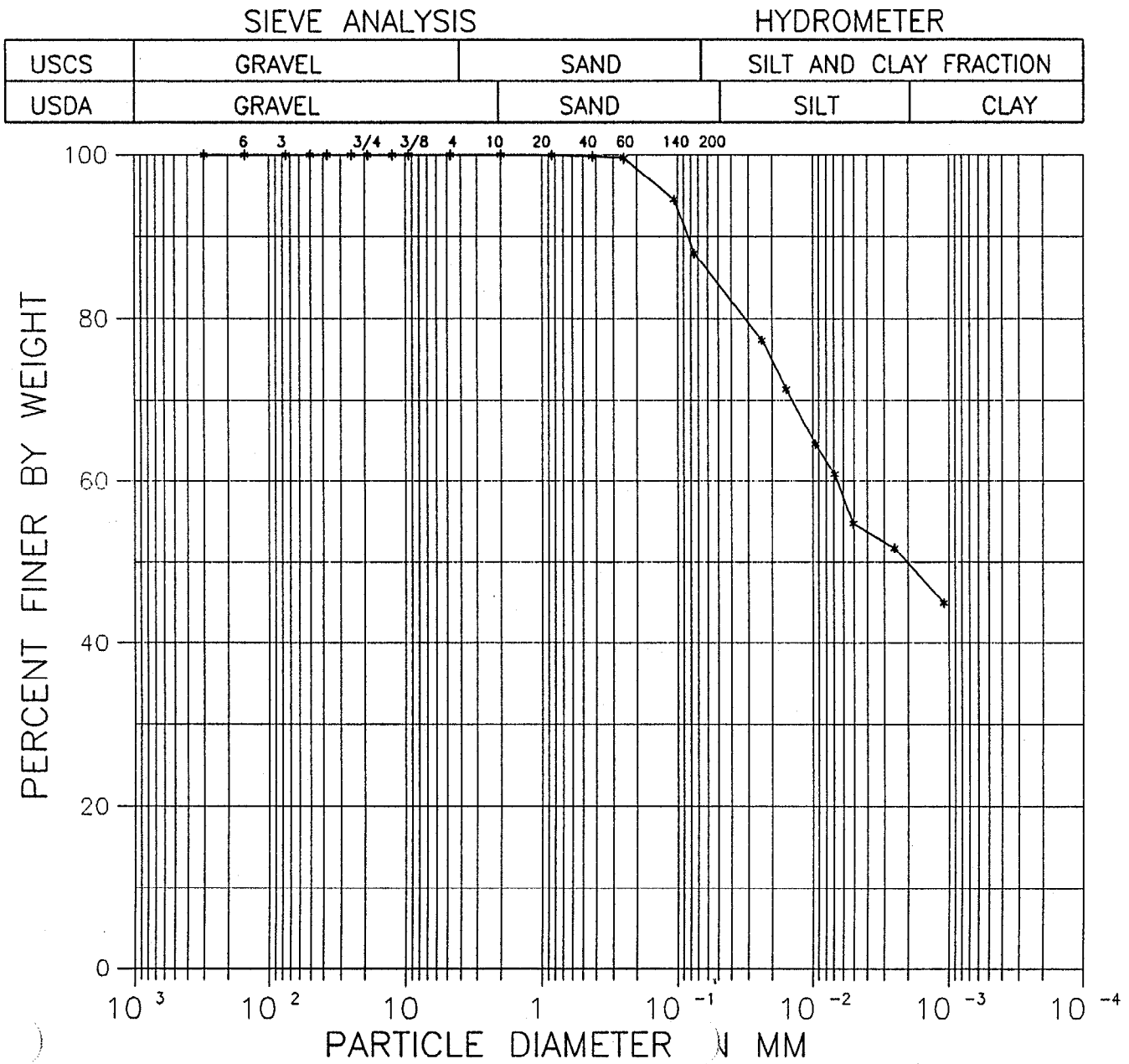
MOISTURE CONTENT					
Section Number	1	2	3	4	5
Tare Number	1497		1720		
Wt. Tare & WS(gm.)	134.50		457.10		
Wt. Tare & DS(gm.)	103.24		345.53		
Wt. Tare(gm.)	33.82		81.82		
Moisture Content(%)	45.0		42.3		

UNIT WEIGHT			
Wt. Tube & WS.(gms.)		1052.30	822.00
Wt. Of Tube(gms.)		290.62	244.65
Wt. Of WS.(gms.)		761.68	577.35
Length 1 (in.)		3.988	3.146
Length 2 (in.)		4.016	3.121
Length 3 (in.)		4.013	3.124
Top Diameter (in.)		2.868	2.880
Middle Diameter (in.)		2.872	2.877
Bottom Diameter (in.)		2.872	2.879
Sample Volume (cc)		424.85	333.86
Moisture Content(%)		45.03	42.31
Unit Wet Wt.(gms/cc)		1.79	1.73
Unit Wet Wt.(pcf.)		111.9	107.9
Unit Dry Wt.(pcf.)		77.1	75.8
Unit Dry Wt.(gms/cc)		1.24	1.22

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

Client QUANTERRA
Client Project 3753 / BAKER
Project No. 95170
USCS Classification cl
Soil Description GRAY LEAN CLAY

Boring No. MW-12
Depth(ft) 14.2-14.5
Sample No. T-1
USDA Classification CLAY



544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

Geotechnics

Geotechnics

WASH SIEVE ANALYSIS

Client	QUANTERRA	Tested By	TO	Date	06-16-95
Client Project	3753 / BAKER	Checked By	jcm	Date	6-26-95
Project No.	95170				
Boring No.	MW-12				
Depth(ft.)	14.2-14.5				
Sample No.	T-1				
Soil Description	GRAY LEAN CLAY				

Wt. of Total Sample(dry)	263.71 gm.
Wt. of +#200 Sample	31.73 gm.
Wt. of -#200 Sample	231.98 gm.

Sieve	Sieve Opening (mm)	Wt. of Soil Retained (gm.)	Percent Retained	Accumulated Percent Retained	Percent Finer
12"	300.00	0.00	0.0	0.0	100.0
6"	150.00	0.00	0.0	0.0	100.0
3"	75.00	0.00	0.0	0.0	100.0
2"	50.00	0.00	0.0	0.0	100.0
1 1/2"	37.50	0.00	0.0	0.0	100.0
1"	25.00	0.00	0.0	0.0	100.0
3/4"	19.00	0.00	0.0	0.0	100.0
1/2"	12.50	0.00	0.0	0.0	100.0
3/8"	9.50	0.00	0.0	0.0	100.0
#4	4.75	0.00	0.0	0.0	100.0
#10	2.00	0.00	0.0	0.0	100.0
#20	0.85	0.15	0.1	0.1	99.9
#40	0.425	0.37	0.1	0.2	99.8
#60	0.250	0.56	0.2	0.4	99.6
#140	0.106	13.39	5.1	5.5	94.5
#200	0.075	17.26	6.5	12.0	88.0
Pan	-	231.98	88.0	100.0	-

Water Content	
Tare No.	1720
Wgt. Tare + WS.	457.10
Wgt. Tare + DS.	345.53
Wgt. Tare	81.82
Wgt. Of Water	111.57
Wgt. Of DS.	263.71
% Water	42.3

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

Geotechnics

HYDROMETER ANALYSIS

Client	QUANTERRA		Tested By	TO	Date 06-16-95
Client Project	3753 / BAKER		Checked By		Date 6-26-95
Project No.	95170				
Boring No.	MW-12				
Depth(ft.)	14.2-14.5				
Sample No.	T-1				

Soil Sample Weight

Container No.	1671		
Wt. Contain. & Dry Soil	163.44 gm.	K Factor	0.01279
Wt. Contain.	100.72 gm.	Composite Correction	5.70
Wt. Dispers.	5.00 gm.	a Factor	0.99
Wt. Dry Soil	57.72 gm.	% Finer Than No. 200	87.97
Temperature C	24.2		
Specific Gravity	2.70 Assumed		

Elapsed Time (min.)	R Measured		R Corrected	N (%)	D (mm)	N' (%)
0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
2	56.5	57.0	51.3	88.0	0.0239	77.4
5		53.0	47.3	81.1	0.0158	71.4
15		48.5	42.8	73.4	0.0095	64.6
30		46.0	40.3	69.1	0.0069	60.8
60		42.0	36.3	62.3	0.0051	54.8
250		40.0	34.3	58.8	0.0025	51.8
1440		35.5	29.8	51.1	0.0011	45.0

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

Geotechnics

Client	QUANTERRA
Client Project	3753 / BAKER
Project No.	95170
Boring No.	MW-12
Depth(ft.)	14.2-14.5
Sample No.	T-1

DIAMETER (mm)	PERCENT FINER
300.00	100.0
150.00	100.0
75.000	100.0
50.000	100.0
37.500	100.0
25.000	100.0
19.000	100.0
12.500	100.0
9.5000	100.0
4.7500	100.0
2.0000	100.0
0.8500	99.9
0.4250	99.8
0.2500	99.6
0.1060	94.5
0.0750	88.0
0.0239	77.4
0.0158	71.4
0.0095	64.6
0.0069	60.8
0.0051	54.8
0.0025	51.8
0.0011	45.0

SIEVE OPENING (mm)	PERCENT FINER
100.00	100.00
2.00	100.00
0.05	84.23
0.002	49.87

PERCENT OF EACH COMPONENT		CORRECTED PERCENT OF -2.0 mm MATERIAL FOR USDA DETERMINATION
GRAVEL	0.00	0.00
SAND	15.77	15.77
SILT	34.36	34.36
CLAY	49.87	49.87

USDA CLASSIFICATION CLAY

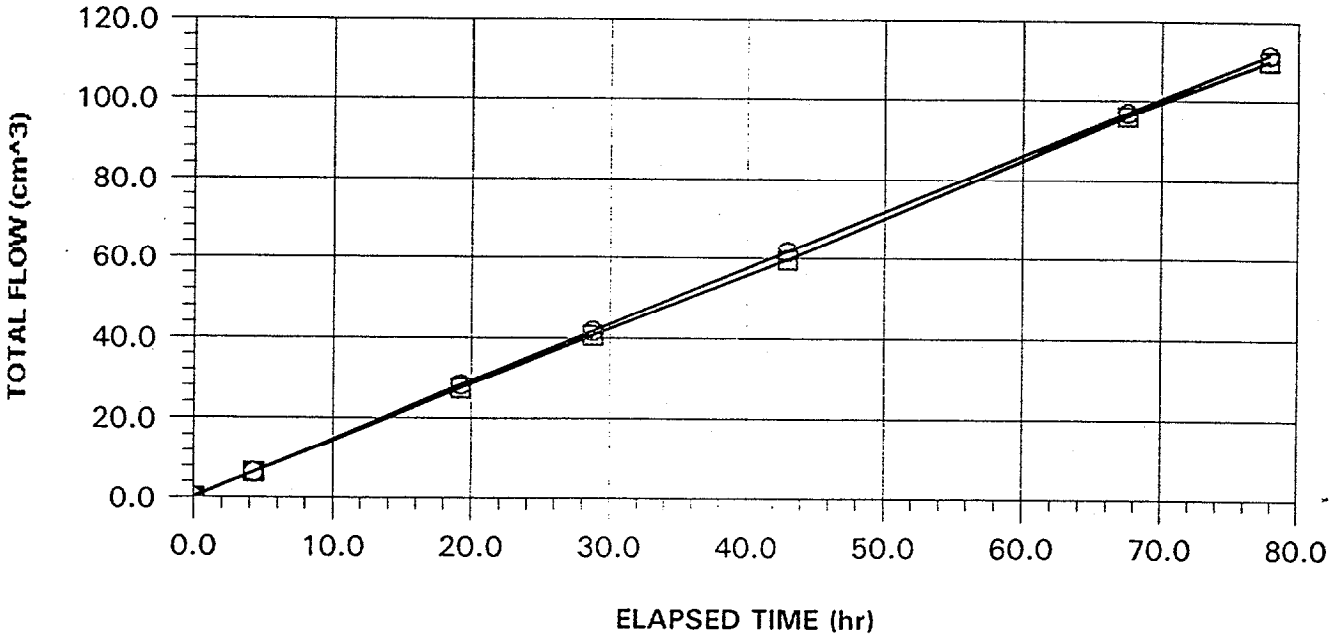
544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

PERMEABILITY TEST

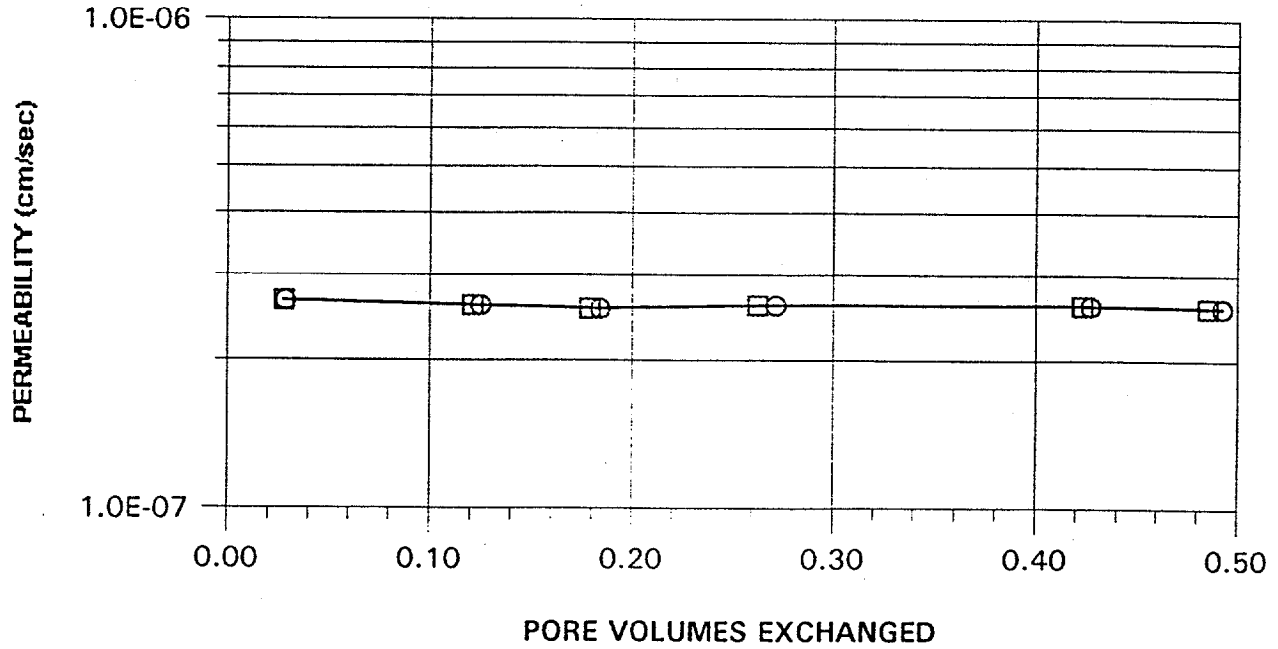
Client	QUANTERRA	Boring No.	73 MW-12
Client Project	3753 / BAKER	Depth(ft.)	14.5-14.8
Project No.	95170	Sample No.	T-1

AVERAGE PERMEABILITY = 2.6E-07 cm/sec @ 20°C
AVERAGE PERMEABILITY = 2.6E-09 m/sec @ 20°C

TOTAL FLOW vs. ELAPSED TIME



PORE VOLUMES EXCHANGED vs. PERMEABILITY



544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

PERMEABILITY TEST

Geotechnics

Client	QUANTERRA	Tested By	JCM Date 06-15-95
Client Project	3753 / BAKER	Checked By	Date 6-22-95
Project No.	95170		
Boring No.	73 MW-12	Specific Gravity	2.70 ASSUMED
Depth(ft.)	14.5-14.8	Sample Condition	UNDISTURBED
Sample No.	T-1		

Visual Description GRAY CLAY

MOISTURE CONTENT	BEFORE TEST	AFTER TEST
Tare Number	1497	1703
Wt. Tare & WS(gm.)	134.50	438.50
Wt. Tare & DS(gm.)	103.24	337.77
Wt. Water(gm.)	31.26	100.73
Wt. Tare(gm.)	33.82	83.72
Wt. DS(gm.)	69.42	254.05
Moisture Content(%)	45.0	39.6
UNIT WEIGHT		
Wt. Tube & WS.(gms.)	1052.30	NA
Wt. Of Tube(gms.)	290.62	NA
Wt. Of WS.(gms.)	761.68	733.4
Length 1 (in.)	3.988	4.062
Length 2 (in.)	4.016	4.058
Length 3 (in.)	4.013	4.051
Top Diameter (in.)	2.868	2.832
Middle Diameter (in.)	2.872	2.843
Bottom Diameter (in.)	2.872	2.847
Average Length (in)	4.01	4.06
Average Area (in^2)	6.47	6.34
Sample Volume(cc.)	424.85	421.34
Unit Wet Wt.(gms/cc)	1.79	1.74
Unit Wet Wt.(pcf.)	111.9	108.6
Unit Dry Wt.(pcf.)	77.1	77.8
Unit Dry Wt.(gms/cc)	1.24	1.25
Void Ratio,e	1.18	1.17
Porosity, n	0.54	0.54
Pore Volume(cm^3)	230.3	226.8

PERMEABILITY TEST

Geotechnics

Client	QUANTERRA	Tested By	JCM	Date	06-15-95
Client Project	3753 / BAKER	Checked By	EDM	Date	6-22-95
Project No.	95170				
Boring No.	73 MW-12				
Depth(ft.)	14.5-14.8				
Sample No.	T-1				
Visual Description	GRAY CLAY				

Pressure Heads (Constant)	
Top Cap (psi)	25.0
Bottom Cap (psi)	30.0
Cell (psi)	35.0
Total Pressure Head (cm)	351.5

Final Sample Dimensions	
Sample Length (cm.), L	10.30
Sample Diameter (cm.)	7.22
Sample Area (cm.^2), A	40.89
Inflow Burette Area, (cm.^2), a-in	4.88
Outflow Burette Area, (cm.^2), a-out	4.60
B Parameter	100%

AVERAGE PERMEABILITY = 2.6E-07 **cm/sec @ 20°C**
AVERAGE PERMEABILITY = 2.6E-09 **m/sec @ 20°C**

DATE	TIME		ELAPSED TIME (t)	TOTAL INFLOW	TOTAL OUTFLOW	TOTAL HEAD (h)	FLOW 0 FLOW 1 STOP	TEMP	INCREMENTAL PERMEABILITY @ 20°C
mon-dy-yr	hr	min	hr	cm^3	cm^3	cm		°C	cm/sec
06-15-95	13	5	0.0	0.0	0.0	363.1	0	24.0	NA
06-15-95	17	20	4.2	6.5	6.3	360.4	0	24.0	2.6E-07
06-16-95	8	20	19.3	28.3	27.4	351.4	0	23.4	2.6E-07
06-16-95	17	50	28.8	41.7	40.6	345.7	0	24.0	2.6E-07
06-17-95	8	5	43.0	61.6	59.5	337.6	1	23.1	2.6E-07
06-17-95	8	10	43.0	61.6	59.5	375.3	0	23.1	NA
06-18-95	8	40	67.5	96.8	95.9	360.1	0	23.0	2.6E-07
06-18-95	19	0	77.8	111.7	110.1	354.0	0	23.0	2.6E-07

544 Braddock Avenue • East Pittsburgh, PA 15112 • Phone (412) 823-7600 • Fax (412) 823-8999

Envirocorp Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
(615) 588-6401

COC NO. *0004253*

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD*

WO# 3753
RL# 3756

Reference Document No. 1096
Page 1 of 1

Project Name/No.[1] CTO-0312
Sample Team Members[2]
Profit Center No.[3]
Project Manager[4] Mac Petroccia
Purchase Order No.[6] 62470-312
Required Report Date[11]

Samples Shipment Date[7] 5-25-95
Lab Destination[8]
Lab Contact[9]
Project Contact/Phone[12]
Carrier/Waybill No.[13]

Bill to:[5] Baker Environmental
420 Rouser Rd.
Coraopolis, Pa
15108

Report to:[10] Mac Petroccia

ONE CONTAINER PER LINE

Sample Number[14]	Sample Description/Type[15]	Date/Time Collected[16]	Container Type[17]	Sample Volume[18]	Pre-servative[19]	Requested Testing Program[20]	Condition on Receipt[21]	Disposal Record No.[22]
73-MW12	Shelby Tube		Shelby TUBE			grain size & hydrometer Vertical Hydraulic Conductivity		

Special Instructions:[23]

Possible Hazard Identification:[24]
Non-hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐

Sample Disposal:[25]
Return to Client ☐ Disposal by Lab ☑ Archive (mos.)

Turnaround Time Required:[26]
Normal ☑ Rush ☐

QC Level:[27]
I. ☐ II. ☐ III. ☐ Project Specific (specify): LEVEL D

1. Relinquished by[28] (Signature/Affiliation) James S. Culp	Date: 5-25-95 Time: 1300	1. Received by[28] (Signature/Affiliation) Kenya Klemm	Date: 05-26-95 Time: 08:40
2. Relinquished by (Signature/Affiliation)	Date: Time:	2. Received by (Signature/Affiliation)	Date: Time:
3. Relinquished by (Signature/Affiliation)	Date: Time:	3. Received by (Signature/Affiliation)	Date: Time:

Comments:[29]

Write: To accompany samples Yellow: Field copy

*See back of form for special instructions.

CTO 312 SITE 73 UST A 47-5 SURFACE SOIL

LOCATION	73-AC1-MW16-00	73-AC1-MW17-00	73-AC1-MW27-00	73-AC5-SB09-00	73-AC5-SB09-00D
METHOD	SOILMOISTU	SOILMOISTU	SOILMOISTU	SOILMOISTU	SOILMOISTU
DATE_SAMPLED	04/22/95	04/21/95	04/22/95	04/18/95	04/18/95
DEPTH	NA	NA	NA	NA	NA
UNITS	%	%	%	%	%
ENGINEERING PARAMETERS					
SOLIDS, TOTAL (TS) SOLID MATRI					
MOISTURE	17.29	8.06	5.36	16.06	4.57

CTO 312 SITE 73 UST A 47-5 SURFACE SOIL

LOCATION	73-AC5-SB10-00	73-AC5-SB10-00
METHOD	160.3 MODI	SOILMOISTU
DATE_SAMPLED	04/18/95	04/18/95
DEPTH	NA	NA
UNITS	%	%
ENGINEERING PARAMETERS		
SOLIDS, TOTAL (TS) SOLID MATRI	94.4	
MOISTURE		7.06

CTO 312 SITE 73 UST A 47-5 GROUNDWATER

LOCATION	73-AC1-MW16-01	73-AC1-MW17-01	73-AC1-MW17-01	73-AC1-MW17-01D	73-AC1-MW27-01
METHOD	160.2	160.2	SOILMOISTU	SOILMOISTU	160.2
DATE_SAMPLED	05/07/95	05/17/95	05/05/95	05/05/95	05/18/95
DEPTH	NA	NA	NA	NA	NA
UNITS	MG/L	MG/L	%	%	MG/L
ENGINEERING PARAMETERS					
MOISTURE			13.47	13.13	
SUSPENDED SOLIDS (NON-FILTERAB	4	4 U			4 U

CTO 312 SITE 73 UST A 47-5 GROUNDWATER

LOCATION	73-AC1-MW27-02	73-AC1-MW27-02D	73-AC5-SB10-03
METHOD	SOILMOISTU	SOILMOISTU	SOILMOISTU
DATE_SAMPLED	04/22/95	04/22/95	04/18/95
DEPTH	NA	NA	NA
UNITS	%	%	%
ENGINEERING PARAMETERS			
MOISTURE	14.53	14.53	19.38
SUSPENDED SOLIDS (NON-FILTERAB			

CTO 312 SITE 73 UST A 47-4 SUBSURFACE SOIL

LOCATION	73-AC1-MW04-01	73-AC1-MW04-01	73-AC1-MW04-01	73-AC1-MW04-01D	73-AC1-MW04-01D
METHOD	160.2	160.3	SOILMOISTU	160.2	160.3 MODI
DATE_SAMPLED	05/06/95	04/20/95	04/20/95	05/06/95	04/20/95
DEPTH	NA	NA	NA	NA	NA
UNITS	MG/L	%	%	MG/L	%
ENGINEERING PARAMETERS					
SOLIDS, TOTAL (TS) SOLID MATRI		81.3			90.4
MOISTURE			16.71		
SUSPENDED SOLIDS (NON-FILTERAB	3			2	

CTO 312 SITE 73 UST A 47-4 SUBSURFACE SOIL

LOCATION	73-AC1-MW04-01D	73-AC1-MW04-01D	73-AC1-MW11-01	73-AC1-MW11-01	73-AC1-MW17-01
METHOD	SOILMOISTU	160.3 MODI	160.2	SOILMOISTU	160.2
DATE_SAMPLED	04/20/95	04/20/95	05/16/95	04/17/95	05/17/95
DEPTH	NA	NA	NA	NA	NA
UNITS	%	%	MG/L	%	MG/L
ENGINEERING PARAMETERS					
SOLIDS, TOTAL (TS) SOLID MATRI		80.6			
MOISTURE	13			17.12	
SUSPENDED SOLIDS (NON-FILTERAB			2		4 U

CTO 312 SITE 73 UST A 47-4 SUBSURFACE SOIL

LOCATION	73-AC1-MW17-01	73-AC1-MW17-01D	73-AC1-MW26-01	73-AC1-MW26-01	73-AC1-MW27-01
METHOD	SOILMOISTU	SOILMOISTU	160.2	SOILMOISTU	160.2
DATE_SAMPLED	05/05/95	05/05/95	05/07/95	04/18/95	05/18/95
DEPTH	NA	NA	NA	NA	NA
UNITS	%	%	MG/L	%	MG/L
ENGINEERING PARAMETERS					
SOLIDS, TOTAL (TS) SOLID MATRI					
MOISTURE	13.47	13.13		6.97	
SUSPENDED SOLIDS (NON-FILTERAB			1 U		4 U

CTO 312 SITE 73 UST A 47-4 SUBSURFACE SOIL

LOCATION	73-AC1-MW27-02	73-AC1-MW27-02D
METHOD	SOILMOISTU	SOILMOISTU
DATE_SAMPLED	04/22/95	04/22/95
DEPTH	NA	NA
UNITS	%	%
ENGINEERING PARAMETERS		
SOLIDS, TOTAL (TS) SOLID MATRI		
MOISTURE	14.53	14.53
SUSPENDED SOLIDS (NON-FILTERAB		

CTO 312 SITE 73 UST A 47-4 GROUNDWATER

LOCATION	73-AC1-MW11B-01	73-AC1-MW13-01	73-AC1-MW16-01	73-AC1-MW17-01
METHOD	160.2	160.1	160.2	160.2
DATE_SAMPLED	05/17/95	05/18/95	05/07/95	05/17/95
DEPTH	NA	NA	NA	NA
UNITS	MG/L	MG/L	MG/L	MG/L
ENGINEERING PARAMETERS				
PHOSPHORUS		0.01 U		
TOTAL KJELDAHL NITROGEN (TKN)		2.3		
ALKALINITY, AS CACO3		68		
CHEMICAL OXYGEN DEMAND (COD)		60		
SUSPENDED SOLIDS (NON-FILTERAB	4 U	4 U	4	4 U
DISSOLVED SOLIDS (FILTERABLE R		240		
TOTAL ORGANIC CARBON (TOC)		27		

CTO 312 SITE 73 UST A47-2 SOIL

LOCATION	73-AC5-SB10-00	73-AC5-SB11-00	73-AC6-SB07-00	73-AC6-SB07-00D
METHOD	160.3 MODI	SOILMOISTU	SOILMOISTU	SOILMOISTU
DATE_SAMPLED	04/18/95	04/09/95	04/22/95	04/22/95
DEPTH	NA	NA	NA	NA
UNITS	%	%	%	%
ENGINEERING				
SOLIDS, TOTAL (TS) SOLID MATRI	94.4			
MOISTURE	7.06	7.48	6.92	7.59

CTO 312 SITE 73 UST A47-1 GROUNDWATER

LOCATION	73-AC1-MW27-01	73-AC1-MW29-01
DATE SAMPLED	05/18/95	05/18/95
DEPTH	NA	NA
UNITS	MG/L	MG/L
PHOSPHORUS		
TOTAL KJELDAHL NITROGEN (TKN)		
ALKALINITY, AS CACO3		
CHEMICAL OXYGEN DEMAND (COD)		
SUSPENDED SOLIDS (NON-FILTERAB	4 U	4 U
DISSOLVED SOLIDS (FILTERABLE R		
TOTAL ORGANIC CARBON (TOC)		
ACIDITY, AS CACO3		

CTO 312 SITE 73 UST A47-1 SOIL

LOCATION	73-AC1-MW13
DATE_STAMP	05/04/95
UNITS	MG/KG
ENGINEERING	
PHOSPHORUS	21
TOTAL KJELDAHL NITROGEN (TKN)	66
ALKALINITY, AS CACO3	440
CHEMICAL OXYGEN DEMAND (COD)	6100

CTO 312 SITE 73 UST A47-1 GROUNDWATER

LOCATION	73-A47/3-08-01	73-A47/3-09-01	73-AC1-DW03-01	73-AC1-MW13-01	73-AC1-MW14-01
DATE SAMPLED	05/17/95	05/17/95	05/18/95	05/18/95	04/25/95
DEPTH	NA	NA	NA	NA	NA
UNITS	MG/L	MG/L	MG/L	MG/L	MG/L
PHOSPHORUS	0.01 U			0.01 U	
TOTAL KJELDAHL NITROGEN (TKN)	3.5			2.3	
ALKALINITY, AS CACO3	100			68	
CHEMICAL OXYGEN DEMAND (COD)	120			60	
SUSPENDED SOLIDS (NON-FILTERAB	5	4 U	5	4 U	1 U
DISSOLVED SOLIDS (FILTERABLE R	370			240	
TOTAL ORGANIC CARBON (TOC)	51			27	
ACIDITY, AS CACO3	500			480	

APPENDIX Q
FIELD DUPLICATE SUMMARIES

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB11-04D	65-SD04-06D	73-AC1-DW03-00D	73-AC1-SB04-01D
METHOD	8240	8240	8240	8240	8240	8240A	8240A
VOLATILES (ug/kg)							
CHLOROMETHANE	11 U	12 U	11 U	12 U	12 J	11 U	12 U
BROMOMETHANE	11 U	12 U	11 U	12 U	56 U	11 U	12 U
VINYL CHLORIDE	11 U	12 U	11 U	12 U	56 U	11 U	12 U
CHLOROETHANE	11 U	12 U	11 U	12 U	56 U	11 U	12 U
METHYLENE CHLORIDE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
ACETONE	24	12 U	11 U	63	250 J	56 U	58 U
CARBON DISULFIDE	11 U	12 U	11 U	12 U	56 UJ	5.6 U	5.8 U
1,1-DICHLOROETHENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
1,1-DICHLOROETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
1,2-DICHLOROETHENE (TOTAL)	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
CHLOROFORM	11 U	12 U	11 U	12 U	6 J	5.6 U	5.8 U
1,2-DICHLOROETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
2-BUTANONE	11 U	3 J	11 U	1 J	56 U	56 U	58 U
1,1,1-TRICHLOROETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
CARBON TETRACHLORIDE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
BROMODICHLOROMETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
1,2-DICHLOROPROPANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
CIS-1,3-DICHLOROPROPENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
TRICHLOROETHENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
DIBROMOCHLOROMETHANE	11 U	12 U	11 U	12 U	56 U	NA	NA
1,1,2-TRICHLOROETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
BENZENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
TRANS-1,3-DICHLOROPROPENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
BROMOFORM	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
4-METHYL-2-PENTANONE	11 U	12 U	11 U	12 U	56 U	56 U	58 U
2-HEXANONE	11 U	12 U	11 U	12 U	56 U	56 U	58 U
TETRACHLOROETHENE	11 U	12 U	11 U	12 U	26 J	5.6 U	5.8 U
1,1,2,2-TETRACHLOROETHANE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
TOLUENE	11 U	12 U	11 U	12 U	11 J	1.3 J	5.8 U
CHLOROBENZENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
ETHYLBENZENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
STYRENE	11 U	12 U	11 U	12 U	56 U	5.6 U	5.8 U
XYLENES (TOTAL)	2 J	12 U	2 J	2 J	56 U		

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB11-04D	65-SD04-06D	73-AC1-DW03-00D	73-AC1-SB04-01D
METHOD	8240	8240	8240	8240	8240	8240A	8240A
VOLATILES (ug/kg) (cont)							
VINYL ACETATE	NA	NA	NA	NA	NA	5.6 U	5.8 U
ACROLEIN	NA	NA	NA	NA	NA	110 U	120 R
ACRYLONITRILE	NA	NA	NA	NA	NA	56 U	58 U
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	5.6 U	5.8 U
DIBROMOMETHANE	NA	NA	NA	NA	NA	5.6 U	5.8 U
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	5.6 U	5.8 U
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	5.6 U	5.8 U
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	5.6 U	5.8 U
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	11 U	12 U
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	5.6 U	5.8 U
O-XYLENE	NA	NA	NA	NA	NA	5.6 U	5.8 U
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	5.6 U	5.8 U

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-01D	73-AC3-MW03-01D	73-AC4-MW18-00D	73-AC4-MW18-00DR	73-AC4-SB13-01D	73-AC5-MW20-00D
METHOD	8240	8240	8240	8240	8240	8240
VOLATILES (ug/kg)						
CHLOROMETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
BROMOMETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
VINYL CHLORIDE	11 U	11 U	14 U	14 R	11 U	18 UJ
CHLOROETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
METHYLENE CHLORIDE	11 U	11 U	14 U	14 R	11 U	18 UJ
ACETONE	11 U	43	14 U	18 R	11 U	32 J
CARBON DISULFIDE	11 U	11 U	14 U	14 R	11 U	18 UJ
1,1-DICHLOROETHENE	11 U	11 U	14 U	14 R	11 U	18 UJ
1,1-DICHLOROETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
1,2-DICHLOROETHENE (TOTAL)	11 U	11 U	14 U	14 R	11 U	18 UJ
CHLOROFORM	11 U	11 U	14 U	14 R	11 U	18 UJ
1,2-DICHLOROETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
2-BUTANONE	11 U	7 J	14 U	14 R	11 U	18 UJ
1,1,1-TRICHLOROETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
CARBON TETRACHLORIDE	11 U	11 U	14 U	14 R	11 U	18 UJ
BROMODICHLOROMETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
1,2-DICHLOROPROPANE	11 U	11 U	14 U	14 R	11 U	18 UJ
CIS-1,3-DICHLOROPROPENE	11 U	11 U	14 U	14 R	11 U	18 UJ
TRICHLOROETHENE	11 U	11 U	14 U	14 R	11 U	18 UJ
DIBROMOCHLOROMETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
1,1,2-TRICHLOROETHANE	11 U	11 U	14 U	14 R	11 U	18 UJ
BENZENE	11 U	11 U	14 U	14 R	11 U	18 UJ
TRANS-1,3-DICHLOROPROPENE	11 U	11 U	14 U	14 R	11 U	18 UJ
BROMOFORM	11 U	11 U	14 U	14 R	11 U	18 UJ
4-METHYL-2-PENTANONE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
2-HEXANONE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
TETRACHLOROETHENE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
1,1,2,2-TETRACHLOROETHANE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
TOLUENE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
CHLOROBENZENE	11 U	11 U	14 UJ	14 R	11 U	18 UJ
ETHYLBENZENE	11 U	11 U	14 UJ	14 R	11 U	7 J
STYRENE	11 U	11 U	2 J	14 R	11 U	9 J
XYLENES (TOTAL)	11 U	11 U	14 UJ	2 R	1 J	18 UJ

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW05-01D	73-AC3-MW03-01D	73-AC4-MW18-00D	73-AC4-MW18-00DR	73-AC4-SB13-01D	73-AC5-MW20-00D
METHOD	8240	8240	8240	8240	8240	8240
VOLATILES (ug/kg) (cont)						
VINYL ACETATE	NA	NA	NA	NA	NA	NA
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00DR	73-AC5-SB09-00D	73-AC6-SB07-00D	73-SB06DW-03D	73-SB12DW-00D	73-SD06-06D
METHOD	8240	8240	8240	OLM01.9	OLM01.9	8240
VOLATILES (ug/kg)						
CHLOROMETHANE	18 R	11 U	11 U	12 U	16 U	71 U
BROMOMETHANE	18 R	11 U	11 U	12 U	16 U	71 U
VINYL CHLORIDE	18 R	11 U	11 U	12 U	16 U	71 U
CHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
METHYLENE CHLORIDE	4 R	11 U	11 U	12 U	16 U	71 U
ACETONE	27 UJ	11 U	11 U	39	16 U	71 U
CARBON DISULFIDE	18 R	11 U	11 U	12 U	16 U	71 U
1,1-DICHLOROETHENE	18 R	11 U	11 U	12 U	16 U	71 U
1,1-DICHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
1,2-DICHLOROETHENE (TOTAL)	18 R	11 U	11 U	12 U	16 U	71 U
CHLOROFORM	18 R	11 U	11 U	12 U	16 U	71 U
1,2-DICHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
2-BUTANONE	18 R	11 U	11 U	12 U	16 U	71 U
1,1,1-TRICHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
CARBON TETRACHLORIDE	18 R	11 U	11 U	12 U	16 U	71 U
BROMODICHLOROMETHANE	18 R	11 U	11 U	12 U	16 U	71 U
1,2-DICHLOROPROPANE	18 R	11 U	11 U	12 U	16 U	71 U
CIS-1,3-DICHLOROPROPENE	18 R	11 U	11 U	12 U	16 U	71 U
TRICHLOROETHENE	18 R	11 U	11 U	12 U	16 U	71 U
DIBROMOCHLOROMETHANE	18 R	11 U	11 U	12 U	16 U	71 U
1,1,2-TRICHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
BENZENE	18 R	11 U	11 U	12 U	16 U	71 U
TRANS-1,3-DICHLOROPROPENE	18 R	11 U	11 U	12 U	16 U	71 U
BROMOFORM	18 R	11 U	11 U	12 U	16 U	71 U
4-METHYL-2-PENTANONE	18 R	11 U	11 U	12 U	16 U	71 U
2-HEXANONE	18 R	11 U	11 U	12 U	16 U	71 U
TETRACHLOROETHENE	18 R	11 U	11 U	12 U	16 U	71 U
1,1,2,2-TETRACHLOROETHANE	18 R	11 U	11 U	12 U	16 U	71 U
TOLUENE	18 R	11 U	11 U	12 U	16 U	71 U
CHLOROBENZENE	18 R	11 U	11 U	12 U	16 U	71 U
ETHYLBENZENE	5 R	11 U	11 U	12 U	16 U	71 U
STYRENE	18 R	11 U	11 U	12 U	16 U	71 U
XYLENES (TOTAL)	18 R	1 J	11 U	12 U	16 U	71 U

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00DR	73-AC5-SB09-00D	73-AC6-SB07-00D	73-SB06DW-03D	73-SB12DW-00D	73-SD06-06D
METHOD	8240	8240	8240	OLM01.9	OLM01.9	8240
VOLATILES (ug/kg) (cont)						
VINYL ACETATE	NA	NA	NA	NA	NA	NA
ACROLEIN	NA	NA	NA	NA	NA	NA
ACRYLONITRILE	NA	NA	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA	NA	NA	NA	NA
DIBROMOMETHANE	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA	NA	NA	NA	NA
M-XYLENE & P-XYLENE	NA	NA	NA	NA	NA	NA
O-XYLENE	NA	NA	NA	NA	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA	NA	NA	NA	NA

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD06-612D	73-SD12-06D
METHOD	8240	8240
VOLATILES (ug/kg)		
CHLOROMETHANE	70 U	26 U
BROMOMETHANE	70 U	26 U
VINYL CHLORIDE	70 U	26 U
CHLOROETHANE	70 U	26 U
METHYLENE CHLORIDE	70 U	26 U
ACETONE	34 J	150 U
CARBON DISULFIDE	9 J	20 J
1,1-DICHLOROETHENE	70 U	26 U
1,1-DICHLOROETHANE	70 U	26 U
1,2-DICHLOROETHENE (TOTAL)	70 U	26 U
CHLOROFORM	70 U	26 U
1,2-DICHLOROETHANE	70 U	26 U
2-BUTANONE	7 J	26 U
1,1,1-TRICHLOROETHANE	70 U	26 U
CARBON TETRACHLORIDE	70 U	26 U
BROMODICHLOROMETHANE	70 U	26 U
1,2-DICHLOROPROPANE	70 U	26 U
CIS-1,3-DICHLOROPROPENE	70 U	26 U
TRICHLOROETHENE	70 U	26 U
DIBROMOCHLOROMETHANE	70 U	26 U
1,1,2-TRICHLOROETHANE	70 U	26 U
BENZENE	70 U	26 U
TRANS-1,3-DICHLOROPROPENE	70 U	26 U
BROMOFORM	70 U	26 U
4-METHYL-2-PENTANONE	70 U	26 U
2-HEXANONE	70 U	26 U
TETRACHLOROETHENE	70 U	26 U
1,1,2,2-TETRACHLOROETHANE	70 U	26 U
TOLUENE	70 U	26 U
CHLOROBENZENE	70 U	26 U
ETHYLBENZENE	70 U	26 U
STYRENE	70 U	26 U
XYLENES (TOTAL)	18 J	26 U

DUPLICATE SUMMARY
DETECTED VOLATILES IN SOIL
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD06-612D	73-SD12-06D
METHOD	8240	8240
VOLATILES (ug/kg) (cont)		
VINYL ACETATE	NA	NA
ACROLEIN	NA	NA
ACRYLONITRILE	NA	NA
TRICHLOROFLUOROMETHANE	NA	NA
DIBROMOMETHANE	NA	NA
1,3-DICHLOROBENZENE	NA	NA
1,4-DICHLOROBENZENE	NA	NA
1,2-DICHLOROBENZENE	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	NA
M-XYLENE & P-XYLENE	NA	NA
O-XYLENE	NA	NA
CIS-1,2-DICHLOROETHENE	NA	NA

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB11-04D	65-SD04-06D	73-AC1-DW03-00D
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)						
PHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
BIS(2-CHLOROETHYL) ETHER	370 U	380 U	370 U	390 U	9100 U	1800 U
2-CHLOROPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
1,3-DICHLOROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
1,4-DICHLOROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
1,2-DICHLOROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
2-METHYLPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	380 U	370 U	390 U	9100 U	1800 U
4-METHYLPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
N-NITROSO-DI-N-PROPYLAMINE	370 U	380 U	370 U	390 U	9100 U	1800 U
HEXACHLOROETHANE	370 U	380 U	370 U	390 U	9100 U	1800 U
NITROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
ISOPHORONE	370 U	380 U	370 U	390 U	9100 U	1800 U
2-NITROPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
2,4-DIMETHYLPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
BIS(2-CHLOROETHOXY)METHANE	370 U	380 U	370 U	390 U	9100 U	1800 U
2,4-DICHLOROPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
1,2,4-TRICHLOROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
NAPHTHALENE	370 U	380 U	370 U	390 U	9100 U	1800 U
4-CHLOROANILINE	370 U	380 U	370 U	390 U	9100 U	1800 U
HEXACHLOROBUTADIENE	370 U	380 U	370 U	390 U	9100 U	1800 U
4-CHLORO-3-METHYLPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
2-METHYLNAPHTHALENE	370 U	380 U	370 U	390 U	9100 U	1800 U
HEXACHLOROCYCLOPENTADIENE	370 UJ	380 UJ	370 U	390 UJ	9100 U	1800 U
2,4,6-TRICHLOROPHENOL	370 U	380 U	370 U	390 U	9100 U	1800 U
2,4,5-TRICHLOROPHENOL	890 U	930 U	900 U	950 U	22000 U	4400 U
2-CHLORONAPHTHALENE	370 U	380 U	370 U	390 U	9100 U	1800 U
2-NITROANILINE	890 U	930 U	900 U	950 U	22000 U	4400 U
DIMETHYL PHTHALATE	370 U	380 U	370 U	390 U	9100 U	1800 U
ACENAPHTHYLENE	370 U	380 U	370 U	390 U	9100 U	1800 U
2,6-DINITROTOLUENE	370 U	380 U	370 U	390 U	9100 U	1800 U
3-NITROANILINE	890 U	930 U	900 U	950 U	22000 U	4400 U
ACENAPHTHENE	370 U	380 U	370 U	390 U	9100 U	1800 U
2,4-DINITROPHENOL	890 U	930 U	900 U	950 U	22000 U	4400 U
4-NITROPHENOL	890 U	930 U	900 U	950 U	22000 U	4400 UJ

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB11-04D	65-SD04-06D	73-AC1-DW03-00D
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)						
DIBENZOFURAN	370 U	380 U	370 U	390 U	9100 U	1800 U
2,4-DINITROTOLUENE	370 U	380 U	370 U	390 U	9100 U	1800 U
DIETHYL PHTHALATE	370 U	380 U	370 U	390 U	9100 U	1800 U
4-CHLOROPHENYL PHENYL ETHE	370 U	380 U	370 U	390 U	9100 U	1800 U
FLUORENE	370 U	380 U	370 U	390 U	9100 U	1800 U
4-NITROANILINE	890 U	930 U	900 U	950 U	22000 U	4400 U
4,6-DINITRO-2-METHYLPHENOL	890 U	930 U	900 U	950 U	22000 U	4400 U
N-NITROSODIPHENYLAMINE	370 U	380 U	370 U	390 U	9100 U	1800 U
4-BROMOPHENYL PHENYL ETHER	370 U	380 U	370 U	390 U	9100 U	1800 U
HEXACHLOROBENZENE	370 U	380 U	370 U	390 U	9100 U	1800 U
PENTACHLOROPHENOL	890 U	930 U	900 U	950 U	22000 U	4400 U
PHENANTHRENE	370 U	380 U	370 U	390 U	9100 U	1800 U
ANTHRACENE	370 U	380 U	370 U	390 U	9100 U	1800 U
CARBAZOLE	370 U	380 U	370 U	390 U	9100 UJ	1800 U
DI-N-BUTYL PHTHALATE	370 U	380 U	370 U	390 U	2400 J	1800 U
FLUORANTHENE	370 U	380 U	370 U	390 U	9100 U	1800 U
PYRENE	370 U	380 U	370 U	390 U	9100 U	1800 U
BUTYL BENZYL PHTHALATE	370 U	380 U	370 U	390 U	9100 U	1800 U
3,3'-DICHLOROBENZIDINE	370 U	380 U	370 U	390 U	9100 U	1800 U
BENZO(A)ANTHRACENE	370 U	380 U	370 U	390 U	9100 U	1800 U
CHRYSENE	370 U	380 U	370 U	390 U	9100 U	1800 U
DI-N-OCTYL PHTHALATE	370 U	380 U	370 U	390 U	9100 U	1800 U
BENZO(B)FLUORANTHENE	370 U	380 U	370 U	390 U	9100 U	1800 U
BENZO(K)FLUORANTHENE	370 U	380 U	370 U	390 U	9100 U	1800 U
BENZO(A)PYRENE	370 U	380 U	370 U	390 U	9100 U	1800 U
INDENO(1,2,3-CD)PYRENE	370 U	380 U	370 U	390 U	9100 U	1800 U
DIBENZ(A,H)ANTHRACENE	370 U	380 U	370 U	390 U	9100 U	1800 U
BENZO(G,H,I)PERYLENE	370 U	380 U	370 U	390 U	9100 U	1800 U
BIS(2-ETHYLHEXYL)PHTHALATE	130 J	380 U	120 J	300 J	9100 U	1800 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01D	73-AC1-MW13-00D	73-AC1-MW14-02DR	73-AC1-MW15-01D	73-AC1-MW15IW-01D
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)					
PHENOL	370 U	7100 U	3600 R	7400 U	3700 U
BIS(2-CHLOROETHYL) ETHER	370 U	7100 U	3600 R	7400 U	3700 U
2-CHLOROPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
1,3-DICHLOROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
1,4-DICHLOROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
1,2-DICHLOROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
2-METHYLPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
2,2'-OXYBIS(1-CHLOROPROPANE)	370 U	7100 U	3600 R	7400 U	3700 U
4-METHYLPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
N-NITROSO-DI-N-PROPYLAMINE	370 U	7100 U	3600 R	7400 U	3700 U
HEXACHLOROETHANE	370 U	7100 U	3600 R	7400 U	3700 U
NITROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
ISOPHORONE	370 U	7100 U	3600 R	7400 U	3700 U
2-NITROPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
2,4-DIMETHYLPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
BIS(2-CHLOROETHOXY)METHANE	370 U	7100 U	3600 R	7400 U	3700 U
2,4-DICHLOROPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
1,2,4-TRICHLOROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
NAPHTHALENE	370 U	7100 U	3600 R	7400 U	3700 U
4-CHLOROANILINE	370 U	7100 U	3600 R	7400 U	3700 U
HEXACHLOROBUTADIENE	370 U	7100 U	3600 R	7400 U	3700 U
4-CHLORO-3-METHYLPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
2-METHYLNAPHTHALENE	370 U	7100 U	3600 R	7400 U	3700 U
HEXACHLOROCYCLOPENTADIENE	370 U	7100 U	3600 R	7400 U	3700 U
2,4,6-TRICHLOROPHENOL	370 U	7100 U	3600 R	7400 U	3700 U
2,4,5-TRICHLOROPHENOL	890 U	17000 U	8700 R	18000 U	9000 U
2-CHLORONAPHTHALENE	370 U	7100 U	3600 R	7400 U	3700 U
2-NITROANILINE	890 U	17000 U	8700 R	18000 U	9000 U
DIMETHYL PHTHALATE	370 U	7100 U	3600 R	7400 U	3700 U
ACENAPHTHYLENE	370 U	7100 U	3600 R	7400 U	3700 U
2,6-DINITROTOLUENE	370 U	7100 U	3600 R	7400 U	3700 U
3-NITROANILINE	890 U	17000 U	8700 R	18000 U	9000 U
ACENAPHTHENE	370 U	7100 U	3600 R	7400 U	490 J
2,4-DINITROPHENOL	890 U	17000 U	8700 R	18000 U	9000 UJ
4-NITROPHENOL	890 U	17000 U	8700 R	18000 U	9000 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01D	73-AC1-MW13-00D	73-AC1-MW14-02DR	73-AC1-MW15-01D	73-AC1-MW15IW-01D
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)					
DIBENZOFURAN	370 U	7100 U	3600 R	7400 U	3700 U
2,4-DINITROTOLUENE	370 U	7100 U	3600 R	7400 U	3700 U
DIETHYL PHTHALATE	370 U	7100 U	3600 R	7400 U	3700 U
4-CHLOROPHENYL PHENYL ETHE	370 U	7100 U	3600 R	7400 U	3700 U
FLUORENE	370 U	7100 U	3600 R	7400 U	3700 U
4-NITROANILINE	890 U	17000 U	8700 R	18000 U	9000 U
4,6-DINITRO-2-METHYLPHENOL	890 U	17000 U	8700 R	18000 U	9000 U
N-NITROSODIPHENYLAMINE	370 U	7100 U	3600 R	7400 U	3700 U
4-BROMOPHENYL PHENYL ETHER	370 U	7100 U	3600 R	7400 U	3700 U
HEXACHLOROBENZENE	370 U	7100 U	3600 R	7400 U	3700 U
PENTACHLOROPHENOL	890 U	17000 U	8700 R	18000 U	9000 U
PHENANTHRENE	370 U	7100 U	3600 R	7400 U	3700 U
ANTHRACENE	370 U	7100 U	3600 R	7400 U	2000 J
CARBAZOLE	370 U	7100 U	3600 R	7400 U	3700 U
DI-N-BUTYL PHTHALATE	370 U	7100 U	3600 R	7400 U	3700 U
FLUORANTHENE	370 U	7100 U	3600 R	7400 U	4000
PYRENE	370 U	7100 U	3600 R	7400 U	3100 J
BUTYL BENZYL PHTHALATE	370 U	7100 U	3600 R	7400 U	3700 U
3,3'-DICHLOROBENZIDINE	370 U	7100 U	3600 R	7400 U	3700 U
BENZO(A)ANTHRACENE	370 U	7100 U	3600 R	7400 U	880 J
CHRYSENE	370 U	7100 U	3600 R	7400 U	930 J
DI-N-OCTYL PHTHALATE	370 U	7100 U	3600 R	7400 U	3700 U
BENZO(B)FLUORANTHENE	370 U	7100 U	3600 R	7400 U	690 J
BENZO(K)FLUORANTHENE	370 U	7100 U	3600 R	7400 U	3700 U
BENZO(A)PYRENE	370 U	7100 U	3600 R	7400 U	3700 U
INDENO(1,2,3-CD)PYRENE	370 U	7100 U	3600 R	7400 U	3700 U
DIBENZ(A,H)ANTHRACENE	370 U	7100 U	3600 R	7400 U	3700 U
BENZO(G,H,I)PERYLENE	NA	7100 U	3600 R	7400 U	3700 U
BIS(2-ETHYLHEXYL)PHTHALATE	370 U	7100 U	410 R	7400 U	3700 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-SB04-01D	73-AC2-MW05-01D	73-AC3-MW03-01D	73-AC4-MW18-00D	73-AC4-SB13-01D
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)					
PHENOL	1900 U	360 U	370 U	470 U	370 U
BIS(2-CHLOROETHYL) ETHER	1900 U	360 U	370 U	470 U	370 U
2-CHLOROPHENOL	1900 U	360 U	370 U	470 U	370 U
1,3-DICHLOROBENZENE	1900 U	360 U	370 U	470 U	370 U
1,4-DICHLOROBENZENE	1900 U	360 U	370 U	470 U	370 U
1,2-DICHLOROBENZENE	1900 U	360 U	370 U	470 U	370 U
2-METHYLPHENOL	1900 U	360 U	370 U	470 U	370 U
2,2'-OXYBIS(1-CHLOROPROPANE)	1900 U	360 U	370 U	470 U	370 U
4-METHYLPHENOL	1900 U	360 U	370 U	470 U	370 U
N-NITROSO-DI-N-PROPYLAMINE	1900 U	360 U	370 U	470 U	370 U
HEXACHLOROETHANE	1900 U	360 U	370 U	470 U	370 U
NITROBENZENE	1900 U	360 U	370 U	470 U	370 U
ISOPHORONE	1900 U	360 U	370 U	470 U	370 U
2-NITROPHENOL	1900 U	360 U	370 U	470 U	370 U
2,4-DIMETHYLPHENOL	1900 U	360 U	370 U	470 U	370 U
BIS(2-CHLOROETHOXY)METHANE	1900 U	360 U	370 U	470 U	370 U
2,4-DICHLOROPHENOL	1900 U	360 U	370 U	470 U	370 U
1,2,4-TRICHLOROBENZENE	1900 U	360 U	370 U	470 U	370 U
NAPHTHALENE	1900 U	360 U	370 U	470 U	370 U
4-CHLOROANILINE	1900 U	360 U	370 U	470 U	370 U
HEXACHLOROBUTADIENE	1900 U	360 U	370 U	470 U	370 U
4-CHLORO-3-METHYLPHENOL	1900 U	360 U	370 U	470 U	370 U
2-METHYLNAPHTHALENE	1900 U	360 U	370 U	470 U	370 U
HEXACHLOROCYCLOPENTADIENE	1900 U	360 U	370 U	470 U	370 U
2,4,6-TRICHLOROPHENOL	1900 U	360 U	370 U	470 U	370 U
2,4,5-TRICHLOROPHENOL	4500 U	880 U	890 U	1200 U	890 U
2-CHLORONAPHTHALENE	1900 U	360 U	370 U	470 U	370 U
2-NITROANILINE	4500 U	880 U	890 U	1200 U	890 U
DIMETHYL PHTHALATE	1900 U	360 U	370 U	470 U	370 U
ACENAPHTHYLENE	1900 U	360 U	370 U	470 U	370 U
2,6-DINITROTOLUENE	1900 U	360 U	370 U	470 U	370 U
3-NITROANILINE	4500 U	880 U	890 U	1200 U	890 U
ACENAPHTHENE	1900 U	360 U	370 U	470 U	370 U
2,4-DINITROPHENOL	4500 U	880 U	890 U	1200 U	890 UJ
4-NITROPHENOL	4500 U	880 U	890 U	1200 U	890 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-SB04-01D	73-AC2-MW05-01D	73-AC3-MW03-01D	73-AC4-MW18-00D	73-AC4-SB13-01D
METHOD	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)					
DIBENZOFURAN	1900 U	360 U	370 U	470 U	370 U
2,4-DINITROTOLUENE	1900 U	360 U	370 U	470 U	370 U
DIETHYL PHTHALATE	1900 U	360 U	370 U	470 U	370 U
4-CHLOROPHENYL PHENYL ETHE	1900 U	360 U	370 U	470 U	370 U
FLUORENE	1900 U	360 U	370 U	470 U	370 U
4-NITROANILINE	4500 R	880 U	890 U	1200 U	890 U
4,6-DINITRO-2-METHYLPHENOL	4500 U	880 U	890 U	1200 U	890 U
N-NITROSODIPHENYLAMINE	1900 U	360 U	370 U	470 U	370 U
4-BROMOPHENYL PHENYL ETHER	1900 U	360 U	370 U	470 U	370 U
HEXACHLOROBENZENE	1900 U	360 U	370 U	470 U	370 U
PENTACHLOROPHENOL	4500 U	880 U	890 U	1200 U	890 U
PHENANTHRENE	1900 U	360 U	370 U	470 U	370 U
ANTHRACENE	1900 U	360 U	370 U	470 U	370 U
CARBAZOLE	1900 U	360 U	370 U	470 U	370 U
DI-N-BUTYL PHTHALATE	1900 U	360 J	490	480 U	140 J
FLUORANTHENE	1900 U	360 U	370 U	470 U	370 U
PYRENE	1900 U	360 U	370 U	470 U	370 U
BUTYL BENZYL PHTHALATE	1900 U	360 U	370 U	470 U	370 U
3,3'-DICHLOROBENZIDINE	1900 U	360 U	370 U	470 U	370 U
BENZO(A)ANTHRACENE	1900 U	360 U	370 U	470 U	370 U
CHRYSENE	1900 U	360 U	370 U	470 U	370 U
DI-N-OCTYL PHTHALATE	1900 U	360 U	370 U	470 U	370 U
BENZO(B)FLUORANTHENE	1900 U	360 U	370 U	470 U	370 U
BENZO(K)FLUORANTHENE	1900 U	360 U	370 U	470 U	370 U
BENZO(A)PYRENE	1900 U	360 U	370 U	470 U	370 U
INDENO(1,2,3-CD)PYRENE	1900 U	360 U	370 U	470 U	370 U
DIBENZ(A,H)ANTHRACENE	1900 U	360 U	370 U	470 U	370 U
BENZO(G,H,I)PERYLENE	1900 U	360 U	370 U	470 U	370 U
BIS(2-ETHYLHEXYL)PHTHALATE	1900 U	53 J	95 J	59 J	70 J

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00D	73-AC5-SB09-00D	73-AC6-SB07-00D	73-SD05-06D	73-SD06-06D	73-SD06-612D
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg)						
PHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BIS(2-CHLOROETHYL) ETHER	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2-CHLOROPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
1,3-DICHLOROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
1,4-DICHLOROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
1,2-DICHLOROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2-METHYLPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2,2'-OXYBIS(1-CHLOROPROPANE)	570 U	340 U	1700 U	7900 U	13000 U	11000 U
4-METHYLPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
N-NITROSO-DI-N-PROPYLAMINE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
HEXACHLOROETHANE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
NITROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
ISOPHORONE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2-NITROPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2,4-DIMETHYLPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BIS(2-CHLOROETHOXY)METHANE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2,4-DICHLOROPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
1,2,4-TRICHLOROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
NAPHTHALENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
4-CHLOROANILINE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
HEXACHLOROBUTADIENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
4-CHLORO-3-METHYLPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2-METHYLNAPHTHALENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
HEXACHLOROCYCLOPENTADIENE	570 U	340 UJ	1700 U	7900 U	13000 U	11000 U
2,4,6-TRICHLOROPHENOL	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2,4,5-TRICHLOROPHENOL	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
2-CHLORONAPHTHALENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2-NITROANILINE	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
DIMETHYL PHTHALATE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
ACENAPHTHYLENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
2,6-DINITROTOLUENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
3-NITROANILINE	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
ACENAPHTHENE	570 U	81 J	1700 U	7900 U	13000 U	11000 U
2,4-DINITROPHENOL	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
4-NITROPHENOL	1400 U	830 U	4200 UJ	19000 U	32000 R	27000 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC5-MW20-00D	73-AC5-SB09-00D	73-AC6-SB07-00D	73-SD05-06D	73-SD06-06D	73-SD06-612D
METHOD	8270	8270	8270	8270	8270	8270
SEMIVOLATILES (ug/kg) (cont)						
DIBENZOFURAN	570 U	48 J	1700 U	7900 U	13000 U	11000 U
2,4-DINITROTOLUENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
DIETHYL PHTHALATE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
4-CHLOROPHENYL PHENYL ETHE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
FLUORENE	570 U	75 J	1700 U	7900 U	13000 U	11000 U
4-NITROANILINE	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
4,6-DINITRO-2-METHYLPHENOL	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
N-NITROSODIPHENYLAMINE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
4-BROMOPHENYL PHENYL ETHER	570 U	340 U	1700 U	7900 U	13000 U	11000 U
HEXACHLOROBENZENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
PENTACHLOROPHENOL	1400 U	830 U	4200 U	19000 U	32000 U	27000 U
PHENANTHRENE	570 U	670	180 J	7900 U	13000 U	11000 U
ANTHRACENE	570 U	70 J	1700 U	7900 U	13000 U	11000 U
CARBAZOLE	570 U	140 J	1700 U	7900 R	13000 R	11000 R
DI-N-BUTYL PHTHALATE	220 J	340 U	1700 U	7900 U	13000 U	11000 U
FLUORANTHENE	570 U	720	370 J	7900 U	13000 U	11000 U
PYRENE	570 U	620	360 J	7900 U	13000 U	11000 U
BUTYL BENZYL PHTHALATE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
3,3'-DICHLOROBENZIDINE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BENZO(A)ANTHRACENE	570 U	300 J	250 J	7900 U	13000 U	11000 U
CHRYSENE	570 U	340 J	200 J	7900 U	13000 U	11000 U
DI-N-OCTYL PHTHALATE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BENZO(B)FLUORANTHENE	570 U	580	470 J	7900 U	13000 U	11000 U
BENZO(K)FLUORANTHENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BENZO(A)PYRENE	570 U	170 J	1700 U	7900 U	13000 U	11000 U
INDENO(1,2,3-CD)PYRENE	570 U	160 J	1700 U	7900 U	13000 U	11000 U
DIBENZ(A,H)ANTHRACENE	570 U	340 U	1700 U	7900 U	13000 U	11000 U
BENZO(G,H,I)PERYLENE	570 U	120 J	1700 U	7900 U	13000 U	11000 U
BIS(2-ETHYLHEXYL)PHTHALATE	83 J	340 U	1700 U	7900 U	13000 U	11000 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD12-06D
METHOD	8270
SEMIVOLATILES (ug/kg)	
PHENOL	860 U
BIS(2-CHLOROETHYL) ETHER	860 U
2-CHLOROPHENOL	860 U
1,3-DICHLOROBENZENE	860 U
1,4-DICHLOROBENZENE	860 U
1,2-DICHLOROBENZENE	860 U
2-METHYLPHENOL	860 U
2,2'-OXYBIS(1-CHLOROPROPANE)	860 U
4-METHYLPHENOL	860 U
N-NITROSO-DI-N-PROPYLAMINE	860 U
HEXACHLOROETHANE	860 U
NITROBENZENE	860 U
ISOPHORONE	860 U
2-NITROPHENOL	860 U
2,4-DIMETHYLPHENOL	860 U
BIS(2-CHLOROETHOXY)METHANE	860 U
2,4-DICHLOROPHENOL	860 U
1,2,4-TRICHLOROBENZENE	860 U
NAPHTHALENE	860 U
4-CHLOROANILINE	860 U
HEXACHLOROBUTADIENE	860 U
4-CHLORO-3-METHYLPHENOL	860 U
2-METHYLNAPHTHALENE	860 U
HEXACHLOROCYCLOPENTADIENE	860 U
2,4,6-TRICHLOROPHENOL	860 U
2,4,5-TRICHLOROPHENOL	2100 U
2-CHLORONAPHTHALENE	860 U
2-NITROANILINE	2100 U
DIMETHYL PHTHALATE	860 U
ACENAPHTHYLENE	860 U
2,6-DINITROTOLUENE	860 U
3-NITROANILINE	2100 U
ACENAPHTHENE	860 U
2,4-DINITROPHENOL	2100 U
4-NITROPHENOL	2100 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN SOIL
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-SD12-06D
METHOD	8270
SEMIVOLATILES (ug/kg) (cont)	
DIBENZOFURAN	860 U
2,4-DINITROTOLUENE	860 U
DIETHYL PHTHALATE	860 U
4-CHLOROPHENYL PHENYL ETHE	860 U
FLUORENE	860 U
4-NITROANILINE	2100 U
4,6-DINITRO-2-METHYLPHENOL	2100 U
N-NITROSODIPHENYLAMINE	860 U
4-BROMOPHENYL PHENYL ETHER	860 U
HEXACHLOROBENZENE	860 U
PENTACHLOROPHENOL	2100 U
PHENANTHRENE	860 U
ANTHRACENE	860 U
CARBAZOLE	860 U
DI-N-BUTYL PHTHALATE	180 J
FLUORANTHENE	860 U
PYRENE	860 U
BUTYL BENZYL PHTHALATE	860 U
3,3'-DICHLOROBENZIDINE	860 U
BENZO(A)ANTHRACENE	860 U
CHRYSENE	860 U
DI-N-OCTYL PHTHALATE	860 U
BENZO(B)FLUORANTHENE	860 U
BENZO(K)FLUORANTHENE	860 U
BENZO(A)PYRENE	860 U
INDENO(1,2,3-CD)PYRENE	860 U
DIBENZ(A,H)ANTHRACENE	860 U
BENZO(G,H,I)PERYLENE	860 U
BIS(2-ETHYLHEXYL)PHTHALATE	110 J

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN SOIL
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB07-00DR	65-SB09-02DR	65-SB11-04D	65-SB12-00DR
METHOD	8080	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)							
ALPHA-BHC	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
BETA-BHC	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
DELTA-BHC	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
GAMMA-BHC (LINDANE)	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
HEPTACHLOR	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
ALDRIN	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
HEPTACHLOR EPOXIDE	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
ENDOSULFAN I	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
DIELDRIN	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
4,4'-DDE	3.7 U	3.8 U	36 J	77 D	14 R	3.9 UJ	75 D
ENDRIN	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
ENDOSULFAN II	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
4,4'-DDD	3.7 UJ	3.8 UJ	3.8 UJ	8.4 R	68 D	3.9 UJ	17 R
ENDOSULFAN SULFATE	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
4,4'-DDT	3.7 U	3.8 U	29 U	53 R	7.2 R	3.9 UJ	22 R
METHOXYCHLOR	19 U	20 U	19 U	43 R	37 R	20 UJ	37 R
ENDRIN KETONE	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
ENDRIN ALDEHYDE	3.7 U	3.8 U	3.8 U	8.4 R	7.2 R	3.9 UJ	7.2 R
ALPHA-CHLORDANE	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
GAMMA-CHLORDANE	1.9 U	2 U	1.9 U	4.3 R	3.7 R	2 UJ	3.7 R
TOXAPHENE	190 U	200 U	190 U	430 R	370 R	200 UJ	370 R
AROCLOR-1016	37 U	38 U	38 U	84 R	72 R	39 UJ	72 R
AROCLOR-1221	75 U	78 U	76 U	170 R	150 R	79 UJ	150 R
AROCLOR-1232	37 U	38 U	38 U	84 R	72 R	39 UJ	72 R
AROCLOR-1242	37 U	38 U	38 U	84 R	72 R	39 UJ	72 R
AROCLOR-1248	37 U	38 U	38 U	84 R	72 R	39 UJ	72 R
AROCLOR-1254	37 U	38 U	38 U	84 R	72 R	39 UJ	72 R
AROCLOR-1260	37 U	38 U	38 U	84 R	72 U	39 UJ	72 R

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN SOIL
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-SD04-06D	65-TP04DR	65-TP05DR	65-TP07DR	73-AC1-DW03-00D	73-AC1-MW04-01D	73-AC1-MW14-00DR
METHOD	8080	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)							
ALPHA-BHC	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
BETA-BHC	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
DELTA-BHC	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 UJ	5.5 R
GAMMA-BHC (LINDANE)	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
HEPTACHLOR	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
ALDRIN	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
HEPTACHLOR EPOXIDE	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
ENDOSULFAN I	9.1 U	9.4 R	2.7 R	9.3 R	1.9 U	1.9 U	5.5 R
DIELDRIN	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
4,4'-DDE	32 J	84 R	42 R	67 R	7 NJ	3.7 U	11 R
ENDRIN	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
ENDOSULFAN II	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
4,4'-DDD	120 J	140	340 J	110	11	3.7 U	82
ENDOSULFAN SULFATE	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
4,4'-DDT	18 U	31 R	8.9 R	37 R	3.6 U	3.7 U	11 R
METHOXYCHLOR	91 U	94 R	120 R	93 R	19 U	19 U	55 R
ENDRIN KETONE	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
ENDRIN ALDEHYDE	18 U	18 R	23 R	18 R	3.6 U	3.7 U	11 R
ALPHA-CHLORDANE	9.1 U	9.4 R	12 R	9.3 R	1.9 U	1.9 U	5.5 R
GAMMA-CHLORDANE	9.1 U	4.3 R	12 R	3.1 R	1.9 U	1.9 U	5.5 R
TOXAPHENE	910 U	940 R	1200 R	930 R	190 U	190 U	550 R
AROCLOR-1016	180 U	180 R	230 R	180 R	36 U	37 U	110 R
AROCLOR-1221	360 U	370 R	470 R	370 R	73 U	74 U	220 R
AROCLOR-1232	180 U	180 R	230 R	180 R	36 U	37 U	110 R
AROCLOR-1242	180 U	180 R	230 R	180 R	36 U	37 U	110 R
AROCLOR-1248	180 U	180 R	230 R	180 R	36 U	37 U	110 R
AROCLOR-1254	180 U	180 R	230 R	180 R	36 U	37 U	110 R
AROCLOR-1260	180 U	180 R	230 R	180 R	36 U	37 U	110 R

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN SOIL
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW15-01DR	73-AC1-MW15IW-01D	73-AC1-MW28-01DR	73-AC1-SB03-01DR	73-AC1-SB04-01D	73-AC2-MW05-01D
METHOD	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
BETA-BHC	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
DELTA-BHC	9.5 R	1.9 UJ	390 R	9.2 R	1.9 U	1.9 U
GAMMA-BHC (LINDANE)	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
HEPTACHLOR	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
ALDRIN	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
HEPTACHLOR EPOXIDE	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
ENDOSULFAN I	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
DIELDRIN	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
4,4'-DDE	51 R	5.3 NJ	760 R	8.4 R	7.8 NJ	3.6 U
ENDRIN	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
ENDOSULFAN II	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
4,4'-DDD	210	22	9100	150	42 J	3.6 U
ENDOSULFAN SULFATE	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
4,4'-DDT	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
METHOXYCHLOR	95 R	19 U	3900 R	92 R	19 U	19 U
ENDRIN KETONE	18 R	3.8 U	760 R	18 R	3.7 U	3.6 U
ENDRIN ALDEHYDE	18 R	3.9	760 R	18 R	3.7 U	3.6 U
ALPHA-CHLORDANE	9.5 R	1.9 U	390 R	2.1 R	1.9 U	1.9 U
GAMMA-CHLORDANE	9.5 R	1.9 U	390 R	9.2 R	1.9 U	1.9 U
TOXAPHENE	950 R	190 U	39000 R	920 R	190 U	190 U
AROCLOR-1016	180 R	38 U	7600 R	180 R	37 U	36 U
AROCLOR-1221	370 R	77 U	15000 R	360 R	76 U	73 U
AROCLOR-1232	180 R	38 U	7600 R	180 R	37 U	36 U
AROCLOR-1242	180 R	38 U	7600 R	180 R	37 U	36 U
AROCLOR-1248	180 R	38 U	7600 R	180 R	37 U	36 U
AROCLOR-1254	180 R	38 U	7600 R	180 R	37 U	36 U
AROCLOR-1260	180 R	38 U	7600 R	180 R	37 U	36 U

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN SOIL
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC3-MW02-00DR	73-AC3-MW03-01D	73-AC4-MW18-00D	73-AC4-SB13-01D	73-AC5-MW20-00D	73-AC5-SB09-00D
METHOD	8080	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)						
ALPHA-BHC	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
BETA-BHC	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
DELTA-BHC	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 UJ
GAMMA-BHC (LINDANE)	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
HEPTACHLOR	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
ALDRIN	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
HEPTACHLOR EPOXIDE	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
ENDOSULFAN I	3.7 U	1.9 U	2.4 U	1.9 U	3 U	1.8 U
DIELDRIN	7.1 U	3.7 U	4.7 U	3.7 U	5.7 U	3.5 U
4,4'-DDE	130	11 J	4.7 U	3.7 U	6.9 J	3.5 U
ENDRIN	7.1 U	3.7 U	4.7 U	3.7 U	5.7 U	3.5 U
ENDOSULFAN II	7.1 U	3.7 U	4.7 U	3.7 U	9.8 NJ	3.5 U
4,4'-DDD	46 J	160	4.7 U	3.7 U	5.7 U	3.5 U
ENDOSULFAN SULFATE	7.1 U	3.7 U	4.7 U	3.7 U	5.7 U	3.5 U
4,4'-DDT	490	3.7 U	4.7 U	3.7 U	12 NJ	3.5 U
METHOXYCHLOR	37 U	19 U	24 U	19 U	30 U	18 U
ENDRIN KETONE	7.1 U	3.7 U	4.7 U	3.7 U	5.7 U	3.5 U
ENDRIN ALDEHYDE	7.1 U	3.7 U	4.7 U	3.7 U	5.7 U	3.5 U
ALPHA-CHLORDANE	3.7 U	1.9 U	2.4 U	1.9 U	3 U	2.9 NJ
GAMMA-CHLORDANE	3.7 U	1.9 U	2.4 U	1.9 U	3 U	8.2 J
TOXAPHENE	370 U	190 U	240 U	190 U	300 U	180 U
AROCLOR-1016	71 U	37 U	47 U	37 U	110 NJ	35 U
AROCLOR-1221	140 U	74 U	96 U	75 U	120 U	71 U
AROCLOR-1232	71 U	37 U	47 U	37 U	57 U	35 U
AROCLOR-1242	71 U	37 U	47 U	37 U	57 U	35 U
AROCLOR-1248	71 U	37 U	47 U	37 U	57 U	35 U
AROCLOR-1254	71 U	37 U	47 U	37 U	57 U	35 U
AROCLOR-1260	71 U	37 U	47 U	37 U	100 NJ	35 U

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN SOIL
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC6-SB07-00D	73-AC6-SB07-01DR	73-SD06-06D	73-SD06-612D	73-SD12-06D
METHOD	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/kg)					
ALPHA-BHC	1.8 U	18 R	2.4 UJ	2.3 U	4.5 U
BETA-BHC	1.8 U	18 R	2.4 UJ	2.3 U	4.5 U
DELTA-BHC	1.8 UJ	18 R	2.4 UJ	2.3 U	4.5 U
GAMMA-BHC (LINDANE)	1.8 U	18 R	2.4 UJ	2.3 U	4.5 U
HEPTACHLOR	1.8 U	18 R	2.4 UJ	2.3 U	4.5 U
ALDRIN	1.8 U	18 R	2.4 UJ	2.3 UJ	4.5 U
HEPTACHLOR EPOXIDE	1.8 U	18 R	2.4 UJ	2.3 U	4.5 U
ENDOSULFAN I	1.8 U	5.4 R	2.4 UJ	2.3 U	4.5 U
DIELDRIN	3.4 U	7.5 R	4.7 UJ	4.5 U	8.7 U
4,4'-DDE	7.5	10 R	4.7 J	11 J	8.7 U
ENDRIN	3.4 U	35 R	4.7 UJ	4.6 J	8.7 U
ENDOSULFAN II	3.4 U	35 R	4.7 UJ	4.5 U	8.7 U
4,4'-DDD	29	540	4.7 UJ	11 J	8.7 U
ENDOSULFAN SULFATE	3.4 U	35 R	4.7 UJ	4.5 U	8.7 U
4,4'-DDT	3.4 U	17 R	4.7 UJ	4.5 U	8.7 U
METHOXYCHLOR	18 UJ	180 R	24 UJ	23 U	45 UJ
ENDRIN KETONE	3.4 U	35 R	4.7 UJ	4.5 U	8.7 U
ENDRIN ALDEHYDE	3.4 U	35 R	4.7 UJ	4.5 UJ	8.7 U
ALPHA-CHLORDANE	2.4 J	3.7 R	3.4 J	4.5 J	4.5 U
GAMMA-CHLORDANE	4.6 J	18 R	2.4 UJ	2.3 U	4.5 U
TOXAPHENE	180 U	1800 R	240 UJ	230 U	450 U
AROCLOR-1016	34 U	350 R	47 UJ	45 U	87 U
AROCLOR-1221	70 U	710 R	95 UJ	91 U	180 U
AROCLOR-1232	34 U	350 R	47 UJ	45 U	87 U
AROCLOR-1242	34 U	350 R	47 UJ	45 U	87 U
AROCLOR-1248	34 U	350 R	47 UJ	45 U	87 U
AROCLOR-1254	34 U	49 R	40 J	45 U	87 U
AROCLOR-1260	58 J	350 R	47 UJ	70 J	87 U

DUPLICATE SUMMARY
DETECTED METALS IN SOIL
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-DW01-04D	65-MW06A-00D	65-SB07-00D	65-SB11-04D	65-SD04-06D	73-AC1-DW03-00D
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)						
ALUMINUM	8520	1760	1230	9310	60500 J	2510
ANTIMONY	11.4 U	11.9 U	11.4 U	12 U	55.2 UJ	11.1 UJ
ARSENIC	2.3 U	2.4 U	2.3 U	2.4 U	11 U	2.2 U
BARIUM	14.4	4.9	5.2	15.2	170	14
BERYLLIUM	0.23 U	0.24 U	0.23 U	0.24 U	1.1 U	0.22 U
CADMIUM	1.1 U	1.2 U	1.1 U	1.2 U	5.5 U	1.1 U
CALCIUM	371	286	120	554	7290	9440 J
CHROMIUM	10.5	3.5	2.3 U	10.5	73.6 J	11 J
COBALT	4.6 UJ	4.8 UJ	4.6 UJ	4.8 UJ	37.7	4.5 U
COPPER	4.2	7.2	4.1	2.4 U	159 J	2.3
IRON	2960 J	2090 J	707 J	2130 J	23200 J	2830 J
LEAD	18.3 J	11.6 J	6.8 J	3.5 J	276 J	23 J
MAGNESIUM	296	56.9	45.1	408	1910	267
MANGANESE	15 J	8.2 J	5.6 J	4.6 J	215 J	14 J
MERCURY	0.11 U	0.12 U	0.11 U	0.12 U	0.55 U	0.11 U
NICKEL	4.6 U	4.8 U	4.6 U	4.8 U	22.1 U	4.5 U
POTASSIUM	228 U	238 U	229 U	375	2140	223 U
SELENIUM	1.1 U	1.2 U	1.1 U	1.2 U	5.5 U	1.1 U
SILVER	1.1 U	1.2 U	1.1 U	1.2 U	5.5 U	1.1 UJ
SODIUM	46.2	47.6 U	45.8 U	48.1 U	257	58.1
THALLIUM	2.3 U	2.4 U	2.3 U	2.4 U	11 U	2.2 U
VANADIUM	15.4	2.4 U	2.3 U	7.5	66.9	4.7
ZINC	32 J	68 J	7.6 J	6.9 J	420 J	19.7 J

DUPLICATE SUMMARY
DETECTED METALS IN SOIL
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW04-01D	73-AC1-MW15IW-01D	73-AC1-SB04-01D	73-AC2-MW05-01D	73-AC3-MW03-01D	73-AC4-MW18-00D
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)						
ALUMINUM	1770	1980	1980	1210	1200	249
ANTIMONY	11.1 U	11.4 U	11.8 UJ	11.1 U	11.3 U	14.3 U
ARSENIC	2.2 U	2.3 U	2.4 U	2.2 U	2.3 U	2.9 U
BARIUM	5.4	10.1	13.1	2.9	6.5	10.7
BERYLLIUM	0.22 U	0.23 U	0.24 U	0.22 U	0.23 U	0.29 U
CADMIUM	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.4 U
CALCIUM	338 J	7860	3980 J	145 J	3650 J	352
CHROMIUM	3.2	7.5	7 J	2.2 U	4	2.9 U
COBALT	4.4 U	4.9	4.7 U	4.4 U	5.5 U	5.7 U
COPPER	2.2 U	6	2.4 U	2.2 U	2.3 U	2.9 U
IRON	723	2960	3090 J	573 J	835 J	218
LEAD	2.3	14	20.4 J	1.5	12.4	4.9
MAGNESIUM	40.9	325	291	68.6	98.3	86.8
MANGANESE	4	11.4	21.2 J	4.5	6	6.3
MERCURY	0.11 U	0.11 U	0.12 U	0.11 U	0.11 U	0.14 U
NICKEL	4.4 U	4.6 U	4.7 U	4.4 U	4.5 U	5.7 U
POTASSIUM	222 U	315	235 U	221 U	225 U	286 U
SELENIUM	1.1 U	1.1 U	1.2 U	1.1 U	1.1 U	1.4 U
SILVER	1.1 U	1.1 U	1.2 UJ	1.1 U	1.1 U	1.4 U
SODIUM	44.4 U	234	62.8	44.3 U	45 U	65.6
THALLIUM	2.2 U	2.3 U	2.4 U	2.2 U	2.3 U	2.9 U
VANADIUM	2.2 U	3.9	3.6	2.2 U	2.3 U	2.9 U
ZINC	6.3	23	14.2 J	9	19.9	7.9 U

DUPLICATE SUMMARY
DETECTED METALS IN SOIL
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC4-SB13-01D	73-AC5-MW20-00D	73-AC5-SB09-00D	73-AC6-SB07-00D	73-SD06-06D	73-SD06-612D	73-SD12-06D
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
METALS (mg/kg)							
ALUMINUM	1640	4450	3040	3110	3510	4430	12600
ANTIMONY	11.2 U	17.6 U	10.5 U	10.8 UJ	14.3 U	14 U	26 U
ARSENIC	2.2 U	3.5 U	2.1 U	2.2 U	2.9 U	2.8 U	7
BARIUM	7.2	42.4	10.5	12.9	5.4	7.2	10.5
BERYLLIUM	0.22 U	0.35 U	0.21 U	0.22 U	0.29 U	0.28 U	0.52 U
CADMIUM	1.1 UJ	5.6 J	1.1 U	1.2	4.2 J	3.4 J	2.6 U
CALCIUM	1360	2910	9330 J	29200 J	867	1070	2510
CHROMIUM	4.6	10.6	7.1	9.4 J	8.9	13	25.7
COBALT	4.5 UJ	7 UJ	4.6	4.3 U	5.7 U	5.6 U	10.4 U
COPPER	2.2 U	6.1	7.2	4.5	16 J	45.8 J	8.1
IRON	1360	3430	2340	1950 J	5690 J	5170 J	15500
LEAD	9.6	30.1	9.6	30.1 J	22.2 J	31 J	18.1
MAGNESIUM	53.5	324	219	548	868	682	4030
MANGANESE	5.8	8.2	15.1	14.7 J	16.6 J	17 J	52.2
MERCURY	0.11 U	0.18 U	0.11 U	0.11 U	0.23	0.14 U	0.26 U
NICKEL	4.5 U	7 U	4.2 U	4.3 U	5.7 U	5.7	10.4 U
POTASSIUM	225 U	352 U	210 U	216 U	362	498	2140
SELENIUM	1.1 U	1.8 U	1.1 U	1.1 U	1.4 U	1.4 U	2.6 U
SILVER	1.1 U	1.8 U	1.1 U	1.1 UJ	1.4 U	1.4 U	2.6 U
SODIUM	44.9 U	154	54.6	68.1	2440	944	11500
THALLIUM	2.2 U	3.5 U	2.1 U	2.2 U	2.9 U	2.8 U	5.2 U
VANADIUM	2.2 U	7	5.2	4.4	6.1	9.5	22.2
ZINC	7.3 J	454 J	14.8	30.4 J	56.8 J	49.8 J	51.9

DUPLICATE SUMMARY
DETECTED VOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8240, 601/602, OLM01.9
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-SW04-01D	73-A47/3-16-01D	73-AC1-DW02-02D	73-AC1-DW04-01D	73-AC1-MW08-01D
METHOD	8240	8240	601/602	OLM01.9	601/602	601/602
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	0.8 U	10 U	0.8 U	0.8 U
BROMOMETHANE	10 U	10 U	1.2 U	10 U	1.2 U	1.2 U
VINYL CHLORIDE	10 U	10 U	1.8 U	10 U	1.8 U	1.8 U
CHLOROETHANE	10 UJ	10 UJ	5.2 U	10 U	5.2 U	5.2 U
METHYLENE CHLORIDE	10 U	10 U	15 U	10 U	15 U	15 U
ACETONE	10 U	10 U	NA	10 U	NA	NA
CARBON DISULFIDE	10 U	10 U	NA	10 U	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	1.3 U	10 U	1.3 U	1.3 U
1,1-DICHLOROETHANE	10 U	10 U	0.7 U	10 U	0.7 U	0.7 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	NA	10 U	NA	NA
CHLOROFORM	10 U	10 U	0.5 U	10 U	2.6 J	0.5 U
1,2-DICHLOROETHANE	1 J	10 U	0.9 U	10 U	0.5	0.5 U
2-BUTANONE	10 U	10 U	NA	10 U	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	0.3 U	10 U	0.3 U	0.3 U
CARBON TETRACHLORIDE	10 U	10 U	1.2 U	10 U	1.2 U	1.2 U
BROMODICHLOROMETHANE	10 U	10 U	1 U	10 U	1 U	1 U
1,2-DICHLOROPROPANE	10 U	10 U	0.4 U	10 U	0.4 U	0.4 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	3.4 U	10 U	3.4 U	3.4 U
TRICHLOROETHENE	10 U	10 U	1.2 U	10 U	1.9 J	1.2 U
DIBROMOCHLOROMETHANE	10 U	10 U	0.9 U	10 U	0.9 U	0.9 U
1,1,2-TRICHLOROETHANE	10 U	10 U	0.2 U	10 U	0.2 U	0.2 U
BENZENE	10 U	10 U	2 U	10 U	2 U	2 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	3.4 U	10 U	3.4 U	3.4 U
BROMOFORM	10 U	10 U	2 U	10 U	2 U	2 U
4-METHYL-2-PENTANONE	10 U	10 U	NA	10 U	NA	NA
2-HEXANONE	10 U	10 U	NA	10 U	NA	NA
TETRACHLOROETHENE	10 U	10 U	0.3 U	10 U	0.3 U	0.3 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	0.3 U	10 U	0.3 U	0.3 U
TOLUENE	10 U	10 U	2 U	10 U	2 U	2 U
CHLOROBENZENE	10 U	10 U	2 U	10 U	2 U	2 U
ETHYLBENZENE	10 U	10 U	2 U	10 U	2 U	2 U
STYRENE	10 U	10 U	NA	10 U	NA	NA
XYLENES (TOTAL)	10 U	10 U	1 U	10 U	1 U	1 U
CIS-1,2-DICHLOROETHENE	NA	NA	1 U	NA	1 U	1.8
TRICHLOROFLUOROMETHANE	NA	NA	2 U	NA	2 U	2 U

DUPLICATE SUMMARY
DETECTED VOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8240, 601/602, OLM01.9
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-SW04-01D	73-A47/3-16-01D	73-AC1-DW02-02D	73-AC1-DW04-01D	73-AC1-MW08-01D
METHOD	8240	8240	601/602	OLM01.9	601/602	601/602
VOLATILES (ug/L) (cont)						
DICHLORODIFLUOROMETHANE	NA	NA	1.8 U	NA	1.8 U	1.8 U
1,2-DIBROMOETHANE	NA	NA	3 U	NA	3 U	3 U
1,3-DICHLOROBENZENE	NA	NA	3.2 U	NA	3.2 U	3.2 U
1,4-DICHLOROBENZENE	NA	NA	2.4 U	NA	2.4 U	2.4 U
1,2-DICHLOROBENZENE	NA	NA	1.5 U	NA	1.5 U	1.5 U
2-CHLOROETHYL VINYL ETHER	NA	NA	1.3 U	NA	1.3 U	1.3 U
ISOPROPYL ETHER	NA	NA	3 U	NA	3 U	3 U
METHYL TERT-BUTYLETHER	NA	NA	3 U	NA	3 U	3 U
TRANS-1,2-DICHLOROETHENE	NA	NA	1 U	NA	1 U	1 U

DUPLICATE SUMMARY
DETECTED VOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8240, 601/602, OLM01.9
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW09-02D	73-AC2-MW22-01D	73-DW02-01D	73-GW03GW-01D	73-GW32MW-01D	73-POLY-01DR	73-SW06-01D
METHOD	OLM01.9	601/602	601/602	OLM01.9	OLM01.9	8240	8240
VOLATILES (ug/L)							
CHLOROMETHANE	10 U	0.8 U	0.8 U	10 U	10 U	200 R	10 U
BROMOMETHANE	10 U	1.2 U	1.2 U	10 U	10 U	200 R	10 U
VINYL CHLORIDE	20	1.8 U	1.8 U	10 U	10 U	200 R	10 U
CHLOROETHANE	10 U	5.2 U	5.2 U	10 U	10 U	200 R	10 U
METHYLENE CHLORIDE	10 U	15 U	15 U	10 U	10 U	37 R	10 U
ACETONE	10 U	NA	NA	10 U	10 U	3200	10 U
CARBON DISULFIDE	10 U	NA	NA	10 U	10 U	200 R	10 UJ
1,1-DICHLOROETHENE	10 U	1.3 U	1.3 U	10 U	10 U	200 R	10 U
1,1-DICHLOROETHANE	10 U	0.7 U	0.7 U	10 U	10 U	200 R	10 U
1,2-DICHLOROETHENE (TOTAL)	1 J	NA	NA	10 U	8 J	200 R	10 U
CHLOROFORM	10 U	0.5 U	0.5 U	10 U	10 U	200 R	2 J
1,2-DICHLOROETHANE	10 U	0.9 U	1.1 U	10 U	10 U	200 R	10 U
2-BUTANONE	10 U	NA	NA	10 U	10 U	200 R	10 U
1,1,1-TRICHLOROETHANE	10 U	0.3 U	0.3 U	10 U	10 U	200 R	10 U
CARBON TETRACHLORIDE	10 U	1.2 U	1.2 U	10 U	10 U	200 R	10 U
BROMODICHLOROMETHANE	10 U	1 U	1 U	10 U	10 U	200 R	10 U
1,2-DICHLOROPROPANE	10 U	0.4 U	0.4 U	10 U	10 U	200 R	10 U
CIS-1,3-DICHLOROPROPENE	10 U	3.4 U	3.4 U	10 U	10 U	200 R	10 U
TRICHLOROETHENE	10 U	1.2 U	1.2 U	10 U	10 U	200 R	10 U
DIBROMOCHLOROMETHANE	10 U	0.9 U	0.9 U	10 U	10 U	200 R	10 U
1,1,2-TRICHLOROETHANE	10 U	0.2 U	0.2 U	10 U	10 U	200 R	10 U
BENZENE	10 U	2 U	2 U	10 U	10 U	200 R	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	3.4 U	3.4 U	10 U	10 U	200 R	10 U
BROMOFORM	10 U	2 U	2 U	10 U	10 U	200 R	10 U
4-METHYL-2-PENTANONE	10 U	NA	NA	10 U	10 U	200 R	10 U
2-HEXANONE	10 U	NA	NA	10 U	10 U	200 R	10 U
TETRACHLOROETHENE	10 U	0.3 U	0.3 U	10 U	10 U	200 R	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	0.3 U	0.3 U	10 U	10 U	200 R	10 U
TOLUENE	10 U	2 U	2 U	10 U	10 U	200 R	10 U
CHLOROBENZENE	10 U	2 U	2 U	10 U	10 U	200 R	10 U
ETHYLBENZENE	10 U	2 U	2 U	10 U	10 U	200 R	10 U
STYRENE	10 U	NA	NA	10 U	10 U	200 R	10 U
XYLENES (TOTAL)	10 U	1 U	1 U	10 U	10 U	200 R	10 U
CIS-1,2-DICHLOROETHENE	NA	1 U	1 U	NA	NA	NA	NA
TRICHLOROFLUOROMETHANE	NA	2 U	2 U	NA	NA	NA	NA

DUPLICATE SUMMARY
DETECTED VOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8240, 601/602, OLM01.9
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-MW09-02D	73-AC2-MW22-01D	73-DW02-01D	73-GW03GW-01D	73-GW32MW-01D	73-POLY-01DR	73-SW06-01D
METHOD	OLM01.9	601/602	601/602	OLM01.9	OLM01.9	8240	8240
VOLATILES (ug/L) (cont)							
DICHLORODIFLUOROMETHANE	NA	1.8 U	1.8 U	NA	NA	NA	NA
1,2-DIBROMOETHANE	NA	3 U	3 U	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	3.2 U	3.2 U	NA	NA	NA	NA
1,4-DICHLOROBENZENE	NA	2.4 U	2.4 U	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	1.5 U	1.5 U	NA	NA	NA	NA
2-CHLOROETHYL VINYL ETHER	NA	1.3 U	1.3 U	NA	NA	NA	NA
ISOPROPYL ETHER	NA	3 U	3 U	NA	NA	NA	NA
METHYL TERT-BUTYLETHER	NA	3 U	3 U	NA	NA	NA	NA
TRANS-1,2-DICHLOROETHENE	NA	1 U	1 U	NA	NA	NA	NA

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8270, 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-SW04-01D	73-A47/3-16-01D	73-AC1-DW04-01D	73-AC1-MW04-01D	73-AC1-MW08-01D
METHOD	8270	8270	625	625	625	625
SEMIVOLATILES (ug/L)						
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	NA	NA	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	NA	NA	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	NA	NA	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	NA	NA	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	NA	NA	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	NA	NA	NA	NA
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	NA	NA	NA	NA
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 UJ	25 U	50 U	50 U	50 U	50 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8270, 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-SW04-01D	73-A47/3-16-01D	73-AC1-DW04-01D	73-AC1-MW04-01D	73-AC1-MW08-01D
METHOD	8270	8270	625	625	625	625
SEMIVOLATILES (ug/L) (cont)						
4-NITROPHENOL	25 U	25 U	50 U	50 U	50 U	50 U
DIBENZOFURAN	10 U	10 U	NA	NA	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	NA	NA	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	50 U	50 U	50 U	50 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	50 U	50 U	50 U	50 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	NA	NA	NA	NA
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	20 U	20 U	20 U	20 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	7 J	10 U	10 J	10 U	10 U
N-NITROSODIMETHYLAMINE	NA	NA	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	NA	NA	10 U	10 U	10 U	10 U
BENZIDINE	NA	NA	50 U	50 U	50 U	50 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8270, 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW22-01D	73-DW02-01D	73-SW06-01D
METHOD	625	625	8270
SEMIVOLATILES (ug/L)			
PHENOL	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U
2-METHYLPHENOL	NA	NA	NA U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U
4-METHYLPHENOL	NA	NA	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U
NAPHTHALENE	10 U	2 J	10 U
4-CHLOROANILINE	NA	NA	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U
2-METHYLNAPHTHALENE	NA	NA	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	NA	NA	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U
2-NITROANILINE	NA	NA	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U
3-NITROANILINE	NA	NA	25 U
ACENAPHTHENE	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	25 U

DUPLICATE SUMMARY
DETECTED SEMIVOLATILES IN GROUNDWATER/SURFACE WATER
VIA METHODS 8270, 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW22-01D	73-DW02-01D	73-SW06-01D
METHOD	625	625	8270
SEMIVOLATILES (ug/L) (cont)			
4-NITROPHENOL	50 U	50 U	25 U
DIBENZOFURAN	NA	NA	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHE	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U
4-NITROANILINE	NA	NA	25 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	25 U
PHENANTHRENE	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U
CARBAZOLE	NA	NA	10 UJ
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U
N-NITROSODIMETHYLAMINE	10 U	10 U	NA
1,2-DIPHENYLHYDRAZINE	10 U	10 U	NA
BENZIDINE	50 U	50 U	NA

DUPLICATE SUMMARY
DETECTED PESTICIDE/PCBS IN GROUNDWATER/SURFACE WATER
VIA METHODS 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-SW04-01D	73-AC1-DW04-01D	73-AC2-MW22-01D	73-SW06-01D
METHOD	8080	8080	8080	8080	8080
PESTICIDE/PCBS (ug/L)					
ALPHA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
BETA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DELTA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-BHC (LINDANE)	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
HEPTACHLOR	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ALDRIN	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
HEPTACHLOR EPOXIDE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
ENDOSULFAN I	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
DIELDRIN	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDOSULFAN II	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDD	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDOSULFAN SULFATE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
4,4'-DDT	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
METHOXYCHLOR	0.5 U	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
ENDRIN KETONE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ENDRIN ALDEHYDE	0.1 U	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ
ALPHA-CHLORDANE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-CHLORDANE	0.05 U	0.05 UJ	0.05 UJ	0.05 UJ	0.05 UJ
TOXAPHENE	5 U	5 UJ	5 UJ	5 UJ	5 UJ
AROCLOR-1016	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1221	2 U	2 UJ	2 UJ	2 UJ	2 UJ
AROCLOR-1232	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1242	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1248	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1254	1 U	1 UJ	1 UJ	1 UJ	1 UJ
AROCLOR-1260	1 U	1 UJ	1 UJ	1 UJ	1 UJ

DUPLICATE SUMMARY
DETECTED METALS IN GROUNDWATER/SURFACE WATER
VIA METHODS CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	65-MW01A-01D	65-MW01AF-01D	65-SW04-01D	73-A47/3-16-01D	73-A47/3-16F-01D	73-AC1-DW04-01D
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (ug/L)						
ALUMINUM	40 U	40 U	22600	90.7 J	73	82.5
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	57.6	62.8	63.9	66.2	66.3	11.1
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	152000	167000	12600	36600	36800	53800
CHROMIUM	10	10.4	25.8	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	54	10 U	68.3	10 U
IRON	261	202	7830	428	419	394
LEAD	3 U	3 U	50.5	3 U	3 U	3 U
MAGNESIUM	17000	18700	2030	19300	19200	1440
MANGANESE	181	198	91.2	36.6	36.6	32.4
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	5610	6840	2890	8860	9130	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	11300	12300	3430	72300	73800	15400
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	25.8	10 U	10 U	10 U
ZINC	10.7	5.1 U	128	12.8 J	5.1 U	37.6

DUPLICATE SUMMARY
DETECTED METALS IN GROUNDWATER/SURFACE WATER
VIA METHODS CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC1-DW04F-01D	73-AC1-MW04-01D	73-AC1-MW04F-01D	73-AC1-MW08-01D	73-AC1-MW09F-01D	73-AC2-MW22-01D
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
METALS (ug/L)						
ALUMINUM	40 U	399 J	40 U	829 J	40 U	121
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	11.3	15.4	14.5	24	20.4	13.6
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	59200	26400	26100	18700	55200	25200
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20.1	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U
IRON	303	772	688	1000	532	1460
LEAD	3 U	5.6	3 U	3 U	3 U	3 U
MAGNESIUM	1520	1540	1540	2440	1440	1860
MANGANESE	33.3	19.7	20	28.8	29.4	51.4
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	1000	1000 U	1000 U	1680	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	18300	2500	2580	11200 U	4260	11100
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	5.1 U	10.5 J	5.1 U	16 J	5.1 U	17.3

DUPLICATE SUMMARY
DETECTED METALS IN GROUNDWATER/SURFACE WATER
VIA METHODS CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-AC2-MW22F-01D	73-DW02-01D	73-DW02F-01D	73-SW06-01D
METHOD	CLP	CLP	CLP	CLP
METALS (ug/L)				
ALUMINUM	79.8	55.6 J	40 U	134
ANTIMONY	50 U	50 U	50 U	186
ARSENIC	10 U	10 U	10 U	10 U
BARIUM	14.3	6.1	6.6	9.1
BERYLLIUM	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U
CALCIUM	28900	13100	13200	265000
CHROMIUM	10 U	10 U	10 U	10 U
COBALT	20 U	40.2	20 U	20 U
COPPER	10 U	10 U	10 U	10 U
IRON	1630	1010	976	599
LEAD	3 U	3 U	3 U	3 U
MAGNESIUM	2160	727	779	1280000
MANGANESE	59	19.7	20.2	10.1
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U
POTASSIUM	1040	1050	1570	342000
SELENIUM	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U
SODIUM	12900	7520	7880	10300000
THALLIUM	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U
ZINC	6	17.2 J	5.1 U	44.8

APPENDIX R
QA/QC FREQUENCY OF DETECTION SUMMARIES

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240A
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-06	73-TB-08	73-TB-20	73-RB-10	73-RB-11	73-RB-21
METHOD	8240A	8240A	8240A	8240A	8240A	8240A
DATE SAMPLED	04/26/95	04/22/95	05/08/95	04/23/95	04/25/95	05/17/95
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	5 U	5 U	5 U	9.4	7.7	1.3 J
ACETONE	50 U	50 U	50 U	52	69 J	31 J
CARBON DISULFIDE	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLOROETHENE	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROETHENE (TOTAL)	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROFORM	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	50 U	50 U	50 U	4 J	3.9 J	4.7 J
1,1,1-TRICHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U
CARBON TETRACHLORIDE	5 U	5 U	5 U	5 U	5 U	5 U
VINYL ACETATE	5 U	5 U	5 U	5 U	5 U	5 U
BROMODICHLOROMETHANE	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROPROPANE	5 U	5 U	5 U	5 U	5 U	5 U
CIS-1,3-DICHLOROPROPENE	5 U	5 U	5 U	5 U	5 U	5 U
TRICHLOROETHENE	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-TRICHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U
BENZENE	5 U	5 U	5 U	5 U	5 U	5 U
TRANS-1,3-DICHLOROPROPENE	5 U	5 U	5 U	5 U	5 U	5 U
BROMOFORM	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	50 U	50 U	50 U	50 U	50 U	50 R
2-HEXANONE	50 U	50 U	50 U	50 U	50 U	50 U
TETRACHLOROETHENE	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-TETRACHLOROETHANE	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	5 U	5 U	2.9 J	5 U	5 U	5 U
CHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	5 U	5 U	5 U	5 U	5 U	5 U
ACROLEIN	100 U	100 U	100 U	100 U	100 U	100 U
ACRYLONITRILE	50 U	50 U	50 U	50 U	50 U	50 U
TRICHLOROFLUOROMETHANE	5 U	5 U	5 U	5 U	5 U	5 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240A
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-06	73-TB-08	73-TB-20	73-RB-10	73-RB-11	73-RB-21
METHOD	8240A	8240A	8240A	8240A	8240A	8240A
DATE SAMPLED	04/26/95	04/22/95	05/08/95	04/23/95	04/25/95	05/17/95
VOLATILES (ug/L) cont						
DIBROMOMETHANE	5 U	5 U	5 U	5 U	5 U	5 U
1,3-DICHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U
1,4-DICHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROBENZENE	5 U	5 U	5 U	5 U	5 U	5 U
2-CHLOROETHYL VINYL ETHER	10 U	10 U	10 U	10 U	10 U	10 R
M-XYLENE & P-XYLENE	5 U	5 U	5 U	5 U	5 U	5 U
O-XYLENE	5 U	5 U	5 U	5 U	5 U	5 U
CIS-1,2-DICHLOROETHENE	5 U	5 U	5 U	5 U	5 U	5 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240A
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/6	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/6	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/6	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/6	NA	NA
METHYLENE CHLORIDE	5 U	5 U	1.3 J	9.4	73-RB-10	3/6	6.13	7.70
ACETONE	50 U	50 U	31 J	69 J	73-RB-11	3/6	50.67	52.00
CARBON DISULFIDE	5 U	5 U	ND	ND		0/6	NA	NA
1,1-DICHLOROETHENE	5 U	5 U	ND	ND		0/6	NA	NA
1,1-DICHLOROETHANE	5 U	5 U	ND	ND		0/6	NA	NA
1,2-DICHLOROETHENE (TOTAL)	5 U	5 U	ND	ND		0/6	NA	NA
CHLOROFORM	5 U	5 U	ND	ND		0/6	NA	NA
1,2-DICHLOROETHANE	5 U	5 U	ND	ND		0/6	NA	NA
2-BUTANONE	50 U	50 U	3.9 J	4.7 J	73-RB-21	3/6	4.20	4.00
1,1,1-TRICHLOROETHANE	5 U	5 U	ND	ND		0/6	NA	NA
CARBON TETRACHLORIDE	5 U	5 U	ND	ND		0/6	NA	NA
VINYL ACETATE	5 U	5 U	ND	ND		0/6	NA	NA
BROMODICHLOROMETHANE	5 U	5 U	ND	ND		0/6	NA	NA
1,2-DICHLOROPROPANE	5 U	5 U	ND	ND		0/6	NA	NA
CIS-1,3-DICHLOROPROPENE	5 U	5 U	ND	ND		0/6	NA	NA
TRICHLOROETHENE	5 U	5 U	ND	ND		0/6	NA	NA
1,1,2-TRICHLOROETHANE	5 U	5 U	ND	ND		0/6	NA	NA
BENZENE	5 U	5 U	ND	ND		0/6	NA	NA
TRANS-1,3-DICHLOROPROPENE	5 U	5 U	ND	ND		0/6	NA	NA
BROMOFORM	5 U	5 U	ND	ND		0/6	NA	NA
4-METHYL-2-PENTANONE	50 U	50 U	ND	ND		0/5	NA	NA
2-HEXANONE	50 U	50 U	ND	ND		0/6	NA	NA
TETRACHLOROETHENE	5 U	5 U	ND	ND		0/6	NA	NA
1,1,2,2-TETRACHLOROETHANE	5 U	5 U	ND	ND		0/6	NA	NA
TOLUENE	5 U	5 U	2.9 J	2.9 J	73-TB-20	1/6	2.90	2.90
CHLOROBENZENE	5 U	5 U	ND	ND		0/6	NA	NA
ETHYLBENZENE	5 U	5 U	ND	ND		0/6	NA	NA
STYRENE	5 U	5 U	ND	ND		0/6	NA	NA
ACROLEIN	100 U	100 U	ND	ND		0/6	NA	NA
ACRYLONITRILE	50 U	50 U	ND	ND		0/6	NA	NA
TRICHLOROFLUOROMETHANE	5 U	5 U	ND	ND		0/6	NA	NA

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240A
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L) cont								
DIBROMOMETHANE	5 U	5 U	ND	ND		0/6	NA	NA
1,3-DICHLOROBENZENE	5 U	5 U	ND	ND		0/6	NA	NA
1,4-DICHLOROBENZENE	5 U	5 U	ND	ND		0/6	NA	NA
1,2-DICHLOROBENZENE	5 U	5 U	ND	ND		0/6	NA	NA
2-CHLOROETHYL VINYL ETHER	10 U	10 U	ND	ND		0/5	NA	NA
M-XYLENE & P-XYLENE	5 U	5 U	ND	ND		0/6	NA	NA
O-XYLENE	5 U	5 U	ND	ND		0/6	NA	NA
CIS-1,2-DICHLOROETHENE	5 U	5 U	ND	ND		0/6	NA	NA

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-01	73-RB-03	73-RB-05	73-RB-07	73-RB-09	73-RB-11
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/09/95	04/06/95	04/17/95	04/18/95	04/22/95	04/25/95
SEMIVOLATILES (ug/L)						
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	2 J	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 R	25 U	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-01	73-RB-03	73-RB-05	73-RB-07	73-RB-09	73-RB-11
METHOD	8270	8270	8270	8270	8270	8270
DATE SAMPLED	04/09/95	04/06/95	04/17/95	04/18/95	04/22/95	04/25/95
SEMIVOLATILES (ug/L) cont						
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U	25 R
4,6-DINITRO-2-METHYLPHENOL	25 U	25 UJ	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	1 J	10 U	10 U	10 U	1 J
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	10 U	10 U	1 J

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-15	73-RB-21	73-FB-01	73-FB-02	73-FB-03
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	05/03/95	05/17/95	04/20/95	04/20/95	04/20/95
SEMIVOLATILES (ug/L)					
PHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U	25 U	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U	25 U	25 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-15	73-RB-21	73-FB-01	73-FB-02	73-FB-03
METHOD	8270	8270	8270	8270	8270
DATE SAMPLED	05/03/95	05/17/95	04/20/95	04/20/95	04/20/95
SEMIVOLATILES (ug/L) cont					
DIBENZOFURAN	10 U	10 U	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CARBAZOLE	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	1 J	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	1 J	10 U	2 J	10 U	10 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
PHENOL	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	ND	ND		0/11	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/11	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/11	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLOROANILINE	10 U	10 U	2 J	2 J	73-RB-03	1/11	2.00	2.00
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/11	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/11	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/11	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/11	NA	NA
DIMETHYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/11	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/11	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/11	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/10	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L) cont								
DIBENZOFURAN	10 U	10 U	ND	ND		0/11	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/11	NA	NA
DIETHYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/11	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/11	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/10	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
N-NITROSODIPHENYLAMINE	10 U	10 U	ND	ND		0/11	NA	NA
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/11	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/11	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/11	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
CARBAZOLE	10 U	10 U	ND	ND		0/11	NA	NA
DI-N-BUTYL PHTHALATE	10 U	10 U	1 J	1 J	73-FB-01	3/11	1.00	1.00
FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
BUTYL BENZYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/11	NA	NA
DI-N-OCTYL PHTHALATE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/11	NA	NA
DIBENZ(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/11	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/11	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	1 J	2 J	73-FB-01	3/11	1.33	1.00

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-01	73-RB-03	73-RB-05	73-RB-07	73-RB-09	73-RB-11
METHOD	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/04/95	04/06/95	04/17/95	04/18/95	04/22/95	04/25/95
PESTICIDES/PCB's (ug/L)						
ALPHA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.05 U	0.05 UJ	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALDRIN	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 U	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 U	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 U	1 U	1 U	1 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FB-01	73-FB-02	73-FB-03
METHOD	8080	8080	8080
DATE SAMPLED	04/20/95	04/20/95	04/20/95
PESTICIDES/PCB's (ug/L)			
ALPHA-BHC	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.05 U	0.05 U	0.05 U
ALDRIN	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 U	0.5 U	0.5 U
ENDRIN KETONE	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 U	5 U
AROCLOR-1016	1 U	1 U	1 U
AROCLOR-1221	2 U	2 U	2 U
AROCLOR-1232	1 U	1 U	1 U
AROCLOR-1242	1 U	1 U	1 U
AROCLOR-1248	1 U	1 U	1 U
AROCLOR-1254	1 U	1 U	1 U
AROCLOR-1260	1 U	1 U	1 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCB's (ug/L)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/9	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/9	NA	NA
DELTA-BHC	0.05 U	0.05 U	ND	ND		0/9	NA	NA
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	ND	ND		0/9	NA	NA
HEPTACHLOR	0.05 U	0.05 U	ND	ND		0/9	NA	NA
ALDRIN	0.05 U	0.05 U	ND	ND		0/9	NA	NA
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/9	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/9	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/9	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/9	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/9	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/9	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/9	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/9	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/9	NA	NA
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/9	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/9	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/9	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/9	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/9	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/9	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/9	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/9	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/9	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/9	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/9	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/9	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/9	NA	NA

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-01	73-RB-03	73-RB-05	73-RB-07	73-RB-09	73-RB-11
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLE	04/04/95	04/06/95	04/17/95	04/18/95	04/22/95	04/25/95
TOTAL METALS (ug/L)						
ALUMINUM	40 U	40 U	47.7	109	40 U	40 U
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	3.3	4.3	2 U	2 U	2 U	2 U
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	6	5 U	5 U	5 U	5 U	5 U
CALCIUM	585	161 U	181	138	86	207 U
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	25.5	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U
IRON	10 U	10 U	31.5	25.7	10 U	18.3 U
LEAD	3 U	3 U	3 U	3 U	3 U	3 U
MAGNESIUM	50 U	50 U	50 U	80.2	54.8	63.7
MANGANESE	2 U	2 U	2 U	2 U	2 U	2
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	1000 U	1000 U	1000 U	2370	2220	2130
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	200 U	200 U	200 U	200 U	200 U	200
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	56.2	22	19.4 U	11.3	9.5	26.8 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-FB-01	73-FB-02	73-FB-03
METHOD	CLP	CLP	CLP
DATE SAMPLE	04/20/95	04/20/95	04/20/95
TOTAL METALS (ug/L)			
ALUMINUM	73.6	40 U	40 U
ANTIMONY	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U
BARIUM	2.7	2.1	3
BERYLLIUM	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U
CALCIUM	138	102	21400
CHROMIUM	10 U	10 U	10 U
COBALT	20 U	20 U	20 U
COPPER	16.1	10 U	10 U
IRON	20.4	73.1	13.6
LEAD	3 U	3 U	6.2
MAGNESIUM	50 U	69.1	855
MANGANESE	2 U	2 U	2 U
MERCURY	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U
POTASSIUM	1000 U	2410	1020
SELENIUM	5 U	5 U	5 U
SILVER	5 U	5 U	5 U
SODIUM	200 U	246	60700
THALLIUM	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U
ZINC	20.3	13.4	28

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLE	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL METALS (ug/L)								
ALUMINUM	40 U	40 U	47.7	109	73-RB-07	3/9	76.77	73.60
ANTIMONY	50 U	50 U	ND	ND		0/9	NA	NA
ARSENIC	10 U	10 U	ND	ND		0/9	NA	NA
BARIUM	2 U	2 U	2.1	4.3	73-RB-03	5/9	3.08	3.00
BERYLLIUM	1 U	1 U	ND	ND		0/9	NA	NA
CADMIUM	5 U	5 U	6	6	73-RB-01	1/9	6.00	6.00
CALCIUM	161 U	207 U	86	21400	73-FB-03	7/9	3232.86	138.00
CHROMIUM	10 U	10 U	ND	ND		0/9	NA	NA
COBALT	20 U	20 U	25.5	25.5	73-RB-03	1/9	25.50	25.50
COPPER	10 U	10 U	16.1	16.1	73-FB-01	1/9	16.10	16.10
IRON	10 U	18.3 U	13.6	73.1	73-FB-02	5/9	32.86	25.70
LEAD	3 U	3 U	6.2	6.2	73-FB-03	1/9	6.20	6.20
MAGNESIUM	50 U	50 U	54.8	855	73-FB-03	5/9	224.56	69.10
MANGANESE	2 U	2 U	2	2	73-RB-11	1/9	2.00	2.00
MERCURY	0.2 U	0.2 U	ND	ND		0/9	NA	NA
NICKEL	20 U	20 U	ND	ND		0/9	NA	NA
POTASSIUM	1000 U	1000 U	1020	2410	73-FB-02	5/9	2030.00	2220.00
SELENIUM	5 U	5 U	ND	ND		0/9	NA	NA
SILVER	5 U	5 U	ND	ND		0/9	NA	NA
SODIUM	200 U	200 U	200	60700	73-FB-03	3/9	20382.00	246.00
THALLIUM	10 U	10 U	ND	ND		0/9	NA	NA
VANADIUM	10 U	10 U	ND	ND		0/9	NA	NA
ZINC	19.4 U	26.8 U	9.5	56.2	73-RB-01	7/9	22.96	20.30

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA CLP METHOD (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-201	73-TB-202	73-TB-206	73-RB105	73-FB201	73-FB202	73-FB-203
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	02/21/96	02/23/96	03/12/96	02/25/96	03/20/96	03/20/96	03/26/96
VOLATILES (ug/L)							
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	2 J	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	15	11	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U	33
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	13
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	3 J
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U

SOIL QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA CLP METHOD (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
METHYLENE CHLORIDE	10 U	10 U	2 J	2 J	73-RB105	1/7	2.00	2.00
ACETONE	10 U	10 U	11	15	73-FB201	2/7	13.00	13.00
CARBON DISULFIDE	10 U	10 U	ND	ND		0/7	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROFORM	10 U	10 U	33	33	73-FB-203	1/7	33.00	33.00
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/7	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/7	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	13	13	73-FB-203	1/7	13.00	13.00
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/7	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/7	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	3 J	3 J	73-FB-203	1/7	3.00	3.00
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
BENZENE	10 U	10 U	ND	ND		0/7	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/7	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/7	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/7	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/7	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
STYRENE	10 U	10 U	ND	ND		0/7	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/7	NA	NA

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 601/602
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-10	73-TB-11	73-TB-12	73-TB-13	73-TB-16	73-TB-20
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	04/25/95	05/02/95	05/03/95	05/05/95	05/05/95	05/08/95
VOLATILES (ug/L)						
CHLOROMETHANE	1 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
BROMOMETHANE	1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
VINYL CHLORIDE	1 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
CHLOROETHANE	1 U	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
METHYLENE CHLORIDE	1 U	15 U	15 U	15 U	15 U	15 U
1,1-DICHLOROETHENE	1 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
1,1-DICHLOROETHANE	1 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
CHLOROFORM	1 U	0.5 U	0.5 U	0.5 U	0.8	0.5 U
1,2-DICHLOROETHANE	3.6 J	1.3	1.3	1.7	1.8	1.4
1,1,1-TRICHLOROETHANE	1 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
CARBON TETRACHLORIDE	1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	1 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
CIS-1,3-DICHLOROPROPENE	1 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRICHLOROETHENE	1 U	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
DIBROMOCHLOROMETHANE	1 U	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
1,1,2-TRICHLOROETHANE	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZENE	1 U	2 U	2 U	2 U	2 U	2 U
TRANS-1,3-DICHLOROPROPENE	1 U	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
BROMOFORM	1 U	2 U	2 U	2 U	2 U	2 U
TETRACHLOROETHENE	1 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-TETRACHLOROETHANE	1 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	2.5 J	3.3	2.7	3.6	2.8	3.2
CHLOROBENZENE	1 U	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	1 U	2 U	2 U	2 U	2 U	2 U
TRICHLOROFLUOROMETHANE	1 U	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1 U	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,3-DICHLOROBENZENE	1 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
1,4-DICHLOROBENZENE	1 U	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DICHLOROBENZENE	1 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
2-CHLOROETHYL VINYL ETHER	1 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES (TOTAL)	NA	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	NA	3 U	3 U	3 U	3 U	3 U
ISOPROPYL ETHER	NA	3 U	3 U	3 U	3 U	3 U
METHYL TERT-BUTYLETHER	NA	3 U	3 U	3 U	3 U	3 U
CIS-1,2-DICHLOROETHENE	NA	1 U	1 U	1 U	1 U	1 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 601/602
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-21	73-TB-22	73-TB-24	73-RB-12	73-RB-13	73-RB-15
METHOD	601/602	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/10/95	05/17/95	05/20/95	04/25/95	05/01/95	05/03/95
VOLATILES (ug/L)						
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	1 U	0.8 U	0.8 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1 U	1.2 U	1.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1 U	1.8 U	1.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	1 U	5.2 U	5.2 U
METHYLENE CHLORIDE	15 U	15 U	15 U	5.2 J	15 U	15 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1 U	1.3 U	1.3 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	1 U	0.7 U	0.7 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	1 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.4	0.3 U	0.3 U	1 U	0.4	0.7
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	1 U	0.3 U	0.3 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1 U	1.2 U	1.2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	1 U	0.4 U	0.4 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	1 U	3.4 U	3.4 U
TRICHLOROETHENE	1.2 U	1.2 U	1.2 U	1 U	1.2 U	1.2 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	1 U	0.9 U	0.9 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	1 U	0.2 U	0.2 U
BENZENE	2 U	2 U	2 U	1 U	2 U	2 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	1 U	3.4 U	3.4 U
BROMOFORM	2 U	2 U	2 U	1 U	2 U	2 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	1 U	0.3 U	0.3 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	1 U	0.3 U	0.3 U
TOLUENE	2 U	2 U	2 U	1 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	1 U	2 U	2 U
ETHYLBENZENE	2 U	2 U	2 U	1 U	2 U	2 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	1 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1 U	1.8 U	1.8 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	1 U	3.2 U	3.2 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	1 U	2.4 U	2.4 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1 U	1.5 U	1.5 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1 U	1.3 U	1.3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U	1 U
XYLENES (TOTAL)	1 U	1 U	1 U	NA	1 U	1 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	NA	3 U	3 U
ISOPROPYL ETHER	3 U	3 U	3 U	NA	3 U	3 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	NA	3 U	3 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	NA	1 U	1 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 601/602
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-17	73-RB-18	73-RB-22	73-RB-24	73-RB-25
METHOD	601/602	601/602	601/602	601/602	601/602
DATE SAMPLED	05/05/95	05/06/95	05/16'95	05/18/95	05/18/95
VOLATILES (ug/L)					
CHLOROMETHANE	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
BROMOMETHANE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
VINYL CHLORIDE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
CHLOROETHANE	5.2 U	5.2 U	5.2 U	5.2 U	5.2 U
METHYLENE CHLORIDE	15 U	15 U	15 U	15 U	15 U
1,1-DICHLOROETHENE	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
1,1-DICHLOROETHANE	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U
CHLOROFORM	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
1,2-DICHLOROETHANE	0.4	0.6 U	0.5 J	0.3 U	0.7
1,1,1-TRICHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
CARBON TETRACHLORIDE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
BROMODICHLOROMETHANE	1 U	1 U	1 U	1 U	1 U
1,2-DICHLOROPROPANE	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U
CIS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
TRICHLOROETHENE	1.2 U	1.2 U	1.2 U	1.2 U	1.2 U
DIBROMOCHLOROMETHANE	0.9 U	0.9 U	0.9 U	0.9 U	0.9 U
1,1,2-TRICHLOROETHANE	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
BENZENE	2 U	2 U	2 U	2 U	2 U
TRANS-1,3-DICHLOROPROPENE	3.4 U	3.4 U	3.4 U	3.4 U	3.4 U
BROMOFORM	2 U	2 U	2 U	2 U	2 U
TETRACHLOROETHENE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
1,1,2,2-TETRACHLOROETHANE	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
TOLUENE	2 U	2 U	2 U	2 U	2 U
CHLOROBENZENE	2 U	2 U	2 U	2 U	2 U
ETHYLBENZENE	2 U	2 U	2 U	2 U	2 U
TRICHLOROFLUOROMETHANE	2 U	2 U	2 U	2 U	2 U
DICHLORODIFLUOROMETHANE	1.8 U	1.8 U	1.8 U	1.8 U	1.8 U
1,3-DICHLOROBENZENE	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
1,4-DICHLOROBENZENE	2.4 U	2.4 U	2.4 U	2.4 U	2.4 U
1,2-DICHLOROBENZENE	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
2-CHLOROETHYL VINYL ETHER	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U
TRANS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U
XYLENES (TOTAL)	1 U	1 U	1 U	1 U	1 U
1,2-DIBROMOETHANE	3 U	3 U	3 U	3 U	3 U
ISOPROPYL ETHER	3 U	3 U	3 U	3 U	3 U
METHYL TERT-BUTYLETHER	3 U	3 U	3 U	3 U	3 U
CIS-1,2-DICHLOROETHENE	1 U	1 U	1 U	1 U	1 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 601/602
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	0.8 U	1 U	ND	ND		0/17	NA	NA
BROMOMETHANE	1 U	1.2 U	ND	ND		0/17	NA	NA
VINYL CHLORIDE	1 U	1.8 U	ND	ND		0/17	NA	NA
CHLOROETHANE	1 U	5.2 U	ND	ND		0/17	NA	NA
METHYLENE CHLORIDE	1 U	15 U	5.2 J	5.2 J	73-RB-12	1/17	5.20	5.20
1,1-DICHLOROETHENE	1 U	1.3 U	ND	ND		0/17	NA	NA
1,1-DICHLOROETHANE	0.7 U	1 U	ND	ND		0/17	NA	NA
CHLOROFORM	0.5 U	1 U	0.8	0.8	73-TB-16	1/17	0.80	0.80
1,2-DICHLOROETHANE	0.3 U	1 U	0.4	3.6 J	73-TB-10	12/17	1.18	1.00
1,1,1-TRICHLOROETHANE	0.3 U	1 U	ND	ND		0/17	NA	NA
CARBON TETRACHLORIDE	1 U	1.2 U	ND	ND		0/17	NA	NA
BROMODICHLOROMETHANE	1 U	1 U	ND	ND		0/17	NA	NA
1,2-DICHLOROPROPANE	0.4 U	1 U	ND	ND		0/17	NA	NA
CIS-1,3-DICHLOROPROPENE	1 U	3.4 U	ND	ND		0/17	NA	NA
TRICHLOROETHENE	1 U	1.2 U	ND	ND		0/17	NA	NA
DIBROMOCHLOROMETHANE	0.9 U	1 U	ND	ND		0/17	NA	NA
1,1,2-TRICHLOROETHANE	0.2 U	1 U	ND	ND		0/17	NA	NA
BENZENE	1 U	2 U	ND	ND		0/17	NA	NA
TRANS-1,3-DICHLOROPROPENE	1 U	3.4 U	ND	ND		0/17	NA	NA
BROMOFORM	1 U	2 U	ND	ND		0/17	NA	NA
TETRACHLOROETHENE	0.3 U	1 U	ND	ND		0/17	NA	NA
1,1,2,2-TETRACHLOROETHANE	0.3 U	1 U	ND	ND		0/17	NA	NA
TOLUENE	1 U	2 U	2.5 J	3.6	73-TB-13	6/17	3.02	3.00
CHLOROBENZENE	1 U	2 U	ND	ND		0/17	NA	NA
ETHYLBENZENE	1 U	2 U	ND	ND		0/17	NA	NA
TRICHLOROFLUOROMETHANE	1 U	2 U	ND	ND		0/17	NA	NA
DICHLORODIFLUOROMETHANE	1 U	1.8 U	ND	ND		0/17	NA	NA
1,3-DICHLOROBENZENE	1 U	3.2 U	ND	ND		0/17	NA	NA
1,4-DICHLOROBENZENE	1 U	2.4 U	ND	ND		0/17	NA	NA
1,2-DICHLOROBENZENE	1 U	1.5 U	ND	ND		0/17	NA	NA
2-CHLOROETHYL VINYL ETHER	1 U	1.3 U	ND	ND		0/17	NA	NA
TRANS-1,2-DICHLOROETHENE	1 U	1 U	ND	ND		0/17	NA	NA
XYLENES (TOTAL)	1 U	1 U	ND	ND		0/15	NA	NA
1,2-DIBROMOETHANE	3 U	3 U	ND	ND		0/15	NA	NA
ISOPROPYL ETHER	3 U	3 U	ND	ND		0/15	NA	NA
METHYL TERT-BUTYLETHER	3 U	3 U	ND	ND		0/15	NA	NA
CIS-1,2-DICHLOROETHENE	1 U	1 U	ND	ND		0/15	NA	NA

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-12	73-RB-13	73-RB-17	73-RB-18	73-RB-22	73-RB-24	73-RB-25
METHOD	625	625	625	625	625	625	625
DATE SAMPLED	04/25/95	05/01/95	05/05/95	05/06/95	05/16/95	05/18/95	05/18/95
SEMIVOLATILES (ug/L)							
PHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIMETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACENAPHTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-DINITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-NITROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2,4-DINITROTOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U	10 U	10 U	10 U	10 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-12	73-RB-13	73-RB-17	73-RB-18	73-RB-22	73-RB-24	73-RB-25
METHOD	625	625	625	625	625	625	625
DATE SAMPLED	04/25/95	05/01/95	05/05/95	05/06/95	05/16/95	05/18/95	05/18/95
SEMIVOLATILES (ug/L) cont							
HEXACHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PENTACHLOROPHENOL	50 U	50 U	50 U	50 U	50 U	50 U	50 U
PHENANTHRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	20 U	20 U	20 U	20 U	20 U	20 U	20 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-NITROSODIMETHYLAMINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DIPHENYLHYDRAZINE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZIDINE	50 U	50 U	50 U	50 U	50 U	50 U	50 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U	25	10 U	10 U	10 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
PHENOL	10 U	10 U	ND	ND		0/7	NA	NA
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	ND	ND		0/7	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/7	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/7	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/7	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/7	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/7	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/7	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/7	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/7	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/7	NA	NA
DIMETHYL PHTHALATE	10 U	10 U	ND	ND		0/7	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/7	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/7	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/7	NA	NA
2,4-DINITROPHENOL	50 U	50 U	ND	ND		0/7	NA	NA
4-NITROPHENOL	50 U	50 U	ND	ND		0/7	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/7	NA	NA
DIETHYL PHTHALATE	10 U	10 U	ND	ND		0/7	NA	NA
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/7	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/7	NA	NA
4,6-DINITRO-2-METHYLPHENOL	50 U	50 U	ND	ND		0/7	NA	NA
N-NITROSODIPHENYLAMINE	10 U	10 U	ND	ND		0/7	NA	NA
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/7	NA	NA

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 625
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L) cont								
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
PENTACHLOROPHENOL	50 U	50 U	ND	ND		0/7	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/7	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/7	NA	NA
DI-N-BUTYL PHTHALATE	10 U	10 U	ND	ND		0/7	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/7	NA	NA
PYRENE	10 U	10 U	ND	ND		0/7	NA	NA
BUTYL BENZYL PHTHALATE	10 U	10 U	ND	ND		0/7	NA	NA
3,3'-DICHLOROBENZIDINE	20 U	20 U	ND	ND		0/7	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/7	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/7	NA	NA
DI-N-OCTYL PHTHALATE	10 U	10 U	ND	ND		0/7	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/7	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/7	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/7	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/7	NA	NA
DIBENZ(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/7	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/7	NA	NA
N-NITROSODIMETHYLAMINE	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DIPHENYLHYDRAZINE	10 U	10 U	ND	ND		0/7	NA	NA
BENZIDINE	50 U	50 U	ND	ND		0/7	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	25	25	73-RB-18	1/7	25.00	25.00

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-12	73-RB-15	73-RB-17	73-RB-18	73-RB-22	73-RB-24	73-RB-25
METHOD	8080	8080	8080	8080	8080	8080	8080
DATE SAMPLED	04/25/95	05/03/95	05/05/95	05/06/95	05/16/95	05/18/95	05/18/95
PESTICIDES/PCB's (ug/L)							
ALPHA-BHC	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
BETA-BHC	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DELTA-BHC	0.05 U	0.05 UJ	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-BHC (LINDANE)	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ALDRIN	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
HEPTACHLOR EPOXIDE	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
ENDOSULFAN I	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
DIELDRIN	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDE	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN II	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDD	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDOSULFAN SULFATE	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
4,4'-DDT	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
METHOXYCHLOR	0.5 UJ	0.5 UJ	0.5 UJ	0.5 U	0.5 UJ	0.5 UJ	0.5 U
ENDRIN KETONE	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ENDRIN ALDEHYDE	0.1 U	0.1 UJ	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
ALPHA-CHLORDANE	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
GAMMA-CHLORDANE	0.05 U	0.05 UJ	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
TOXAPHENE	5 U	5 UJ	5 U	5 U	5 U	5 U	5 U
AROCLOR-1016	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1221	2 U	2 UJ	2 U	2 U	2 U	2 U	2 U
AROCLOR-1232	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1242	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1248	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1254	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U
AROCLOR-1260	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCB's (ug/L)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/7	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/7	NA	NA
DELTA-BHC	0.05 U	0.05 U	ND	ND		0/7	NA	NA
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	ND	ND		0/7	NA	NA
HEPTACHLOR	0.05 U	0.05 U	ND	ND		0/7	NA	NA
ALDRIN	0.05 U	0.05 U	ND	ND		0/7	NA	NA
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/7	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/7	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/7	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/7	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/7	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/7	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/7	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/7	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/7	NA	NA
METHOXYCHLOR	0.5 UJ	0.5 UJ	ND	ND		0/7	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/7	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/7	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/7	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/7	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/7	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/7	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/7	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/7	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/7	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/7	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/7	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/7	NA	NA

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-12	73-RB-13	73-RB-15	73-RB-17	73-RB-18	73-RB-21	73-RB-22
METHOD	CLP	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLE	NA	NA	NA	NA	NA	NA	NA
TOTAL METALS (ug/L)							
ALUMINUM	40 U	40 U	40 U	52.3	51.2 J	40 U	40 U
ANTIMONY	50 U	50 U	50 U	50 U	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BARIUM	2 U	2 U	2 U	3	2.8	2 U	2 U
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
CALCIUM	113 U	219 U	48.9	96.9	67.5 U	80.8 U	43.4 U
CHROMIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
COBALT	20 U	20 U	20 U	20 U	20 U	20 U	20 U
COPPER	10 U	10 U	10 U	10 U	10 U	10 U	10 U
IRON	10.4	20 U	29.9	56.7	41.2 U	35.2 U	34.5 U
LEAD	3 U	3 U	3 U	8.2 U	3 U	3 U	3 U
MAGNESIUM	50	50 U	50 U	50 U	50 U	50 U	50 U
MANGANESE	2 U	2 U	2 U	2 U	2 U	2 U	2 U
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	2070	1000 U	1000 U	1000 U	1000 U	1000 U	1000 U
SELENIUM	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SILVER	5 U	5 U	5 U	5 U	5 U	5 U	5 U
SODIUM	200	200 U	200 U	200 U	200 U	200 U	200 U
THALLIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ZINC	27.1 U	75.2	16.9	18	32.5 J	9.9 U	6 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-24	73-RB-25
METHOD	CLP	CLP
DATE SAMPLE	NA	NA
TOTAL METALS (ug/L)		
ALUMINUM	40 U	40 U
ANTIMONY	50 U	50 U
ARSENIC	10 U	10 U
BARIUM	2 U	2 U
BERYLLIUM	1 U	1 U
CADMIUM	5 U	5 U
CALCIUM	41.8	40 U
CHROMIUM	10 U	10 U
COBALT	20 U	20 U
COPPER	10 U	10 U
IRON	10 U	10 U
LEAD	3 U	3 U
MAGNESIUM	50 U	50 U
MANGANESE	2 U	2 U
MERCURY	0.2 U	0.2 U
NICKEL	20 U	20 U
POTASSIUM	1000 U	1000 U
SELENIUM	5 U	5 U
SILVER	5 U	5 U
SODIUM	200 U	200 U
THALLIUM	10 U	10 U
VANADIUM	10 U	10 U
ZINC	17.4	5.1 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLE	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL METALS (ug/L)								
ALUMINUM	40 U	40 U	51.2 J	52.3	73-RB-17	2/9	51.75	51.75
ANTIMONY	50 U	50 U	ND	ND		0/9	NA	NA
ARSENIC	10 U	10 U	ND	ND		0/9	NA	NA
BARIUM	2 U	2 U	2.8	3	73-RB-17	2/9	2.90	2.90
BERYLLIUM	1 U	1 U	ND	ND		0/9	NA	NA
CADMIUM	5 U	5 U	ND	ND		0/9	NA	NA
CALCIUM	40 U	219 U	41.8	96.9	73-RB-17	3/9	62.53	48.90
CHROMIUM	10 U	10 U	ND	ND		0/9	NA	NA
COBALT	20 U	20 U	ND	ND		0/9	NA	NA
COPPER	10 U	10 U	ND	ND		0/9	NA	NA
IRON	10 U	41.2 U	10.4	56.7	73-RB-17	3/9	32.33	29.90
LEAD	3 U	8.2 U	ND	ND		0/9	NA	NA
MAGNESIUM	50 U	50 U	50	50	73-RB-12	1/9	50.00	50.00
MANGANESE	2 U	2 U	ND	ND		0/9	NA	NA
MERCURY	0.2 U	0.2 U	ND	ND		0/9	NA	NA
NICKEL	20 U	20 U	ND	ND		0/9	NA	NA
POTASSIUM	1000 U	1000 U	2070	2070	73-RB-12	1/9	2070.00	2070.00
SELENIUM	5 U	5 U	ND	ND		0/9	NA	NA
SILVER	5 U	5 U	ND	ND		0/9	NA	NA
SODIUM	200 U	200 U	200	200	73-RB-12	1/9	200.00	200.00
THALLIUM	10 U	10 U	ND	ND		0/9	NA	NA
VANADIUM	10 U	10 U	ND	ND		0/9	NA	NA
ZINC	5.1 U	27.1 U	16.9	75.2	73-RB-13	5/9	32.00	18.00

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA CLP METHOD (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-204	73-TB207	73-TB208	TB-210	73-RB-101	73-RB-103
METHOD	CLP	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	02/27/96	03/20/96	03/21/96	03/26/96	02/20/96	02/22/96
VOLATILES (ug/L)						
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	1 J	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA CLP METHOD (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB107	73-RB109	73-FB201	73-FB202	73-FB-203
METHOD	CLP	CLP	CLP	CLP	CLP
DATE SAMPLED	03/19/96	03/21/96	03/20/96	03/20/96	03/26/96
VOLATILES (ug/L)					
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U
ACETONE	15	19	15	11	10 U
CARBON DISULFIDE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	33
1,2-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	13
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	3 J
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U

GROUNDWATER QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA CLP METHOD (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/11	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/11	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
METHYLENE CHLORIDE	10 U	10 U	1 J	1 J	73-TB-204	1/11	1.00	1.00
ACETONE	10 U	10 U	11	19	73-RB109	4/11	15.00	15.00
CARBON DISULFIDE	10 U	10 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/11	NA	NA
CHLOROFORM	10 U	10 U	33	33	73-FB-203	1/11	33.00	33.00
1,2-DICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
2-BUTANONE	10 U	10 U	ND	ND		0/11	NA	NA
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/11	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	13	13	73-FB-203	1/11	13.00	13.00
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/11	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/11	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	3 J	3 J	73-FB-203	1/11	3.00	3.00
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
BENZENE	10 U	10 U	ND	ND		0/11	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/11	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/11	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/11	NA	NA
2-HEXANONE	10 U	10 U	ND	ND		0/11	NA	NA
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/11	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/11	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/11	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/11	NA	NA
STYRENE	10 U	10 U	ND	ND		0/11	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/11	NA	NA

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-TB-21	73-TB-50	73-TB-51	73-TB-52	73-RB-19	73-RB-20	73-RS-27
METHOD	8240	8240	8240	8240	8240	8240	8240
DATE SAMPLED	05/10/95	05/22/95	05/22/95	05/22/95	05/07/95	05/08/95	05/22/95
VOLATILES (ug/L)							
CHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ACETONE	10 U	10 UJ	10 UJ	10 UJ	170	170	110 J
CARBON DISULFIDE	10 UJ	10 U	10 U	10 U	10 U	10 UJ	10 U
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	10 U	1 J	1 J	1 J	10 U	10 U	1 J
2-BUTANONE	10 U	10 U	10 U	10 U	22	22	16 J
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	10 U	10 U	10 U	10 U	5 J	7 J	10 U
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TOLUENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
VOLATILES, VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
VOLATILES (ug/L)								
CHLOROMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
BROMOMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
VINYL CHLORIDE	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
METHYLENE CHLORIDE	10 U	10 U	ND	ND		0/7	NA	NA
ACETONE	10 U	10 U	110 J	170	73-RB-20	3/7	150.00	170.00
CARBON DISULFIDE	10 UJ	10 UJ	ND	ND		0/7	NA	NA
1,1-DICHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
1,1-DICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROFORM	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DICHLOROETHANE	10 U	10 U	1 J	1 J	73-RS-27	4/7	1.00	1.00
2-BUTANONE	10 U	10 U	16 J	22	73-RB-20	3/7	20.00	22.00
1,1,1-TRICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
CARBON TETRACHLORIDE	10 U	10 U	ND	ND		0/7	NA	NA
BROMODICHLOROMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
1,2-DICHLOROPROPANE	10 U	10 U	ND	ND		0/7	NA	NA
CIS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/7	NA	NA
TRICHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
DIBROMOCHLOROMETHANE	10 U	10 U	ND	ND		0/7	NA	NA
1,1,2-TRICHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
BENZENE	10 U	10 U	ND	ND		0/7	NA	NA
TRANS-1,3-DICHLOROPROPENE	10 U	10 U	ND	ND		0/7	NA	NA
BROMOFORM	10 U	10 U	ND	ND		0/7	NA	NA
4-METHYL-2-PENTANONE	10 U	10 U	ND	ND		0/7	NA	NA
2-HEXANONE	10 U	10 U	5 J	7 J	73-RB-20	2/7	6.00	6.00
TETRACHLOROETHENE	10 U	10 U	ND	ND		0/7	NA	NA
1,1,2,2-TETRACHLOROETHANE	10 U	10 U	ND	ND		0/7	NA	NA
TOLUENE	10 U	10 U	ND	ND		0/7	NA	NA
CHLOROBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
ETHYLBENZENE	10 U	10 U	ND	ND		0/7	NA	NA
STYRENE	10 U	10 U	ND	ND		0/7	NA	NA
XYLENES (TOTAL)	10 U	10 U	ND	ND		0/7	NA	NA

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-19	73-RB-20	73-RS-27
METHOD	8270	8270	8270
DATE SAMPLED	05/07/95	05/08/95	05/22/95
SEMIVOLATILES (ug/L)			
PHENOL	10 U	10 U	10 U
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	10 U
2-CHLOROPHENOL	10 U	10 U	10 U
1,3-DICHLOROBENZENE	10 U	10 U	10 U
1,4-DICHLOROBENZENE	10 U	10 U	10 U
1,2-DICHLOROBENZENE	10 U	10 U	10 U
2-METHYLPHENOL	10 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	10 U
4-METHYLPHENOL	10 U	10 U	10 U
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	10 U
HEXACHLOROETHANE	10 U	10 U	10 U
NITROBENZENE	10 U	10 U	10 U
ISOPHORONE	10 U	10 U	10 U
2-NITROPHENOL	10 U	10 U	10 U
2,4-DIMETHYLPHENOL	10 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	10 U
2,4-DICHLOROPHENOL	10 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10 U	10 U	10 U
NAPHTHALENE	10 U	10 U	10 U
4-CHLOROANILINE	10 U	10 U	10 U
HEXACHLOROBUTADIENE	10 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10 U	10 U	10 U
2-METHYLNAPHTHALENE	10 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25 U	25 U	25 U
2-CHLORONAPHTHALENE	10 U	10 U	10 U
2-NITROANILINE	25 U	25 U	25 U
DIMETHYL PHTHALATE	10 U	10 U	10 U
ACENAPHTHYLENE	10 U	10 U	10 U
2,6-DINITROTOLUENE	10 U	10 U	10 U
3-NITROANILINE	25 U	25 U	25 U
ACENAPHTHENE	10 U	10 U	10 U
2,4-DINITROPHENOL	25 U	25 U	25 U
4-NITROPHENOL	25 U	25 U	25 U

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-19	73-RB-20	73-RS-27
METHOD	8270	8270	8270
DATE SAMPLED	05/07/95	05/08/95	05/22/95
SEMIVOLATILES (ug/L) cont			
DIBENZOFURAN	10 U	10 U	10 U
2,4-DINITROTOLUENE	10 U	10 U	10 U
DIETHYL PHTHALATE	10 U	10 U	10 U
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	10 U
FLUORENE	10 U	10 U	10 U
4-NITROANILINE	25 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10 U	10 U	10 U
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	10 U
HEXACHLOROBENZENE	10 U	10 U	10 U
PENTACHLOROPHENOL	25 U	25 U	25 U
PHENANTHRENE	10 U	10 U	10 U
ANTHRACENE	10 U	10 U	10 U
CARBAZOLE	10 UJ	10 UJ	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	10 U
FLUORANTHENE	10 U	10 U	10 U
PYRENE	10 U	10 U	10 U
BUTYL BENZYL PHTHALATE	1 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10 U	10 U	10 U
BENZO(A)ANTHRACENE	10 U	10 U	10 U
CHRYSENE	10 U	10 U	10 U
DI-N-OCTYL PHTHALATE	10 U	10 U	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	10 U
BENZO(A)PYRENE	10 U	10 U	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	10 U
DIBENZ(A,H)ANTHRACENE	10 U	10 U	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	10 U

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L)								
PHENOL	10 U	10 U	ND	ND		0/3	NA	NA
BIS(2-CHLOROETHYL) ETHER	10 U	10 U	ND	ND		0/3	NA	NA
2-CHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
1,3-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
1,4-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
1,2-DICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
2-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,2'-OXYBIS(1-CHLOROPROPANE)	10 U	10 U	ND	ND		0/3	NA	NA
4-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
N-NITROSO-DI-N-PROPYLAMINE	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROETHANE	10 U	10 U	ND	ND		0/3	NA	NA
NITROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
ISOPHORONE	10 U	10 U	ND	ND		0/3	NA	NA
2-NITROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DIMETHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
BIS(2-CHLOROETHOXY)METHANE	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DICHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
1,2,4-TRICHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
NAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLOROANILINE	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROBUTADIENE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLORO-3-METHYLPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2-METHYLNAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROCYCLOPENTADIENE	10 U	10 U	ND	ND		0/3	NA	NA
2,4,6-TRICHLOROPHENOL	10 U	10 U	ND	ND		0/3	NA	NA
2,4,5-TRICHLOROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
2-CHLORONAPHTHALENE	10 U	10 U	ND	ND		0/3	NA	NA
2-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
DIMETHYL PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
ACENAPHTHYLENE	10 U	10 U	ND	ND		0/3	NA	NA
2,6-DINITROTOLUENE	10 U	10 U	ND	ND		0/3	NA	NA
3-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
ACENAPHTHENE	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DINITROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
4-NITROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
SEMIVOLATILES, VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
SEMIVOLATILES (ug/L) cont								
DIBENZOFURAN	10 U	10 U	ND	ND		0/3	NA	NA
2,4-DINITROTOLUENE	10 U	10 U	ND	ND		0/3	NA	NA
DIETHYL PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
4-CHLOROPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/3	NA	NA
FLUORENE	10 U	10 U	ND	ND		0/3	NA	NA
4-NITROANILINE	25 U	25 U	ND	ND		0/3	NA	NA
4,6-DINITRO-2-METHYLPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
N-NITROSODIPHENYLAMINE	10 U	10 U	ND	ND		0/3	NA	NA
4-BROMOPHENYL PHENYL ETHER	10 U	10 U	ND	ND		0/3	NA	NA
HEXACHLOROBENZENE	10 U	10 U	ND	ND		0/3	NA	NA
PENTACHLOROPHENOL	25 U	25 U	ND	ND		0/3	NA	NA
PHENANTHRENE	10 U	10 U	ND	ND		0/3	NA	NA
ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
CARBAZOLE	10 UJ	10 UJ	ND	ND		0/3	NA	NA
DI-N-BUTYL PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
BUTYL BENZYL PHTHALATE	1 U	10 U	ND	ND		0/3	NA	NA
3,3'-DICHLOROBENZIDINE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(A)ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
CHRYSENE	10 U	10 U	ND	ND		0/3	NA	NA
DI-N-OCTYL PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(B)FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(K)FLUORANTHENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(A)PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
INDENO(1,2,3-CD)PYRENE	10 U	10 U	ND	ND		0/3	NA	NA
DIBENZ(A,H)ANTHRACENE	10 U	10 U	ND	ND		0/3	NA	NA
BENZO(G,H,I)PERYLENE	10 U	10 U	ND	ND		0/3	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	10 U	ND	ND		0/3	NA	NA

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-19	73-RB-20	73-RS-27
METHOD	8080	8080	8080
DATE SAMPLED	05/07/95	05/08/95	05/22/95
PESTICIDES/PCB's (ug/L)			
ALPHA-BHC	0.05 U	0.05 U	0.05 UJ
BETA-BHC	0.05 U	0.05 U	0.05 UJ
DELTA-BHC	0.05 UJ	0.05 UJ	0.05 UJ
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	0.05 UJ
HEPTACHLOR	0.05 U	0.05 U	0.05 UJ
ALDRIN	0.05 U	0.05 U	0.05 UJ
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	0.05 UJ
ENDOSULFAN I	0.05 U	0.05 U	0.05 UJ
DIELDRIN	0.1 U	0.1 U	0.1 UJ
4,4'-DDE	0.1 U	0.1 U	0.1 UJ
ENDRIN	0.1 U	0.1 U	0.1 UJ
ENDOSULFAN II	0.1 U	0.1 U	0.1 UJ
4,4'-DDD	0.1 U	0.1 U	0.1 UJ
ENDOSULFAN SULFATE	0.1 U	0.1 U	0.1 UJ
4,4'-DDT	0.1 U	0.1 U	0.1 UJ
METHOXYCHLOR	0.5 U	0.5 U	0.5 UJ
ENDRIN KETONE	0.1 U	0.1 U	0.1 UJ
ENDRIN ALDEHYDE	0.1 U	0.1 U	0.1 UJ
ALPHA-CHLORDANE	0.05 U	0.05 U	0.05 UJ
GAMMA-CHLORDANE	0.05 U	0.05 U	0.05 UJ
TOXAPHENE	5 U	5 U	5 UJ
AROCLOR-1016	1 U	1 U	1 UJ
AROCLOR-1221	2 U	2 U	2 UJ
AROCLOR-1232	1 U	1 U	1 UJ
AROCLOR-1242	1 U	1 U	1 UJ
AROCLOR-1248	1 U	1 U	1 UJ
AROCLOR-1254	1 U	1 U	1 UJ
AROCLOR-1260	1 U	1 U	1 UJ

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
PESTICIDES/PCB's, VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
PESTICIDES/PCB's (ug/L)								
ALPHA-BHC	0.05 U	0.05 U	ND	ND		0/3	NA	NA
BETA-BHC	0.05 U	0.05 U	ND	ND		0/3	NA	NA
DELTA-BHC	0.05 UJ	0.05 UJ	ND	ND		0/3	NA	NA
GAMMA-BHC (LINDANE)	0.05 U	0.05 U	ND	ND		0/3	NA	NA
HEPTACHLOR	0.05 U	0.05 U	ND	ND		0/3	NA	NA
ALDRIN	0.05 U	0.05 U	ND	ND		0/3	NA	NA
HEPTACHLOR EPOXIDE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
ENDOSULFAN I	0.05 U	0.05 U	ND	ND		0/3	NA	NA
DIELDRIN	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDRIN	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDOSULFAN II	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDD	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDOSULFAN SULFATE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
4,4'-DDT	0.1 U	0.1 U	ND	ND		0/3	NA	NA
METHOXYCHLOR	0.5 U	0.5 U	ND	ND		0/3	NA	NA
ENDRIN KETONE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ENDRIN ALDEHYDE	0.1 U	0.1 U	ND	ND		0/3	NA	NA
ALPHA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
GAMMA-CHLORDANE	0.05 U	0.05 U	ND	ND		0/3	NA	NA
TOXAPHENE	5 U	5 U	ND	ND		0/3	NA	NA
AROCLOR-1016	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1221	2 U	2 U	ND	ND		0/3	NA	NA
AROCLOR-1232	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1242	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1248	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1254	1 U	1 U	ND	ND		0/3	NA	NA
AROCLOR-1260	1 U	1 U	ND	ND		0/3	NA	NA

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION	73-RB-19	73-RB-20	73-RS-27
METHOD	CLP	CLP	CLP
DATE SAMPLE	05/07/95	05/08/95	05/22/95
TOTAL METALS (ug/L)			
ALUMINUM	41.6	73.7	40 U
ANTIMONY	50 U	50 U	50 U
ARSENIC	10 U	10 U	10 U
BARIUM	2 U	2 U	2 U
BERYLLIUM	1 U	1 U	1 U
CADMIUM	5 U	5 U	5 U
CALCIUM	76	145	118 U
CHROMIUM	10 U	10 U	10 U
COBALT	20 U	20 U	20 U
COPPER	10 U	10 U	10 U
IRON	31.1 U	53.5 U	30.3 U
LEAD	3 U	3 U	3 U
MAGNESIUM	50 U	50 U	50 U
MANGANESE	2 U	2 U	2 U
MERCURY	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U
POTASSIUM	1000 U	1000 U	1000 U
SELENIUM	5 U	5 U	5 U
SILVER	5 U	5 U	5 U
SODIUM	664	324	200 U
THALLIUM	10 U	10 U	10 U
VANADIUM	10 U	10 U	10 U
ZINC	16.5	22.1	10.4 U

SURFACE WATER AND SEDIMENT QA/QC - FREQUENCY OF DETECTION SUMMARY
TOTAL METALS, VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGASTION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLE	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION	AVERAGE OF POSITIVE DETECTIONS	MEDIAN OF POSITIVE DETECTIONS
TOTAL METALS (ug/L)								
ALUMINUM	40 U	40 U	41.6	73.7	73-RB-20	2/3	57.65	57.65
ANTIMONY	50 U	50 U	ND	ND		0/3	NA	NA
ARSENIC	10 U	10 U	ND	ND		0/3	NA	NA
BARIUM	2 U	2 U	ND	ND		0/3	NA	NA
BERYLLIUM	1 U	1 U	ND	ND		0/3	NA	NA
CADMIUM	5 U	5 U	ND	ND		0/3	NA	NA
CALCIUM	118 U	118 U	78	145	73-RB-20	2/3	111.50	111.50
CHROMIUM	10 U	10 U	ND	ND		0/3	NA	NA
COBALT	20 U	20 U	ND	ND		0/3	NA	NA
COPPER	10 U	10 U	ND	ND		0/3	NA	NA
IRON	30.3 U	53.5 U	ND	ND		0/3	NA	NA
LEAD	3 U	3 U	ND	ND		0/3	NA	NA
MAGNESIUM	50 U	50 U	ND	ND		0/3	NA	NA
MANGANESE	2 U	2 U	ND	ND		0/3	NA	NA
MERCURY	0.2 U	0.2 U	ND	ND		0/3	NA	NA
NICKEL	20 U	20 U	ND	ND		0/3	NA	NA
POTASSIUM	1000 U	1000 U	ND	ND		0/3	NA	NA
SELENIUM	5 U	5 U	ND	ND		0/3	NA	NA
SILVER	5 U	5 U	ND	ND		0/3	NA	NA
SODIUM	200 U	200 U	324	664	73-RB-19	2/3	494.00	494.00
THALLIUM	10 U	10 U	ND	ND		0/3	NA	NA
VANADIUM	10 U	10 U	ND	ND		0/3	NA	NA
ZINC	10.4 U	10.4 U	16.5	22.1	73-RB-20	2/3	19.30	19.30

APPENDIX S
STATISTICAL SUMMARIES

STATISTICAL SUMMARY
DETECTED VOLATILES IN SURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	5.50	1.54	5.94	1.65	0.35	6.19
1,2-DICHLOROETHANE	5.28	1.67	5.83	1.60	0.38	6.16
1,2-DICHLOROPROPANE	5.47	1.62	5.93	1.63	0.42	6.41
2-BUTANONE	8.98	12.18	12.47	1.84	0.69	10.24
ACETONE	12.34	13.19	16.13	2.17	0.74	15.25
CHLOROBENZENE	5.55	1.53	5.99	1.66	0.40	6.43
ETHYLBENZENE	5.56	1.37	5.95	1.68	0.30	6.17
STYRENE	5.45	1.53	5.89	1.65	0.35	6.14
TOLUENE	5.46	1.63	5.93	1.63	0.42	6.41
TRICHLOROETHENE	5.48	1.54	5.92	1.65	0.34	6.18
XYLENES (TOTAL)	4.65	2.24	5.34	1.37	0.66	6.38

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN SURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/kg)						
2,4-DINITROPHENOL	1377.91	2580.65	2128.97	6.38	1.15	1999.44
4-CHLORO-3-METHYLPHENOL	569.46	1048.08	870.09	5.62	0.99	676.25
ACENAPHTHENE	569.00	1048.24	869.68	5.62	0.98	671.59
ANTHRACENE	569.29	1048.09	869.93	5.63	0.97	664.45
BENZO(A)ANTHRACENE	574.14	1046.01	874.19	5.67	0.92	651.28
BENZO(A)PYRENE	572.43	1046.66	872.66	5.66	0.93	649.15
BENZO(B)FLUORANTHENE	560.43	1045.31	860.27	5.65	0.90	620.48
BENZO(G,H,I)PERYLENE	572.14	1046.78	872.41	5.66	0.93	649.42
BIS(2-ETHYLHEXYL)PHTHALATE	538.83	1060.13	842.92	5.40	1.12	702.27
BUTYL BENZYL PHTHALATE	571.43	1047.10	871.79	5.65	0.94	650.64
CHRYSENE	566.29	1049.37	867.29	5.60	0.99	665.03
DI-N-BUTYL PHTHALATE	606.14	1038.32	903.98	5.76	0.94	729.20
FLUORANTHENE	557.34	1046.98	857.66	5.61	0.96	642.46
PHENANTHRENE	575.29	1045.63	875.22	5.67	0.92	653.49
PYRENE	557.46	1047.72	857.99	5.58	1.00	701.42

STATISTICAL SUMMARY
DETECTED PESTICIDES AND PCBS IN SURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	7.87	16.02	12.93	1.22	1.08	10.93
4,4'-DDE	2.43	1.88	3.03	0.76	0.42	2.74
4,4'-DDT	2.38	2.44	3.15	0.72	0.40	2.59
ALPHA-CHLORDANE	1.05	0.31	1.15	0.02	0.21	1.13
AROCLOR-1016	23.07	22.58	30.20	3.00	0.39	24.94
AROCLOR-1260	24.10	28.13	32.99	3.01	0.42	25.95
ENDRIN KETONE	2.07	0.97	2.37	0.68	0.26	2.23
GAMMA-CHLORDANE	1.28	1.15	1.65	0.10	0.43	1.43

STATISTICAL SUMMARY
DETECTED METALS IN SURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ALUMINUM	2183.03	1898.66	2727.65	7.34	0.93	3492.83
BARIUM	9.81	7.95	12.09	2.08	0.61	12.03
CADMIUM	0.72	0.37	0.83	-0.41	0.36	0.80
CALCIUM	4316.19	7806.42	6555.42	7.25	1.60	12922.01
CHROMIUM	5.03	3.30	5.97	1.38	0.75	6.96
COBALT	2.84	1.11	3.16	0.99	0.31	3.11
COPPER	2.43	1.95	2.99	0.66	0.64	2.98
IRON	1666.26	1668.46	2144.85	6.99	0.99	2675.75
LEAD	11.84	10.64	14.89	2.09	0.90	17.71
MAGNESIUM	169.63	182.96	222.11	4.68	0.95	253.11
MANGANESE	8.33	6.39	10.17	1.90	0.71	11.24
POTASSIUM	154.64	86.46	179.44	4.94	0.41	174.18
SODIUM	58.37	62.59	76.33	3.75	0.73	73.02
VANADIUM	3.35	2.82	4.16	0.94	0.72	4.37
ZINC	22.56	37.32	33.27	2.47	1.07	34.50

STATISTICAL SUMMARY
DETECTED VOLATILES IN SUBSURFACE SOILS
VIA METHODS 8240/8240A AND CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
1,1,1-TRICHLOROETHANE	6.17	3.11	7.17	1.75	0.35	6.95
2-BUTANONE	6.61	4.62	8.13	1.77	0.44	7.71
4-METHYL-2-PENTANONE	7.71	5.90	9.61	1.91	0.43	8.74
ACETONE	69.23	122.34	108.60	3.25	1.39	162.91
CARBON DISULFIDE	5.49	1.29	5.90	1.66	0.31	6.20
ETHYLBENZENE	5.27	1.63	5.80	1.58	0.51	6.73
M-XYLENE & P-XYLENE	2.33	0.74	NA	0.82	0.32	NA
O-XYLENE	2.25	1.18	4.23	0.68	0.69	209.45
TETRACHLOROETHENE	5.42	1.38	5.86	1.63	0.40	6.43
TRICHLOROETHENE	5.59	1.08	5.94	1.70	0.24	6.12
XYLENES (TOTAL)	5.62	1.84	6.25	1.65	0.46	6.98

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN SUBSURFACE SOILS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/kg)						
2-METHYLNAPHTHALENE	2757.41	10606.73	6239.81	5.83	1.42	2355.11
2,4-DINITROPHENOL	6073.27	25348.25	14564.08	6.58	1.40	4823.68
ACENAPHTHENE	2382.26	10536.05	5841.45	5.64	1.27	1434.26
ANTHRACENE	2490.00	10523.88	5945.20	5.77	1.32	1798.92
BENZO(A)ANTHRACENE	2439.44	10530.07	5896.67	5.70	1.30	1602.83
BENZO(A)PYRENE	2476.11	10526.02	5932.01	5.73	1.32	1748.67
BENZO(B)FLUORANTHENE	2436.48	10530.30	5893.79	5.71	1.28	1570.07
BIS(2-ETHYLHEXYL)PHTHALATE	2458.85	10530.19	5916.12	5.53	1.49	1992.68
CHRYSENE	2441.30	10529.79	5898.43	5.70	1.30	1611.80
DI-N-BUTYL PHTHALATE	2516.67	10517.20	5969.67	5.87	1.31	1951.62
FLUORANTHENE	2553.67	10529.76	6010.79	5.72	1.41	2079.27
FLUORENE	2448.15	10527.56	5904.55	5.72	1.30	1665.49
PHENANTHRENE	2457.96	10527.07	5914.21	5.72	1.31	1684.24
PYRENE	2522.04	10526.01	5977.93	5.74	1.36	1907.55

STATISTICAL SUMMARY
DETECTED PESTICIDES AND PCS IN SUBSURFACE SOILS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
PESTICIDE/PCBS (ug/kg)						
4,4'-DDD	376.53	1746.98	950.09	1.67	2.58	2954.49
4,4'-DDE	5.85	11.48	9.62	0.81	1.44	16.17
4,4'-DDT	3.66	7.48	6.12	0.57	1.24	7.77
ALPHA-CHLORDANE	1.65	3.59	2.83	-0.15	1.18	3.41
AROCLOR-1254	33.04	69.98	56.01	2.85	1.19	69.49
DIELDRIN	3.28	7.02	5.58	0.53	1.19	6.81
ENDOSULFAN I	1.71	3.62	2.90	-0.13	1.20	3.61
ENDRIN ALDEHYDE	3.17	6.99	5.47	0.51	1.17	6.44

STATISTICAL SUMMARY
DETECTED METALS IN SUBSURFACE SOILS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ALUMINUM	2821.69	3316.16	3869.16	7.60	0.83	4102.12
BARIUM	9.07	6.99	11.28	1.94	0.73	12.58
CADMIUM	0.64	0.23	0.72	-0.48	0.25	0.70
CALCIUM	4733.82	9655.56	7783.70	6.84	1.91	25692.20
CHROMIUM	5.76	5.41	7.47	1.43	0.83	8.58
COBALT	2.71	0.90	2.99	0.96	0.26	2.95
COPPER	1.97	1.83	2.55	0.46	0.57	2.34
IRON	1722.55	1953.18	2339.50	7.07	0.84	2471.43
LEAD	9.45	14.07	13.89	1.64	1.04	15.81
MAGNESIUM	183.47	227.16	255.22	4.64	1.07	333.59
MANGANESE	6.75	4.59	8.20	1.64	0.83	10.71
POTASSIUM	166.90	171.11	220.94	4.93	0.49	187.72
SODIUM	52.86	49.96	68.64	3.69	0.69	67.58
VANADIUM	4.08	5.65	5.86	1.01	0.78	5.24
ZINC	12.62	17.04	18.00	2.03	0.96	19.24

STATISTICAL SUMMARY
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD 601/602 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/L)						
ETHYLBENZENE	1.04	0.32	1.12	0.01	0.20	1.09
1,2-DICHLOROETHANE	0.40	0.15	0.44	-1.00	0.45	0.46
TOLUENE	1.03	0.31	1.11	0.01	0.19	1.08
XYLENES (TOTAL)	0.76	0.90	0.98	-0.52	0.54	0.80
CIS-1,2-DICHLOROETHENE	6.33	17.86	10.72	-0.01	1.47	5.66
TRANS-1,2-DICHLOROETHENE	0.77	0.89	0.99	-0.51	0.55	0.82
CHLOROFORM	0.44	0.78	0.63	-1.16	0.59	0.44
BENZENE	1.90	2.89	2.60	0.27	0.67	2.00
VINYL CHLORIDE	1.59	3.48	2.43	0.03	0.59	1.46
TRICHLOROETHENE	6.28	17.01	10.41	0.47	1.39	7.90

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN GROUNDWATER
VIA METHOD 625 (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/L)						
PHENOL	5.79	6.20	7.23	1.64	0.34	5.93
BIS(2-ETHYLHEXYL)PHTHALATE	6.73	8.71	8.73	1.67	0.53	7.06
1,2,4-TRICHLOROBENZENE	5.70	6.18	7.12	1.61	0.41	6.00
ACENAPHTHENE	5.76	6.15	7.17	1.63	0.34	5.89
DI-N-BUTYL PHTHALATE	5.44	6.28	6.88	1.51	0.53	6.02
FLUORENE	5.76	6.16	7.17	1.62	0.39	6.01
NAPHTHALENE	5.76	6.16	7.17	1.63	0.35	5.91

STATISTICAL SUMMARY
DETECTED METALS IN GROUNDWATER
VIA METHOD CLP (PHASE I)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
INORGANICS (ug/L)						
ALUMINUM	804.90	3987.61	1710.37	4.91	1.47	710.60
ANTIMONY	33.41	58.32	46.66	3.29	0.40	32.18
BARIUM	71.96	273.02	133.96	3.38	0.92	59.81
BERYLLIUM	1.44	6.98	3.03	-0.61	0.63	0.79
CADMIUM	3.38	6.50	4.85	0.97	0.41	3.18
CALCIUM	40518.73	33004.15	48013.00	10.21	1.02	65301.88
CHROMIUM	9.59	27.94	15.94	1.74	0.59	7.95
COBALT	24.02	70.24	39.97	2.60	0.70	20.87
COPPER	10.13	35.59	18.21	1.72	0.57	7.62
IRON	3542.12	6433.70	5003.02	7.33	1.29	5808.45
LEAD	1.94	2.15	2.43	0.50	0.41	1.99
MAGNESIUM	3537.35	4398.87	4536.20	7.73	0.94	4779.58
MANGANESE	65.53	96.56	87.46	3.44	1.30	122.10
NICKEL	19.27	68.77	34.89	2.37	0.53	14.26
POTASSIUM	2882.36	3542.71	3686.81	7.37	1.07	4110.10
SILVER	3.44	6.97	5.02	0.97	0.41	3.20
SODIUM	21763.27	30591.50	28709.70	9.41	1.01	28870.60
THALLIUM	5.11	0.78	5.28	1.62	0.10	5.22
VANADIUM	15.10	69.25	30.82	1.75	0.69	8.78
ZINC	39.86	76.64	57.27	3.07	0.99	48.01

STATISTICAL SUMMARY
DETECTED VOLATILES IN GROUNDWATER
VIA METHOD CLP (PHASE II)
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

LOCATION METHOD DATE SAMPLED	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/L)						
VINYL CHLORIDE	6.23	6.23	7.81	1.69	0.39	6.52
CHLOROETHANE	4.95	0.30	5.03	1.60	0.08	5.06
ACETONE	4.91	0.71	5.09	1.58	0.20	5.21
1,2-DICHLOROETHENE (TOTAL)	9.30	18.62	14.02	1.77	0.68	9.19
CHLOROFORM	4.61	1.10	4.89	1.47	0.40	5.32
TRICHLOROETHENE	13.14	47.75	25.26	1.73	0.76	9.79
BENZENE	5.43	3.34	6.28	1.63	0.27	5.71
TOLUENE	4.93	0.45	5.05	1.59	0.14	5.13

STATISTICAL SUMMARY
DETECTED VOLATILES IN SURFACE WATER
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/L)						
TOLUENE	4.45	1.21	5.12	1.44	0.37	5.77
ACETONE	9.36	13.51	16.74	1.86	0.70	14.17
CHLOROFORM	4.82	0.60	5.15	1.56	0.15	5.29

STATISTICAL SUMMARY
DETECTED METALS IN SURFACE WATER
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (ug/L)						
ALUMINUM	129.33	180.78	228.09	3.93	1.38	768.37
ANTIMONY	152.18	49.84	179.41	4.92	0.59	251.23
BARIUM	8.40	1.22	9.06	2.12	0.14	9.15
CALCIUM	243582.73	78854.65	286664.06	12.19	1.01	1005812.63
IRON	921.91	1225.07	1591.21	6.42	0.81	1757.47
MAGNESIUM	1074777.27	382122.41	1283545.48	13.37	2.00	265107394.39
MANGANESE	13.00	9.70	18.30	2.39	0.56	19.24
POTASSIUM	325863.64	110644.50	386312.99	12.19	1.98	36143067.97
SILVER	2.85	1.18	3.50	1.00	0.28	3.38
SODIUM	8595463.64	3040042.03	10256355.81	15.43	2.06	2669887772.70
ZINC	34.29	27.16	49.13	3.22	0.95	97.29

STATISTICAL SUMMARY
DETECTED VOLATILES IN SEDIMENTS
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
METHYLENE CHLORIDE	11.11	8.50	14.23	2.23	0.55	14.07
ACETONE	38.52	64.60	62.23	2.89	1.13	74.47
CARBON DISULFIDE	12.32	16.91	18.52	1.99	0.96	20.48
2-BUTANONE	12.18	9.05	15.50	2.30	0.61	16.36
TOLUENE	11.09	8.67	14.27	2.17	0.73	16.81
XYLENES (TOTAL)	11.20	8.46	14.31	2.24	0.55	14.18

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN SEDIMENTS
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/kg)						
PHENOL	2969.77	3418.33	4224.02	7.18	1.44	11522.09
PHENANTHRENE	2829.09	3432.54	4088.55	7.13	1.40	9920.25
DI-N-BUTYL PHTHALATE	2946.82	3427.97	4204.60	7.23	1.33	9480.32
FLUORANTHENE	2831.82	3431.00	4090.71	7.13	1.39	9936.57
PYRENE	2826.36	3434.14	4086.41	7.13	1.40	9905.84
BIS(2-ETHYLHEXYL)PHTHALATE	2716.86	3406.76	3966.87	6.75	1.89	33318.91

STATISTICAL SUMMARY
DETECTED PESTICIDES AND PCBS IN SEDIMENTS
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
PESTICIDE/PCBS (ug/kg)						
4,4'-DDE	5.43	4.59	7.11	1.41	0.73	7.94
ENDRIN	3.83	2.46	4.74	1.19	0.54	4.91
4,4'-DDD	6.30	6.36	8.63	1.49	0.80	9.65
AROCLOR-1260	39.14	29.53	49.97	3.47	0.59	50.61

STATISTICAL SUMMARY
DETECTED METALS IN SEDIMENTS
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ALUMINUM	7061.01	7773.58	9913.28	7.97	1.85	102503.85
ARSENIC	4.08	3.65	5.42	1.06	0.84	6.63
BARIUM	8.08	7.19	10.72	1.63	1.10	20.00
CADMIUM	1.40	1.31	1.88	0.07	0.68	1.90
CALCIUM	4588.87	6189.67	6859.97	7.62	1.68	37503.97
CHROMIUM	16.41	16.06	22.30	2.17	1.29	55.75
COBALT	5.38	3.37	6.61	1.51	0.60	7.16
COPPER	7.33	6.63	9.76	1.51	1.07	16.74
IRON	8253.03	8549.24	11389.91	8.04	2.02	280357.12
LEAD	20.97	14.85	26.42	2.74	0.86	36.18
MAGNESIUM	2479.99	2952.37	3563.27	6.93	1.65	17343.36
MANGANESE	31.66	38.02	45.60	2.72	1.40	123.33
NICKEL	5.97	5.39	7.94	1.48	0.74	8.58
POTASSIUM	1149.55	1312.79	1631.23	6.35	1.27	3468.19
SODIUM	6318.97	7880.61	9210.51	7.75	1.84	78046.49
VANADIUM	14.66	15.46	20.34	1.99	1.33	50.81
ZINC	39.90	33.09	52.05	3.22	1.17	110.70

STATISTICAL SUMMARY
DETECTED VOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
METHYLENE CHLORIDE	7637.50	10109.11	14410.44	8.26	1.16	46808.22
ACETONE	64175.00	45359.70	94565.26	10.72	1.05	404456.22
TOLUENE	7337.50	10315.98	14249.04	7.99	1.45	119084.24

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN FISH TISSUE (FILLET)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/kg)						
DI-N-BUTYL PHTHALATE	2237.50	1929.42	3530.18	7.29	1.03	12672.26

STATISTICAL SUMMARY
DETECTED PESTICIDES AND PCBS IN FISH TISSUE (FILLET)
VIA METHOD 8080
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
PESTICIDE/PCBS (ug/kg)						
ENDRIN	5.56	1.71	6.71	1.68	0.24	6.71

STATISTICAL SUMMARY
DETECTED METALS IN FISH TISSUE (FILLET)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ARSENIC	1.97	1.18	2.76	0.35	1.06	13.28
BARIUM	0.05	0.03	0.06	-3.19	0.55	0.08
CALCIUM	1297.13	1503.95	2304.75	6.59	1.16	8963.68
COPPER	0.74	0.35	0.97	-0.44	0.60	1.44
IRON	4.47	3.25	6.65	1.18	0.93	17.15
LEAD	0.03	0.01	0.04	-3.45	0.33	0.04
MAGNESIUM	336.00	53.66	371.95	5.81	0.16	380.27
MANGANESE	0.30	0.27	0.48	-1.55	0.86	0.88
MERCURY	0.07	0.06	0.11	-3.09	0.93	0.24
POTASSIUM	4080.00	519.45	4428.02	8.31	0.14	4514.72
SELENIUM	0.34	0.16	0.45	-1.23	0.71	0.84
SODIUM	687.50	147.13	786.08	6.52	0.19	790.81
ZINC	8.36	2.42	9.99	2.08	0.32	11.05

STATISTICAL SUMMARY
DETECTED VOLATILES IN FISH TISSUE (WHOLE BODY)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
ACETONE	125800.00	231653.19	346671.91	10.60	1.51	61792101.38

STATISTICAL SUMMARY
DETECTED METALS IN FISH TISSUE (WHOLE BODY)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ALUMINUM	26.38	51.90	75.86	1.42	2.17	13909111.96
ARSENIC	1.38	0.78	2.12	0.15	0.70	6.18
BARIUM	0.52	0.60	1.09	-1.61	1.95	12859.94
CALCIUM	11986.80	6898.82	18564.54	8.84	1.70	32547016.40
CHROMIUM	0.30	0.26	0.54	-1.80	1.58	400.06
COPPER	0.62	0.55	1.14	-1.29	1.96	18881.24
IRON	39.05	56.57	92.99	2.50	2.05	16095179.73
LEAD	0.12	0.13	0.25	-2.67	1.24	6.24
MAGNESIUM	419.82	229.64	638.77	5.47	1.76	4446393.60
MANGANESE	2.65	1.86	4.42	0.51	1.40	652.67
MERCURY	0.02	0.01	0.04	-3.75	0.35	0.04
POTASSIUM	2566.68	1426.73	3927.01	7.09	2.20	5051522869.31
SELENIUM	0.47	0.14	0.60	-0.79	0.29	0.67
SODIUM	1146.10	619.40	1736.67	6.59	1.49	449858.57
THALLIUM	0.07	0.03	0.10	-2.73	0.34	0.11
VANADIUM	0.50	1.01	1.46	-2.28	1.80	2341.96
ZINC	15.84	9.48	24.88	2.23	1.64	30349.42
MOLYBDENUM	0.10	0.09	0.18	-3.15	2.08	67759.72

STATISTICAL SUMMARY
DETECTED VOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8240
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
VOLATILES (ug/kg)						
METHYLENE CHLORIDE	8250.00	9752.90	16272.93	8.39	1.21	152728.28
ACETONE	95483.33	120377.41	194508.24	10.26	2.07	2547801113.06
TOLUENE	9296.67	11410.95	18683.54	8.31	1.48	711296.67

STATISTICAL SUMMARY
DETECTED SEMIVOLATILES IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD 8270
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
SEMIVOLATILES (ug/kg)						
DI-N-BUTYL PHTHALATE	1033.33	828.65	1715.00	6.69	0.74	3509.31

STATISTICAL SUMMARY
DETECTED METALS IN CRAB TISSUE (EDIBLE PORTION)
VIA METHOD CLP
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

	NORMAL ARITHMETIC MEAN	NORMAL STANDARD DEVIATION	NORMAL UPPER 95% CONFIDENCE INTERVAL	LOG ARITHMETIC MEAN	LOG STANDARD DEVIATION	LOG UPPER 95% CONFIDENCE INTERVAL
METALS (mg/kg)						
ARSENIC	3.68	0.69	4.25	1.29	0.19	4.40
BARIUM	0.05	0.03	0.07	-3.18	0.56	0.10
CALCIUM	1158.17	414.42	1499.07	6.99	0.39	1820.66
COPPER	5.10	0.89	5.83	1.62	0.17	5.97
IRON	5.83	1.04	6.69	1.75	0.18	6.95
LEAD	0.04	0.02	0.05	-3.37	0.42	0.06
MAGNESIUM	423.50	26.21	445.06	6.05	0.06	447.84
MANGANESE	0.26	0.11	0.35	-1.40	0.37	0.39
MERCURY	0.03	0.02	0.05	-3.48	0.47	0.06
POTASSIUM	2558.33	316.76	2818.91	7.84	0.12	2871.96
SELENIUM	0.32	0.06	0.37	-1.16	0.17	0.37
SILVER	0.17	0.08	0.24	-1.89	0.63	0.47
SODIUM	4346.67	580.85	4824.49	8.37	0.14	4973.66
ZINC	30.92	5.48	35.42	3.42	0.18	36.58

APPENDIX T
PERMEABILITY CONSTANT CALCULATIONS

CALCULATION OF PERMEABILITY CONSTANTS

Chemical-specific permeability constants (PCs or k_p) were calculated using the following equation. (Reference: USEPA, 1992)

$$\text{Log kp} = -2.72 + 0.71 \log k_{ow} - 0.0061 \text{ MW}$$

Where,

k_p = permeability constant (cm/hr)
k_{ow} = octanol/water coefficient (unitless)
MW = molecular weight (g/mole)

Parameter	Log k_{ow}	MW	k_p
acenapthene	4	154	0.01
2-methylnaphthalene	3.86	142.2	1.5×10^{-3}

PC VALUES
20-Nov-96

FILE: PCVAL.WQ1

PARAMETER	[CM/HR]	
	linked here	
	1.50E-03	
1,1-Dichloroethane	0.0126	
1,1-Dichloroethene	0.0015	
1,2,4-Trichlorobenzene	0.1000	
1,2-Dichloroethane	0.0053	
1,2-Dichloroethene (total)	0.0100	
1,2-Dichloropropane	0.0225	
1,3-Dichlorobenzene	0.0573	
1,4-Dichlorobenzene	0.0804	
2,4-Dimethylphenol	0.0150	
2,4-Dinitrotoluene	0.1000	
2-Butanone	0.0060	
2-Chlorophenol	0.0300	
2-Methylnaphthalene	0.1423	
2-Methylphenol	0.0160	
2-methylnaphthalene	0.1423	
4,4'-DDD	0.2800	
4,4'-DDE	0.2400	
4,4'-DDT	0.4300	
4-Methylphenol	0.0180	
Acenaphthene	0.1516	
Acenaphthene	1.50E-03	
Acenaphthylene	1.50E-03	
Acetone	0.0015	
Aldrin	0.0016	
Aluminum	0.0010	
Anthracene	0.0015	
Antimony	0.0010	
Arsenic	0.0010	
Barium	0.0010	
Benzene	0.0210	
Benzo(a)anthracene	0.0079	
Benzo(a)pyrene	0.9000	
Benzo(b)fluoranthene	0.6200	
Benzo(g,h,i)perylene	0.0015	
Benzo(k)fluoranthene	0.6200	
Benzoic acid	0.7120	
Beryllium	0.0010	
Bis(2-chloroethyl)ether	0.0021	
Bis(2-ethylhexyl)phthalate	3.30E-02	
Boron	0.0010	
Cadmium (soil)	0.0010	cadmium chloride
Cadmium (water)	0.0010	cadmium chloride
Carbazole	0.0015	
Carbon disulfide	0.5300	
Chlorobenzene	0.0404	
Chloroform	0.0089	
Chromium	0.0010	
Chrysene	0.6200	
Cis-1,2-Dichloroethene	0.0100	
Cobalt	0.0010	
Copper	0.0010	
Cyanide	0.0010	
Di-n-butylphthalate	2.3E-06	

Dibenz(a,h)anthracene	2.7	
Dibenzofuran	1.5E-03	
Diethyl phthalate	1.1E-05	
Dimethyl phthalate	3.3E-05	
Endosulfan sulfate	1.5E-03	
Endrin	0.0160	
Ethylbenzene	1.2000	
Fluoranthene	0.2970	
Fluorene	1.5E-03	
Heptachlor	0.0094	
Indeno(1,2,3-cd)pyrene	1.9000	
Iron	0.0010	
Isobutyl Alcohol	0.0015	
Kepone	0.0010	
Lead	4.0E-06	(lead acetate)
Magnesium	0.0010	
Manganese	0.0010	
Mercury	0.0010	
Molybdenum	0.0010	
Methylene Chloride	0.0051	
N-nitroso-di-n-propylamine	0.0028	
N-nitrosodiphenylamine	0.0005	
Naphthalene	0.0690	
Nickel	0.0001	(nickel chloride)
Pentachlorophenol	0.4900	
Phenanthrene	0.2700	
Phenol	0.0081	
Pyrene	0.0015	
Selenium	0.0010	
Silicon	0.0010	
Strontium	0.0010	
Styrene	0.6500	
Tetrachloroethene	0.0450	
1,1,2,2-Tetrachloroethane	0.009	
Thallium	0.001	
Tin	0.0010	
Toluene	1.0000	
Total Xylenes	0.0800	
1,1,2-Trichloroethane	0.0167	
Trichloroethene	0.0160	
Trichlorotrifluoroethane	0.0015	
Vanadium	0.0010	
Vinyl Chloride	0.0073	
Zinc	0.0006	(zinc chloride)
Acenapthene	0.1516	
beta-BHC	0.0015	
delta-BHC	0.0015	
gamma-BHC (Lindane)	0.0140	
p-Chloro-m-cresol	0.0500	
p-Cresol	0.0100	

Calculations

log Kp = -2.72 + 0.71 log Kw - 0.0061 MW

	Kp	log Kw	MW (g/mole)
acenapthene	0.15156537557	4	154
2-methylnaphthalene	0.14229184153	3.86	142.2
1,1,2-Trichloroethane	0.01668783511	2.47	133

APPENDIX U
HUMAN HEALTH RISK CALCULATIONS

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE SOIL* INGESTION CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from ingestion of soil

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times CF \times EF \times ED \times IR}{BW \times AT}$$

Where:	C	=	Contaminant concentration in soil (mg/kg)
	CF	=	Conversion factor (kg/mg)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	IR	=	Ingestion rate (mg/day)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF (mg/kg·day)$^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: 4,4'-DDD

$$Intake\ (mg/kg{\cdot}day) = \frac{2.95\ mg/kg \times 480\ mg/day \times 90\ days/yr \times 1\ yr \times 1.0E{-}6\ kg/mg}{70\ kg \times 25{,}550\ days}$$

$$= 7.1E\text{-}08$$

Risk = 7.1E-08 mg/kg·day x 0.24 mg/kg·day^{-1} = 1.7E-08

Example Noncarcinogen: Aluminum

$$Intake\ (mg/kg{\cdot}day) = \frac{4102.12\ mg/kg \times 480\ mg/day \times 90\ days/yr \times 1\ yr \times 1.0E{-}6\ kg/mg}{70\ kg \times 365\ days}$$

$$= 6.9E\text{-}03$$

$$Risk = \frac{6.9E{-}03\ mg/kg{\cdot}day}{1.0\ mg/kg{\cdot}day} = 6.9E{-}03$$

* This example calculation also is applicable for sediment ingestion.
Re: Site 73 Future Construction Worker

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	260
ED = adult exposure duration (yr)	4
IR = adult soil ingestion rate (mg/day)	100
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversio Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	260	4	1E-06	100	70	25550	9.3E-09	7.3E+00	6.79E-08	100%	1460	1.6E-07	0.0E+00	0.00E+00	0%
Aluminum	3492.83	260	4	1E-06	100	70	25550	2.0E-04	0.0E+00	0.00E+00	0%	1460	3.6E-03	1.0E+00	3.55E-03	28%
Iron	2675.75	260	4	1E-06	100	70	25550	1.6E-04	0.0E+00	0.00E+00	0%	1460	2.7E-03	3.0E-01	9.08E-03	72%
TOTAL										6.8E-08					1.3E-02	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	48
ED = adult exposure duration (yr)	30
IR = adult soil ingestion rate (mg/day)	100
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogeni Risk Adult
Benzo(a)pyrene	0.16	48	30	1E-06	100	70	25550	1.3E-08	7.3E+00	9.4E-08	100%	10950	3.0E-08	0.0E+00	0.0E+00	0%
Aluminum	3492.83	48	30	1E-06	100	70	25550	2.8E-04	0.0E+00	0.0E+00	0%	10950	6.6E-04	1.0E+00	6.6E-04	28%
Iron	2675.75	48	30	1E-06	100	70	25550	2.2E-04	0.0E+00	0.0E+00	0%	10950	5.0E-04	3.0E-01	1.7E-03	72%
0	0.00	48	30	1E-06	100	70	25550	0.0E+00	0.0E+00	0.0E+00	0%	10950	0.0E+00	9.0E-02	0.0E+00	0%
TOTAL										9.4E-08					2.3E-03	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adolescent exposure frequency (days/yr)	48
ED = adolescent exposure duration (yr)	9
IR = adolescent soil ingestion rate (mg/day)	100
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (days)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Benzo(a)pyrene	0.16	48	9	1E-06	100	37	25550	7.3E-09	7.30E+00	5.34E-08	100%	3285	5.7E-08	0.00E+00	0.00E+00	0%
Aluminum	3492.83	48	9	1E-06	100	37	25550	1.6E-04	0.00E+00	0.00E+00	0%	3285	1.2E-03	1.00E+00	1.24E-03	28%
Iron	2675.75	48	9	1E-06	100	37	25550	1.2E-04	0.00E+00	0.00E+00	0%	3285	9.5E-04	3.00E-01	3.17E-03	72%
TOTAL										5.3E-08					4.4E-03	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in soil (mg/kg)		
CF = conversion for kg to mg		1E-06
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
IR = adult soil ingestion rate (mg/day)		100
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (days/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	350	30	1E-06	100	70	25550	9.4E-06	7.3E+00	6.86E-07	100%	10950	2.2E-07	0.0E+00	0.0E+00	0%
Aluminum	3492.83	350	30	1E-06	100	70	25550	2.1E-03	0.0E+00	0.00E+00	0%	10950	4.8E-03	1.0E+00	4.8E-03	28%
Iron	2675.75	350	30	1E-06	100	70	25550	1.6E-03	0.0E+00	0.00E+00	0%	10950	3.7E-03	3.0E-01	1.2E-02	72%
TOTAL										6.9E-07					1.7E-02	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	234
ED = adult exposure duration (yr)	9
IR = adult soil ingestion rate (mg/day)	50
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	234	9	1E-06	50	70	25550	9.4E-09	7.3E+00	6.88E-08	100%	3285	7.3E-08	0.0E+00	0.0E+00	0%
Aluminum	3492.83	234	9	1E-06	50	70	25550	2.1E-04	0.0E+00	0.00E+00	0%	3285	1.6E-03	1.0E+00	1.6E-03	28%
Iron	2675.75	234	9	1E-06	50	70	25550	1.6E-04	0.0E+00	0.00E+00	0%	3285	1.2E-03	3.0E-01	4.1E-03	72%
TOTAL										6.9E-08					5.7E-03	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (yr)	6
IR = child soil ingestion rate (mg/day)	200
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Child	Exposure Duration (yr) Child	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)pyrene	0.16	350	6	1E-06	200	15	25550	1.8E-07	7.30E+00	1.28E-06	100%	2190	2.0E-06	0.00E+00	0.0E+00	0%
Aluminum	3492.83	350	6	1E-06	200	15	25550	3.8E-03	0.00E+00	0.00E+00	0%	2190	4.5E-02	1.00E+00	4.5E-02	28%
Iron	2675.75	350	6	1E-06	200	15	25550	2.9E-03	0.00E+00	0.00E+00	0%	2190	3.4E-02	3.00E-01	1.1E-01	72%
TOTAL										1.3E-06					1.6E-01	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = child exposure frequency (days/yr)	234
ED = child exposure duration (yr)	6
IR = child soil ingestion rate (mg/day)	100
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Child	Exposure Duration (yr) Child	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)pyrene	0.16	234	6	1E-06	100	15	25550	5.9E-08	7.30E+00	4.28E-07	100%	2190	6.8E-07	0.00E+00	0.0E+00	0%
Aluminum	3492.83	234	6	1E-06	100	15	25550	1.3E-03	0.00E+00	0.00E+00	0%	2190	1.5E-02	1.00E+00	1.5E-02	28%
Iron	2675.75	234	6	1E-06	100	15	25550	9.8E-04	0.00E+00	0.00E+00	0%	2190	1.1E-02	3.00E-01	3.8E-02	72%
TOTAL										4.3E-07					5.3E-02	

SURFACE SOIL INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	90
ED = adult exposure duration (yr)	1
IR = adult soil ingestion rate (mg/day)	480
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	90	1	1E-06	480	70	25550	3.9E-09	7.3E+00	2.8E-08	100%	365	2.7E-07	0.0E+00	0.0E+00	0%
Aluminum	3492.83	90	1	1E-06	480	70	25550	8.4E-05	0.0E+00	0.0E+00	0%	365	5.9E-03	1.0E+00	5.9E-03	28%
Iron	2675.75	90	1	1E-06	480	70	25550	6.5E-05	0.0E+00	0.0E+00	0%	365	4.5E-03	3.0E-01	1.5E-02	72%
TOTAL										2.8E-08					2.1E-02	

SUBSURFACE SOIL INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Intake from ingestion of soil is calculated as follows:

Intake (mg/kg-day) = C * CF * EF * ED * IR/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = adult exposure frequency (days/yr)	90
ED = adult exposure duration (yr)	1
IR = adult soil ingestion rate (mg/day)	480
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Exposure Frequency (days/yr) Adult	Exposure Duration (yr) Adult	Conversion Factor (kg/mg)	Ingestion Rate (mg/day) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.88	90	1	1E-06	480	70	25550	2.1E-08	7.3E-01	1.6E-08	27%	365	1.5E-06	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.14	90	1	1E-06	480	70	25550	3.4E-09	7.3E+00	2.5E-08	43%	365	2.4E-07	0.0E+00	0.0E+00	0%
4,4'-DDD	2.95	90	1	1E-06	480	70	25550	7.1E-08	2.4E-01	1.7E-08	30%	365	5.0E-06	0.0E+00	0.0E+00	0%
Aluminum	4102.12	90	1	1E-06	480	70	25550	9.9E-05	0.0E+00	0.0E+00	0%	365	6.9E-03	1.0E+00	6.9E-03	33%
Iron	2471.43	90	1	1E-06	480	70	25550	6.0E-05	0.0E+00	0.0E+00	0%	365	4.2E-03	3.0E-01	1.4E-02	67%
TOTAL										5.7E-08					2.1E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency (days/yr)	100
ED = exposure duration (yr)	4
IR = soil ingestion rate (mg/day)	100
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr)	Exposure Duration (yr)	Ingestion Rate (mg/day)	Conversion Factor (kg/mg)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg/day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarcinogenic Risk	Percent Noncarcinogeni Risk
Aluminum	28100.000	100	4	100	1E-06	70	25550	6.3E-04	0.0E+00	0.0E+00	0%	1460	1.1E-02	1.0E+00	1.1E-02	18%
Arsenic	6.630	100	4	100	1E-06	70	25550	1.5E-07	1.5E+00	2.2E-07	100%	1460	2.6E-06	3.0E-04	8.6E-03	14%
Cadmium (soil)	1.900	100	4	100	1E-06	70	25550	4.2E-08	0.0E+00	0.0E+00	0%	1460	7.4E-07	1.0E-03	7.4E-04	1%
Chromium	55.750	100	4	100	1E-06	70	25550	1.2E-06	0.0E+00	0.0E+00	0%	1460	2.2E-05	5.0E-03	4.4E-03	7%
Iron	27400.000	100	4	100	1E-06	70	25550	6.1E-04	0.0E+00	0.0E+00	0%	1460	1.1E-02	3.0E-01	3.6E-02	59%
TOTAL										2.2E-07					6.1E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency (days/yr)	48
ED = exposure duration (yr)	30
IR = soil ingestion rate (mg/day)	100
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr)	Exposure Duration (yr)	Ingestion Rate (mg/day)	Conversion Factor (kg/mg)	Body Weight (kg)	Average Carc Tim (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg/day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	48	30	100	1E-06	70	25550	2.3E-03	0.0E+00	0.0E+00	0%	10950	5.3E-03	1.0E+00	5.3E-03	18%
Arsenic	6.630	48	30	100	1E-06	70	25550	5.3E-07	1.5E+00	8.0E-07	100%	10950	1.2E-06	3.0E-04	4.2E-03	14%
Cadmium (soil)	1.900	48	30	100	1E-06	70	25550	1.5E-07	0.0E+00	0.0E+00	0%	10950	3.6E-07	1.0E-03	3.6E-04	1%
Chromium	55.750	48	30	100	1E-06	70	25550	4.5E-06	0.0E+00	0.0E+00	0%	10950	1.0E-05	5.0E-03	2.1E-03	7%
Iron	27400.000	48	30	100	1E-06	70	25550	2.2E-03	0.0E+00	0.0E+00	0%	10950	5.1E-03	3.0E-01	1.7E-02	59%
TOTAL										8.0E-07					2.9E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency for adolescent (days/yr)	48
ED = exposure duration for adolescent (yr)	9
IR = soil ingestion rate for adolescent (mg/day)	100
BW = body weight for adolescent (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Adolescent	Exposure Duration (yr) Adolescent	Ingestion Rate (mg/day) Adolescent	Conversion Factor (kg/mg)	Body Weight (kg) Adolescent	Average Carc Time (days)	Carc Dose (mg/kg/day) Adolescent	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adolescent	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Aluminum	28100.000	48	9	100	1E-06	37	25550	1.3E-03	0.0E+00	0.0E+00	0%	3285	1.0E-02	1.0E+00	1.0E-02	18%
Arsenic	6.630	48	9	100	1E-06	37	25550	3.0E-07	1.5E+00	4.5E-07	100%	3285	2.4E-06	3.0E-04	7.9E-03	14%
Cadmium (soil)	1.900	48	9	100	1E-06	37	25550	8.7E-08	0.0E+00	0.0E+00	0%	3285	6.8E-07	1.0E-03	6.8E-04	1%
Chromium	55.750	48	9	100	1E-06	37	25550	2.5E-06	0.0E+00	0.0E+00	0%	3285	2.0E-05	5.0E-03	4.0E-03	7%
Iron	27400.000	48	9	100	1E-06	37	25550	1.3E-03	0.0E+00	0.0E+00	0%	3285	9.7E-03	3.0E-01	3.2E-02	59%
TOTAL										4.5E-07					5.5E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency (days/yr)	48
ED = exposure duration (yr)	30
IR = soil ingestion rate (mg/day)	100
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr)	Exposure Duration (yr)	Ingestion Rate (mg/day)	Conversion Factor (kg/mg)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg/day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	48	30	100	1E-06	70	25550	2.3E-03	0.00E+00	0.0E+00	0%	10950	5.3E-03	1.00E+00	5.3E-03	18%
Arsenic	6.630	48	30	100	1E-06	70	25550	5.3E-07	1.50E+00	8.0E-07	100%	10950	1.2E-06	3.00E-04	4.2E-03	14%
Cadmium (soil)	1.900	48	30	100	1E-06	70	25550	1.5E-07	0.00E+00	0.0E+00	0%	10950	3.6E-07	1.00E-03	3.6E-04	1%
Chromium	55.750	48	30	100	1E-06	70	25550	4.5E-06	0.00E+00	0.0E+00	0%	10950	1.0E-05	5.00E-03	2.1E-03	7%
Iron	27400.000	48	30	100	1E-06	70	25550	2.2E-03	0.00E+00	0.0E+00	0%	10950	5.1E-03	3.00E-01	1.7E-02	59%
TOTAL										8.0E-07					2.9E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency (days/yr)	48
ED = exposure duration (yr)	30
IR = soil ingestion rate (mg/day)	100
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr)	Exposure Duration (yr)	Ingestion Rate (mg/day)	Conversion Factor (kg/mg)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg/day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	48	30	100	1E-06	70	25550	2.3E-03	0.0E+00	0.0E+00	0%	10950	5.3E-03	1.0E+00	5.3E-03	18%
Arsenic	6.630	48	30	100	1E-06	70	25550	5.3E-07	1.5E+00	8.0E-07	100%	10950	1.2E-06	3.0E-04	4.2E-03	14%
Cadmium (soil)	1.900	48	30	100	1E-06	70	25550	1.5E-07	0.0E+00	0.0E+00	0%	10950	3.6E-07	1.0E-03	3.6E-04	1%
Chromium	55.750	48	30	100	1E-06	70	25550	4.5E-06	0.0E+00	0.0E+00	0%	10950	1.0E-05	5.0E-03	2.1E-03	7%
Iron	27400.000	48	30	100	1E-06	70	25550	2.2E-03	0.0E+00	0.0E+00	0%	10950	5.1E-03	3.0E-01	1.7E-02	59%
TOTAL										8.0E-07					2.9E-02	

SEDIMENT INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency (days/yr)	48
ED = exposure duration (yr)	9
IR = soil ingestion rate (mg/day)	50
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr)	Exposure Duration (yr)	Ingestion Rate (mg/day)	Conversion Factor (kg/mg)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg/day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	7061.010	48	9	50	1E-06	70	25550	8.5E-05	0.0E+00	0.0E+00	0%	3285	6.6E-04	1.0E+00	6.6E-04	10%
Arsenic	6.630	48	9	50	1E-06	70	25550	8.0E-08	1.5E+00	1.2E-07	100%	3285	6.2E-07	3.0E-04	2.1E-03	32%
Cadmium (soil)	1.900	48	9	50	1E-06	70	25550	2.3E-08	0.0E+00	0.0E+00	0%	3285	1.8E-07	1.0E-03	1.8E-04	3%
Chromium	55.750	48	9	50	1E-06	70	25550	6.7E-07	0.0E+00	0.0E+00	0%	3285	5.2E-06	5.0E-03	1.0E-03	16%
Iron	8253.030	48	9	50	1E-06	70	25550	1.0E-04	0.0E+00	0.0E+00	0%	3285	7.8E-04	3.0E-01	2.6E-03	39%
TOTAL										1.2E-07					6.5E-03	

SEDIMENT INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency for child (days/yr)	48
ED = exposure duration for child (yr)	6
IR = soil ingestion rate for child (mg/day)	200
BW = body weight for child (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Child	Exposure Duration (yr) Child	Ingestion Rate (mg/day) Child	Conversion Factor (kg/mg)	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	28100.000	48	6	200	1E-06	15	25550	4.2E-03	0.0E+00	0.0E+00	0%	2190	4.9E-02	1.0E+00	4.9E-02	18%
Arsenic	6.630	48	6	200	1E-06	15	25550	1.0E-06	1.5E+00	1.5E-06	100%	2190	1.2E-05	3.0E-04	3.9E-02	14%
Cadmium (soil)	1.900	48	6	200	1E-06	15	25550	2.9E-07	0.0E+00	0.0E+00	0%	2190	3.3E-06	1.0E-03	3.3E-03	1%
Chromium	55.750	48	6	200	1E-06	15	25550	8.4E-06	0.0E+00	0.0E+00	0%	2190	9.8E-05	5.0E-03	2.0E-02	7%
Iron	27400.000	48	6	200	1E-06	15	25550	4.1E-03	0.0E+00	0.0E+00	0%	2190	4.8E-02	3.0E-01	1.6E-01	59%
TOTAL										1.5E-06					2.7E-01	

SEDIMENT INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from ingestion of sediment is calculated as follows:

Intake (mg/kg-day) = C * IR * CF * EF * ED/ BW * ATC or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in sediment (mg/kg)	
CF = conversion for kg to mg	1E-06
EF = exposure frequency for child (days/yr)	48
ED = exposure duration for child (yr)	6
IR = soil ingestion rate for child (mg/day)	100
BW = body weight for child (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days/year)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Exposure Frequency (days/yr) Child	Exposure Duration (yr) Child	Ingestion Rate (mg/day) Child	Conversion Factor (kg/mg)	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Slope Factor (mg/kg/day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Reference Dose (mg/kg/day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	7061.010	48	6	100	1E-06	15	25550	5.3E-04	0.0E+00	0.0E+00	0%	2190	6.2E-03	1.0E+00	6.2E-03	10%
Arsenic	6.630	48	6	100	1E-06	15	25550	5.0E-07	1.5E+00	7.5E-07	100%	2190	5.8E-06	3.0E-04	1.9E-02	32%
Cadmium (soil)	1.900	48	6	100	1E-06	15	25550	1.4E-07	0.0E+00	0.0E+00	0%	2190	1.7E-06	1.0E-03	1.7E-03	3%
Chromium	55.750	48	6	100	1E-06	15	25550	4.2E-06	0.0E+00	0.0E+00	0%	2190	4.9E-05	5.0E-03	9.8E-03	16%
Iron	8253.030	48	6	100	1E-06	15	25550	6.2E-04	0.0E+00	0.0E+00	0%	2190	7.2E-03	3.0E-01	2.4E-02	39%
TOTAL										7.5E-07					6.1E-02	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE DERMAL CONTACT WITH SOIL* CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from dermal contact with soil

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times CF \times SA \times AF \times ABS \times EF \times ED}{BW \times AT}$$

Where:	C	=	Contaminant concentration in soil (mg/kg)
	CF	=	Conversion factor (kg/mg)
	SA	=	Surface available for contact (cm^2/event)
	AF	=	Soil to skin adherence factor (mg/cm^2)
	ABS	=	Fraction absorbed (percent) - 0.01 organics, 0.001 inorganics
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	IR	=	Ingestion rate (mg/day)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x dermally - adjusted CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/ dermally - adjusted RfD (mg/kg·day)

Example Carcinogen: 4,4'-DDD

$$Intake\ (mg/kg{\cdot}day) = \frac{2.95\ mg/kg \times 1.0E{-}06\ kg/mg \times 4{,}300\ cm^2/event \times 0.01 \times 1\ mg/cm^2 \times 90\ days/yr \times 1\ yr}{70\ kg \times 25{,}550\ days}$$

$$= 6.4E\text{-}09$$

Risk = 6.4E-09 mg/kg·day x 1.2 $mg/kg{\cdot}day^{-1}$ = 7.7E-09

Example Noncarcinogen: Aluminum

$$Intake\ (mg/kg{\cdot}day) = \frac{4102.12\ mg/kg \times 1.0E{-}06\ kg/mg \times 4{,}300\ cm^2/event \times 1\ mg/cm^2 \times 0.001 \times 90\ days/yr \times 1\ yr}{70\ kg \times 365\ days}$$

$$= 6.2E\text{-}05$$

$$Risk = \frac{6.2E{-}05\ mg/kg{\cdot}day}{2.0E{-}01\ mg/kg{\cdot}day} = 3.1E{-}04$$

* This example calculation also is applicable for sediment dermal contact.
Re: Site 73 Future Construction Worker

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	260
ED = adult exposure duration (years)	4
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

Note: Inputs are scenario and site specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)◆	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Tim (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	1E-06	4300	1	0.01	260	4	70	25550	4.0E-09	1.46E+01	5.84E-08	100%	1460	7.0E-08	0.00E+00	0.00E+00	0%
Aluminum	3492.83	1E-06	4300	1	0.001	260	4	70	25550	8.7E-06	0.00E+00	0.00E+00	0%	1460	1.5E-04	2.00E-01	7.64E-04	28%
Iron	2675.75	1E-06	4300	1	0.001	260	4	70	25550	6.7E-06	0.00E+00	0.00E+00	0%	1460	1.2E-04	6.00E-02	1.95E-03	72%
TOTAL												5.8E-08					2.7E-03	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	5800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	48
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	1E-06	5800	1	0.01	48	30	70	25550	7.5E-09	1.5E+01	1.1E-07	100%	10950	1.74E-08	0.00E+00	0.00E+00	0%
Aluminum	3492.83	1E-06	5800	1	0.001	48	30	70	25550	1.6E-05	0.0E+00	0.0E+00	0%	10950	3.81E-05	2.00E-01	1.90E-04	28%
Iron	2675.75	1E-06	5800	1	0.001	48	30	70	25550	1.2E-05	0.0E+00	0.0E+00	0%	10950	2.92E-05	6.00E-02	4.86E-04	72%
TOTAL												1.1E-07					6.8E-04	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adolescent exposed skin surface area (cm2)	3480
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adolescent exposure frequency (events/yr)	48
ED = adolescent exposure duration (years)	9
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (days)	Carc Dose (mg/kg/day) Adolescent	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adolescent	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Benzo(a)pyrene	0.16	1E-06	3480	1	0.01	48	9	37	25550	2.5E-09	1.5E+01	3.71E-08	100%	3285	2.0E-08	0.0E+00	0.00E+00	0%
Aluminum	3492.83	1E-06	3480	1	0.001	48	9	37	25550	5.6E-08	0.0E+00	0.00E+00	0%	3285	4.3E-05	2.0E-01	2.16E-04	28%
Iron	2675.75	1E-06	3480	1	0.001	48	9	37	25550	4.3E-06	0.0E+00	0.00E+00	0%	3285	3.3E-05	6.0E-02	5.52E-04	72%
TOTAL												3.7E-08					7.7E-04	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	5800
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	350
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Tim (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	1E-06	5800	1	0.01	350	30	70	25550	5.4E-08	1.5E+01	7.95E-07	100%	10950	1.3E-07	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1E-06	5800	1	0.001	350	30	70	25550	1.2E-04	0.0E+00	0.00E+00	0%	10950	2.8E-04	2.0E-01	1.4E-03	28%
Iron	2675.75	1E-06	5800	1	0.001	350	30	70	25550	9.1E-05	0.0E+00	0.00E+00	0%	10950	2.1E-04	6.0E-02	3.5E-03	72%
TOTAL												8.0E-07					4.9E-03	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	5000
AF = soil to skin adherence factor (mg/cm2)	0.2
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	234
ED = adult exposure duration (years)	9
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	1E-06	5000	0.2	0.01	234	9	70	25550	1.9E-09	1.5E+01	2.75E-08	100%	3285	1.5E-08	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1E-06	5000	0.2	0.001	234	9	70	25550	4.1E-06	0.0E+00	0.00E+00	0%	3285	3.2E-05	2.0E-01	1.6E-04	28%
Iron	2675.75	1E-06	5000	0.2	0.001	234	9	70	25550	3.2E-06	0.0E+00	0.00E+00	0%	3285	2.5E-05	6.0E-02	4.1E-04	72%
TOTAL												2.8E-08					5.7E-04	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = child exposed skin surface area (cm2)	2300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = child exposure frequency (events/yr)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Child	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Child	Exposure Duration (yrs) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)pyrene	0.16	1E-06	2300	1	0.01	350	6	15	25550	2.0E-08	1.5E+01	2.94E-07	100%	2190	2.4E-07	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1E-06	2300	1	0.001	350	6	15	25550	4.4E-05	0.0E+00	0.00E+00	0%	2190	5.1E-04	2.0E-01	2.6E-03	28%
Iron	2675.75	1E-06	2300	1	0.001	350	6	15	25550	3.4E-05	0.0E+00	0.00E+00	0%	2190	3.9E-04	6.0E-02	6.6E-03	72%
TOTAL												2.9E-07					9.1E-03	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = child exposed skin surface area (cm2)	1745
AF = soil to skin adherence factor (mg/cm2)	0.2
Abs = fraction absorbed (unitless)	Specific
EF = child exposure frequency (events/yr)	234
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Child	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Child	Exposure Duration (yrs) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Benzo(a)pyrene	0.18	1E-06	1745	0.2	0.01	234	6	15	25550	2.0E-09	1.5E+01	2.99E-08	100%	2190	2.4E-08	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1E-06	1745	0.2	0.001	234	6	15	25550	4.5E-06	0.0E+00	0.00E+00	0%	2190	5.2E-05	2.0E-01	2.6E-04	28%
Iron	2675.75	1E-06	1745	0.2	0.001	234	6	15	25550	3.4E-06	0.0E+00	0.00E+00	0%	2190	4.0E-05	6.0E-02	6.7E-04	72%
TOTAL												3.0E-08					9.3E-04	

SUBSURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	90
ED = adult exposure duration (years)	1
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = day per year (day/yr)	365
CSF,= cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Dermally-Adjusted Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)anthracene	0.88	1E-06	4300	1	0.01	90	1	70	25550	1.9E-09	1.5E+00	2.8E-09	27%	365	1.3E-07	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.14	1E-06	4300	1	0.01	90	1	70	25550	3.0E-10	1.5E+01	4.4E-09	43%	365	2.1E-08	0.0E+00	0.0E+00	0%
4,4'-DDD	2.95	1E-06	4300	1	0.01	90	1	70	25550	6.4E-09	4.8E-01	3.1E-09	30%	365	4.5E-07	0.0E+00	0.0E+00	0%
Aluminum	4102.12	1E-06	4300	1	0.001	90	1	70	25550	8.9E-07	0.0E+00	0.0E+00	0%	365	6.2E-05	2.0E-01	3.1E-04	33%
Iron	2471.43	1E-06	4300	1	0.001	90	1	70	25550	5.3E-07	0.0E+00	0.0E+00	0%	365	3.7E-05	6.0E-02	6.2E-04	67%
TOTAL												1.0E-08					9.3E-04	

SURFACE SOIL DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Dermal contact with soil is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1E-06
SA = adult exposed skin surface area (cm2)	4300
AF = soil to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless)	Specific
EF = adult exposure frequency (events/yr)	90
ED = adult exposure duration (years)	1
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adult	Adherence Factor (mg/cm2)	Fraction Absorbed (%)	Exposure Frequency (events/yr) Adult	Exposure Duration (yrs) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg/day) Adult	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adult	Dermally-Adjusted Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Benzo(a)pyrene	0.16	1E-06	4300	1	0.01	90	1	70	25550	3.5E-10	1.5E+01	5.1E-09	100%	365	2.4E-08	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1E-06	4300	1	0.001	90	1	70	25550	7.6E-07	0.0E+00	0.0E+00	0%	365	5.3E-05	2.0E-01	2.6E-04	28%
Iron	2675.75	1E-06	4300	1	0.001	90	1	70	25550	5.8E-07	0.0E+00	0.0E+00	0%	365	4.1E-05	6.0E-02	6.8E-04	72%
TOTAL												5.1E-09					9.4E-04	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = exposed skin surface area (cm2)	4300
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = exposure frequency (events/yr)	100
ED = exposure duration (years)	4
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2)	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogeni Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	1E-06	4300	1	0.001	100	4	70	25550	2.7E-05	0.0E+00	0.0E+00	0%	1460	4.7E-04	5.0E-01	9.5E-04	8%
Arsenic	6.630	1E-06	4300	1	0.001	100	4	70	25550	6.4E-09	7.5E+00	4.8E-08	100%	1460	1.1E-07	6.0E-05	1.9E-03	16%
Cadmium (soil)	1.900	1E-06	4300	1	0.001	100	4	70	25550	1.8E-09	0.0E+00	0.0E+00	0%	1460	3.2E-08	2.0E-04	1.6E-04	1%
Chromium	55.750	1E-06	4300	1	0.001	100	4	70	25550	5.4E-08	0.0E+00	0.0E+00	0%	1460	9.4E-07	1.0E-03	9.4E-04	8%
Iron	27400.000	1E-06	4300	1	0.001	100	4	70	25550	2.6E-05	0.0E+00	0.0E+00	0%	1460	4.6E-04	6.0E-02	7.7E-03	66%
TOTAL												4.8E-08					1.2E-02	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

The intake from dermal contact to sediment is calculted as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = exposed skin surface area (cm2)	5800
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = exposure frequency (events/yr)	48
ED = exposure duration (years)	30
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2)	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.0E+00	0.0E+00	0%	10950	3.1E-04	2.0E-01	1.5E-03	18%
Arsenic	6.630	1E-06	5800	1	0.001	48	30	70	25550	3.1E-08	7.5E+00	2.3E-07	100%	10950	7.2E-08	6.0E-05	1.2E-03	14%
Cadmium (soil)	1.900	1E-06	5800	1	0.001	48	30	70	25550	8.9E-09	0.0E+00	0.0E+00	0%	10950	2.1E-08	2.0E-04	1.0E-04	1%
Chromium	55.750	1E-06	5800	1	0.001	48	30	70	25550	2.6E-07	0.0E+00	0.0E+00	0%	10950	6.1E-07	1.0E-03	6.1E-04	7%
Iron	27400.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.0E+00	0.0E+00	0%	10950	3.0E-04	6.0E-02	5.0E-03	59%
TOTAL												2.3E-07					8.4E-03	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = adolescent exposed skin surface area (cm2)	3480
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = adolescent exposure frequency (events/yr)	48
ED = adolescent exposure duration (years)	9
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Adolescent	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr) Adolescent	Exposure Duration (yrs) Adolescent	Body Weight (kg) Adolescent	Average Carc Time (days)	Carc Dose (mg/kg/day) Adolescent	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Adolescent	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Aluminum	28100.000	1E-06	3480	1	0.001	48	9	37	25550	4.5E-05	0.0E+00	0.0E+00	0%	3285	3.5E-04	2.0E-01	1.7E-03	18%
Arsenic	6.630	1E-06	3480	1	0.001	48	9	37	25550	1.1E-08	7.5E+00	7.9E-08	100%	3285	8.2E-08	6.0E-05	1.4E-03	14%
Cadmium (soil)	1.900	1E-06	3480	1	0.001	48	9	37	25550	3.0E-09	0.0E+00	0.0E+00	0%	3285	2.4E-08	2.0E-04	1.2E-04	1%
Chromium	55.750	1E-06	3480	1	0.001	48	9	37	25550	8.9E-08	0.0E+00	0.0E+00	0%	3285	6.9E-07	1.0E-03	6.9E-04	7%
Iron	27400.000	1E-06	3480	1	0.001	48	9	37	25550	4.4E-05	0.0E+00	0.0E+00	0%	3285	3.4E-04	6.0E-02	5.6E-03	59%
TOTAL												7.9E-08					9.6E-03	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

The intake from dermal contact to sediment is calculted as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = exposed skin surface area (cm2)	5800
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = exposure frequency (events/yr)	48
ED = exposure duration (years)	30
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2)	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Dermal Adjusted Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Dermally-Adjusted Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.00E+00	0.0E+00	0%	10950	3.1E-04	2.00E-01	1.5E-03	18%
Arsenic	6.630	1E-06	5800	1	0.001	48	30	70	25550	3.1E-08	7.50E+00	2.3E-07	100%	10950	7.2E-08	6.00E-05	1.2E-03	14%
Cadmium (soil)	1.900	1E-06	5800	1	0.001	48	30	70	25550	8.9E-09	0.00E+00	0.0E+00	0%	10950	2.1E-08	2.00E-04	1.0E-04	1%
Chromium	55.750	1E-06	5800	1	0.001	48	30	70	25550	2.6E-07	0.00E+00	0.0E+00	0%	10950	6.1E-07	1.00E-03	6.1E-04	7%
Iron	27400.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.00E+00	0.0E+00	0%	10950	3.0E-04	6.00E-02	5.0E-03	59%
TOTAL												2.3E-07					8.4E-03	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = exposed skin surface area (cm2)	5800
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = exposure frequency (events/yr)	48
ED = exposure duration (years)	30
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2)	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	28100.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.0E+00	0.0E+00	0%	10950	3.1E-04	2.0E-01	1.5E-03	18%
Arsenic	6.630	1E-06	5800	1	0.001	48	30	70	25550	3.1E-08	7.5E+00	2.3E-07	100%	10950	7.2E-08	6.0E-05	1.2E-03	14%
Cadmium (soil)	1.900	1E-06	5800	1	0.001	48	30	70	25550	8.9E-09	0.0E+00	0.0E+00	0%	10950	2.1E-08	2.0E-04	1.0E-04	1%
Chromium	55.750	1E-06	5800	1	0.001	48	30	70	25550	2.6E-07	0.0E+00	0.0E+00	0%	10950	6.1E-07	1.0E-03	6.1E-04	7%
Iron	27400.000	1E-06	5800	1	0.001	48	30	70	25550	1.3E-04	0.0E+00	0.0E+00	0%	10950	3.0E-04	6.0E-02	5.0E-03	59%
TOTAL												2.3E-07					8.4E-03	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = exposed skin surface area (cm2)	5000
AF = sediment to skin adherence factor (mg/cm2)	0.2
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = exposure frequency (events/yr)	48
ED = exposure duration (years)	9
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2)	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	7061.010	1E-06	5000	0.2	0.001	48	9	70	25550	1.7E-06	0.0E+00	0.0E+00	0%	3285	1.3E-05	2.0E-01	6.6E-05	10%
Arsenic	6.630	1E-06	5000	0.2	0.001	48	9	70	25550	1.6E-09	7.5E+00	1.2E-08	100%	3285	1.2E-08	6.0E-05	2.1E-04	32%
Cadmium (soil)	1.900	1E-06	5000	0.2	0.001	48	9	70	25550	4.6E-10	0.0E+00	0.0E+00	0%	3285	3.6E-09	2.0E-04	1.8E-05	3%
Chromium	55.750	1E-06	5000	0.2	0.001	48	9	70	25550	1.3E-08	0.0E+00	0.0E+00	0%	3285	1.0E-07	1.0E-03	1.0E-04	16%
Iron	8253.030	1E-06	5000	0.2	0.001	48	9	70	25550	2.0E-06	0.0E+00	0.0E+00	0%	3285	1.6E-05	6.0E-02	2.6E-04	39%
TOTAL												1.2E-08					6.5E-04	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = child exposed skin surface area (cm2)	2300
AF = sediment to skin adherence factor (mg/cm2)	1
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = child exposure frequency (events/yr)	48
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Child	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr) Child	Exposure Duration (yrs) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	28100.000	1E-06	2300	1	0.001	48	6	15	25550	4.9E-05	0.0E+00	0.0E+00	0%	2190	5.7E-04	2.0E-01	2.8E-03	18%
Arsenic	6.630	1E-06	2300	1	0.001	48	6	15	25550	1.1E-08	7.5E+00	8.6E-08	100%	2190	1.3E-07	6.0E-05	2.2E-03	14%
Cadmium (soil)	1.900	1E-06	2300	1	0.001	48	6	15	25550	3.3E-09	0.0E+00	0.0E+00	0%	2190	3.8E-08	2.0E-04	1.9E-04	1%
Chromium	55.750	1E-06	2300	1	0.001	48	6	15	25550	9.6E-08	0.0E+00	0.0E+00	0%	2190	1.1E-06	1.0E-03	1.1E-03	7%
Iron	27400.000	1E-06	2300	1	0.001	48	6	15	25550	4.7E-05	0.0E+00	0.0E+00	0%	2190	5.5E-04	6.0E-02	9.2E-03	59%
TOTAL												8.6E-08					1.6E-02	

SEDIMENT DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

The intake from dermal contact to sediment is calculated as follows:

Intake (mg/kg-day) = C * CF * SA * AF * Abs * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	
CF = conversion factor (kg/mg)	1.00E-06
SA = child exposed skin surface area (cm2)	1745
AF = sediment to skin adherence factor (mg/cm2)	0.2
Abs = fraction absorbed (unitless) (contaminant specific)	Specific
EF = child exposure frequency (events/yr)	48
ED = child expsosure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/kg)	Conversion Factor (kg/mg)	Surface Area (cm2) Child	Adherence Factor (mg/cm2)	ABS Factor (%)	Exposure Frequency (events/yr) Child	Exposure Duration (yrs) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg/day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	7061.010	1E-06	1745	0.2	0.001	48	6	15	25550	1.9E-06	0.0E+00	0.0E+00	0%	2190	2.2E-05	2.0E-01	1.1E-04	10%
Arsenic	6.630	1E-06	1745	0.2	0.001	48	6	15	25550	1.7E-09	7.5E+00	1.3E-08	100%	2190	2.0E-08	6.0E-05	3.4E-04	32%
Cadmium (soil)	1.900	1E-06	1745	0.2	0.001	48	6	15	25550	5.0E-10	0.0E+00	0.0E+00	0%	2190	5.8E-09	2.0E-04	2.9E-05	3%
Chromium	55.750	1E-06	1745	0.2	0.001	48	6	15	25550	1.5E-08	0.0E+00	0.0E+00	0%	2190	1.7E-07	1.0E-03	1.7E-04	16%
Iron	8253.030	1E-06	1745	0.2	0.001	48	6	15	25550	2.2E-08	0.0E+00	0.0E+00	0%	2190	2.5E-05	6.0E-02	4.2E-04	39%
TOTAL												1.3E-08					1.1E-03	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE INHALATION OF PARTICULATES CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from the inhalation of soil particulates

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED \times 1/PEF}{BW \times AT}$$

Where:	C	=	Contaminant concentration in soil (mg/kg)
	IR	=	Inhalation rate (m^3/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	PEF	=	Particulate Emission Factor (m^3/kg)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Benzo(a)pyrene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.16\ mg/kg \times 20\ m^3/day \times 90\ days/yr \times 1\ yr \times 1/(1.32E{+}9\ m^3/kg)}{70\ kg \times 25{,}550\ days}$$

$$= 1.2E\text{-}13$$

Risk = 1.2E-13 mg/kg day x 6.1 $mg/kg\ day^{-1}$ = 7.4E-13

Example Noncarcinogen: No noncarcinogenic COPC with inhalation RfD

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3/day)	20
EF = adult exposure frequency (days)	260
ED = adult exposure duration (years)	4
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Tim (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	260	20	4	70	25550	1.4E-12	6.1E+00	8.6E-12	100%	1460	2.5E-11	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	260	20	4	70	25550	3.1E-08	0.0E+00	0.0E+00	0%	1460	5.4E-07	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	260	20	4	70	25550	2.4E-08	0.0E+00	0.0E+00	0%	1460	4.1E-07	0.0E+00	0.0E+00	0%
TOTAL										8.6E-12					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Specific
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3/day)	20
EF = adult exposure frequency (days)	48
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Tim (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogeni Risk
Benzo(a)pyrene	0.16	1.3E+09	48	20	30	70	25550	2.0E-12	6.1E+00	1.19E-11	100%	10950	4.6E-12	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	48	20	30	70	25550	4.3E-08	0.0E+00	0.00E+00	0%	10950	9.9E-08	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	48	20	30	70	25550	3.3E-08	0.0E+00	0.00E+00	0%	10950	7.6E-08	0.0E+00	0.0E+00	0%
TOTAL										1.2E-11					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3/day)	20
EF = adolescent exposure frequency (days)	48
ED = adolescent exposure duration (years)	9
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogeni Risk
Benzo(a)pyrene	0.16	1.3E+09	48	20	9	37	25550	1.1E-12	6.1E+00	6.8E-12	100%	3285	8.6E-12	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	48	20	9	37	25550	2.4E-08	0.0E+00	0.0E+00	0%	3285	1.9E-07	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	48	20	9	37	25550	1.9E-08	0.0E+00	0.0E+00	0%	3285	1.4E-07	0.0E+00	0.0E+00	0%
TOTAL										6.8E-12					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	20
EF = adult exposure frequency (days)	350
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	350	20	30	70	25550	1.4E-11	6.1E+00	8.7E-11	100%	10950	3.3E-11	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	350	20	30	70	25550	3.1E-07	0.0E+00	0.0E+00	0%	10950	7.2E-07	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	350	20	30	70	25550	2.4E-07	0.0E+00	0.0E+00	0%	10950	5.6E-07	0.0E+00	0.0E+00	0%
TOTAL										8.7E-11					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	20
EF = adult exposure frequency (days)	234
ED = adult exposure duration (years)	9
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	234	20	9	70	25550	2.9E-12	6.1E+00	1.7E-11	100%	3285	2.2E-11	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	234	20	9	70	25550	6.2E-08	0.0E+00	0.0E+00	0%	3285	4.8E-07	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	234	20	9	70	25550	4.8E-08	0.0E+00	0.0E+00	0%	3285	3.7E-07	0.0E+00	0.0E+00	0%
TOTAL										1.7E-11					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	15
EF = child exposure frequency (days)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	350	15	6	15	25550	1.0E-11	6.1E+00	6.1E-11	100%	2190	1.2E-10	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	350	15	6	15	25550	2.2E-07	0.0E+00	0.0E+00	0%	2190	2.5E-06	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	350	15	6	15	25550	1.7E-07	0.0E+00	0.0E+00	0%	2190	1.9E-06	0.0E+00	0.0E+00	0%
TOTAL										6.1E-11					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/	Calculated
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3)	15
EF = child exposure frequency (days)	234
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen	6
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Conrtribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	234	15	6	15	25550	8.7E-12	6.1E+00	4.1E-11	100%	2190	7.8E-11	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	234	15	6	15	25550	1.5E-07	0.0E+00	0.0E+00	0%	2190	1.7E-06	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	234	15	6	15	25550	1.1E-07	0.0E+00	0.0E+00	0%	2190	1.3E-06	0.0E+00	0.0E+00	0%
TOTAL										4.1E-11					0.0E+00	

SURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Specific
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3/day)	20
EF = adult exposure frequency (days)	90
ED = adult exposure duration (years)	1
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)pyrene	0.16	1.3E+09	90	20	1	70	25550	1.2E-13	6.1E+00	7.4E-13	100%	365	8.5E-12	0.0E+00	0.0E+00	0%
Aluminum	3492.83	1.3E+09	90	20	1	70	25550	2.7E-09	0.0E+00	0.0E+00	0%	365	1.9E-07	0.0E+00	0.0E+00	0%
Iron	2675.75	1.3E+09	90	20	1	70	25550	2.0E-09	0.0E+00	0.0E+00	0%	365	1.4E-07	0.0E+00	0.0E+00	0%
TOTAL										7.4E-13					0.0E+00	

SUBSURFACE SOIL PARTICULATE INHALATION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE DUMP
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CONSTRUCTION WORKER

Intake from the inhalation of particulates is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * IR * 1/PEF)/(BW * ATc or ATnc * DY)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in soil (mg/kg)	Specific
CSF = carcinogenic slope factor	Specific
RfD = reference dose for noncarcinogen	Specific
IR = inhalation rate (m3/day)	20
EF = adult exposure frequency (days)	90
ED = adult exposure duration (years)	1
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	1
DY = day per year (day/yr)	365
PEF = particulate emission factor (m3/kg)	1.32E+09

COPC	Concentration Carcinogen (mg/kg)	Particulate Emission Factor (m3/kg)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Contribution to Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Benzo(a)anthracene	0.88	1.3E+09	90	20	1	70	25550	6.7E-13	6.1E-01	4.1E-13	39%	365	4.7E-11	0.0E+00	0.0E+00	0%
Benzo(a)pyrene	0.14	1.3E+09	90	20	1	70	25550	1.1E-13	6.1E+00	6.5E-13	61%	365	7.5E-12	0.0E+00	0.0E+00	0%
4,4'-DDD	2.95	1.3E+09	90	20	1	70	25550	2.3E-12	0.0E+00	0.0E+00	0%	365	1.6E-10	0.0E+00	0.0E+00	0%
Aluminum	4102.12	1.3E+09	90	20	1	70	25550	3.1E-09	0.0E+00	0.0E+00	0%	365	2.2E-07	0.0E+00	0.0E+00	0%
Iron	2471.43	1.3E+09	90	20	1	70	25550	1.9E-09	0.0E+00	0.0E+00	0%	365	1.3E-07	0.0E+00	0.0E+00	0%
TOTAL										1.1E-12					0.0E+00	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE GROUNDWATER INGESTION CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from ingestion of groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED}{BW \times AT}$$

Where:	C	=	Contaminant concentration in groundwater (mg/L)
	IR	=	Daily intake ingestion rate (L/day)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.002\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

$$= 2.3E\text{-}05$$

Risk = 2.3E-05 mg/kg·day x 2.9E-02 $mg/kg{\cdot}day^{-1}$ = 6.8E-07

Example Noncarcinogen: Barium

$$Intake\ (mg/kg{\cdot}day) = \frac{0.06\ mg/L \times 2\ L/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

$$= 1.6E\text{-}03$$

$$Risk = \frac{1.6E{-}03\ mg/kg{\cdot}day}{7.0E{-}02\ mg/kg{\cdot}day} = 2.3E{-}02$$

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = adult daily water ingestion rate (L/Day)	2
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (yr)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinog Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinoge Risk Adult	Percent Noncarcio Risk Adult
1,2-Dichloroethane	0.0007	2	350	30	70	25550	8.2E-06	9.1E-02	7.5E-07	0%	10950	1.9E-05	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.0740	2	350	30	70	25550	8.7E-04	0.0E+00	0.0E+00	0%	10950	2.0E-03	1.0E-02	2.0E-01	2%
Benzene	0.0180	2	350	30	70	25550	2.1E-04	2.9E-02	6.1E-06	1%	10950	4.9E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.0230	2	350	30	70	25550	2.7E-04	1.9E+00	5.1E-04	96%	10950	6.3E-04	0.0E+00	0.0E+00	0%
Trichloroethene	0.1100	2	350	30	70	25550	1.3E-03	1.1E-02	1.4E-05	3%	10950	3.0E-03	6.0E-03	5.0E-01	5%
Aluminum	29.7000	2	350	30	70	25550	3.5E-01	0.0E+00	0.0E+00	0%	10950	8.1E-01	1.0E+00	8.1E-01	8%
Barium	2.0500	2	350	30	70	25550	2.4E-02	0.0E+00	0.0E+00	0%	10950	5.6E-02	7.0E-02	8.0E-01	8%
Chromium	0.2100	2	350	30	70	25550	2.5E-03	0.0E+00	0.0E+00	0%	10950	5.8E-03	5.0E-03	1.2E+00	11%
Cobalt	0.5300	2	350	30	70	25550	6.2E-03	0.0E+00	0.0E+00	0%	10950	1.5E-02	6.0E-02	2.4E-01	2%
Copper	0.2690	2	350	30	70	25550	3.2E-03	0.0E+00	0.0E+00	0%	10950	7.4E-03	4.0E-02	1.8E-01	2%
Iron	38.8000	2	350	30	70	25550	4.6E-01	0.0E+00	0.0E+00	0%	10950	1.1E+00	3.0E-01	3.5E+00	35%
Manganese	0.5340	2	350	30	70	25550	6.3E-03	0.0E+00	0.0E+00	0%	10950	1.5E-02	2.3E-02	6.4E-01	6%
Vanadium	0.5180	2	350	30	70	25550	6.1E-03	0.0E+00	0.0E+00	0%	10950	1.4E-02	7.0E-03	2.0E+00	20%
TOTAL									5.34E-04					10.10	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = adult daily water ingestion rate (L/Day)		2
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogeni Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcionogenic Risk Adult
1,2-Dichloroethane	0.00046	2	350	30	70	25550	5.4E-06	9.1E-02	4.9E-07	1%	10950	1.3E-05	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	2	350	30	70	25550	6.6E-05	0.0E+00	0.0E+00	0%	10950	1.6E-04	1.0E-02	1.6E-02	2%
Benzene	0.00200	2	350	30	70	25550	2.3E-05	2.9E-02	6.8E-07	2%	10950	5.5E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	2	350	30	70	25550	1.7E-05	1.9E+00	3.3E-05	94%	10950	4.0E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	2	350	30	70	25550	9.3E-05	1.1E-02	1.0E-06	3%	10950	2.2E-04	6.0E-03	3.6E-02	4%
Aluminum	0.71060	2	350	30	70	25550	8.3E-03	0.0E+00	0.0E+00	0%	10950	1.9E-02	1.0E+00	1.9E-02	2%
Barium	0.05981	2	350	30	70	25550	7.0E-04	0.0E+00	0.0E+00	0%	10950	1.6E-03	7.0E-02	2.3E-02	3%
Chromium	0.00795	2	350	30	70	25550	9.3E-05	0.0E+00	0.0E+00	0%	10950	2.2E-04	5.0E-03	4.4E-02	5%
Cobalt	0.02087	2	350	30	70	25550	2.5E-04	0.0E+00	0.0E+00	0%	10950	5.7E-04	6.0E-02	9.5E-03	1%
Copper	0.00762	2	350	30	70	25550	8.9E-05	0.0E+00	0.0E+00	0%	10950	2.1E-04	4.0E-02	5.2E-03	1%
Iron	5.80845	2	350	30	70	25550	6.8E-02	0.0E+00	0.0E+00	0%	10950	1.6E-01	3.0E-01	5.3E-01	61%
Manganese	0.12210	2	350	30	70	25550	1.4E-03	0.0E+00	0.0E+00	0%	10950	3.3E-03	2.3E-02	1.5E-01	17%
Vanadium	0.00878	2	350	30	70	25550	1.0E-04	0.0E+00	0.0E+00	0%	10950	2.4E-04	7.0E-03	3.4E-02	4%
TOTAL									3.48E-05					0.86	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - CENTRAL TENDECY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = adult daily water ingestion rate (L/Day)	1.4
EF = adult exposure frequency (days/yr)	234
ED = adult exposure duration (yr)	9
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogen Risk Adult	Percent Noncarcino Risk Adult
1,2-Dichloroethane	0.00046	1.4	234	9	70	25550	7.6E-07	9.1E-02	6.9E-08	1%	3285	5.9E-06	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00586	1.4	234	9	70	25550	9.3E-06	0.0E+00	0.0E+00	0%	3285	7.3E-05	1.0E-02	7.3E-03	2%
Benzene	0.00200	1.4	234	9	70	25550	3.3E-06	2.9E-02	9.6E-08	2%	3285	2.6E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	1.4	234	9	70	25550	2.4E-06	1.9E+00	4.6E-06	94%	3285	1.9E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	1.4	234	9	70	25550	1.3E-05	1.1E-02	1.4E-07	3%	3285	1.0E-04	6.0E-03	1.7E-02	4%
Aluminum	0.71060	1.4	234	9	70	25550	1.2E-03	0.0E+00	0.0E+00	0%	3285	9.1E-03	1.0E+00	9.1E-03	2%
Barium	0.05981	1.4	234	9	70	25550	9.9E-05	0.0E+00	0.0E+00	0%	3285	7.7E-04	7.0E-02	1.1E-02	3%
Chromium	0.00795	1.4	234	9	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	3285	1.0E-04	5.0E-03	2.0E-02	5%
Cobalt	0.02087	1.4	234	9	70	25550	3.4E-05	0.0E+00	0.0E+00	0%	3285	2.7E-04	6.0E-02	4.5E-03	1%
Copper	0.00762	1.4	234	9	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	3285	9.8E-05	4.0E-02	2.4E-03	1%
Iron	5.80845	1.4	234	9	70	25550	9.6E-03	0.0E+00	0.0E+00	0%	3285	7.4E-02	3.0E-01	2.5E-01	61%
Manganese	0.12210	1.4	234	9	70	25550	2.0E-04	0.0E+00	0.0E+00	0%	3285	1.6E-03	2.3E-02	6.8E-02	17%
Vanadium	0.00878	1.4	234	9	70	25550	1.4E-05	0.0E+00	0.0E+00	0%	3285	1.1E-04	7.0E-03	1.6E-02	4%
TOTAL									4.88E-06					0.40	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = adult daily water ingestion rate (L/Day)		2
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
1,2-Dichloroethene (total)	0.120	2	350	30	70	25550	1.4E-03	0.0E+00	0.0E+00	0%	10950	3.3E-03	9.0E-03	3.7E-01	3%
Benzene	0.027	2	350	30	70	25550	3.2E-04	2.9E-02	9.2E-06	1%	10950	7.4E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.043	2	350	30	70	25550	5.0E-04	1.9E+00	9.6E-04	95%	10950	1.2E-03	0.0E+00	0.0E+00	0%
Trichloroethene	0.320	2	350	30	70	25550	3.8E-03	1.1E-02	4.1E-05	4%	10950	8.8E-03	6.0E-03	1.5E+00	13%
Aluminum	29.700	2	350	30	70	25550	3.5E-01	0.0E+00	0.0E+00	0%	10950	8.1E-01	1.0E+00	8.1E-01	7%
Barium	2.050	2	350	30	70	25550	2.4E-02	0.0E+00	0.0E+00	0%	10950	5.6E-02	7.0E-02	8.0E-01	7%
Chromium	0.210	2	350	30	70	25550	2.5E-03	0.0E+00	0.0E+00	0%	10950	5.8E-03	5.0E-03	1.2E+00	10%
Cobalt	0.530	2	350	30	70	25550	6.2E-03	0.0E+00	0.0E+00	0%	10950	1.5E-02	6.0E-02	2.4E-01	2%
Copper	0.269	2	350	30	70	25550	3.2E-03	0.0E+00	0.0E+00	0%	10950	7.4E-03	4.0E-02	1.8E-01	2%
Iron	38.800	2	350	30	70	25550	4.6E-01	0.0E+00	0.0E+00	0%	10950	1.1E+00	3.0E-01	3.5E+00	32%
Manganese	0.534	2	350	30	70	25550	6.3E-03	0.0E+00	0.0E+00	0%	10950	1.5E-02	2.3E-02	6.4E-01	6%
Vanadium	0.518	2	350	30	70	25550	6.1E-03	0.0E+00	0.0E+00	0%	10950	1.4E-02	7.0E-03	2.0E+00	18%
TOTAL									1.01E-03					1.12E+01	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = adult daily water ingestion rate (L/Day)		2
EF = adult exposure frequency (days/yr)		350
ED = adult exposure duration (yr)		30
BW = adult body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Tim (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenl Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
1,2-Dichloroethene (total)	0.00919	2	350	30	70	25550	1.1E-04	0.0E+00	0.0E+00	0%	10950	2.5E-04	9.0E-03	2.8E-02	3%
Benzene	0.00571	2	350	30	70	25550	6.7E-05	2.9E-02	1.9E-06	1%	10950	1.6E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00652	2	350	30	70	25550	7.7E-05	1.9E+00	1.5E-04	98%	10950	1.8E-04	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	2	350	30	70	25550	1.1E-04	1.1E-02	1.3E-06	1%	10950	2.7E-04	6.0E-03	4.5E-02	5%
Aluminum	0.71060	2	350	30	70	25550	8.3E-03	0.0E+00	0.0E+00	0%	10950	1.9E-02	1.0E+00	1.9E-02	2%
Barium	0.05981	2	350	30	70	25550	7.0E-04	0.0E+00	0.0E+00	0%	10950	1.6E-03	7.0E-02	2.3E-02	3%
Chromium	0.00795	2	350	30	70	25550	9.3E-05	0.0E+00	0.0E+00	0%	10950	2.2E-04	5.0E-03	4.4E-02	5%
Cobalt	0.02087	2	350	30	70	25550	2.5E-04	0.0E+00	0.0E+00	0%	10950	5.7E-04	6.0E-02	9.5E-03	1%
Copper	0.00762	2	350	30	70	25550	8.9E-05	0.0E+00	0.0E+00	0%	10950	2.1E-04	4.0E-02	5.2E-03	1%
Iron	5.80845	2	350	30	70	25550	6.8E-02	0.0E+00	0.0E+00	0%	10950	1.6E-01	3.0E-01	5.3E-01	60%
Manganese	0.12210	2	350	30	70	25550	1.4E-03	0.0E+00	0.0E+00	0%	10950	3.3E-03	2.3E-02	1.5E-01	16%
Vanadium	0.00878	2	350	30	70	25550	1.0E-04	0.0E+00	0.0E+00	0%	10950	2.4E-04	7.0E-03	3.4E-02	4%
TOTAL									1.49E-04					8.84E-01	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = adult daily water ingestion rate (L/Day)	1.4
EF = adult exposure frequency (days/yr)	234
ED = adult exposure duration (yr)	9
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Adult	Exposure Frequency (day/year) Adult	Exposure Duration (year) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcionogenic Risk Adult
1,2-Dichloroethene (total)	0.00919	1.4	234	9	70	25550	1.5E-05	0.0E+00	0.0E+00	0%	3285	1.2E-04	9.0E-03	1.3E-02	3%
Benzene	0.00571	1.4	234	9	70	25550	9.4E-06	2.9E-02	2.7E-07	1%	3285	7.3E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00652	1.4	234	9	70	25550	1.1E-05	1.9E+00	2.0E-05	98%	3285	8.4E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	1.4	234	9	70	25550	1.6E-05	1.1E-02	1.8E-07	1%	3285	1.3E-04	6.0E-03	2.1E-02	5%
Aluminum	0.71060	1.4	234	9	70	25550	1.2E-03	0.0E+00	0.0E+00	0%	3285	9.1E-03	1.0E+00	9.1E-03	2%
Barium	0.05981	1.4	234	9	70	25550	9.9E-05	0.0E+00	0.0E+00	0%	3285	7.7E-04	7.0E-02	1.1E-02	3%
Chromium	0.00795	1.4	234	9	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	3285	1.0E-04	5.0E-03	2.0E-02	5%
Cobalt	0.02087	1.4	234	9	70	25550	3.4E-05	0.0E+00	0.0E+00	0%	3285	2.7E-04	6.0E-02	4.5E-03	1%
Copper	0.00762	1.4	234	9	70	25550	1.3E-05	0.0E+00	0.0E+00	0%	3285	9.8E-05	4.0E-02	2.4E-03	1%
Iron	5.80845	1.4	234	9	70	25550	9.6E-03	0.0E+00	0.0E+00	0%	3285	7.4E-02	3.0E-01	2.5E-01	60%
Manganese	0.12210	1.4	234	9	70	25550	2.0E-04	0.0E+00	0.0E+00	0%	3285	1.6E-03	2.3E-02	6.8E-02	16%
Vanadium	0.00878	1.4	234	9	70	25550	1.4E-05	0.0E+00	0.0E+00	0%	3285	1.1E-04	7.0E-03	1.6E-02	4%
TOTAL									2.09E-05					4.14E-01	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = child daily water ingestion rate	1
EF = child exposure frequency (days/	350
ED = child exposure duration (yr)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (	70
ATnc = averaging time for noncarcino	6
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-da	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00070	1	350	6	15	25550	3.8E-06	9.1E-02	3.5E-07	0%	2190	4.5E-05	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.07400	1	350	6	15	25550	4.1E-04	0.0E+00	0.0E+00	0%	2190	4.7E-03	1.0E-02	4.7E-01	2%
Benzene	0.01800	1	350	6	15	25550	9.9E-05	2.9E-02	2.9E-06	1%	2190	1.2E-03	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.02300	1	350	6	15	25550	1.3E-04	1.9E+00	2.4E-04	96%	2190	1.5E-03	0.0E+00	0.0E+00	0%
Trichloroethene	0.11000	1	350	6	15	25550	6.0E-04	1.1E-02	6.6E-06	3%	2190	7.0E-03	6.0E-03	1.2E+00	5%
Aluminum	29.70000	1	350	6	15	25550	1.6E-01	0.0E+00	0.0E+00	0%	2190	1.9E+00	1.0E+00	1.9E+00	8%
Barium	2.05000	1	350	6	15	25550	1.1E-02	0.0E+00	0.0E+00	0%	2190	1.3E-01	7.0E-02	1.9E+00	8%
Chromium	0.21000	1	350	6	15	25550	1.2E-03	0.0E+00	0.0E+00	0%	2190	1.3E-02	5.0E-03	2.7E+00	11%
Cobalt	0.53000	1	350	6	15	25550	2.9E-03	0.0E+00	0.0E+00	0%	2190	3.4E-02	6.0E-02	5.6E-01	2%
Copper	0.26900	1	350	6	15	25550	1.5E-03	0.0E+00	0.0E+00	0%	2190	1.7E-02	4.0E-02	4.3E-01	2%
Iron	38.80000	1	350	6	15	25550	2.1E-01	0.0E+00	0.0E+00	0%	2190	2.5E+00	3.0E-01	8.3E+00	35%
Manganese	0.53400	1	350	6	15	25550	2.9E-03	0.0E+00	0.0E+00	0%	2190	3.4E-02	2.3E-02	1.5E+00	6%
Vanadium	0.51800	1	350	6	15	25550	2.8E-03	0.0E+00	0.0E+00	0%	2190	3.3E-02	7.0E-03	4.7E+00	20%
TOTAL									2.5E-04					23.8	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = child daily water ingestion rate (L/Day)	1
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (yr)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00046	1	350	6	15	25550	2.5E-06	9.1E-02	2.3E-07	1%	2190	2.9E-05	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	1	350	6	15	25550	3.1E-05	0.0E+00	0.0E+00	0%	2190	3.6E-04	1.0E-02	3.6E-02	2%
Benzene	0.00200	1	350	6	15	25550	1.1E-05	2.9E-02	3.2E-07	2%	2190	1.3E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	1	350	6	15	25550	8.0E-06	1.9E+00	1.5E-05	94%	2190	9.3E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	1	350	6	15	25550	4.3E-05	1.1E-02	4.8E-07	3%	2190	5.1E-04	6.0E-03	8.4E-02	4%
Aluminum	0.71060	1	350	6	15	25550	3.9E-03	0.0E+00	0.0E+00	0%	2190	4.5E-02	1.0E+00	4.5E-02	2%
Barium	0.05981	1	350	6	15	25550	3.3E-04	0.0E+00	0.0E+00	0%	2190	3.8E-03	7.0E-02	5.5E-02	3%
Chromium	0.00795	1	350	6	15	25550	4.4E-05	0.0E+00	0.0E+00	0%	2190	5.1E-04	5.0E-03	1.0E-01	5%
Cobalt	0.02087	1	350	6	15	25550	1.1E-04	0.0E+00	0.0E+00	0%	2190	1.3E-03	6.0E-02	2.2E-02	1%
Copper	0.00762	1	350	6	15	25550	4.2E-05	0.0E+00	0.0E+00	0%	2190	4.9E-04	4.0E-02	1.2E-02	1%
Iron	5.80845	1	350	6	15	25550	3.2E-02	0.0E+00	0.0E+00	0%	2190	3.7E-01	3.0E-01	1.2E+00	61%
Manganese	0.12210	1	350	6	15	25550	6.7E-04	0.0E+00	0.0E+00	0%	2190	7.8E-03	2.3E-02	3.4E-01	17%
Vanadium	0.00878	1	350	6	15	25550	4.8E-05	0.0E+00	0.0E+00	0%	2190	5.6E-04	7.0E-03	8.0E-02	4%
TOTAL									1.6E-05					2.0	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE I) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = child daily water ingestion rate (L/Da		1
EF = child exposure frequency (days/yr)		234
ED = child exposure duration (yr)		6
BW = child body weight (kg)		15
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (y		6
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00046	1	234	6	15	25550	1.7E-06	9.1E-02	1.5E-07	1%	2190	2.0E-05	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	1	234	6	15	25550	2.1E-05	0.0E+00	0.0E+00	0%	2190	2.4E-04	1.0E-02	2.4E-02	2%
Benzene	0.00200	1	234	6	15	25550	7.3E-06	2.9E-02	2.1E-07	2%	2190	8.5E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	1	234	6	15	25550	5.3E-06	1.9E+00	1.0E-05	94%	2190	6.2E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	1	234	6	15	25550	2.9E-05	1.1E-02	3.2E-07	3%	2190	3.4E-04	6.0E-03	5.6E-02	4%
Aluminum	0.71080	1	234	6	15	25550	2.6E-03	0.0E+00	0.0E+00	0%	2190	3.0E-02	1.0E+00	3.0E-02	2%
Barium	0.05981	1	234	6	15	25550	2.2E-04	0.0E+00	0.0E+00	0%	2190	2.6E-03	7.0E-02	3.7E-02	3%
Chromium	0.00795	1	234	6	15	25550	2.9E-05	0.0E+00	0.0E+00	0%	2190	3.4E-04	5.0E-03	6.8E-02	5%
Cobalt	0.02087	1	234	6	15	25550	7.6E-05	0.0E+00	0.0E+00	0%	2190	8.9E-04	6.0E-02	1.5E-02	1%
Copper	0.00762	1	234	6	15	25550	2.8E-05	0.0E+00	0.0E+00	0%	2190	3.3E-04	4.0E-02	8.1E-03	1%
Iron	5.80845	1	234	6	15	25550	2.1E-02	0.0E+00	0.0E+00	0%	2190	2.5E-01	3.0E-01	8.3E-01	61%
Manganese	0.12210	1	234	6	15	25550	4.5E-04	0.0E+00	0.0E+00	0%	2190	5.2E-03	2.3E-02	2.3E-01	17%
Vanadium	0.00878	1	234	6	15	25550	3.2E-05	0.0E+00	0.0E+00	0%	2190	3.8E-04	7.0E-03	5.4E-02	4%
TOTAL									1.1E-05					1.3	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUTS
C = contaminant concentration in water (mg/l)		
IRw = child daily water ingestion rate (L/Da		1
EF = child exposure frequency (days/yr)		350
ED = child exposure duration (yr)		6
BW = child body weight (kg)		15
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (y		6
DY = days per year (day/year)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.12000	1	350	6	15	25550	6.6E-04	0.0E+00	0.0E+00	0%	2190	7.7E-03	9.0E-03	8.5E-01	3%
Benzene	0.02700	1	350	6	15	25550	1.5E-04	2.9E-02	4.3E-06	1%	2190	1.7E-03	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.04300	1	350	6	15	25550	2.4E-04	1.9E+00	4.5E-04	95%	2190	2.7E-03	0.0E+00	0.0E+00	0%
Trichloroethene	0.32000	1	350	6	15	25550	1.8E-03	1.1E-02	1.9E-05	4%	2190	2.0E-02	6.0E-03	3.4E+00	13%
Aluminum	29.70000	1	350	6	15	25550	1.6E-01	0.0E+00	0.0E+00	0%	2190	1.9E+00	1.0E+00	1.9E+00	7%
Barium	2.05000	1	350	6	15	25550	1.1E-02	0.0E+00	0.0E+00	0%	2190	1.3E-01	7.0E-02	1.9E+00	7%
Chromium	0.21000	1	350	6	15	25550	1.2E-03	0.0E+00	0.0E+00	0%	2190	1.3E-02	5.0E-03	2.7E+00	10%
Cobalt	0.53000	1	350	6	15	25550	2.9E-03	0.0E+00	0.0E+00	0%	2190	3.4E-02	6.0E-02	5.6E-01	2%
Copper	0.26900	1	350	6	15	25550	1.5E-03	0.0E+00	0.0E+00	0%	2190	1.7E-02	4.0E-02	4.3E-01	2%
Iron	38.80000	1	350	6	15	25550	2.1E-01	0.0E+00	0.0E+00	0%	2190	2.5E+00	3.0E-01	8.3E+00	32%
Manganese	0.53400	1	350	6	15	25550	2.9E-03	0.0E+00	0.0E+00	0%	2190	3.4E-02	2.3E-02	1.5E+00	6%
Vanadium	0.51800	1	350	6	15	25550	2.8E-03	0.0E+00	0.0E+00	0%	2190	3.3E-02	7.0E-03	4.7E+00	18%
TOTAL									4.7E-04					26.2	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = child daily water ingestion rate (L/Day)	1
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (yr)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.00919	1	350	6	15	25550	5.0E-05	0.0E+00	0.0E+00	0%	2190	5.9E-04	9.0E-03	6.5E-02	3%
Benzene	0.00571	1	350	6	15	25550	3.1E-05	2.9E-02	9.1E-07	1%	2190	3.7E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00852	1	350	6	15	25550	3.6E-05	1.9E+00	6.8E-05	98%	2190	4.2E-04	0.0E+00	0.0E+00	0%
Trichloroethene	0.00879	1	350	6	15	25550	5.4E-05	1.1E-02	5.9E-07	1%	2190	6.3E-04	6.0E-03	1.0E-01	5%
Aluminum	0.71060	1	350	6	15	25550	3.9E-03	0.0E+00	0.0E+00	0%	2190	4.5E-02	1.0E+00	4.5E-02	2%
Barium	0.05981	1	350	6	15	25550	3.3E-04	0.0E+00	0.0E+00	0%	2190	3.8E-03	7.0E-02	5.5E-02	3%
Chromium	0.00795	1	350	6	15	25550	4.4E-05	0.0E+00	0.0E+00	0%	2190	5.1E-04	5.0E-03	1.0E-01	5%
Cobalt	0.02087	1	350	6	15	25550	1.1E-04	0.0E+00	0.0E+00	0%	2190	1.3E-03	6.0E-02	2.2E-02	1%
Copper	0.00762	1	350	6	15	25550	4.2E-05	0.0E+00	0.0E+00	0%	2190	4.9E-04	4.0E-02	1.2E-02	1%
Iron	5.80845	1	350	6	15	25550	3.2E-02	0.0E+00	0.0E+00	0%	2190	3.7E-01	3.0E-01	1.2E+00	60%
Manganese	0.12210	1	350	6	15	25550	6.7E-04	0.0E+00	0.0E+00	0%	2190	7.8E-03	2.3E-02	3.4E-01	16%
Vanadium	0.00878	1	350	6	15	25550	4.8E-05	0.0E+00	0.0E+00	0%	2190	5.6E-04	7.0E-03	8.0E-02	4%
TOTAL									6.9E-05					2.1	

GROUNDWATER INGESTION EXPOSURE ASSESSMENT (PHASE II) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Intake from drinking water is calculated as follows:

Intake (mg/kg-day) = C * IRw * EF * ED/BW * AT or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in water (mg/l)	
IRw = child daily water ingestion rate (L/Day)	1
EF = child exposure frequency (days/yr)	234
ED = child exposure duration (yr)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (day/year)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (L/day) Child	Exposure Frequency (day/year) Child	Exposure Duration (year) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.00919	1	234	6	15	25550	3.4E-05	0.0E+00	0.0E+00	0%	2190	3.9E-04	9.0E-03	4.4E-02	3%
Benzene	0.00571	1	234	6	15	25550	2.1E-05	2.9E-02	6.1E-07	1%	2190	2.4E-04	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00652	1	234	6	15	25550	2.4E-05	1.9E+00	4.5E-05	98%	2190	2.8E-04	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	1	234	6	15	25550	3.6E-05	1.1E-02	3.9E-07	1%	2190	4.2E-04	6.0E-03	7.0E-02	5%
Aluminum	0.71060	1	234	6	15	25550	2.6E-03	0.0E+00	0.0E+00	0%	2190	3.0E-02	1.0E+00	3.0E-02	2%
Barium	0.05981	1	234	6	15	25550	2.2E-04	0.0E+00	0.0E+00	0%	2190	2.6E-03	7.0E-02	3.7E-02	3%
Chromium	0.00795	1	234	6	15	25550	2.9E-05	0.0E+00	0.0E+00	0%	2190	3.4E-04	5.0E-03	6.8E-02	5%
Cobalt	0.02087	1	234	6	15	25550	7.6E-05	0.0E+00	0.0E+00	0%	2190	8.9E-04	6.0E-02	1.5E-02	1%
Copper	0.00762	1	234	6	15	25550	2.8E-05	0.0E+00	0.0E+00	0%	2190	3.3E-04	4.0E-02	8.1E-03	1%
Iron	5.80845	1	234	6	15	25550	2.1E-02	0.0E+00	0.0E+00	0%	2190	2.5E-01	3.0E-01	8.3E-01	60%
Manganese	0.12210	1	234	6	15	25550	4.5E-04	0.0E+00	0.0E+00	0%	2190	5.2E-03	2.3E-02	2.3E-01	16%
Vanadium	0.00878	1	234	6	15	25550	3.2E-05	0.0E+00	0.0E+00	0%	2190	3.8E-04	7.0E-03	5.4E-02	4%
TOTAL									4.6E-05					1.4	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE DERMAL CONTACT WITH GROUNDWATER CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from dermal contact with groundwater

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times CF \times SA \times PC \times ET \times EF \times ED}{BW \times AT}$$

Where:

C	=	Contaminant concentration in groundwater (mg/L)
CF	=	Conversion factor (1 L/1,000 cm^3)
SA	=	Exposed skin surface available for contact (cm^2)
PC	=	Chemical-specific dermal permeability constant (cm/hr)
ET	=	Exposure time (hr/day)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
IR	=	Ingestion rate (L/day)
BW	=	Body weight (kg)
AT_c	=	Averaging time carcinogen (days)
AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Benzene

$$ntake\ (mg/kgday) = \frac{0.002\ mg/L \times 1.0E{-}03\ L/cm^3 \times 23{,}000\ cm^2/event \times 2.1E{-}02\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 25{,}550\ days}$$

$$= 1.4E\text{-}06$$

Risk = 1.4E-06 mg/kg·day x 3.6E-02 $mg/kg{\cdot}day^{-1}$ = 5.1E-08

Example Noncarcinogen: Barium

$$Intake\ (mg/kg{\cdot}day) = \frac{0.06\ mg/L \times 1.0E{-}03\ L/cm^3 \times 23{,}000\ cm^2/event \times 1.0E{-}03\ cm/hr \times 0.25\ hr/day \times 350\ days/yr \times 30\ yrs}{70\ kg \times 10{,}950\ days}$$

$$= 4.7E\text{-}06$$

$$Risk = \frac{4.7E{-}06\ mg/kg{\cdot}day}{1.4E{-}02\ mg/kg{\cdot}day} = 3.4E{-}04$$

Re: Site 73 Future Residential Adult

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/da Adult	Exposure Frequenc (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Tim (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncare Time (years)	Noncarc Dose (mg/kg-da Adult	Dermal A Referenc Dose (mg/kg-da	Noncarc Risk Adult	Percent Noncarcin Risk Adult
1,2-Dichloroethane	0.0007	23000	5.30E-03	0.25	350	30	0.001	70	25550	1.3E-07	1.1E-01	1.4E-08	0%	10950	2.9E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.0740	23000	1.00E-02	0.25	350	30	0.001	70	25550	2.5E-05	0.0E+00	0.0E+00	0%	10950	5.8E-05	8.0E-03	7.3E-03	4%
Benzene	0.0180	23000	2.10E-02	0.25	350	30	0.001	70	25550	1.3E-05	3.6E-02	4.6E-07	3%	10950	3.0E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.0230	23000	7.30E-03	0.25	350	30	0.001	70	25550	5.7E-06	2.4E+00	1.3E-05	91%	10950	1.3E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.1100	23000	1.60E-02	0.25	350	30	0.001	70	25550	5.9E-05	1.4E-02	8.2E-07	6%	10950	1.4E-04	4.8E-03	2.9E-02	17%
Aluminum	29.7000	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.0E-03	0.0E+00	0.0E+00	0%	10950	2.3E-03	2.0E-01	1.2E-02	7%
Barium	2.0500	23000	1.00E-03	0.25	350	30	0.001	70	25550	6.9E-05	0.0E+00	0.0E+00	0%	10950	1.6E-04	1.4E-02	1.2E-02	7%
Chromium	0.2100	23000	1.00E-03	0.25	350	30	0.001	70	25550	7.1E-06	0.0E+00	0.0E+00	0%	10950	1.7E-05	1.0E-03	1.7E-02	10%
Cobalt	0.5300	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.8E-05	0.0E+00	0.0E+00	0%	10950	4.2E-05	1.2E-02	3.5E-03	2%
Copper	0.2690	23000	1.00E-03	0.25	350	30	0.001	70	25550	9.1E-06	0.0E+00	0.0E+00	0%	10950	2.1E-05	8.0E-03	2.6E-03	2%
Iron	38.8000	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.3E-03	0.0E+00	0.0E+00	0%	10950	3.1E-03	6.0E-02	5.1E-02	30%
Manganese	0.5340	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.8E-05	0.0E+00	0.0E+00	0%	10950	4.2E-05	4.6E-03	9.1E-03	5%
Vanadium	0.5180	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.7E-05	0.0E+00	0.0E+00	0%	10950	4.1E-05	1.4E-03	2.9E-02	17%
TOTAL												1.5E-05					1.7E-01	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogeni Risk Adult
1,2-Dichloroethane	0.00046	23000	5.30E-03	0.25	350	30	0.001	70	25550	8.2E-08	1.1E-01	9.4E-09	1%	10950	1.9E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	23000	1.00E-02	0.25	350	30	0.001	70	25550	1.9E-06	0.0E+00	0.0E+00	0%	10950	4.5E-06	8.0E-03	5.6E-04	4%
Benzene	0.00200	23000	2.10E-02	0.25	350	30	0.001	70	25550	1.4E-06	3.6E-02	5.1E-08	5%	10950	3.3E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	23000	7.30E-03	0.25	350	30	0.001	70	25550	3.6E-07	2.4E+00	8.5E-07	88%	10950	8.4E-07	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	23000	1.60E-02	0.25	350	30	0.001	70	25550	4.3E-06	1.4E-02	5.9E-08	6%	10950	1.0E-05	4.8E-03	2.1E-03	15%
Aluminum	0.71060	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.4E-05	0.0E+00	0.0E+00	0%	10950	5.6E-05	2.0E-01	2.8E-04	2%
Barium	0.05981	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.0E-06	0.0E+00	0.0E+00	0%	10950	4.7E-06	1.4E-02	3.4E-04	2%
Chromium	0.00795	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.7E-07	0.0E+00	0.0E+00	0%	10950	6.3E-07	1.0E-03	6.3E-04	4%
Cobalt	0.02087	23000	1.00E-03	0.25	350	30	0.001	70	25550	7.0E-07	0.0E+00	0.0E+00	0%	10950	1.6E-06	1.2E-02	1.4E-04	1%
Copper	0.00762	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.6E-07	0.0E+00	0.0E+00	0%	10950	6.0E-07	8.0E-03	7.5E-05	1%
Iron	5.80845	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.0E-04	0.0E+00	0.0E+00	0%	10950	4.6E-04	6.0E-02	7.6E-03	53%
Manganese	0.12210	23000	1.00E-03	0.25	350	30	0.001	70	25550	4.1E-06	0.0E+00	0.0E+00	0%	10950	9.6E-06	4.6E-03	2.1E-03	15%
Vanadium	0.00878	23000	1.00E-03	0.25	350	30	0.001	70	25550	3.0E-07	0.0E+00	0.0E+00	0%	10950	6.9E-07	1.4E-03	4.9E-04	3%
TOTAL												9.7E-07					1.4E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	234
ED = adult exposure duration (years)	9
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
1,2-Dichloroethane	0.00046	23000	5.30E-03	0.25	234	9	0.001	70	25550	1.7E-08	1.1E-01	1.9E-09	1%	3285	1.3E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00586	23000	1.00E-02	0.25	234	9	0.001	70	25550	3.8E-07	0.0E+00	0.0E+00	0%	3285	3.0E-06	8.0E-03	3.7E-04	4%
Benzene	0.00200	23000	2.10E-02	0.25	234	9	0.001	70	25550	2.8E-07	3.6E-02	1.0E-08	5%	3285	2.2E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00146	23000	7.30E-03	0.25	234	9	0.001	70	25550	7.2E-08	2.4E+00	1.7E-07	88%	3285	5.6E-07	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	23000	1.60E-02	0.25	234	9	0.001	70	25550	8.6E-07	1.4E-02	1.2E-08	6%	3285	6.7E-06	4.8E-03	1.4E-03	15%
Aluminum	0.71060	23000	1.00E-03	0.25	234	9	0.001	70	25550	4.8E-06	0.0E+00	0.0E+00	0%	3285	3.7E-05	2.0E-01	1.9E-04	2%
Barium	0.05981	23000	1.00E-03	0.25	234	9	0.001	70	25550	4.0E-07	0.0E+00	0.0E+00	0%	3285	3.1E-06	1.4E-02	2.2E-04	2%
Chromium	0.00795	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.4E-08	0.0E+00	0.0E+00	0%	3285	4.2E-07	1.0E-03	4.2E-04	4%
Cobalt	0.02087	23000	1.00E-03	0.25	234	9	0.001	70	25550	1.4E-07	0.0E+00	0.0E+00	0%	3285	1.1E-06	1.2E-02	9.2E-05	1%
Copper	0.00762	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.2E-08	0.0E+00	0.0E+00	0%	3285	4.0E-07	8.0E-03	5.0E-05	1%
Iron	5.80845	23000	1.00E-03	0.25	234	9	0.001	70	25550	3.9E-05	0.0E+00	0.0E+00	0%	3285	3.1E-04	6.0E-02	5.1E-03	53%
Manganese	0.12210	23000	1.00E-03	0.25	234	9	0.001	70	25550	8.3E-07	0.0E+00	0.0E+00	0%	3285	6.4E-06	4.6E-03	1.4E-03	15%
Vanadium	0.00878	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.9E-08	0.0E+00	0.0E+00	0%	3285	4.6E-07	1.4E-03	3.3E-04	3%
TOTAL												2.0E-07					9.6E-03	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/da Adult	Exposure Frequenc (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Referenoe Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
1,2-Dichloroethene (total)	0.120	23000	1.00E-02	0.25	350	30	0.001	70	25550	4.1E-05	0.0E+00	0.0E+00	0%	10950	9.5E-05	7.2E-03	1.3E-02	6%
Benzene	0.027	23000	2.10E-02	0.25	350	30	0.001	70	25550	1.9E-05	3.6E-02	6.9E-07	2%	10950	4.5E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.043	23000	7.30E-03	0.25	350	30	0.001	70	25550	1.1E-05	2.4E+00	2.5E-05	89%	10950	2.5E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.320	23000	1.60E-02	0.25	350	30	0.001	70	25550	1.7E-04	1.4E-02	2.4E-06	8%	10950	4.0E-04	4.8E-03	8.4E-02	36%
Aluminum	29.700	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.0E-03	0.0E+00	0.0E+00	0%	10950	2.3E-03	2.0E-01	1.2E-02	5%
Barium	2.050	23000	1.00E-03	0.25	350	30	0.001	70	25550	6.9E-05	0.0E+00	0.0E+00	0%	10950	1.6E-04	1.4E-02	1.2E-02	5%
Chromium	0.210	23000	1.00E-03	0.25	350	30	0.001	70	25550	7.1E-06	0.0E+00	0.0E+00	0%	10950	1.7E-05	1.0E-03	1.7E-02	7%
Cobalt	0.530	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.8E-05	0.0E+00	0.0E+00	0%	10950	4.2E-05	1.2E-02	3.5E-03	1%
Copper	0.269	23000	1.00E-03	0.25	350	30	0.001	70	25550	9.1E-06	0.0E+00	0.0E+00	0%	10950	2.1E-05	8.0E-03	2.6E-03	1%
Iron	38.800	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.3E-03	0.0E+00	0.0E+00	0%	10950	3.1E-03	6.0E-02	5.1E-02	22%
Manganese	0.534	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.8E-05	0.0E+00	0.0E+00	0%	10950	4.2E-05	4.6E-03	9.1E-03	4%
Vanadium	0.518	23000	1.00E-03	0.25	350	30	0.001	70	25550	1.7E-05	0.0E+00	0.0E+00	0%	10950	4.1E-05	1.4E-03	2.9E-02	13%
TOTAL												2.8E-05					2.3E-01	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	350
ED = adult exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365

Note: Inputs are site and scenario specific

SHALLOW GROUNDWATER

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogeni Risk Adult
1,2-Dichloroethene (total)	0.00919	23000	1.00E-02	0.25	350	30	0.001	70	25550	3.1E-06	0.0E+00	0.0E+00	0%	10950	7.2E-06	7.2E-03	1.0E-03	7%
Benzene	0.00571	23000	2.10E-02	0.25	350	30	0.001	70	25550	4.0E-06	3.8E-02	1.5E-07	4%	10950	9.4E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00852	23000	7.30E-03	0.25	350	30	0.001	70	25550	1.6E-06	2.4E+00	3.8E-06	95%	10950	3.7E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	23000	1.60E-02	0.25	350	30	0.001	70	25550	5.3E-06	1.4E-02	7.3E-08	2%	10950	1.2E-05	4.8E-03	2.6E-03	17%
Aluminum	0.71060	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.4E-05	0.0E+00	0.0E+00	0%	10950	5.6E-05	2.0E-01	2.8E-04	2%
Barium	0.05981	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.0E-06	0.0E+00	0.0E+00	0%	10950	4.7E-06	1.4E-02	3.4E-04	2%
Chromium	0.00795	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.7E-07	0.0E+00	0.0E+00	0%	10950	6.3E-07	1.0E-03	6.3E-04	4%
Cobalt	0.02087	23000	1.00E-03	0.25	350	30	0.001	70	25550	7.0E-07	0.0E+00	0.0E+00	0%	10950	1.6E-06	1.2E-02	1.4E-04	1%
Copper	0.00782	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.6E-07	0.0E+00	0.0E+00	0%	10950	6.0E-07	8.0E-03	7.5E-05	0%
Iron	5.80845	23000	1.00E-03	0.25	350	30	0.001	70	25550	2.0E-04	0.0E+00	0.0E+00	0%	10950	4.6E-04	6.0E-02	7.6E-03	50%
Manganese	0.12210	23000	1.00E-03	0.25	350	30	0.001	70	25550	4.1E-06	0.0E+00	0.0E+00	0%	10950	9.6E-06	4.8E-03	2.1E-03	14%
Vanadium	0.00878	23000	1.00E-03	0.25	350	30	0.001	70	25550	3.0E-07	0.0E+00	0.0E+00	0%	10950	6.9E-07	1.4E-03	4.9E-04	3%
TOTAL												4.0E-06					1.5E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATo or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adult skin surface available for contact (cm2)	23000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adult exposure time (hours/day)	0.25
EF = adult exposure frequency (days/yr)	234
ED = adult exposure duration (years)	9
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365

Note: Inputs are site and scenario specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adult	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adult	Exposure Frequency (days/yr) Adult	Exposure Duration (years) Adult	Volumetric Conversion (L/m3)	Body Weight (kg) Adult	Averaging Carc Time (years)	Carc Dose (mg/kg-day) Adult	Derm. Adj. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (years)	Noncarc Dose (mg/kg-day) Adult	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Adult	Percent Noncarcinogenic Risk Adult
1,2-Dichloroethene (total)	0.00919	23000	1.00E-02	0.25	234	9	0.001	70	25550	6.2E-07	0.0E+00	0.0E+00	0%	3285	4.6E-06	7.2E-03	6.7E-04	7%
Benzene	0.00571	23000	2.10E-02	0.25	234	9	0.001	70	25550	8.1E-07	3.6E-02	2.9E-08	4%	3285	6.3E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00652	23000	7.30E-03	0.25	234	9	0.001	70	25550	3.2E-07	2.4E+00	7.7E-07	95%	3285	2.5E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	23000	1.60E-02	0.25	234	9	0.001	70	25550	1.1E-06	1.4E-02	1.5E-08	2%	3285	8.2E-06	4.8E-03	1.7E-03	17%
Aluminum	0.71080	23000	1.00E-03	0.25	234	9	0.001	70	25550	4.8E-06	0.0E+00	0.0E+00	0%	3285	3.7E-05	2.0E-01	1.9E-04	2%
Barium	0.05981	23000	1.00E-03	0.25	234	9	0.001	70	25550	4.0E-07	0.0E+00	0.0E+00	0%	3285	3.1E-06	1.4E-02	2.2E-04	2%
Chromium	0.00795	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.4E-08	0.0E+00	0.0E+00	0%	3285	4.2E-07	1.0E-03	4.2E-04	4%
Cobalt	0.02087	23000	1.00E-03	0.25	234	9	0.001	70	25550	1.4E-07	0.0E+00	0.0E+00	0%	3285	1.1E-06	1.2E-02	9.2E-05	1%
Copper	0.00762	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.2E-08	0.0E+00	0.0E+00	0%	3285	4.0E-07	8.0E-03	5.0E-05	0%
Iron	5.80845	23000	1.00E-03	0.25	234	9	0.001	70	25550	3.9E-05	0.0E+00	0.0E+00	0%	3285	3.1E-04	6.0E-02	5.1E-03	50%
Manganese	0.12210	23000	1.00E-03	0.25	234	9	0.001	70	25550	8.3E-07	0.0E+00	0.0E+00	0%	3285	6.4E-06	4.6E-03	1.4E-03	14%
Vanadium	0.00878	23000	1.00E-03	0.25	234	9	0.001	70	25550	5.9E-08	0.0E+00	0.0E+00	0%	3285	4.6E-07	1.4E-03	3.3E-04	3%
TOTAL												8.1E-07					1.0E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00070	10000	5.30E-03	0.25	350	6	0.001	15	25550	5.1E-08	1.1E-01	5.8E-09	0%	2190	5.9E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.07400	10000	1.00E-02	0.25	350	6	0.001	15	25550	1.0E-05	0.0E+00	0.0E+00	0%	2190	1.2E-04	8.0E-03	1.5E-02	4%
Benzene	0.01800	10000	2.10E-02	0.25	350	6	0.001	15	25550	5.2E-06	3.8E-02	1.9E-07	3%	2190	6.0E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.02300	10000	7.30E-03	0.25	350	6	0.001	15	25550	2.3E-06	2.4E+00	5.5E-06	91%	2190	2.7E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.11000	10000	1.80E-02	0.25	350	6	0.001	15	25550	2.4E-05	1.4E-02	3.3E-07	6%	2190	2.8E-04	4.8E-03	5.9E-02	18%
Aluminum	29.70000	10000	1.00E-03	0.25	350	6	0.001	15	25550	4.1E-04	0.0E+00	0.0E+00	0%	2190	4.7E-03	8.0E-01	5.9E-03	2%
Barium	2.05000	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.8E-05	0.0E+00	0.0E+00	0%	2190	3.3E-04	1.4E-02	2.3E-02	7%
Chromium	0.21000	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.9E-06	0.0E+00	0.0E+00	0%	2190	3.4E-05	1.0E-03	3.4E-02	10%
Cobalt	0.53000	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.3E-06	0.0E+00	0.0E+00	0%	2190	8.5E-05	1.2E-02	7.1E-03	2%
Copper	0.26900	10000	1.00E-03	0.25	350	6	0.001	15	25550	3.7E-06	0.0E+00	0.0E+00	0%	2190	4.3E-05	8.0E-03	5.4E-03	2%
Iron	38.80000	10000	1.00E-03	0.25	350	6	0.001	15	25550	5.3E-04	0.0E+00	0.0E+00	0%	2190	6.2E-03	6.0E-02	1.0E-01	31%
Manganese	0.53400	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.3E-06	0.0E+00	0.0E+00	0%	2190	8.5E-05	4.6E-03	1.9E-02	6%
Vanadium	0.51800	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.1E-06	0.0E+00	0.0E+00	0%	2190	8.3E-05	1.4E-03	5.9E-02	18%
TOTAL												6.0E-06					3.3E-01	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00046	10000	5.30E-03	0.25	350	6	0.001	15	25550	3.3E-08	1.1E-01	3.8E-09	1%	2190	3.9E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	10000	1.00E-02	0.25	350	6	0.001	15	25550	7.8E-07	0.0E+00	0.0E+00	0%	2190	9.0E-06	8.0E-03	1.1E-03	4%
Benzene	0.00200	10000	2.10E-02	0.25	350	6	0.001	15	25550	5.8E-07	3.8E-02	2.1E-08	5%	2190	6.7E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00148	10000	7.30E-03	0.25	350	6	0.001	15	25550	1.5E-07	2.4E+00	3.5E-07	88%	2190	1.7E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	10000	1.60E-02	0.25	350	6	0.001	15	25550	1.7E-06	1.4E-02	2.4E-08	6%	2190	2.0E-05	4.8E-03	4.2E-03	15%
Aluminum	0.71060	10000	1.00E-03	0.25	350	6	0.001	15	25550	9.7E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	8.0E-01	1.4E-04	0%
Barium	0.05981	10000	1.00E-03	0.25	350	6	0.001	15	25550	8.2E-07	0.0E+00	0.0E+00	0%	2190	9.6E-06	1.4E-02	6.8E-04	2%
Chromium	0.00795	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.1E-07	0.0E+00	0.0E+00	0%	2190	1.3E-06	1.0E-03	1.3E-03	4%
Cobalt	0.02087	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.9E-07	0.0E+00	0.0E+00	0%	2190	3.3E-06	1.2E-02	2.8E-04	1%
Copper	0.00762	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.0E-07	0.0E+00	0.0E+00	0%	2190	1.2E-06	8.0E-03	1.5E-04	1%
Iron	5.80845	10000	1.00E-03	0.25	350	6	0.001	15	25550	8.0E-05	0.0E+00	0.0E+00	0%	2190	9.3E-04	6.0E-02	1.5E-02	54%
Manganese	0.12210	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.7E-06	0.0E+00	0.0E+00	0%	2190	2.0E-05	4.6E-03	4.2E-03	15%
Vanadium	0.00878	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.2E-07	0.0E+00	0.0E+00	0%	2190	1.4E-06	1.4E-03	1.0E-03	4%
TOTAL												4.0E-07					2.9E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE I) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	6978
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	234
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethane	0.00046	6978	5.30E-03	0.25	234	6	0.001	15	25550	1.6E-08	1.1E-01	1.8E-09	1%	2190	1.8E-07	0.0E+00	0.0E+00	0%
Cis-1,2-Dichloroethene	0.00566	6978	1.00E-02	0.25	234	6	0.001	15	25550	3.6E-07	0.0E+00	0.0E+00	0%	2190	4.2E-06	8.0E-03	5.3E-04	4%
Benzene	0.00200	6978	2.10E-02	0.25	234	6	0.001	15	25550	2.7E-07	3.6E-02	9.7E-09	5%	2190	3.1E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00148	6978	7.30E-03	0.25	234	6	0.001	15	25550	6.8E-08	2.4E+00	1.6E-07	88%	2190	7.9E-07	0.0E+00	0.0E+00	0%
Trichloroethene	0.00790	6978	1.60E-02	0.25	234	6	0.001	15	25550	8.1E-07	1.4E-02	1.1E-08	6%	2190	9.4E-06	4.8E-03	2.0E-03	15%
Aluminum	0.71060	6978	1.00E-03	0.25	234	6	0.001	15	25550	4.5E-06	0.0E+00	0.0E+00	0%	2190	5.3E-05	8.0E-01	6.6E-05	0%
Barium	0.05981	6978	1.00E-03	0.25	234	6	0.001	15	25550	3.8E-07	0.0E+00	0.0E+00	0%	2190	4.5E-06	1.4E-02	3.2E-04	2%
Chromium	0.00795	6978	1.00E-03	0.25	234	6	0.001	15	25550	5.1E-08	0.0E+00	0.0E+00	0%	2190	5.9E-07	1.0E-03	5.9E-04	4%
Cobalt	0.02087	6978	1.00E-03	0.25	234	6	0.001	15	25550	1.3E-07	0.0E+00	0.0E+00	0%	2190	1.6E-06	1.2E-02	1.3E-04	1%
Copper	0.00762	6978	1.00E-03	0.25	234	6	0.001	15	25550	4.9E-08	0.0E+00	0.0E+00	0%	2190	5.7E-07	8.0E-03	7.1E-05	1%
Iron	5.80845	6978	1.00E-03	0.25	234	6	0.001	15	25550	3.7E-05	0.0E+00	0.0E+00	0%	2190	4.3E-04	6.0E-02	7.2E-03	54%
Manganese	0.12210	6978	1.00E-03	0.25	234	6	0.001	15	25550	7.8E-07	0.0E+00	0.0E+00	0%	2190	9.1E-06	4.6E-03	2.0E-03	15%
Vanadium	0.00878	6978	1.00E-03	0.25	234	6	0.001	15	25550	5.6E-08	0.0E+00	0.0E+00	0%	2190	6.5E-07	1.4E-03	4.7E-04	4%
TOTAL												1.8E-07					1.3E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.12000	10000	1.00E-02	0.25	350	6	0.001	15	25550	1.6E-05	0.0E+00	0.0E+00	0%	2190	1.9E-04	7.2E-03	2.7E-02	8%
Benzene	0.02700	10000	2.10E-02	0.25	350	6	0.001	15	25550	7.8E-06	3.6E-02	2.8E-07	2%	2190	9.1E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.04300	10000	7.30E-03	0.25	350	6	0.001	15	25550	4.3E-06	2.4E+00	1.0E-05	69%	2190	5.0E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.32000	10000	1.60E-02	0.25	350	6	0.001	15	25550	7.0E-05	1.4E-02	9.6E-07	8%	2190	8.2E-04	4.8E-03	1.7E-01	36%
Aluminum	29.70000	10000	1.00E-03	0.25	350	6	0.001	15	25550	4.1E-04	0.0E+00	0.0E+00	0%	2190	4.7E-03	2.0E-01	2.4E-02	5%
Barium	2.05000	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.8E-05	0.0E+00	0.0E+00	0%	2190	3.3E-04	1.4E-02	2.3E-02	5%
Chromium	0.21000	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.9E-06	0.0E+00	0.0E+00	0%	2190	3.4E-05	1.0E-03	3.4E-02	7%
Cobalt	0.53000	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.3E-06	0.0E+00	0.0E+00	0%	2190	8.5E-05	1.2E-02	7.1E-03	1%
Copper	0.26900	10000	1.00E-03	0.25	350	6	0.001	15	25550	3.7E-06	0.0E+00	0.0E+00	0%	2190	4.3E-05	8.0E-03	5.4E-03	1%
Iron	38.80000	10000	1.00E-03	0.25	350	6	0.001	15	25550	5.3E-04	0.0E+00	0.0E+00	0%	2190	6.2E-03	6.0E-02	1.0E-01	22%
Manganese	0.53400	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.3E-06	0.0E+00	0.0E+00	0%	2190	8.5E-05	4.6E-03	1.9E-02	4%
Vanadium	0.51800	10000	1.00E-03	0.25	350	6	0.001	15	25550	7.1E-06	0.0E+00	0.0E+00	0%	2190	8.3E-05	1.4E-03	5.9E-02	13%
TOTAL												1.1E-05					4.7E-01	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	10000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	350
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.00919	10000	1.00E-02	0.25	350	6	0.001	15	25550	1.3E-06	0.0E+00	0.0E+00	0%	2190	1.5E-05	7.2E-03	2.0E-03	7%
Benzene	0.00571	10000	2.10E-02	0.25	350	6	0.001	15	25550	1.6E-06	3.6E-02	6.0E-08	4%	2190	1.9E-05	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00852	10000	7.30E-03	0.25	350	6	0.001	15	25550	6.5E-07	2.4E+00	1.5E-06	95%	2190	7.0E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	10000	1.80E-02	0.25	350	6	0.001	15	25550	2.1E-06	1.4E-02	3.0E-08	2%	2190	2.5E-05	4.8E-03	5.2E-03	17%
Aluminum	0.71060	10000	1.00E-03	0.25	350	6	0.001	15	25550	9.7E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	2.0E-01	5.7E-04	2%
Barium	0.05981	10000	1.00E-03	0.25	350	6	0.001	15	25550	8.2E-07	0.0E+00	0.0E+00	0%	2190	9.6E-06	1.4E-02	6.8E-04	2%
Chromium	0.00795	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.1E-07	0.0E+00	0.0E+00	0%	2190	1.3E-06	1.0E-03	1.3E-03	4%
Cobalt	0.02087	10000	1.00E-03	0.25	350	6	0.001	15	25550	2.9E-07	0.0E+00	0.0E+00	0%	2190	3.3E-06	1.2E-02	2.8E-04	1%
Copper	0.00762	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.0E-07	0.0E+00	0.0E+00	0%	2190	1.2E-06	8.0E-03	1.5E-04	0%
Iron	5.80845	10000	1.00E-03	0.25	350	6	0.001	15	25550	8.0E-05	0.0E+00	0.0E+00	0%	2190	9.3E-04	6.0E-02	1.5E-02	50%
Manganese	0.12210	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.7E-06	0.0E+00	0.0E+00	0%	2190	2.0E-05	4.6E-03	4.2E-03	14%
Vanadium	0.00878	10000	1.00E-03	0.25	350	6	0.001	15	25550	1.2E-07	0.0E+00	0.0E+00	0%	2190	1.4E-06	1.4E-03	1.0E-03	3%
TOTAL												1.6E-06					3.1E-02	

GROUNDWATER DERMAL CONTACT EXPOSURE ASSESSMENT (PHASE II) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL CHILD

Dermal Contact from groundwater is calcuated as follows:

Intake (mg/kg-day) = CW * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	6978
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	0.25
EF = child exposure frequency (days/yr)	234
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal. Adjust. Reference Dose (mg/kg-day)	Noncarc Risk Child	Percent Noncarcinogenic Risk Child
1,2-Dichloroethene (total)	0.00919	6978	1.00E-02	0.25	234	6	0.001	15	25550	5.9E-07	0.0E+00	0.0E+00	0%	2190	6.9E-06	7.2E-03	9.5E-04	7%
Benzene	0.00571	6978	2.10E-02	0.25	234	6	0.001	15	25550	7.7E-07	3.6E-02	2.8E-08	4%	2190	8.9E-06	0.0E+00	0.0E+00	0%
Vinyl Chloride	0.00652	6978	7.30E-03	0.25	234	6	0.001	15	25550	3.0E-07	2.4E+00	7.2E-07	95%	2190	3.5E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00979	6978	1.80E-02	0.25	234	6	0.001	15	25550	1.0E-06	1.4E-02	1.4E-08	2%	2190	1.2E-05	4.8E-03	2.4E-03	17%
Aluminum	0.71060	6978	1.00E-03	0.25	234	6	0.001	15	25550	4.5E-06	0.0E+00	0.0E+00	0%	2190	5.3E-05	2.0E-01	2.6E-04	2%
Barium	0.05981	6978	1.00E-03	0.25	234	6	0.001	15	25550	3.8E-07	0.0E+00	0.0E+00	0%	2190	4.5E-06	1.4E-02	3.2E-04	2%
Chromium	0.00795	6978	1.00E-03	0.25	234	6	0.001	15	25550	5.1E-08	0.0E+00	0.0E+00	0%	2190	5.9E-07	1.0E-03	5.9E-04	4%
Cobalt	0.02087	6978	1.00E-03	0.25	234	6	0.001	15	25550	1.3E-07	0.0E+00	0.0E+00	0%	2190	1.6E-06	1.2E-02	1.3E-04	1%
Copper	0.00762	6978	1.00E-03	0.25	234	6	0.001	15	25550	4.9E-08	0.0E+00	0.0E+00	0%	2190	5.7E-07	8.0E-03	7.1E-05	0%
Iron	5.80845	6978	1.00E-03	0.25	234	6	0.001	15	25550	3.7E-05	0.0E+00	0.0E+00	0%	2190	4.3E-04	6.0E-02	7.2E-03	50%
Manganese	0.12210	6978	1.00E-03	0.25	234	6	0.001	15	25550	7.8E-07	0.0E+00	0.0E+00	0%	2190	9.1E-06	4.6E-03	2.0E-03	14%
Vanadium	0.00878	6978	1.00E-03	0.25	234	6	0.001	15	25550	5.6E-08	0.0E+00	0.0E+00	0%	2190	6.5E-07	1.4E-03	4.7E-04	3%
TOTAL												7.6E-07					1.4E-02	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE INHALATION OF GROUNDWATER VOLATILES CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from the inhalation of groundwater volatiles

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED \times ET}{AT \times BW}$$

Where:

C	=	Contaminant concentration in shower air (mg/m^3)
EF	=	Exposure frequency (days/year)
ED	=	Exposure duration (years)
ET	=	Exposure time (hr/day)
AT_c	=	Averaging time carcinogen (days)
AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Trichloroethene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.0089\ mg/m^3 \times 0.6\ m^3/hr \times 0.25 hr/day \times 350\ days/yr \times 30\ yrs}{25{,}550\ days \times 70\ kg}$$

$$= 7.8E\text{-}06$$

Risk = 7.8E-06 mg/kg·day x 6.0E-03 $mg/kg{\cdot}day^{-1}$ = 4.7E-08

Example Noncarcinogen: Benzene

$$Intake\ (mg/kg{\cdot}day) = \frac{0.0029\ mg/m^3 \times 0.6\ m^3/hr \times 0.25 hr/day \times 350\ days/yr \times 30\ yrs}{10{,}950\ days \times 70\ kg}$$

$$= 5.9E\text{-}06$$

$$Risk = \frac{5.9E\text{-}06\ mg/kg{\cdot}day}{1.7E\text{-}03\ mg/kg{\cdot}day} = 3.4E\text{-}03$$

Re: Site 73 Future Residential Adult

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE I) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	350
ED = exposure duration (years)	30
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	10950

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-da	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethane	0.00092	350	0.6	30	0.25	70	25550	8.1E-07	9.1E-02	7.4E-08	1%	10950	1.9E-06	2.9E-03	6.6E-04	2%
Cis-1,2-Dichloroethene	0.09758	350	0.6	30	0.25	70	25550	8.6E-05	0.0E+00	0.0E+00	0%	10950	2.0E-04	0.0E+00	0.0E+00	0%
Benzene	0.02575	350	0.6	30	0.25	70	25550	2.3E-05	2.9E-02	6.6E-07	6%	10950	5.3E-05	1.7E-03	3.1E-02	98%
Vinyl Chloride	0.03472	350	0.6	30	0.25	70	25550	3.1E-05	3.0E-01	9.2E-06	87%	10950	7.1E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.12276	350	0.6	30	0.25	70	25550	1.1E-04	6.0E-03	6.5E-07	6%	10950	2.5E-04	0.0E+00	0.0E+00	0%
TOTAL										1.1E-05					3.2E-02	

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE I) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	350
ED = exposure duration (years)	30
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	10950

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethane	0.0006	350	0.6	30	0.25	70	25550	5.3E-07	9.1E-02	4.8E-08	6%	10950	1.2E-06	2.9E-03	4.3E-04	11%
Cis-1,2-Dichloroethene	0.00746	350	0.6	30	0.25	70	25550	6.6E-06	0.0E+00	0.0E+00	0%	10950	1.5E-05	0.0E+00	0.0E+00	0%
Benzene	0.00286	350	0.6	30	0.25	70	25550	2.5E-06	2.9E-02	7.3E-08	10%	10950	5.9E-06	1.7E-03	3.4E-03	89%
Vinyl Chloride	0.0022	350	0.6	30	0.25	70	25550	1.9E-06	3.0E-01	5.8E-07	78%	10950	4.5E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00882	350	0.6	30	0.25	70	25550	7.8E-06	6.0E-03	4.7E-08	6%	10950	1.8E-05	0.0E+00	0.0E+00	0%
TOTAL										7.5E-07					3.9E-03	

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE I) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	234
ED = exposure duration (years)	9
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	3285

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethane	0.0006	234	0.6	9	0.25	70	25550	1.1E-07	9.1E-02	9.6E-09	6%	3285	8.2E-07	2.9E-03	2.9E-04	11%
Cis-1,2-Dichloroethene	0.00748	234	0.6	9	0.25	70	25550	1.3E-06	0.0E+00	0.0E+00	0%	3285	1.0E-05	0.0E+00	0.0E+00	0%
Benzene	0.00286	234	0.6	9	0.25	70	25550	5.1E-07	2.9E-02	1.5E-08	10%	3285	3.9E-06	1.7E-03	2.3E-03	89%
Vinyl Chloride	0.0022	234	0.6	9	0.25	70	25550	3.9E-07	3.0E-01	1.2E-07	78%	3285	3.0E-06	0.0E+00	0.0E+00	0%
Trichloroethene	0.00882	234	0.6	9	0.25	70	25550	1.6E-06	6.0E-03	9.3E-09	6%	3285	1.2E-05	0.0E+00	0.0E+00	0%
TOTAL										1.5E-07					2.6E-03	

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE II) - MAXIMUM DETECTED CONCENTRATION
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	350
ED = exposure duration (years)	30
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	10950

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethene (total)	0.1859	350	0.6	30	0.25	70	25550	1.6E-04	0.0E+00	0.0E+00	0%	10950	3.8E-04	0.0E+00	0.0E+00	0%
Benzene	0.03957	350	0.6	30	0.25	70	25550	3.5E-05	2.9E-02	1.0E-06	5%	10950	8.1E-05	1.7E-03	4.8E-02	100%
Vinyl Chloride	0.06819	350	0.6	30	0.25	70	25550	6.0E-05	3.0E-01	1.8E-05	86%	10950	1.4E-04	0.0E+00	0.0E+00	0%
Trichloroethene	0.35713	350	0.6	30	0.25	70	25550	3.1E-04	6.0E-03	1.9E-06	9%	10950	7.3E-04	0.0E+00	0.0E+00	0%
TOTAL										2.1E-05					4.8E-02	

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE II) - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	350
ED = exposure duration (years)	30
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	10950

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethene (total)	0.01217	350	0.6	30	0.25	70	25550	1.1E-05	0.0E+00	0.0E+00	0%	10950	2.5E-05	0.0E+00	0.0E+00	0%
Benzene	0.00837	350	0.6	30	0.25	70	25550	7.4E-06	2.9E-02	2.1E-07	7%	10950	1.7E-05	1.7E-03	1.0E-02	100%
Vinyl Chloride	0.01034	350	0.6	30	0.25	70	25550	9.1E-06	3.0E-01	2.7E-06	91%	10950	2.1E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.0109	350	0.6	30	0.25	70	25550	9.6E-06	6.0E-03	5.8E-08	2%	10950	2.2E-05	0.0E+00	0.0E+00	0%
TOTAL										3.0E-06					1.0E-02	

GROUNDWATER INHALATION EXPOSURE ASSESSMENT (PHASE II) - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE RESIDENTIAL ADULT

Intake from the inhalation of volatile organics is calculated as follows:

Intake (mg/kg-day) = (C * EF * ED * ET * IR)/(BW * ATc or ATnc)

Risk = Intake * CSF or /RfD

Where:	INPUTS
C = contaminant concentration in air (mg/m3)	Specific
CSF = carcinogenic slope factor (inhalation)	Specific
RfD = reference dose (inhalation)	Specific
IR = inhalation rate (m3/hr)	0.6
EF = exposure frequency (days)	234
ED = exposure duration (years)	9
ET = exposure time (hr/day)	0.25
BW = body weight (kg)	70
ATc = averaging time for carcinogen (days)	25550
ATnc = averaging time for noncarcinogen (days)	3285

Note: Inputs are scenario and site specific

Contaminant	Concentration (mg/m3)	Exposure Frequency (events/yr)	Inhalation Rate (m3/day)	Exposure Duration (yrs)	Exposure Time (hr/day)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg/day)	Slope Factor (mg/kg-day)-1	Carc Risk Adult	Percent Carc Risk	Ave Time Noncarc (days)	Noncarc Dose (mg/kg/day)	Reference Dose (mg/kg/day)	Noncarc Hazard Adult	Percent Noncarc Hazard
1,2-Dichloroethene (total)	0.01217	234	0.6	9	0.25	70	25550	2.1E-06	0.0E+00	0.0E+00	0%	3285	1.7E-05	0.0E+00	0.0E+00	0%
Benzene	0.00837	234	0.6	9	0.25	70	25550	1.5E-06	2.9E-02	4.3E-08	7%	3285	1.1E-05	1.7E-03	6.7E-03	100%
Vinyl Chloride	0.01034	234	0.6	9	0.25	70	25550	1.8E-06	3.0E-01	5.5E-07	91%	3285	1.4E-05	0.0E+00	0.0E+00	0%
Trichloroethene	0.0109	234	0.6	9	0.25	70	25550	1.9E-06	6.0E-03	1.2E-08	2%	3285	1.5E-05	0.0E+00	0.0E+00	0%
TOTAL										6.0E-07					6.7E-03	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE SURFACE WATER INGESTION CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from ingestion of surface water

$$Intake\ (mg/kg{\cdot}day) = \frac{C \times IR \times EF \times ED \times ET}{BW \times AT}$$

Where:	C	=	Contaminant concentration in surface water (mg/L)
	IR	=	Daily intake ingestion rate (kg/meal)
	EF	=	Exposure frequency (meal/year)
	ED	=	Exposure duration (years)
	ET	=	Exposure time (hrs/day)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg{\cdot}day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: No Carcinogenic COPCs in Surface Water

Example Noncarcinogen: Aluminum

$$Intake\ (mg/kgday) = \frac{0.5\ mg/L \times 0.05\ L/day \times 48\ days/yr \times 30\ yrs \times 2.6\ hrs/day}{70\ kg \times 10{,}950\ days}$$

$$= 1.2E\text{-}04$$

$$Risk = \frac{1.2E\text{-}04\ mg/kgday}{1.0\ mg/kgday} = 1.2E\text{-}04$$

SURFACE WATER INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = ingestion rate (Liter/hour)		0.05
ET = exposure time (hours/event)		2.6
EF = exposure frequency (events/yr)		100
ED = exposure duration (yrs)		4
BW = body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		4
DY = days per year (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (l/hour)	Exposure Time (hrs/event)	Exposure Frequency (events/yr)	Exposure Duration (years)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg-day)	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Averaging Time Noncarc. (days)	Noncarc Dose (mg/kg-day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	0.05	2.6	100	4	70	25550	1.5E-05	0.0E+00	0.0E+00	0%	1460	2.5E-04	1.0E+00	2.5E-04	0%
Antimony	0.216	0.05	2.6	100	4	70	25550	6.3E-06	0.0E+00	0.0E+00	0%	1460	1.1E-04	4.0E-04	2.7E-01	99%
Iron	1.757	0.05	2.6	100	4	70	25550	5.1E-05	0.0E+00	0.0E+00	0%	1460	8.9E-04	3.0E-01	3.0E-03	1%
Silver	0.003	0.05	2.6	100	4	70	25550	9.8E-08	0.0E+00	0.0E+00	0%	1460	1.7E-06	5.0E-03	3.4E-04	0%
Zinc	0.097	0.05	2.6	100	4	70	25550	2.8E-06	0.0E+00	0.0E+00	0%	1460	5.0E-05	3.0E-01	1.7E-04	0%
TOTAL										0.0E+00					2.8E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUT
Cw = contaminant concentration in surface water (mg/l)	
CR = ingestion rate (Liter/hour)	0.05
ET = exposure time (hours/event)	2.6
EF = exposure frequency (events/yr)	48
ED = exposure duration (yrs)	30
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event)	Exposure Frequency (events/yr)	Exposure Duration (years)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg-day)	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Averaging Time Noncarc. (days)	Noncarc Dose (mg/kg-day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	0.05	2.6	48	30	70	25550	5.2E-05	0.0E+00	0.0E+00	0%	10950	1.2E-04	1.0E+00	1.2E-04	0%
Antimony	0.216	0.05	2.6	48	30	70	25550	2.3E-05	0.0E+00	0.0E+00	0%	10950	5.3E-05	4.0E-04	1.3E-01	99%
Iron	1.757	0.05	2.6	48	30	70	25550	1.8E-04	0.0E+00	0.0E+00	0%	10950	4.3E-04	3.0E-01	1.4E-03	1%
Silver	0.003	0.05	2.6	48	30	70	25550	3.5E-07	0.0E+00	0.0E+00	0%	10950	8.3E-07	5.0E-03	1.7E-04	0%
Zinc	0.097	0.05	2.6	48	30	70	25550	1.0E-05	0.0E+00	0.0E+00	0%	10950	2.4E-05	3.0E-01	7.9E-05	0%
TOTAL										0.0E+00					1.3E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUT
Cw = contaminant concentration in surface water (mg/l)	
CR = contact rate (Liter/hour)	0.05
ET = adolescent exposure time (hours/event)	2.6
EF = adolescent exposure frequency (events/yr)	48
ED = adolescent exposure duration (yrs)	9
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Adolescent	Exposure Frequency (events/yr) Adolescent	Exposure Duration (years) Adolescent	Body Weight (kg) Adolescent	Averaging Carc. Time (days)	Carc Dose (mg/kg-day) Adolescent	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Averaging Time Noncarc (days)	Noncarc Dose (mg/kg-day) Adolescent	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Aluminum	0.500	0.05	2.6	48	9	37	25550	3.0E-05	0.0E+00	0.0E+00	0%	3285	2.3E-04	1.0E+00	2.3E-04	0%
Antimony	0.216	0.05	2.6	48	9	37	25550	1.3E-05	0.0E+00	0.0E+00	0%	3285	1.0E-04	4.0E-04	2.5E-01	99%
Iron	1.757	0.05	2.6	48	9	37	25550	1.0E-04	0.0E+00	0.0E+00	0%	3285	8.1E-04	3.0E-01	2.7E-03	1%
Silver	0.003	0.05	2.6	48	9	37	25550	2.0E-07	0.0E+00	0.0E+00	0%	3285	1.6E-06	5.0E-03	3.1E-04	0%
Zinc	0.097	0.05	2.6	48	9	37	25550	5.6E-06	0.0E+00	0.0E+00	0%	3285	4.5E-05	3.0E-01	1.5E-04	0%
TOTAL										0.0E+00					2.5E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
IR = ingestion rate (Liter/hour)		0.05
ET = exposure time (hours/event)		2.6
EF = exposure frequency (events/yr)		48
ED = exposure duration (yrs)		30
BW = body weight (kg)		70
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		30
DY = days per year (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event)	Exposure Frequency (events/yr)	Exposure Duration (years)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg-day)	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Averaging Time Noncarc. (years)	Noncarc Dose (mg/kg-day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	0.05	2.6	48	30	70	25550	5.2E-05	0.00E+00	0.0E+00	0%	10950	1.2E-04	1.00E+00	1.2E-04	0%
Antimony	0.216	0.05	2.6	48	30	70	25550	2.3E-05	0.00E+00	0.0E+00	0%	10950	5.3E-05	4.00E-04	1.3E-01	99%
Iron	1.757	0.05	2.6	48	30	70	25550	1.8E-04	0.00E+00	0.0E+00	0%	10950	4.3E-04	3.00E-01	1.4E-03	1%
Silver	0.003	0.05	2.6	48	30	70	25550	3.5E-07	0.00E+00	0.0E+00	0%	10950	8.3E-07	5.00E-03	1.7E-04	0%
Zinc	0.097	0.05	2.6	48	30	70	25550	1.0E-05	0.00E+00	0.0E+00	0%	10950	2.4E-05	3.00E-01	7.9E-05	0%
TOTAL										0.0E+00					1.3E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE ADULT RESIDENT

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUT
Cw = contaminant concentration in surface water (mg/l)	
CR = ingestion rate (Liter/hour)	0.05
ET = exposure time (hours/event)	2.6
EF = exposure frequency (events/yr)	48
ED = exposure duration (yrs)	30
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (l/hour)	Exposure Time (hrs/event)	Exposure Frequency (events/yr)	Exposure Duration (years)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg-da	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Averaging Tim Noncarc. (days)	Noncarc Dose (mg/kg-day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	0.05	2.6	48	30	70	25550	5.2E-05	0.0E+00	0.0E+00	0%	10950	1.2E-04	1.0E+00	1.2E-04	0%
Antimony	0.216	0.05	2.6	48	30	70	25550	2.3E-05	0.0E+00	0.0E+00	0%	10950	5.3E-05	4.0E-04	1.3E-01	99%
Iron	1.757	0.05	2.6	48	30	70	25550	1.8E-04	0.0E+00	0.0E+00	0%	10950	4.3E-04	3.0E-01	1.4E-03	1%
Silver	0.003	0.05	2.6	48	30	70	25550	3.5E-07	0.0E+00	0.0E+00	0%	10950	8.3E-07	5.0E-03	1.7E-04	0%
Zinc	0.097	0.05	2.6	48	30	70	25550	1.0E-05	0.0E+00	0.0E+00	0%	10950	2.4E-05	3.0E-01	7.9E-05	0%
TOTAL										0.0E+00					1.3E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE ADULT RESIDENT

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUT
Cw = contaminant concentration in surface water (mg/l)	
CR = ingestion rate (Liter/hour)	0.05
ET = exposure time (hours/event)	2.6
EF = exposure frequency (events/yr)	48
ED = exposure duration (yrs)	9
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Ingestion Rate (l/hour)	Exposure Time (hrs/event)	Exposure Frequency (events/yr)	Exposure Duration (years)	Body Weight (kg)	Average Carc Time (days)	Carc Dose (mg/kg-day)	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Averaging Time Noncarc. (days)	Noncarc Dose (mg/kg-day)	Reference Dose (mg/kg-day)	Noncarcinogenic Risk	Percent Noncarcinogenic Risk
Aluminum	0.129	0.05	2.6	48	9	70	25550	4.1E-06	0.0E+00	0.0E+00	0%	3285	3.2E-05	1.0E+00	3.2E-05	0%
Antimony	0.152	0.05	2.6	48	9	70	25550	4.8E-06	0.0E+00	0.0E+00	0%	3285	3.7E-05	4.0E-04	9.3E-02	98%
Iron	1.757	0.05	2.6	48	9	70	25550	5.5E-05	0.0E+00	0.0E+00	0%	3285	4.3E-04	3.0E-01	1.4E-03	2%
Silver	0.003	0.05	2.6	48	9	70	25550	1.1E-07	0.0E+00	0.0E+00	0%	3285	8.3E-07	5.0E-03	1.7E-04	0%
Zinc	0.097	0.05	2.6	48	9	70	25550	3.1E-06	0.0E+00	0.0E+00	0%	3285	2.4E-05	3.0E-01	7.9E-05	0%
TOTAL										0.0E+00					9.5E-02	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CHILD RESIDENT

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:		INPUT
Cw = contaminant concentration in surface water (mg/l)		
CR = contact rate (Liter/hour)		0.05
ET = child exposure time (hours/event)		2.6
EF = child exposure frequency (events/yr)		48
ED = child exposure duration (yrs)		6
BW = child body weight (kg)		15
ATc = averaging time for carcinogen (yr)		70
ATnc = averaging time for noncarcinogen (yr)		6
DY = days per year (days)		365
CSF = cancer slope factor (mg/kg-day)-1	specific	
RfD = reference dose (mg/kg-day)	specific	

COPC	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Child	Exposure Frequency (events/yr) Child	Exposure Duration (years) Child	Body Weight (kg) Child	Averaging Carc. Time (days)	Carc Dose (mg/kg-day) Child	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Averaging Time Noncarc (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	0.600	0.05	2.6	48	6	15	25550	4.6E-05	0.0E+00	0.0E+00	0%	2190	5.7E-04	1.0E+00	5.7E-04	0%
Antimony	0.216	0.05	2.6	48	6	15	25550	2.1E-05	0.0E+00	0.0E+00	0%	2190	2.5E-04	4.0E-04	6.2E-01	99%
Iron	1.757	0.05	2.6	48	6	15	25550	1.7E-04	0.0E+00	0.0E+00	0%	2190	2.0E-03	3.0E-01	6.7E-03	1%
Silver	0.003	0.05	2.6	48	6	15	25550	3.3E-07	0.0E+00	0.0E+00	0%	2190	3.9E-06	5.0E-03	7.7E-04	0%
Zinc	0.097	0.05	2.6	48	6	15	25550	9.5E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	3.0E-01	3.7E-04	0%
TOTAL										0.0E+00					6.2E-01	

SURFACE WATER INGESTION EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CHILD RESIDENT

The intake from the ingestion of surface water is calculated as follows:

Intake (mg/kg-day) = Cw * CR * ET * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUT
Cw = contaminant concentration in surface water (mg/l)	
CR = contact rate (Liter/hour)	0.05
ET = child exposure time (hours/event)	2.6
EF = child exposure frequency (events/yr)	48
ED = child exposure duration (yrs)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	specific
RfD = reference dose (mg/kg-day)	specific

COPC	Concentration Carcinogen (mg/l)	Contact Rate (l/hour)	Exposure Time (hrs/event) Child	Exposure Frequency (events/yr) Child	Exposure Duration (years) Child	Body Weight (kg) Child	Averaging Carc. Time (days)	Carc Dose (mg/kg-day) Child	Cancer Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Averaging Time Noncarc (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	0.129	0.05	2.6	48	6	15	25550	1.3E-05	0.0E+00	0.0E+00	0%	2190	1.5E-04	1.0E+00	1.5E-04	0%
Antimony	0.152	0.05	2.6	48	6	15	25550	1.5E-05	0.0E+00	0.0E+00	0%	2190	1.7E-04	4.0E-04	4.3E-01	98%
Iron	1.757	0.05	2.6	48	6	15	25550	1.7E-04	0.0E+00	0.0E+00	0%	2190	2.0E-03	3.0E-01	6.7E-03	2%
Silver	0.003	0.05	2.6	48	6	15	25550	3.3E-07	0.0E+00	0.0E+00	0%	2190	3.9E-06	5.0E-03	7.7E-04	0%
Zinc	0.097	0.05	2.6	48	6	15	25550	9.5E-06	0.0E+00	0.0E+00	0%	2190	1.1E-04	3.0E-01	3.7E-04	0%
TOTAL										0.0E+00					4.4E-01	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE SURFACE WATER DERMAL CONTACT CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from dermal contact with surface water

$$Intake\ (mg/kgday) = \frac{C \times SA \times CF \times EF \times ED \times ET \times PC}{BW \times AT}$$

Where:	C	=	Contaminant concentration in surface water (mg/L)
	SA	=	Skin surface area (cm^2)
	CF	=	Conversion factor (1 L/1,000 cm^3)
	EF	=	Exposure frequency (days/year)
	ED	=	Exposure duration (years)
	ET	=	Exposure time (hrs/day)
	PC	=	Chemical-specific dermal permeability constant (cm/hr)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg \cdot day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: No Carcinogenic COPCs in Surface Water

Example Noncarcinogen: Aluminum

$$Intake\ (mg/kgday) = \frac{0.5\ mg/L \times 5{,}800\ cm^2 \times 48\ days/yr \times 30\ yrs \times 2.6\ hrs/day \times 1.0E\text{-}3\ L/cm^3 \times 1E\text{-}03\ cm/hr}{70\ kg \times 10{,}950\ days}$$

$$= 1.4E\text{-}05$$

$$Risk = \frac{1.4E\text{-}05\ mg/kgday}{2.0E\text{-}01\ mg/kgday} = 7.1E\text{-}05$$

Re: Site 73 Future Residential Adult

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT MILITARY PERSONNEL

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = skin surface available for contact (cm2)	4300
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = exposure time (hours/day)	2.6
EF = exposure frequency (days/yr)	100
ED = exposure duration (years)	4
CF = volumetric conversion factor for water (1liter/1000 cm	0.001
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	4
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/l)	Surface Area (cm2)	Dermal Permeability (cm/hr)	Exposure Time (hours/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Volumetric Conversion (L/m3)	Body Weight (kg)	Averaging Carc Time (days)	Carc Dose (mg/kg-day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	4300	1.0E-03	2.6	100	4	0.001	70	25550	1.3E-06	0.0E+00	0.0E+00	0%	1460	2.2E-05	2.0E-01	1.1E-04	0%
Antimony	0.216	4300	1.0E-03	2.6	100	4	0.001	70	25550	5.4E-07	0.0E+00	0.0E+00	0%	1460	9.5E-06	8.0E-05	1.2E-01	99%
Iron	1.757	4300	1.0E-03	2.6	100	4	0.001	70	25550	4.4E-06	0.0E+00	0.0E+00	0%	1460	7.7E-05	6.0E-02	1.3E-03	1%
Silver	0.003	4300	1.0E-03	2.6	100	4	0.001	70	25550	8.5E-09	0.0E+00	0.0E+00	0%	1460	1.5E-07	1.0E-03	1.5E-04	0%
Zinc	0.097	4300	6.0E-04	2.6	100	4	0.001	70	25550	1.5E-07	0.0E+00	0.0E+00	0%	1460	2.6E-06	6.0E-02	4.3E-05	0%
TOTAL												0.0E+00					1.2E-01	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADULT TRESPASSER

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = skin surface available for contact (cm2)	5800
PC = contaminant specific dermal permability (cm/hr	Specific
ET = exposure time (hours/day)	2.6
EF = exposure frequency (days/yr)	48
ED = exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1	0.001
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/l)	Surface Area (cm2)	Dermal Permeability (cm/hr)	Exposure Time (hours/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Volumetric Conversion (L/m3)	Body Weight (kg)	Averaging Carc Time (days)	Carc Dose (mg/kg-day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Tim (days)	Noncarc Dose (mg/kg-day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	5800	1.0E-03	2.6	48	30	0.001	70	25550	6.1E-06	0.0E+00	0.0E+00	0%	10950	1.4E-05	2.0E-01	7.1E-05	0%
Antimony	0.216	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.6E-06	0.0E+00	0.0E+00	0%	10950	6.1E-06	8.0E-05	7.6E-02	99%
Iron	1.757	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.1E-05	0.0E+00	0.0E+00	0%	10950	5.0E-05	6.0E-02	8.3E-04	1%
Silver	0.003	5800	1.0E-03	2.6	48	30	0.001	70	25550	4.1E-08	0.0E+00	0.0E+00	0%	10950	9.6E-08	1.0E-03	9.6E-05	0%
Zinc	0.097	5800	6.0E-04	2.6	48	30	0.001	70	25550	7.1E-07	0.0E+00	0.0E+00	0%	10950	1.7E-06	6.0E-02	2.8E-05	0%
TOTAL												0.0E+00					7.8E-02	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CURRENT ADOLESCENT TRESPASSER

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = adolescent skin surface available for contact (cm2)	3480
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = adolescent exposure time (hours/day)	2.6
EF = adolescent exposure frequency (days/yr)	48
ED = adolescent exposure duration (years)	9
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = adolescent body weight (kg)	37
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Adolescent	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Adolescent	Exposure Frequency (days/yr) Adolescent	Exposure Duration (years) Adolescent	Volumetric Conversion (L/m3)	Body Weight (kg) Adolescent	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Adolescent	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adolescent	Percent Carcinogenic Risk Adolescent	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adolescent	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc. Risk Adolescent	Percent Noncarcinogenic Risk Adolescent
Aluminum	0.500	3480	1.0E-03	2.6	48	9	0.001	37	25550	2.1E-06	0.0E+00	0.0E+00	0%	3285	1.6E-05	2.0E-01	8.0E-05	0%
Antimony	0.216	3480	1.0E-03	2.6	48	9	0.001	37	25550	8.9E-07	0.0E+00	0.0E+00	0%	3285	6.9E-06	8.0E-05	8.7E-02	99%
Iron	1.757	3480	1.0E-03	2.6	48	9	0.001	37	25550	7.3E-06	0.0E+00	0.0E+00	0%	3285	5.7E-05	6.0E-02	9.4E-04	1%
Silver	0.003	3480	1.0E-03	2.6	48	9	0.001	37	25550	1.4E-08	0.0E+00	0.0E+00	0%	3285	1.1E-07	1.0E-03	1.1E-04	0%
Zinc	0.097	3480	6.0E-04	2.6	48	9	0.001	37	25550	2.4E-07	0.0E+00	0.0E+00	0%	3285	1.9E-06	6.0E-02	3.1E-05	0%
TOTAL												0.0E+00					8.8E-02	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = skin surface available for contact (cm2)	5800
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = exposure time (hours/day)	2.6
EF = exposure frequency (days/yr)	48
ED = exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2)	Dermal Permeability (cm/hr)	Exposure Time (hours/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Volumetric Conversion (L/m3)	Body Weight (kg)	Averaging Carc Time (days)	Carc Dose (mg/kg-day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc. Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	5800	1.0E-03	2.6	48	30	0.001	70	25550	6.1E-06	0.00E+00	0.0E+00	0%	10950	1.4E-05	2.00E-01	7.1E-05	0%
Antimony	0.216	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.6E-06	0.00E+00	0.0E+00	0%	10950	6.1E-06	8.00E-05	7.6E-02	99%
Iron	1.757	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.1E-05	0.00E+00	0.0E+00	0%	10950	5.0E-05	6.00E-02	8.3E-04	1%
Silver	0.003	5800	1.0E-03	2.6	48	30	0.001	70	25550	4.1E-08	0.00E+00	0.0E+00	0%	10950	9.6E-08	1.00E-03	9.6E-05	0%
Zinc	0.097	5800	6.0E-04	2.6	48	30	0.001	70	25550	7.1E-07	0.00E+00	0.0E+00	0%	10950	1.7E-06	6.00E-02	2.8E-05	0%
TOTAL												0.0E+00					7.8E-02	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE ADULT RESIDENT

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = skin surface available for contact (cm2)	5800
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = exposure time (hours/day)	2.6
EF = exposure frequency (days/yr)	48
ED = exposure duration (years)	30
CF = volumetric conversion factor for water (1liter/10	0.001
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	30
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/l)	Surface Area (cm2)	Dermal Permeability (cm/hr)	Exposure Time (hours/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Volumetric Conversion (L/m3)	Body Weight (kg)	Averaging Carc Time (days)	Carc Dose (mg/kg-day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk	Percent Noncarcinogenic Risk
Aluminum	0.500	5800	1.0E-03	2.6	48	30	0.001	70	25550	6.1E-08	0.0E+00	0.0E+00	0%	10950	1.4E-05	2.0E-01	7.1E-05	0%
Antimony	0.216	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.6E-08	0.0E+00	0.0E+00	0%	10950	6.1E-06	8.0E-05	7.6E-02	89%
Iron	1.757	5800	1.0E-03	2.6	48	30	0.001	70	25550	2.1E-05	0.0E+00	0.0E+00	0%	10950	5.0E-05	6.0E-02	8.3E-04	1%
Silver	0.003	5800	1.0E-03	2.6	48	30	0.001	70	25550	4.1E-08	0.0E+00	0.0E+00	0%	10950	9.6E-08	1.0E-03	9.6E-05	0%
Zinc	0.097	5800	6.0E-04	2.6	48	30	0.001	70	25550	7.1E-07	0.0E+00	0.0E+00	0%	10950	1.7E-06	6.0E-02	2.8E-05	0%
TOTAL												0.0E+00					7.8E-02	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE ADULT RESIDENT

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = skin surface available for contact (cm2)	5000
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = exposure time (hours/day)	2.6
EF = exposure frequency (days/yr)	48
ED = exposure duration (years)	9
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = body weight (kg)	70
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	9
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration (mg/l)	Surface Area (cm2)	Dermal Permeability (cm/hr)	Exposure Time (hours/day)	Exposure Frequency (days/yr)	Exposure Duration (years)	Volumetric Conversion (L/m3)	Body Weight (kg)	Averaging Carc Time (days)	Carc Dose (mg/kg-day)	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk	Percent Carcinogenic Risk	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day)	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc Risk	Percent Noncarcinogenic Risk
Aluminum	0.129	5000	1.0E-03	2.6	48	9	0.001	70	25550	4.1E-07	0.0E+00	0.0E+00	0%	3285	3.2E-06	2.0E-01	1.6E-05	0%
Antimony	0.152	5000	1.0E-03	2.6	48	9	0.001	70	25550	4.8E-07	0.0E+00	0.0E+00	0%	3285	3.7E-06	8.0E-05	4.6E-02	98%
Iron	1.757	5000	1.0E-03	2.6	48	9	0.001	70	25550	5.5E-06	0.0E+00	0.0E+00	0%	3285	4.3E-05	6.0E-02	7.2E-04	2%
Silver	0.003	5000	1.0E-03	2.6	48	9	0.001	70	25550	1.1E-08	0.0E+00	0.0E+00	0%	3285	8.3E-08	1.0E-03	8.3E-05	0%
Zinc	0.097	5000	6.0E-04	2.6	48	9	0.001	70	25550	1.8E-07	0.0E+00	0.0E+00	0%	3285	1.4E-06	6.0E-02	2.4E-05	0%
TOTAL												0.0E+00					4.7E-02	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT - RME
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CHILD RESIDENT

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	2300
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	2.6
EF = child exposure frequency (days/yr)	48
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc. Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	0.500	2300	1.0E-03	2.6	48	6	0.001	15	25550	2.2E-06	0.0E+00	0.0E+00	0%	2190	2.6E-05	2.0E-01	1.3E-04	0%
Antimony	0.216	2300	1.0E-03	2.6	48	6	0.001	15	25550	9.7E-07	0.0E+00	0.0E+00	0%	2190	1.1E-05	8.0E-05	1.4E-01	99%
Iron	1.757	2300	1.0E-03	2.6	48	6	0.001	15	25550	7.9E-06	0.0E+00	0.0E+00	0%	2190	9.2E-05	6.0E-02	1.5E-03	1%
Silver	0.003	2300	1.0E-03	2.6	48	6	0.001	15	25550	1.5E-08	0.0E+00	0.0E+00	0%	2190	1.8E-07	1.0E-03	1.8E-04	0%
Zinc	0.097	2300	6.0E-04	2.6	48	6	0.001	15	25550	2.6E-07	0.0E+00	0.0E+00	0%	2190	3.1E-06	6.0E-02	5.1E-05	0%
TOTAL												0.0E+00					1.4E-01	

SURFACE WATER DERMAL CONTACT EXPOSURE ASSESSMENT - CENTRAL TENDENCY
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FUTURE CHILD RESIDENT

The intake from dermal contact with surface water is calculated as follows:

Intake (mg/kg-day) = Cw * SA * PC * ET * EF * ED * CF/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CW = contaminant concentration in water (mg/l)	
SA = child skin surface available for contact (cm2)	1745
PC = contaminant specific dermal permability (cm/hr)	Specific
ET = child exposure time (hours/day)	2.6
EF = child exposure frequency (days/yr)	48
ED = child exposure duration (years)	6
CF = volumetric conversion factor for water (1liter/1000 cm3)	0.001
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (yr)	70
ATnc = averaging time for noncarcinogen (yr)	6
DY = days per year (days)	365
CSF = cancer slope factor (mg/kg-day)-1	Specific
RfD = reference dose (mg/kg-day)	Specific

COPC	Concentration Carcinogen (mg/l)	Surface Area (cm2) Child	Dermal Permeability (cm/hr)	Exposure Time (hours/day) Child	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Volumetric Conversion (L/m3)	Body Weight (kg) Child	Averaging Carc Time (days)	Carc Dose (mg/kg-day) Child	Dermal Adjust. Slope Factor (mg/kg-day)-1	Carcinogenic Risk Child	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Dermal Adjust. Reference Dose (mg/kg-day)	Noncarc. Risk Child	Percent Noncarcinogenic Risk Child
Aluminum	0.129	1745	1.0E-03	2.6	48	6	0.001	15	25550	4.4E-07	0.0E+00	0.0E+00	0%	2190	5.1E-06	2.0E-01	2.6E-05	0%
Antimony	0.152	1745	1.0E-03	2.6	48	6	0.001	15	25550	5.2E-07	0.0E+00	0.0E+00	0%	2190	6.1E-06	8.0E-05	7.6E-02	98%
Iron	1.757	1745	1.0E-03	2.6	48	6	0.001	15	25550	6.0E-06	0.0E+00	0.0E+00	0%	2190	7.0E-05	6.0E-02	1.2E-03	2%
Silver	0.003	1745	1.0E-03	2.6	48	6	0.001	15	25550	1.2E-08	0.0E+00	0.0E+00	0%	2190	1.3E-07	1.0E-03	1.3E-04	0%
Zinc	0.097	1745	6.0E-04	2.6	48	6	0.001	15	25550	2.0E-07	0.0E+00	0.0E+00	0%	2190	2.3E-06	6.0E-02	3.9E-05	0%
TOTAL												0.0E+00					7.7E-02	

Computed by: KTW Checked by: RSP Date: 10/96

EXAMPLE FISH/CRAB INGESTION CALCULATIONS
OPERABLE UNIT NO. 9
CONTRACT TASK ORDER 0312

Purpose: Estimate intake/risk from ingestion of fish/crab (edible portion):

$$Intake\ (mg/kgday) = \frac{C \times FI \times EF \times ED \times IR}{BW \times AT}$$

Where:	C	=	Contaminant concentration in fish/crab tissue (mg/kg)
	FI	=	Fraction ingested
	EF	=	Exposure frequency (meal/year)
	ED	=	Exposure duration (years)
	IR	=	Ingestion rate (kg/meal)
	BW	=	Body weight (kg)
	AT_c	=	Averaging time carcinogen (days)
	AT_{nc}	=	Averaging time noncarcinogen (days)

Risks:

Carcinogens = Intake (mg/kg·day) x CSF $(mg/kg \cdot day)^{-1}$
Noncarcinogens = Intake (mg/kg·day)/RfD (mg/kg·day)

Example Carcinogen: Methylene Chloride

$$Intake\ (mg/kgday) = \frac{1.1\ mg/kg \times 0.054\ kg/meal \times 350\ days/yr \times 30\ yrs \times 0.1}{70\ kg \times 25{,}550\ days}$$

$$= 3.5E\text{-}05$$

Risk = 3.5E-05 mg/kg·day x 7.5E-03 $mg/kg \cdot day^{-1}$ = 2.6E-07

Example Noncarcinogen: Mercury

$$Intake\ (mg/kgday) = \frac{0.18\ mg/kg \times 0.054\ kg/meal \times 350\ days/yr \times 30\ yrs \times 0.1}{70\ kg \times 10{,}950\ days}$$

$$= 1.3E\text{-}05$$

$$Risk = \frac{1.3E\text{-}05\ mg/kgday}{3.0E\text{-}04\ mg/kgday} = 4.4E\text{-}02$$

Re: Site 73 Adult Fisherman

FISH INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

Intake (mg/kg-day) = CF * IR * FI * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CF = contaminant concentration in fish (mg/kg)	
IR = adult ingestion rate (kg/meal)	0.054
FI = fraction ingested from contaminated source (unitless)	0.1
EF = adult exposure frequency (meals/yr)	350
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (years)	70
ATnc = averaging time for noncarcinogen (years)	30
DY = days per year (days/yr)	365

COPC	Concentration Carcinogen (mg/kg)	Ingestion Rate (kg/meal) Adult	Fraction Ingestion (%)	Exposure Frequency (meals/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Methylene Chloride	1.100	0.054	0.1	350	30	70	25550	3.5E-05	7.5E-03	2.6E-07	100%	10950	8.1E-05	6.0E-02	1.4E-03	3%
Lead	0.04	0.054	0.1	350	30	70	25550	1.3E-06	0.0E+00	0.0E+00	0%	10950	3.0E-08	0.0E+00	0.0E+00	0%
Mercury	0.18	0.054	0.1	350	30	70	25550	5.7E-06	0.0E+00	0.0E+00	0%	10950	1.3E-05	3.0E-04	4.4E-02	97%
TOTAL										2.6E-07					4.6E-02	

CRAB INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
FISHERMAN - ADULT RECEPTOR

Intake (mg/kg-day) = CF * IR * FI * EF * ED/BW * ATc or ATnc * DY
Risk = Intake * CSF or RfD

Where:	INPUTS
CF = contaminant concentration in crab (mg/kg)	
IR = adult ingestion rate (kg/meal)	0.054
FI = fraction ingested from contaminated source (unitless)	0.1
EF = adult exposure frequency (meals/yr)	350
ED = adult exposure duration (years)	30
BW = adult body weight (kg)	70
ATc = averaging time for carcinogen (years)	70
ATnc = averaging time for noncarcinogen (years)	30
DY = days per year (days/yr)	365

COPC	Concentration Carcinogen (mg/kg)	Ingestion Rate (kg/meal) Adult	Fraction Ingestion (%)	Exposure Frequency (meals/yr) Adult	Exposure Duration (years) Adult	Body Weight (kg) Adult	Average Carc Time (days)	Carc Dose (mg/kg-day) Adult	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Adult	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Adult	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Adult	Percent Noncarcinogenic Risk Adult
Methylene Chloride	17	0.054	0.1	350	30	70	25550	5.4E-04	7.5E-03	4.0E-06	100%	10950	1.3E-03	6.0E-02	2.1E-02	48%
Copper	5.97	0.054	0.1	350	30	70	25550	1.9E-04	0.0E+00	0.0E+00	0%	10950	4.4E-04	3.7E-02	1.2E-02	26%
Lead	0.06	0.054	0.1	350	30	70	25550	1.9E-06	0.0E+00	0.0E+00	0%	10950	4.4E-06	0.0E+00	0.0E+00	0%
Mercury	0.05	0.054	0.1	350	30	70	25550	1.6E-06	0.0E+00	0.0E+00	0%	10950	3.7E-06	3.0E-04	1.2E-02	27%
TOTAL										4.0E-06					4.5E-02	

FISH INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CHILD RECEPTOR

Intake (mg/kg-day) = CF * IR * FI * EF * ED/BW * ATc or ATnc * DY

Risk = Intake * CSF or /RfD

Where:	INPUTS
CF = contaminant concentration in fish (mg/kg)	
IR = child ingestion rate (kg/meal)	0.054
FI = fraction ingested from contaminated source (unitless)	0.1
EF = child exposure frequency (meals/yr)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (years)	70
ATnc = averaging time for noncarcinogen (years)	6
DY = days per year (days/yr)	365

COPC	Concentration (mg/kg)	Ingestion Rate (kg/meal) Child	Fraction Ingestion (%)	Exposure Frequency (days/yr) Child	Exposure Duration (years) Child	Body Weight (kg) Child	Average Carc Time (days)	Carc Dose (mg/kg-day) Child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk Adult	Percent Carcinogenic Risk Child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) Child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk Child	Percent Noncarcinogenic Risk Child
Methylene Chloride	1.100	0.054	0.1	350	6	15	25550	3.3E-05	7.5E-03	2.4E-07	100%	2190	3.8E-04	6.0E-02	6.3E-03	3%
Lead	0.04	0.054	0.1	350	6	15	25550	1.2E-06	0.0E+00	0.0E+00	0%	2190	1.4E-05	0.0E+00	0.0E+00	0%
Mercury	0.18	0.054	0.1	350	6	15	25550	5.3E-06	0.0E+00	0.0E+00	0%	2190	6.2E-05	3.0E-04	2.1E-01	97%
TOTAL										2.4E-07					2.1E-01	

CRAB INGESTION EXPOSURE ASSESSMENT
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
CHILD RECEPTOR

Intake (mg/kg-day) = CF * IR * FI * EF * ED/BW * ATc or ATnc * DY
Risk = Intake * CSF or /RfD

Where:	INPUTS
CF = contaminant concentration in crab (mg/kg)	
IR = child ingestion rate (kg/meal)	0.054
FI = fraction ingested from contaminated source (unitless)	0.1
EF = child exposure frequency (meals/yr)	350
ED = child exposure duration (years)	6
BW = child body weight (kg)	15
ATc = averaging time for carcinogen (years)	70
ATnc = averaging time for noncarcinogen (years)	30
DY = days per year (days/yr)	365

COPC	Concentration Carcinogen (mg/kg)	Ingestion Rate (kg/meal) child	Fraction Ingestion (%)	Exposure Frequency (meals/yr) child	Exposure Duration (years) child	Body Weight (kg) child	Average Carc Time (days)	Carc Dose (mg/kg-day) child	Slope Factor (mg/kg-day)-1	Carcinogenic Risk child	Percent Carcinogenic Risk child	Average Noncarc Time (days)	Noncarc Dose (mg/kg-day) child	Reference Dose (mg/kg-day)	Noncarcinogenic Risk child	Percent Noncarcinogenic Risk child
Methylene Chloride	17	0.054	0.1	350	6	15	25550	5.0E-04	7.5E-03	3.8E-06	100%	2190	5.9E-03	6.0E-02	9.8E-02	46%
Copper	5.97	0.054	0.1	350	6	15	25550	1.8E-04	0.0E+00	0.0E+00	0%	2190	2.1E-03	3.7E-02	5.6E-02	26%
Lead	0.06	0.054	0.1	350	6	15	25550	1.8E-06	0.0E+00	0.0E+00	0%	2190	2.1E-05	0.0E+00	0.0E+00	0%
Mercury	0.05	0.054	0.1	350	6	15	25550	1.5E-06	0.0E+00	0.0E+00	0%	2190	1.7E-05	3.0E-04	5.8E-02	27%
TOTAL										3.9E-06					2.1E-01	

APPENDIX V
SHOWER MODEL CALCULATIONS

CALCULATION SPREADSHEET FOR INDOOR AIR CONCENTRATION OF VOLATILIZED ORGANIC COMPOUNDS
RESULTING FROM SHOWERING WITH WATER CONTAINING VOLATILE CONSTITUENTS OF INTEREST*
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
PHASE I GROUNDWATER

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

$$KL = 1/(1/kl + RT/Hkg),$$

where

H = Henry's Law Constant (atm-m3/mol-K);
RT = product of ideal gas constant (8.2E-5atm-m3/mol-K) and absolute temperature (293K)
= 0.024 atm-m3/mole;
kl = VOC-specific liquid-film mass transfer coefficient (cm/hr); and
= kl(CO2)*(44/MWvoc)^0.5; and
kg = VOC-specific gas-film mass transfer coefficient (cm/hr)
kl(H2O)*(18/MWvoc)^0.5

where

kl(CO2) = 20 cm/hr
kl(H2O) = 3000 cm/hr
MWvoc = Molecular weight of VOC.

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

$$KaL = KL[(Tc*us)/(Ts*uc)]^{-0.5}$$

where

KaL = adjusted overall mass transfer coefficient (cm/hr);
Tc = calibration water temperature of KL (K);
uc = water viscosity at Tc (cp); and
us = water viscosity at Ts (cp).

(3) Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

$$Cwd = Cw[1-exp((-KaL*ts)/60d)]$$

where

Cw = shower water concentrations (ug;L);
d = shower droplet diameter (mm); and
ts = shower droplet drop time (sec).

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

where

FR = shower water flow rate (L/min); and
SV = shower room air volume (m3).

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[wxp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

where

Ds = shower duration (min); and
t = time (min).

* Chrostowski, Foster, 1987.

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

KL = 1/(1/kl + RT/Hkg),

COI	kl(CO2) (cm/hr)	kg(H2O) (cm/hr)	MW (g/mol)	kl (cm/hr)	kg (cm/hr)	RT (atm-m3/mol)	H (atm-m3/mol-K)	KL (cm/hr)
1,2-Dichloroethane	20	3000	99	13.33	1279.20	0.024	0.0819	13.29
cis-1,2-Dichloroethene	20	3000	97	13.47	1292.32	0.024	0.034	13.37
Benzene	20	3000	78	15.02	1441.15	0.024	0.00758	14.54
Vinyl Chloride	20	3000	63	16.71	1603.57	0.024	0.00287	15.37
Trichloroethene	20	3000	131.4	11.57	1110.35	0.024	0.0091	11.26

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

KaL = KL[(Tc*us)/(Ts*uc)]^-0.5

COI	KL (cm/hr)	Tc (K)	Ts (K)	uc (cp)	us (cp)	KaL (cm/hr)
1,2-Dichloroethane	13.29	293	318	0.01002	0.5996	1.79
cis-1,2-Dichloroethene	13.37	293	318	0.01002	0.5996	1.80
Benzene	14.54	293	318	0.01002	0.5996	1.96
Vinyl Chloride	15.37	293	318	0.01002	0.5996	2.07
Trichloroethene	11.26	293	318	0.01002	0.5996	1.52

(3)Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

Cwd = Cw*[1-exp((-KaL*ts)/60*d)]
= Cw(1-exp(A))

COI	Cw (ug/L)	KaL (cm/hr)	ts (sec)	d (mm)	A	exp(A)	Cwd (ug/L)
1,2-Dichloroethane	0.46	1.79	2	1	-0.060	0.942	0.03
cis-1,2-Dichloroethene	5.66	1.80	2	1	-0.060	0.942	0.33
Benzene	2	1.96	2	1	-0.065	0.937	0.13
Vinyl Chloride	1.46	2.07	2	1	-0.069	0.933	0.10
Trichloroethene	7.9	1.52	2	1	-0.051	0.951	0.39

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

COI	Cwd (ug/L)	FR (L/min)	SV (M3)	S (ug/m3-min)
1,2-Dichloroethane	0.03	10	6	0.04
cis-1,2-Dichloroethene	0.33	10	6	0.55
Benzene	0.13	10	6	0.21
Vinyl Chloride	0.10	10	6	0.16
Trichloroethene	0.39	10	6	0.65

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[exp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

COI	S (ug/m3-min)	R (1/min)	Ds (min)	t (min)	RDs	Rt	exp(RDs)	exp(-Rt)	Ca(t) (ug/m3)
1,2-Dichloroethane	0.04	0.008	15	20	0.12	0.16	1.13	0.85	0.60
cis-1,2-Dichloroethene	0.55	0.008	15	20	0.12	0.16	1.13	0.85	7.46
Benzene	0.21	0.008	15	20	0.12	0.16	1.13	0.85	2.86
Vinyl Chloride	0.16	0.008	15	20	0.12	0.16	1.13	0.85	2.20
Trichloroethene	0.65	0.008	15	20	0.12	0.16	1.13	0.85	8.82

CALCULATION SPREADSHEET FOR INDOOR AIR CONCENTRATION OF VOLATILIZED ORGANIC COMPOUNDS
RESULTING FROM SHOWERING WITH WATER CONTAINING VOLATILE CONSTITUENTS OF INTEREST*
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
PHASE I GROUNDWATER - MAXIMUM DETECTED CONCENTRATIONS

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

KL = 1/(1/kl + RT/Hkg),

where

H = Henry's Law Constant (atm-m3/mol-K);
RT = product of ideal gas constant (8.2E-5atm-m3/mol-K) and absolute temperature (293K)
= 0.024 atm-m3/mole;
kl = VOC-specific liquid-film mass transfer coefficient (cm/hr); and
= kl(CO2)*(44/MWvoc)^0.5; and
kg = VOC-specific gas-film mass transfer coefficient (cm/hr)
kl(H2O)*(18/MWvoc)^0.5

where

kl(CO2) = 20 cm/hr
kl(H2O) = 3000 cm/hr
MWvoc = Molecular weight of VOC.

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

KaL = KL[(Tc*us)/(Ts*uc)]^-0.5

where

KaL = adjusted overall mass transfer coefficient (cm/hr);
Tc = calibration water temperature of KL (K);
uc = water viscosity at Tc (cp); and
us = water viscosity at Ts (cp).

(3) Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

Cwd = Cw[1-exp((-KaL*ts)/60d)]

where

Cw = shower water concentrations (ug;L);
d = shower droplet diameter (mm); and
ts = shower droplet drop time (sec).

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

S = (Cwd*FR)/SV

where

FR = shower water flow rate (L/min); and
SV = shower room air volume (m3).

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

Ca(t) = (S/R)[wxp(RDs)-1]*exp(-Rt) for t>Ds

where

Ds = shower duration (min); and
t = time (min).

* Chrostowski, Foster, 1987.

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

KL = 1/(1/kl + RT/Hkg),

COI	kl(CO2) (cm/hr)	kg(H2O) (cm/hr)	MW (g/mol)	kl (cm/hr)	kg (cm/hr)	RT (atm-m3/mol)	H (atm-m3/mol-K)	KL (cm/hr)
1,2-Dichloroethane	20	3000	99	13.33	1279.20	0.024	0.0819	13.29
cis-1,2-Dichloroethene	20	3000	97	13.47	1292.32	0.024	0.034	13.37
Benzene	20	3000	78	15.02	1441.15	0.024	0.00758	14.54
Vinyl Chloride	20	3000	63	16.71	1603.57	0.024	0.00287	15.37
Trichloroethene	20	3000	131.4	11.57	1110.35	0.024	0.0091	11.26

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

KaL = KL[(Tc*us)/(Ts*uc)]^-0.5

COI	KL (cm/hr)	Tc (K)	Ts (K)	uc (cp)	us (cp)	KaL (cm/hr)
1,2-Dichloroethane	13.29	293	318	0.01002	0.5996	1.79
cis-1,2-Dichloroethene	13.37	293	318	0.01002	0.5996	1.80
Benzene	14.54	293	318	0.01002	0.5996	1.96
Vinyl Chloride	15.37	293	318	0.01002	0.5996	2.07
Trichloroethene	11.26	293	318	0.01002	0.5996	1.52

(3)Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

Cwd = Cw*[1-exp((-KaL*ts)/60*d)]
= Cw(1-exp(A))

COI	Cw (ug/L)	KaL (cm/hr)	ts (sec)	d (mm)	A	exp(A)	Cwd (ug/L)
1,2-Dichloroethane	0.7	1.79	2	1	-0.060	0.942	0.04
cis-1,2-Dichloroethene	74	1.80	2	1	-0.060	0.942	4.31
Benzene	18	1.96	2	1	-0.065	0.937	1.14
Vinyl Chloride	23	2.07	2	1	-0.069	0.933	1.53
Trichloroethene	110	1.52	2	1	-0.051	0.951	5.42

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

COI	Cwd (ug/L)	FR (L/min)	SV (M3)	S (ug/m3-min)
1,2-Dichloroethane	0.04	10	6	0.07
cis-1,2-Dichloroethene	4.31	10	6	7.19
Benzene	1.14	10	6	1.90
Vinyl Chloride	1.53	10	6	2.56
Trichloroethene	5.42	10	6	9.04

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[\exp(RDs)-1]*\exp(-Rt) \text{ for } t>Ds$$

COI	S (ug/m3-min)	R (1/min)	Ds (min)	t (min)	RDs	Rt	exp(RDs)	exp(-Rt)	Ca(t) (ug/m3)
1,2-Dichloroethane	0.07	0.008	15	20	0.12	0.16	1.13	0.85	0.92
cis-1,2-Dichloroethene	7.19	0.008	15	20	0.12	0.16	1.13	0.85	97.58
Benzene	1.90	0.008	15	20	0.12	0.16	1.13	0.85	25.75
Vinyl Chloride	2.56	0.008	15	20	0.12	0.16	1.13	0.85	34.72
Trichloroethene	9.04	0.008	15	20	0.12	0.16	1.13	0.85	122.76

CALCULATION SPREADSHEET FOR INDOOR AIR CONCENTRATION OF VOLATILIZED ORGANIC COMPOUNDS
RESULTING FROM SHOWERING WITH WATER CONTAINING VOLATILE CONSTITUENTS OF INTEREST*
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
PHASE II GROUNDWATER

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

$$KL = 1/(1/kl + RT/Hkg),$$

where

H = Henry's Law Constant (atm-m3/mol-K);
RT = product of ideal gas constant (8.2E-5atm-m3/mol-K) and absolute temperature (293K)
= 0.024 atm-m3/mole;
kl = VOC-specific liquid-film mass transfer coefficient (cm/hr); and
= kl(CO2)*(44/MWvoc)^0.5; and
kg = VOC-specific gas-film mass transfer coefficient (cm/hr)
kl(H2O)*(18/MWvoc)^0.5

where

kl(CO2) = 20 cm/hr
kl(H2O) = 3000 cm/hr
MWvoc = Molecular weight of VOC.

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

$$KaL = KL[(Tc*us)/(Ts*uc)]^{-0.5}$$

where

KaL = adjusted overall mass transfer coefficient (cm/hr);
Tc = calibration water temperature of KL (K);
uc = water viscosity at Tc (cp); and
us = water viscosity at Ts (cp).

(3) Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

$$Cwd = Cw[1-exp((-KaL*ts)/60d)]$$

where

Cw = shower water concentrations (ug;L);
d = shower droplet diameter (mm); and
ts = shower droplet drop time (sec).

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

where

FR = shower water flow rate (L/min); and
SV = shower room air volume (m3).

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[wxp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

where

Ds = shower duration (min); and
t = time (min).

* Chrostowski, Foster, 1987.

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

KL = 1/(1/kl + RT/Hkg),

COI	kl(CO2) (cm/hr)	kg(H2O) (cm/hr)	MW (g/mol)	kl (cm/hr)	kg (cm/hr)	RT (atm-m3/mol)	H (atm-m3/mol-K)	KL (cm/hr)
1,2-Dichloroethene (total)	20	3000	97	13.47	1292.32	0.024	0.0819	13.43
Benzene	20	3000	78	15.02	1441.15	0.024	0.034	14.91
Vinyl Chloride	20	3000	63	16.71	1603.57	0.024	0.00758	16.18
Trichloroethene	20	3000	131.4	11.57	1110.35	0.024	0.0091	11.26

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

KaL = KL[(Tc*us)/(Ts*uc)]^-0.5

COI	KL (cm/hr)	Tc (K)	Ts (K)	uc (cp)	us (cp)	KaL (cm/hr)
1,2-Dichloroethene (total)	13.43	293	318	0.01002	0.5996	1.81
Benzene	14.91	293	318	0.01002	0.5996	2.01
Vinyl Chloride	16.18	293	318	0.01002	0.5996	2.18
Trichloroethene	11.26	293	318	0.01002	0.5996	1.52

(3)Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

Cwd = Cw*[1-exp((-KaL*ts)/60*d)]
= Cw(1-exp(A))

COI	Cw (ug/L)	KaL (cm/hr)	ts (sec)	d (mm)	A	exp(A)	Cwd (ug/L)
1,2-Dichloroethene (total)	9.19	1.81	2	1	-0.060	0.941	0.54
Benzene	5.71	2.01	2	1	-0.067	0.935	0.37
Vinyl Chloride	6.52	2.18	2	1	-0.073	0.930	0.46
Trichloroethene	9.79	1.52	2	1	-0.051	0.951	0.48

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

COI	Cwd (ug/L)	FR (L/min)	SV (M3)	S (ug/m3-min)
1,2-Dichloroethene (total)	0.54	10	6	0.90
Benzene	0.37	10	6	0.62
Vinyl Chloride	0.46	10	6	0.76
Trichloroethene	0.48	10	6	0.80

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[exp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

COI	S (ug/m3-min)	R (1/min)	Ds (min)	t (min)	RDs	Rt	exp(RDs)	exp(-Rt)	Ca(t) (ug/m3)
1,2-Dichloroethene (total)	0.90	0.008	15	20	0.12	0.16	1.13	0.85	12.17
Benzene	0.62	0.008	15	20	0.12	0.16	1.13	0.85	8.37
Vinyl Chloride	0.76	0.008	15	20	0.12	0.16	1.13	0.85	10.34
Trichloroethene	0.80	0.008	15	20	0.12	0.16	1.13	0.85	10.93

CALCULATION SPREADSHEET FOR INDOOR AIR CONCENTRATION OF VOLATILIZED ORGANIC COMPOUNDS
RESULTING FROM SHOWERING WITH WATER CONTAINING VOLATILE CONSTITUENTS OF INTEREST*
SITE 73-AMPHIBIOUS VEHICLE MAINTENANCE AREA
REMEDIAL INVESTIGATION CTO-0312
MCB CAMP LEJEUNE, NORTH CAROLINA
PHASE II GROUNDWATER - MAXIMUM DETECTED CONCENTRATION

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

$$KL = 1/(1/kl + RT/Hkg),$$

where

H = Henry's Law Constant (atm-m3/mol-K);
RT = product of ideal gas constant (8.2E-5atm-m3/mol-K) and absolute temperature (293K)
= 0.024 atm-m3/mole;
kl = VOC-specific liquid-film mass transfer coefficient (cm/hr); and
= kl(CO2)*(44/MWvoc)^0.5; and
kg = VOC-specific gas-film mass transfer coefficient (cm/hr)
kl(H2O)*(18/MWvoc)^0.5

where

kl(CO2) = 20 cm/hr
kl(H2O) = 3000 cm/hr
MWvoc = Molecular weight of VOC.

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

$$KaL = KL[(Tc*us)/(Ts*uc)]^{-0.5}$$

where

KaL = adjusted overall mass transfer coefficient (cm/hr);
Tc = calibration water temperature of KL (K);
uc = water viscosity at Tc (cp); and
us = water viscosity at Ts (cp).

(3) Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

$$Cwd = Cw[1-exp((-KaL*ts)/60d)]$$

where

Cw = shower water concentrations (ug;L);
d = shower droplet diameter (mm); and
ts = shower droplet drop time (sec).

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

where

FR = shower water flow rate (L/min); and
SV = shower room air volume (m3).

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[wxp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

where

Ds = shower duration (min); and
t = time (min).

* Chrostowski, Foster, 1987.

(1) Estimation of overall mass transfer coefficient, KL (cm/hr):

KL = 1/(1/kl + RT/Hkg),

COI	kl(CO2) (cm/hr)	kg(H2O) (cm/hr)	MW (g/mol)	kl (cm/hr)	kg (cm/hr)	RT (atm-m3/mol)	H (atm-m3/mol-K)	KL (cm/hr)
1,2-Dichloroethene (total)	20	3000	97	13.47	1292.32	0.024	0.0819	13.43
Benzene	20	3000	78	15.02	1441.15	0.024	0.034	14.91
Vinyl Chloride	20	3000	63	16.71	1603.57	0.024	0.00758	16.18
Trichloroethene	20	3000	131.4	11.57	1110.35	0.024	0.0091	11.26

(2) Adjustment of overall mass transfer coefficient, KL, to shower water temperature:

KaL = KL[(Tc*us)/(Ts*uc)]^-0.5

COI	KL (cm/hr)	Tc (K)	Ts (K)	uc (cp)	us (cp)	KaL (cm/hr)
1,2-Dichloroethene (total)	13.43	293	318	0.01002	0.5996	1.81
Benzene	14.91	293	318	0.01002	0.5996	2.01
Vinyl Chloride	16.18	293	318	0.01002	0.5996	2.18
Trichloroethene	11.26	293	318	0.01002	0.5996	1.52

(3)Estimation of VOC concentration leaving shower droplet, Cwd (ug/L):

Cwd = Cw*[1-exp((-KaL*ts)/60*d)]
= Cw(1-exp(A))

COI	Cw (ug/L)	KaL (cm/hr)	ts (sec)	d (mm)	A	exp(A)	Cwd (ug/L)
1,2-Dichloroethene (total)	120.00	1.81	2	1	-0.060	0.941	7.02
Benzene	27.00	2.01	2	1	-0.067	0.935	1.75
Vinyl Chloride	43.00	2.18	2	1	-0.073	0.930	3.01
Trichloroethene	320.00	1.52	2	1	-0.051	0.951	15.78

(4) Estimation of VOC generation rate in the shower room, S (ug/m3-min):

$$S = (Cwd*FR)/SV$$

COI	Cwd (ug/L)	FR (L/min)	SV (M3)	S (ug/m3-min)
1,2-Dichloroethene (total)	7.02	10	6	11.70
Benzene	1.75	10	6	2.91
Vinyl Chloride	3.01	10	6	5.02
Trichloroethene	15.78	10	6	26.30

(5) Calculation of time-dependent indoor air concentration, Ca(t) (ug/m3):

$$Ca(t) = (S/R)[exp(RDs)-1]*exp(-Rt) \text{ for } t>Ds$$

COI	S (ug/m3-min)	R (1/min)	Ds (min)	t (min)	RDs	Rt	exp(RDs)	exp(-Rt)	Ca(t) (ug/m3)
1,2-Dichloroethene (total)	11.70	0.008	15	20	0.12	0.16	1.13	0.85	158.90
Benzene	2.91	0.008	15	20	0.12	0.16	1.13	0.85	39.57
Vinyl Chloride	5.02	0.008	15	20	0.12	0.16	1.13	0.85	68.19
Trichloroethene	26.30	0.008	15	20	0.12	0.16	1.13	0.85	357.13

APPENDIX W
WHITE OAK RIVER BASIN REFERENCE DATA

Statistical Summary of Analytical Results (Surface Water)

KEY TO STATISTICAL AND ANALYTICAL SUMMARY TABLES

U - Indicated analyte was analyzed for but not detected

J - Indicates an estimated value

UJ - Not detected, quantitation limit may be inaccurate or imprecise

R - Result is rejected and unusable

B - Not detected substantially above the level reported in laboratory or field blanks (organics)

P - There is greater than 25% difference for detected pesticide/PCB concentrations between the two GC columns, the lower of the two values is reported

L - Result is biased low

K - Result is biased high

ND - Analyte not detected

NZ - Analyte not analyzed

mg/L - Milligrams per liter

ug/L - Micrograms per liter

mg/kg - Milligrams per kilogram

ug/kg - Micrograms per kilogram

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - METALS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aluminum	692.00	692.00	+	HC-SW04	253.10	488.87	1019.72	1	5	20%
Arsenic	20.00	20.00	+	HC-SW03	5.30	13.35	3190.11	1	5	20%
Barium	9.00	26.00	+	HC-SW03	19.60	25.87	35.22	5	5	100%
Calcium	11600.00	107000.00	+	HC-SW03D	53760.00	92784.90	456379.04	5	5	100%
Chromium	125.00	130.00	+	HC-SW03	54.70	118.12	40374.07	2	5	40%
Iron	291.00	746.00	+	HC-SW01	492.00	666.33	793.41	5	5	100%
Magnesium	954.00	633000.00	+	HC-SW03	258640.80	576299.05	1.50E+16	5	5	100%
Potassium	14500.00	203000.00	+	HC-SW03	84234.00	187308.88	5.24E+12	3	5	60%
Selenium	6.00	6.00	+	HC-SW03	2.00	4.29	38.67	1	5	20%
Sodium	6090.00	2560000.00	+	HC-SW03D	1.01E+06	2.17E+06	4.80E+14	5	5	100%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO PESTICIDES/PCBs WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - METALS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aluminum	535.00	535.00	*+ HM-SW02	269.50	657.32	48037.76	1	3	33%
Barium	20.00	49.00	*+ HM-SW01	35.67	60.35	204.30	3	3	100%
Calcium	14100.00	302000.00	*+ HM-SW03	118766.67	387190.45	4.42E+14	3	3	100%
Chromium	36.00	158.00	*+ HM-SW03	66.33	202.69	3.67E+12	2	3	67%
Iron	320.00	559.00	*+ HM-SW02	434.67	636.62	843.56	3	3	100%
Lead	58.10	58.10	*+ HM-SW03	19.95	75.65	1.70E+27	1	3	33%
Magnesium	2830.00	754000.00	*+ HM-SW03	288610.00	973947.76	1.02E+35	3	3	100%
Potassium	41100.00	288000.00	*+ HM-SW03	109978.33	372096.67	1.33E+36	2	3	67%
Selenium	1.50	41.00	*+ HM-SW03	15.00	52.97	8.42E+13	2	3	67%
Silver	37.00	37.00	*+ HM-SW03	16.83	46.42	284713.62	1	3	33%
Sodium	16500.00	6750000.00	*+ HM-SW03	2501833.33	8733985.25	1.96E+44	3	3	100%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO PESTICIDES/PCBs WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - METALS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Barium	27.00	29.00	*+ WC-SW02	28.00	34.31	32.19	2	2	100%
Calcium	40500.00	46900.00	*+ WC-SW02	43700.00	63904.80	58284.51	2	2	100%
Chromium	97.00	97.00	*+ WC-SW03	52.25	334.80	1.32E+20	1	2	50%
Iron	321.00	660.00	*+ WC-SW02	490.50	1560.72	14358.69	2	2	100%
Magnesium	29000.00	44800.00	*+ WC-SW03	36900.00	86780.60	133710.58	2	2	100%
Potassium	10900.00	136000.00	*+ WC-SW03	73450.00	468390.70	1.01E+23	2	2	100%
Sodium	202000.00	895000.00	*+ WC-SW03	548500.00	2736301.00	6.83E+11	2	2	100%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aldrin	0.04	0.04	*+	WC-SW02	0.03	0.06	0.07	1	2	50%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/L)	MAXIMUM DETECTED VALUE (ug/L)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/L)	RME (ug/L)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/L)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

Statistical Summary of Analytical Results (Sediment)

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - METALS

PARAMETER	MINIMUM DETECTED VALUE (mg/kg)	MAXIMUM DETECTED VALUE (mg/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (mg/kg)	RME (mg/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (mg/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aluminum	780.00	14000.00	+	HC-SD03-612	5467.78	8305.91	20353.32	9	9	100%
Arsenic	0.26	1.90	*+	HC-SD02-612	1.71	2.67	8.56	6	9	67%
Barium	4.10	17.20	+	HC-SD03-612	9.75	13.11	21.84	8	9	89%
Beryllium	0.14	0.32	+	HC-SD02-612	0.16	0.24	4.60	3	6	50%
Cadmium	0.03	0.66		HC-SD03-06	0.11	0.24	0.42	7	9	78%
Calcium	1030.00	3620.00	+	HC-SD01-06	2645.56	3233.82	3840.09	9	9	100%
Chromium	1.30	41.60	+	HC-SD03-612	10.81	18.97	53.55	9	9	100%
Cobalt	4.50	5.00		HC-SD03-612	1.87	2.91	4.01	2	9	22%
Copper	0.66	1.50	*+	HC-SD02-06	1.35	1.75	2.01	6	9	67%
Iron	382.00	11100.00	+	HC-SD03-06D	3396.56	5709.65	28323.00	9	9	100%
Lead	3.70	5.30	*+	HC-SD03-06	4.50	9.55	305.02	2	2	100%
Magnesium	77.10	6540.00	+	HC-SD03-612	1977.79	3486.31	1292043.17	7	9	78%
Manganese	3.50	64.70		HC-SD03-612	16.54	29.38	62.63	9	9	100%
Mercury	0.25	0.42	*+	HC-SD03-612	0.34	0.48	11.17	3	3	100%
Nickel	1.80	12.10	+	HC-SD03-612	3.77	6.49	17.25	4	9	44%
Potassium	623.00	1840.00	+	HC-SD03-612	671.39	1079.26	2769.97	4	9	44%
Selenium	0.21	0.60		HC-SD02-06	0.30	0.39	0.48	5	9	56%
Sodium	1630.00	2750.00	+	HC-SD02-06	845.25	1750.35	183541390882.91	2	6	33%
Thallium	0.14	0.44	+	HC-SD03-612	0.23	0.31	0.46	6	9	67%
Vanadium	1.50	36.90	+	HC-SD03-612	11.11	18.54	56.26	9	9	100%
Zinc	20.80	40.00	+	HC-SD03-612	12.71	22.07	63.76	3	9	33%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
beta-BHC	1.70	1.70	*+	HC-SD04-612	1.93	2.39	2.58	1	9	11%
delta-BHC	0.64	0.64	*+	HC-SD01-06	1.82	2.35	2.91	1	9	11%
Heptachlor	0.48	2.00	*+	HC-SD04-612	1.89	2.42	3.26	2	9	22%
4,4'-DDD	1.50	4.00		HC-SD03-612	2.16	3.11	3.50	3	9	33%
4,4'-DDT	1.20	1.20	*+	HC-SD03-06D	3.23	4.23	5.08	1	9	11%
Methoxychlor	0.94	0.94	*+	HC-SD04-06	17.66	23.58	92.52	1	9	11%
Endrin aldehyde	0.59	7.10	+	HC-SD02-06	3.56	5.02	10.80	3	9	33%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Acetone	70.00	70.00		HC-SD01-06	18.06	30.44	36.73	1	9	11%
Carbon Disulfide	14.00	19.00		HC-SD02-612	12.44	15.67	18.14	2	9	22%
2-Butanone	7.00	7.00	*+	HC-SD01-06	11.06	13.94	15.49	1	9	11%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - METALS

PARAMETER	MINIMUM DETECTED VALUE (mg/kg)	MAXIMUM DETECTED VALUE (mg/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (mg/kg)	RME (mg/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (mg/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aluminum	337.00	13600.00	+	HM-SD02-06	6181.29	10282.21	655067.62	7	7	100%
Barium	11.00	18.70	+	HM-SD02-06	8.71	13.92	68.49	4	7	57%
Cadmium	0.03	0.11		HM-SD01-06D	0.06	0.08	0.10	7	7	100%
Calcium	282.00	7860.00	+	HM-SD02-612	2952.86	4844.12	22431.34	7	7	100%
Chromium	1.10	38.40	+	HM-SD02-06	19.63	32.39	2021.73	7	7	100%
Cobalt	4.00	4.40	+	HM-SD02-06	2.02	3.18	6.18	2	7	29%
Iron	225.00	32400.00	+	HM-SD02-612	12262.43	21399.01	27918943.98	7	7	100%
Lead	0.62	9.20	+	HM-SD03-06	4.35	6.94	32.96	7	7	100%
Magnesium	26.70	5700.00	+	HM-SD03-06	2576.66	4422.69	136198282.35	7	7	100%
Manganese	1.30	67.20	+	HM-SD02-06	34.14	56.82	8851.72	7	7	100%
Mercury	0.09	0.35	+	HM-SD03-06	0.23	0.30	0.38	7	7	100%
Nickel	9.60	14.20	+	HM-SD03-06	6.76	11.07	359.48	4	7	57%
Potassium	1510.00	1760.00	+	HM-SD03-612	1007.00	1596.65	13233.89	4	7	57%
Selenium	0.25	0.40		HM-SD02-06	0.21	0.29	0.39	2	7	29%
Silver	0.49	0.49	*+	HM-SD01-06	0.39	0.49	0.60	1	7	14%
Thallium	0.13	0.37	+	HM-SD02-06	0.20	0.29	0.52	4	7	57%
Vanadium	0.66	30.00	+	HM-SD02-612	16.69	27.76	18094.26	6	7	86%
Zinc	6.70	43.10	+	HM-SD02-06	23.57	34.53	65.13	7	7	100%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
beta-BHC	3.80	7.30		HM-SD01-06D	3.24	4.69	5.98	2	7	29%
Aldrin	0.56	0.72	*+	HM-SD01-612	1.84	2.60	4.20	2	7	29%
Dieldrin	0.58	1.50	*+	HM-SD01-612	3.55	5.13	12.37	2	7	29%
4,4'-DDE	1.00	4.30	*+	HM-SD01-612	4.01	5.37	8.82	2	7	29%
4,4'-DDD	0.87	3.10	*+	HM-SD01-612	2.85	4.16	6.44	4	7	57%
4,4'-DDT	1.70	1.70	*+	HM-SD01-612	3.79	5.13	6.75	1	7	14%
alpha-Chlordane	1.30	1.30	*+	HM-SD01-612	1.99	2.61	3.14	1	7	14%
gamma-Chlordane	3.00	3.00	+	HM-SD01-612	2.24	2.86	3.56	1	7	14%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)		SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Di-n-butylphthalate	534.00	619.00	+	HM-SD02-612	423.29	573.31	766.73	3	7	43%
bis(2-Ethylhexyl)phthalate	454.00	454.00	*+	HM-SD03-612	378.64	500.04	607.73	1	7	14%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - METALS

PARAMETER	MINIMUM DETECTED VALUE (mg/kg)	MAXIMUM DETECTED VALUE (mg/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (mg/kg)	RME (mg/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (mg/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Aluminum	8200.00	14800.00	*+ WC-SD02-06	12275.00	15932.10	19239.95	4	4	100%
Barium	13.30	28.20	+ WC-SD02-06	18.83	26.76	35.92	4	4	100%
Cadmium	0.06	0.26	+ WC-SD02-06	0.13	0.24	1.11	4	4	100%
Calcium	2190.00	4060.00	*+ WC-SD02-06	3222.50	4132.21	4914.08	4	4	100%
Chromium	8.70	42.60	+ WC-SD03-612	24.93	42.26	246.57	4	4	100%
Cobalt	3.50	3.90	*+ WC-SD03-612	2.44	4.16	21.71	2	4	50%
Iron	8120.00	20700.00	+ WC-SD03-612	13980.00	20133.62	29586.84	4	4	100%
Lead	5.10	16.90	+ WC-SD02-06	9.85	16.48	51.03	4	4	100%
Magnesium	618.00	6060.00	*+ WC-SD03-612	3197.00	6127.63	817766.37	4	4	100%
Manganese	26.00	47.80	*+ WC-SD03-612	39.35	50.44	60.95	4	4	100%
Mercury	0.23	0.40	*+ WC-SD02-06	0.31	0.41	0.48	4	4	100%
Nickel	3.80	11.40	+ WC-SD03-612	7.25	11.11	21.80	4	4	100%
Potassium	1410.00	1590.00	*+ WC-SD03-612	905.88	1719.51	81148.45	2	4	50%
Thallium	0.24	0.24	+ WC-SD03-06	0.16	0.23	0.31	1	4	25%
Vanadium	11.90	31.00	+ WC-SD03-612	21.33	30.50	45.84	4	4	100%
Zinc	27.20	52.00	+ WC-SD02-06	33.83	48.09	61.59	4	4	100%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - PESTICIDES/PCBs

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
delta-BHC	0.79	0.79	*+ WC-SD02-612	1.99	3.02	9.99	1	4	25%
Aldrin	1.20	1.20	*+ WC-SD02-06	1.93	2.65	3.66	1	4	25%
Dieldrin	3.70	3.70	*+ WC-SD02-06	4.00	4.79	4.98	1	4	25%
4,4'-DDE	16.00	16.00	+ WC-SD02-06	7.08	14.12	97.81	1	4	25%
4,4'-DDD	12.00	12.00	+ WC-SD02-06	6.08	10.78	28.91	1	4	25%
4,4'-DDT	0.76	2.60	*+ WC-SD02-06	2.37	4.64	91.00	3	4	75%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
Benzo(a)pyrene	544.00	544.00	*+ WC-SD03-612	436.25	554.81	635.17	1	4	25%

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

MARINE CORPS BASE CAMP LEJEUNE
STATISTICAL SUMMARY OF ANALYTICAL RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

PARAMETER	MINIMUM DETECTED VALUE (ug/kg)	MAXIMUM DETECTED VALUE (ug/kg)	SAMPLE No. OF MAXIMUM DETECTED VALUE	ARITHMETIC AVERAGE (ug/kg)	RME (ug/kg)	LOG NORMAL UPPER 95% CONFIDENCE LEVEL (ug/kg)	No. OF TIMES DETECTED	No. OF TIMES ANALYZED	FREQUENCY OF DETECTION
NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED									

* = THE RME IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
+ = THE LOG NORMAL 95% UCL IS GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
*+ = BOTH THE RME AND LOG NORMAL 95% UCL ARE GREATER THAN THE MAXIMUM DETECTED VALUE; THEREFORE, THE MAXIMUM VALUE IS USED TO CALCULATE CHRONIC DAILY INTAKE
RME = REASONABLE MAXIMUM EXPOSURE
NA = NOT APPLICABLE

Analytical Summary of Results
(Surface Water)

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - METALS

BAKER I.D.	HC-SW01		HC-SW02		HC-SW03		HC-SW03D		HC-SW04	
LABORATORY I.D.	5167-16		5162		5166		5163		5152	
DATE COLLECTED	08-MAY-1994		06-MAY-1994		06-MAY-1994		06-MAY-1994		08-MAY-1994	
UNITS	UG/L		UG/L		UG/L		UG/L		UG/L	
Aluminum	356	U	303	U	301	U	187	U	692	
Arsenic	1	U	1	UJ	20		10	UJ	1	U
Barium	19	J	20	J	26	J	24	J	9	J
Calcium	27000		36600		86600		107000		11600	
Chromium	9	U	19	U	130	J	125	J	9	U
Iron	746		528		339		291		556	
Magnesium	1450		44800		633000		613000		954	
Potassium	1670	U	14500		203000		202000		1670	U
Selenium	1	U	5	U	6	J	1	UJ	1	UJ
Sodium	6900		383000		2090000		2560000		6090	

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER PESTICIDES AND PCBs

BAKER I.D.	HC-SW01	HC-SW02	HC-SW03	HC-SW03D	HC-SW04
LABORATORY I.D.	5167-16	5162	5166	5163	5152
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994	06-MAY-1994	08-MAY-1994
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l

NO PESTICIDES OR PCBs WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HC-SW01	HC-SW02	HC-SW03	HC-SW03D	HC-SW04
LABORATORY I.D.	5167-16	5162	5166	5163	5152
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994	06-MAY-1994	08-MAY-1994
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l

NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HC-SW01	HC-SW02	HC-SW03	HC-SW03D	HC-SW04
LABORATORY I.D.	5167-16	5162	5166	5163	5152
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994	06-MAY-1994	08-MAY-1994
UNITS	ug/l	ug/l	ug/l	ug/l	ug/l

NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - METALS

BAKER I.D.	HM-SW01		HM-SW02		HM-SW03	
LABORATORY I.D.	5167-18		5161		5160	
DATE COLLECTED	08-MAY-1994		06-MAY-1994		06-MAY-1994	
UNITS	UG/L		UG/L		UG/L	
Aluminum	259	U	535	J	288	U
Barium	49	J	38	J	20	J
Calcium	14100		40200		302000	
Chromium	10	U	36	J	158	J
Iron	425		559		320	
Lead	1	U	2.5	U	58.1	
Magnesium	2830		109000		754000	
Potassium	1670	U	41100		288000	
Selenium	1.5	J	5	U	41	J
Silver	10	U	17	U	37	J
Sodium	16500		739000		6750000	

MARINE CORPS BASE CAMP LEJEUNE
ANLAYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - PESTICIDES AND PCBs

BAKER I.D.	HM-SW01	HM-SW02	HM-SW03
LABORATORY I.D.	5167-18	5161	5160
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l	ug/l

NO PESTICIDES OR PCBs WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HM-SW01	HM-SW02	HM-SW03
LABORATORY I.D.	5167-18	5161	5160
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l	ug/l

NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HM-SW01	HM-SW02	HM-SW03
LABORATORY I.D.	5167-18	5161	5160
DATE COLLECTED	08-MAY-1994	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l	ug/l

NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - METALS

BAKER I.D.	WC-SW02		WC-SW03	
LABORATORY I.D.	5167-8		5158	
DATE COLLECTED	06-MAY-1994		06-MAY-1994	
UNITS	UG/L		UG/L	
Barium	29	J	27	J
Calcium	46900		40500	
Chromium	15	U	97	J
Iron	660		321	
Magnesium	29000		44800	
Potassium	10900		136000	
Sodium	202000		895000	

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - PESTICIDES AND PCBs

BAKER I.D.	WC-SW02	WC-SW03
LABORATORY I.D.	5167-8	5158
DATE COLLECTED	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l
Aldrin	0.035 J	0.05 U

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	WC-SW02	WC-SW03
LABORATORY I.D.	5167-8	5158
DATE COLLECTED	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l

NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SURFACE WATER - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	WC-SW02	WC-SW03
LABORATORY I.D.	5167-8	5158
DATE COLLECTED	06-MAY-1994	06-MAY-1994
UNITS	ug/l	ug/l

NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED

Analytical Summary of Results
(Sediment)

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - METALS

BAKER I.D.	HC-SD01-06	HC-SD01-612	HC-SD02-06	HC-SD02-612	HC-SD03-06	HC-SD03-06D	HC-SD03-612	HC-SD04-06	HC-SD04-612
LABORATORY I.D	5050	5044	5057-2	5054	5238	5237	5236	5052	5051
DATE COLLECTED	8-MAY-1994	8-MAY-1994	6-MAY-1994	6-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	8-MAY-1994	8-MAY-1994
UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Aluminum	2940 J	1880 J	7820 J	10100 J	3120 J	7310 J	14000 J	780 J	1260 J
Arsenic	0.46 J	0.28 J	1.1 J	1.9 J	7.5 U	6.5 U	7.9 U	0.45 J	0.26 J
Barium	16.3 J	14.6 J	9.2 J	8.7 J	3.9 U	10.2	17.2	4.1 J	5.5 J
Beryllium	0.14 J	0.16 U	0.25 J	0.32 J	0.95 R	0.92 R	1.3 R	0.13 U	0.15 U
Cadmium	0.03 J	0.03 J	0.1 J	0.04 J	0.66	0.08	0.04 U	0.03 J	0.03 UJ
Calcium	3620 J	3330 J	2030 J	1610 J	3380 J	3350 J	3310 J	1030 J	2150 J
Chromium	2.3	3.2	6	6	16.1	18.8	41.6	2	1.3
Cobalt	1.6 U	1.8 U	2.7 U	1.8 U	3.7 U	4.5	5	1.5 U	1.6 U
Copper	1	1.1	1.5	0.81	4.9 U	4.3 U	3.5 U	0.66	0.73
Iron	648	586	3660	4630	7280 J	11100 J	1700 J	382	583
Lead	0.77 R	0.88 R	1.1 R	7.1 R	5.3	3.7	8.6 R	1 R	1.1 R
Magnesium	87.7	77.1	1450	1040	4420	4130	6540	48.2 U	62.5 U
Manganese	6.9	6.5	6.5	4.9	17.1	35.1	64.7	3.7	3.5
Mercury	0.19 R	0.13 R	0.42 R	0.24 R	0.34	0.25	0.42	0.11 R	0.08 R
Nickel	1.6 U	1.8 U	2.7 U	1.8	9.9	5.5	12.1	1.5 U	1.6 U
Potassium	349 U	396 U	623	395 U	1420	1250	1840	324 U	355 U
Selenium	0.27 J	0.34 J	0.6 J	0.47 J	0.48 UJ	0.41 UJ	0.51 UJ	0.21 J	0.2 UJ
Sodium	339 U	385 U	2750	1630	14100 R	9860 R	6620 R	315 U	344 U
Thallium	0.14	0.16	0.42	0.28	0.34 U	0.29	0.44	0.13 U	0.15 U
Vanadium	2.6	2.8	8.4	7	20.5	18.4	36.9	1.5	1.9
Zinc	4.9 U	4.5 U	9.7 U	6.6 U	20.8	34.3	40	4.5 U	8.3 U

MARINE COPRS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - PESTICIDES AND PCBs

BAKER I.D.	HC-SD01-06	HC-SD01-612	HC-SD02-06	HC-SD02-612	HC-SD03-06	HC-SD03-06D	HC-SD03-612	HC-SD04-06	HC-SD04-612
LABORATORY I.D.	5057-7	5044	5055	5054	5238	5237	5236	5052	5051
DATE COLLECTED	8-MAY-1994	8-MAY-1994	6-MAY-1994	6-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	8-MAY-1994	8-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
beta-BHC	2.4 U	2.8 U	4.2 U	2.8 U	5.8 U	4.9 U	6.2 U	2.3 U	1.7 J
delta-BHC	0.64 J	2.8 U	4.2 U	2.8 U	5.8 U	4.9 U	6.2 U	2.3 U	2.5 U
Heptachlor	0.48 J	2.8 U	4.2 U	2.8 U	5.8 U	4.9 U	6.2 U	2.3 U	2 J
4,4'-DDD	2.4 U	2.8 U	1.5 J	2.8 U	11 U	2 J	4 J	2.3 U	2.5 U
4,4'-DDT	4.7 U	5.4 U	8.2 U	5.3 U	11 U	1.2 J	12 U	4.4 U	4.8 U
Methoxychlor	24 U	28 U	42 U	28 U	58 U	49 U	62 U	0.94 J	25 U
Endrin aldehyde	0.59 J	5.4 U	7.1 J	0.77 J	11 U	9.6 U	12 U	4.4 U	4.8 U

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HC-SD01-06	HC-SD01-612	HC-SD02-06	HC-SD02-612	HC-SD03-06	HC-SD03-06D	HC-SD03-612	HC-SD04-06	HC-SD04-612
LABORATORY I.D.	5057-7	5044	5055	5054	5238	5237	5236	5052	5051
DATE COLLECTED	8-MAY-1994	8-MAY-1994	6-MAY-1994	6-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	8-MAY-1994	8-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

NO SEMIVOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HADNOT CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HC-SD01-06	HC-SD01-612	HC-SD02-06	HC-SD02-612	HC-SD03-06	HC-SD03-06D	HC-SD03-612	HC-SD04-06	HC-SD04-612
LABORATORY I.D.	5057-7	5044	5055	5054	5238	5237	5236	5052	5051
DATE COLLECTED	8-MAY-1994	8-MAY-1994	6-MAY-1994	6-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	8-MAY-1994	8-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Acetone	70 J	16 UJ	25 UJ	16 UJ	34 UJ	29 UJ	37 UJ	13 UJ	15 UJ
Carbon Disulfide	14 U	16 U	14	19 J	34 U	29 U	37 U	13 U	15 U
2-Butanone	7 J	16 UJ	25 UJ	16 UJ	34 UJ	29 UJ	37 UJ	13 UJ	15 UJ

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - METALS

BAKER I.D.	HM-SD01-06	HM-SD01-06D	HM-SD01-612	HM-SD02-06	HM-SD02-612	HM-SD03-06	HM-SD03-612
LABORATORY I.D.	5243-18	5220	5219	5242	5241	5240	5239
DATE COLLECTED	08-MAY-1994	08-MAY-1994	08-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Aluminum	457 J	337 J	505 J	13600 J	9850 J	8760 J	9760 J
Barium	3.4 U	2.1 U	3.9 U	18.7	13.7	11	12.9
Cadmium	0.03	0.11	0.03	0.08	0.06	0.05	0.03
Calcium	282 J	508 J	2850 J	4250 J	7860 J	2920 J	2000 J
Chromium	1.6	1.1	1.5	38.4	28.1	30.7	36
Cobalt	1.3 U	1.4 U	1.4 U	4.4	3.5 U	3.9 U	4
Iron	262 J	225 J	350 J	15800 J	32400 J	16900 J	19900 J
Lead	0.62 J	0.74 J	1	6	7.2	9.2	5.7
Magnesium	35.5	26.7	34.4	4940	3000	5700	4300
Manganese	1.9	1.3	1.6	67.2	55.5	50.2	61.3
Mercury	0.09	0.16	0.18	0.27	0.32	0.35	0.27
Nickel	1.3 U	1.4 U	1.4 U	11.2	9.6	14.2	10.3
Potassium	297 U	304 U	317 U	1510	1600	1720	1760
Selenium	0.17 U	0.17 U	0.25 J	0.4 J	0.45 UJ	0.5 UJ	0.37 UJ
Silver	0.49	0.37 U	0.39 U	0.85 U	0.95 U	1.1 U	0.79 U
Thallium	0.12 U	0.12 U	0.13	0.37	0.32	0.35 U	0.27
Vanadium	0.84	0.62 U	0.66	27.1	30	28.4	29.5
Zinc	9.7	6.7	8.3	43.1	33.2	34.1	29.9

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - PESTICIDES AND PCBs

BAKER I.D.	HM-SD01-06	HM-SD01-06D	HM-SD01-612	HM-SD02-06	HM-SD02-612	HM-SD03-06	HM-SD03-612
LABORATORY I.D.	5243-18	5220	5219	5242	5241	5240	5239
DATE COLLECTED	08-MAY-1994	08-MAY-1994	08-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
beta-BHC	2.1 UJ	7.3 J	3.8	5.1 U	5.5 U	6 U	4.5 U
Aldrin	2.1 U	0.56 J	0.72 J	5.1 U	5.5 U	6 U	4.5 U
Dieldrin	4 U	0.58 J	1.5 J	9.8 U	11 U	12 U	8.8 U
4,4'-DDE	4 U	1 J	4.3	9.8 U	11 U	12 U	8.8 U
4,4'-DDD	4 U	0.87 J	3.1	9.8 U	11 U	2.5 J	1.1 J
4,4'-DDT	4 U	4.1 U	1.7 J	9.8 U	11 U	12 U	8.8 U
alpha-Chlordane	2.1 U	2.1 U	1.3 J	5.1 U	5.5 U	6 U	4.5 U
gamma-Chlordane	2.1 U	2.1 U	3	5.1 U	5.5 U	6 U	4.5 U

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HM-SD01-06	HM-SD01-06D	HM-SD01-612	HM-SD02-06	HM-SD02-612	HM-SD03-06	HM-SD03-612
LABORATORY I.D.	5243-18	5220	5219	5242	5241	5240	5239
DATE COLLECTED	08-MAY-1994	08-MAY-1994	08-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Di-n-butylphthalate	401 U	412 U	429 U	614 J	619 J	1150 U	534 J
bis(2-Ethylhexyl)phthalate	401 UJ	412 UJ	429 UJ	943 U	1058 U	1150 U	454 J

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - HOLLAND MILL CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	HM-SD01-06	HM-SD01-06D	HM-SD01-612	HM-SD02-06	HM-SD02-612	HM-SD03-06	HM-SD03-612
LABORATORY I.D.	5243-18	5220	5219	5242	5241	5240	5239
DATE COLLECTED	08-MAY-1994	08-MAY-1994	08-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg

NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - METALS

BAKER I.D.	WC-SD02-06	WC-SD02-612	WC-SD03-06	WC-SD03-612
LABORATORY I.D.	5243-10	5232	5235	5234
DATE COLLECTED	06-MAY-1994	06-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	MG/KG	MG/KG	MG/KG	MG/KG
Aluminum	14800 J	8200	11500 J	14600 J
Barium	28.2	13.3	14.6	19.2
Cadmium	0.26	0.12	0.06	0.07
Calcium	4060 J	3260 J	2190 J	3380 J
Chromium	18.1	8.7	30.3	42.6
Cobalt	3.5	2.3 U	2.4 U	3.9
Iron	14600 J	8120	12500 J	20700 J
Lead	16.9	11.9	5.1	5.5
Magnesium	1690	618	4420	6060
Manganese	40.2	26	43.4	47.8
Mercury	0.4	0.36	0.23	0.26
Nickel	5.7	3.8	8.1	11.4
Potassium	739 U	508 U	1410	1590
Thallium	0.3 U	0.21 U	0.24	0.32 U
Vanadium	21	11.9	21.4	31
Zinc	52	27.8	28.3	27.2

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - PESTICIDES AND PCBs

BAKER I.D.	WC-SD02-06	WC-SD02-612	WC-SD03-06	WC-SD03-612
LABORATORY I.D.	5243-10	5232	5235	5234
DATE COLLECTED	06-MAY-1994	06-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg
delta-BHC	5.2 U	0.79 J	3.7 U	5.4 U
Aldrin	1.2 J	3.9 U	3.7 U	5.4 U
Dieldrin	3.7 J	7.5 U	7.1 U	10 U
4,4'-DDE	16	7.5 U	7.1 U	10 U
4,4'-DDD	12	7.5 U	7.1 U	10 U
4,4'-DDT	2.6 J	1.1 J	0.76 J	10 U

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - SEMIVOLATILE ORGANIC COMPOUNDS

BAKER I.D.	WC-SD02-06	WC-SD02-612	WC-SD03-06	WC-SD03-612
LABORATORY I.D.	5243-10	5232	5235	5234
DATE COLLECTED	06-MAY-1994	06-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg
Benzo(a)pyrene	1000 U	688 U	714 U	544 J

MARINE CORPS BASE CAMP LEJEUNE
ANALYTICAL SUMMARY OF RESULTS
BACKGROUND - WEBB CREEK
SEDIMENT - VOLATILE ORGANIC COMPOUNDS

BAKER I.D.	WC-SD02-06	WC-SD02-612	WC-SD03-06	WC-SD03-612
LABORATORY I.D.	5243-10	5232	5235	5234
DATE COLLECTED	06-MAY-1994	06-MAY-1994	07-MAY-1994	07-MAY-1994
UNITS	ug/kg	ug/kg	ug/kg	ug/kg

NO VOLATILE ORGANIC COMPOUNDS WERE DETECTED

Field Chemistry Results

FIELD CHEMISTRY FROM BIOLOGICAL SAMPLES
HADNOT CREEK, HOLLAND MILL CREEK, AND WEBB CREEK
MCB CAMP LEJEUNE, NORTH CAROLINA

Sample Identification	Sample Location	Salinity (ppt)	Conductivity (micromhos/cm)	DO (mg/L)	pH (S.U.)	Temperature (deg. C)
HC01-SW/SD-FS/BN	surface	0	13.5	7.7	6.89	17
	bottom	NA	NA	NA	NA	NA
HC02-SW/SD	surface	0.8	1,810	5.9	6.71	16.1
	bottom	15.5	21,900	1.0	6.73	18.2
HC02-FS/BN	surface	0.3	1,200	NA	NA	20.5
	bottom	13.1	20,900	NA	NA	22
	surface	0	720	7.3	7.2	15.5
	bottom	10.5	17,200	1	6.7	20
	surface	0	1,050	NA	NA	20.5
	bottom	16.5	22,800	NA	NA	21
HC03-SW/SD	surface	17	25,500	12	7.79	17.5
	bottom	NA	NA	NA	NA	NA
HC03-FS/BN	surface	17.9	26,500	NA	7.69	17.8
	bottom	NA	NA	NA	NA	NA
HC04-SW/SD-FS/BN	surface	0	65	5.3	6.16	17.3
	bottom	NA	NA	NA	NA	NA
HM01-SW/SD-FS/BN	surface	0	140	8.0	6.9	17.5
	bottom	NA	NA	NA	NA	NA
HM02-SW/SD	surface	24	36,000	11.8	7.9	17.2
	bottom	25	38,000	11.6	7.6	17.6
HM02-FS/BN	surface	21	29,000	7.75	NA	21
	bottom	19	27,000	7.75	NA	20
	surface	2	3,810	NA	NA	19
	bottom	3.75	6,000	NA	NA	19.5
	surface	1	2,490	5.8	6.85	15.5
	bottom	1.1	2,700	5.0	6.72	15.2
HM03-SW/SD	surface	13.5	19,000	3.4	6.81	17.8
	bottom	NA	NA	NA	NA	NA
HM03-FS/BN	surface	22	32,000	10.8	7.90	17.5
	bottom	NA	NA	NA	NA	NA

Sample Identification	Sample Location	Salinity (ppt)	Conductivity (micromhos/cm)	DO (mg/L)	pH (S.U.)	Temperature (deg. C)
WC02-SW/SD	surface	4.5	9,000	9.0	7.48	21
	bottom	5.5	9,000	7.0	7.48	20.5
	surface	0	975	5.1	7.08	17.5
	bottom	0	1,250	4.4	7.15	17.5
WC02-FS/BN	surface	0	850	5.5	6.98	20.5
	bottom	7	10,500	6.1	6.85	21
WC03-SW/SD	surface	10	16,500	10	7.33	23
	bottom	10	16,500	8.5	7.36	22.4
WC03-FS/BN	surface	12	17,200	9.1	7.43	20
	bottom	12.8	18,000	9.6	7.56	19

ppt = parts per thousand
S.U. = Standard Units
NA = Not Analyzed
Sample Location = Water surface or water bottom
DO = Dissolved Oxygen level

FS = Fish sample
BN = Benthic Macroinvertebrate sample
SW/SD = Surface water/sediment sample

Positive Detection Summary
Fish Fillet Tissue Analysis

MARINE CORPS BASE CAMP LEJEUNE
BACKGROUND - HADNOT CREEK
POSITIVE DETECTIONS SUMMARY
FISH FILLET TISSUE SAMPLES

Parameter	HC1A-RD (Red Drum) (mg/kg)		HC1A-SF (Southern Flounder) (mg/kg)		HC1A-LBA (Largemouth Bass) (mg/kg)		HC1A-LBB (Largemouth Bass) (mg/kg)		HC1A-LBC (Largemouth Bass) (mg/kg)		HC1A-BCA (Blue Crab) (mg/kg)		HC1A-BCA (Blue Crab) (mg/kg)		HC1A-GA (Longnose Gar) (mg/kg)		HC1A-GB (Longnose Gar) (mg/kg)	
Volatiles																		
Acetone	0.13	J	0.056	J	0.077	J	0.07	J	0.037	J	0.11	J	0.099	J	0.028	J	0.016	J
Methylene Chloride	0.041		0.013	B	0.017	B	0.016	B	0.003	B	0.011	B	0.022	B	0.004	B	0.015	B
Semivolatiles																		
Phenol	ND		0.46		ND		2.1		1.6		ND		ND		ND		ND	
Di-n-octyl phthalate	ND		ND		0.061	J	ND		0.085		ND		ND		0.29	J	0.5	J
Bis(2-ethylhexyl)phthalate	1.1	B	0.82	B	3.6	B	3.2	B	4.8	B	ND		ND		11	J	17	J
Pesticides/PCBs																		
4,4'-DDD	ND		ND		ND		ND		ND		0.0066		0.0056		ND		ND	
4,4'-DDE	ND		ND		ND		ND		ND		0.0087		0.0046		0.012		0.0097	
alpha-Chlordane	ND		ND		ND		ND		0.00017	P	0.0018		0.0012		ND		ND	
Aroclor-1260	ND		ND		ND		ND		ND		ND		ND		ND		ND	
Inorganics																		
Aluminum	ND		ND		ND		36.5		ND		ND		ND		ND		ND	
Arsenic	0.7	L	0.82		0.34	L	0.37	L	0.36	K	0.68		0.39		2.5		3.9	L
Barium	ND		ND		ND		ND		ND		ND		10.1		ND		ND	
Cadmium	ND		ND		ND		ND		ND		0.14		0.11	J	ND		ND	
Calcium	154		271		528		684		1170		4480		32200		493		520	
Chromium	0.38	L	ND		0.23	L	0.68	L	0.63	L	ND		0.52	L	0.32	L	0.21	L
Copper	0.3	J	0.18	J	0.2	J	0.24	J	0.28	J	7.9		5.8		0.46	J	0.18	J
Iron	ND		ND		ND		ND		ND		ND		ND		ND		ND	
Lead	ND		ND		ND		ND		ND		ND		ND		ND		ND	
Magnesium	285		254		298		292		319		591		1800		286		300	
Manganese	0.13		0.38		0.09	J	0.09	J	0.08	J	1.8		13.6		0.24	J	0.21	J
Mercury	0.07		0.05		0.22		0.24		0.17	K	0.08		0.02	J	0.22		0.14	
Nickel	ND		ND		ND		ND		ND		ND		ND		0.45	L	ND	
Potassium	3930		3700		3740		3610		4040		2170		1860		3410		3270	
Sodium	1060		607		505		580		529		4060		4270		623		523	
Zinc	5		5		3.9		4.4		4.6	L	25		17.9		6.5		4.6	

Fish Distribution and Characterization

FISH DISTRIBUTION AND CHARACTERIZATION
BACKGROUND STATIONS - WEBB, HADNOT, AND HOLLAND MILL CREEKS

MCB CAMP LEJEUNE, NORTH CAROLINA

Common Name	Scientific Name	Length N.C. (cm)	Length Atlas (cm)	Water Type	Habitat	Spawning	Tolerance	Family	Sources
Atlantic Menhaden	Brevoortia tyrannus	20	46	Brackish or marine, enters freshwater	Rivers, streams	NA	Intermediate	Clupeidae	1,2,3,4
Spot	Leiostomas xanthurus	NA	NA	Brackish or marine, enters freshwater	NA	NA	NA	Sciaenidae	1
Stripped Mullet	Mugil cephalus	NA	23-35	Brackish or marine, enters freshwater	Rivers	NA	NA	Mugilidae	1,2
Pinfish	Lagodon rhomboides	NA	38	Marine, seldom enters freshwater	Shallow waters	NA	NA	Sparidae	1,2
Mud Catfish (Yellow Bullhead)	Ictalupus natalis	24	-38	Freshwater	Rivers Streams	April through May	Tolerant	Ictaluridae	1,2,3
Redbreast Sunfish	Lepomis auritus	18	6-15	Freshwater	Streams	April through June	NA	Centrarchidae	1,2,3
Atlantic Croaker	Micropogonias undulatus	NA	61	Estuaries, brackish-water or marine	NA	NA	NA	Sciaenidae	1,2
Pumpkinseed	Lepomis gibbosus	20	8-20	Freshwater	Streams Creeks	April through October	Moderately Tolerant	Centrarchidae	1,2,3,4
Longnose Gar	Lepisosteus osseus	80	-150	Freshwater; May enter brackish water	Rivers	April through May	Intermediate	Lepisosteidae	1,2,3
Summer Flounder	Paralichthys dentatus	NA	37	Brackish or marine, enters freshwater	Rivers	NA	NA	Bothidae	1
Flier	Centrarchus macropterus	12	7-19	Freshwater	Streams	April through May	NA	Centrarchidae	1,2,3
Chain Pickerel	Esox niger	44	38-45	Freshwater	Streams Creeks	February through March	Intermediate	Esocidae	1,2,3

FISH DISTRIBUTION AND CHARACTERIZATION
BACKGROUND STATIONS - WEBB, HADNOT, AND HOLLAND MILL CREEKS
REMEDIAL INVESTIGATION, CTO-0232
MCB CAMP LEJEUNE, NORTH CAROLINA

Common Name	Scientific Name	Length N.C. (cm)	Length Atlas (cm)	Water Type	Habitat	Spawning	Tolerance	Family	Sources
Redear Fish	Lepomis microlophus	18	14-25	Freshwater	Streams	May through August	Intermediate	Centrarchidae	1,2,3
Warmouth	Lepomis gulosus	16	8-26	Freshwater	Rivers Streams	May through August	Intermediate	Centrarchidae	1,2,3
White Perch	Morone americana	NA	to 48	Brackish water; Freshwater	Bays and estuaries; Rivers and lakes	NA	Intermediate	Percichthyidae	3,5
Bluefish	Pomatomus saltatrix	NA	NA	Coastal waters	Surface waters; Near shore and off shore	NA	NA	Pomatomidae	2
Bluegill	Lepomis macrochirus	25	18-20	Freshwater	Rivers Streams Creeks	May through October	Intermediate	Centrarchidae	1,2,3
White Catfish	Ictalurus catus	31	-46	Freshwater	Rivers	May through June	Intermediate	Ictaluridae	1,2,3
Largemouth Bass	Micropterus salmoides	48	12-70	Freshwater	Rivers Streams Creeks	May through June	Intermediate	Centrarchidae	1,2,3
Mummichog	Fundulus heteroclitus	7	8-10	Shallow coastal waters	Rivers Streams	April through August	NA	Cyprinodontidae	1,2,3
Redfin Pickerel	Esox americanus	23	25-30	Freshwater	Streams Creeks	February through March	NA	Esocidae	1,2,3
Hog Choker	Trinectes maculatus	5	7-12	Shallow coastal waters; Occasionally enters freshwater	Rivers Streams	March through April	NA	Soleidae	1,2,3

FISH DISTRIBUTION AND CHARACTERIZATION
BACKGROUND STATIONS - WEBB, HADNOT, AND HOLLAND MILL CREEKS
REMEDIAL INVESTIGATION, CTO-0232
MCB CAMP LEJEUNE, NORTH CAROLINA

Common Name	Scientific Name	Length N.C. (cm)	Length Atlas (cm)	Water Type	Habitat	Spawning	Tolerance	Family	Sources
Pirate Perch	Aphredoderus sayanus	9	7-14	Freshwater	Streams Creeks	January through March	Intermediate	Aphredoderidae	1,2,3
Eastern Mosquito (Mosquitofish)	Gambusia affinis	NA	NA	Fresh or brackish water	Ponds, lakes, ditches, backwaters, sluggish streams	NA	Intermediate	Poeciliidae	2,5

1 Menhinick, 1992.
2 Boschung, 1983.
3 USEPA, 1989d.
4 Raasch, 1991.
5 Kennish, 1986.
NA = Information not Available

TOTAL NUMBER AND PERCENT OF AQUATIC SPECIES IDENTIFIED PER AREA
WEBB CREEK AND HADNOT CREEK

MCB CAMP LEJEUNE, NORTH CAROLINA

SPECIES	WEBB CREEK		Total Detected	HADNOT CREEK				Total Detected
	WC02	WC03		HC01	HCO2	HC03	HC04	
FISH SPECIES								
Spot	4		4			12		12
Stripped Mullet	4		4			3		3
Pumpkinseed			0		3			3
Mudcat	3		3	3				3
Redbreast sunfish	1		1	2				2
Long-Nosed Gar	9	5	14					0
American flier			0	3				3
Chain pickerel			0	1				1
Redear fish			0	1				1
Atlantic croaker			0			5		5
Warmouth			0		1			1
Bluefish			0			3		3
Yellow Bullhead	3		3	2				2
Blue gill	4		4					0
White catfish	1		1					0
Largemouth bass	2		2					0
Summer flounder		1	1					0
Mummichog		3	3					0
Pinfish	25	24	49			5		5
Atlantic menhaden			0			2		2
Redfin pickerel			0				2	2
White perch			0			1		1
Hog choker			0			1		1
Pirate perch			0				8	8

TOTAL NUMBER AND PERCENT OF AQUATIC SPECIES IDENTIFIED PER AREA
WEBB CREEK AND HADNOT CREEK

MCB CAMP LEJEUNE, NORTH CAROLINA

SPECIES	WEBB CREEK		Total Detected	HADNOT CREEK				Total Detected
	WC02	WC03		HC01	HCO2	HC03	HC04	
NO. OF SPECIES	9	4	12	5	2	8	2	18
NO. OF INDIVIDUALS	53	33	86	10	4	32	10	56
OTHER AQUATIC SPECIES								
Grass shrimp		3	3					0
Crayfish			0				3	3
NUMBER OF SPECIES	0	1	1	0	0	0	1	1
NO. OF INDIVIDUALS	0	3	3	0	0	0	3	3

TOTAL NUMBER AND PERCENT OF AQUATIC SPECIES IDENTIFIED PER AREA
HOLLAND MILL CREEK

MCB CAMP LEJEUNE, NORTH CAROLINA

SPECIES	HOLLAND MILL CREEK (CARTWHEEL BRANCH)			Total Detected
	HM01	HM02	HM03	
Spot			8	8
Stripped Mullet		11	3	14
Pumpkinseed	16	2		18
Chain pickerel	2			2
Swamp darter	6			6
Mud sunfish	1			1
Black drum		1		1
Ligar		3		3
Gizzard Shad		2		2
Spotted sunfish		2		2
Blue gill	2	1		3
Atlantic menhaden			199	199
Largemouth bass		1		1
Hog choker			2	2
Summer flounder		1	17	18
Mummichog		6		6
Pinfish		7	4	11
Goby, freshwater	1	1		2
NUMBER OF SPECIES	6	12	6	18
NO. OF INDIVIDUALS	28	38	233	299

TOTAL NUMBER AND PERCENT OF AQUATIC SPECIES IDENTIFIED PER AREA
HOLLAND MILL CREEK

MCB CAMP LEJEUNE, NORTH CAROLINA

SPECIES	HOLLAND MILL CREEK (CARTWHEEL BRANCH)			Total Detected
	HM01	HM02	HM03	
OTHER AQUATIC SPECIES				
Unknown	1			1
Grass shrimp		13		13
Crayfish	3			3
NUMBER OF SPECIES	2	1	0	3
NO. OF INDIVIDUALS	4	13	0	17

HADNOT CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HC01 Fish Length (cm)	Mass Weight	Average Weight (g)	HC02 Fish Length (cm)	Mass Weight	Average Weight (g)	HC03 Fish Length (cm)	Mass Weight	Average Weight (g)	HC04 Fish Length (cm)	Mass Weight	Average Weight (g)
Strippet Mullet	HC03							15.25	45	45			
								12.5	20	20			
								12.5	20	20			
	COUNT							3		3			
	AVERAGE							13.416666667		28.333333333			
	MAXIMUM							15.25		45			
	MINIMUM							12.5		20			
								+1 collected, no length or weight					
Atlantic Menhaden	HC03							5	<5	2.5			
	COUNT							2		2			
	AVERAGE							5		2.5			
	MAXIMUM							5		2.5			
	MINIMUM							5		2.5			
Blue Fish	HC03							7	7	7			
								11	17	17			
								8	8	8			
	COUNT							3		3			
	AVERAGE							8.6666666667		10.666666667			
	MAXIMUM							11		17			
	MINIMUM							7		7			
Spot	HC03							12.5	22	22			
								5.5	<5.0	2.5			
								5.75	<5.0	2.5			
								5	<5.0	2.5			
								3.5	<5.0	2.5			
								5.5	<5.0	2.5			
								14	40	40			
								13.5	35	35			
								12	35	35			
								14	35	35			
								5.5	<5.0	2.5			
								11.5	20	20			
	COUNT							12		12			
	AVERAGE							9.0208333333		16.833333333			
	MAXIMUM							14		40			
	MINIMUM							3.5		2.5			

HADNOT CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HC01 Fish Length (cm)	Mass Weight	Average Weight (g)	HC02 Fish Length (cm)	Mass Weight	Average Weight (g)	HC03 Fish Length (cm)	Mass Weight	Average Weight (g)	HC04 Fish Length (cm)	Mass Weight	Average Weight (g)
White Perch	HC03							18.5	105	105			
	COUNT							1		1			
	AVERAGE							18.5		105			
	MAXIMUM							18.5		105			
	MINIMUM							18.5		105			
Hogchoker	HC03							5.5	5	5			
	COUNT							1		1			
	AVERAGE							5.5		5			
	MAXIMUM							5.5		5			
	MINIMUM							5.5		5			
Pinfish													
	HC03							13	35	35			
								10.6	25	25			
								11	22	22			
								10.5	25	25			
								13	37	37			
	COUNT							5		5			
	AVERAGE							11.66		28.8			
	MAXIMUM							13		37			
	MINIMUM							10.5		22			
Atlantic Croaker	HC03							11.5	20	20			
								10.5	16	16			
								9	10	10			
								10.5	14	14			
								7.5	<5	2.5			
	COUNT							5		5			
	AVERAGE							9.8		12.5			
	MAXIMUM							11.5		20			
	MINIMUM							7.5		2.5			
Redbreast Sunfish	HC01	23.5	265	265									
		20	175	175									
	COUNT	2		2									
	AVERAGE	21.75		220									
	MAXIMUM	23.5		265									
	MINIMUM	20		175									
American Flyer	HC01	16.5	65	65									
		9.5	15	15									
		+1 collected, no length or weight											
	COUNT	3		3									
	AVERAGE	13		40									
	MAXIMUM	16.5		65									
	MINIMUM	9.5		15									

HADNOT CREEK - 1OUND STATIONS

SPECIES	COC SAMPLE NO.	HC01 Fish Length (cm)	Mass Weight	Average Weight (g)	HC02 Fish Length (cm)	Mass Weight	Average Weight (g)	HC03 Fish Length (cm)	Mass Weight	Average Weight (g)	HC04 Fish Length (cm)	Mass Weight	Average Weight (g)
Chain Pickerel	HC01	37	290	290									
	COUNT	1		1									
	AVERAGE	37		290									
	MAXIMUM	37		290									
	MINIMUM	37		290									
Yellow Bullhead	HC01	26.5	270	270									
		26.5	275	275									
	COUNT	2		2									
	AVERAGE	26.5		272.5									
	MAXIMUM	26.5		275									
	MINIMUM	26.5		270									
Pumpkinseed	HC02				13	50	50						
					17.5	125	125						
					16	100	100						
	COUNT				3		3						
	AVERAGE				15.5		91.666667						
	MAXIMUM				17.5		125						
	MINIMUM				13		50						
Warmouth	HC02				22	250	250						
	COUNT				1		1						
	AVERAGE				22		250						
	MAXIMUM				22		250						
	MINIMUM				22		250						
Redfin Pickerel	HC04										+1 collected, no length or weight		
											17	30	30
	COUNT										2		2
	AVERAGE										17		30
	MAXIMUM										17		30
	MINIMUM										17		30
Pirate Perch	HC04										5	>5	2.5
											4.5		2.5
											+6 collected, no length or weight		
	COUNT										6		6
	AVERAGE										4.75		2.5
	MAXIMUM										5		2.5
	MINIMUM										4.5		2.5
Crayfish	HC04										6	10	3.3
											4.5		3.3
											4		3.3
	COUNT										3		3
	AVERAGE										4.8333333		3.3
	MAXIMUM										6		3.3
	MINIMUM										4		3.3
Mudcat	3 collected at HC01, no length or weight												

HOLLAND MILL CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HM01 Fish Length (cm)	Mass Weight	Average Weight (g)	HM02 Fish Length (cm)	Mass Weight	Average Weight (g)	HM03 Fish Length (cm)	Mass Weight	Average Weight (g)
Strippet Mullet	HM02				38.5	640	640			
					39.5	600	600			
					34.5	400	400			
					34.5	400	400			
					33.5	360	360			
					34	340	340			
					37	460	460			
					35	520	520			
					33.5	410	410			
					32	320	320			
					31	370	370			
	HM03							14.5	40	40
								6.5	<5	2.5
								+1 collected, no length or weight		
	COUNT				11		11	3		3
	AVERAGE				34.81818182		438.1818182	10.5		21.25
	MAXIMUM				39.5		640	14.5		40
	MINIMUM				31		320	6.5		2.5
Atlantic Menhaden	HM03							6	24	4
								6		4
								5.7		4
								5.4		4
								5.5		4
								5.6		4
								5.7	22	2.2
								5.5		2.2
								5		2.2
								5.5		2.2
								5.5		2.2
								5.2		2.2
								5.5		2.2
								5.5		2.2
								5.6		2.2
								6.2		2.2
								6	25	2.5
								5.5		2.5
								5		2.5
								5.5		2.5
								5.5		2.5
								5.5		2.5
								6		2.5
								5		2.5
								5.5		2.5
								5.5	20	2
								5.7		2
								5		2
								5		2
								6		2
								5.5		2
								5.5		2
								6		2
								6		2
								5.5		2
								5.5	27	1.8
								5.8		1.8
								5.5		1.8
								5.7		1.8
								6		1.8
								6		1.8
								6.5		1.8
								5.5		1.8
								6.5		1.8
								5.5		1.8
								5.5		1.8
								5.5		1.8
								6		1.8
								5.5		1.8
								5.5		1.8
								5.5	20	2
								4.5		2
								5		2
								5.5		2
								5.5		2
								5.5		2
								5.5		2
								6		2
								5.5		2
								6		2
								6		2
								138 collected no length or weight		
	COUNT							199		61
	AVERAGE							5.6		2.2540984
	MAXIMUM							6.5		4
	MINIMUM							4.5		1.8

HOLLAND MILL CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HM01 Fish Length (cm)	Mass Weight	Average Weight (g)	HM02 Fish Length (cm)	Mass Weight	Average Weight (g)	HM03 Fish Length (cm)	Mass Weight	Average Weight (g)
Flounder	HM02				29.5	250	250			
	HM03							33	400	400
								43	850	850
								20.5	90	90
								24	120	120
								+13 collected, no length or weight		
	COUNT				1		1	17		4
	AVERAGE				29.5		250	30.125		365
	MAXIMUM				29.5		250	43		850
	MINIMUM				29.5		250	20.5		90
Black Drum	HM02				28	350	350			
	COUNT				1		1			
	AVERAGE				28		350			
	MAXIMUM				28		350			
	MINIMUM				28		350			
Spotted Sunfish	HM02				15.5	65	65			
					17	110	110			
	COUNT				2		2			
	AVERAGE				16.25		87.5			
	MAXIMUM				17		110			
	MINIMUM				15.5		65			
Largemouth Bass	HM02				34	540	540			
	COUNT				1		1			
	AVERAGE				34		540			
	MAXIMUM				34		540			
	MINIMUM				34		540			
Hogchoker	HM03							+1 collected, no length or weight		
								6	10	10
	COUNT							2		1
	AVERAGE							6		10
	MAXIMUM							6		10
	MINIMUM							6		10
Spot	HM03							5	<5	2.5
								12	25	25
								5.8	20	4
								6		4
								6.2		4
								6.4		4
								6.4		4
								+1 collected, no length or weight		
	COUNT							8		7
	AVERAGE							6.82857143		6.78571429
	MAXIMUM							12		25
	MINIMUM							5		2.5
Blue Gill	HM02				17		105			
	HM01	10.5		10	10					
		+1 collected, no length or weight								
	COUNT	2		1	1		1			
	AVERAGE	10.5		10	17		105			
	MAXIMUM	10.5		10	17		105			
	MINIMUM	10.5		10	17		105			

HOLLAND MILL CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HM01 Fish Length (cm)	Mass Weight	Average Weight (g)	HM02 Fish Length (cm)	Mass Weight	Average Weight (g)	HM03 Fish Length (cm)	Mass Weight	Average Weight (g)
Pumpkinseed	HM02				15	50	50			
					11.5	30	30			
	HM01	7.5	45	4.5						
		6.5		4.5						
		7.5		4.5						
		7.5		4.5						
		6		4.5						
		6		4.5						
		4.5		4.5						
		6.5		4.5						
		6		4.5						
		5.5		4.5						
		6	50	6.3						
		6.5		6.3						
		6.5		6.3						
		6.5		6.3						
		11		6.3						
		7.5		6.3						
	COUNT	16		16	2		2			
	AVERAGE	7.34375		5.925	13.25		40			
	MAXIMUM	11		6.3	15		50			
	MINIMUM	4.5		4.5	11.5		30			
Long-nose Gar	HM02				73	1250	1250			
					83	2000	2000			
					72.5	1640	1640			
	COUNT				3		3			
	AVERAGE				76.16666667		1630			
	MAXIMUM				83		2000			
	MINIMUM				72.5		1250			
Pinfish	HM02				17.5	80	80			
	HM03							5	<5	2.5
					+6 collected, no length or weight			+3 collected, no length or weight		
	COUNT				7		1	4		1
	AVERAGE				17.5		80	5		2.5
	MAXIMUM				17.5		80	5		2.5
	MINIMUM				17.5		80	5		2.5
Gizzard Shad	HM02				33	480	480			
					34	460	460			
	COUNT				2		2			
	AVERAGE				33.5		470			
	MAXIMUM				34		480			
	MINIMUM				33		460			
Chain Pickerel	HM01	13	10	5						
		13.5		5						
	COUNT	2		2						
	AVERAGE	13.25		5						
	MAXIMUM	13.5		5						
	MINIMUM	13		5						
Unknown Fish	HM01	7.5	<5	2.5						
	COUNT	1		1						
	AVERAGE	7.5		2.5						
	MAXIMUM	7.5		2.5						
	MINIMUM	7.5		2.5						
Swamp Darter	HM01	6	18	3						
		6		3						
		6		3						
		6		3						
		6		3						
		6		3						
	COUNT	6		6						
	AVERAGE	6		3						
	MAXIMUM	6		3						
	MINIMUM	6		3						

HOLLAND MILL CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	HM01 Fish Length (cm)	Mass Weight	Average Weight (g)	HM02 Fish Length (cm)	Mass Weight	Average Weight (g)	HM03 Fish Length (cm)	Mass Weight	Average Weight (g)
Crayfish	HM01	8.5	15	5						
		4.5		5						
		5.5		5						
	COUNT	3		3						
	AVERAGE	6.16666667		5						
	MAXIMUM	8.5		5						
	MINIMUM	4.5		5						
Mud Sunfish	1 collected at HM01, no length or weight									
Mummichog	6 collected at HM02, no length or weight									
Goby, freshwater	1 collected at HM01 and 1 collected at HM02, no length or weight									
Gras shrimp	13 collected at HM02, no length or weight									

WEBB CREEK - BACKGROUND STATIONS

SPECIES	COC SAMPLE NO.	WC02 Fish Length (cm)	Mass Weight	Average Weight (g)	WC03 Fish Length (cm)	Mass Weight	Average Weight (g)
Strippet Mullet	WC02	39.5	500	500			
		35.5	380	380			
		41.5	700	700			
		37	600	600			
	COUNT	4		4			
	AVERAGE	38.375		545			
	MAXIMUM	41.5		700			
	MINIMUM	35.5		380			
Summer Flounder	WC03				21	60	60
	COUNT				1		1
	AVERAGE				21		60
	MAXIMUM				21		60
	MINIMUM				21		60
Largemouth Bass	WC02	34	525	525			
		34	600	600			
	COUNT	2		2			
	AVERAGE	34		562.5			
	MAXIMUM	34		600			
	MINIMUM	34		525			
Redbreast Sunfish	WC02	16	60	60			
	COUNT	1		1			
	AVERAGE	16		60			
	MAXIMUM	16		60			
	MINIMUM	16		60			
White Catfish	WC02	37	750	750			
	COUNT	1		1			
	AVERAGE	37		750			
	MAXIMUM	37		750			
	MINIMUM	37		750			
Spot	WC02	14.5	10	10			
		13	10	10			
		13	<10	5			
		+1 collected, no length or weight					
	COUNT	4		4			
	AVERAGE	13.5		8.33333333			
	MAXIMUM	14.5		10			
	MINIMUM	13		5			
Blue Gill	WC02	23	300	300			
		23.5	300	300			
		21.5	250	250			
		16.75	85	85			
	COUNT	4		4			
	AVERAGE	21.1875		233.75			
	MAXIMUM	23.5		300			
	MINIMUM	16.75		85			

WEBB CREEK - BACKGROUND STATIONS

CIES	COC SAMPLE NO.	WC02 Fish Length (cm)	Mass Weight	Average Weight (g)	WC03 Fish Length (cm)	Mass Weight	Average Weight (g)
Long-nose Gar	WC02	68	1100	1100			
		71.5	1220	1220			
		73.5	1350	1350			
		72.5	1220	1220			
		66.5	1120	1120			
		72.5	1260	1260			
		71.5	1340	1340			
		69.5	1240	1240			
		75	1420	1420			
	WC03				87	1900	1900
					83	1850	1850
					97	2850	2850
					71.5	1000	1000
					73	1580	1580
	COUNT	9		9	5		5
	AVERAGE	71.16667		1252.222	82.3		1836
	MAXIMUM	75		1420	97		2850
	MINIMUM	66.5		1100	71.5		1000
Pinfish	WC02	10.5	NA				
		+24 collected, no length or weight			24 collected, no length or weight		
	COUNT	25			24		
	AVERAGE	10.5					
	MAXIMUM	10.5					
	MINIMUM	10.5					
Yellow Bullhead Catfish	WC02	38.5	900	900			
		32.5	620	620			
		36.5	640	640			
	COUNT	3		3			
	AVERAGE	35.83333		720			
	MAXIMUM	38.5		900			
	MINIMUM	32.5		620			

Mudcat — 3 fish collected at WC02, no length or weight

Mummichog — 3 fish collected at WC03, no length or weight

Grass shrimp — 3 collected at WC03, no length or weight

Benthic Macroinvertebrate Characterization and Statistics

MARINE CORPS BASE CAMP LEJEUNE
BACKGROUND - WEBB CREEK
BENTHIC MACROINVERTEBRATES

	WC02-BN			WC03-BN		
	01	02	03	01	02	03
NEMERTEA						
Anopla						
Heteronemertea						
Lineidae						
Micrura leidyi				1	2	2
ANNELIDA						
Polychaeta						
Capitellida						
Capitellidae						
Heteromestus filiformis	2					
Phyllodocida						
Nereidae						
Nereis succinea			1			
Spionida						
Spionidae						
Scolecolepides viridis						1
Terebellida						
Ampharetidae						
Hypaniola grayi		4	10			
ARTHROPODA						
Crustacea						
Amphipoda						
Gammaridae						
Gammarus tigrinus	10			1	1	
Insecta						
Diptera						
Chironomidae						
Chironomus decorus gr.	8	24	13	38	17	6
Procladius sp.	1	3		2		1
Tanytarsus sp.		2	1			
MOLLUSCA						
Bivalvia						
Veneroida						
Corbiculidae						
Polymesoda caroliniana					1	
Tellinidae						
Macoma tenta					1	
Total Taxa	4	4	4	4	5	4
Total Specimens	21	33	25	42	22	10
Replicate Specimens Average		26.33			24.67	
Standard Deviation	4.42531	10.5317	6.18466	18.3394	7.05691	2.38048
Brillouin's Diversity		0.518			0.279	
SPECIES DENSITY (#/M^2)	134	210	159	268	140	64
SPECIES DIVERSITY (Shannon-Wiener)	0.473	0.380	0.419	0.180	0.304	0.473

MARINE CORPS BASE CAMP LEJEUNE
BACKGROUND - HADNOT CREEK
BENTHIC MACROINVERTEBRATES

	HC01-BN			HC02-BN			HC03-BN			HC04-BN		
	01	02	03	01	02	03	01	02	03	01	02	03
NEMATEA												
Nemata												
Heteronemertea												
Lineidae												
Micrura leidyi						6	5	3				
ANNELIDA												
Oligochaeta												
Lumbriculida												
Lumbriculidae												
Eclipidrilus sp.			1									
Tubificida												
Tubificidae												
Isochaetides freyi	77	42	36							21	21	8
Limnodrilus hoffmeisteri											1	
Spiosperma carolinensis		3									1	3
Polychaeta												
Capitellida												
Capitellidae												
Heteromastus filiformis							14	9				
Phyllodocida												
Nereidae												
Nereis succinea							6		19			
Phyllodocidae												
Eteone heteropoda									1			
Terebellida												
Ampharetidae												
Hypaniola grayi (ampharetid worm)				18	6	48						
ARTHROPODA												
Crustacea												
Amphipoda												
Corophiidae												
Corophium lacustre									82			
Gammaridae												
Crangonyx pseudogracilis					1	1					15	20
Gammarus tigrinus												
Tanaidacea												
Tanaidae												
Leptochelia rapax									80			
Insecta												
Coleoptera												
Dytiscidae												
Hydroporus sp.			1							5	2	6
Elmidae												
Dubiraphia sp.		1										
Diptera												
Ceratopogonidae												
Palpomyia/sphaeromias sp. (biting midges)	5	7	4			1						
Chironomidae												
Ablabesmyia annulata	2	7	1									
Ablabesmyia rhamphe gr.	4	7	9									
Clinotanypus pinguis											1	
Cryptochironomus fulvus gr.		2	3									
Epoicladius sp.			1									
Glyptotendipes sp.												1
Nilotheurus sp.		2	1									
Parasiuterbornella nigrohalteralis	1	5	2									
Polypedilum illinoense	3	1										
Procladius sp. (midges)		1										
Tanytarsus sp.	2	9	2									
Tribelos lucundum	4	8	8								9	8
Tipulidae												
Pseudolimnophila sp.											1	2
Ephemeroptera												
Ephemeridae												
Hexagenia bilineata	3	3	1									
Megaloptera												
Sialidae												
Sialis sp.										1		
Odonata												
Coenagrionidae												
Argia sp.		1										
Libellulidae												
Pachydiplax longipennis											1	
Trichoptera												
Polycentropodidae												
Phylocentropus sp.	1	5	7							17	13	4
MOLLUSCA												
Bivalvia												
Mytiloida												
Mytilidae												
Geukensia demissa									1			
Veneroida												
Sphaeriidae												
Pisidium casertanum		2	1								4	
Tellinidae												
Macoma tenta							5	19	1			
Total Taxa	10	17	15	1	2	4	4	3	6	4	11	8
Total Specimens	102	108	78	18	7	54	30	31	183	44	69	52
Replicate Specimens Average		36.33333			26.33333			81.33333			55	
Standard Deviation	23.50792	9.814833	8.961824	NA	3.535534	21.79449	4.358899	8.082904	39.67241	9.321905	7.128687	8.047432
Shannon's Diversity		0.755			0.072			0.675			0.757	
SPECIES DENSITY (#/M^2)	850	678	487	115	45	344	191	198	1166	280	440	331
SPECIES DIVERSITY (Shannon-Wiener)	0.463	0.956	0.831	0.000	0.178	0.230	0.554	0.384	0.449	0.456	0.803	0.763

MARINE CORPS BASE CAMP LEJEUNE
BACKGROUND - HADNOT CREEK
BENTHIC MACROINVERTEBRATES

	HM01-BN			HM02-BN			HM03-BN		
	01	02	03	01	02	03	01	02	03
NEMERTEA									
Anopla									
Heteronemertea									
Lineidae									
Micrura leidyi							3	4	2
ANNELIDA									
Oligochaeta									
Tubificida									
Tubificidae									
Limnodrilus hoffmeisteri	3	1	3						
Polychaeta									
Ariciida									
Orbiniidae									
Scoloplos fragilis							3	20	8
Capitellida									
Capitellidae									
Heteromastus filiformis							1	1	1
Phyllodocida									
Nereidae									
Nereis succinea				7	9	6			
Spionida									
Spionidae									
Streblospio benedicti							1		
Terebellida									
Ampharetidae									
Hypaniola grayi (ampharetid worm)				3		2			
ARTHROPODA									
Crustacea									
Decapoda									
Palaemonidae									
Palaemonetes pugio						1			
Insecta									
Coleoptera									
Dytiscidae									
Hydroporus sp.	1								
Elmidae									
Dubiraphis sp.			8						
Diptera									
Chaoboridae									
Chaoborus sp.			1						
Chironomidae									
Ablabesmyia mallochi	1								
Chironomus decorus gr.	2	2	2	120	180	76	1		
Dicrotendipes nervosus	5		3						
Larsia sp.			1						
Polypedilum illinoense	12		7						
Polypedilum scalaenum	18		11						
Tanytarsus sp.	11		12						
Tribelos lucundum	50	159	31						
Megaloptera									
Sialidae									
Sialis sp.	1								
MOLLUSCA									
Bivalvia									
Veneroida									
Mactridae									
Mulinia lateralis							3		
Tellinidae									
Macoma tenta							17	23	9
Total Taxa	10	3	10	3	2	4	7	4	4
Total Specimens	104	162	79	130	189	85	29	48	20
Replicate Specimens Average		115			134.667			32.3333	
Standard Deviation	15.0864	90.934	9.06091	66.4254	120.915	36.5639	5.75698	11.1056	4.08248
Brillouin's Diversity		0.5			0.122			0.497	
SPECIES DENSITY (#/M^2)	663	1033	504	829	1205	542	185	306	127
SPECIES DIVERSITY (Shannon-Wiener)	0.695	0.045	0.793	0.138	0.083	0.186	0.593	0.436	0.480

SUMMARY STATISTICS OF BENTHIC MACROINVERTEBRATE SPECIES AT HADNOT CREEK, HOLLAND MILL CREEK, AND WEBB CREEK MCB CAMP LEJEUNE, NORTH CAROLINA

Station	Number of Species	Number of Organisms	Species Density (#/m^2)	Species Diversity (Shannon-Weiner)	Species Diversity (Brillouin's)	Macroinvertebrate Biotic Index
WC02	7	79	504	0.570	0.518	9.4
WC03	7	74	472	0.323	0.279	9.6
HC01	20	286	1,823	0.802	0.755	7.8
HC02	4	79	504	0.196	0.072	7.6
HC03	8	244	1,555	0.683	0.675	NA
HC04	13	165	1,052	0.807	0.757	7.6
HM01	13	345	2,199	0.525	0.500	6.9
HM02	4	404	2,575	0.128	0.122	9.6
HM03	7	97	618	0.538	0.497	9.6

WC = Webb Creek Stations
HC = Hadnot Creek Stations
HM = Holland Mill Creek Stations
BN = Benthic Macroinvertebrate Sample
NA = Not Applicable
Species Density (#m^2) is based on a sample area of 0.0523 m^2.

SYSTEMATIC LIST OF BENTHIC MACROINVERTEBRATE SPECIES
AT BACKGROUND STATIONS
(WEBB, HADNOT, AND HOLLAND MILL CREEKS)
MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals
NERMERTEA	Phylum
Anopla	Class
Heteronemertea	Order
Lineidae	Family
Micrura leidyl	Genus Species
ANNELIDA	Phylum
Oligochaeta	Class
Lumbriculida	Order
Lumbriculiae	Family
Eclipidrillus sp.	Genus Species
Tubificida	Order
Tubificidae	Family
Isochaetides freyi	Genus Species
Limnodrilus hoffmeisteri	Genus Species
Spirosperma carolinensis	Genus Species
Polychaeta	Class
Ariciida	Order
Orbiniidae	Family
Scoloplos fragilis	Genus Species
Capitellida	Order
Capitellidae	Family
Heteromestus filiformis	Genus Species
Phyllodocida	Order
Nereidae	Family
Nereis succinea	Genus Species
Phyliodocidae	Family
Eteone heteropoda	Genus Species
Spionida	Order
Spionidae	Family
Scolecolepides virdis	Genus Species
Streblospio benedicti	Genus Species
Terebellida	Order

SYSTEMATIC LIST OF BENTHIC MACROINVERTEBRATE SPECIES
AT BACKGROUND STATIONS
(WEBB, HADNOT, AND HOLLAND MILL CREEKS)
MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals
Ampharetidae	Family
Hypaniola grayi	Genus Species
ARTHROPODA	Phylum
Crustacea	Class
Amphipoda	Order
Corophiidae	Family
Corophium lacuatre	Genus Species
Gammaridae	Family
Crangonyx pseudogracillus	Genus Species
Gammarus tigrinus	Genus Species
Tanaidacea	Order
Tanaidae	Family
Leptochelia rapox	Genus Species
Decapoda	Order
Palaemonidae	Family
Palaemonetes pugio	Genus Species
Insecta	Class
Coleoptera	Order
Dytiscidae	Family
Hydroporus sp.	Genus Species
Elmidae	Family
Dubiraphia sp.	Genus Species
Diptera	Order
Ceratopogonidae	Family
Palpomyia/sphaeromias sp.	Genus Species
Chaoboridae	Family
Chaoborus sp.	Genus Species
Chironomidae	Family
Ablabesmyia annulata	Genus Species
Ablabesmyia mallochi	Genus Species
Ablabesmyia ramphe gr.	Genus Species
Clinotanypus pinguis	Genus Species
Chironomus decorus gr.	Genus Species

SYSTEMATIC LIST OF BENTHIC MACROINVERTEBRATE SPECIES
AT BACKGROUND STATIONS
(WEBB, HADNOT, AND HOLLAND MILL CREEKS)
MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals
Cryptochironomus fulvus gr	Genus Species
Dicrotendipes nervosus	Genus Species
Epoicladius sp.	Genus Species
Glyptotendipes sp.	Genus Species
Larsia sp.	Genus Species
Nilothauma sp.	Genus Species
Paraiauterborniella nigrohaite	Genus Species
Polypedilum illinoense	Genus Species
Polypedilum scalaenum	Genus Species
Procladius sp.	Genus Species
Tanytarsus sp.	Genus Species
Tribelos jucundum	Genus Species
Tribelos lucundum	Genus Species
Tipulidae	Family
Psuedolimnophila sp.	Genus Species
Ephemeroptera	Order
Ephemeridae	Family
Hexagenia billineata	Genus Species
Megaloptera	Order
Sialidae	Family
Sialis sp.	Genus Species
Odonata	Order
Coenagrionidae	Family
Argia sp.	Genus Species
Libelluiidae	Family
Pechydiplax longipennis	Genus Species
Trichoptera	Order
Polycentropodidae	Family
Phylacentropus sp.	Genus Species
MOLLUSCA	Phylum
Bivalvia	Class
Mytiloida	Order
Mytilldae	Family

SYSTEMATIC LIST OF BENTHIC MACROINVERTEBRATE SPECIES
AT BACKGROUND STATIONS
(WEBB, HADNOT, AND HOLLAND MILL CREEKS)
MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals
Geukensia demissa	Genus Species
Veneroida	Order
Corbiculidae	Family
Polymesoda caroliniana	Genus Species
Mactridae	Family
Mullinia lateralis	Genus Species
Sphaeriidae	Family
Pisidium casertanum	Genus Species
Tellinidae	Family
Macoma tenta	Genus Species

USEPA SENSITIVITY TO METALS AND TOLERANCE TO ORGANIC WASTE AND BIOTIC INDEX FOR BENTHIC MACROINVERTEBRATE SPECIES AT BACKGROUND STATIONS (WEBB, HADNOT, AND HOLLAND MILL CREEKS) MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals	Organics	NCDEHNR[2] Biotic Index
NERMERTEA			
Anopla			
Heteronemertea			
Lineidae			
Micrura leidyl	NA	NA	NA
ANNELIDA			
Oligochaeta			
Lumbriculida			
Lumbriculiae			
Eclipidrillus sp.	NA	NA	NA
Tubificida			
Tubificidae			
Isochaetides freyi	NA	NA	8.6
Limnodrilus hoffmeisteri	NA	5	9.4
Spirosperma carolinensis	NA	3	NA
Polychaeta			
Ariciida			
Orbiniidae			
Scoloplos fragilis	NA	NA	NA
Capitellida			
Capitellidae			
Heteromestus filiformis	NA	NA	NA
Phyllodocida			
Nereidae			
Nereis succinea	NA	NA	NA
Phyliodocidae			
Eteone heteropoda	NA	NA	NA
Spionida			
Spionidae			
Scolecolepides virdis	NA	NA	NA
Streblospio benedicti	NA	NA	NA
Terebellida			

USEPA SENSITIVITY TO METALS AND TOLERANCE TO ORGANIC WASTE AND BIOTIC INDES FOR BENTHIC MACROINVERTEBRATE SPECIES AT BACKGROUND STATIONS (WEBB, HADNOT, AND HOLLAND MILL CREEKS) MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals	Organics	NCDEHNR[2] Biotic Index
Ampharetidae			
Hypaniola grayi	NA	NA	NA
ARTHROPODA			
Crustacea			
Amphipoda			
Corophiidae			
Corophium lacuatre	NA	NA	NA
Gammaridae			
Crangonyx pseudogracillus	NA	NA	7.9
Gammarus tigrinus	NA	2	NA
Tanaidacea			
Tanaidae			
Leptochelia rapox	NA	NA	NA
Decapoda			
Palaemonidae			
Palaemonetes pugio	NA	NA	NA
Insecta			
Coleoptera			
Dytiscidae			
Hydroporus sp.	NA	NA	8.6
Elmidae			
Dubiraphia sp.	NA	NA	5.9
Diptera			
Ceratopogonidae			
Palpomyia/sphaeromias sp.	NA	NA	7.0
Chaoboridae			
Chaoborus sp.	NA	NA	8.5
Chironomidae			
Ablabesmyia annulata	NA	1	3.5
Ablabesmyia mallochi	S	2	7.2
Ablabesmyia ramphe gr.	NA	2	NA
Clinotanypus pinguis	S	3	8.7

USEPA SENSITIVITY TO METALS AND TOLERANCE TO ORGANIC WASTE AND BIOTIC INDES FOR BENTHIC MACROINVERTEBRATE SPECIES AT BACKGROUND STATIONS (WEBB, HADNOT, AND HOLLAND MILL CREEKS) MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals	Organics	NCDEHNR[2] Biotic Index
Chironomus decorus gr.	NA	NA	9.6
Cryptochironomus fulvus gr	NA	3	6.4
Dicrotendipes nervosus	S	2	9.7
Epoicladius sp.	NA	NA	0.0
Glyptotendipes sp.	NA	NA	9.4
Larsia sp.	NA	2	9.3
Nilothauma sp.	NA	NA	5.0
Paraiauterborniella nigrohaite	NA	NA	NA
Polypedilum illinoense	NA	3	9.0
Polypedilum scalaenum	NA	2	8.4
Procladius sp.	NA	NA	9.1
Tanytarsus sp.	NA	NA	6.7
Tribelos jucundum	S	1	6.3
Tribelos lucundum	NA	NA	6.3
Tipulidae			
Psuedolimnophila sp.	NA	NA	7.2
Ephemeroptera			
Ephemeridae			
Hexagenia billineata	NA	2	NA
Megaloptera			
Sialidae			
Sialis sp.	T	4	7.2
Odonata			
Coenagrionidae			
Argia sp.	NA	NA	8.2
Libelluiidae			
Pechydiplax longipennis	NA	NA	NA
Trichoptera			
Polycentropodidae			
Phylacentropus sp.	NA	NA	6.2
MOLLUSCA			
Bivalvia			

USEPA SENSITIVITY TO METALS AND TOLERANCE TO ORGANIC WASTE AND BIOTIC INDES FOR BENTHIC MACROINVERTEBRATE SPECIES AT BACKGROUND STATIONS (WEBB, HADNOT, AND HOLLAND MILL CREEKS) MCB CAMP LEJEUNE, NORTH CAROLINA

Species	USEPA[1] Metals	Organics	NCDEHNR[2] Biotic Index
Mytiloida			
Mytilldae			
Geukensia demissa	NA	NA	NA
Veneroida			
Corbiculidae			
Polymesoda caroliniana	NA	NA	NA
Mactridae			
Mullinia lateralis	NA	NA	NA
Sphaeriidae			
Pisidium casertanum	NA	4	6.5
Tellinidae			
Macoma tenta	NA	NA	NA

(1) Macroinvertebrate Field and Laboratory Methods for Evaluating the Biological Integrity of Surface Waters

(2) Lenat, 1993

NA = Not Available

S = Sensitive to heavy metals

T = Tolerant to heavy metals

Organics Ranking = 0 to 5 with 0 being the least tolerant

APPENDIX X
SQC AND QI CALCULATIONS

SALTWAT EDIMENT SAMPLES
SITE 73 - BIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0303
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	Koc (mL/g)	SWSV (ug/L)	Sample No.	73-SD01-06 SQC (ug/kg)	73-SD01-612 SQC (ug/kg)	73-SD02-06 SQC (ug/kg)	73-SD02-612 SQC (ug/kg)	73-SD03-06 SQC (ug/kg)	73-SD03-612 SQC (ug/kg)	73-SD04-06 SQC (ug/kg)	73-SD04-612 SQC (ug/kg)	73-SD05-06 SQC (ug/kg)	73-SD05-612 SQC (ug/kg)
Acetone	2.20E+00	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Butanone	4.50E+00	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carbon disulfide	5.40E+01	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylene chloride	ND	11000	(1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toluene	3.00E+02	1050	(1)	5827.50	5355.00	4315.50	3780.00	25.58	25.52	13.80	15.47	25.74	26.05
Xylenes	2.40E+02	6000	(1)	26640.00	24480.00	19728.00	17280.00	116.93	116.64	63.07	70.70	117.65	119.09
Bis(2-ethylhexyl)phthalate	1.00E+05	360	(1)	666000.00	612000.00	493200.00	432000.00	2923.20	2916.00	1576.80	1767.60	2941.20	2977.20
Di-n-butylphthalate	1.70E+05	3.4	(2)	10693.00	9826.00	7918.60	6936.00	46.93	46.82	25.32	28.38	47.22	47.80
Fluoranthene	1.00E+05	6.16	(6)	11396.00	10472.00	8439.20	7392.00	50.02	49.90	26.98	30.25	50.33	50.94
Phenanthrene	2.88E+04	6.32	(3)	3371.97	3098.57	2497.08	2187.23	14.80	14.76	7.98	8.95	14.89	15.07
Phenol	1.42E+01	5800	(1)	1523.66	1400.12	1128.33	988.32	6.69	6.67	3.61	4.04	6.73	6.81
Pyrene	3.80E+04	300	(2)	210900.00	193800.00	156180.00	136800.00	925.68	923.40	499.32	559.74	931.38	942.78
4,4'-DDD	7.70E+05	0.001	(4)(5)	14.25	13.09	10.55	9.24	0.06	0.06	0.03	0.04	0.06	0.06
4,4'-DDE	4.40E+06	0.001	(4)(5)	81.40	74.80	60.28	52.80	0.36	0.36	0.19	0.22	0.36	0.36
Endrin	6.92E+04	0.002	(5)	2.56	2.35	1.90	1.66	0.01	0.01	0.01	0.01	0.01	0.01
Arocior-1260	5.30E+05	0.001	(5)	9.81	9.01	7.26	6.36	0.04	0.04	0.02	0.03	0.04	0.04
			Foc (mg/kg	**18500**	**17000**	**13700**	**12000**	**81.2**	**81**	**43.8**	**49.1**	**81.7**	**82.7**

SQC = (Koc*SWSV*Foc)/1000000

NA - Not Available
SWSV - Surface Water Screening Value
SQC - Sediment Quality Criteria
Foc - Fraction of organic carbon in mg/kg
Koc - Organic-carbon partition coefficient
(1) USEPA, 1991 (Lowest Observed Effects Level)
(2) USEPA, 1995b (Region III Water Quality Screening Values)
(3) USEPA, 1993 (Sediment Quality Criteria for Phenanthrene)
(4) Used DDT value
(5) North Carolina Water Quality Standards
(6) USEPA, 1993 (Sediment Quality Criteria for Fluoranthene)

SALTWATER SEDIMENT SAMPLES
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0303
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	Koc (mL/g)	SWSV (ug/L)	Sample No.	73-SD06-06 SQC (ug/kg)	73-SD06-612 SQC (ug/kg)	73-SD07-06 SQC (ug/kg)	73-SD07-612 SQC (ug/kg)	73-SD08-06 SQC (ug/kg)	73-SD08-612 SQC (ug/kg)	73-SD09-06 SQC (ug/kg)	73-SD09-612 SQC (ug/kg)	73-SD11-06 SQC (ug/kg)	73-SD11-612 SQC (ug/kg)	73-SD12-06 SQC (ug/kg)	73-SD12-612 SQC (ug/kg)
Acetone	2.20E+00	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2-Butanone	4.50E+00	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carbon disulfide	5.40E+01	NA		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Methylene chloride	ND	11000	(1)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Toluene	3.00E+02	1050	(1)	22.52	23.34	24.44	24.79	22.55	20.22	8.54	8.22	51975.00	72135.00	13104.00	11655.00
Xylenes	2.40E+02	6000	(1)	102.96	106.70	111.74	113.33	103.10	92.45	39.02	37.58	237600.00	329760.00	59904.00	53280.00
Bis(2-ethylhexyl)phthalate	1.00E+05	360	(1)	2574.00	2667.60	2793.60	2833.20	2577.60	2311.20	975.60	939.60	5940000.00	8244000.00	1497600.00	1332000.00
Di-n-butylphthalate	1.70E+05	3.4	(2)	41.33	42.83	44.85	45.49	41.38	37.11	15.66	15.09	95370.00	132362.00	24044.80	21386.00
Fluoranthene	1.00E+05	6.16	(6)	44.04	45.65	47.80	48.48	44.11	39.55	16.69	16.08	101640.00	141064.00	25625.60	22792.00
Phenanthrene	2.88E+04	6.32	(3)	13.03	13.51	14.14	14.34	13.05	11.70	4.94	4.76	30074.35	41739.56	7582.38	6743.95
Phenol	1.42E+01	5800	(1)	5.89	6.10	6.39	6.48	5.90	5.29	2.23	2.15	13589.40	18860.44	3426.18	3047.32
Pyrene	3.80E+04	300	(2)	815.10	844.74	884.64	897.18	816.24	731.88	308.94	297.54	1881000.00	2610600.00	474240.00	421800.00
4,4'-DDD	7.70E+05	0.001	(4)(5)	0.06	0.06	0.06	0.06	0.06	0.05	0.02	0.02	127.05	176.33	32.03	28.49
4,4'-DDE	4.40E+06	0.001	(4)(5)	0.31	0.33	0.34	0.35	0.32	0.28	0.12	0.11	726.00	1007.60	183.04	162.80
Endrin	6.92E+04	0.002	(5)	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	22.83	31.69	5.76	5.12
Aroclor-1260	5.30E+05	0.001	(5)	0.04	0.04	0.04	0.04	0.04	0.03	0.01	0.01	87.45	121.37	22.05	19.61
			Foc (mg/kg)	**71.5**	**74.1**	**77.6**	**78.7**	**71.6**	**64.2**	**27.1**	**26.1**	**165000**	**229000**	**41600**	**37000**

SQC = (Koc*SWSV*Foc)/1000000

NA - Not Available
SWSV - Surface Water Screening Value
SQC - Sediment Quality Criteria
Foc - Fraction of organic carbon in mg/kg
Koc - Organic-carbon partition coefficient
(1) USEPA, 1991 (Lowest Observed Effects Level)
(2) USEPA, 1995b (Region III Water Quality Screening Values)
(3) USEPA, 1993 (Sediment Quality Criteria for Phenanthrene)
(4) Used DDT value
(5) North Carolina Water Quality Standards
(6) USEPA, 1993 (Sediment Quality Criteria for Fluoranthene)

SURFACE WATER QUOTIENT INDEX CALCULATIONS
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	Station	Concentration (ug/L)	North Carolina WQS	USEPA WQSV Acute	USEPA WQSV Chronic	Quotient Index North Carolina WQS	Quotient Index USEPA SWSV Acute	Quotient Index USEPA SWSV Chronic
Total Inorganics (Saltwater)								
Manganese	73-SW01-01	25.3	NE	NE	10	NA	NA	2.53
Manganese	73-SW02-01	37.7	NE	NE	10	NA	NA	3.77
Manganese	73-SW06-01	10.7	NE	NE	10	NA	NA	1.07
Manganese	73-SW11-01	11.3	NE	NE	10	NA	NA	1.13
Manganese	73-SW12-01	10.7	NE	NE	10	NA	NA	1.07
Zinc	73-SW04-01	103	86	95	86	1.20	1.08	1.20

TOTAL SURFACE WATER QUOTIENT INDEX CALCULATIONS
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	LOG UCL Concentration (ug/L)	North Carolina WQS	USEPA WQSV Acute	USEPA WQSV Chronic	Quotient Index North Carolina WQS	Quotient Index USEPA SWSV Acute	Quotient Index USEPA SWSV Chronic
Total Inorganics (Saltwater)							
Manganese	19.24	NE	NE	10	NA	NA	1.92
Zinc	97.29	86	95	86	1.13	1.02	1.13
TOTAL					1.13	1.02	3.06

SEDIMENT QUOTIENT INDEX CALCULATIONS
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	Station	Sample Concentration	ER-L	ER-M	SQC	Quoti ER-L	ER-M	SQC
SVOCs (ug/kg) (Saltwater)								
Toluene	73-SD11-612	12 J	NE	NE	72135	NA	NA	0.0002
Bis(2-ethylhexyl)phthalate	73-SD06-612	1900 J	NE	1300	2667.6	NA	1.46	0.71
Di-n-butylphthalate	73-SD01-06	290 J	NE	1400	10693	NA	0.21	0.03
Di-n-butylphthalate	73-SD01-612	400 J	NE	1400	9826	NA	0.29	0.04
Di-n-butylphthalate	73-SD02-06	350 J	NE	1400	7918.6	NA	0.25	0.04
Di-n-butylphthalate	73-SD07-06	350 J	NE	1400	44.85	NA	0.25	7.80
Di-n-butylphthalate	73-SD07-612	430	NE	1400	45.49	NA	0.31	9.45
Di-n-butylphthalate	73-SD08-06	590	NE	1400	41.38	NA	0.42	14.26
Di-n-butylphthalate	73-SD08-612	420 J	NE	1400	37.11	NA	0.30	11.32
Di-n-butylphthalate	73-SD11-06	680 J	NE	1400	95370	NA	0.49	0.007
Di-n-butylphthalate	73-SD11-612	620 J	NE	1400	132362	NA	0.44	0.005
Di-n-butylphthalate	73-SD12-06	360 J	NE	1400	24044.8	NA	0.26	0.015
Di-n-butylphthalate	73-SD12-612	240 J	NE	1400	21386	NA	0.17	0.011
Pesticides (ug/kg) (Saltwater)								
4,4'-DDD	73-SD01-06	28	2	20	14.25	14.00	1.40	1.96
4,4'-DDD	73-SD02-612	6.8 J	2	20	9.24	3.40	0.34	0.74
4,4'-DDD	73-SD03-612	4.2 J	2	20	0.06	2.10	0.21	70.00
4,4'-DDD	73-SD04-612	7.8 J	2	20	0.04	3.90	0.39	195.00
4,4'-DDD	73-SD06-612	18 J	2	20	0.06	9.00	0.90	300.00
4,4'-DDD	73-SD08-612	12 J	2	20	0.05	6.00	0.60	240.00
4,4'-DDE	73-SD01-06	17 J	2.2	27	81.4	7.73	0.63	0.21
4,4'-DDE	73-SD04-06	6 J	2.2	27	0.19	2.73	0.22	31.58
4,4'-DDE	73-SD04-612	9.8 J	2.2	27	0.22	4.45	0.36	44.55
4,4'-DDE	73-SD06-612	17 J	2.2	27	0.33	7.73	0.63	51.52
4,4'-DDE	73-SD08-612	5.6 J	2.2	27	0.28	2.55	0.21	20.00
Endrin	73-SD04-06	4.7	0.02	45	0.01	235.00	0.10	470.00
Endrin	73-SD06-612	7.5 J	0.02	45	0.01	375.00	0.17	750.00
Inorganics (mg/kg) (Saltwater)								
Arsenic	73-SD09-06	14.1	8.2	70	NE	1.72	0.20	NA
Arsenic	73-SD09-612	11.9	8.2	70	NE	1.45	0.17	NA
Cadmium	73-SD06-06	2.7 J	1.2	9.6	NE	2.25	0.28	NA
Cadmium	73-SD06-612	6.1 J	1.2	9.6	NE	5.08	0.64	NA
Iron	73-SD09-06	27400	NE	27000	NE	NA	1.01	NA
Lead	73-SD06-612	47.7 J	46.7	218	NE	1.02	0.22	NA

NE - Not established
NA - Not applicable

TOTAL SEDIMENT QUOTIENT INDEX CALCULATION
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Contaminant	Log Normal UCL		ER-L	ER-M	SQC	Quoti ER-L	ER-M	SQC
SVOCs (ug/kg) (Saltwater)								
Toluene	12	*	NE	NE	8.2	NA	NA	1.46
Bis(2-ethylhexyl)phthalate	1900	*	NE	1300	940	NA	1.46	2.02
Di-n-butylphthalate	680	*	NE	1400	15	NA	0.49	45.33
Pesticides (ug/kg) (Saltwater)								
4,4'-DDD	9.65		2	20	0.02	4.80	0.50	482.50
4,4'-DDE	7.94		2.2	27	0.11	3.60	0.30	72.18
Endrin	4.91		0.02	45	0.004	245.50	0.11	1227.50
Inorganics (mg/kg) (Saltwater)								
Arsenic	6.63		8.2	70	NE	0.80	0.09	NA
Cadmium	1.9		1.2	9.6	NE	1.60	0.20	NA
Iron	27400	*	NE	27000	NE	NA	1.01	NA
Lead	36.18		46.7	218	NE	0.80	0.20	NA
TOTAL QI						257.10	4.36	1,831.00

* - Maximum value
NE - Not established
NA - Not applicable

APPENDIX Y
SAMPLING STATION CHARACTERIZATION DATA SHEETS

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-Sed/SD01 Date: May 8, 95 Time: 1255 (Sed)

Samplers: AMB, PAM Date: May 8, 95 Time: 1320 (SD)

Water Body: Trib to Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar Petite) Kemmerer (Sediment Corer liner only) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: (Forest) Urban (Industrial) Other:

Shore Vegetation: See habitat map

Aquatic Vegetation: None

Estimated Stream Width: 5 ft Est. Stream Depth: 1 ft Riffle: — ft Run: — ft Pool: 10# ft

Stream Type: Cold Water (Warm Water) Velocity: None * Channelized: Yes X No

Canopy Cover: Open (Partly Open) Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic Other:

Sediment Oils: Absent (Very Slight) Moderate Profuse ~~HNd~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 3 Replicate #2: 1 Replicate #3: 2

Sediment Description: Silty Sand w/ much organic material + some peat - brown/gray - some benthics

Water:

Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
—	23	6.06	3.8	145	0

Water Odors: (Normal) Sewage Petroleum Chemical Other:

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: Clear (Slightly Turbid) Turbid Opaque Water Color: Yellow Brown

Weather Conditions: Sunny ~ 75-80°F Tide: In (Out)

Comments: * Possibly Tidal

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD02 Date: May 8, 95 Time: 1030 (SW)

Samplers: AMB, PHM Date: May 8, 95 Time: 1103 (SD)

Water Body: Trib. to Courthouse Bay State: NC County: Onslow

Sample Type: Fish Benthic Macroinvertebrate (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar Petite.) Kemmerer (Sediment Corer liner only) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) Other: _____

Shore Vegetation: See habitat map

Aquatic Vegetation: None

Estimated Stream Width: 3-5 ft Est. Stream Depth: 0.4 ft Riffle: — ft Run: 100% ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: tidal Channelized: Yes ✓ No _

Canopy Cover: Open (Partly Open) Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage (Petroleum) Chemical Anaerobic Other: _____

Sediment Oils: Absent (Slight) Moderate Profuse ~~HNd~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Fine sand/silt into silt/clay (gray/black), sand dark gray/brown/black - some benthics

Water:

Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
—	19.5	6.91	7.4	36,000	28.5

Water Odors: (Normal) Sewage Petroleum Chemical Other: _____

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: (Clear) Slightly Turbid Turbid Opaque Water Color: None

Weather Conditions: Sunny ~75°F Tide: In (Out)

Comments: _____

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD03 Date: May 9, 95 Time: 1245 (SW)

Samplers: AMB/PMM/JLH Date: May 22, 95 Time: 1330 (SD)

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar std) Kemmerer (Sediment Corer inner only) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: (Forest) Urban (Industrial) Other: _____

Shore Vegetation: See Habitat Map

Aquatic Vegetation: None

Estimated Stream Width: NM ft Est. Stream Depth: ~1 ft Riffle: — ft Run: 100s ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: Tidal Channelized: Yes __ No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: (Normal) Sewage Petroleum Chemical Anaerobic Other: _____

Sediment Oils: (Absent) Slight Moderate Profuse ~~HNu~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Silty w/ fine sand + some organic material

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9	—	24.7	8.36	9.1	46,000	32
5-22	—	28.5	8.04	8.8	48,000	31.8

Water Odors: (Normal) Sewage Petroleum Chemical Other: _____

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: Clear Slightly Turbid Turbid Opaque Water Color: None

Weather Conditions: _____ Tide: In (Out)

Comments: Station location was 1' deep

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD04 Date: 5-9-95 Time: 1215 (SW)

Samplers: AMB/PMM/JLH Date: 5-21-95 Time: 1650 (SD/BW)

Water Body: Courthouse Bay State: _____ County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar std) Kemmerer (Sediment Corer) Spoon Other: Sub-surface sample

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) Other: * Adjacent to concrete retaining wall

Shore Vegetation: See Habitat Map

Aquatic Vegetation: None

Estimated Stream Width: NM ft Est. Stream Depth: 3 ft Riffle: — ft Run: — ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: tidal Channelized: Yes __ No ✓

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other: _____ (strong H_2S)

Sediment Oils: (Absent) Slight Moderate Profuse ~~HNu~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Silty w/ fine sand + some organic material

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5/9	Surface	24.1	8.34	9.4	41,500	30
	Bottom	23.1	8.37	8.6	40,500	29
5/24	Surface	26.0	7.9	8.5	45,100	31.1
	Bottom	25.1	7.92	8.1	45,500	31.1

Water Odors: (Normal) Sewage Petroleum Chemical Other: _____

Water Surface Oils: Slick (Sheen) None Secchi: NA ft.

Turbidity: Clear (Slightly Turbid) Turbid Opaque Water Color: None

Weather Conditions: _____ Tide: In (Out)

Comments: * Sample collected ~ 10 feet from wall

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD05 Date: 5-9-95 (SW) Time: 1055

Samplers: AMB/PAM Date: 5-21-95 (SD) Time: 1128 (SD)

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar SD) Kemmerer (Sediment Corer 1½ in only) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) Other: ______

Shore Vegetation: ______

Aquatic Vegetation: None

Estimated Stream Width: NM ft Est. Stream Depth: <1* ft Riffle: — ft Run: 100% ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: Tidal Channelized: Yes __ No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other: ______

Sediment Oils: (Absent) Slight Moderate Profuse ~~HNu~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Fine sand w/ some coarse sand/gravel - some benthos observed

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9	—	22.9	8.48	8.9	44,000	31
5-21	—	27.2	8.03	9.4	4400	30

Water Odors: (Normal) Sewage Petroleum Chemical Other: ______

Water Surface Oils: Slick (Sheen) ~~(None)~~ Secchi: NA ft.

Turbidity: (Clear) Slightly Turbid Turbid Opaque Water Color: Clear

Weather Conditions: Sunny - windy 70°F Tide: In (Out)

Comments: * <1' at sampling location

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD06 Date: 5-9-95 (SM) Time: 1025 (SM)

Samplers: AMB/PAM Date: 5-22-95 (SD) Time: 1040 (SD)

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar SM) Kemmerer (Sediment Corer 11"ø 0-5) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) Other: _____

Shore Vegetation: _____

Aquatic Vegetation: None

Estimated Stream Width: Nm ft Est. Stream Depth: 1* ft Riffle: — ft Run: 1006 ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: Tidal Channelized: Yes — No K

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage (Petroleum) Chemical Anaerobic Other: _____

Sediment Oils: Absent (Slight) Moderate Profuse ~~HNa~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: fine sand w/ some mud to coarse sand - black/grey

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9	Surface	22.7	8.17	8.5	43,500	31
"	"					
5-21	"	24.8	7.9	9.1	45000	31.8

Water Odors: (Normal) Sewage Petroleum Chemical Other: _____

Water Surface Oils: Slick (Sheen) (Mousse) Secchi: NA ft.

Turbidity: (Clear) Slightly Turbid Turbid Opaque Water Color: Yellow

Weather Conditions: Sunny - windy ~ 75°C Tide: In (Out)

Comments: * 1 ft at sampling location along shoal

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD07 Date: 5-9-95 (SW) Time: 0955 (SW)

Samplers: AMB / PMM Date: 5-26-95 (SD) Time: 1240 (SD)

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar SW) Kemmerer (Sediment Corer Hand-held) Spoon Other: ____

Riparian Zone/Instream Features

Predominant Surrounding Land Use: (Forest) Urban (Industrial) Other: ____

Shore Vegetation: ____

Aquatic Vegetation: ____

Estimated Stream Width: NM ft Est. Stream Depth: 1* ft Riffle: — ft Run: 100* ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: tidal Channelized: Yes __ No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other: ____

Sediment Oils: (Absent) Slight Moderate Profuse HNu

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Fine Sand - some shell fragments

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9	—	21.7	8.23	8.2	43,500	32
						28
5-21	—	29.6	7.98	8.8	47,900	33

Water Odors: (Normal) Sewage Petroleum Chemical Other: ____

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: (Clear) Slightly Turbid Turbid Opaque Water Color: None

Weather Conditions: Sunny - Clear ~ 75°C Windy Tide: In (Out)

Comments: * Depth 1ft at simple location along shore ~ 20-30' from shore For SD/QA due to shell fragments preventing penetration past 6"

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-54/08-SD-2 Date: 5-9-95 Time: 1120

Samplers: AMB/PAM Date: 5-21-95 Time: 1425 (5B)

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar) Kemmerer (Sediment Corer) Spoon Other: _____

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) Other: _____

Shore Vegetation: MARSH ALDER, LOBLOLLY PINE, BLACK RUSH, WAX MYRTLE Scirpus americanus (Bulrush), Juncus sp. (Rush), Spartina sp., & American Beachgr

Aquatic Vegetation: None

Estimated Stream Width: NM ft Est. Stream Depth: 7* ft Riffle: — ft Run: 100% ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: Tidal Channelized: Yes __ No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) → strong H_2S odor Other: _____

Sediment Oils: Absent (very slight sheen) Slight Moderate Profuse HNu

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Fine silty sand with some trace sand, gravel & shell fragments. Benthic organisms were observed.

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9-95	Surface	22.2	8.42	8.7	43,900	30.5
5-9-95	~~Bottom~~ 3.5'	22.6	8.37	8.4	43,900	31
5-9-95	Bottom	22.2	8.28	7.8	43,900	31
5-21	SURFACE	24.9	7.83	8.6	43,900	31
5-21		23.4	7.41	1.6	46,600	31

Water Odors: (Normal) Sewage Petroleum Chemical Other: _____

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: Clear (Slightly Turbid) Turbid Opaque Water Color: None

Weather Conditions: _____ Tide: In (Out)

Comments: * SW sample collected from 3.5'

In line w/ #7 - out from #5 ~ 300'

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD09 Date: 5-9-95 (SA) Time: 1150

Samplers: AMB / PMM Date: 5-21-95 (S/B) S/N Time: 1530

Water Body: Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar) Kemmerer (Sediment Corer) Spoon Other:

Riparian Zone/Instream Features

Predominant Surrounding Land Use: Forest Urban (Industrial) (Other: Marine Amphibious vehicle maintenance area, and ~~forest~~)

Shore Vegetation: SAME AS 08

Aquatic Vegetation: None

Estimated Stream Width: NM ft Est. Stream Depth: 8' ft Riffle: — ft Run: 1008 ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: tidal Channelized: Yes — No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other: strong H_2S odor

Sediment Oils: (Absent) Slight Moderate Profuse HNu

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 1 Replicate #2: 1 Replicate #3: 1

Sediment Description: Very fine silt - gelatinous

Water:

	Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
5-9	Surface	22	8.46	8.7	44,000	31
	4'	22	8.47	8.4	44,000	32
	Bottom (8')	21.6	8.4	7.6	44,500	32
	SURFACE	25.6	7.85	9.1	45,900	31.8
	BOTTOM	23.9	7.96	1.2	46,000	32

Water Odors: (Normal) Sewage Petroleum Chemical Other:

Water Surface Oils: Slick Sheen (None) Secchi: NA ft.

Turbidity: Clear (Slightly Turbid) Turbid Opaque Water Color: None

Weather Conditions: Tide: In (Out)

Comments: Location ~ 300' out from #4

- Very little sediment during benthic samples - does not even cover bottom of sample containers

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD11 Date: 5-9-95 Time: 1650

Samplers: AMB/1Am Date: 5-9-95 Time:

Water Body: Trib to Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar std) Kemmerer (Sediment Corer hand auger) Spoon Other: dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: (Forest) Urban Industrial Other:

Shore Vegetation:

Aquatic Vegetation: none

Estimated Stream Width: 3-4 ft Est. Stream Depth: 1 ft Riffle: — ft Run: 1000 ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: tidal Channelized: Yes — No of

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other:

Sediment Oils: (Absent) Slight Moderate Profuse HNu

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: 10 9 Replicate #2: 7 Replicate #3: 5

Sediment Description: Silty w/ mucky organic material (roots, plants)

Water:

Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
—	25.4	8.0	~~8.0~~ 6.9	46,000	32 46 32

Water Odors: (Normal) Sewage Petroleum Chemical Other:

Water Surface Oils: Slick Sheen (None) Secchi: ft.

Turbidity: Clear (Slightly Turbid) Turbid Opaque Water Color: none

Weather Conditions: Tide: (In) Out

Comments:

SAMPLING STATION CHARACTERIZATION DATA SHEET

Station Number: 73-SW/SD02 Date: 5-9-95 Time: 1500 (SW)

Samplers: AMB/PAM Date: 5-9-95 Time: 1515 (SD)

Water Body: Trib to Courthouse Bay State: NC County: Onslow

Sample Type: Fish (Benthic Macroinvertebrate) (Sediment) (Surface Water)

SAMPLING EQUIPMENT: Seine Gill Net (Ponar std) Kemmerer (Sediment Corer top only) Spoon Other: Dip

Riparian Zone/Instream Features

Predominant Surrounding Land Use: (Forest) Urban Industrial Other: ____

Shore Vegetation: ____

Aquatic Vegetation: None

Estimated Stream Width: 100 ft Est. Stream Depth: 1 ft Riffle: — ft Run: 100% ft Pool: — ft

Stream Type: Cold Water (Warm Water) Velocity: Tidal Channelized: Yes __ No X

Canopy Cover: (Open) Partly Open Partly Shaded Shaded

Sediment/Substrate:

Sediment Odors: Normal Sewage Petroleum Chemical (Anaerobic) Other: ____

Sediment Oils: (Absent) Slight Moderate Profuse ~~HNu~~

Ponar Grab: Number of Jars Filled with Sediments Replicate: #1: ____ Replicate #2: ____ Replicate #3: ____

Sediment Description: Very fine brown sand/silt

Water:

Depth	Temp. °C	pH (s.u.)	Dissolved Oxygen (mg/L)	Conductivity (micromhos/cm)	Salinity (ppt)
—	25.4	8.13	9.0	45,500	31

Water Odors: (Normal) Sewage Petroleum Chemical Other: ____

Water Surface Oils: Slick Sheen None Secchi: NA ft.

Turbidity: Clear Slightly Turbid (Turbid) Opaque Water Color: None

Weather Conditions: Partly Cloudy, windy Tide: (Coming In) Out

Comments: Adjacent to staff gauge at mid-stream

APPENDIX Z
BENTHIC MACROINVERTEBRATE LABORATORY BENCH SHEETS

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC — Job Number/Task: 15825.001
cation: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN01-01
Coll Date: 5/8/95 — Prelim. Sorter: JSD — Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 — Presort ID Time: 6.5 — Date-Identifier: 6/26/95 mm
Split/Midge and worm ID Time: _____ — Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	3					
	DIPTERA	Chaoborus sp.	4					

Notes: 6/26 1:30 – 2:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825,001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN01-0.

Coll Date: 5/8/95 Prelim. Sorter: MJB Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1,5 Presort ID Time: 0,5 Date-Identifier: 6/26/95 mm

Split/Midge and worm ID Time: 1.0 Date-Identifier: 6/28/95 mm

QA/QC Time: 0.5

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	TUBIFICIDA	Limnodrilus hoffmeisteri	9		9			
	DIPTERA	Chaoborus sp.	29		28		1	
	"	Chironomus sp.	3		2		1	

Notes: 6/26 2:00 - 2:30 OLIGO 2:30 - 3:00 6/28 7:00 - 7:00

SUBSAMPLE/QA/QC RESULTS

Taxonic Group	Taxon	Number of Specimens in Splits 1	2	3	4	Subtotal	Multiplier	Estimated Total
(4)	OLIGO	9	DARK BROWNISH RED. RELATIVELY LARGE					
	Limno hoffm IIII							
(1)	CHIRONOMINI	2						
	Chironomus sp. II		[WEIRD ANTENNAL BLADE w/ LAUTERBORN ORGAN ?"]					

SAMPLE TOTALS

Presorted Taxa: 3
Subsampled Taxa: —
QA/QC Taxa: 0
Sample Total Taxa: 3

Presorted Specimens: 39
Estimated Subsampled Specimens: —
Actual QA/QC Specimens: 2
Sample Total Specimens: 41
Estimated QA/QC Specimens: —

SORTING QC

Preliminary Sorter: MJG

QC Based Upon (circle): (Whole Sample) Split Estimate

Taxa QC= Presorted + Subsampled Taxa / Sample Total Taxa = 3/3 = 100.0 %

Specimen QC= Presorted + Est. Subsmpl. Specimens / Samp. Tot. Spec. + (Est. QA/QC Spec. - Act. QA/QC Spec.) = 39/41 = 95.1 %

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC
Job Number/Task: 15825.001
Location: SITE 73, CAMP LEJEUNE, NC
Sample ID: 73 BN01-0
Coll Date: 5/8/95
Prelim. Sorter: MJG
Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5
Presort ID Time: 0.5
Date-Identifier: 6/27/95 MJG
Split/Midge and worm ID Time: _____
Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	DIPTERA	Chaoborus sp.	18					1 PUPAE

Notes: 6/27 8:00-8:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001
Location: SITE 73, CAMP LEJEUNE NC Sample ID: 73 BN02-01
Coll Date: 5/8/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: _____
ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/26/95 mwm
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	64					
	PHYLLODOCIDA	Cerutonereis tridentata	9					NEREIDAE
	SPIONIDA	Polydora cornuta	4					

Notes: _____ Page ____ of ____

610:30-11:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN02-

Coll Date: 5/8/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 6/26/95 MJW

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	49					
3	PHYLLODOCIDA	Ceratonereis tridentata	2					NEREIDAE
	SPIONIDA	Polydora cornuta	5					

Notes: _____ Page ____ of ____

7/11 11:00 - 12:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC — Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN02-03

Coll Date: 5/8/95 — Prelim. Sorter: MJG — Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 — Presort ID Time: 0.5 — Date-Identifier: 6/26/95 nom

Split/Midge and worm ID Time: _____ — Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata tg	38					
	PHYLLODOCIDA	Ceratonereis tridentata tg	2					NEREIDAE
	SPIONIDA	Polydora cornuta	1					

Notes: 6/26 12:00–12:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN03-C

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.5 Date-Identifier: 6/27/95 MM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	6					
	CAPITELLIDA	Capitella capitata	10					
1816 ONE	PHYLLODOCIDA	Ceratonereis tridentata	13					NEREIDAE
	SPIONIDA	Streblospio benedicti	4					

Notes: 6/27 8:30-10:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC — Job Number/Task: 15825-001
Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN03-02
Coll Date: 5/21/95 — Prelim. Sorter: MJG — Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 — Presort ID Time: 0.5 — Date-Identifier: 6/27/95 MJG
Split/Midge and worm ID Time: _____ — Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	1					
	CAPITELLIDA	Capitella capitata	5					
	CIRRATULIDA	Tharyx setigera	3					
	PHYLLODOCIDA	Etrone lactea	1					
	"	Ceratonereis tridentata	32					NEREIDAE
	SPIONIDA	Streblospio benedicti	11					

Notes: 6/27 10:00 - 10:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC
Location: SITE 73, CAMP LEJEUNE, NC
Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/27/95 mm
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

Job Number/Task: 15825.001
Sample ID: 73 BN03

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	3					
	CAPITELLIDA	Capitella capitata	3					
	CIRRATULIDA	Heteromastus filiformis	1					
	CIRRATULIDA	Tharyx setigera	5					
	PHYLLODOCIDA	Ceratonereis tridentata	19					NEREIDAE
	"	Eteone lactea	2					
	SPIONIDA	Streblospio benedicti	14					
	"	Polydora cornuta	1					
	PHYLUM	NEMERTEA	1					

Notes: 6/7, 10:30–11:00

Page _____ of _____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC
Location: SITE 73 CAMP LEJEUNE, NC
Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: _____
ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/27/95 mm
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

Job Number/Task: 15825.001
Sample ID: 73 BN04-01

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	NO	ORGANISMS						

Notes: 6/27 11:00-11:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN04 2

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/27/95

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	VENEROIDA	Gemma gemma	1					

Notes: _____ Page ____ of ____

6/27 11:50 - 12:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73 CAMP LEJEUNE, NC Sample ID: 73 BN04-03

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/27/95 MJM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
		NO ORGANISMS						

Notes: _____ Page ____ of ____

6/27 12:00-12:70

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.00

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN05-C

Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: ____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 6/27/95 MJG

Split/Midge and worm ID Time: ____ Date-Identifier: ____

QA/QC Time: ____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	5					
	"	Heteromastus filiformis	2					
	CIRRATULIDA	Tharyx setigera	5					
1 BG	PHYLLODOCIDA	Ceratonereis tridentata	9					
	SPIONIDA	Streblospio benedicti	2					

Notes: 6/27 12:30-1:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN05-02

Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 6/27/95 MJG

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	1					
	CAPITELLIDA	Capitella capitata	11					
	"	Heteromastus filiformis	1					
	CIRRATULIDA	Tharyx setigera	9					
SEVERAL R.L.	PHYLLODOCIDA	Ceratonereis trifendata	18					NEREIDAE
	SPIONIDA	Streblospio benedicti	5					

Notes: 6/27 1:30 – 2:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN05-(

Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.5 Date-Identifier: 6/27/95 MJW

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	3					
	CAPITELLIDA	Capitella capitata	12					
	"	Heteromastus filiformis	3					
	CIRRATULIDA	Tharyx setigera	21					
	PHYLLODOCIDA	Ceratonereis tridentata	31					NEREIDAE
	"	Neanthes succinea	1					"
	SPIONIDA	Streblospio benedicti	11					

Notes: 6/27 2:30-4:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC — Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN06-01

Coll Date: 5/22/95 — Prelim. Sorter: MJG — Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 — Presort ID Time: 0.5 — Date-Identifier: 6/28/95 MJG

Split/Midge and worm ID Time: _____ — Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	2					
	CIRRATULIDA	Tharyx setigera	1					
SEVERAL	PHYLLODOCIDA	Ceratonereis tridentata	21					

Notes: _____ Page ____ of ____

6/28 7:00 – 7:30

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC
Job Number/Task: 15825.001
Location: SITE-73, CAMP LEJEUNE, NC
Sample ID: 73 BN06-C
Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/28/95 MJM
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	4					
	PHYLLODOCIDA	Ceratonereis tridentata	10					NEREIDAE

Notes: 6/28 7:30-8:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN06-03

Coll Date: 5/22/95 Prelim. Sorter: MRS Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 6/28/95 WM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	1					
	CAPITELLIDA	Capitella capitata	51					
	"	Heteromastus filiformis	8					
	CIRRATULIDA	Tharyx setigera	1					
	PHYLLODOCIDA	Ceratonereis trifilata	6					NEREIDAE
	SPIONIDA	Streblospio benedicti	4					

Notes: 6/28 8:00-8:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001
Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN07-c
Coll Date: 5/22/95 Prelim. Sorter: MJC Split Sorter: _____
Subsampled Taxa: _____
ID Time Budget: 1,5 Presort ID Time: 1.0 Date-Identifier: 6/28/95 MJM
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	1					
	CAPITELLIDA	Capitella capitata	2					
	CIRRATULIDA	Tharyx setigera	16					
	EUNICIDA	Scoletoma sp.	1					
	PHYLLODOCIDA	Glycinde solitaria	1					
B.G	"	Ceratonereis tridentata	12					NEREIDAE
	SPIONIDA	Streblospio benedicti	19					
CLASS ENTEROPNEUSTA		Saccoglossus kowalewskii	5					HARRIMANIIDAE ?

Notes: pH HEMICHORDATA KOWALEWSKY'S ACORN WORM Page ____ of ____
9/28 8:30-9:30

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 1825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN07-02

Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.5 Date-Identifier: 6/28/95 MJM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: 1.0

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
MEG	CAPITELLIDA	Capitella capitata	5					
MEG	"	Heteromastus filiformis	3					
MEG	CIRRATULIDA	Tharyx setigera	20					
MEG	EUNICIDA	Drilonereis longa	1					
MEG	PHYLLODOCIDA	Glycinde solitaria	3					
BIMEG	"	Ceratonereis tridentata	31					NEREIDAE
MEG	SPIONIDA	Streblospio benedicti	21					
CLASS	ENTEROPNEUSTA	Saccoglossus kowalewskii	2					
MEG	VENEROIDA	Mulinia lateralis	1					

Notes: _____ Page ____ of ____

6/28 9:30 - 11:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001
Location: SITE 73 CAMP LEJEUNE, NC Sample ID: 73 BN07-C
Coll Date: 5/22/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 6/28/95 WOM
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	7					
	"	Heteromastus filiformis	6					
	CIRRATULIDA	Tharyx setigera	29					
	PHYLLODOCIDA	Ceratonereis tridentata	11					NEREIDAE
	"	Glycinde solitaria	1					
	SPIONIDA	Streblospio benedicti	17					
	"	Polydora cornuta	1					
	VENEROIDA	Gemma gemma	1					LOST
	CLASS ENTEROPNEUSTA	Saccoglossus kowalewskii	1					

Notes: 6/28 11:00-12:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LETEUNE, NC Sample ID: 73-BN08-01

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: _____

ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 7/17/95 MJM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
*	ARICIIDA	Aricidea (acmira) catherinae	1					MEDIAN ANTENNA NO POSTSETAL LOBE ON 1ST SETIGER.
	CAPITELLIDA	Capitella capitata	12					
	"	Heteromastus filiformis	1					
	CIRRATULIDA	Tharyx setigera	1					
	SPIONIDA	Streblospio benedicti	100					
CLASS ENTEROPNEUSTA		Saccoglossus kowalewskii	5					

Notes: * NAME CHANGE - UPDATE DATABASE

7/17 2:00 - 3:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 RN08-C

Coll Date: 5/21/95 Prelim. Sorter: MFG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 1.0 Date-Identifier: 7/17/95 MSN

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	2					
	CAPITELLIDA	Capitella capitata	4					
	PHYLLODOCIDA	Glycinde solitaria	1					
	"	Eteone heteropoda	1					
	SPIONIDA	Streblospio benedicti	8					

Notes: 7/17 3:00-4:00

Page ____ of ____

12

SAcc

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC — Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BNOR-03

Coll Date: 5/21/95 — Prelim. Sorter: MJG — Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 — Presort ID Time: 2.0 — Date-Identifier: 7/18/95-mm

Split/Midge and worm ID Time: _____ — Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	HETERONEMERTEA	Micrura leidyi	3					
	ARICIIDA	Leitoscoloplos fragilis	2					
	CAPITELLIDA	Capitella capitata	32					
	CIRRATULIDA	Tharyx setigera	3					
	EUNICIDA	Staurocereis ruldolphi	1					
	SPIONIDA	Streblospio benedicti	19					
	VENEROIDA	Gemma gemma	1					
	"	Tellina agilis	1					
	"	← ?	1					?
	CLASS ENTEROPNEUSTA	Saccoglossus Kowalewski;	12					

Notes: 7/18 10:00 – 12:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN09-01

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: _____

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/95 MJM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	3					
	PHYLLODOCIDA	Glycinde solitaria	1					
	SPIONIDA	Streblospio benedicti	13					

Notes: 7/19 11:00 - 11:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

cation: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN09-02

Coll Date: 5/21/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/95 WM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	1					
	PHYLLODOCIDA	Glycinde solitaria	2					
	SPIONIDA	Streblospio benedicti	25					

Notes: 7/19 11:30-12:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC — Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN09-C

Coll Date: 5/21/95 — Prelim. Sorter: MJG — Split Sorter: _____

Subsampled Taxa: _____

ID Time Budget: 1.5 — Presort ID Time: 0.5 — Date-Identifier: 7/19/95 MJM

Split/Midge and worm ID Time: _____ — Date-Identifier: _____

QA/QC Time: 0.5

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	2		2			
	CAPITELLIDA	Capitella capitata	1		1			
	PHYLLODOCIDA	Glycinde solitaria	2		1		1	
	SPIONIDA	Streblospio benedicti	11		10		1	

Notes: _____ — Page ____ of ____

7/ 12:00 - 1:00

SUBSAMPLE/QA/QC RESULTS

Taxonomic Group	Taxon	Number of Specimens in Splits 1	2	3	4	Subtotal	Multiplier	Estimated Total
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	
		+	+	+	=	x	=	

SAMPLE TOTALS

Presorted Taxa: 4
Subsampled Taxa: –
QA/QC Taxa: 0

Sample Total Taxa: 4

Presorted Specimens: 14
Estimated Subsampled Specimens: –
Actual QA/QC Specimens: 2

Sample Total Specimens: 16

Estimated QA/QC Specimens: –

SORTING QC

Preliminary Sorter: MJG

QC Based Upon (circle): Whole Sample (circled) Split Estimate

Taxa QC= $\frac{\text{Presorted + Subsampled Taxa}}{\text{Sample Total Taxa}} = \frac{4}{4} = 100.0\ \%$

Specimen QC= $\frac{\text{Presorted + Est. Subsmpl. Specimens}}{\text{Samp. Tot. Spec. + (Est. QA/QC Spec. - Act. QA/QC Spec.)}} = \frac{14}{16} = 87.5\ \%$

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC
Job Number/Task: 15825.001
Location: SITE 73, CAMP LEJEUNE, NC
Sample ID: 73 BN11-0
Coll Date: 5/9/95 Prelim. Sorter: MJG Split Sorter: _____
Subsampled Taxa: —
ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/95 MM
Split/Midge and worm ID Time: _____ Date-Identifier: _____
QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
		NO ORGANISMS						

Notes: 7/19 1:00-1:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE Sample ID: 73 BN11-02

Coll Date: 5/9/95 Prelim. Sorter: JSD Split Sorter: _____

Subsampled Taxa: _____

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/97 MJM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	3					

Notes: _____ Page ____ of ____

7/19 1:30-2:00

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN11-01

Coll Date: 5/9/95 Prelim. Sorter: JSD Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/95 MWM

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	2					

Notes: 7/19 2:00 - 2:30

Page _____ of _____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC — Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC — Sample ID: 73 BN12-01

Coll Date: 5/9/95 — Prelim. Sorter: MJG — Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 — Presort ID Time: 0.5 — Date-Identifier: 7/19/95 MJM

Split/Midge and worm ID Time: _____ — Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	CAPITELLIDA	Capitella capitata	31					

Notes: 2:30-3:00

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON, INC
Job Number/Task: 1582S.001
Location: SITE 73, CAMP LEJEUNE, NC
Sample ID: 73 BN12-0
Coll Date: 5/9/95
Prelim. Sorter: MJG
Split Sorter:
Subsampled Taxa: —
ID Time Budget: 1.5
Presort ID Time: 0.5
Date-Identifier: 7/19/95 MJM
Split/Midge and worm ID Time:
Date-Identifier:
QA/QC Time:

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	HETERONEMERTEA	Micrura leidyi	1					
	ARICIIDA	Leitoscoloplos fragilis	4					
	CAPITELLIDA	Capitella capitata	21					

Notes: 7/19 3:00-3:30

Page ____ of ____

INVERTEBRATE SECTION
LABORATORY IDENTIFICATION BENCH SHEET

Client: BAKER ENVIRON., INC. Job Number/Task: 15825.001

Location: SITE 73, CAMP LEJEUNE, NC Sample ID: 73 BN12-03

Coll Date: 5/9/95 Prelim. Sorter: MJG Split Sorter: _____

Subsampled Taxa: —

ID Time Budget: 1.5 Presort ID Time: 0.5 Date-Identifier: 7/19/95 mom

Split/Midge and worm ID Time: _____ Date-Identifier: _____

QA/QC Time: _____

QC Check	Taxonomic Order	Taxon	Total Number	=	Presort Number	+	Split/QA/QC Number	Comments
	ARICIIDA	Leitoscoloplos fragilis	2					
	CAPITELLIDA	Capitella capitata	15					

Notes: 7/19 3:30 - 4:00

Page ____ of ____

APPENDIX AA
FISH COLLECTION LOGS

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
MEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
Trawling	Pinfish	5-18-95	915	13.3	45	
Trawling	Pinfish	5-18-95	915	12.8	35	
Trawling	Pinfish	5-18-95	915	11.5	30	
Trawling	Pinfish	5-18-95	915	11.3	25	
Trawling	Pinfish	5-18-95	915	10	20	
Trawling	Pinfish	5-18-95	915	12.2	35	
Trawling	Pinfish	5-18-95	915	10	20	
Trawling	Pinfish	5-18-95	915	12.5	30	
Trawling	Pinfish	5-18-95	915	12.2	20	
Trawling	Pinfish	5-18-95	915	12.1	30	
Trawling	Pinfish	5-18-95	915	12.3	30	
Trawling	Pinfish	5-18-95	915	12.7	30	
Trawling	Pinfish	5-18-95	915	12.3	30	
Trawling	Pinfish	5-18-95	915	12.3	35	
Trawling	Pinfish	5-18-95	915	11.8	25	
Trawling	Pinfish	5-18-95	915	12.2	30	
Trawling	Pinfish	5-18-95	915	15.3	60	
Trawling	158 Additional	5-18-95	915-1345	NM	NM	
			Minimum	10	20	
			Maximum	15.3	60	
			Average	12.2	31	
			Count	175		
Trawling	Spot	5-18-95	1000	13	30	
Trawling	Spot	5-18-95	1000	15	40	
Trawling	Spot	5-18-95	1000	15.2	45	
Trawling	Spot	5-18-95	1000	15	45	
Trawling	Spot	5-18-95	1230	7.3	NM	
Trawling	Spot	5-18-95	1230	5.6	NM	
Trawling	Spot	5-18-95	1230	6.8	NM	
Trawling	Spot	5-18-95	1230	5	NM	
Trawling	Spot	5-18-95	1230	4.4	NM	
Trawling	Spot	5-18-95	1230	6.5	NM	
Trawling	Spot	5-18-95	1230	15.4	55	
Trawling	Spot	5-18-95	1300	15	50	
Trawling	Spot	5-18-95	1300	15	50	
Trawling	Spot	5-18-95	1300	16	55	
Trawling	Spot	5-18-95	1300	15.5	50	
Trawling	Spot	5-18-95	1300	14	45	
Trawling	Spot	5-18-95	1300	13.2	20	
Trawling	Spot	5-18-95	1300	12.3	30	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
Trawling	Spot	5-18-95	1300	12	30	
Trawling	Spot	5-18-95	1300	8	15	
Trawling	Spot	5-18-95	1300	5	NM	
Trawling	Spot	5-18-95	1300	5	NM	
Trawling	Spot	5-18-95	1345	13.3	NM	
Trawling	Spot	5-18-95	1345	13.8	NM	
Trawling	Spot	5-18-95	1345	14.6	NM	
Trawling	Spot	5-18-95	1345	5	NM	
			Minimum	4.4	0	
			Maximum	16	55	
			Average	11.0	40	
			Count	26		
Trawling	Atlantic Croaker	5-18-95	1230	18.5	75	
Trawling	Atlantic Croaker	5-18-95	1230	8.9	NM	
Trawling	Atlantic Croaker	5-18-95	1300	20.6	100	
Trawling	Atlantic Croaker	5-18-95	1300	10.6	15	
			Minimum	8.9	0	
			Maximum	20.6	100	
			Average	14.7	63	
			Count	4		
Trawling	Bay Anchovie	5-18-95	1300	5.9	NM	
Trawling	Bay Anchovie	5-18-95	1300	5.8	NM	
Trawling	Bay Anchovie	5-18-95	1300	5.9	NM	
Trawling	Bay Anchovie	5-18-95	1300	6.1	NM	
Trawling	Bay Anchovie	5-18-95	1300	6.3	NM	
Trawling	Bay Anchovie	5-18-95	1300	5.9	NM	
Trawling	Bay Anchovie	5-18-95	1345	5.8	NM	
Trawling	Bay Anchovie	5-18-95	1345	4.5	NM	
			Minimum			
			Maximum			
			Average			
			Count			
Trawling	Butterfish	5-18-95	NR	7.8	NM	
Trawling	Yellowfin menhaden	5-18-95	NR	19.6	60	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
MEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
Trawling	Southern Flounder	5-18-95	NR	13	NM	
Trawling	Southern Flounder	5-18-95	NR	10.5	NM	
Trawling	Pigfish	5-18-95	NR	200	80	
FS01	Blue Crab	5-18-95	1000	15.0	200	
FS01	Blue Crab	5-18-95	1000	16.0	200	
FS01	Blue Crab	5-18-95	1000	16.0	200	
FS01	Blue Crab	5-18-95	1000	17.0	230	
FS01	Blue Crab	5-18-95	1000	18.0	250	
FS01	Blue Crab	5-18-95	1000	16.5	225	
FS01	Blue Crab	5-18-95	1000	15.0	150	
S01	Blue Crab	5-18-95	1000	14.0	145	
FS01	Blue Crab	5-20-95	800	18.0	200	
FS01	Blue Crab	5-20-95	1800	14.0	155	
FS01	Blue Crab	5-20-95	1800	14.0	150	
FS01	Blue Crab	5-20-95	1800	16.0	235	
FS01	Blue Crab	5-20-95	1800	13.0	150	
FS01	Blue Crab	5-21-95	815	13.0	160	
FS01	Blue Crab	5-21-95	1815	14.0	170	
FS01	Blue Crab	5-21-95	1815	16.0	195	
FS01	Blue Crab	5-21-95	1815	15.0	165	
FS01	Blue Crab	5-21-95	1815	14.0	150	
FS01	Blue Crab	5-22-95	815	17.0	220	
FS01	Blue Crab	5-22-95	815	16.0	230	
FS01	Blue Crab	5-23-95	815	15.5	225	
FS01	Blue Crab	5-23-95	815	15.5	255	
			Minimum	13	145	
			Maximum	18	255	
			Average	15.4	194	
			Count	22		
FS01	Bluefish	5-20-95	750	37	500	
S01	Bluefish	5-22-95	800	28.5	200	
			Average	32.75	350	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
FS01	Pinfish	5-20-95	750	21.5	100	
FS01	Pinfish	5-20-95	1800	20	100	
FS01	Pinfish	5-21-95	800	18	110	
FS01	Pinfish	5-21-95	1800	14.5	60	
FS01	Pinfish	5-22-95	800	18	90	
FS01	Pinfish	5-22-95	1500	17	80	Partial tail, not into flesh
			Minimum	14.5	60	
			Maximum	21.5	110	
			Average	18.17	90	
			Count	6		
FS01	Southern Flounder	5-21-95	1800	34	475	
FS01	Southern Flounder	5-21-95	1800	24	170	
FS01	Southern Flounder	5-22-95	800	26	200	
FS01	Southern Flounder	5-22-95	800	26	220	
FS01	Southern Flounder	5-22-95	800	22.5	135	
FS01	Southern Flounder	5-23-95	800	27	230	
			Minimum	22.5	135	
			Maximum	34	475	
			Average	26.6	238	
			Count	6		
FS01	Yellowfin Menhaden	5-20-95	800	32.5	325	
FS01	Atlantic Menhaden	5-20-95	1800	355	400	
FS01	Atlantic Menhaden	5-20-95	1800	300	250	
			Average	327.5	325	
FS02	Blue Crab	5-20-95	845	15	210	
FS02	Blue Crab	5-20-95	845	13	150	
FS02	Blue Crab	5-20-95	845	14.5	180	
FS02	Blue Crab	5-20-95	845	14.5	180	
FS02	Blue Crab	5-20-95	845	16	225	
FS02	Blue Crab	5-20-95	1845	16	200	
FS02	Blue Crab	5-20-95	1845	15	150	
FS02	Blue Crab	5-20-95	1845	16	170	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
MEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
FS02	Blue Crab	5-21-95	845	17.5	260	
FS02	Blue Crab	5-21-95	845	15	150	
FS02	Blue Crab	5-21-95	845	16	210	
FS02	Blue Crab	5-21-95	845	15	200	
FS02	Blue Crab	5-22-95	845	16	200	
FS02	Blue Crab	5-22-95	845	15	210	
FS02	Blue Crab	5-22-95	845	14	180	
FS02	Blue Crab	5-22-95	845	18	250	
FS02	Blue Crab	5-22-95	845	18	300	
FS02	Blue Crab	5-23-95	845	15	235	
FS02	Blue Crab	5-23-95	845	17.5	295	
FS02	Blue Crab	5-23-95	845	16.5	315	
FS02	Blue Crab	5-23-95	845	15.5	225	
			Minimum	13	150	
			Maximum	18	315	
			Average	15.7	214	
			Count	21		
FS02	Yellowfin Menhaden	5-20-95	845	23	120	Partially eaten
FS02	Yellowfin Menhaden	5-20-95	1845	34.5	370	Partially eaten
FS02	Yellowfin Menhaden	5-21-95	830	29.3	225	Partially eaten
FS02	Yellowfin Menhaden	5-21-95	1830	20	120	
FS02	Yellowfin Menhaden	5-21-95	1830	21	110	
			Minimum	20	110	
			Maximum	34.5	370	
			Average	25.6	189	
			Count	5		
FS02	Atlantic Menhaden	5-20-95	845	20	NM	Partially eaten
FS02	Atlantic Menhaden	5-21-95	830	32	265	Eyes eaten
			Average	26	NA	
FS02	Bluefish	5-20-95	1830	79	3500	Partially eaten
FS02	Southern Flounder	5-20-95	830	26	200	
FS02	Southern Flounder	5-20-95	830	27	225	
FS02	Southern Flounder	5-21-95	1830	25	180	
FS02	Southern Flounder	5-21-95	1830	27.5	230	
FS02	Southern Flounder	5-22-95	830	28.5	270	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
FS02	Southern Flounder	5-22-95	830	27	220	Partial tail, not into flesh
FS02	Southern Flounder	5-22-95	830	27	250	
FS02	Southern Flounder	5-22-95	830	22.5	150	
FS02	Southern Flounder	5-23-95	830	27.5	235	
FS02	Southern Flounder	5-23-95	830	32	390	
			Minimum	22.5	150	
			Maximum	32	390	
			Average	27	235	
			Count	10		
FS02	Spotted Sea Trout	5-20-95	1830	40	1600	
FS02	Spanish Mackrel	5-21-95	830	49	750	
FS02	Spanish Mackrel	5-21-95	830	38.5	255	Partially eaten
			Average	43.75	502.5	
FS02	Atlantic Croaker	5-21-95	830	24	150	
FS02	Pinfish	5-21-95	830	14	55	
FS02	Pinfish	5-21-95	1830	20	100	
FS02	Pinfish	5-22-95	830	21.5	125	
			Average	18.5		
FS03	Blue Crab	5-20-95	945	15	200	
FS03	Blue Crab	5-20-95	945	13	145	
FS03	Blue Crab	5-20-95	945	13	150	
FS03	Blue Crab	5-20-95	945	14	165	
FS03	Blue Crab	5-20-95	945	14.5	140	
FS03	Blue Crab	5-20-95	945	15	160	
FS03	Blue Crab	5-20-95	945	17	220	
FS03	Blue Crab	5-20-95	1915	16	200	
FS03	Blue Crab	5-20-95	1915	17	230	
FS03	Blue Crab	5-20-95	1915	16	200	
FS03	Blue Crab	5-20-95	1915	14	155	
FS03	Blue Crab	5-21-95	915	14	200	
FS03	Blue Crab	5-21-95	915	15	200	
FS03	Blue Crab	5-21-95	915	16.5	280	
FS03	Blue Crab	5-21-95	915	13	145	
FS03	Blue Crab	5-21-95	915	14	160	

FISH COLLECTION LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
MEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Station	Fish Species	Date	Time	Length (cm)	Weight (grams)	Comments
FS03	Blue Crab	5-21-95	915	17	250	
FS03	Blue Crab	5-21-95	1900	12.5	160	
FS03	Blue Crab	5-23-95	1015	17	270	
			Minimum	12.5	140	
			Maximum	17	280	
			Average	14.9	191	
			Count	19		
FS03	Atlantic Croaker	5-20-95	930	27.5	300	
FS03	Southern Flounder	5-20-95	915	200	NM	Partially eaten
FS03	Southern Flounder	5-20-95	1900	33	425	
FS03	Southern Flounder	5-21-95	900	34.5	500	
FS03	Southern Flounder	5-21-95	900	34	450	
FS03	Southern Flounder	5-23-95	1000	26	150	
			Minimum	26	0	
			Maximum	200	500	
			Average	65.5	381	
			Count	5		
FS03	Stripped Mullet	5-20-95	1900	30.5	300	
FS03	Stripped Mullet	5-21-95	900	33.5	425	
			Average	32	363	
FS03	Yellowfin Menhaden	5-23-95	1000	36	425	

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-18-95	1000	73-FS01-BC01	15.0	200	73-FS01-BC01F	Edible Portion
5-18-95	1000	73-FS01-BC02	16.0	200		
5-18-95	1000	73-FS01-BC03	16.0	200		
5-18-95	1000	73-FS01-BC04	17.0	230		
5-18-95	1000	73-FS01-BC05	18.0	250		
5-18-95	1000	73-FS01-BC06	16.5	225		
5-18-95	1000	73-FS01-BC07	15.0	150		
5-18-95	1000	73-FS01-BC08	14.0	145		
5-20-95	1800	73-FS01-BC11	14.0	150		
5-20-95	1800	73-FS01-BC10	14.0	155		
		Minimum	14			
		Maximum	18			
		Min/Max	0.78			
		Average	15.6			
		Count	10			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	800	73-FS01-BC09	18.0	200	73-FS01-BC02F	Edible Portion
5-20-95	1800	73-FS01-BC12	16.0	235		
5-21-95	1815	73-FS01-BC15	14.0	170		
5-21-95	1815	73-FS01-BC16	16.0	195		
5-21-95	1815	73-FS01-BC17	15.0	165		
5-21-95	1815	73-FS01-BC18	14.0	150		
5-22-95	815	73-FS01-BC19	17.0	220		
5-22-95	815	73-FS01-BC20	16.0	230		
5-23-95	815	73-FS01-BC21	15.5	225		
5-23-95	815	73-FS01-BC22	15.5	255		
		Minimum	14			
		Maximum	18			
		Min/Max	0.78			
		Average	15.7			
		Count	10			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	750	73-FS01-BF01	37	500	73-FS01-BF01F	Fillet
5-22-95	800	73-FS01-BF02	28.5	200		
		Minimum	28.5			
		Maximum	37			
		Min/Max	0.77			
		Average	32.8			
		Count	2			

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
MEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	1800	73-FS01-PF01	20	100	73-FS01-PF01W	Whole Body
5-21-95	800	73-FS01-PF02	18	110		
5-21-95	1800	73-FS01-PF03	14.5	60		
5-22-95	800	73-FS01-PF04	18	90		
		Minimum	14.5			
		Maximum	20			
		Min/Max	0.73			
		Average	17.6			
		Count	4			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-21-95	1800	73-FS01-SF02	24	170	73-FS01-SF01W	Whole Body
5-22-95	800	73-FS01-SF03	26	200		
5-22-95	800	73-FS01-SF05	22.5	135		
		Minimum	22.5			
		Maximum	26			
		Min/Max	0.87			
		Average	24.2			
		Count	3			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-21-95	1800	73-FS01-SF01	34	475	73-FS01-SF01F	Fillet
5-23-95	800	73-FS01-SF06	27	230		
5-22-95	800	73-FS01-SF04	26	220		
		Minimum	26			
		Maximum	34			
		Min/Max	0.76			
		Average	29			
		Count	3			

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	845	73-FS02-BC01	15	210	73-FS02-BC01F	Edible Portion
5-20-95	845	73-FS02-BC03	14.5	180		
5-20-95	845	73-FS02-BC04	16	225		
5-20-95	1845	73-FS02-BC06	16	200		
5-20-95	1845	73-FS02-BC07	15	150		
5-20-95	1845	73-FS02-BC08	16	170		
5-21-95	845	73-FS02-BC09	17.5	260		
5-21-95	845	73-FS02-BC10	15	150		
5-21-95	845	73-FS02-BC11	16	210		
5-22-95	845	73-FS02-BC17	18	300		
		Minimum	14.5			
		Maximum	18			
		Min/Max	0.80556			
		Average	15.9			
		Count	10			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-22-95	845	73-FS02-BC13	16	200	73-FS02-BC02F	Edible Portion
5-21-95	845	73-FS02-BC12	15	200		
5-22-95	845	73-FS02-BC14	15	210		
5-22-95	845	73-FS02-BC15	14	180		
5-22-95	845	73-FS02-BC16	18	250		
5-23-95	845	73-FS02-BC18	15	235		
5-23-95	845	73-FS02-BC19	17.5	295		
5-23-95	845	73-FS02-BC20	16.5	315		
5-23-95	845	73-FS02-BC21	15.5	225		
		Minimum	14			
		Maximum	18			
		Min/Max	0.78			
		Average	15.8			
		Count	9			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-21-95	1830	73-FS02-YM01	20	120	73-FS02-YM01W	Whole Body
5-21-95	1830	73-FS02-YM02	21	110		
		Minimum	20			
		Maximum	21			
		Min/Max	0.95			
		Average	20.5			
		Count	2			

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	830	73-FS02-SF01	26	200	73-FS02-SF01W	Whole Body
5-20-95	830	73-FS02-SF02	27	225		
5-21-95	1830	73-FS02-SF03	25	180		
5-22-95	830	73-FS02-SF07	27	250		
5-22-95	830	73-FS02-SF08	22.5	150		
		Minimum	22.5			
		Maximum	27			
		Min/Max	0.83			
		Average	25.5			
		Count	5			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-21-95	1830	73-FS02-SF04	27.5	230	73-FS02-SF01F	Fillet
5-23-95	830	73-FS02-SF09	27.5	235		
5-22-95	830	73-FS02-SF05	28.5	270		
5-23-95	830	73-FS02-SF10	32	390		
		Minimum	27.5			
		Maximum	32			
		Min/Max	0.86			
		Average	28.9			
		Count	4			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	1830	73-FS02-SS01	40	1600	73-FS02-SS01F	Fillet
5-21-95	830	73-FS02-SPM01	49	750	73-FS02-SPM01F	Fillet

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-21-95	830	73-FS02-PF01	14	55	73-FS02-PF01W	Whole Body
5-21-95	1830	73-FS02-PF02	20	100		
5-22-95	830	73-FS02-PF03	21.5	125		
		Minimum	14			
		Maximum	21.5			
		Min/Max	0.65			
		Average	18.5			
		Count	3			

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	945	73-FS03-BC01	15	200	73-FS03-BC01F	Edible Portion
5-20-95	945	73-FS03-BC04	14	165		
5-20-95	945	73-FS03-BC05	14.5	140		
5-20-95	945	73-FS03-BC06	15	160		
5-20-95	945	73-FS03-BC07	17	220		
5-20-95	1915	73-FS03-BC08	16	200		
5-21-95	915	73-FS03-BC12	14	200		
5-20-95	1915	73-FS03-BC10	16	200		
5-21-95	915	73-FS03-BC15	13	145		
		Minimum	13			
		Maximum	17			
		Min/Max	0.76			
		Average	14.9			
		Count	9			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	1915	73-FS03-BC11	14	155	73-FS03-BC02F	Edible Portion
5-20-95	1915	73-FS03-BC09	17	230		
5-21-95	915	73-FS03-BC13	15	200		
5-21-95	915	73-FS03-BC14	16.5	280		
5-21-95	915	73-FS03-BC16	14	160		
5-21-95	915	73-FS03-BC17	17	250		
5-23-95	1015	73-FS03-BC19	17	270		
5-20-95	945	73-FS03-BC02	13	145		
5-20-95	945	73-FS03-BC03	13	150		
		Minimum	13			
		Maximum	17			
		Min/Max	0.76			
		Average	15.2			
		Count	9			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	930	73-FS03-AC01	27.5	300	73-FS03-AC01F	Fillet
5-21-95	830	73-FS02-AC01	24	150		
		Minimum	24			
		Maximum	27.5			
		Min/Max	0.87			
		Average	25.8			
		Count	2			

FISH SAMPLE TISSUE LOG
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	1900	73-FS03-SF01	33	425	73-FS03-SF01F	Fillet
5-21-95	900	73-FS03-SF02	34.5	500		
5-21-95	900	73-FS03-SF03	34	450		
5-23-95	1000	73-FS03-SF04	26	150		
		Minimum	26			
		Maximum	34.5			
		Min/Max	0.75			
		Average	31.9			
		Count	4			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-20-95	1900	73-FS03-SM01	30.5	300	73-FS03-SM01F	Fillet
5-21-95	900	73-FS03-SM02	33.5	425		
		Minimum	30.5			
		Maximum	33.5			
		Min/Max	0.91			
		Average	32.0			
		Count	2			

Date	Collection Time	Sample Numbe	Length (cm)	Weight (grams)	New Sample Number	Sample Analysis
5-23-95	1000	73-FS03-YM01	36	425	73-FS03-YM01W	Whole Body

APPENDIX AB
TERRESTRIAL REFERENCE VALUES AND CDI ECOLOGICAL RISK SPREADSHEETS

TOXICITY [illegible]SED TO CALCULATE TERRESTRIAL REFERENCE VALUES
SITE 73 - AM[illegible]IOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Substitute Chemical Used	Cattle (mg/kg/day)	Poultry (mg/kg/day)	Rabbit (mg/kg/day)	Dog (mg/kg/day)	Rat (mg/kg/day)	Mouse (mg/kg/day)	Guinea Pig (mg/kg/day)	Mink (mg/kg/day)
Aluminum		5 (1)	10 (1)	11.61 (1)	15 (1)	NA	1.93 (60)	NA	NA
Antimony		NA	NA	4.06 (1)	NA	0.035 (12)	NA	NA	NA
Arsenic		0.25 (1)	5.135 (61) Mallard	2.90 (1)	NA	NA	0.1261 (13)	NA	NA
Barium		0.1 (1)	1 (1)	1.16 (1)	NA	0.25 (4)	NA	NA	NA
Beryllium		NA	NA	NA	NA	0.54 (4)	NA	NA	NA
Cadmium		0.0025 (1)	1.45 (63) Mallard	0.03 (1)	0.075 (14)	0.004 (15)	NA	NA	NA
Chromium		5 (1)	50 (1)	58.03 (1)	NA	2.41 (5)	NA	NA	NA
Cobalt		0.05 (1)	0.5 (1)	0.58 (1)	NA	NA	NA	NA	NA
Copper		0.5 (1)	15 (1)	11.61 (1)	NA	NA	NA	NA	12.9 (17)
Iron		5 (1)	50 (1)	29.02 (1)	NA	NA	NA	NA	NA
Lead		0.15 (1)	3.85 (65) A. kestral	1.74 (1)	NA	8 (6)	NA	NA	NA
Manganese		1 (24)	100 (1)	23.21 (1)	NA	8.8 (66)	NA	NA	NA
Mercury		0.01 (1)	0.1 (1)	0.12 (1)	NA	0.32 (18)	NA	NA	NA
Molydenum		NA	NA	NA	NA	0.02 (82)	NA	NA	NA
Nickel		0.25 (1)	15 (1)	2.90 (1)	25 (2)	5 (2)	NA	NA	NA
Selenium		0.01 (1)	0.5 (67) Mallard	0.12 (1)	NA	0.04 (19)	NA	NA	NA
Silver		NA	5 (1)	NA	NA	NA	0.181 (20)	NA	NA
Thallium		NA	NA	NA	NA	0.023 (54)	NA	NA	NA
Vanadium		0.25 (1)	11.38 (68) Mallard	0.06 (1)	NA	0.65 (58)	NA	NA	NA
Zinc		2.5 (1)	50 (1)	29.02 (1)	1 (3)	160 (69)	NA	NA	NA
Cyanide		NA	4.5 (21)	NA	0.375 (22)	10.8 (23)	NA	NA	NA
Acenaphthene		NA	NA	NA	NA	17.5 (56)	NA	NA	NA
Acenaphthylene		NA	NA	NA	NA	17.5 Acen.	NA	NA	NA
Anthracene		NA	NA	NA	NA	NA	100 (33)	NA	NA
Benzo(a)anthracene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Benzo(b)fluoranthene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Benzo(k)fluoranthene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Benzo(ghi)perylene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Benzo(g,h,i)perylene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Benzo(a)pyrene		NA	NA	NA	NA	NA	1 (7)	NA	NA
beta-BHC		NA	NA	NA	NA	5 (51)	NA	NA	NA
gamma-BHC	(beta-BHC)	NA	NA	NA	NA	5 (51)	NA	NA	NA
Bis(2-ethylhexyl)phthalate		NA	1.11 (16) Ringed Dove	NA	NA	NA	NA	0.1833 (11)	NA
Butylbenzylphthalate		NA	NA	NA	NA	15.9 (52)	NA	NA	NA
Carbazole	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Chrysene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Dibenzofuran	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Dibenzo(a,h)anthracene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Dibenz(a,h)anthracene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
Diethylphthalate		NA	NA	NA	NA	NA	4583 (53)	NA	NA
2,4-Dimethylphenol		NA	NA	NA	NA	NA	5 (85)	NA	NA
Di-n-butylphthalate		NA	0.11 (16) Ringed Dove	NA	NA	125 (63)	NA	NA	NA
Di-n-octylphthalate		NA	NA	NA	NA	17.5 (79)	NA	NA	NA
2,4-Dinitrophenol		NA	15 (86) Duck	NA	5 (87)	20 (88)	25.5 (89)	NA	NA
2,6-Dinitrotoluene		NA	NA	NA	0.4 (84)	NA	NA	NA	NA
Fluoranthene		NA	NA	NA	NA	NA	12.5 (8)	NA	NA
Fluorene		NA	NA	NA	NA	12.5 (56)	NA	NA	NA
Indeno(1,2,3-cd)pyrene	(Benzo(a)pyrene)	NA	NA	NA	NA	NA	1	NA	NA
2-Methylnaphthalene	(Naphthalene)	NA	NA	NA	NA	41	NA	NA	NA
Naphthalene		NA	NA	NA	NA	41 (9)	NA	NA	NA
Nitrobenzene		NA	NA	NA	NA	0.25 (80)	NA	NA	NA
n-Nitrosodiphenylamine		NA	NA	NA	NA	50 (81)	NA	NA	NA
Phenanthrene	(Naphthalene)	NA	NA	NA	NA	41	NA	NA	NA
Phenol		NA	NA	NA	NA	6 (57)	NA	NA	NA
Pyrene		NA	NA	NA	NA	NA	7.5 (10)	NA	NA

TOXICITY DATA USED TO CALCULATE TERRESTRIAL REFERENCE VALUES
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Substitute Chemical Used	Cattle (mg/kg/day)	Poultry (mg/kg/day)	Rabbit (mg/kg/day)	Dog (mg/kg/day)	Rat (mg/kg/day)	Mouse (mg/kg/day)	Guinea Pig (mg/kg/day)	Mink (mg/kg/day)
Aldrin		0.5 (24)	NA	NA	0.025 (77)	0.025 (77)	NA	NA	NA
Alpha-chlordane	(Chlordane)	1 (24)	2.14 (70) Blackbird	NA	0.075 (48)	0.055 (49)	NA	NA	NA
Gamma-chlordane	(Chlordane)	1 (24)	2.14 (70) Blackbird	NA	0.075 (48)	0.055 (49)	NA	NA	NA
Dieldrin		0.5 (24)	0.03 (71) Mallard	NA	0.005 (25)	0.005 (25)	NA	NA	NA
4,4'-DDD	(DDT)	NA	0.088 (DDT)	NA	NA	0.8 DDT	NA	NA	NA
4,4'-DDE		NA	0.088 (24) Quail	NA	NA	0.8 (47)	NA	NA	NA
4,4'-DDT		NA	0.088 (24) Quail	NA	NA	0.8 (47)	NA	NA	NA
Endosulfan		NA	10 (72) Partridge	NA	0.57 (26)	0.6 (26)	NA	NA	NA
Endosulfan I		NA	10 (72) Partridge	NA	0.57 (26)	0.6 (26)	NA	NA	NA
Endosulfan II	(Endosulfan)	NA	10 (72) Partridge	NA	0.57 (26)	0.6 (26)	NA	NA	NA
Endosulfan sulfate	(Endosulfan)	NA	10 (72) Partridge	NA	0.57 (26)	0.6 (26)	NA	NA	NA
Endrin		NA	0.3 (73) Mallard	NA	0.025 (27)	0.25 (28)	NA	NA	NA
Endrin aldehyde	(Endrin)	NA	0.3 (73) Mallard	NA	0.025 (27)	0.25 (28)	NA	NA	NA
Endrin ketone	(Endrin)	NA	0.3 (73) Mallard	NA	0.025 (27)	0.25 (28)	NA	NA	NA
Heptachlor		NA	NA	NA	NA	0.15 (45)	NA	NA	0.057 (29)
Heptachlor Epoxide		NA	NA	NA	0.000125 (24)	NA	NA	NA	NA
Aroclor-1221		NA	NA	NA	NA	3.5 (30)	NA	NA	NA
Aroclor-1232	(Aroclor-1242)	NA	0.41 (78) Owl	NA	NA	0.15 (31)	NA	NA	NA
Aroclor-1260		NA	NA	NA	NA	0.005 (32)	NA	NA	NA
Aroclor-1254		NA	0.18 (76) Pheasant	1 (75)	NA	NA	NA	NA	0.1 (50)
Aroclor-1248		NA	NA	0.28 (77)	NA	NA	0.13 (62)	NA	NA
Methylene Chloride		NA	NA	NA	NA	5.85 (34)	NA	NA	NA
Carbon Disulfide		NA	NA	1.1 (35)	NA	NA	NA	NA	NA
1,1-Dichloroethene		NA	NA	NA	NA	28 (59)	NA	NA	NA
1,2-Dichloroethene (total)		NA	NA	NA	NA	5 (44)	NA	NA	NA
Chloroform		NA	NA	NA	30 (36)	38 (37)	NA	NA	NA
2-Butanone		NA	NA	NA	NA	NA	NA	NA	NA
1,1,1-Trichloroethane		NA	NA	NA	NA	NA	1000 (38)	NA	NA
Trichloroethene		NA	NA	NA	NA	100 (39)	NA	NA	NA
1,1,2-Trichloroethane		NA	NA	NA	NA	NA	0.39 (40)	NA	NA
Benzene		NA	NA	NA	NA	0.1 (41)	NA	NA	NA
1,1,2,2-Tetrachloroethane		NA	NA	NA	NA	76 (85)	NA	NA	NA
Tetrachloroethene		NA	NA	NA	NA	1.4 (42)	NA	NA	NA
Toluene		NA	NA	NA	NA	22.3 (38)	NA	NA	NA
Ethylbenzene		NA	NA	NA	NA	9.71 (41)	NA	NA	NA
Xylenes		NA	NA	NA	NA	179 (43)	NA	NA	NA
Xylenes (total)		NA	NA	NA	NA	179 (43)	NA	NA	NA
Vinyl chloride		NA	NA	NA	NA	0.17 (83)	NA	NA	NA
Acetone		NA	NA	NA	NA	10 (46)	NA	NA	NA

(1) NAS, 1980
(2) Ambrose et.al., 1976
(3) Drinker et. al., 1927
(4) Schroder and Mitchner, 1975a,b
(5) Mackenzie et.al., 1958
(6) Azar et.al., 1973
(7) Mackenzie and Angevine, 1981
(8) USEPA, 1988a
(9) Schmall, 1955
(10) USEPA, 1989a
(11) Lamb, et.al., 1987
(12) Schroeder et.al., 1976
(13) Schroeder and Mitchner, 1971
(14) Loser and Lorke, 1977
(15) Kopp et.al., 1982
(16) Peakall et.al., 1974
(17) Aulerich et.al., 1982
(18) Fitzhugh et.al., 1950
(19) Halverson et.al., 1966
(20) Rungby and Dansher, 1984
(21) Gomez et.al., 1983, 1988
(22) USEPA, 1980
(23) Howard and Hanzal, 1955
(24) Ford et.al., 1991
(25) Walker et.al., 1969
(26) Hoechst, 1989
(27) Vesicol, 1969
(28) Treon et.al., 1955
(29) Aulerich et.al., 1990
(30) Wasserman and Culos, 1973
(31) Bruckner et.al., 1974
(32) Byrne et.al., 1988
(33) USEPA, 1989b
(34) NCA., 1982
(35) Hardin et.al., 1981
(36) Heywood et.al., 1979
(37) Jorgenson et.al., 1985
(38) Lane, et.al., 1982
(39) NTP, 1985a
(40) White et.al., 1985
(41) Wolf et.al., 1956
(42) Buban, 1985
(43) NTP, 1986a
(44) Quast et.al., 1983
(45) Vesicol, 1955
(46) USEPA, 1986a
(47) Fitzhugh, 1948
(48) WHO, 1984 and NRCC, 1975
(49) Vesicol, 1983
(50) Ringer, 1983
(51) Ito et.al., 1975
(52) NTP, 1985b
(53) McClane and Hughs, 1980
(54) USEPA, 1986b
(55) NCI, 1978
(56) USEPA, 1989b
(57) NTP, 1983a
(58) Schroeder et.al., 1970
(59) Nitchke, et.al., 1983
(60) Ondreicka, et.al., 1966
(61) USFWS, 1964
(62) Thomas and Hinsdill, 1980
(63) White and Finely, 1978
(64) Smith, et.al., 1953
(65) Pattee, 1984
(66) Laskey, et.al., 1982
(67) Heinz, et.al., 1987
(68) White and Dieter, 1978
(69) Schlicker and Cox, 1968
(70) Stickel, e.al., 1983
(71) Nebeker et.al., 1992
(72) Abiola, 1992
(73) Spann, et.al., 1986
(74) Dow, 1958
(75) Villeneuve, et.al., 1972
(76) Dahlgren, et.al., 1972
(77) FAO/WHO, 1978
(78) McLane and Hughes, 1980
(79) Piekacz, 1971
(80) CIIT, 1984
(81) NCI, 1979
(82) Jeter et.al., 1954
(83) Til et.al., 1983
(84) Lee et.al., 1976
(85) USEPA, 1989c
(86) Gehring and Buerge, 1969
(87) Buschke, 1947
(88) Arnold et. al., 1976
(89) Gibson, 1973

BODY WEIGHTS FOR TERRESTRIAL REFERENCE VALUE CALCULATION
SITE 73 - AMPHIBIOUS VEHICLE MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Animal	Body Weight (kg)	Reference
Cattle	100	(IT Corp, 1992)
Whitetailed Deer	45.4	(Dee, 1991)
Bobwhite Quail	0.174	(USEPA, 1993b)
Eastern Cottontail	1.2285	(USEPA, 1993b)
Lab Rat	0.35	(USEPA, 1988)
Lab Dog	10	(USEPA, 1988)
Poultry	0.5	(IT Corp, 1992)
Red Fox	4.535	(Storm et.al., 1976)
Racoon	5.12	(USEPA, 1993b)
Lab Mouse	0.03	(USEPA, 1988)
Guinea pig	0.86	(USEPA, 1988)
Mink	1	(USEPA, 1993b)
Mallard Duck	1	(Heinze et.al., 1989)
Short-tailed Shrew	0.017	(Schlesinger and Potter, 1974)
Americal Kestral	0.13	(Pattee, 1984)
Blackbird	0.064	(Stickel, 1983)
Pheasant	1	(USEPA, 1993b)
Ringed Dove	0.155	(Terres, 1980)
Screech Owl	0.181	(Dunning, 1984)
Partridge	0.4	(Abiola, 1992)

REGION IV TERRESTRIAL REFERENCE VALUE CALCULATION
SITE 73 - AMPHIBIOUS MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Whitetailed Deer (mg/kg/day)	Bobwhite Quail (mg/kg/day)	Eastern Cottontail (mg/kg/day)	Red Fox (mg/kg/day)	Racoon (mg/kg/day)
Aluminum	6.51E+00 (ct)	1.42E+01 (bi)	1.16E+01 (rb)	1.95E+01 (dg)	3.48E-01 (mo)
Antimony	6.91E-03 (rt)	4.42E-02 (rt)	4.06E+00 (rb)	1.49E-02 (rt)	1.43E-02 (rt)
Arsenic	3.25E-01 (ct)	9.19E+00 (bi)	2.90E+00 (rb)	2.37E-02 (mo)	2.27E-02 (mo)
Barium	1.30E-01 (ct)	1.42E+00 (bi)	1.16E+00 (rb)	1.07E-01 (rt)	1.02E-01 (rt)
Beryllium	1.07E-01 (rt)	6.82E-01 (rt)	3.55E-01 (rt)	2.30E-01 (rt)	2.21E-01 (rt)
Cadmium	3.25E-03 (ct)	2.60E+00 (bi)	2.90E-02 (rb)	9.76E-02 (dg)	1.64E-03 (rt)
Chromium	6.51E+00 (ct)	7.11E+01 (bi)	5.80E+01 (rb)	1.03E+00 (rt)	9.86E-01 (rt)
Cobalt	6.51E-02 (ct)	7.11E-01 (bi)	5.80E-01 (rb)	3.75E-01 (rb)	3.61E-01 (rb)
Copper	6.51E-01 (ct)	2.13E+01 (bi)	1.16E+01 (rb)	7.80E+00 (mk)	7.49E+00 (mk)
Iron	6.51E+00 (ct)	7.11E+01 (bi)	2.90E+01 (rb)	1.88E+01 (rb)	1.80E+01 (rb)
Lead	1.95E-01 (ct)	3.49E+00 (bi)	1.74E+00 (rb)	3.41E+00 (rt)	3.27E+00 (rt)
Manganese	1.30E+00 (ct)	1.42E+02 (bi)	2.32E+01 (rb)	3.75E+00 (rt)	3.60E+00 (rt)
Mercury	1.30E-02 (ct)	1.42E-01 (bi)	1.20E-01 (rb)	1.36E-01 (rt)	1.31E-01 (rt)
Molybdenum	3.95E-03 (rt)	2.52E-02 (rt)	1.32E-02 (rt)	8.52E-03 (rt)	8.18E-03 (rt)
Nickel	3.25E-01 (ct)	2.13E+01 (bi)	2.90E+00 (rb)	3.25E+01 (dg)	2.05E+00 (rt)
Selenium	1.30E-02 (ct)	8.95E-01 (bi)	1.20E-01 (rb)	1.70E-02 (rt)	1.64E-02 (rt)
Silver	1.58E-02 (mo)	7.11E+00 (bi)	5.25E-02 (mo)	3.40E-02 (mo)	3.26E-02 (mo)
Thallium	4.54E-03 (rt)	2.90E-02 (rt)	1.51E-02 (rt)	9.79E-03 (rt)	9.40E-03 (rt)
Vanadium	3.25E-01 (ct)	2.04E+01 (bi)	5.80E-02 (rb)	2.77E-01 (rt)	2.66E-01 (rt)
Zinc	3.25E+00 (ct)	7.11E+01 (bi)	2.90E+01 (rb)	1.30E+00 (dg)	6.54E+01 (rt)
Cyanide	2.13E+00 (rt)	6.40E+00 (bi)	7.11E+00 (rt)	4.88E-01 (dg)	4.42E+00 (rt)
Acenaphthene	3.46E+00 (rt)	2.21E+01 (rt)	1.15E+01 (rt)	7.45E+00 (rt)	7.16E+00 (rt)
Acenaphthylene	3.46E+00 (rt)	2.21E+01 (rt)	1.15E+01 (rt)	7.45E+00 (rt)	7.16E+00 (rt)
Anthracene	8.71E+00 (mo)	5.57E+01 (mo)	2.90E+01 (mo)	1.88E+01 (mo)	1.80E+01 (mo)
Benzo(a)anthracene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Benzo(b)fluoranthene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Benzo(k)fluoranthene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Benzo(ghi)perylene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Benzo(g,h,i)perylene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Benzo(a)pyrene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
beta-BHC	9.88E-01 (rt)	6.31E+00 (rt)	3.29E+00 (rt)	2.13E+00 (rt)	2.04E+00 (rt)
gamma-BHC	9.88E-01 (rt)	6.31E+00 (rt)	3.29E+00 (rt)	2.13E+00 (rt)	2.04E+00 (rt)
Bis(2-ethylhexyl)phthalate	4.89E-02 (gp)	1.07E+00 (bi)	1.63E-01 (gp)	1.05E-01 (gp)	1.01E-01 (gp)
Bis(2-chloroethyl)ether	NA	NA	NA	NA	NA
Butylbenzylphthalate	3.14E+00 (rt)	2.01E+01 (rt)	1.05E+01 (rt)	6.77E+00 (rt)	6.50E+00 (rt)
Carbazole	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Chrysene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Dibenzofuran	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Dibenzo(a,h)anthracene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Dibenz(a,h)anthracene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
Diethylphthalate	3.99E+02 (mo)	2.55E+03 (mo)	1.33E+03 (mo)	8.60E+02 (mo)	8.26E+02 (mo)
2,4-Dimethylphenol	4.36E-01 (mo)	2.78E+00 (mo)	1.45E+00 (mo)	9.39E-01 (mo)	9.01E-01 (mo)
Di-n-butylphthalate	2.47E+01 (rt)	1.06E-01 (bi)	8.23E+01 (rt)	5.32E+01 (rt)	5.11E+01 (rt)
Di-n-octylphthalate	3.46E+00 (rt)	2.21E+01 (bi)	1.15E+01 (rt)	7.45E+00 (rt)	7.16E+00 (rt)
2,4-Dinitophenol	3.95E+00 (rt)	1.44E+01 (dk)	1.32E+01 (rt)	8.52E+00 (rt)	8.18E+00 (rt)
2,6-Dinitrotoluene	2.42E-01 (dg)	1.54E+00 (dg)	8.05E-01 (dg)	5.20E-01 (dg)	5.00E-01 (dg)
Fluoranthene	1.09E+00 (mo)	6.96E+00 (mo)	3.63E+00 (mo)	2.35E+00 (mo)	2.25E+00 (mo)
Fluorene	2.47E+00 (rt)	1.58E+01 (rt)	8.23E+00 (rt)	5.32E+00 (rt)	5.11E+00 (rt)
Indeno(1,2,3-cd)pyrene	8.71E-02 (mo)	5.57E-01 (mo)	2.90E-01 (mo)	1.88E-01 (mo)	1.80E-01 (mo)
2-Methylnaphthalene	8.10E+00 (rt)	5.18E+01 (rt)	2.70E+01 (rt)	1.75E+01 (rt)	1.68E+01 (rt)
Naphthalene	8.10E+00 (rt)	5.18E+01 (rt)	2.70E+01 (rt)	1.75E+01 (rt)	1.68E+01 (rt)
Nitrobenzene	4.94E-02 (rt)	3.16E-01 (rt)	1.65E-01 (rt)	1.06E-01 (rt)	1.02E-01 (rt)
N-Nitrosodiphenylamine	9.88E+00 (rt)	6.31E+01 (rt)	3.29E+01 (rt)	2.13E+01 (rt)	2.04E+01 (rt)
Phenanthrene	8.10E+00 (rt)	5.18E+01 (rt)	2.70E+01 (rt)	1.75E+01 (rt)	1.68E+01 (rt)
Phenol	1.19E+00 (rt)	7.57E+00 (rt)	3.95E+00 (rt)	2.55E+00 (rt)	2.45E+00 (rt)
Pyrene	6.53E-01 (mo)	4.17E+00 (mo)	2.18E+00 (mo)	1.41E+00 (mo	1.35E+00 (mo)

REGION I. ...RRESTRIAL REFERENCE VALUE CALCULATION
SITE 73 - AMPHIBIOUS MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Whitetailed Deer (mg/kg/day)	Bobwhite Quail (mg/kg/day)	Eastern Cottontail (mg/kg/day)	Red Fox (mg/kg/day)	Racoon (mg/kg/day)
Aldrin	6.51E-01 (ct)	3.16E-02 (rt)	1.65E-02 (rt)	3.25E-02 (dg)	1.02E-02 (rt)
Alpha-chlordane	1.30E+00 (ct)	1.53E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)	2.25E-02 (rt)
Gamma-chlordane	1.30E+00 (ct)	1.53E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)	2.25E-02 (rt)
Dieldrin	6.51E-01 (ct)	5.37E-02 (bi)	3.29E-03 (rt)	6.51E-03 (dg)	2.04E-03 (rt)
4,4'-DDD	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
4,4'-DDE	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
4,4'-DDT	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
Endosulfan	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan I	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan II	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan sulfate	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endrin	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Endrin aldehyde	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Endrin ketone	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Heptachlor	2.96E-02 (rt)	1.89E-01 (rt)	9.87E-02 (rt)	6.39E-02 (rt)	6.13E-02 (rt)
Heptachlor epoxide	7.55E-05 (dg)	4.82E-04 (dg)	2.51E-04 (dg)	1.63E-04 (dg)	1.56E-04 (dg)
Aroclor-1221	6.91E-01 (rt)	4.42E+00 (rt)	2.30E+00 (rt)	1.49E+00 (rt)	1.43E+00 (rt)
Aroclor-1232	2.96E-02 (rt)	ERR (bi)	9.87E-02 (rt)	6.39E-02 (rt)	6.13E-02 (rt)
Aroclor-1260	9.88E-04 (rt)	6.31E-03 (rt)	3.29E-03 (rt)	2.13E-03 (rt)	2.04E-03 (rt)
Aroclor-1254	2.80E-02 (mk)	3.22E-01 (bi)	1.00E+00 (rb)	6.47E-01 (rb)	6.21E-01 (rb)
Aroclor-1248	1.13E-02 (mo)	7.24E-02 (mo)	2.80E-01 (rb)	1.81E-01 (rb)	2.34E-02 (mo)
Methylene Chloride	1.16E+00 (rt)	7.38E+00 (rt)	3.85E+00 (rt)	2.49E+00 (rt)	2.39E+00 (rt)
Carbon Disulfide	3.30E-01 (rb)	2.11E+00 (rb)	1.10E+00 (rb)	7.12E-01 (rb)	6.84E-01 (rb)
1,1-Dichloroethene	5.53E+00 (rt)	3.53E+01 (rt)	1.84E+01 (rt)	1.19E+01 (rt)	1.14E+01 (rt)
1,2-Dichloroethene (total)	9.88E-01 (rt)	6.31E+00 (rt)	3.29E+00 (rt)	2.13E+00 (rt)	2.04E+00 (rt)
Chloroform	7.51E+00 (rt)	4.80E+01 (rt)	2.50E+01 (rt)	3.90E+01 (dg)	1.55E+01 (rt)
2-Butanone	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	8.71E+01 (rt)	5.57E+02 (rt)	2.90E+02 (rt)	1.88E+02 (rt)	1.80E+02 (rt)
Trichloroethene	1.98E+01 (rt)	1.26E+02 (rt)	6.58E+01 (rt)	4.26E+01 (rt)	4.09E+01 (rt)
1,1,2-Trichloroethane	3.40E-02 (mo)	2.17E-01 (mo)	1.13E-01 (mo)	7.32E-02 (mo)	7.03E-02 (mo)
Benzene	1.98E-02 (rt)	1.26E-01 (rt)	6.58E-02 (rt)	4.26E-02 (rt)	4.09E-02 (rt)
1,1,2,2-Tetrachloroethane	1.50E+01 (rt)	9.59E+01 (rt)	5.00E+01 (rt)	3.24E+01 (rt)	3.11E+01 (rt)
Tetrachloroethene	2.77E-01 (rt)	1.77E+00 (rt)	9.21E-01 (rt)	5.96E-01 (rt)	5.72E-01 (rt)
Toluene	4.41E+00 (rt)	2.81E+01 (rt)	1.47E+01 (rt)	9.49E+00 (rt)	9.12E+00 (rt)
Ethylbenzene	1.92E+00 (rt)	1.23E+01 (rt)	6.39E+00 (rt)	4.13E+00 (rt)	3.97E+00 (rt)
Xylenes	3.54E+01 (rt)	2.26E+02 (rt)	1.18E+02 (rt)	7.62E+01 (rt)	7.32E+01 (rt)
Xylenes (total)	3.54E+01 (rt)	2.26E+02 (rt)	1.18E+02 (rt)	7.62E+01 (rt)	7.32E+01 (rt)
Vinyl chloride	3.36E-02 (rt)	2.15E-01 (rt)	1.12E-01 (rt)	7.24E-02 (rt)	6.95E-02 (rt)
Acetone	1.98E+00 (rt)	1.26E+01 (rt)	6.58E+00 (rt)	4.26E+00 (rt)	4.09E+00 (rt)
2-Hexanone	NA	NA	NA	NA	NA

Note: The following abbreviations indicate which species was used to develop the TRV

(ct) = cattle
(rt) = rat
(bi) = bird
(gp) = guinea pig
(rb) = rabbit
(dg) = dog
(mo) = mouse
(mk) = mink

NA - No Data Available

REGION IV TERRESTRIAL REFERENCE VALUE CALCULATION
SITE 73 - AMPHIBIOUS MAINTENANCE FACILITY
REMEDIAL INVESTIGATION, CTO-0312
MCB, CAMP LEJEUNE, NORTH CAROLINA

Chemical	Whitetailed Deer (mg/kg/day)	Bobwhite Quail (mg/kg/day)	Eastern Cottontail (mg/kg/day)	Red Fox (mg/kg/day)	Racoon (mg/kg/day)
Aldrin	6.51E-01 (ct)	3.16E-02 (rt)	1.65E-02 (rt)	3.25E-02 (dg)	1.02E-02 (rt)
Alpha-chlordane	1.30E+00 (ct)	1.53E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)	2.25E-02 (rt)
Gamma-chlordane	1.30E+00 (ct)	1.53E+00 (bi)	3.62E-02 (rt)	9.76E-02 (dg)	2.25E-02 (rt)
Dieldrin	6.51E-01 (ct)	5.37E-02 (bi)	3.29E-03 (rt)	6.51E-03 (dg)	2.04E-03 (rt)
4,4'-DDD	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
4,4'-DDE	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
4,4'-DDT	1.58E-01 (rt)	8.80E-02 (bi)	5.26E-01 (rt)	3.41E-01 (rt)	3.27E-01 (rt)
Endosulfan	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan I	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan II	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endosulfan sulfate	1.19E-01 (rt)	1.32E+01 (bi)	3.95E-01 (rt)	7.42E-01 (dg)	2.45E-01 (rt)
Endrin	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Endrin aldehyde	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Endrin ketone	4.94E-02 (rt)	5.37E-01 (bi)	1.65E-01 (rt)	3.25E-02 (dg)	1.02E-01 (rt)
Heptachlor	2.96E-02 (rt)	1.89E-01 (rt)	9.87E-02 (rt)	6.39E-02 (rt)	6.13E-02 (rt)
Heptachlor epoxide	7.55E-05 (dg)	4.82E-04 (dg)	2.51E-04 (dg)	1.63E-04 (dg)	1.56E-04 (dg)
Aroclor-1221	6.91E-01 (rt)	4.42E+00 (rt)	2.30E+00 (rt)	1.49E+00 (rt)	1.43E+00 (rt)
Aroclor-1232	2.96E-02 (rt)	ERR (bi)	9.87E-02 (rt)	6.39E-02 (rt)	6.13E-02 (rt)
Aroclor-1260	9.88E-04 (rt)	6.31E-03 (rt)	3.29E-03 (rt)	2.13E-03 (rt)	2.04E-03 (rt)
Aroclor-1254	2.80E-02 (mk)	3.22E-01 (bi)	1.00E+00 (rb)	6.47E-01 (rb)	6.21E-01 (rb)
Aroclor-1248	1.13E-02 (mo)	7.24E-02 (mo)	2.80E-01 (rb)	1.81E-01 (rb)	2.34E-02 (mo)
Methylene Chloride	1.16E+00 (rt)	7.38E+00 (rt)	3.85E+00 (rt)	2.49E+00 (rt)	2.39E+00 (rt)
Carbon Disulfide	3.30E-01 (rb)	2.11E+00 (rb)	1.10E+00 (rb)	7.12E-01 (rb)	6.84E-01 (rb)
1,1-Dichloroethene	5.53E+00 (rt)	3.53E+01 (rt)	1.84E+01 (rt)	1.19E+01 (rt)	1.14E+01 (rt)
1,2-Dichloroethene (total)	9.88E-01 (rt)	6.31E+00 (rt)	3.29E+00 (rt)	2.13E+00 (rt)	2.04E+00 (rt)
Chloroform	7.51E+00 (rt)	4.80E+01 (rt)	2.50E+01 (rt)	3.90E+01 (dg)	1.55E+01 (rt)
2-Butanone	NA	NA	NA	NA	NA
1,1,1-Trichloroethane	8.71E+01 (rt)	5.57E+02 (rt)	2.90E+02 (rt)	1.88E+02 (rt)	1.80E+02 (rt)
Trichloroethene	1.98E+01 (rt)	1.26E+02 (rt)	6.58E+01 (rt)	4.26E+01 (rt)	4.09E+01 (rt)
1,1,2-Trichloroethane	3.40E-02 (mo)	2.17E-01 (mo)	1.13E-01 (mo)	7.32E-02 (mo)	7.03E-02 (mo)
Benzene	1.98E-02 (rt)	1.26E-01 (rt)	6.58E-02 (rt)	4.26E-02 (rt)	4.09E-02 (rt)
1,1,2,2-Tetrachloroethane	1.50E+01 (rt)	9.59E+01 (rt)	5.00E+01 (rt)	3.24E+01 (rt)	3.11E+01 (rt)
Tetrachloroethene	2.77E-01 (rt)	1.77E+00 (rt)	9.21E-01 (rt)	5.96E-01 (rt)	5.72E-01 (rt)
Toluene	4.41E+00 (rt)	2.81E+01 (rt)	1.47E+01 (rt)	9.49E+00 (rt)	9.12E+00 (rt)
Ethylbenzene	1.92E+00 (rt)	1.23E+01 (rt)	6.39E+00 (rt)	4.13E+00 (rt)	3.97E+00 (rt)
Xylenes	3.54E+01 (rt)	2.26E+02 (rt)	1.18E+02 (rt)	7.62E+01 (rt)	7.32E+01 (rt)
Xylenes (total)	3.54E+01 (rt)	2.26E+02 (rt)	1.18E+02 (rt)	7.62E+01 (rt)	7.32E+01 (rt)
Vinyl chloride	3.36E-02 (rt)	2.15E-01 (rt)	1.12E-01 (rt)	7.24E-02 (rt)	6.95E-02 (rt)
Acetone	1.98E+00 (rt)	1.26E+01 (rt)	6.58E+00 (rt)	4.26E+00 (rt)	4.09E+00 (rt)
2-Hexanone	NA	NA	NA	NA	NA

Note: The following abbreviations indicate which species was used to develop the TRV

(ct) = cattle
(rt) = rat
(bi) = bird
(gp) = guinea pig
(rb) = rabbit
(dg) = dog
(mo) = mouse
(mk) = mink

NA - No Data Available

EQUATIONS TO CALCULATE EXPOSURE FOR THE RED FOX

Food Source ingestion of:	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw = Constituent concentration in water Iw = Ingestion of water Cm = Constituent concentration in small mammal Im = Ingestion of small mammal Cs = Constituent concentration in soil Bv = Vegetation biotransfer factor Iv = Ingestion of vegetation Is = Incidential ingestion of soil H = Ratio of home range area to site area Bb = Tissue biotransfer factor BW = Body weight
Vegetation (Iv) = 20 percent Small mammals (Im) = 80 percent												
Parameters (Red Fox)	6.009E-01	1.682E-02	3.855E-01	NA	NA	4.807E-01	1.202E-01	4.535E+00	1.245E+03	4.050E+01	3.252E-02	$E=\frac{(Cw)(Iw)+[(cm)(Im)+(Cs)(Bv)(Iv)+(Cs)(Is)][H]}{BW}$
Parameters (Small Mammal)	1.120E-01	2.690E-03	6.520E-02	NA	NA	NA	1.120E-01	3.725E-01	3.200E-02	1.000E+00	1.000E+00	$Cm=\frac{[(Cw)(Iw)+((Cs)(Bv)(Iv)+(Cs)(Is))(H)][Bb]}{BW}$

Constituent of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/L) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Ingestion-to-tissue Biotransfer Factor (Bb)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d) (E)	Terrestrial Reference Value (mg/kg/day) (TRV)	Quotient Ratio (= E/TRV)
Chloroform	3.089E+00	0.003	0.00E+00	NA	2.00E-06	1.05E-09	2.55E-04	3.90E+01	6.53E-06
Toluene	9.324E-01	0.005	1.00E-03	NA	1.58E-05	1.84E-08	4.26E-04	9.49E+00	4.49E-05
Xylenes	5.475E-01	0	4.00E-03	NA	3.98E-05	2.74E-08	2.37E-06	7.62E+01	3.11E-08
Benzo(b)fluoranthene	1.010E-02	0	3.30E-01	NA	3.98E-02	1.35E-04	4.32E-05	1.88E-01	2.30E-04
Chrysene	1.965E-02	0	1.90E-01	NA	1.26E-02	3.14E-05	2.62E-05	1.88E-01	1.40E-04
Di-n-butylphthalate	8.496E-02	0	5.10E-01	NA	1.00E-03	1.67E-05	9.89E-05	5.32E+01	1.86E-06
2,4-Dinitrophenol	4.605E+00	0	2.00E-01	NA	1.00E-06	2.78E-07	8.18E-04	8.52E+00	9.60E-05
Fluoranthene	4.426E-02	0	3.80E-01	NA	3.09E-03	2.41E-05	6.04E-05	2.35E+00	2.58E-05
Pyrene	4.367E-02	0	4.50E-01	NA	3.16E-03	2.90E-05	7.13E-05	1.41E+00	5.07E-05
Gamma-chlordane	7.741E-03	0	1.43E-03	NA	6.31E-02	8.62E-07	1.85E-07	9.76E-02	1.90E-06
4,4'-DDD	1.154E-02	0	1.09E-02	NA	3.16E-02	3.70E-06	1.44E-06	3.41E-01	4.23E-06
4,4'-DDE	4.546E-03	0	2.74E-03	NA	1.58E-01	3.73E-06	3.54E-07	3.41E-01	1.04E-06
4,4'-DDT	6.776E-03	0	2.60E-03	NA	7.94E-02	1.91E-06	3.35E-07	3.41E-01	9.83E-07
Aluminum	4.000E-03	0.5	3.49E+03	NA	1.50E-03	4.43E-02	4.76E-01	1.95E+01	2.44E-02
Antimony	2.000E-01	0.216	0.00E+00	NA	1.00E-03	3.78E-05	1.84E-02	1.49E-02	1.23E+00
Arsenic	4.000E-02	0	0.00E+00	NA	2.00E-03	0.00E+00	0.00E+00	2.37E-02	0.00E+00
Barium	1.500E-01	0.00915	1.20E+01	NA	1.50E-04	9.47E-05	3.78E-03	1.07E-01	3.55E-02
Cadmium	5.500E-01	0	8.00E-01	NA	5.40E-04	7.46E-05	4.76E-04	9.76E-02	4.88E-03
Chromium	7.500E-03	0	6.96E+00	NA	5.50E-03	3.63E-04	8.86E-04	1.03E+00	8.63E-04
Cobalt	2.000E-02	0	3.11E+00	NA	2.00E-02	8.23E-04	4.32E-04	3.75E-01	1.15E-03
Copper	4.000E-01	0	2.98E+00	NA	1.00E-02	3.80E-03	1.40E-03	7.80E+00	1.80E-04
Iron	4.000E-03	1.75747	2.68E+03	NA	2.00E-02	4.57E-01	4.83E-01	1.88E+01	2.57E-02
Lead	4.500E-02	0	1.77E+01	NA	3.00E-04	1.10E-04	2.82E-03	3.41E+00	8.28E-04
Manganese	2.500E-01	0.01924	1.12E+01	NA	4.00E-04	3.72E-04	5.41E-03	3.75E+00	1.44E-03
Molybdenum	2.500E-01	0	0.00E+00	NA	6.00E-03	0.00E+00	0.00E+00	8.52E-03	0.00E+00
Silver	4.000E-01	0.00338	0.00E+00	NA	3.00E-03	1.77E-06	2.87E-04	3.40E-02	8.46E-03
Vanadium	5.500E-03	0	4.37E+00	NA	2.50E-03	9.70E-05	5.48E-04	2.77E-01	1.98E-03
Zinc	1.500E+00	0.09729	3.45E+01	NA	1.00E-01	1.58E+00	6.25E-02	1.30E+00	4.80E-02
									1.39E+00

ND - Not Detected
NA - Not Applicable

EQUATIONS USED TO CALCULATE EXPOSURE FOR THE BOBWHITE QUAIL

Food Source ingestion of: Vegetation(Iv) = 100 percent	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw=constituent conc. in water Cs=constituent conc. in soil Cwo=constituent conc. in worms Cfr=constituent conc. in fruit H=ratio of home range area to site area
Parameters	1.350E-02	1.107E-03	1.910E-02	NA	NA	NA	1.350E-02	1.736E-01	2.624E+01	4.050E+01	1.000E+00	$E=\frac{(Cw)(Iw) + [(Cs)(Bv)(Iv)+(Cs)(Is)][H]}{BW}$

Constituent of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/L) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d) (E)	Terrestrial Reference Value (mg/kg/day) (TRV)	Quotient Ratio (= E/TRV)
Chloroform	3.089E+00	0.003	0.00E+00	NA	NA	NA	0.000	4.80E+01	6.88E-06
Toluene	9.324E-01	0.005	1.00E-03	NA	NA	NA	0.001	2.81E+01	2.23E-05
Xylenes	5.475E-01	0	4.00E-03	NA	NA	NA	0.000	2.26E+02	8.66E-07
Benzo(b)fluoranthene	1.010E-02	0	3.30E-01	NA	NA	NA	0.002	5.57E-01	4.25E-03
Chrysene	1.965E-02	0	1.90E-01	NA	NA	NA	0.002	5.57E-01	2.70E-03
Di-n-butylphthalate	8.496E-02	0	5.10E-01	NA	NA	NA	0.007	1.06E-01	6.25E-02
2,4-Dinitrophenol	4.605E+00	0	2.00E-01	NA	NA	NA	0.073	1.44E+01	5.05E-03
Fluoranthene	4.426E-02	0	3.80E-01	NA	NA	NA	0.004	6.96E+00	5.36E-04
Pyrene	4.367E-02	0	4.50E-01	NA	NA	NA	0.004	4.17E+00	1.05E-03
Gamma-chlordane	7.741E-03	0	1.43E-03	NA	NA	NA	0.000	1.53E+00	6.51E-06
4,4'-DDD	1.154E-02	0	1.09E-02	NA	NA	NA	0.000	8.80E-02	9.03E-04
4,4'-DDE	4.546E-03	0	2.74E-03	NA	NA	NA	0.000	8.80E-02	2.10E-04
4,4'-DDT	6.776E-03	0	2.60E-03	NA	NA	NA	0.000	8.80E-02	2.04E-04
Aluminum	4.000E-03	0.5	3.49E+03	NA	NA	NA	23.410	1.42E+01	1.65E+00
Antimony	2.000E-01	0.216	0.00E+00	NA	NA	NA	0.024	4.42E-02	5.38E-01
Arsenic	4.000E-02	0	0.00E+00	NA	NA	NA	0.000	9.19E+00	0.00E+00
Barium	1.500E-01	0.00915	1.20E+01	NA	NA	NA	0.218	1.42E+00	1.53E-01
Cadmium	5.500E-01	0	8.00E-01	NA	NA	NA	0.039	2.60E+00	1.51E-02
Chromium	7.500E-03	0	6.96E+00	NA	NA	NA	0.048	7.11E+01	6.82E-04
Cobalt	2.000E-02	0	3.11E+00	NA	NA	NA	0.025	7.11E-01	3.47E-02
Copper	4.000E-01	0	2.98E+00	NA	NA	NA	0.112	2.13E+01	5.24E-03
Iron	4.000E-03	1.75747	2.68E+03	NA	NA	NA	18.085	7.11E+01	2.54E-01
Lead	4.500E-02	0	1.77E+01	NA	NA	NA	0.175	3.49E+00	5.01E-02
Manganese	2.500E-01	0.01924	1.12E+01	NA	NA	NA	0.292	1.42E+02	2.06E-03
Molybdenum	2.500E-01	0	0.00E+00	NA	NA	NA	0.000	2.52E-02	0.00E+00
Silver	4.000E-01	0.00338	0.00E+00	NA	NA	NA	0.000	7.11E+00	5.23E-05
Vanadium	5.500E-03	0	4.37E+00	NA	NA	NA	0.030	2.04E+01	1.46E-03
Zinc	1.500E+00	0.09729	3.45E+01	NA	NA	NA	4.254	7.11E+01	5.99E-02
									2.84E+00

ND - Not Detected
NA - Not Applicable

EQUATIONS [illegible] TO CALCULATE EXPOSURE FOR THE EASTERN COTTONTAIL RABBIT

Food Source ingestion of: Vegetation(Iv) = 100 percent	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E = Total exposure Cw = Constituent concentration in water Iw = Ingestion of water Cs = Constituent concentration in soil Bv = Vegetation biotransfer factor Iv = Ingestion of vegetation Is = Incidential ingestion of soil H = Ratio of home range area to site area BW = Body weight
Parameters	2.370E-01	5.688E-03	1.192E-01	NA	NA	NA	2.370E-01	1.229E+00	9.297E+00	4.050E+01	1.000E+00	$E=\frac{(Cw)(Iw) + [(Cs)(Bv)(Iv) + (Cs)(Is)][H]}{BW}$

Constituent of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/L) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d) (E)	Terrestrial Reference Value (mg/kg/day) (TRV)	Quotient Ratio (= E/TRV)
Chloroform	3.089E+00	0.003	0.00E+00	NA	NA	NA	2.91E-04	2.50E+01	1.16E-05
Toluene	9.324E-01	0.005	1.00E-03	NA	NA	NA	6.70E-04	1.47E+01	4.56E-05
Xylenes	5.475E-01	0	4.00E-03	NA	NA	NA	4.41E-04	1.18E+02	3.74E-06
Benzo(b)fluoranthene	1.010E-02	0	3.30E-01	NA	NA	NA	2.17E-03	2.90E-01	7.48E-03
Chrysene	1.965E-02	0	1.90E-01	NA	NA	NA	1.60E-03	2.90E-01	5.52E-03
Di-n-butylphthalate	8.496E-02	0	5.10E-01	NA	NA	NA	1.07E-02	8.23E+01	1.30E-04
2,4-Dinitrophenol	4.605E+00	0	2.00E-01	NA	NA	NA	1.79E-01	1.32E+01	1.36E-02
Fluoranthene	4.426E-02	0	3.80E-01	NA	NA	NA	5.00E-03	3.63E+00	1.38E-03
Pyrene	4.367E-02	0	4.50E-01	NA	NA	NA	5.87E-03	2.18E+00	2.70E-03
Gamma-chlordane	7.741E-03	0	1.43E-03	NA	NA	NA	8.76E-06	3.62E-02	2.42E-04
4,4'-DDD	1.154E-02	0	1.09E-02	NA	NA	NA	7.49E-05	5.26E-01	1.42E-04
4,4'-DDE	4.546E-03	0	2.74E-03	NA	NA	NA	1.51E-05	5.26E-01	2.87E-05
4,4'-DDT	6.776E-03	0	2.60E-03	NA	NA	NA	1.54E-05	5.26E-01	2.93E-05
Aluminum	4.000E-03	0.5	3.49E+03	NA	NA	NA	1.89E+01	1.16E+01	1.63E+00
Antimony	2.000E-01	0.216	0.00E+00	NA	NA	NA	2.10E-02	4.06E+00	5.16E-03
Arsenic	4.000E-02	0	0.00E+00	NA	NA	NA	0.00E+00	2.90E+00	0.00E+00
Barium	1.500E-01	0.00915	1.20E+01	NA	NA	NA	4.05E-01	1.16E+00	3.49E-01
Cadmium	5.500E-01	0	8.00E-01	NA	NA	NA	8.86E-02	2.90E-02	3.05E+00
Chromium	7.500E-03	0	6.96E+00	NA	NA	NA	4.23E-02	5.80E+01	7.29E-04
Cobalt	2.000E-02	0	3.11E+00	NA	NA	NA	2.64E-02	5.80E-01	4.55E-02
Copper	4.000E-01	0	2.98E+00	NA	NA	NA	2.44E-01	1.16E+01	2.10E-02
Iron	4.000E-03	1.75747	2.68E+03	NA	NA	NA	1.46E+01	2.90E+01	5.04E-01
Lead	4.500E-02	0	1.77E+01	NA	NA	NA	2.36E-01	1.74E+00	1.35E-01
Manganese	2.500E-01	0.01924	1.12E+01	NA	NA	NA	5.96E-01	2.32E+01	2.57E-02
Molybdenum	2.500E-01	0	0.00E+00	NA	NA	NA	0.00E+00	1.32E-02	0.00E+00
Silver	4.000E-01	0.00338	0.00E+00	NA	NA	NA	3.28E-04	5.25E-02	6.24E-03
Vanadium	5.500E-03	0	4.37E+00	NA	NA	NA	2.49E-02	5.80E-02	4.29E-01
Zinc	1.500E+00	0.09729	3.45E+01	NA	NA	NA	1.02E+01	2.90E+01	3.50E-01
									6.59E+00

ND - Not Detected
NA - Not Applicable

EQUATIONS USED TO CALCULATE EXPOSURE FOR THE WHITETAILED DEER

Food Source ingestion of: Vegetation(Iv) = 100 percent	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Mammal Ingestion (Im in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E = Total exposure Cw = Constituent concentration in water Iw = Ingestion of water Cs = Constituent concentration in soil Bv = Vegetation biotransfer factor Iv = Ingestion of vegetation Is = Incidential ingestion of soil H = Ratio of home range area to site area BW = Body weight
Parameters	1.600E+00	1.850E-02	1.100E+00	NA	NA	NA	1.600E+00	4.540E+01	4.540E+02	4.050E+01	8.921E-02	$E=\frac{(Cw)(Iw) + [(Cs)(Bv)(Iv) + (Cs)(Is)][H]}{BW}$

Constituent of Concern	Soil to Plant Transfer Coefficient (Bv)	Constituent Concentration in Water (mg/L) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Constituent Concentration in Fruit (mg/kg) (Cfr)	Constituent Concentration in Mammals (mg/kg) (Cm)	Total Exposure (mg/kg/d) (E)	Terrestrial Reference Value (mg/kg/day) (TRV)	Quotient Ratio (= E/TRV)
Chloroform	3.089E+00	0.003	0.00E+00	NA	NA	NA	7.27E-05	7.51E+00	9.68E-06
Toluene	9.324E-01	0.005	1.00E-03	NA	NA	NA	1.24E-04	4.41E+00	2.82E-05
Xylenes	5.475E-01	0	4.00E-03	NA	NA	NA	7.03E-06	3.54E+01	1.99E-07
Benzo(b)fluoranthene	1.010E-02	0	3.30E-01	NA	NA	NA	2.25E-05	8.71E-02	2.58E-04
Chrysene	1.965E-02	0	1.90E-01	NA	NA	NA	1.86E-05	8.71E-02	2.14E-04
Di-n-butylphthalate	8.496E-02	0	5.10E-01	NA	NA	NA	1.55E-04	2.47E+01	6.27E-06
2,4-Dinitrophenol	4.605E+00	0	2.00E-01	NA	NA	NA	2.90E-03	3.95E+00	7.35E-04
Fluoranthene	4.426E-02	0	3.80E-01	NA	NA	NA	6.67E-05	1.09E+00	6.12E-05
Pyrene	4.367E-02	0	4.50E-01	NA	NA	NA	7.81E-05	6.53E-01	1.20E-04
Gamma-chlordane	7.741E-03	0	1.43E-03	NA	NA	NA	8.68E-08	1.30E+00	6.67E-08
4,4'-DDD	1.154E-02	0	1.09E-02	NA	NA	NA	7.94E-07	1.58E-01	5.02E-06
4,4'-DDE	4.546E-03	0	2.74E-03	NA	NA	NA	1.39E-07	1.58E-01	8.78E-07
4,4'-DDT	6.776E-03	0	2.60E-03	NA	NA	NA	1.50E-07	1.58E-01	9.47E-07
Aluminum	4.000E-03	0.5	3.49E+03	NA	NA	NA	1.83E-01	6.51E+00	2.81E-02
Antimony	2.000E-01	0.216	0.00E+00	NA	NA	NA	5.23E-03	6.91E-03	7.57E-01
Arsenic	4.000E-02	0	0.00E+00	NA	NA	NA	0.00E+00	3.25E-01	0.00E+00
Barium	1.500E-01	0.00915	1.20E+01	NA	NA	NA	6.33E-03	1.30E-01	4.87E-02
Cadmium	5.500E-01	0	8.00E-01	NA	NA	NA	1.41E-03	3.25E-03	4.34E-01
Chromium	7.500E-03	0	6.96E+00	NA	NA	NA	4.17E-04	6.51E+00	6.41E-05
Cobalt	2.000E-02	0	3.11E+00	NA	NA	NA	3.09E-04	6.51E-02	4.74E-03
Copper	4.000E-01	0	2.98E+00	NA	NA	NA	3.86E-03	6.51E-01	5.93E-03
Iron	4.000E-03	1.75747	2.68E+03	NA	NA	NA	1.73E-01	6.51E+00	2.67E-02
Lead	4.500E-02	0	1.77E+01	NA	NA	NA	3.15E-03	1.95E-01	1.61E-02
Manganese	2.500E-01	0.01924	1.12E+01	NA	NA	NA	9.71E-03	1.30E+00	7.46E-03
Molybdenum	2.500E-01	0	0.00E+00	NA	NA	NA	0.00E+00	3.95E-03	0.00E+00
Silver	4.000E-01	0.00338	0.00E+00	NA	NA	NA	8.19E-05	1.58E-02	5.19E-03
Vanadium	5.500E-03	0	4.37E+00	NA	NA	NA	2.34E-04	3.25E-01	7.21E-04
Zinc	1.500E+00	0.09729	3.45E+01	NA	NA	NA	1.66E-01	3.25E+00	5.11E-02
									1.39E+00

ND - Not Detected
NA - Not Applicable

EQUATIONS TO CALCULATE EXPOSURE FOR THE RACCOON

Food Source ingestion of: Fruit (Ifr) = 40 percent Fish (If) = 60 percent	Feeding Rate (I in kg/d)	Incidental Soil Ingestion (Is in kg/d)	Rate of Drinking Water Ingestion (Iw in l/d)	Rate of Worm Ingestion (Iwo in kg/d)	Rate of Fruit Ingestion (Ifr in kg/d)	Rate of Fish Ingestion (If in kg/d)	Rate of Vegetation Ingestion (Iv in kg/d)	Body Weight (BW) (kg)	Home Range Size (acres)	Contaminated Area (acres)	H Ratio	Equation Used to Calculate Total Exposure E=total exposure Cw = Constituent concentration in water Iw = Ingestion of water Cf = Constituent concentration in fish If = Ingestion of fish Cs = Constituent concentration in soil Br = Vegetation biotransfer factor (fruit) Ifr = Ingestion of fruit Is = Incidential ingestion of soil H = Ratio of home range area to site area BW = Body weight
Parameters	2.143E-01	2.014E-02	4.224E-01	NA	8.571E-02	1.286E-01	NA	5.120E+00	2.570E+02	4.050E+01	1.576E-01	$E=\frac{(Cw)(Iw) + (Cf)(If) + [(Cs)(Br)(Ifr) + (Cs)(Is)] [H]}{BW}$

Constituent of Concern	Soil to Plant Transfer Coefficient (fruit) (Br)	Constituent Concentration in Water (mg/L) (Cw)	Constituent Concentration in Soil (mg/kg) (Cs)	Constituent Concentration in Worms (mg/kg) (Cwo)	Fish Bioconcentration Factor (BCF)	Constituent Concentration in Fishes (mg/kg) (Cf)	Total Exposure (mg/kg/d) (E)	Terrestrial Reference Value (mg/kg/day) (TRV)	Quotient Ratio (= E/TRV)
Chloroform	3.089E+00	0.003	0.00E+00	NA	3.750	0.00E+00	2.48E-04	1.55E+01	1.59E-05
Toluene	9.324E-01	0.005	1.00E-03	NA	10.700	0.00E+00	4.16E-04	9.12E+00	4.56E-05
Xylenes	5.475E-01	0	4.00E-03	NA	2.200	0.00E+00	8.26E-06	7.32E+01	1.13E-07
Benzo(b)fluoranthene	1.010E-02	0	3.30E-01	NA	30.000	0.00E+00	2.13E-04	1.80E-01	1.18E-03
Chrysene	1.965E-02	0	1.90E-01	NA	30.000	0.00E+00	1.28E-04	1.80E-01	7.08E-04
Di-n-butylphthalate	8.496E-02	0	5.10E-01	NA	89.000	0.00E+00	4.30E-04	5.11E+01	8.42E-06
2,4-Dinitrophenol	4.605E+00	0	2.00E-01	NA	1.500	0.00E+00	2.55E-03	8.18E+00	3.12E-04
Fluoranthene	4.426E-02	0	3.80E-01	NA	1150.000	0.00E+00	2.80E-04	2.25E+00	1.24E-04
Pyrene	4.367E-02	0	4.50E-01	NA	30.000	0.00E+00	3.31E-04	1.35E+00	2.45E-04
Gamma-chlordane	7.741E-03	0	1.43E-03	NA	14100.000	0.00E+00	9.16E-07	2.25E-02	4.07E-05
4,4'-DDD	1.154E-02	0	1.09E-02	NA	53600.000	0.00E+00	7.11E-06	3.27E-01	2.17E-05
4,4'-DDE	4.546E-03	0	2.74E-03	NA	53600.000	0.00E+00	1.73E-06	3.27E-01	5.29E-06
4,4'-DDT	6.776E-03	0	2.60E-03	NA	53600.000	0.00E+00	1.66E-06	3.27E-01	5.06E-06
Aluminum	6.500E-04	0.5	3.49E+03	NA	231.000	1.19E+02	5.20E+00	3.48E-01	1.49E+01
Antimony	3.000E-02	0.216	0.00E+00	NA	1.000	0.00E+00	1.78E-02	1.43E-02	1.25E+00
Arsenic	6.000E-03	0	0.00E+00	NA	44.000	2.40E+00	6.03E-02	2.27E-02	2.65E+00
Barium	1.500E-02	0.00915	1.20E+01	NA	8.000	1.50E+00	4.64E-02	1.02E-01	4.53E-01
Cadmium	1.500E-01	0	8.00E-01	NA	64.000	0.00E+00	8.13E-04	1.64E-03	4.96E-01
Chromium	4.500E-03	0	6.96E+00	NA	16.000	7.10E-01	2.22E-02	9.86E-01	2.25E-02
Cobalt	7.000E-03	0	3.11E+00	NA	40.000	0.00E+00	1.99E-03	3.61E-01	5.51E-03
Copper	2.500E-01	0	2.98E+00	NA	36.000	1.30E+00	3.65E-02	7.49E+00	4.87E-03
Iron	1.000E-03	1.75747	2.68E+03	NA	ND	1.37E+02	5.25E+00	1.80E+01	2.91E-01
Lead	9.000E-03	0	1.77E+01	NA	49.000	2.70E-01	1.82E-02	3.27E+00	5.55E-03
Manganese	5.000E-02	0.01924	1.12E+01	NA	35.000	4.60E+00	1.26E-01	3.60E+00	3.49E-02
Molybdenum	6.000E-02	0	0.00E+00	NA	ND	2.20E-01	5.52E-03	8.18E-03	6.75E-01
Silver	1.000E-01	0.00338	0.00E+00	NA	0.500	0.00E+00	2.79E-04	3.26E-02	8.55E-03
Vanadium	3.000E-03	0	4.37E+00	NA	ND	2.30E+00	6.05E-02	2.66E-01	2.28E-01
Zinc	9.000E-01	0.09729	3.45E+01	NA	47.000	2.66E+01	7.79E-01	6.54E+01	1.19E-02
									2.11E+01

ND - Not Detected
NA - Not Applicable