

**Draft Final**  
**Remedial Investigation**  
**Addendum**  
**for the**  
**Dry Cleaning Facilities Area**  
**(Operable Unit 003)**  
**at**  
**Fort Riley, Kansas**

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## LIST OF ACRONYMS AND ABBREVIATIONS (continued)

AFCEE	Air Force Center for Environmental Excellence
ASTM	American Society of Testing Materials
Army	U.S. Department of the Army
ATV	all-terrain vehicle
bgs	below ground surface
BLRA	Baseline Risk Assessment
BMcD.	Burns & McDonnell Engineering Company, Inc.
BOD	Biological Oxygen Demand
BRAC	Base Realignment and Closure
CAS	Continental Analytical Services
cfs	cubic feet per second
cis-1,2-DCE	cis-1,2-dichloroethylene
Cl <sup>-</sup>	chloride
cm <sup>2</sup>	square centimeters
cm/sec	centimeters per second
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO <sub>2</sub>	carbon dioxide
COD	chemical oxygen demand
COPCs	Chemicals of Potential Concern
COPEC	Chemicals of Potential Ecological Concern
CSM	Conceptual Site Model
DCE	dichloroethylene
DCF	Dry Cleaning Facilities
DCFA	Dry Cleaning Facilities Area
DCF96-3 Work Plan	<i>Work Plan, Monitoring Well DCF96-36 Detections at Fort Riley, Kansas</i>
DCF96-3 Work Plan Addendum	<i>Amended Work Plan, Monitoring Well DCF96-36 Detections at Fort Riley, Kansas</i>
DDT	dichlorodiphenyltrichloroethane
DO	dissolved oxygen
DSR	Data Summary Report
EHQ	Ecological Hazard Quotient
EPS	Environmental Priority Service
ERA	Ecological Risk Assessment
°F	degrees Fahrenheit
Fe (II)	ferrous iron
FFA	Federal Facility Agreement
FR	Federal Register
FS	Feasibility Study
FSP	Field Sampling Plan
ft/ft	feet per foot

## LIST OF ACRONYMS AND ABBREVIATIONS (continued)

GC	Gas Chromatograph
gpm	gallons per minute
GPS	global positioning system
H <sub>2</sub>	molecular hydrogen
HEAST	Health Effects Assessment Summary Tables
HHBRA	Human Health Baseline Risk Assessment
HSA	hollow-stem auger
I	hydraulic gradient
in	inches
in/yr	inches per year
IRIS	<i>Integrated Risk Information System</i>
J	estimated (chemical analysis)
K	hydraulic conductivity
K <sub>H</sub>	Henry's Law constant
KDHE	Kansas Department of Health and Environment
KDWP	Kansas Department of Wildlife and Parks
kg	kilogram
KSWQC	Kansas Surface Water Quality Criteria
K <sub>ow</sub>	octanol-water partition coefficient
Law	Law Environmental, Inc.
LBA	Louis Berger & Associates
LLNL	Lawrence Livermore National Laboratory
LOAELs	Lowest Observed Adverse Effect Levels
m <sup>3</sup> /hr	cubic meters per hour (of air)
MAAF	Marshall Army Airfield
MCL	Maximum Contaminant Level
MF	modifying factors
mg/cm <sup>2</sup>	milligrams per square centimeter
mg/day	milligrams per day
mg/kg	milligrams per kilogram
mg/kg/day	milligrams of chemical per kilogram body weight per day
mg/L	milligrams/Liter
mg/m <sup>3</sup>	milligrams per cubic meter
ml/min	milliliters per minute
msl	mean sea level
MS/MSD	Matrix Spike/Matrix Spike Duplicate
mV	millivolts
µg/kg	micrograms per kilogram
µg/L	micrograms per Liter
n <sub>e</sub>	effective porosity range
NA	natural attenuation

## LIST OF ACRONYMS AND ABBREVIATIONS (continued)

NAWQC	National Ambient Water Quality Criteria
NCI	National Cancer Institute
NCP	National Contingency Plan
NO <sub>2</sub>	nitrite
NOAELs	No Observed Adverse Effect Levels
NPL	National Priority List
NRWQC	National Recommended Water Quality Criteria
NWI	National Wetlands Inventory
ORNL	Oak Ridge National Laboratory
ORP	oxidation reduction potential
OU	Operable Unit
PA/SI	Preliminary Assessment/Site Investigation
PCE	tetrachloroethylene
PEF	particle emission factor
PID	photoionization detector
ppm	part per million
PSAI	Potential Source Area Investigation
PVC	polyvinyl chloride
QA	quality assurance
QAPP	Quality Assurance Project Plan
QCSR	Quality Control Summary Report
QCTM	Quality Control Technical Memorandum
RAGS	<i>Risk Assessment Guidance for Superfund</i>
RfC	Reference Concentration
RfD	Reference Dose
RI	Remedial Investigation
RIAMER	<i>Remedial Investigation Addendum Monitoring Expansion Report, Dry Cleaning Facilities Study Area, Fort Riley, Kansas</i>
RI Report	<i>Remedial Investigation Report, Dry Cleaning Facilities Area, Fort Riley, Kansas</i>
RME	reasonable maximum exposure
RSK	<i>Risk-Based Standards for Kansas, RSK Manual - 3<sup>rd</sup> Version</i>
SAP	Site-Wide Sampling and Analysis Plan
FSP	Site-Wide Field Sampling Plan
QAPP	Site-Wide Quality Assurance Project Plan
SSHP	Site Safety and Health Plan
STSC	Superfund Technical Support Center
SVE	soil vapor extraction
SVOC	semivolatile organic compounds
TA2	Training Area 2
TCE	trichloroethylene
TDS	total dissolved solids

**LIST OF ACRONYMS AND ABBREVIATIONS (continued)**

TEAPs	terminal electron-accepting processes
TOC	total organic carbon
TPH	total petroleum hydrocarbon
trans-1,2-DCE	trans-1,2-Dichloroethene
TSS	total suspended solids
UCL	upper confidence limit
UFs	uncertainty factors
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USAEHA	U.S. Army Environmental Hygiene Agency
USATHAMA	U.S. Army Toxic and Hazardous Materials Agency
USCS	Unified Soil Classification System
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UST	underground storage tank
V <sub>s</sub>	seepage velocity
VC	vinyl chloride
VF	volatilization factors
VOCs	volatile organic compounds
Work Plan	<i>Remedial Investigation/Feasibility Study Addendum Work Plan for the Dry Cleaning Facilities Area (Operable Unit 003) at Fort Riley, Kansas</i>
Work Plan Addendum	<i>Work Plan Addendum for the Dry Cleaning Facilities Study Area at Fort Riley, Kansas</i>

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**Appendix A –  
Electronic Copies of Reports from  
Previous Investigations**

**Appendix B –  
Borehole Logs**

**400-Series Borehole Logs  
Buildings 180/181**



# HTW DRILLING LOG

HOLE NO **B401**

1. COMPANY NAME <b>B7CD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 7 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg. 180/181</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe SFC6</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4328020.1060</b> <b>E691076.022</b>		8. HOLE LOCATION <b>Fort Riley, Kansas</b>		9. SURFACE ELEVATION <b>1083.586</b>	
		10. DATE STARTED <b>6-3-02</b>		11. DATE COMPLETED <b>6-3-02</b>	
12. OVERBURDEN THICKNESS <b>28'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>26'</b>			
13. DEPTH DRILLED INTO ROCK <b>0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>0'</b>			
14. DEPTH OF HOLE <b>28'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
22. DISPOSITION OF HOLE <b> Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Thibault</b>	
					21. TOTAL CORE RECOVERY <b>NA %</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Pump	REMARKS h
	1	Silt, pale yellowish brown (cut 26/2), soft, non-plastic, damp	0				1321-1322
	2		0		B401/ S601 2-3'		1324
	3		0				
	4		0			1323	
	5	Clayey silt, dark yellowish brown (cut 4/2), soft, non-plastic, damp	0				

# HTW DRILLING LOG

HOLE NO. **B4C1**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET **2**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	Clayey silt, dark yellowish brown (10YR4/2), soft, non-plastic, damp.	0	$\frac{38}{40}$	B401/ SB02 6-7'		1335
	7		0				
	8		0			1333	
	9	Becomes slightly sandy. Fine grained.	0	$\frac{39}{40}$	B401/ SB03, SB13, SB03QA 9-10'		1343
	10		0				
	11		0			1342	
	12		0	$\frac{33}{40}$	B401/ SB0F 12-13'		1404
	13		0				
	14		0				

# HTW DRILLING LOG

HOLE NO. *B401*

PROJECT		INSPECTOR			SHEET		
<i>DCFA</i>		<i>Rick Mack</i>			OF <i>3</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE CORRECTION NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	<i>Layered silt, dark yellowish brown (10%R/12), soft, non-plastic, damp; slightly sandy (fine grained)</i>	0	<i>Recovery</i>			
	16		0				<i>140</i>
	17	<i>Silt, moderate yellowish brown (10%R/14), soft, non-plastic, damp.</i>	0	<i>3.6</i> <i>40</i>	<i>B401</i> <i>SB05</i> <i>17-18</i>		<i>1413</i>
	18		0				
	19	<i>Clayey silt, dark yellowish brown (10%R/12), soft, slightly plastic, damp.</i>	0	<i>4.0</i> <i>4.0</i>	<i>B401</i> <i>SB06</i> <i>21-22'</i>		<i>142K</i>
	20		0				
	21	<i>Very becomes moist to very wet.</i>					
	22						
	23						



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PROJECT *DCFA*

HOLE NO. *B401*

# HTW DRILLING LOG

HOLE NO *B401*

PROJECT

*DCFA*

INSPECTOR

*Rick Mast*

SHEET *2* OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OF CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp	REMARKS h
	24	<i>clayey silt, dark yellowish brown (10YR4/2), soft, slightly plastic, very moist to wet.</i>	0			1423	
	25			0			
	26	<i>Becomes wet</i>	0	<i>4.0</i> <i>4.0</i>	<i>B401/</i> <i>SB07</i> <i>26-27'</i>		<i>1438</i>
	27			0		<del><i>B40</i></del>	
	28						
	29	<i>TD=28' at 1437</i>					
	30						
	31						
	32						



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PROJECT

*DCFA*

HOLE NO.

*B401*

# HTW DRILLING LOG

HOLE NO. **B 402**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		1 SHEET OF <b>40</b> SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg. 180/181</b>		
5. NAME OF DRILLER <b>Ryan Welsch</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprob; 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4326026.210</b> <b>E691083.340</b>		8. HOLE LOCATION <b>FORT RILEY, KANSAS</b>		9. SURFACE ELEVATION <b>1084.138</b>	
		10. DATE STARTED <b>6-202</b>		11. DATE COMPLETED <b>6-3-02</b>	
12. OVERBURDEN THICKNESS <b>32</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>29.6'</b>			
13. DEPTH DRILLED INTO ROCK <b>0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>32</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hunt</b>	
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Clayey silt, grayish brown (24R3/2), moderate hard, non-plastic, damp.	0	33 40			1449 - Begin probing
	2	Silt, pale yellowish brown (10YR6/3), soft, non-plastic, damp.	0		B402/ S601 2-3'		1451
	3						
	4		0			1450	
	5		0				

# HTW DRILLING LOG

 HOLE NO. **B402**

 PROJECT **DCFA**

 INSPECTOR **Rick Monk**

 SHEET **2**  
OF **48** SHEETS.

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Ti 27A	REMARKS h
	6	Silt, pale yellowish brown (10 MK/2), soft, non-plastic, damp	0	1.6 — 4.0	B402 SB02 6-7'		1507
	7						
	8	Clayey silt, dark yellowish brown (10 MK/2), soft, non-plastic, damp	0			1505	
	9		0	4.0 — 4.0			
	10		0		B402 SB03 11-1		1517
	11	Becomes slightly sandy. fine grained	0				
	12		0			1516	
	13		0	3.8 — 4.0			
	14	Clayey silt, moderate yellowish brown (10 MK/2), soft, non-plastic, damp. trace of very fine sand	0		B402 SB04		1520


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 PROJECT **DCFA**

1415

 HOLE NO. **B402**

# HTW DRILLING LOG

HOLE NO. **B402**

PROJECT **DC-4**

INSPECTOR **Rick Monk**

SHEET **7** OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	15	Clayey silt, moderate yellowish brown (15% R.S./H), soft, non-plastic, damp. Trace of very fine sand.	0				
	16		0			1528	
	17		0	$\frac{4.0}{4.0}$			
	18		0		B402/ SB05 18-19		1545
	19		0				
	20	Few grayish root features in 1mm stringers.	0			1543	
	21		0				
	22	Reddish yellow orange (10% R.S./H) soft, non-plastic damp to moist, fine to medium grained, subrounded.	0	$\frac{3.2}{4.0}$			
	23	1" chert fragments.	0		B402/ SB06 22-23		1600



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PROJECT **DC-A**

HOLE NO. **B402**

# HTW DRILLING LOG

HOLE NO. **B 402**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **X 4**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h	
	24	Sand, dark yellowish orange (COYR 6/6), soft, non-plastic damp to moist, fine to medium grained, subrounded.	0			1558		
	25	1" silt seam		30 — 46				
	26		0		B 402 / SBC 7 26-27'		1614	
	27	Series of 1" silt / 1" sand seams. Silt is dark yellowish brown (COYR 4/2). Sand is same as above.	0					
	28					1612		
	29		0					
	30	Silt, dark yellowish brown (COYR 4/2), very soft, non-plastic, wet.	0	46 — 40	B 402 / SBC 8 31-32'		1634	
	31	Sand, dark yellowish orange (COYR 6/6), soft, non-plastic, wet, fine to medium grained, subrounded.	0					
	32							
		TB = 32' at 1632						



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PROJECT **DCFA**

HOLE NO. **B 402**



# HTW DRILLING LOG

HOLE NO. **B403**

1. COMPANY NAME <b>BMCD</b>		2. DRILLING SUBCONTRACTOR <b>ERS</b>			SHEET OF <b>4</b> SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>0.1 mi W/181</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4326031.430</b> <b>E691091.148</b>		2" macrologs with		8. HOLE LOCATION <b>FORT R. let, KANSAS</b>		
		macrologs sleeves		9. SURFACE ELEVATION <b>1085.000</b>		
				10. DATE STARTED <b>6-4-02</b>		
				11. DATE COMPLETED <b>6-4-02</b>		
12. OVERBURDEN THICKNESS <b>28'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>27.6'</b>				
13. DEPTH DRILLED INTO ROCK <b>0'</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>28'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <b>✓</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %	
				23. SIGNATURE OF INSPECTOR <i>[Signature]</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Silty clay, dusky brown (5YR2/2), moderately hard, slightly plastic, damp.	0				0738 - began probing
	1	Silt, pale yellowish brown (10YR6/2), soft, non-plastic, damp.	0	3.2 4.0	B403/ SB01, SB11, SB010A 1-2'		0740
	2		0				
	3		0				
	4	Color change to dusky brown (5YR2/2)	0				0734
	5		0	3.4 4.0			

# HTW DRILLING LOG

HOLE NO. **B 403**

PROJECT **D L F A**

INSPECTOR **Rich Monk**

SHEET **2**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Silt, pale yellowish brown (10% R <sub>6</sub> /2), soft, non-plastic, damp	0		B 403/ SR 02 6-7'		0800
	7	Clayey silt, dusky brown (5% R <sub>6</sub> 2/2), soft, non-plastic, damp	0			0758	
	8		0				
	9		0	40			
	10	Becomes slightly sandy Fine grained.	0	40	B 403/ SR 03 10-11'		0813
	11		0				
	12	Silty sand, moderate yellowish brown (10% R <sub>6</sub> 5/4) soft, non plastic, damp, sand is fine grained to very fine grained.	C			0811	
	13						
	14		0		B 403/ SR 04 + 2jars for analysis		0827



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PROJECT

**D L F A**

1415'

HOLE NO.

**B 403**

# HTW DRILLING LOG

HOLE NO. **B403**

SHEET **3**  
OF **4** SHEETS

PROJECT **DCFA**

INSPECTOR

LEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp, fine to very fine grained.	0	3.8 <u>4.0</u>			
	16		0			0825	
	17		0				
	18		0	4.0 <u>4.0</u>			
	19		0		B403/ SR05 18-19		0846
	20	Clayey silt, moderately soft, moderate yellowish brown (10YR 5/4), slightly plastic, moist.	0				0844
	21	Becomes sandy	0				
	22	Sand, dark yellowish orange (10YR 6/6), soft, non-plastic, damp, fine to medium grained, sub rounded.	0		B403/ SR06 22-23		0857
	23						

# HTW DRILLING LOG

HOLE NO. **B403**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **XP**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, dark yellowish orange (10% 6/6), soft, non-plastic, damp, fine to medium grained, subrounded	0			0955	
	25		0	27 — 40			
	26		0				
	27		0		B403/ S.A. 7 27-28		0914 ▼
	28	Silt, moderate, yellowish brown (10% 6/6), soft, slightly plastic, wet					
	29	TD=28' at 0913 on water					
	30						
	31						
	33						



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PROJECT **DCFA**

HOLE NO. **B403**

# HTW DRILLING LOG

HOLE NO. **B404**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Blotg. 180/1st</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geopac 542</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4326036.420</b> <b>E 691048.471</b>		2" mucrocure with acrotuff sleeves		8. HOLE LOCATION <b>FORT RILEY, KANSAS</b>			
				9. SURFACE ELEVATION <b>1084.948</b>			
				10. DATE STARTED <b>6-4-02</b>			
				11. DATE COMPLETED <b>6-2-02</b>			
12. OVERBURDEN THICKNESS <b>28'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>28' 27.3'</b>					
13. DEPTH DRILLED INTO ROCK <b>0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>28'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Marks</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>Time</b>	REMARKS h
		Silty clay, dusky brown (5YR2/2), moderately hard, slightly plastic, dump	0				0926 - Ryan probing.
	1	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, dump		3.7			
	2		0	4.0			
	3	Silt, dusky brown (5YR2/2), soft, non-plastic, dump	0		B404/ 5801 2-3'		0930
	4	Silty sandy, pale yellowish brown (10YR 6/2), soft, non-plastic, dump, fine to very fine	0			0928	
	5						



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Form MRK -55

PROJECT **DCFA**

HOLE NO. **B404**

# HTW DRILLING LOG

HOLE NO **B 404**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET OF **72** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T.O.F g	REMARKS h
	6	Sandy silt, pale yellowish brown (16 PR 6/2), soft, non-plastic, damp, fine to very fine.	0	$\frac{3.8}{4.0}$			C946
	7		0				
	8	Clayey silt, dusky brown (5 PR 2/2), soft, slightly plastic, damp.	0			0943	
	9		0				
	10	Becomes slightly sandy Fine grained.	0	$\frac{3.8}{4.0}$			C957
	11		0				
	12		0			0955	
	13		0	$\frac{4.1}{4.0}$			100
	14		0				1008

# HTW DRILLING LOG

HOLE NO. **B404**

PROJECT **DCFA**

INSPECTOR **Rich Monk**

SHEET **3** OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T. Bl. P	REMARKS h
	15	Slightly sandy clayey silt, dusky brown (5YR2/2), soft, slightly plastic, damp, sand is fine grained.		Recovery			
	16	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp.	0			1006	
	17		0	4.0			
	18		0	4.0	B404/ SB05, SB19, SB25 at 18-19'		1019
	19		0				
	20					1017	
	21	clayey silt, moderate yellowish brown (10YR 5/4), soft, slightly plastic, damp	0				
	22	Becomes sandy	0	3.7			
	23		0	4.0	B404/ SB06 22-23'		1038



051601  
Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B404**

# HTW DRILLING LOG

HOLE NO. **B404**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4** OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>T.B.P</i>	REMARKS h
	24	Sandy clayey silt, moderate yellowish brown (10% R5/Y), soft, slightly plastic, damp	0	∅		1036	
	25						
	26		0	$\frac{3.8}{4.0}$			
	27						1056
	28	Silt, moderate yellowish brown (10% R5/Y), soft, non-plastic, wet, trace of limonite	0		B404/ SB07 27-28'		▼
	29	TD = 28' at 1054 on water.					
	30						
	31						
	32						



# HTW DRILLING LOG

HOLE NO. **B405**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DLFA</b>		4. LOCATION <b>Rd 180/181</b>			
NAME OF DRILLER <b>Paul Vogelshaus</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5700</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4326041.850</b> <b>E641105.877</b>		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>Fort Riley, Kansas</b>	
				9. SURFACE ELEVATION <b>1084.968</b>	
		10. DATE STARTED <b>6-5-02</b>		11. DATE COMPLETED <b>6-5-02</b>	
12. OVERBURDEN THICKNESS <b>36'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>33.9</b>			
13. DEPTH DRILLED INTO ROCK <b>0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>36'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>		UNDISTURBED <b>NA</b>	
19. TOTAL NUMBER OF CORE BOXES <b>NA</b>					
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	NA	NA	NA
					21. TOTAL CORE RECOVERY <b>NA</b> %
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Smith</b>
		✓	NA	NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TO 13ft	REMARKS h
		S, H, clay grayish brown (57K3/2), moderately soft, slightly plastic, damp	0				0712 - Pagan pricing
	1	Sand, dark yellowish orange (164R66), soft, non-plastic, damp. fine to very fine, trace of fines		3.3			
	2	clayey silt, dusky brown (57K2/2), soft, non-plastic, damp	0	4.0			
	3		0		B405/ SB01 2-3'		0714
	4	Sand, moderate yellowish brown (164R5/4), soft, non-plastic, damp. very fine grained.	0				0713
	5		0				

# HTW DRILLING LOG

HOLE NO. **B405**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>70nf</i>	REMARKS h
	6	Sand, moderate yellowish brown (CTR 5/4), soft, non-plastic, damp, very fine grained.	0	$\frac{3.8}{4.0}$			0733
	7	clayey silt, dusky brown (STR 2/2), soft, non-plastic, damp	0				0731
	8		0				
	9		0				
	10	Becomes slightly sandy. Fine grained.	0	$\frac{4.0}{4.0}$			0743
	11		0				
	12		0				0741
	13		0	$\frac{4.0}{4.0}$			
	14		0				0753



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PROJECT

**DLFA**

HOLE NO.

**B405**

# HTW DRILLING LOG

HOLE NO. **B405**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4** OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	SLOW COUNTS TIME g	REMARKS h
	15	Sand, grayish orange (10YR 7/4), soft, non-plastic, damp to moist, fine to very fine grained, trace of fines.	0	Recovery			
	16		0			0751	
	17		0	$\frac{3.8}{4.0}$			
	18	2" of silty clay, moderate yellowish brown slightly plastic.	0		B405/ SP05 18-19		0804
	19	2" of silty clay, moderate yellowish brown, slightly plastic.	0				
	20		0			0803	
	21	Clayey silt, moderate yellowish brown (10YR 5/4), soft, slightly plastic, moist.	0	$\frac{3.6}{4.0}$			
	22		0		B405/ SP06 22-23		0814
	23	Sand, grayish orange (10YR 7/4), soft, non-plastic, damp, fine to medium grained, subrounded.					



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B405**

# HTW DRILLING LOG

HOLE NO. B405

PROJECT

DCFA

INSPECTOR

Rick Monk

SHEET 4  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS TIME g	REMARKS h
	24	Sand, grayish orange (16% 7/4), soft, non-plastic, damp; fine to medium grained, subrounded	C			0813	
	25		C	4.0 / 4.0			
	26	Clay & silt, moderate yellowish brown (10% 5/4), soft, moderately plastic, moist	C				
	27		C		B405/ SBC7 26-27'		0830
	28		C			0528	
	29		C	3.2 / 4.0			
	30		C		B405/ SBC8 28-31'		0842
	31	Sand, grayish orange (16% 7/4), soft, non-plastic, moist to wet.	C				
	32	Silty sand, pale yellowish brown (10% 6/2), silty, slightly plastic; moist to wet. Some reddish red & features fine to medium grained	C			0840	



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Form MRK-55-2

PROJECT

DCFA

HOLE NO.

B405

# HTW DRILLING LOG

HOLE NO. **B405**

PROJECT **DLFA**

INSPECTOR **Pick, Mark**

SHEET **5**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Silty sand, pale yellowish brown (10% 6/2), soft, slightly plastic, moist to wet. Some reddish redox features. Fine to medium grained.	C	$\frac{35}{4.0}$		T. 0.12	
	34	3' of <del>silty</del> sand, dark yellowish orange, fine to medium wet.					▼
	35	4' of sand, grayish orange (10% 7/9), fine to medium sandy silt, dark yellowish brown (6% 4/2), soft, slightly plastic, wet to very moist, fine to very fine grained.	C		B405/ 35-36		C903
	36	TD = 36' at C901 on water.					

# HTW DRILLING LOG

HOLE NO. **B406**

1. COMPANY NAME <b>BMC</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/181</b>		
5. NAME OF DRILLER <b>Paul Vogel'sberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>M4326046.730</b> <b>E 691113.117</b>		8. HOLE LOCATION <b>Fort R. 1st, Kansas</b>		9. SURFACE ELEVATION <b>1085.010</b>	
		10. DATE STARTED <b>6-5-02</b>		11. DATE COMPLETED <b>6-5-02</b>	
		12. OVERBURDEN THICKNESS <b>40.6</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>29.4'</b>	
13. DEPTH DRILLED INTO ROCK <b>0.2</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>40.8</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Reintegrate</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA %</b>
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Luigi Thibault</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
		Silty clay, dusky brown (5422/3), moderately soft, slightly plastic, damp	C				0926 - Re-integrate
	1	Sand, dark yellowish brown (16424/2), soft, non-plastic, damp, fine to very fine grained. Trace of fines		35			
	2	12" limestone fragments.	C	4.0			
	3	Sand, grayish coarse (16427/4), soft, non-plastic, damp, fine to medium, trace some gravel.			B406 SBC1 2-3'		0929
	4	Clayey silt, dusky brown (5422/2), soft, non-plastic, damp.	C			0927	
	5		C				

# HTW DRILLING LOG

HOLE NO. **B406**

PROJECT

**DCFA**

INSPECTOR

**Rick Monk**

SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS TIME g	REMARKS h
	6	Sand, pale yellowish brown (10% R6(2)), soft, non-plastic, damp, very fine grained.	0	$\frac{3.4}{4.0}$	B406/ SR02 6-7'		0944
	7						
	8	Clayey silt, dusty brown (5% R2/A), soft, non-plastic, damp.	0			0942	
	9		0				
	10		0	$\frac{3.6}{4.0}$	B406/ SR03, SR13, SR03QA 10-11'		0954
	11	Becomes slightly sandy. Fine grained.	0				
	12					0952	
	13		0	$\frac{4.0}{4.0}$			
	14		0		B406/ SR04	14:55	010

# HTW DRILLING LOG

HOLE NO. **B406**

PROJECT

**DCFA**

INSPECTOR

**Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Slightly sandy clayey silt, dusky brown (5 YR 2/2), soft, non-plastic, damp. Sand is fine grained.					
	16	Silty clay, moderate yellowish brown (10 YR 5/4), soft, slightly plastic, damp. Some fine sand.	C			1008	
	17		C				
	18		C	$\frac{26}{40}$			
	19	2" silt zone, very moist. Clayey silt, moderate yellowish brown (10 YR 5/4), soft, slightly plastic, moist.	C		B406/ SBC5 18-19'		1024
	20		C			1022	
	21		C	$\frac{34}{40}$			
	22	2" sand zone. Fine to medium.	C		B406/ SBC6 22-23'		1035 <span style="border: 1px solid black; padding: 2px;">MSR</span>
	23						



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PROJECT

**DCFA**

HOLE NO.

**B406**



# HTW DRILLING LOG

 HOLE NO. *B46i*

 PROJECT *DCFA*

 INSPECTOR *Rock Monk*

 SHEET *24*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Figure</i>	REMARKS h
	24	Clayey silt, moderate yellowish brown (10TR5/4), soft, slightly plastic, moist.	C			1034	
	25		C	3.7			
	26		C	4.6			
	27	Silty fine sand, pale yellowish brown (10TR6/2), soft, non-plastic, moist.			<i>B466/</i> <i>SPT</i> <i>26-27</i>		1049
	28	Sand, grayish orange (10TR7/4), soft, non-plastic, moist, fine to medium, some reddish iron staining.	C			1047	
	29		C				▼
	30	Clayey silt, pale yellowish brown (10TR6/2), soft, slightly plastic, wet.  — 2" sand seam, fine to medium.	C	4.0			
	31		C		<i>B466/</i> <i>SPT</i> <i>31-32</i>		1105
	32					1103	
							<i>Began discreet sampling to bedrock</i>

# HTW DRILLING LOG

HOLE NO *B406*

PROJECT *DCFA*

INSPECTOR *Rich Monk*

SHEET *15*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Clayey silt, pale yellowish brown (10YR 6/2), soft, slightly plastic wet.					
	34						
	35						
	36						
	37						
	38						
	39						
	40						
		Shale, light olive gray (5Y 6/1), unweathered.					
	41	1131- TD = <del>40.8</del> 40.8' Refused.					



051601  
Form MAR-55-2

PROJECT *DCFA*

HOLE NO. *B406*

# HTW DRILLING LOG

 HOLE NO. **B407**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DCAF</b>			4. LOCATION <b>Bldg 180/181</b>		
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>M4326052.250</b> <b>E691120.303</b>		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>Fort R. Ly, Kansas</b>	
				9. SURFACE ELEVATION <b>1085.086</b>	
		10. DATE STARTED <b>6-6-02</b>		11. DATE COMPLETED <b>253 6-6-02</b>	

12. OVERBURDEN THICKNESS <b>41.4</b>		15. DEPTH GROUNDWATER ENCOUNTERED <del>NA</del> <b>35.3</b>	
13. DEPTH DRILLED INTO ROCK <b>0.1</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
14. DEPTH OF HOLE <b>41.5</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>	

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR	
<b>Bentonite</b>		✓	<b>NA</b>	<b>NA</b>	<i>Rich [Signature]</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Silty clay, dusky brown (5R2/3), moderate soft, slightly plastic, damp	0				0714 - Signal probing
	1	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp, fine grains					
	2	Silty clay, moderate reddish brown (10R 4/6), soft, non-plastic, damp, trace of black redox features.	1.9	4.0 4.0			
	3	Silty clay, medium light gray, soft, non-plastic, damp					
	4	Clayey silt, grayish brown (5YR 4/2), soft, slightly plastic, damp	3.0		B407 SB01 3-4'	0715	0716
	5		3.3				



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 PROJECT **DCAF**

 HOLE NO. **B407**

# HTW DRILLING LOG

HOLE NO. **B407**

PROJECT **DCFA**

INSPECTOR **Rock Munk**

SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Temp</i>	REMARKS h
	6	Clayey silt, grayish brown (5YR 5/2), soft, slightly plastic, damp.					
	7	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp; very fine grained.	4.4	3.2 <hr/> 4.0	B407/ SB02 6-7'		0736
	8	Clayey silt, dusky brown (5YR 2/2), soft, non-plastic, damp.	0.5			0774	
	9		4.0		B407/ SB03, SB13, SB036A 8-9'		0750
	10		1.5	4.0 <hr/> 4.6			
	11	Clayey silt, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp.	0			0778	
	12		1.9				
	13	Becomes slightly sandy (finer)		4.0 <hr/> 4.0			
	14		2.6		B407/ SB04		0816



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Form MRK-55-2

PROJECT **DCFA**

14-75'

HOLE NO. **B407**

# HTW DRILLING LOG

HOLE NO. **B467**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	<del>GEOTECH SAMPLE</del> <del>OR CORE BOX NO.</del> <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	15	Slightly sandy clayey silt, moderate yellowish brown (10YR5/4), soft, non-plastic, damp	0.8			0808	
	16		0.5				
	17		0.8	3.4 — 4.0	B467/ SB05 17-18'		0823
	18	2" sand seam, fine to medium					
	19	Silt, dark yellowish brown (10YR4/2), soft, slightly plastic, moist					
	20	Sand, grayish orange (10YR7/4), soft, non-plastic, damp	C			0821	
	21	Silty clay, dark yellowish brown (10YR4/2), moderately hard, moderately plastic, damp	C				
	21	1" sand seam		3.4 — 4.0	B467/ SB06 21-22		0838
	22	Sand, grayish orange (10YR7/4), soft, non-plastic, damp, fine to medium	C				
	23						



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Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B 407**

# HTW DRILLING LOG

HOLE NO. **B467**

PROJECT **DCFA**

INSPECTOR **Rick Mack**

SHEET **KP**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Clayey sandy silt, grayish orange (10TR7/4), soft, slightly plastic, damp. Sand is in very thin layers 1/2" apart.	0			0836	
	25		0	3.2 <hr/> 4.0			
	26		0				
	27	Sandy silt, moderate yellowish brown (10TR5/4), soft, slightly plastic, damp to moist.	0		B467/ SBC7, SBI7, SBC7 26-27		0853
	28					0851	
	29		0				
	30	3-4" layers of light gray silt and sand, dark yellowish orange (10TR6/6), soft, non-plastic, moist.	0	3.7 <hr/> 4.0			
	31	Becomes same as above with 1/2" sand layers and 1"-2" silt layers.	0		B467/ SBC8 30-31		0913
	32					0911	



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B.467**

# HTW DRILLING LOG

HOLE NO. *13407*

PROJECT *DCFA*

INSPECTOR *Rich Munk*

SHEET *25*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	<i>33</i>	<i>Layers of 1/2" sand and 1-2" silt, dark yellowish brown orange (w/trace of) sand, light gray silt, soft, non-plastic, moist</i>	<i>0</i>	<i>4.0</i> <i>4.0</i>			
	<i>34</i>		<i>0</i>		<i>B407/ SR09 3435' MSD (2,3013)</i>		<i>0934</i>
	<i>35</i>						▼
	<i>36</i>	<i>Becoming wet.</i>	<i>0</i>			<i>0932</i>	<i>stopped profiling. began pushing to bedrock.</i>
	<i>37</i>						
	<i>38</i>						
	<i>39</i>						
	<i>40</i>						
	<i>41</i>	<i>41.4' Shale, light olive gray (SY6/1), moderately strong. TD = 41.5' at 0448</i>					



051601  
Form MRK-55-2

PROJECT *DCFA*

HOLE NO. *13407*

# HTW DRILLING LOG

HOLE NO. **B408**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EP'S</b>			SHEET 1 OF 5 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Node 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>N4326058.400</b> <b>E691126.818</b>		8. HOLE LOCATION <b>Fort Riley, Kansas</b>		9. SURFACE ELEVATION <b>1085.330</b>			
		10. DATE STARTED <b>7-16-02</b>		11. DATE COMPLETED <b>7-16-02</b>			
		12. OVERBURDEN THICKNESS <b>41.3</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>37.8'</b>			
		13. DEPTH DRILLED INTO ROCK <b>0.2</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>41.5</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>benzene</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>[Signature]</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Clayey silt, dark yellowish brown CID 4/24, soft, non-plastic dump.	C			1130	
	2		0				
	3	Fill, clayey silt, dark yellowish brown (CID 4/24), 3/4" - 2" concrete pieces, coal/clinking red brick fragments.	1.2		B408/ SB01 2-3'		1132
	4		0				
	5		1.8				Refusal at 5' Offset 2' north Refusal at 4' offset 3' west or 2nd location
			0.9				



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PROJECT **DLFA**

HOLE NO. **B408**



# HTW DRILLING LOG

HOLE NO **B408**

PROJECT		INSPECTOR		SHEET			
<b>DCFA</b>		<b>Rick Mont</b>		<b>2</b>			
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS	REMARKS
a	b	c	d	<i>Recovery</i>	f	<i>Time</i>	h
	6	weathered shale, yellowish gray (547/2), weak. <u>2" limestone gravel.</u>	2.1		SB02		
	7	Sandy silt, dark yellowish brown (10YR4/3), soft, non-plastic, damp; fine to very fine sand.		36 40	6-7'		<del>1152</del> 1153
	8		2.1			1151	
	9		1.6				
	10	Silty sand, pale yellowish brown (10YR6/2), soft, non-plastic, damp, fine to very fine sand.	4.8	40 40	SB03 9-10'		1206
	11	Color change to moderate yellowish brown (10YR5/4), becomes moderately soft.					
	12		0.6			1203	
	13		0.9				
	14		1.5	33 40			
					SB04 14-15'		1389

# HTW DRILLING LOG

HOLE NO. **B408**

PROJECT		INSPECTOR			SHEET		
<b>DCFA</b>		<b>Rick Mont</b>			<b>5</b>		
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEO TECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS	REMARKS
a	b	c	d	e	f	g	h
	15	Silty sand, moderately yellowish brown (10YR 5/4), moderately soft, nonplastic, damp, fine to very fine sand.		Recovery		Time	
	16		0.6			1347	
	17		1.2		SBU5 16-17'		1400
	18		0.9	40 40			
	19	Color change to pale yellowish brown (10YR 6/2)					
	20		0			1357	
	21		0				
	22	Clayey silty, pale yellowish brown (10YR 6/2), soft, slightly plastic, damp	0.3	40 40	SBU6 22-24'		1413
	23	Silty sandy, very pale gray (10YR 7/2), soft, nonplastic, damp, fine to very fine sand.		light brownish gray (5YR 6/1)			



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B408**

# HTW DRILLING LOG

HOLE NO. **D408**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **2** OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Silty sand, light brownish gray (SRG/1), soft, non-plastic, damp, fine to very fine sand.	0			1411	
	25	Sand, pale yellowish brown (CUTR.6/2) soft, non-plastic, damp, fine to medium.	0	3.5 — 4.0			
	26						
	27	Silt, pale yellowish brown (CUTR.6/2) soft, non-plastic, damp.	0		SB07 26-27'		1427
	28	Silty sand, grayish orange (CUTR.7/4) soft, non-plastic, damp, fine to medium sand.	0			1425	
	29						
	30		0	3.7 — 4.0			
	31	Sandy, grayish orange (CUTR.7/4) soft, non-plastic, damp, fine to medium.			SB08 30-31'		1441
	32		0			1439	
			0				

# HTW DRILLING LOG

HOLE NO. *B408*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *5*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <del>Time</del>	REMARKS h
	33	Sandy grayish orange (10YR7/4) soft, non-plastic clay, fine to medium.					
	34	1" of dark yellowish orange	0	$\frac{36}{40}$	SBA0 3435'		1452
	35						
	36		0			1450	
	37		0		SBA0 3738'		1508
	38	Becomes wet.	0	$\frac{36}{40}$			▼
	39	Color change to dark yellowish <del>orange</del>					
	40		0			1506	
	41	Shale, light olive gray (5Y5/6), weakly weathered. +10 = 41.5' at 1526. Refusal.					Using disc comp sampler to get bedrock.

# HTW DRILLING LOG

HOLE NO. **B409**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 1 SHEETS
3. PROJECT <b>USFRDLFA 27979</b>	4. LOCATION <b>Building 180/181 Location</b>	
NAME OF DRILLER <b>Ryan Weiser</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>Reprobe Magnetic sampler Discont</b>	8. HOLE LOCATION <b>N 4321037.550 E 691108.552</b>	
	9. SURFACE ELEVATION <b>1084.640</b>	
	10. DATE STARTED <b>05/28/02</b>	11. DATE COMPLETED <b>05/23/02</b>

12. OVERBURDEN THICKNESS <b>91.8 ft</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>
13. DEPTH DRILLED INTO ROCK <del>0.02 ft</del> <b>0.02 ft</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>42 ft</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>	VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %

22. DISPOSITION OF HOLE <b>Bentonite</b>	BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Walter B. McClendon</b>
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ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	39	Sandy clay, 10yr 5/2, grayish brown, wet, slightly plastic medium consistency	NA	NA			Discrete Bedrock Sample Only
	39	Sand, 10yr 6/4, Light yellowish brown, wet, fine to medium grained, well sorted, rounded to angular					START Time = 1510
	40						
	41						
	41	Weathered shale, 10yr 6/2, light brownish grey, moist to wet, medium to hard consistency, slightly plastic					
	42	Shale, 10yr 6/2	R		561	0855	
		Bottom of Hole 42 ft					End Time 0900



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PROJECT **USFRDLFA 27979**

HOLE NO. **B409**

# HTW DRILLING LOG

 HOLE NO. **B410**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 1 SHEETS	
3. PROJECT <b>USFR DCFA 27979</b>		4. LOCATION <b>Building 180181 location</b>				
5. NAME OF DRILLER <b>Ryan Weisec</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geopone 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	<b>Preprobe</b>		8. HOLE LOCATION <b>N4326042520 E691111.046</b>			
	<b>macro core sampler</b>		9. SURFACE ELEVATION <b>1084.991</b>			
	<b>Discrete</b>		10. DATE STARTED <b>05/24/02</b>		11. DATE COMPLETED <b>05/24/02</b>	
12. OVERBURDEN THICKNESS <b>39.9</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>				
13. DEPTH DRILLED INTO ROCK <b>0.1</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>40.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
<b>NA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Walter B. McClendon</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	40	Silty Sand, 2.5y 5/3, wet Light olive brown poorly sorted, very fine to medium <hr/> <del>Start Time 0717</del> End Time 0852	R			0845	40
		Bottom of Hole Limestone 2.5y 5/6 light olive brown to 2.5y 2.5/1 black, crystalline, conchoidal fractures					TO=40ft


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 PROJECT **USFR DCFA**
**27979**

 HOLE NO. **B410**

# HTW DRILLING LOG

 HOLE NO. **B411**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET, 1 OF 1 SHEETS			
3. PROJECT <b>USFRDLFA 27979</b>			4. LOCATION <b>Building 180181 Location</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		<b>Prepouse</b>		8. HOLE LOCATION <b>N4326042.390 E 691110.070</b>			
		<b>MACELORE sampler</b>		9. SURFACE ELEVATION <b>1084.991</b>			
		<b>Discrite</b>		10. DATE STARTED <b>05/24/02</b>			
				11. DATE COMPLETED <b>05/24/02</b>			
12. OVERBURDEN THICKNESS <b>38.4</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>				
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>38.5</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>WALTER B. McCLendon</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS time g	REMARKS h
		Sand, 2.5 y 6/1, gray, wet, well sorted, fine grained, rounded					Start Time 0915
	37	Clayey sand, 2.5 y 6/1, gray, wet, very fine to fine, well sorted, soft plastic, soft consistency					37
	38	Sand, 2.5 y 6/1, gray to 10 y 6/10 brownish yellow, fine grained, well sorted, wet					38
	39	Limestone at 38.5 ft	R		SS1	1010	End Time 1020 39
		Bottom of Hole					TD = 38.5 feet



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 PROJECT **USFRDLFA 27979**

 HOLE NO. **B411**

# HTW DRILLING LOG

 HOLE NO. **B412**

1. COMPANY NAME <b>BMD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Blk 180 / 181</b>				
5. NAME OF DRILLER <b>Paul Vigelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" auger core with		8. HOLE LOCATION <b>N4324047.890 E091118.543</b>			
		6 corotate sleeves		9. SURFACE ELEVATION <b>1085.040</b>			
12. OVERBURDEN THICKNESS <b>43.1</b>		10. DATE STARTED <b>7/6/02</b>		11. DATE COMPLETED <b>7/6/02</b>			
13. DEPTH DRILLED INTO ROCK <b>0.1</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>@ 39</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>43.2</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR  <b>Rick Hank</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <del>Time</del>	REMARKS h
		Clayey silt, dark yellowish brown (1072/4) moderately hard, nonplastic, damp.	0.3			0801	
	1	Sandy silt, grayish orange (1072/4) soft, nonplastic, damp, some 1/4" limestone gravel, trace of oval calcite.	6.6				
	2	Sandy silt, grayish brown (572/2) soft nonplastic, damp, fine to very fine sand.	2.1	3.9 <hr/> 4.0			
	3		<del>2.1</del> 6.6				
	4		2.1		B412 9501 3-4'	0802	0804
	5		2.0				



# HTW DRILLING LOG

HOLE NO. **B412**

PROJECT

**DLFA**

INSPECTOR

**Rock Mead**

SHEET **22**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Top</i>	REMARKS h
	6	Sandy silt, grayish brown (STR 3/2), soft, non-plastic, clayey, fine to very fine sand	3.0				
	7		4.5	$\frac{2.8}{4.0}$	SB02 7-8'		0822
	8	some coal/clinker and red brick fragments.	3.3			0820	
	8		3.3		SB03 8-9'		0832
	9		2.1	$\frac{3.8}{4.0}$			
	10		0.9				
	11		0.9			0830	
	12		1.2				
	13		0.6	$\frac{3.5}{4.0}$			
	14				SB04 14-15'		0842



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Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B412**

# HTW DRILLING LOG

HOLE NO. **B412**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **X 3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	15	Silty sand, grayish orange CUTR 7/4, soft, non-plastic, damp, fine to very fine sand.	1.5				
	16		0.6			0840	
	17	Clayey silty dark yellowish brown CUTR 1/2, soft, <del>high</del> moderately plastic, damp.	<del>0.9</del> 0.9		SB05 1718'		0852
	18			40 40			
	19		0.6				
	20		0.3			0850	
	21		0				
	22	Silty sandy moderate brown CUTR 1/4, soft, high-plastic, damp, fine to medium.	0.9	40 40	SB06 22-23'		0903
	23						



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PROJECT **DCFA**

HOLE NO. **B412**

# HTW DRILLING LOG

HOLE NO. **B412**

PROJECT

**DLFA**

INSPECTOR

**Mark Mark**

SHEET **24**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	GLOW COUNTS g <i>None</i>	REMARKS h
	24	Sandy, grayish orange (CUTR 7/4) soft, non-plastic, damp, fine to medium	<del>0.3</del> 0			0201	
	25						
	26	Clayey silt, dark yellowish brown (CUTR 4/2) soft, moderately plastic, damp	0.3	4.0 — 4.0		S607, S617, S617 (C) 26-27'	0916
	27		0.3				
	28	Sandy, sandy silt, pale yellowish brown (CUTR 6/2) soft, non-plastic, damp, fine to medium sand	0			0913	
	29						
	30	Silt, pale yellow with brown (CUTR 6/2) soft, non-plastic, damp to moist	0	37 — 40	S608 30-31'		0938
	31	Silty sand, light brownish gray (CUTR 6/1) soft, non-plastic, damp, fine to very fine sand.	0				
	32		0			0936	
			0				


# HTW DRILLING LOG

HOLE NO. **B412**

PROJECT **DLFA**

INSPECTOR **Rick Munk**

SHEET **5** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Silty sand, light brownish gray (UVR6/11), soft, non-plastic damp, fine to very fine sand.					
	34	-1" sand seam, grayish orange, fine to medium. -1" sand seam, same as above.	0	$\frac{3.6}{4.0}$	S004 34-35'		0953
	35	Sandy silty, pale yellowish brown (UVR6/2), soft, non-plastic, moist, fine to very fine sand.					
	36	Sandy, dark yellowish orange (UVR6/6), soft, non-plastic, damp, fine to medium. Silty sand, pale yellowish brown (UVR6/2), soft, non-plastic, damp, fine to medium.	0			0951	
	37		0		S120 37-38'		1010 <div style="border: 1px solid black; padding: 2px; display: inline-block;">2 jars for MS/TEST</div>
	38	Color change to dark yellowish orange (UVR6/6).	0	$\frac{4.0}{4.0}$			
	39	Becomes wet.					
	40		0			0008	
	41						Using discrete sampler to push to bottom

# HTW DRILLING LOG

HOLE NO. *B412*

PROJECT *DLFA*

INSPECTOR *Rich Mint*

SHEET *x 6*  
OF *6* SHEETS

ELEV. <small>a</small>	DEPTH <small>b</small>	DESCRIPTION OF MATERIALS <small>c</small>	FIELD SCREENING RESULTS <small>d</small>	GEO TECH SAMPLE OR CORE BOX NO. <small>e</small>	ANALYTICAL SAMPLE NO. <small>f</small>	BLOW COUNTS <small>g</small>	REMARKS <small>h</small>
	42						
	43	<i>shale, light olive gray (SFS/2) weak, weathered.</i>		<i>Recovery</i>		<i>71/2</i>	
	44	<i>TO = 43.2' at 1036, refusal.</i>					
	45						
	46						
	47						
	48						



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PROJECT *DLFA*

HOLE NO. *B412*

# HTW DRILLING LOG

 HOLE NO. **B413**

1. COMPANY NAME <b>BTCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 1 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Hdg 180/181</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macramore with acetate sleeves		8. HOLE LOCATION <b>N4326047.970 E691123.518</b>		
				9. SURFACE ELEVATION <b>1084.669</b>		
				10. DATE STARTED <b>5-24-02</b>		11. DATE COMPLETED <b>6-3-02</b>
12. OVERBURDEN THICKNESS <b>42.1</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>			
13. DEPTH DRILLED INTO ROCK <b>1.2</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>43.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Mark</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	41			0.5 0.7			#141-Debris probing.
	42	Shale, pale yellowish brown (10R6/2), weak, friable, weathered.					
	43						
	44	TD = 43.3' bgs at 1207 (6-3-02)					


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PROJECT

**DCFA**

HOLE NO.

**B413**

# HTW DRILLING LOG

 HOLE NO. **B 415**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 4 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg. 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326011.580 E691070.700</b>			
				9. SURFACE ELEVATION <b>1083.563</b>			
				10. DATE STARTED <b>6-6-02</b>		11. DATE COMPLETED <b>6-6-02</b>	
12. OVERBURDEN THICKNESS <b>320</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>272</b>				
13. DEPTH DRILLED INTO ROCK <b>0-0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>320</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		✓	NA	NA	NA	NA	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hunt</b>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Silty clay, dark brown (54R 2/2), soft, slightly plastic, dump, few 2" red brick fragments	0				1058 - try on priming.
	1	Sand, pale yellowish brown (16YR 6/2), soft, non-plastic, dump, very fine grained.	0	1, 3 4.0			
	2		0		B415/ 5461 2-3'		1100
	3		0				
	4		0			1058	
	5	Clayey silt, grayish brown (5.5YR 3/2), soft, slightly plastic, dump	0				

# HTW DRILLING LOG

HOLE NO. *B415*

PROJECT		INSPECTOR			SHEET		
<i>DLFA</i>		<i>Rick Monk</i>			OF <i>4</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR TUBE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	<i>6</i>	<i>Clayey silt, grayish brown (5% R3/2), soft, slightly plastic, damp.</i>	<i>0</i>	<i>4.0 / 4.0</i>			<i>1114</i>
	<i>7</i>		<i>0</i>				
	<i>8</i>		<i>0</i>			<i>1113</i>	
	<i>4</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>10</i>	<i>Becomes <del>more</del> slightly sandy (fine).</i>	<i>0</i>		<i>B415 / SP03 / 1011</i>		<i>1126</i>
	<i>11</i>		<i>0</i>				
	<i>12</i>		<i>0</i>			<i>1123</i>	
	<i>13</i>	<i>Sandy silt, moderate yellowish brown (10% R5/4), soft, non-plastic, damp, sand is fine grained.</i>	<i>0</i>	<i>4.0 / 4.0</i>			
	<i>14</i>		<i>0</i>		<i>B415 / SP04 / SP05 / SP06</i>		<i>1140</i>



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PROJECT *DLFA*

HOLE NO. *B415*



# HTW DRILLING LOG

HOLE NO. **B415**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sandy silt, moderate yellowish brown (10% R 5/4), soft, non plastic, clay; sand is fine grained.	0			1138	
	16		0				
	17						
	18		0	4.0 / 4.0			
	19		0		B415/ SB05 18-19'		1200
	20					1157	
	21						
	22		0	3.8 / 4.0			
	23				B415/ SB06 22-23'		1327



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PROJECT **DCFA**

HOLE NO. **B415**

# HTW DRILLING LOG

HOLE NO. **B415**

PROJECT **DCFA**

INSPECTOR **Rich Monk**

SHEET **24**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Sandy silt, moderate yellowish brown (10/25 & 1/4), soft, non-plastic, damp, sand is fine grained.	0			1324	
	25		0				
	26		0	2.6 <hr/> 4.0			
	27				B415/ SAT 7 26-27'		1343
	28	Silt, moderate yellowish brown (10/25 & 1/4), soft, non-plastic, wet.	0			1341	▼
	29	Silty clay, dark yellowish brown, (10/25 & 1/2), soft, moderately plastic, damp to moist.	0				
	30		0	2.9 <hr/> 4.0			
	31						
	32	Sand, grayish coarse (1/4 & 7/4), soft, non-plastic, wet, medium to coarse grained, subrounded.	0				
		<b>TD = 32' at 1354</b>					



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PROJECT

**DCFA**

HOLE NO.

**B415**

# HTW DRILLING LOG

 HOLE NO. **B416**

1. COMPANY NAME <b>BMcD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 4 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 1801/181</b>				
5. NAME OF DRILLER <b>Paul Vogelsburg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with acetate sleeves		8. HOLE LOCATION <b>N43260110.730 E691084.380</b>			
				9. SURFACE ELEVATION <b>1084.069</b>			
				10. DATE STARTED <b>6-7-02</b>			
				11. DATE COMPLETED <b>6-7-02</b>			
12. OVERBURDEN THICKNESS <b>32.0</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>29.3</b>				
13. DEPTH DRILLED INTO ROCK <b>0.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>32.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mynke</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>FAP</i>	REMARKS h
		Silty clay; dusky brown (STR 1/2), moderately hard, slightly plastic, damp.	0				06574 began recording
	1	Sandy silt; dark yellowish brown (STR 4/2), soft, non-plastic, damp. Some 3" gravel.	2.6	3.8 4.0	B416 SD61 1-2		0702
	2						
	3						
	4	Sand, pale yellowish brown (STR 6/2), soft, non-plastic, damp. Very fine grained.	0.4				0706
			0.8				
	5		2.6				


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PROJECT

**DCFA**

HOLE NO.

**B416**

# HTW DRILLING LOG

HOLE NO. *B416*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *2*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR SORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	<i>6</i>	<i>Sand, pale yellowish brown (10TK6/2), soft, non-plastic, damp, very fine grained.</i>			<i>B416/</i> <i>SB02</i> <i>5-6'</i>		<i>0713</i>
	<i>7</i>	<i>Clayey silt, grayish brown (5TK7/2), soft, non-plastic, damp.</i>		<i>37</i> <i>40</i>			
	<i>8</i>		<i>1.1</i>			<i>0711</i>	
	<i>9</i>		<i>1.1</i>				
	<i>10</i>	<i>Becomes slightly sandy (line).</i>	<i>0.7</i>	<i>40</i> <i>40</i>	<i>B416/</i> <i>SB03</i> <i>SB13</i> <i>SB036A</i> <i>4-10'</i>		<i>0722</i>
	<i>11</i>						
	<i>12</i>		<i>0.7</i>			<i>0720</i>	
	<i>13</i>	<i>Silty sand, moderate yellowish brown (10TK5/4), soft, non-plastic, damp.</i>	<i>0.0</i>				
			<i>0</i>	<i>37</i> <i>40</i>	<i>B416/</i> <i>SB04</i> <i>13-14'</i>		<i>0741</i>
	<i>14</i>		<i>0</i>				



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PROJECT *DCFA*

HOLE NO. *B416*


# HTW DRILLING LOG

HOLE NO. **B416**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	silty sand, moderate yellowish brown (10/62 S/4) soft, non-plastic, damp					
	16		0			0740	
	17			37			
	18		0	40	B416/ SB05 17-18'		C753
	19	clayey silt, moderate yellowish brown (10/45 S/4) soft, slightly plastic, damp	0				
	20					0753	
	21		0				
	22			25			
	23	silty sand, dark yellowish orange (10/46 G/6) soft, non-plastic, damp, medium to fine grained. = 2' gravel layer	0		B416/ SB06 22-23'		C806



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PROJECT **DCFA**

HOLE NO. **B416**

# HTW DRILLING LOG

HOLE NO. **B-410**

PROJECT **DCA**

INSPECTOR **Rick Monk**

SHEET **48**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Silty sand, dark yellowish orange (UVR 6/6), soft, non-plastic, damp, medium to fine grained.	0			0504	
	25		C				
	26	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium grained.	0	3.6 — 4.6	B-416/ S-007 26-27'		0813
	27	Clayey silt, dark yellowish brown (UVR 4/2), soft, slightly plastic, damp.					
	28	Silty sand, dark yellowish brown (UVR 4/2), soft, slightly plastic, damp, fine to medium.	0			0813	
	29		0				
	30	Silt, dark yellowish brown (UVR 4/2), soft, non-plastic, wet.	C	3.6 — 4.6			▼
	31	Sandy grayish orange (UVR 7/4), soft, non-plastic, moist to wet.					
	32		U		B-416/ S-008 31-32'		0829
	TO = 32' at 0827						



# HTW DRILLING LOG

 HOLE NO. **B417**

1. COMPANY NAME <b>BMCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 4 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>			
5. NAME OF DRILLER <b>Paul Vogelsburg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoproc 5408</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326021.570 E691088.123</b>		9. SURFACE ELEVATION <b>1084.288</b>	
			10. DATE STARTED <b>6-7-02</b>			11. DATE COMPLETED <b>6-7-02</b>
	12. OVERBURDEN THICKNESS <b>38.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>27.7</b>			
	13. DEPTH DRILLED INTO ROCK <b>0.6</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>38.6</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Paul</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Silty clay, moderate ductility brown (5R 2/2), moderately hard, slightly plastic, damp	0				0834-1024 picking
	1	Sandy silt, dark yellowish brown (10R 3/2), soft, non-plastic, damp, fine sand.	0	3.5 80			
	2						
	3	Clayey silt, grayish brown (5R 3/2), soft, non-plastic, damp	0				0841
	4	Sand, pale yellowish brown (10R 3/2), soft, non-plastic, damp, very fine grained.	0				0846
	5		0.7				


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PROJECT

**DCFA**

HOLE NO.

**B417**

# HTW DRILLING LOG

HOLE NO. *R 417*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *2*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	6	<i>Sand, pale yellowish brown (10 PR 6/2) soft, non-plastic damp, very fine grained.</i>	4.4	$\frac{4.0}{4.0}$	<i>R417/ SB62 6-71</i>		0853
	7	<i>Clayey silt, grayish brown (5 PR 3/2), moderately stiff, slightly plastic moist.</i>	0				
	8		0			0851	
	9		0				
	10	<i>becomes slightly sandy (fine).</i>	0	$\frac{3.7}{4.0}$			
	11		0		<i>R417/ SB63 1071</i>		0903
	12		0			0900	
	13		0				
	14		0				





# HTW DRILLING LOG

HOLE NO. **B407**

PROJECT **D C F A**

INSPECTOR **Rick Monk**

SHEET OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silty sand, moderate yellowish brown (10 & R 5/4) soft, non-plastic, damp	0	3.8 — 4.0		B417/ SB04 SB04 SB04 14-15'	0414
	16					0412	
	17		0				
	18		0	3.2 — 4.0			
	19	Silty clay, dark yellowish brown (10 & R 4/2), soft, slightly plastic, damp	0			B417/ SB05 18-19'	0417
	20	Sand, moderate yellowish brown (10 & R 5/4) soft, non-plastic, damp, fine to medium grained, trace s + fines	0				0427
	21						
	22		0	3.6 — 4.0			
	23	2" x 1" gravel (chart)	0			B417/ SB06 22-23'	0441



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PROJECT **D C F A**

HOLE NO. **B417**

# HTW DRILLING LOG

HOLE NO. *B417*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *24*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	<i>24</i>	<i>Sandy, moderate yellowish brown (1044 5/4), soft, non-plastic, damp, fine to medium grained, trace of fines.</i>	<i>0</i>			<i>0439</i>	
	<i>25</i>						
	<i>26</i>	<i>Soft, dark yellowish brown (1044 4/2), soft, non-plastic, moist.</i>	<i>0</i>	<i>4.0</i> <i>4.0</i>			
	<i>27</i>				<i>B407/ SP07 26-27</i>		<i>0452</i>
	<i>28</i>	<i>Becomes wet.</i>	<i>0</i>			<i>0949</i>	
	<i>29</i>						<i>Began sampling for bedrock</i>
<i>36</i>	<del><i>29</i></del>						
	<i>37</i>						
	<i>38</i>	<i>Shale, pale olive (1046/2), moderately strong, weathered top 2".</i>					
	<del><i>38</i></del>	<i>TD = 38.6' @ 1009.</i>					



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PROJECT *DCFA*

HOLE NO. *B417*

# HTW DRILLING LOG

HOLE NO. **B418**

1. COMPANY NAME <b>BACD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DCRA</b>			4. LOCATION <b>Rdy 1801 181</b>			
5. NAME OF DRILLER <b>Paul Fogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe S800</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		27 macro core with acetate sleeves		8. HOLE LOCATION <b>N4326022.410 E091092.291</b>		
				9. SURFACE ELEVATION <b>1084 298</b>		
				10. DATE STARTED <b>7-10-02</b>		11. DATE COMPLETED <b>7-11-02</b>
12. OVERBURDEN THICKNESS <b>41.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>40.1</b>			
13. DEPTH DRILLED INTO ROCK <b>1.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>42.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Beautonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Paul</b>	
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
		Silty clay, brownish gray (STR4/1), hard, non-plastic, damp.	0			1458	
	1	Silty sand, dark yellowish orange (10YR6/6), soft, slightly plastic, damp, fine to very fine sand		3.6 4.0			
	2		0				
	3				B418 S801 3-4		1501
	4	Clayey silt, grayish brown (5YR4/2), soft, non-plastic, damp	1.4			1459	
			3.3		S802 4-5		1519
	5	Sand, yellowish gray (5Y7/2), soft, non-plastic, damp, very fine					

# HTW DRILLING LOG

HOLE NO. *B418*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *2*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	6	<i>Sand, yellowish gray (577/2) soft, non plastic, damp, very fine</i>	<i>0</i>	$\frac{3.6}{4.0}$			
	7						
	8	<i>Clayey silt, dark brown (578/2), soft, non plastic, damp, moderately hard.</i>	<i>1.9</i>			<i>1517</i>	
	9		<i>1.1</i>				
	9		<del><i>2.7</i></del>				
	9		<i>2.4</i>		<i>SBO 3 9-10</i>		<i>1531</i>
	10		<i>1.4</i>	$\frac{3.3}{4.0}$			
	11	<i>Becomes dark yellowish brown (1078/2).</i>	<i>1.1</i>				
	12		<i>1.0</i>			<i>1529</i>	
	13	<i>becomes moderate yellow silty clay, moderate yellowish brown (1078/5), soft, slightly plastic, damp</i>	<i>0</i>		<i>SBO 4 12-13</i>		<i>1548</i>
	13		<i>1.6</i>	$\frac{3.7}{4.0}$			
	14		<i>0.5</i>				

# HTW DRILLING LOG

HOLE NO. **B418**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET **X 3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	silty clay, moderate yellowish brown (10 PRS/4), 20 PR, slightly plastic, damp		<i>Recovery</i>			
	16		0.5			1542	
	17	Clayey sand, dark yellowish orange (10 PRS/6), soft, non-plastic, damp, fine to medium	0				
	18		0	$\frac{3.4}{40}$			
	19						
	20		0				
	21		0				
	22		0				
	23						
	24						
	25		0				
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	99						
	100						

SB 05, SB 13, SB 15, SB 18-14  
 1556

SB06  
22-23

1615



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Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B418**

# HTW DRILLING LOG

HOLE NO. **B418**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **14**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Tim to</i>	REMARKS h
	24	Clayey silt sand, moderate yellowish brown (100R 574) soft, slight plastic, damp, very fine sand.	0			1613	
	25	1" sand seam, grayish orange fine to medium.	0				
	26		0	3.8 4.0	SBC7 26-27'		1627
	27		0				
	28	Sand, grayish orange (100R 719) soft, nonplastic, damp, fine to medium.	0			1625	
	29		0				
	30		0	2.9 4.0	SBC8 30-31'		1628
	31		0				
	32		0			1636	
			0				



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B418**

# HTW DRILLING LOG

HOLE NO. **B48**

PROJECT <b>DCFA</b>			INSPECTOR <b>Rock Mont</b>			SHEET <b>5</b> OF <b>5</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <b>Time</b>	REMARKS h
	33	Clayey silt, dark yellowish brown (10% R4/2), soft, moderately plastic, damp to moist.					
	34		0	$\frac{4.0}{4.0}$	SB09 34-35'		1645
	35						
	36		0			1646	
	37		0				
	38	Becomes slightly sandy.	0	$\frac{4.0}{4.0}$	SB10 38-39'		<del>1600</del> 1700
	39						
	40	Silty sand, dark yellowish brown (10% R4/2), soft, slightly plastic, moist, fine sand.	0			1658 <del>1558</del>	
	41	Becomes wet	0				▼ Not enough dry material to sample
	42		0				

# HTW DRILLING LOG

HOLE NO. **B418**

PROJECT <b>DLFA</b>			INSPECTOR <b>Rick Mont</b>			SHEET <b>6</b> OF <b>6</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>Time</b>	REMARKS h
	42	Shale, yellowish gray (577/2), weak, fissile, weathered at top.	0	2/3 2/3			
	43	TD = 42.3' at 0736 (21602). Refusal					
	44						



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PROJECT **DLFA**

HOLE NO. **B418**



# HTW DRILLING LOG

HOLE NO. **B419**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 5 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/187</b>				
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 9400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with acetate sleeves		8. HOLE LOCATION <b>N4326027.530 E691099.223</b>			
				9. SURFACE ELEVATION <b>1084.567</b>			
				10. DATE STARTED <b>7-11-02</b>		11. DATE COMPLETED <b>7-11-02</b>	
12. OVERBURDEN THICKNESS <b>40.0</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>34.3</b>				
13. DEPTH DRILLED INTO ROCK <b>0.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>40.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		✓	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hank</b>		
		✓	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Silty clay, dark yellowish brown (10 to 4/2), moderately soft, slightly plastic, damp	0			0802	
	2	Silty sand, grayish orange (4 to 2 3/4), soft, non-plastic, damp, fine to very fine	0	3.2 4.0			
	3				<b>B419/5801 23'</b>		<b>0804</b>
	4	Clayey silt, grayish brown (5 to 3 3/4), soft, non-plastic, damp, trace of fine sand.	0			0803	
	5	Silty sand, moderate yellowish brown (10 to 5/4), soft, non-plastic, damp, fine to very fine	0				



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PROJECT **DLFA**

HOLE NO. **B419**

# HTW DRILLING LOG

 HOLE NO. **B414**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

 SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	GLOW COUNTS TIME g	REMARKS h
	6	Silty sand, moderate yellowish brown (CUTR 5/4), soft, non-plastic, damp, fine to very fine	0	$\frac{3.8}{4.0}$	SB02, SB12, SB16A 6-7		0806
	7						
	8		0			0814	
	9	Silty sand, dark yellowish brown (CUTR 5/4), soft, non-plastic, damp, fine to very fine	0				
	10		0	$\frac{3.7}{4.0}$	SB03 + 175/175D 10-11'		2 carb jars. 0837
	11						
	12		0			0835	
	13	Color change to moderate yellowish brown (CUTR 5/4).	0	$\frac{3.2}{4.0}$			
	14		0		SB04 14-15'		0847

# HTW DRILLING LOG

HOLE NO. **B419**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silt/ty sand, moderate yellowish brown (1044 5/4) soft, non plastic, damp, fine to very fine	0				
	16					0845	
	17		0				
	18	Sand, dark yellowish orange (1044 6/6) soft, non plastic, damp, fine to medium, trace of fines.	0	3.9 4.0	SB05 18-19'		0903
	19						
	20		0			0901	
	21		0				
	22		0	3.8 4.0	SB06 22-23'		0914
	23						



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PROJECT **DCFA**

HOLE NO. **B419**

B 49

# HTW DRILLING LOG

HOLE NO. ~~DCFA~~

PROJECT

DCFA

INSPECTOR

Rick Monk

SHEET YF  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	24	2 1/2" silt seam, same color	0			0912	
	25		0				
	26	Splty, moderate yellowish brown (10YR5/4), soft, slightly plastic, moist	0	40 40	S807, S117 S117 & A 26-27'		0924
	27						
	28		0			0922	
	29						
	30	Sand, grayish orange (10YR7/4), soft, non-plastic, damp, fine to medium.	0	31 40	S808 30-31'		0946
	31						
	32		0			0944	
			0				



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PROJECT

DCFA

HOLE NO.

B 49

# HTW DRILLING LOG

HOLE NO. **B419**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Comp</i>	REMARKS h
	33	Sand, grayish orange (10/27/4), soft, nonplastic, damp, fine to medium.					
	34		0	$\frac{31}{40}$	SB09 34-35'		0954
	35						
	36	some $\frac{1}{2}$ " - 1" limestone	0			0452	
	37		0				
	38		0	$\frac{28}{40}$	SB10 38-39'		1004
	39	1" of dark yellowish orange.					▼
	40	Sand, pale yellowish brown (10/28/2) soft, nonplastic, wet, fine to medium	0			1002	
		TD = 40', wet.					



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PROJECT

**DCFA**

HOLE NO.

**B419**

# HTW DRILLING LOG

 HOLE NO. **B420**

1. COMPANY NAME <b>B.M.C.D</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 1501181</b>				
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with acetate sleeves		8. HOLE LOCATION <b>N4326032.890 E691106.602</b>			
				9. SURFACE ELEVATION <b>1084.722</b>			
				10. DATE STARTED <b>7-16-02</b>		11. DATE COMPLETED <b>7-16-02</b>	
12. OVERBURDEN THICKNESS <b>42.7</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>38.9</b>				
13. DEPTH DRILLED INTO ROCK <b>0.5</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>43.2</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA %</b>
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Dentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Monk</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Silty clay, dark yellowish brown (corrosive), moderately soft, slightly plastic, dump	0			1028	
	2	Becomes slightly sandy.	0	21 40	<del>NA</del> 17420/ 5101 2-3'		1032
	3		0				
	4		0			1030	
	5	Silty sand, moderate yellowish brown (corrosive) soil, non-plastic, dump; fine to very fine	0				

# HTW DRILLING LOG

HOLE NO. **B 420**

PROJECT **DLFA**

INSPECTOR **Mark Monk**

SHEET OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g <i>Time</i>	REMARKS h
	6	<i>Silty sand, nuclearite yellowish brown (16XR3/4), soft, non-plastic, damp, fine to very fine</i>	0	$\frac{3.2}{40}$	SB02 6-7'		1052
	7		0				
	8		0			1050	
	9	<i>Clayey silt grayish brown (54R3/2), soft non plastic, damp</i>	0				
	10		0	$\frac{4.0}{40}$	SB03 10-11'		1102
	11		0				
	12		0			1100	
	13	<i>Color change to dark yellowish brown (14XR4/2).</i>	0	$\frac{4.0}{40}$			
	14		0		SB04, SB14 SB140A 114		1114

# HTW DRILLING LOG

 HOLE NO. *B420*

 PROJECT *DLFA*

 INSPECTOR *Rick Hunt*

 SHEET *3*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	<i>15</i>	<i>Clayey silt, dark yellowish brown (CUT 72) 1/2, soft, non-plastic, damp</i>					
	<i>16</i>		<i>0</i>			<i>1/12</i>	
	<i>17</i>		<i>0</i>				
	<i>18</i>		<i>0</i>	<i>3.8 / 4.0</i>			
	<i>19</i>				<i>S805 1819'</i>		<i>1138</i>
	<i>20</i>		<i>0</i>		<i>1136</i>		
	<i>21</i>		<i>0</i>				
	<i>22</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>23</i>	<i>Sand, grayish orange (CUT 74), soft, non-plastic damp, fine to medium.</i>			<i>S806 22-23'</i>		<i>1146</i>


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 PROJECT *DLFA*

 HOLE NO. *B420*



# HTW DRILLING LOG

 HOLE NO. **B420**

PROJECT

**DCFA**

INSPECTOR

**Rick Monk**

 SHEET OF **684** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium.	0			1144	
	25		0				
	26	3" clay, dark yellowish brown, highly plastic.	0	3.6 4.0	SB07 26-27		1200
	27		0				
	28	Silt, moderate yellowish brown (UVR 5/4), soft, non-plastic, moist.	0			1157	
	29		0				
	30	Silt, dark yellowish brown (UVR 2/2), soft, slightly plastic, moist.	0	3.0 4.0	SB08 30-31		1346
	31	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium.	0				
	32	Silty sand, moderate yellowish brown (UVR 5/4), soft, non-plastic, damp, fine to medium.	0			1345	
			0				


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PROJECT

**DCFA**

HOLE NO.

**B420**

# HTW DRILLING LOG

HOLE NO. **B 420**

PROJECT **DLFA**

INSPECTOR **Rock Mank**

SHEET **5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Silty sand, moderate yellowish brown (10 YR 5/4), soft, nonplastic damp, fine to medium.					
	34	Silty clay, moderate yellowish brown (10 YR 5/4), soft, slightly plastic, damp	0	40 <hr/> 4.0	SB09 3435'		1401
	35	Sand, silty sand, grayish orange (10 YR 7/4), soft, nonplastic, damp fine to medium					
	36	3" silt seam, moderate yellowish brown Some 1/2" - 1/2" chert and limestone gravel	0			1359	
	37		0				
	38	Sandy dark yellowish orange (10 YR 6/6), soft, nonplastic damp, fine to medium	0	3.7 <hr/> 4.0	SB10 3534'		1414
	39	Color change to pale yellowish brown (10 YR 6/12), wet.	0				▼
	40		0			1412	
	41		0				



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PROJECT

**DLFA**

HOLE NO.

**B 420**

# HTW DRILLING LOG

HOLE NO. **B420**

PROJECT

**DLFA**

INSPECTOR

**Rick Kent**

SHEET **X B**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <del>                    </del> Remarks	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp	REMARKS h
	42	Sticky clay, yellowish gray (ST 7/2), moderately soft, non plastic, damp.		3.2 3.2			
	43	Silt, yellowish gray (ST 7/2), weakly weathered.	0				
	44	TD = 43.2' at 1425. Refusal,					



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PROJECT

**DLFA**

HOLE NO.

**B420**

# HTW DRILLING LOG

 HOLE NO. **1421**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Rual Vysolberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macro core with acetate sleeves.</b>		8. HOLE LOCATION <b>N4321038.050 E691113.949</b>		9. SURFACE ELEVATION <b>1084.820</b>			
		10. DATE STARTED <b>7-11-02</b>		11. DATE COMPLETED <b>7-12-02</b>			
		12. OVERBURDEN THICKNESS <b>43.8</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>39.5</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>0.2</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		18. GEOTECHNICAL SAMPLES <b>NA</b>	
14. DEPTH OF HOLE <b>44.0</b>		DISTURBED <b>NA</b>		UNDISTURBED <b>NA</b>			
19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		20. SAMPLES FOR CHEMICAL ANALYSIS		21. TOTAL CORE RECOVERY			
VOC <b>✓</b>		METALS <b>NA</b>		OTHER (SPECIFY) <b>NA</b>			
OTHER (SPECIFY) <b>NA</b>		OTHER (SPECIFY) <b>NA</b>		OTHER (SPECIFY) <b>NA</b>			
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED <b>✓</b>		MONITORING WELL <b>NA</b>			
OTHER (SPECIFY) <b>NA</b>		OTHER (SPECIFY) <b>NA</b>		23. SIGNATURE OF INSPECTOR <b>Rob Hanf</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Silt/clay, dusky brown (5 R 2/2), moderately soft, non-plastic, damp.	0			1456	
	2		0	3.7 4.0			
	3	Few concrete fragments 1/2"-1" Clayey silt, dusky yellowish brown (10 R 2/2), soft, non-plastic, damp.	0		B421/ 7801 2-3'		1500
	4		0			1458	
	5		0				


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 PROJECT **DCFA**

 HOLE NO. **B421**

# HTW DRILLING LOG

HOLE NO. **B42**

PROJECT **DCFA**

INSPECTOR **Mark Monk**

SHEET **2** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1514</i>	REMARKS h
	6	Clayey silty, dark yellowish brown (10 PR 2/2), soft, non-plastic, damp	0	$\frac{35}{40}$	SB02	6-7'	1516
	7	Silty sandy, moderate yellowish brown (10 PR 5/4), soft, non-plastic, damp; fine to very fine	0			1514	
	8		0				
	9	Clayey silt, grayish brown (STR 3/2), soft, non-plastic, damp	0	$\frac{40}{40}$			
	10		0	$\frac{40}{40}$	SB03	10-11"	1527
	11		0				
	12		0			1525	
	13		0	$\frac{40}{40}$			
	14		0		SB04	14-15'	1538

# HTW DRILLING LOG

HOLE NO. **B421**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	15	clayey silt, grayish brown (UVR 3/2), soft, non-plastic, damp					
	16	Color change to dark yellowish brown (UVR 4/2)	0			1536	
	17		0				
	18		0	40 40	S805 18-19'		1552
	19		0				
	20		0			1550	
	21		0				
	22		0	40 40	S806 22-23'		1606
	23	Silty sand, moderate yellowish brown (UVR 4/2, 5/4), soft, non-plastic, damp, fine to medium					



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PROJECT **DCFA**

HOLE NO. **B421**

# HTW DRILLING LOG

HOLE NO. *B-42*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *8* OF *8* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GESTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	<i>24</i>	<i>2' sand seam, grayish orange, fine to medium</i>	<i>0</i>			<i>1604</i>	
	<i>25</i>	<i>Silt; moderate yellowish brown (10YR 5/4), soft, slightly plastic, damp to moist</i>	<i>0</i>				
	<i>26</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>27</i>	<i>Becomes slightly sandy (very fine)</i>	<i>0</i>		<div style="border: 1px solid black; padding: 2px; display: inline-block;"><i>SB07 26-27'</i></div>		<i>+ 2 jars for MS/MSD 1619</i>
	<i>28</i>		<i>0</i>			<i>1617</i>	
	<i>29</i>	<i>Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp</i>	<i>0</i>				
	<i>30</i>		<i>0</i>	<i>3.0 / 4.0</i>			
	<i>31</i>				<i>SB08 30-31'</i>		<i>1634</i>
	<i>32</i>	<i>Silty clay, moderate yellowish brown (10YR 5/4), soft, moderately plastic, damp</i>	<i>0</i>			<i>1632</i>	
		<i>Becomes moist.</i>	<i>0</i>				<i>0248 (7-202) Now using Geoprobe 4200</i>

# HTW DRILLING LOG

HOLE NO. **B421**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Stiff clay, moderate yellowish brown (10YR 5/4), soft, moderately plastic, dry moist					
	34		0	23 4.0 <i>(same casing)</i>	SP09 34-35		00852
	35						
	36	Clayey sand, dark yellowish brown (10YR 4/2), moderately soft, non-plastic, dry, medium to coarse sand, <i>35.6'</i> <del>with small limestone</del>	0			0847	
	36	Clayey shale, light olive gray (5Y 5/2), weak, <i>35.9'</i> sand, light brownish gray (5YR 6/1), soft, non-plastic, moist, fine to medium					
36	37	<del>It is 36.6' at 0847.</del> Sand, grayish orange (10YR 7/4), soft, non-plastic, moist, fine to medium	0				Sampler was over full. Using double sampler to try again.
37	38	<del>Becomes dark yellowish orange</del> <del>non-plastic,</del>		3.6 4.0			
38	39	Becomes dark yellowish orange (10YR 6/6)	0		SP10 38-39		0854 
39	40	Becomes pale yellowish brown (10YR 6/2). Becomes wet	0			0852	
40			0			0852	



# HTW DRILLING LOG

HOLE NO. **B421**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
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**41** Sand, pale yellowish brown (core G/2), soft, non-plastic wet, fine to medium.

**42** Trace of 1/2-1" chert, becomes dark yellowish orange.

**43** becomes gravelly.

**44** Limestone highly weathered, yellowish gray (G/2).

**TD=44' at 1031.**  
**Refusal.**



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PROJECT

**DLFA**

HOLE NO.

**B421**

# HTW DRILLING LOG

 HOLE NO. **B422**

1. COMPANY NAME <b>B/C/D</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>B DCEA</b>			4. LOCATION <b>Bldg. 180/187</b>		
5. NAME OF DRILLER <b>Paul Vögelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrolone with acetate sleeves		8. HOLE LOCATION <b>N4326040-840 E69117.93Z</b>	
				9. SURFACE ELEVATION <b>1084.915</b>	
				10. DATE STARTED <b>7/2-02</b>	
		11. DATE COMPLETED <b>7/202</b>			
12. OVERBURDEN THICKNESS <b>40.0</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>39.0</b>		
13. DEPTH DRILLED INTO ROCK <b>0-0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>40.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		

18. GEOTECHNICAL SAMPLES <b>3 @</b>		DISTURBED <b>1 ✓</b>	UNDISTURBED <b>2 ✓</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>NA</b>	<b>NA</b>	<b>TOC</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Recontaminated</b>		BACKFILLED <b>✓</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Munk</b>
					21. TOTAL CORE RECOVERY <b>NA %</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g T <sub>60</sub> (psf)	REMARKS h
	1	Silty clay <del>Clayey silt, moderately ductile</del> yellowish brown (with silty) slightly hard, non-plastic, damp	0		S801 0-1'	1167 1809	TGC sample
	2		0	3.5 / 40			
	3	Silty sands moderate brown (S <sub>u</sub> 22 4/4) soft, non-plastic damp, fine to very fine. Trace of 1/2" gravel and red brick fragments.	0				
	4	Silty clay, grayish brown (S <sub>u</sub> 22 3/26) soft, slightly plastic damp	0			408	
	5						


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 PROJECT **DCEA**

 HOLE NO. **B422**

# HTW DRILLING LOG

HOLE NO. **B422**

PROJECT **DCEA**

INSPECTOR **Rock, Mark**

SHEET **2** OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BELOW COUNTS g <i>None</i>	REMARKS h
	0	<i>Not logged</i>					
	7						
	8					<i>1120</i>	
	8	<i>Clayey silty sand, sandy silt, grayish brown (STR 2/2) silt, non plastic, damp</i>	0		<i>SBU2 8-9'</i>		<i>1140 TOL sample</i>
	9						
	10		0	<i>34 — 40</i>			
	11	<i>5' of limestone, yellowish gray</i>					
	12		0			<i>1138</i>	
	12	<i>Silty sand, pale yellowish brown (10CR 6/2), soft, non plastic, damp.</i>					
	13						<i>1146</i>
	14						



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PROJECT **DCEA**

HOLE NO. **B422**

# HTW DRILLING LOG

HOLE NO. **B422**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **43**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GESTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15						
	16	Clayey silt, dark yellowish brown (10 to 1/2), soft, slightly plastic, damp.	0			1184	
	17						
	18		0	4.0 1.0 4.0			
	19		0		SB03 14-20'		1202 TOC sample.
	20					1200	
	21	Silty sand, moderate yellowish brown (10 to 5/4), soft, non-plastic, damp fine to very fine.	0				
	22		0	6.6 1.0 4.0			
	23						



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PROJECT **DLFA**

HOLE NO. **B422**

# HTW DRILLING LOG

HOLE NO. **B 422**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **24**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g <i>N/A</i>	REMARKS h
24	25	Silty sandy, moderate yellowish brown (over 1/4), soft, non-plastic, damp	0		1329	1329	
	25						
	26	3" silt seam, moderate yellowish brown, moist	0	33 40			
	27						
	28		0			1330	
	29		0				
	30	Clayey silt, moderate yellowish brown (over 5/4), soft, slightly plastic, damp	0	34 40			
	31	Silty sand, moderate yellowish brown (over 5/4), soft, non-plastic, damp	0				
	32		0			1341	
			0				



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PROJECT **DCFA**

HOLE NO. **B 422**

# HTW DRILLING LOG

HOLE NO. **B422**

PROJECT **DCFA**

INSPECTOR **Rick / Mont**

SHEET OF **25** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sandy grayish orange (UPT/4), soft, non-plastic, damp, fine to medium.					
	34	2" silty sand seam, moderate yellowish brown, soft, slightly plastic, damp.	C	3.4 — 4.0			
	35	Weathered limestone, yellowish gray (ST7/2), moderately weak.	D				
	36		D			1401	
	37		D				
	38	Sandy, light olive gray (ST4/1), soft, non-plastic, moist, fine to medium, some fines.	D	3.3 — 4.0			
	39	Sandy, dark yellowish orange (UPT/6), soft, non-plastic, moist, fine to medium. Becomes wet.	D				▼ Collected material from saturated zone in bag.
	40					1413	
		TD = 40' art water.					

# HTW DRILLING LOG

HOLE NO. **B423**

1. COMPANY NAME <b>B/MLD</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 6 SHEETS
3. PROJECT <b>DLFA</b>	4. LOCATION <b>Blkg 180/181</b>	
5. NAME OF DRILLER <b>Paul Holga Kogalsberg</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4100</b>
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N4326043.470 E691121.706</b>	
	9. SURFACE ELEVATION <b>1085.056</b>	
10. DATE STARTED <b>7/5/02</b>		11. DATE COMPLETED <b>7/5/02</b>

12. OVERBURDEN THICKNESS <b>42.5</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>38.2' - 38.1'</b>
13. DEPTH DRILLED INTO ROCK <b>0.6</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>43.1</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	

22. DISPOSITION OF HOLE <b>Reconcrete</b>	BACKFILLED <b>✓</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Monk</b>		
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ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sandy silt, dark yellowish brown with H <sub>2</sub> O soft, some plastic, damp fine to very fine sand	0			0945	
	2		0	29 40	B423/ SP01 2-3'		0949
	3	Fine silt/clay, pale yellowish brown (CO <sub>2</sub> TRC/2), with coal/discard, red brick fragments, concrete fragments 0 sandy					
	4					0947	
	5		0				

# HTW DRILLING LOG

HOLE NO. **B423**

PROJECT <b>DLFA</b>			INSPECTOR <b>Rick Mark</b>			SHEET <b>72</b> OF <b>6</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Filly silty clay, pale yellowish brown (10TR6/2), with coal/lime, red brick fragments, concrete fragments, sandy.	0	$\frac{31}{40}$ <i>Macromer</i>	SB02 6-7'	770	1002
	7						
	8		0			NUD	
	9	Clayey silty, dark yellowish brown (10TR4/2), soft, non-plastic clay, trace of fine sand	0.4	$\frac{40}{40}$			
	10		0.7	$\frac{40}{40}$	SB03, SB03, SB03 GA 10-11'		1011
	11						
	12	Becomes dusky brown (10TR4/2) (5TR2/2).	0.0				1009
	13		0	$\frac{40}{40}$			
	14		0		SB04 14-15'		1027



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PROJECT

**DLFA**

HOLE NO.

**B423**



# HTW DRILLING LOG

HOLE NO. **B423**

SHEET **X 3**  
OF **6** SHEETS

PROJECT		INSPECTOR			SHEET		
<b>DLFA</b>		<b>Mark Mont</b>			<b>X 3</b>		
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS	REMARKS
a	b	c	d	<del>NO. CORE BOX NO.</del>	f	g	h
	15	clayey silt, dusky brown (5YR2/2), soft, non-plastic, damp, trace of fine sand.					
	16	Sandy silt, dark yellowish brown (10YR4/2), soft, non-plastic, damp, fine to medium sand.	0			025	
	17		0.4				
	18		0.4	3.7	S805 1718		1037
	19	Clayey silt, grayish brown (5YR3/2), soft, slightly plastic, damp.	0				
	20					1035	
	21	Silty clay, moderate yellowish brown (10YR5/4), moderately soft, moderately plastic, damp.	0	3.7			
	22			4.0			
	23				S806 22-231		1050



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PROJECT

**DLFA**

HOLE NO.

**B423**

# HTW DRILLING LOG

HOLE NO. **B423**

PROJECT

**BLFA**

INSPECTOR

**Rick Monk**

SHEET **4**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <del>Peruery</del>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Total	REMARKS h
	24	silty sand, moderate yellowish brown (10% R5/4) soft, compressible deep fine to medium sand.	0			1048	
	25		0				
	26		0	4.0 / 4.0	SB07 26-27		1102
	27		0				
	28		0			1100	
	29	3" silt seam, soft, moist.	0				
	30		0	4.0 / 4.0			
	31		0		SB08 30-31		1117
	32		0			1115	
			0				



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PROJECT

**BLFA**

HOLE NO.

**B423**

# HTW DRILLING LOG

HOLE NO. **B423**

PROJECT

**DLFA**

INSPECTOR

SHEET **5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>218</i>	REMARKS h
	33	Silty sand, moderate yellowish brown (UFR 5/4), soft, non-plastic, damp, fine to medium sand.					
	34	Sand, grayish orange (UFR 7/4), soft, non-plastic, damp, fine to medium.	0	$\frac{35}{40}$	SB09 3435		1136
	35						
	36	Silty sand, moderate yellowish brown (UFR 5/4), soft, non-plastic, damp, some 3-1/8 chert and limestone sand.	0			1134	
	37	Sand, grayish orange (UFR 7/4), soft, non-plastic, damp.	0		SB10 37-38		1150
	38		0	$\frac{30}{40}$			▼
	39	Silty sand, pale yellowish brown (UFR 6/2), soft, non-plastic, wet, fine to medium.					
	40		0			1148	
	41		0				Using discrete sampler.



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PROJECT

**DLFA**

HOLE NO.

**B423**

# HTW DRILLING LOG

HOLE NO. **B423**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **6**  
OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Temp</i>	REMARKS h
	42	<del>Silt/sand</del>	0				
	43	Shale, light olive gray (St 5/4) very weathered, crumbly.	0	0.6 <hr/> 0.6			Pushed discrete sample to 42.5' and opened.
	44	TD = 43.1' at 1203. Refusal.					
	45	TD = 44.1' at 1203.					



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PROJECT **DLFA**

HOLE NO. **B423**

# HTW DRILLING LOG

 HOLE NO **B42F**

1. COMPANY NAME <b>B/MCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/181</b>		
5. NAME OF DRILLER <b>Paul Vuyalsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 7150</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" mcca core with		8. HOLE LOCATION <b>N4326048.630 2691129.129</b>	
		geotech sleeves		9. SURFACE ELEVATION <b>1084.013</b>	
		10. DATE STARTED <b>7-15-02</b>		11. DATE COMPLETED <b>7-15-02</b>	
12. OVERBURDEN THICKNESS <b>20.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>			
13. DEPTH DRILLED INTO ROCK <b>0.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>20.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h	
		Fill, sandy silt, pale yellowish brown (10R 6/2) silt, many plastic, some with concrete and red brick fragments	0	Recovery  27 40		1389		
	2		0			B424/ 5801 23'		1352
	3		0					
	4		0				1350	
	5		0					


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PROJECT

**DLFA**

HOLE NO.

**B42F**

# HTW DRILLING LOG

HOLE NO. **B424**

PROJECT

**DCFA**

INSPECTOR

**Rick Monk**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Turns</i>	REMARKS h
	6	Fell, sandy silty, pale yellow with brown (10R 6/2), soft, non-plastic, <del>then</del> with concrete and red brick frags, roots.	0	$\frac{2.0}{4.0}$	SAB2 0-7'		1406
	7		0				
	8	Some coal/clinkers.				1403	
	9		0				
	10		0.4	$\frac{1.9}{4.0}$			
	11		1.3		SAB3 11-12'	<div style="border: 1px solid black; padding: 2px; display: inline-block;">1 Jar only</div>	1414
	12		0			1412	
	13			$\frac{3.6}{4.0}$			
	14	Silty sand, pale yellow with brown (10R 6/2), soft, non-plastic, dump fine to very fine.	0-3				



051601  
Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B424**

# HTW DRILLING LOG

HOLE NO. **R424**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Silty sand, pale yellowish brown 100% G(2) soft, non-plastic, damp fine to very fine					
	16		1.0		SB04 1516'	1429	1423
	17		0.7				
	18		1.0	40 — 40			
	19	Sandy silt, grayish brown C STR 3/4, soft, non-plastic, damp, very fine sand.					
	20		3.4		SB05 19-20'	1434	1436
	21						Coring 1h. Using discrete sampler. Sampler will not go past 16' offset
	22						2 feet west, but to 23' offset 2' north of 2nd location but to 15' and hit refusal.
	23						



051601 Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**R424**

# HTW DRILLING LOG

HOLE NO. **B425**

1. COMPANY NAME <b>Burns + McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>PEB</b>		SHEET 1 OF 1 SHEETS	
3. PROJECT <b>USFROCF 27979</b>			4. LOCATION <b>Building 180/181 Location</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		Preprobe		8. HOLE LOCATION <b>N4326033.710 E69112.164</b>	
		MACROLONE Sampler		9. SURFACE ELEVATION <b>1084.551</b>	
		Dipnet		10. DATE STARTED <b>05/23/02</b>	
				11. DATE COMPLETED <b>05/23/02</b>	
12. OVERBURDEN THICKNESS <b>44.9 ft</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>		
13. DEPTH DRILLED INTO ROCK <b>0.1 ft</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>45 ft</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %
					23. SIGNATURE OF INSPECTOR <b>Walter B. McClendon</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	44	Sand, 10gr 6/3, pale brown, wet, fine grained, well sorted, subangular to rounded					Start Time 0905
	45	snate 5, 2.5/1, black	R				End Time 1030
		Bottom of Hole					TD=45 feet



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Form MRK -55

PROJECT **USFROCF 27979**

HOLE NO. **B425**



# HTW DRILLING LOG

HOLE NO. **B426**

1. COMPANY NAME <b>Burns + McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>P&amp;B</b>			SHEET 1 OF 1 SHEETS	
3. PROJECT <b>USFRDCFA 27979</b>			4. LOCATION <b>Building 180/181 Location</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Reprobe 4500</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		Preprobe		8. HOLE LOCATION <b>N4326033.880 E691116.821</b>		
		macrocore sampler		9. SURFACE ELEVATION <b>1084.617</b>		
		Diomite		10. DATE STARTED <b>05/23/02</b>		
				11. DATE COMPLETED <b>05/23/02</b>		
12. OVERBURDEN THICKNESS <b>45.9 ft</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>			
13. DEPTH DRILLED INTO ROCK <b>0.1 ft</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>46 ft</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED		
<b>NA</b>		<b>NA</b>		<b>NA</b>		
19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		20. SAMPLES FOR CHEMICAL ANALYSIS		21. TOTAL CORE RECOVERY		
		VOC		METALS		
		OTHER (SPECIFY)		OTHER (SPECIFY)		
<b>NA</b>		<b>NA</b>		<b>NA</b>		
		BACKFILLED		MONITORING WELL		
		OTHER (SPECIFY)		23. SIGNATURE OF INSPECTOR		
<b>Bentonite</b>		<input checked="" type="checkbox"/>		<b>NA</b>		
				<b>Walter B. McClendon</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<b>Sand</b>				<b>Time</b>	
	43	↓ Lugged from cuttings on probe casing					Start Time = 1102
	44						
	45						
	46	↓ <b>Calcareous shale, 5/2.5T, black</b>	<b>NA</b>	<b>NA</b>	<b>551</b>	<b>1350</b>	End Time 1357
		Bottom of Hole					TD = 46 ft



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PROJECT

**USFRDCFA**

**27979**

HOLE NO.

**B426**

# HTW DRILLING LOG

HOLE NO. **B427**

1. COMPANY NAME <b>Burns + McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 1 SHEETS		
3. PROJECT <b>USFRDCFA 27979</b>			4. LOCATION <b>Building 180/181 location</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		Preprobe		8. HOLE LOCATION <b>NH326038.1660 E69119.680</b>			
		MACROLUX sampler		9. SURFACE ELEVATION <b>1084.846</b>			
		Discrete		10. DATE STARTED <b>05/23/02</b>			
11. DATE COMPLETED <b>05/23/02</b>		12. OVERBURDEN THICKNESS <b>43.3</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>			
13. DEPTH DRILLED INTO ROCK <b>0.4</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>43.7</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Walter B. Mcclendon</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
		CLAY, 2.5y 7/1, light grey, moist to wet, med plastic and consistency					Start Time = 1412
	43	Weathered Shale, 2.5y 7/1 to 2.5y 5/3, light yellowish brown					
		Shale, 2.5y 6/2, light brownish grey,	R				End Time 1500
	44	Bottom of Hole					TD = 43.7

# HTW DRILLING LOG

HOLE NO. **B428**

1. COMPANY NAME <b>BMCD</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 1 SHEETS
3. PROJECT <b>DLFA</b>	4. LOCATION <b>Blg 180/181</b>	
5. NAME OF DRILLER <b>Paul Vignalsberg</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Greyhound 5400</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N4326038.920 E691125.166</b>	
	9. SURFACE ELEVATION <b>1074.955</b>	
	10. DATE STARTED <b>7/9/02</b>	11. DATE COMPLETED <b>2/4/02</b>

12. OVERBURDEN THICKNESS <b>40.4</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>
13. DEPTH DRILLED INTO ROCK <b>0.2</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>40.6</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Rusk</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	38						
	39						
	40			$\frac{0.2}{0.2}$			
	41	<p><i>Shale, light olive gray (S75/2), weak, weathered</i></p> <p><b>TO = 40.6' at 0830</b></p>					



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PROJECT **DLFA**

HOLE NO. **B428**

# HTW DRILLING LOG

 HOLE NO. **B430**

1. COMPANY NAME <b>BMCB</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 150/181</b>			
5. NAME OF DRILLER <b>Paul Vogelshanz</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geop-dip 4200</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macroprobe with acetate sleeves		8. HOLE LOCATION <b>N4326007.990 E691085.567</b>		
				9. SURFACE ELEVATION <b>1083.947</b>		
				10. DATE STARTED <b>7-17-02</b>		
				11. DATE COMPLETED <b>7-17-02</b>		
12. OVERBURDEN THICKNESS <b>43.0 43.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>34.2'</b>			
13. DEPTH DRILLED INTO ROCK <b>0.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>43.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Decontaminate</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR  <b>Rick Phank</b>	
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Clayey silt, pale yellowish brown (CRR 6/2), soft, non-plastic, damp, zone 1/4" - 1/2" gravel.	C			0731	
	2		C-4	38 40			
	3	Clayey silt, clasy brown (CRR 6/2), soft, non-plastic, damp, trace of coal/clinker and red brick fragments.	C-4		SP01 2-3'		0736
	4		C-4			0733	
	5		0				


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Form MRK -55

PROJECT

**DLFA**

HOLE NO.

**B430**

# HTW DRILLING LOG

HOLE NO. **B430**

PROJECT **DCEA**

INSPECTOR **Rick Mark**

SHEET OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Final</i>	REMARKS h
	6	Clayey silt, dusky brown (SR2/2), soft, non-plastic, damp, trace of coal/clinker and red brick fragments.	0	2.0 4.0	SR2 6-7'		0746
	7	<del>No more coal/clinker or brick</del>					
	8	<del>Silty clay</del> Clayey silt, grayish brown (SR3/2), soft, slightly plastic, damp.	0				0743
	9		0				
	10		0	4.0 4.0	SR03, SR13, SR13CA 10-11'		0751
	11		0				
	12		0				0752
	13	Becomes dark yellowish brown and slightly sandy.	0	4.0 4.0			
	14		0		SR14 14-15'		0813



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PROJECT **DCEA**

HOLE NO. **B430**

# HTW DRILLING LOG

HOLE NO. **B430**

PROJECT <b>DCFA</b>			INSPECTOR <b>Rick Mont</b>			SHEET OF <b>8</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silty clay, dark yellowish brown (10 PR 4/2), soft, slightly plastic, damp, trace of fine sand	0				
	16		0			081	
	17	clay, soft, moderate yellowish brown (10 PR 5/4), soft, non-plastic, damp.	0				
	18	Silty sands, moderate yellowish brown (10 PR 5/4), soft, non-plastic, damp, fine to medium, very fine	0	3.9 — 4.0		S105, 15, 15QA 1874	0822
	19		0				
	20		0			0820	
	21		0				
	22		0	3.6 — 4.0		S106 22-25	0840
	23		0				



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PROJECT **DCFA**

HOLE NO. **B430**

# HTW DRILLING LOG

HOLE NO. *B430*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *X 4*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	CLOW COUNTS <i>7-10</i>	REMARKS h
	24	<i>Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp fine to medium.</i>	0			0838	
	25		0				
	26		0	$\frac{3.3}{4.0}$	<i>SNOT 26-27'</i>		0846
	27		0				
	28	<i>Silty, pale yellowish brown (10YR 6/2), soft, non-plastic, damp.</i>	0			0844	
	29		0				
	30	<i>Becomes moist.</i>	0	$\frac{4.0}{4.0}$			
	31		0		<i>9208 30-31'</i>		0854
	32	<i>3" of sand, fine to medium, grayish orange.</i>	0			0852	
			0				



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PROJECT *DCFA*

HOLE NO. *B430*

# HTW DRILLING LOG

HOLE NO. **B430**

PROJECT **DCFA**

INSPECTOR **Mark Monk**

SHEET **5** OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Stiff, pale yellowish brown (104R G (2), soft, nonplastic, moist)					
	34		0	4.0 4.0	5009 3334		0903  ▼
	35	Becomes wet.					
	36		0			0901	
	37						Using discrete sampler. Sampling below only.
	38						
	39						
	40						
	41						



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PROJECT **DCFA**

HOLE NO. **B430**



# HTW DRILLING LOG

HOLE NO. *B42*

PROJECT *DCEA*

INSPECTOR *Rock Mont*

SHEET *6*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	<del>GEOTECH SAMPLE</del> OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	<del>BLOW</del> COUNTS <i>Time</i>	REMARKS h
	42			$\frac{0}{6.1}$			
	43	<i>No bedrock recovery</i>					
	44	<i>TD = 43.3' Refusal</i>					



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PROJECT *DCEA*

HOLE NO. *B42*

# HTW DRILLING LOG

HOLE NO. **B431**

1. COMPANY NAME <b>BMCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/191</b>		
5. NAME OF DRILLER <b>Paul Vogelsherg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core wire		8. HOLE LOCATION <b>N4326013.310 E691092.808</b>	
		Geoprobe S182205		9. SURFACE ELEVATION <b>1083.970</b>	
				10. DATE STARTED <b>7-17-02</b>	
				11. DATE COMPLETED <b>7-17-02</b>	
12. OVERBURDEN THICKNESS <b>36.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>35.4</b>			
13. DEPTH DRILLED INTO ROCK <b>0.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>36.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	NA	NA	NA
22. DISPOSITION OF HOLE <b>Decontaminate</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rob Pratt</b>
		✓	NA	NA	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
	1	Clayey silt, dark yellowish brown (10 FT 1/2), moderately soft, non-plastic, damp	0			1004	
	2	Clayey silt, grayish brown (5 FT 3/4), soft, non-plastic, damp some coal clinker and red brick fragments 2" of limestone gravel.	0	40 4.0	B431/ S101 23'		1007
	3		0				
	4		1.8		9802 45'	1005	1007
	5						1017



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PROJECT

**DCFA**

HOLE NO.

**B431**

# HTW DRILLING LOG

HOLE NO. *B 431*

PROJECT *DCFA*

INSPECTOR *Rock Mont*

SHEET *42*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	6	<i>Clayey silt, grayish brown (S14 8/2), soft, non-plastic, damp, some coal/clinker and red brick fragments.</i>	<del>0.4</del> <i>0.6</i>	<i>3.1</i> <i>4.0</i>			
	7						
	8		<i>0.4</i>			<i>1015</i>	
	9		<i>0</i>				
	10	<i>Silty clay, dusky brown (S14 8/2), <del>not</del> moderately hard, slightly plastic, damp</i>	<i>0</i>	<i>4.0</i> <i>4.1</i>	<i>SB03</i> <i>1011'</i>		<i>2 jars for MS/MSD</i> <i>1026</i>
	11						
	12		<i>0</i>			<i>1024</i>	
	13						
	14	<i>Becomes slightly sandy and dark yellowish brown, silt</i>	<i>0</i>	<i>4.0</i> <i>4.0</i>	<i>SB04</i> <i>14-15'</i>		<i>1040</i>



# HTW DRILLING LOG

HOLE NO. **B431**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silty clay, dark yellowish brown (CURR 4/2), soft, non-plastic, damp, trace of fine sand.	0				
	16		0			1038	
	17	Clayey silt, pale yellowish brown (CURR 6/2), soft, non-plastic, damp	0	37 — 40			
	18	Silty sand, moderate yellowish brown (CURR 5/4), soft, non-plastic, damp, fine to very fine.	0		SR05 18-19'		1052
	19		0				
	20		0			1050	
	21		0				
	22	Becomes fine to medium.	0	36 — 40	SR06, SR06, SR06 & A 22-23'		1103
	23						

# HTW DRILLING LOG

HOLE NO. **B431**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	24	Silty sand, moderate yellowish brown (10X R5/4) soft, non-plastic, damp, fine to medium	0			1101	
	25		0				
	26		0	3.0 — 4.0	9807 25-27'	5107 <del>25-27'</del>	1116
	27		0				
	28	Sandy, grayish orange (10X R7/4) soft, non-plastic, damp, fine to medium.	0			1114	
	29		0				
	30		0	2.9 — 4.0	9808 30-31'		1127
	31		0				
	32	Silty, moderate yellowish brown (10X R5/4), soft, non-plastic, damp to moist	0			1125	
			0				



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B431**

# HTW DRILLING LOG

HOLE NO. B431

PROJECT DLFA

INSPECTOR Rock Mont

SHEET X 5  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <u>Recovery</u>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <u>Temp</u>	REMARKS h
	33	Silt, moderate yellowish brown (CORR 1/4), soft, non-plastic, damp to moist.					
	34	Silty sand, grayish orange (CORR 7/4), soft, non-plastic, damp.	0	2.8 4.0	SB09 34-35'		1137
	35						
	36	Sandy silt, dark yellowish brown (CORR 4/2), soft, non-plastic, wet, medium sand.	0			1135	▼
		TB = 36' on water at <del>1135</del> 1135.					

# HTW DRILLING LOG

HOLE NO. **6432**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4206</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326018.610 E1691100.442</b>			
				9. SURFACE ELEVATION <b>1084.385</b>			
				10. DATE STARTED <b>7-7-02</b>		11. DATE COMPLETED <b>7-17-02</b>	
				12. OVERBURDEN THICKNESS <b>43.3</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>37.7</b>	
13. DEPTH DRILLED INTO ROCK <b>0.8</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>44.1</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		✓	NA	NA	NA	NA	
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Krab</b>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
		clayey silt, grayish brown (5 & R 3/2) moderately soft, nonplastic, damp.	0			1318	
	1	clayey silt, dark yellowish brown (10 & R 4/2) soft, nonplastic, damp; some coal/clinker and red brick fragments.		38 40			
	2	1" limestone.	1.2		5001 2-3'		1322
	3						
	4	silty sand, moderate to yellowish brown (10 & R 4/2) soft, nonplastic, damp, fine to very fine.	0.6			1320	
	5		0.6				

# HTW DRILLING LOG

HOLE NO. **B 432**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **6** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	Silty sand, moderate yellowish brown (10YR5/4), soft non-plastic, damp, fine to very fine	2.7	$\frac{26}{4.0}$			
	7	Silty sand, pale yellowish brown (10YR6/2), soft, non-plastic, damp, fine to very fine, some red brick fragments	3.9		SB02 78'	1335	1337
	8	Clayey silt, grayish brown (5YR3/2), soft, non-plastic, damp	6.5				
	9				SB03 940'		1352
	16		<del>1.5</del>	$\frac{37}{4.0}$			
	11		1.2				
	12		0.3			1350	
	13		0				
	14	color change to moderate yellowish brown (10YR5/4)	0	$\frac{37}{4.0}$	SB04 1415'		1402



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PROJECT **DCFA**

HOLE NO. **B 432**



# HTW DRILLING LOG

HOLE NO. **B432**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET **X 3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Clayey silt, moderate yellowish brown (10/25/4), soft, non-plastic, damp					
	16		0			1400	
	17		0				
	18		0	3.8 <u>40</u>			1413
	19						SB05, SPS, SB15 & A 18-19'
	20	2" silt seam, pale yellowish brown	0			1411	
	21		0				
	22		0	3.6 <u>40</u>			
	23	Silty sand, moderate yellowish brown (10/25/4), soft, non-plastic, damp, fine to medium.	0		SB06 22-23'		2 jars for MS/MSO 142



# HTW DRILLING LOG

HOLE NO. **B432**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Silty sand, moderate yellowish brown (10 R 9/4), soft, non-plastic, damp, fine to medium	0			1429	
	25						
	26	Sand, grayish orange (10 YR 7/4), soft, non-plastic, damp, fine to medium.	0	28 40	SB07 26-27'		2 jars for MS/MSD 1456
	27						
	28		0			1454	
	29		0				
	30	Some 1/4" gravel (limestone)	0	38 40	SB08 30-31'		1509
	31	Limestone, highly weathered, in part medium gray.					
	32	Silty sand, moderate yellowish brown (10 YR 5/4), soft, non-plastic, damp to moist, fine to medium	0			1507	
			0				



# HTW DRILLING LOG

HOLE NO. **B432**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **X 5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Silty sand, moderate yellowish brown (U <sub>TR5/4</sub> ) soft, non-plastic, damp to moist, fine to medium.					
	34	Sandy, light brownish gray (STR <sub>6/1</sub> ), soft, non-plastic, moist, fine to very fine.	0	3.5 <u>40</u>	S1309 34-35		1522
	35						
	36		0			1520	
	37						
	38	Becomes wet.	0	2.7 <u>40</u>		▼	Not enough dry soil to sample.
	39	Becomes fine to medium.					
	40		0			1534	
	41		0				Use discrete sampler.



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PROJECT **DLFA**

HOLE NO. **B432**

# HTW DRILLING LOG

HOLE NO. **B432**

PROJECT

**DCFA**

INSPECTOR

**Mark Mont**

SHEET **8** OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	42	Sandy, light brownish gray (SYR 6/1), soft, non-plastic, very fine to medium.	0				
	43			29 <hr/> 29			
	44	Shale, light olive gray (SYR 6/1), weak, highly weathered.	0				
		TO= 44.1' at 1555. Refusal.					



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PROJECT

**DCFA**

HOLE NO.

**B432**

# HTW DRILLING LOG

HOLE NO. **B433**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 5 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Paul Fogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with acetate sleeves		8. HOLE LOCATION <b>N4326023.990 E1691105.019</b>			
				9. SURFACE ELEVATION <b>1084.236</b>			
				10. DATE STARTED <b>7-18-02</b>			
11. DATE COMPLETED <b>7-18-02</b>		12. OVERBURDEN THICKNESS <b>360</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>321</b>			
13. DEPTH DRILLED INTO ROCK <b>0-0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>360</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Thont</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Temp	REMARKS h
	1	Clayey silt, pale yellowish brown (lot R6/4), silty, non-plastic, damp, some 1/2" limestone gravel.	0			0754	
	2	Clayey silt, dusky brown (5R2/2), silty, non-plastic, damp, some coal/clinker, shale and limestone gravel.	0	28 Ted	B433 SD01 2-3'		0758
	3						
	4		0			0756	
	5		0				



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PROJECT **DLFA**

HOLE NO. **B433**

# HTW DRILLING LOG

HOLE NO. **R433**

PROJECT		INSPECTOR			SHEET		
<b>DLFA</b>		<b>Mark Monk</b>			OF <b>5</b> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Clayey silt, dusky brown (5YR2/2) soft, nonplastic, damp, some coal clinker, shales and limestone gravel.	0	Recovery 3.2 4.0	SB02, SA12, SA12RA 6-7'	Trap	0813
	7	Pate					
	8	Silty sand, moderate yellowish brown (10YR6/2), soft, nonplastic, fine to very fine.	0			0811	
	9		0				
	10	Clayey silt, dusky brown (5YR2/2), soft, nonplastic, damp.	0	3.8 4.0	SB03 10-11'		0830
	11		0				
	12		0			0828	
	13		0	3.6 4.0			
	14	Color change to moderate yellowish brown (10YR5/4).	0		SB04 14.5'		0842

# HTW DRILLING LOG

HOLE NO. **B433**

PROJECT **DCA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	<i>Clayey silt, moderate yellowish brown (10+R5/4), soft, non-plastic, damp</i>					
	16		0			0840	
	17		0				
	18		0	$\frac{35}{40}$			
	19				SB05 18-19'		0851
	20	<i>1" of clay, <sup>dark</sup> moderate yellowish brown, made slightly plastic.</i>	0			0849	
	21		0				
	22		0	$\frac{27}{40}$			
	23		0		SB06 22-23'		0911

# HTW DRILLING LOG

HOLE NO. **B433**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET **44**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	24	clayey silt, moderate yellowish brown (COTR7/4), soft, non-plastic, damp.	0			0909	
	25	silt/sand, moderate yellowish brown (COTR5/4), soft, non-plastic, damp, fine to very fine.	0				
	26		0	31 40			
	27	Sand, grayish orange (COTR7/8), soft, non-plastic, damp, fine to medium.	0		SB 07 26-27'		0927
	28		0			0925	
	29		0				
	30		0		SB 08 30-31'		0939
	31		0				
	32		0			0937	
			0				



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PROJECT

**DLFA**

HOLE NO.

**B433**



# HTW DRILLING LOG

HOLE NO. **B433**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET **45**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sandy grayish orange (10YR7/4) soft, non-plastic, damp, fine to medium.					
	34		0	$\frac{35}{40}$	5809 3435		1003
	35	Becomes wet					▼
	36	silty sand, light brownish gray (5YR6/1), soft, non-plastic, wet, fine to very fine	0				
		<b>TD = 36' at 1001</b>					
	37						
	38						
	39						
	40						
	41						



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PROJECT **DCFA**

HOLE NO. **B433**

# HTW DRILLING LOG

 HOLE NO. **B434**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Adg 180/181</b>		
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" tri-cone with		8. HOLE LOCATION <b>N4326029.100 E691122.791</b>	
		aluminum sleeves		9. SURFACE ELEVATION <b>1084.548</b>	
				10. DATE STARTED <b>7-18-02</b>	
				11. DATE COMPLETED <b>7-18-02</b>	
12. OVERBURDEN THICKNESS <b>33.9</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		
13. DEPTH DRILLED INTO ROCK <b>0.2</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>34.1</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	NA	NA	NA	NA
22. DISPOSITION OF HOLE <b>Recovery</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Monk</b>	
		✓	NA	NA		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Clayey silt, pale yellowish brown (10R6/2), soft, non-plastic, damp.	0			1036	
	2		0	29 40			
	3	Sandy, grayish orange (10YR7/4), soft, non-plastic, damp, medium to very coarse grained, sub-rounded.	0		B434 5001 2-3'		1034
	4	Clayey silt, grayish brown (5YR 7/2), soft, non-plastic, damp.	0			1032	
	5		0				



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PROJECT

**DLFA**

HOLE NO.

**B434**

# HTW DRILLING LOG

HOLE NO. **B434**

PROJECT **DLFA**      INSPECTOR **Rick Mont**      SHEET **Y2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Time</i>	REMARKS h
	6	Clayey silt, grayish brown (5YR8/2), soft, non-plastic, damp	0				
	7	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp fine to very fine.	0	$\frac{34}{40}$	SB02 6-7'		1048
	8		0			1046	
	9		0				
	10	Clayey silt, dusky brown (5YR 2/2), soft, non-plastic, damp.	0	$\frac{36}{40}$	SB03 10-11'		1058 + 2 jars for MS/MSD
	11		0				
	12		0			1056	
	13		0	$\frac{35}{40}$			
	14	Color change to moderate yellowish brown.	0		SB04 14-15'		1111



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PROJECT **DLFA**

HOLE NO. **B434**

# HTW DRILLING LOG

HOLE NO. **B434**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	15	clay silt, moderate yellowish brown (10% R5/4) soft, non plastic, damp	0				
	16		0			1109	
	17		0				
	18		0	3.6 — 4.0	SR05 18-19'		1122
	19						
	20		0			1120	
	21		0				
	22		0				
	23	silty sand, moderate yellowish brown (10% R5/4), soft, non plastic, damp fine to very fine			SR06 22-23'		1506



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PROJECT **DCFA**

HOLE NO. **B434**

# HTW DRILLING LOG

HOLE NO. **B434**

PROJECT **DLFA**

INSPECTOR **Rock Mont**

SHEET **4**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <del>Time</del>	REMARKS h
	24	Silty sand, moderate yellowish brown (10YR 5/4) soft, non-plastic, damp, fine to very fine.	0			<del>1245</del>	1500
	25		0				
	26	Sandy silt, pale yellowish brown (10YR 6/2), soft, non-plastic, damp, very fine sand.	0	3.1 <hr/> 4.0			
	27	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp, fine to medium.	0		SR07 26-27		0919 + 2 juv cor ms/msp
	28		0			0917 (2-14-02)	
	29		0				
	30		0	3.3 <hr/> 4.0			
	31		0		SB08, SA18, SB18 & A 30-31'		0936
	32	Silt clay, dark yellowish brown, moderate plastic, soft.	0			0933	
		Sand, grayish orange (10YR 7/4), soft, non-plastic, damp, fine to medium.	0				



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PROJECT

**DLFA**

HOLE NO.

**B434**

# HTW DRILLING LOG

HOLE NO. **B434**

PROJECT		INSPECTOR			SHEET		
<b>DCEA</b>		<b>RICK MONK</b>			<b>5</b>		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Silt, moderate yellowish brown (UFR 3/4), soft, non-plastic, moist to wet.	0	20 21			
	34	Sand, dark yellowish brown (UFR 4/4), soft, non-plastic, dense to medium. Becomes clayey	0		SB09 33-34		0956
	35	Times fine, dusky yellow (SB 6/4), med. to heavy clay, weathered				0953	
	36	Refusal					



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PROJECT

**DCEA**

HOLE NO.

**B434**

# HTW DRILLING LOG

HOLE NO. **B435**

1. COMPANY NAME <b>B/MCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>			
5. NAME OF DRILLER <b>Paul Vogel's borg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" auger core with		8. HOLE LOCATION <b>N4326034.710 E691122.711</b>		
		occlude sleeves		9. SURFACE ELEVATION <b>1084.892</b>		
				10. DATE STARTED <b>7-18-02</b>		
				11. DATE COMPLETED <b>7-18-02</b>		
12. OVERBURDEN THICKNESS <b>39.6</b>		13. DEPTH DRILLED INTO ROCK <b>0.0 (Unknown)</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>35.4'</b>		
14. DEPTH OF HOLE <b>39.6</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	
	✓	NA	NA	NA	NA	
22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Blank</b>		
	✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. RECOVERY	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Clayey silt, pale yellowish brown (104R6/4) silt, some plaster clump, some limestone, red brick fragments, coal/clinker.	0			1335	
	2		0	3.6 4.0	SB01 2-3'		1338
	3						
	4		0			1336	
	5		0				



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Form MRK -55

PROJECT **DCFA**

HOLE NO. **B435**

# HTW DRILLING LOG

HOLE NO. **B435**

PROJECT **DLFA**

INSPECTOR **Rick Mont**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>7. m/s</i>	REMARKS h
	6	clayey silty, pale yellowish brown (UFR 6/2), soft, non-plastic, damp, some limestone, red brick fragments, coal/clinker.	0	2.0 4.0	SB02 67'		1348
	7	Silty sand, dark yellowish brown (UFR 4/2), soft, non-plastic, damp, fine to medium.					
	8		0			1346	
	9		0				
	10	clayey silty, darker brown <del>clay</del> (UFR 2/2), soft, non-plastic, damp	0	3.7 4.0	SB03 1011'		1354
	11						
	12		0			1352	
	13		0	3.6 4.0			
	14		0		SB 04, SB14, SB14 CA 1415'		1406



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Form MRK-55-2

PROJECT **DLFA**

HOLE NO. **B435**



# HTW DRILLING LOG

HOLE NO. **B435**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Clayey silt, dusky brown (5 R2/2), soft, nonplastic, dump.	0	Recovery		1403	
	16		0				
	17		0				
	18		0	3.6 4.0			
	19	Sand, grayish orange (10 R7/4), soft, nonplastic, dump, fine to medium.	0		SB05 18-19'		1516
	20		0			1514	
	21		0				
	22		0	3.3 4.0			
	23		0		SB06 22-23'		1528

# HTW DRILLING LOG

HOLE NO. *B435*

PROJECT *DLFA*

INSPECTOR *Rick Mont*

SHEET *17* OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>RECOVERY</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>7.42</i>	REMARKS h
	24	Sand, grayish orange (10YR7/4), soft, nonplastic, damp, fine to medium.	0			<del>1526</del> 1526	
	25		0				
	26	Sandy silt, pale yellowish brown (10YR6/2), soft, nonplastic, damp, fine to very fine sand.	0	$\frac{3.4}{4.0}$	SPT SB08 26-27'		1538
	27	Sand, grayish orange (10YR7/4), soft, nonplastic, damp, fine to medium.	0				
	28		0			1536	
	29		0				
	30	Silt, moderate yellowish brown (10YR5/4), soft, nonplastic, damp, fine to very fine.	0	$\frac{3.7}{4.0}$	SPT SB08 24-31		1548
	31	Sandy silt, light brownish gray (5YR6/1), soft, nonplastic, damp, fine sand.	0				
	32		0			1546	
			0				



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PROJECT *DLFA*

HOLE NO. *B435*

# HTW DRILLING LOG

HOLE NO. **B435**

PROJECT **D CFA**

INSPECTOR **Rick Mark**

SHEET **75**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	SEITECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS Time	REMARKS h	
	33	Sandy silt, light brownish gray (SYR6(1)), soft, non-plastic, damp, fine sand						
	34	Becoms moist	0	3.0 4.0	5604 34-35'		1602	
	35	Silty sand, light brownish gray (SYR6(1)), soft, non-plastic, moist, fine to very fine.						
	36	Becomes wet.	C			1600	▼	
	37						Using discrete sampler	
	38							
	39						Pushed to 39' but sampler would not open. Broke & knock out rod. No recovery.	
	40	TO = 39.6' at 1626. Refusal.						
		<del>TO</del>						

# HTW DRILLING LOG

HOLE NO. **B43E**

1. COMPANY NAME <b>BMC</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 2 SHEETS
3. PROJECT <b>DLFA</b>	4. LOCATION <b>Blkg 180/187</b>	
5. NAME OF DRILLER <b>Rual Vogel's Berg</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geop. dr. 4112</b> <span style="float: right;">5400</span>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N4326039.840 E691129.519</b>	
	9. SURFACE ELEVATION <b>1083.921</b>	
	10. DATE STARTED <b>7-16-02</b>	11. DATE COMPLETED <b>7-10-02</b>

12. OVERBURDEN THICKNESS <b>7.0</b>	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK <b>0.0</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>7.0</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES			
<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
<b>Beatsuite</b>	<b>✓</b>	<b>NA</b>	<b>NA</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Gravelly silty clay, brownish gray (5YR4/1), moderately soft unconsolidated, damp. $\frac{1}{4}$ "-1" gravel fill.	0			0728	
	2		0	$\frac{27}{40}$			
	3		0		B436/ SB01 2-3'		0730
	4		0			0728	
	5	Becomes almost all rock/gravel. $\frac{1}{4}$ "-2"	0	$\frac{61}{40}$	<del>Not enough soil to sample.</del>		
			0				

# HTW DRILLING LOG

HOLE NO. **B436**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **X 2**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Tiroot	REMARKS h
	6						
	7	Concrete	0		SP02 6-7'	0750  0733	Get sample on 2 <sup>nd</sup> try.
	8	TD = 7', Refusal on concrete, Get to samp depth after offset.					Refusal at 7', offset 2' west.
	9						
	10						
	11						
	12						
	13						
	14						



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PROJECT **DLFA**

HOLE NO. **B436**

# HTW DRILLING LOG

 HOLE NO. **B437**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>	2. DRILLING SUBCONTRACTOR <b>PES</b>	SHEET 1 OF 1 SHEETS
3. PROJECT <b>USFRDCFA 27979</b>	4. LOCATION <b>Building location 1801181</b>	
5. NAME OF DRILLER <b>Ryan Weiser</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N4326029.640 E691121.550</b>	
	9. SURFACE ELEVATION <b>1074.285</b>	
	10. DATE STARTED <b>05/23/02</b>	11. DATE COMPLETED <b>05/23/02</b>

12. OVERBURDEN THICKNESS <b>35.9</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>
13. DEPTH DRILLED INTO ROCK <b>0.1</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>36</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
<b>Bentonite</b>	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>Walter McClendon</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
			<b>NA</b>				<b>Start Time = 1525</b>
	<b>36</b>	<b>SSS</b>	<b>R</b>	<b>NA</b>	<b>SS1</b>	<b>1620</b>	<b>End Time 1620</b>
		<b>Bottom of Hole</b>					<b>TD = 36 ft</b>



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 PROJECT **USFRDCFA 27979**

 HOLE NO. **B437**

# HTW DRILLING LOG

 HOLE NO. **B440**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS			
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/187</b>				
5. NAME OF DRILLER <b>Paul Nagelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macro core with acetate sleeves.</b>		8. HOLE LOCATION <b>N4326000.060 E691087.750</b>		9. SURFACE ELEVATION <b>1083.426</b>			
		10. DATE STARTED <b>7-15-02</b>		11. DATE COMPLETED <b>7-15-02</b>			
		12. OVERBURDEN THICKNESS <b>440</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>399</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>0.0</b>		14. DEPTH OF HOLE <b>440</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>	
18. GEOTECHNICAL SAMPLES <input checked="" type="checkbox"/> <b>NA</b>		DISTURBED <input checked="" type="checkbox"/> <b>NA</b>		UNDISTURBED <input checked="" type="checkbox"/> <b>NA</b>			
19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		20. SAMPLES FOR CHEMICAL ANALYSIS <input checked="" type="checkbox"/>		21. TOTAL CORE RECOVERY <b>NA %</b>			
VOC <b>NA</b>		METALS <b>NA</b>		OTHER (SPECIFY) <b>TOC</b>			
OTHER (SPECIFY) <b>NA</b>		OTHER (SPECIFY) <b>NA</b>		OTHER (SPECIFY) <b>NA</b>			
22. DISPOSITION OF HOLE <b>benluate</b>		BACKFILLED <input checked="" type="checkbox"/> <b>NA</b>		MONITORING WELL <input checked="" type="checkbox"/> <b>NA</b>			
OTHER (SPECIFY) <b>NA</b>		23. SIGNATURE OF INSPECTOR <b>Kip Hart</b>					

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sandy silt, grayish brown (5 to 3/4) soft, nonplastic, damp fine to very fine sand.	0	Recovery	B440/ SBU/ 0-1'	1541	1543 (TOC)
	2		0	3.1 46			
	3	Silt sandy silt, moderate yellowish brown (10 to 15) soft, nonplastic, damp, fine to medium sand.	0				
	4					1542	
	5						Capped 48' shore for geophysical testing


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PROJECT

**DLFA**

HOLE NO.

**B440**

# HTW DRILLING LOG

HOLE NO. **B440**

PROJECT

**DCFA**

INSPECTOR

**Rick Mont**

SHEET **2** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6						
	7						
	8					1555	
	8	Silty sand, pale yellowish brown (10 YR 6/2), soft, non-plastic, damp, fine to very fine sand	0		SMU2 8-91		1622
	9	Silty clay, dusky brown (5 YR 2/1), moderate to soft, slightly plastic, damp	0				
	10						
	11						Probe refusal, Offset 2 ft north. Hit refusal at 9'. Offset 2' south of original location.
	12		0			1624	
	13						
	14						



PROJECT

**DCFA**

HOLE NO.

**B440**



# HTW DRILLING LOG

 HOLE NO. **B 440**

 SHEET **3**  
OF **6** SHEETS

 PROJECT **DCAA**

 INSPECTOR **Mark Mont**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Tab</i>	REMARKS h
	15						Capped 12-16' sleeve.
	16					1628	
	17	Sandy clayey silt, moderate yellowish brown (10% R5/4), soft, non-plastic, damp, very fine sand.	0				
	18	Silty sand, pale yellowish brown (10% R6/2), soft, non-plastic, damp, fine to very fine sand.	0				
	19						
	20	Becomes moderate yellowish brown (10% R5/4).	0		SBU3 19-20		1637
	21		0				
	22		0				
	23						

4.0  
—  
4.0

3.7  
—  
4.0


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PROJECT

**DCAA**

HOLE NO.

**B 440**

# HTW DRILLING LOG

HOLE NO. **B440**

PROJECT

**DCAA**

INSPECTOR

**Rick Mont**

SHEET OF **17** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Pen</i>	REMARKS h
	24	Silty sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp, fine to very fine sand.	0			1646	
	25	Silty sand, moderate brown (5YR 4/4), soft, non-plastic, damp, fine to medium sand.	0				
	26		0	3.8 4.0			
	27		0				
	28		0			1653	
	29		0				
	30	Clayey silt, pale yellowish brown (10YR 6/2), soft, slightly plastic, damp to moist.	0			4.0 4.0	
	31	Clayey silt, pale yellowish brown (10YR 6/2), soft, slightly plastic, damp to moist.	0				
	32	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp, fine to very fine sand.	0			1702	
			0				



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PROJECT

**DCAA**

HOLE NO.

**B440**

# HTW DRILLING LOG

HOLE NO. **B440**

PROJECT

**DCFA**

INSPECTOR

**Rock Mont**

SHEET **15**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TEST SAMPLE OR CORE BOX NO. <del>Recovery</del>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1700</i>	REMARKS h
	33	Silty sand, pale yellowish brown (UVR 6/2) soft, non-plastic deep, fine to very fine sand.					
	34	— <i>Becomes moist</i>	0	40 40			
	35	Silty, pale yellowish brown (UVR 6/2) soft, non-plastic moist to wet.					
	36		0			1710	
	37		0				
	38		0				
	39	Sand, pale yellowish brown (UVR 6/2) soft, non-plastic, moist, fine to medium, some 1/4" limestone gravel.					
	40		0			1721	▼
	41	Silty sand, brownish gray (SYR 4/1), soft, non-plastic, wet, fine to medium.					Bagged sample from 40-42'.



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PROJECT

**DCFA**

HOLE NO.

**B 440**

# HTW DRILLING LOG

HOLE NO. **B440**

PROJECT <b>DCFA</b>			INSPECTOR <b>Kirk Monk</b>			SHEET <b>6</b> OF <b>6</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g	REMARKS h
	42	Silty sand, brownish gray (54% F1), soft non-plastic, wet, fine to medium.		40			
	43			40			
	44						
		TO=44' at 1738. wet.					



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PROJECT

**DCFA**

HOLE NO.

**B440**

# HTW DRILLING LOG

 HOLE NO. *B441*

1. COMPANY NAME <i>BMLD</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 5 SHEETS			
3. PROJECT <i>DLFA</i>			4. LOCATION <i>Bldg 180/181</i>				
5. NAME OF DRILLER			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 4200</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with <i>ucata</i> <del>ucata</del> <i>siceros</i>		8. HOLE LOCATION <i>N4326003.230 E691094.565</i>			
				9. SURFACE ELEVATION <i>1083.065</i>			
				10. DATE STARTED <i>7-8-02</i>			
				11. DATE COMPLETED <i>7-9-02</i>			
12. OVERBURDEN THICKNESS <i>35.0</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>None</i>				
13. DEPTH DRILLED INTO ROCK <i>0.0</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. DEPTH OF HOLE <i>35.0</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA</i> %
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	
22. DISPOSITION OF HOLE <i>Decontaminate</i>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rick Hank</i>		
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>(in ft)</i>	REMARKS h	
	1	<i>Silt/clay. Dark brown (STR 2/2), soft, non-plastic, dry, some 1-2" limestone fragments.</i>	C			1305		
	2		C	<i>20</i> <i>48</i>				
	3					<i>B441</i> <i>SB01</i> <i>2-3'</i>		<i>1308</i>
	4			C			1307	
	5			C				


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 PROJECT *DLFA*

 HOLE NO. *B441*

# HTW DRILLING LOG

HOLE NO. *B44*

PROJECT

*DCFA*

INSPECTOR

*Rick Mont*

SHEET *2*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	<i>Silty clay, dusky brown (SR2/4) soft, non plastic, damp, some 1-2" limestone fragments</i>	C	$\frac{1.8}{40}$	SR02 <del>87</del> 75'		1318
	7	<i>Weathered limestone, grayish white (SR2/4, weak)</i>					
	8	<i>Silty clay, dusky brown (SR2/2), soft, slightly plastic, damp</i>	C				1316
	8	<i>Few red brick fragments</i>	C				
	4						
	10		C	$\frac{4.0}{40}$	SR03 SR03 SR03 GA 1071' <del>1352</del>	1352	Refusal at 10' offset 3' east. Refusal again offset 3' south of original location
	11						
	12		C			1350	
	13	<i>Sandy granitic material. Blackish, resembles coal or chert.</i>	C	$\frac{3.7}{40}$			
	14		C				



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PROJECT

*DCFA*

HOLE NO.

*B44*

# HTW DRILLING LOG

HOLE NO. *1441*

SHEET *3* OF *5* SHEETS

PROJECT *DLFA*

INSPECTOR *Rick Mast*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	15	<i>clayey silt, moderate yellowish brown (10 yrs/4), moderately soft non-plastic, damp.</i>	0		<i>SB04 1415'</i>		1413
	16		0			<i>1411</i>	
	17						
	18		0	$\frac{21}{40}$	<i>SB05 1814'</i>		1424
	19						
	20	<i>Sand, gray to orange (10 yrs/4), soft, non-plastic, damp, fine to very fine.</i>	0			1423	
	21		0				
	22		0	$\frac{0.4}{40}$	<i>SB06 22-23'</i>		1443 (1 jar only)  Coal is falling into hole.
	23						

# HTW DRILLING LOG

HOLE NO. **B44**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **24**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	<i>Sand, gray orange (10/20/4) soft, non plastic, moist damp, fine to medium.</i>	C			1440	
	25		C				
	26		C	<del>2.0</del> <del>2.0</del> 1.3 3.0	SB07 25-26		1500
	27		C			1457	
	28		O				<i>begin using discrete sample</i>
	29		O	$\frac{2.9}{4.0}$	SB08 29-30 + 2 jars for 10/100		1552
	30		O				
	31		O			1550	
	32		O				



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PROJECT **DCFA**

HOLE NO. **B44**



# HTW DRILLING LOG

HOLE NO. **B44**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **25**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Sand, grayish orange (WGR 7/4), soft, non-plastic, damp, fine to medium.	0	21 40	SP04 33-34'		1611
	34	Clayey silt, dark yellowish brown (WGR 4/2), soft, slightly plastic, moist					
	35	Sand, grayish orange (WGR 7/4), soft, non-plastic, damp, fine to coarse. Trace of 1/2" chert and limestone.	0			1669	
	36	7-9-02: Could only preprobe to 31 ft. hrs. Broke foot shaft on probe rig trying to pull rods.					WEM
	37	Used Geoprobe 5400 to pull rods. Prober does not want to risk trying again.					<del>can only push to 27 now. will try again tomorrow.</del>
	38						
	39						



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PROJECT **DLFA**

HOLE NO. **B44**

# HTW DRILLING LOG

HOLE NO. **B442**

1. COMPANY NAME <b>BMLD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/187</b>		
5. NAME OF DRILLER <b>Paul Vogelberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION <b>N4326009.580 E691101.374</b>		9. SURFACE ELEVATION <b>1083.531</b>	
		2" macrocore with acetate sleeves		10. DATE STARTED <b>7/9/02</b>	
		11. DATE COMPLETED <b>7/9/02</b>		12. OVERBURDEN THICKNESS <b>40.0</b>	
		13. DEPTH DRILLED INTO ROCK <b>0.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>37.5</b>	
14. DEPTH OF HOLE <b>40.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>	
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Hunt</b>
					21. TOTAL CORE RECOVERY <b>NA %</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g	REMARKS h
	1	Silty clay, grayish brown (5/8" x 1/2" section slightly hard, non-plastic, dense.	0			1244	
	2		0	3.1 / 40	B442 5801 2-3'		1246
	3	2' weathered limestone.					
	4	Fth. Coal/dinker, red brick fragments, blackish red clay.	0			1244	
	5		0				

# HTW DRILLING LOG

HOLE NO. *B442*

PROJECT *PLFA*

INSPECTOR *Rick Monte*

SHEET *22*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	CLOW COUNTS Time	REMARKS h
	6	<i>Fill. Coal/brick, red brick fragments, blackish red clay.</i>	0	$\frac{23}{40}$	<i>SB02 67'</i>		1360
	7						
	8		0			1258	
	9		0				
	10		0	$\frac{21}{40}$	<i>SB03 10-11'</i>		1307
	11		0				
	12		0			1314	
	13		0	$\frac{32}{40}$	<i>SB04/14, 140A 13-14'</i>		1318
	14	<i>Sandy silt, pale yellowish brown (CURG(2)) silt, non plastic, damp fine to very fine sand.</i>	0				



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PROJECT

*DCRA*

HOLE NO.

*B442*

# HTW DRILLING LOG

HOLE NO. *B442*

PROJECT

*DLFA*

INSPECTOR

*Rick Mont*

SHEET *3*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Keyway</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp	REMARKS h
	15	<i>Sandy silt, pale yellowish brown (10/20/2), soft, non-plastic, damp, fine to very fine sand</i>	0			1316	
	16						<i>began discrete sampling</i>
	17						
	18			3.1 4.0	S105 1819'		1744
	19	<i>Silty clay, dark yellowish brown (10/20/4/2), slightly hard, slightly plastic, damp</i>				1342	
	20		0				
	21			2.3 4.0			
	22		0				<i>S106/S106/S106/S106 22-23' 1406</i>
	23		0				



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PROJECT

*DLFA*

HOLE NO.

*B442*

# HTW DRILLING LOG

HOLE NO. **B442**

PROJECT		INSPECTOR			SHEET		
<b>DCFA</b>		<b>Rick Mont</b>			<b>8</b> OF <b>5</b> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. RECOVERY	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Silty clay, dark yellowish brown (10/20/4) slightly hard, slightly plastic, damp - 2" weathered limestone nodule	0			1462	
	25	Sandy grayish orange (10/20/4) soft, non-plastic, damp, fine to medium.	0	1.2 4.0			
	26		0		SB07 26-27		1517
	27		0				
	28		0			1515	
	29	Clayey silt, moderate yellowish brown (10/20/4) soft, slightly plastic, moist, trace of lime sand	0				
	30		0	2.7 4.0			
	31		0		SB08 + MS/MSD (2 jars) 30-31		1536
	32		0			1533	



# HTW DRILLING LOG

HOLE NO. **B442**

PROJECT		INSPECTOR			SHEET	
<b>DCFA</b>		<b>Rick Monk</b>			<b>5</b>	
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEO TECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	REMARKS
a	b	c	d	e	f	h
	33	Sand, grayish orange (10YR 7/4), soft, non-plastic, damp, fine to medium.	0			
	34	Clayey medium sand, moderate yellowish brown (10YR 5/4), soft, non-plastic, damp	0	22 40	SB09 34-35'	1652
	35					
	36	Sand, light brownish gray (5YR 6/1), soft, non-plastic, damp, some fines.	0			1550
	37	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, moist to wet. Sand is fine to very fine. becomes wet.	0	20 40		▼
	38	Silty sand, grayish brown (5YR 5/2), soft, non-plastic, damp to moist, fine to very fine.			SB10 38-39'	1630
	39	Sand, dark yellowish orange (10YR 5/6), soft, non-plastic, wet, fine to medium.	0			
	40	Sand, medium gray, soft, non-plastic, wet, medium to coarse, subrounded.				1628
		TD = 40' on water.				



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PROJECT **DCFA**

HOLE NO. **B442**

# HTW DRILLING LOG

 HOLE NO. **B443**

1. COMPANY NAME <b>BMcD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/181</b>		
5. NAME OF DRILLER <b>Paul Vogelberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geopac 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326015.150 E691109.070</b>	
				9. SURFACE ELEVATION <b>1083.389</b>	
				10. DATE STARTED <b>7-10-02</b>	
				11. DATE COMPLETED <b>7-10-02</b>	
12. OVERBURDEN THICKNESS <b>44.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>42.6</b>			
13. DEPTH DRILLED INTO ROCK <b>0.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>44.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b> Bentonite </b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rob Mark</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	GLOW COUNTS Time	REMARKS h
	1	Silty clay, grayish brown (5/2 1/2), soft, non-plastic, damp	0			0810	
	2		0	3.2 4.0			
	3		0		B443/ 5181 2-3'		OF 13
	4	Sandy silt, dark yellowish brown (6 1/4 1/2), soft, non-plastic, damp fine sand	0			0811	
	5						


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 PROJECT **DLFA**

 HOLE NO. **B443**

# HTW DRILLING LOG

HOLE NO. *B443*

PROJECT *DCFA*

INSPECTOR *Rick Mont*

SHEET *2*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	<i>Sandy silt, dark yellowish brown (16 to 14/2), soft, non-plastic, damp, fine sand</i>	<i>0</i>	<i>1.9 / 40</i>	<i>SR02 6-7'</i>		<i>0827</i>
	7						
	8	<i>~2" weathered limestone.</i>	<i>0</i>			<i>0825</i>	
	9	<i>Fill, Coal/Clinker, red brick fragments, silt, grayish brown (5 to 3/2).</i>	<i>0</i>				
	10		<i>0</i>	<i>3.5 / 40</i>	<i>SR03 14-11'</i>		<i>0836</i>
	11	<i>Sand, grayish orange (10 to 7/4), soft, non-plastic, damp, fine to medium.</i>					
	12		<i>0</i>			<i>0834</i>	
	13	<i>Silty sand, pale yellowish brown (16 to 6/2), soft, non-plastic, damp, fine to very fine sand</i>	<i>0</i>	<i>3.5 / 40</i>			
	14		<i>0</i>		<i>SR04 14-15'</i>		<i>0846</i>



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PROJECT *DCFA*

HOLE NO. *B443*



# HTW DRILLING LOG

HOLE NO. **B443**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **X3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Accessories</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g <i>Time</i>	REMARKS h
	15	clayey silt, dusky yellow with brown (10% or less), soft, slightly plastic, damp, trace of fine sand.	0				
	16		0				0844
	17		0				
	18		0	3.6 40			0700
	19		0				
	20		0				0858
	21		0				
	22	Sand, dark yellowish gray (10% or less) soft, non-plastic, damp fine to medium.	0			(circled) 06/1/19/180 22-23'	2 extra jars 0922
	23						



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PROJECT **DLFA**

HOLE NO. **B443**

# HTW DRILLING LOG

HOLE NO. **B443**

SHEET **X 4**  
OF **6** SHEETS

PROJECT		INSPECTOR					
<b>DLCA</b>		<b>Rick Monk</b>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>N.M.A.</i>	REMARKS h
	24	Sand, dark yellowish brown (104R6/6), soft, non-plastic, damp, fine to medium	0			0920	
	25		0				
	26		0	3.1 — 4.0		SB07 26-27'	0939
	27						
	28	Silty gravelly sand, dark yellowish orange (104R6/6), soft, non-plastic, damp, fine to medium sand, 1/2" - 1" pebbles.	0			0932	
	29	Sandy, moderate yellowish brown (104R5/4), soft, non-plastic, damp, fine to medium.	0				
	30		0	3.6 — 4.0		SB08 30-31'	0947
	31	Sandy silt, moderate yellowish brown (104R5/4), soft, non-plastic, moist to wet. Sand is fine to very fine.					
	31	Sand, grayish orange (104R7/4), soft, non-plastic, damp, fine to medium.	0				
	32					0945	
		Clayey sand, dark yellowish brown (104R2/2), soft, moderate plastic, damp, fine to medium sand.	0				



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PROJECT **DLCA**

HOLE NO. **B443**

# HTW DRILLING LOG

HOLE NO. **B443**

PROJECT **DCFA**

INSPECTOR **Rick Monte**

SHEET OF **55** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sand, dark yellowish brown (UVR 4/2), soft, moderately plastic, damp, fine to medium sand.					
	34	Sand, moderate yellowish brown (UVR 5/4), soft, non-plastic, damp, fine to medium	0	28 40	SB09 3455'		1014
	35	Color change to grayish orange (UVR 7/4).					
	36	Silty clayey sand, dark yellowish brown (UVR 4/2), moderately soft, non-plastic, damp, medium to coarse sub-rounded sand. Some 1/4" gravel.	0			10/2	
	37						
	38	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium, moist	0	40 40	SB16 38-34'		1034
	39	2" medium to coarse medium gray sand Sandy silt, dusty brown (5VR 2/4), soft, non-plastic, damp, fine to very fine sand.					
	40	Silty sand, dusty brown (5VR 2/4), soft, non-plastic, damp, fine to medium.	0			1032	
	41						



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PROJECT **DCFA**

HOLE NO. **B443**

# HTW DRILLING LOG

HOLE NO. **B443**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **6**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	42	Sand, dark yellowish orange (10) R6/6, soft, non-plastic, moist	C		SB11 <del>4054</del> 41-42'		1054
	43	Silty very fine sand, pale yellowish brown (10) R6/2, soft, non-plastic, moist		40 4.0			
	44	Sand, grayish orange (10) R7/4, soft, non-plastic, wet					
	44	Silty sand, dark grayish brown (5) R3/2, soft, non-plastic, wet, fine to very fine.					
	44	Color change to pale yellowish brown (10) R6/2	C				
		TD = 44' at 1052 wet.					



# HTW DRILLING LOG

HOLE NO. **B444**

1. COMPANY NAME <b>BRED</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS			
3. PROJECT <b>DIFA</b>			4. LOCATION <b>180/181</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" Macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326000.810 E691102.484</b>			
				9. SURFACE ELEVATION <b>1081.700</b>			
				10. DATE STARTED <b>5-22-02</b>		11. DATE COMPLETED <b>5-22-02</b>	
12. OVERBURDEN THICKNESS <b>38.4</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>35.5</b>				
13. DEPTH DRILLED INTO ROCK <b>1.6</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>40.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hale</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1127</i>	REMARKS h
	1	Silty clay, grayish brown (SYR 2/2), moderately soft, slightly plastic, damp	0	46 40			1123-Began probing.
	2		0		<b>B444</b> 5801 2-3		1127
	3		0				
	4		0				1125
	5		0				

# HTW DRILLING LOG

HOLE NO. **B444**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g	REMARKS h
	6	Silty clay, grayish brown (5 PR 3/2), moderately soft, slightly plastic, damp.	0	Recovery $\frac{2.6}{4.0}$			
	7	Silt, pale yellowish brown (10 PR 6/2), soft, non-plastic, dry to damp. Trace of very fine sand.	0		B444/ SR62 7-8		1140
	8		0			1138	
	9	Clayey silt, grayish brown, (5 PR 3/2), soft, non-plastic, crumbly, dry to damp.	0	$\frac{4.0}{4.0}$			
	10		0				
	11	Trace of $\frac{1}{8}$ " roots.	0		B444/ SR03/SR03/SR03R 11-12'		1152
	12		0			1150	
	13		0	$\frac{3.4}{4.0}$			
	14		0				

# HTW DRILLING LOG

 HOLE NO. **B444**

 PROJECT **DCFA**

 INSPECTOR **Rick Monk**

 SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Romp	REMARKS h
	15	clayey silt, grayish brown (57R 3/2), soft, non-plastic, crumbly, dry to damp	0		B444/ SB07 1415		1206
	16		0			1203	
	17		0				
	18		0	40 40	B444/ SB05 17-18		MS/MSD 1220
	19	clayey silt, dark yellowish brown (107R 4/2), slightly hard, non-plastic, crumbly, damp.	0				
	20		0			1213	
	21		0	40 40			
	22		0		B444/ SB06 22-23		1230
	23	clayey sandy silt, moderate brown (57R 4/4), soft, non-plastic, damp.	0				


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 PROJECT **DCFA**

 HOLE NO. **B444**

# HTW DRILLING LOG

 HOLE NO. **B444**

 PROJECT **DCFA**

 INSPECTOR **Rick Monk**

 SHEET **4**  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TAMP g	REMARKS h
	24	Clayey sandy silt, moderate brown (10YR 4/4), soft, non-plastic, damp	0			1228	
	25	Sand with trace of fines, light brown (5YR 6/4), soft, non-plastic, moist. Sand is fine to very fine.	0	4.0 4.0			
	26		0				
	27	5" x 1/4" root	0		B444/ SBO7 26-27		1243
	28		0			1241	
	29		0	4.0 4.0			
	30	Silty clay, dark yellowish brown (10YR 4/2), slightly hard, slightly plastic, damp	0		B444/ SBO8 30-31		1253
	31	<del>Sand, dark yellowish orange (10YR 6/6), soft, non-plastic, damp, fine grained.</del> Clayey silt, moderate yellowish brown (10YR 5/4), soft, slightly plastic, damp	0				
	32					1251 <del>1248</del>	


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 PROJECT **DCFA**

 HOLE NO. **B444**



# HTW DRILLING LOG

HOLE NO. **B444**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **5**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	33	Clayey silt, moderate yellowish brown (U <sub>TR</sub> 5/4), soft, slightly plastic, damp	0	40 40			
	34		0	3.1 40	B444/ SB09 3435'		1304
	35						
	36	Sand, dark yellowish orange (U <sub>TR</sub> 6/6), soft, non-plastic, moist, fine to coarse, poorly sorted, sub-angular.	0			1302	▼ wet
	37	silty clay, grayish orange (U <sub>TR</sub> 7/4), hard, moderately plastic, moist to wet.					
	38						
	39	Shale, dark gray, fissile, weathered, moderately strong.					
	40	Clayey weathered shale, clay is grayish orange (U <sub>TR</sub> 7/4), hard, non-plastic				1318	
		TD = 40' at 1318					



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PROJECT

**DLFA**

HOLE NO.

**B444**

# HTW DRILLING LOG

 HOLE NO. *B445*

1. COMPANY NAME <i>BLCO</i>	2. DRILLING SUBCONTRACTOR <i>EPS</i>	SHEET 1 OF 5 SHEETS
3. PROJECT <i>DLFA</i>	4. LOCATION <i>Blg 180/181</i>	
5. NAME OF DRILLER <i>Paul Vogelberg</i>	6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geopipe 4200</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>2" mud motor with aquatone sleeves</i>	8. HOLE LOCATION <i>N4326006.420 E691109.859</i>	
	9. SURFACE ELEVATION <i>1080.909</i>	
	10. DATE STARTED <i>7-8-02</i>	11. DATE COMPLETED <i>7-8-02</i>

12. OVERBURDEN THICKNESS <i>340'</i>	15. DEPTH GROUNDWATER ENCOUNTERED <i>None</i>
13. DEPTH DRILLED INTO ROCK <i>0-2</i>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>
14. DEPTH OF HOLE <i>342</i>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>

18. GEOTECHNICAL SAMPLES <i>NA</i>	DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA %</i>
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE <i>Bentonite</i>	BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>Rick Harb</i>		
---	---	------------------------------	------------------------------	--	--	--

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
	1	<i>Silty clay, dark yellowish brown (6-8/10), soft, non-plastic, damp.</i>	0				<i>1005 - Proven probing</i>
	2		0	<i>3.2 40</i>			
	3		0		<i>B445/ SB01 1-3'</i>		<i>007</i>
	4		0			<i>1006</i>	
	5	<i>Some weathered limestone gravel (1/2" - 1")</i>	0				

# HTW DRILLING LOG

 HOLE NO. B445

 PROJECT DCFA

 INSPECTOR Rick McInt

 SHEET OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <u>Recovery</u>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	6	Silty clay, dark yellowish brown (5%R 4/2), soft, non-plastic, damp, some weathered limestone gravel (1/4"-1").	0				
	7	Sandy silty clay, grayish brown (5%R 3/2), soft, non-plastic, damp, fine sand, trace of red brick fragments.	0	3.3 40	SB02 6-7'		1011
	8	Sandy, moderate yellowish brown (10%R 5/4), soft, non-plastic, damp, fine to very fine, trace of fines, trace of red brick fragments and black granular substance.	0			1007	
	9		0	3.2 40			
	10		0				
	11		0		SB03 08-11'		1019
	12		0			1027	
	13	Sand, pale yellowish brown (10%R 6/2), soft, non-plastic, damp, fine to very fine.	0	3.8 40			
	14	Clayey silt, grayish brown (5%R 2/2), soft, slightly plastic, damp.	0		SB04 <del>13-14'</del> 14-15'		1028


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 PROJECT DCFA

 HOLE NO. B445

# HTW DRILLING LOG

HOLE NO. **045**

PROJECT **DLFA**

INSPECTOR **Rick Mont**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OF CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g <i>Temp</i>	REMARKS h
	15	Sandy clayey silt, moderate yellowish brown (10R 5/4), soft, non-plastic, damp, trace of fine roots. Fine sand.	0			1037	
	16		0				
	17		0	40 40			
	18		0		SB05 18-19'		1050
	19	Sand, moderate yellowish brown (10R 5/4), soft, non-plastic, damp, fine to very fine, trace of fines.	0			649	
	20		0				
	21		0				
	22	silt, little plastic	0	40 40		SB06 22-23'	1102
	23						

# HTW DRILLING LOG

HOLE NO. *B445*

PROJECT		INSPECTOR			SHEET		
<i>DCFA</i>		<i>Rich McInt</i>			<i>X 4</i> OF <i>5</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	<i>24</i>	<i>Sand, moderate yellowish brown (UFR 6/4), soft, non-plastic, damp, fine to very fine, trace of lumps.</i>	<i>0</i>			<i>100</i>	
	<i>25</i>		<i>0</i>				
	<i>26</i>		<i>0</i>	<i>36 40</i>	<i>SB07 26-27</i>		<i>1114</i>
	<i>27</i>		<i>0</i>				
	<i>28</i>	<i>Silty clay, pale yellowish brown (UFR 6/2), soft, slightly plastic, damp</i>				<i>1112</i>	
	<i>29</i>	<i>Slightly sandy clayey silt, moderate yellowish brown (UFR 6/4), soft, slightly plastic, damp, fine sand.</i>	<i>0</i>				
	<i>30</i>		<i>0</i>	<i>46 48</i>	<i>SB08 30-31</i>		<i>1026</i>
	<i>31</i>						
	<i>32</i>		<i>0</i>			<i>1124</i>	
		<i>Sand, pale yellowish brown (UFR 6/2), soft, non-plastic, moist, fine to very fine.</i>	<i>0</i>				



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PROJECT *DCFA*

HOLE NO. *B445*

# HTW DRILLING LOG

HOLE NO. **B445**

PROJECT		INSPECTOR			SHEET			
<b>DCFA</b>		<b>Rick Mont</b>			<b>25</b> OF <b>5</b> SHEETS			
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h	
	33	Clay, grey olive (10Y6/2), moderately soft, highly plastic, damp	0	Recovery	SBC9 32-33i		<del>1142</del> 1142	
	34	Clayey silt, yellowish gray (5Y7/2), soft, slightly plastic, damp <del>Silty yellowish gray (5Y7/2), weathered, friable, weak.</del>					<del>1142</del> 1142	
	35	TD = 342'. Refusal.						



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PROJECT **DCFA**

HOLE NO. **B445**

# HTW DRILLING LOG

HOLE NO. **BC446**  
 SHEET 1 OF 5 SHEETS

1. COMPANY NAME <b>BMCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>				
3. PROJECT <b>DCFA</b>		4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelberg</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" macrolone w/ok		8. HOLE LOCATION <b>N4526056.690 E69112.598</b>			
	9. SURFACE ELEVATION <b>1085.778</b>		11. DATE COMPLETED <b>7-23-02</b>			
	10. DATE STARTED <b>7-23-02</b>					
12. OVERBURDEN THICKNESS <b>32.4</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>				
13. DEPTH DRILLED INTO ROCK <b>32.4 - 0.1 1.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>32.4</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Debris</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mont</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	clayey silt, dark yellowish brown (U4R4/2), soft, non-plastic, damp.	0			1321	
	2		1.4	3.3 40	B4461 5801 2-3'		1324
	3	Silty sand, pale yellowish brown (U4R6/2), soft, non-plastic, fine to very fine, damp	1.4			1322	
	4		1.4	8 3.6 40	51312 4-5'		1337
	5						

# HTW DRILLING LOG

HOLE NO. **B446**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **2** OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1335</i>	REMARKS h
	6	Clayey sandy silt, moderate yellowish brown (10YR 5/4), soft, nonplastic, damp, fine sand.	1.1				
	7						
	8		1.1			1335	
	9		1.1				
	10		1.1	3.7 40	9B03 9-10'		1347
	11						
	12		0.8			1345	
	13	Silty sandy moderate yellowish brown (10YR 5/4), soft, nonplastic, damp fine to very fine.	1.1				
	14		1.4	3.6 4.0			1354

SB04, SB04, SB04  
 1415



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PROJECT **DCFA**

HOLE NO. **B446**



# HTW DRILLING LOG

HOLE NO. **B446**

PROJECT

**DCFA**

INSPECTOR

**Rock Mont**

SHEET **X 3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	DETECT SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>200</i>	REMARKS h
	15	Silty sand, moderate yellowish brown (UVR 5/4), soft, non-plastic, damp, fine to very fine.					
	16		1.1			1352	
	17						
	18		1.4				
	19	Clayey silt, dark yellowish brown (UVR 4/2), soft, non-plastic, damp.					
	20		0			1407	
	21		1.1				
	22		1.1				
	23						

$\frac{3.5}{4.0}$

$\frac{14.0}{4.0}$



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PROJECT

**DCFA**

HOLE NO.

**B446**

# HTW DRILLING LOG

HOLE NO. **B446**

PROJECT **DLFA**

INSPECTOR **Rock Mont**

SHEET **4**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	<del>GEO TECH SAMPLE OR CORE BOX NO.</del> Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Clayey silty dark yellowish brown (UVR 4/2), soft, non-plastic, damp	0.7			1420	
	25		0				
	26	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium	0	$\frac{3.1}{4.8}$	SB07 26-27'		1432
	27	Silty sand, moderate yellowish brown (UVR 5/4), soft, non-plastic, damp, fine to very fine sand.	0			1430	
	28		0				
	29		0	$\frac{3.0}{3.0}$	SB08 29-30'		1443
	30	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to medium.	0				
	31		0			1441	
	31	Highly weathered limestone, very pale orange (UVR 8/2), moderately strong in $\frac{1}{2}$ -1" pieces.	0				
	32	Silty clay, moderate brown (UVR 3/4), slightly hard non-plastic, damp	0	$\frac{2.4}{2.4}$	SB09 31-32'		1458



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PROJECT

**DLFA**

HOLE NO.

**B446**

# HTW DRILLING LOG

HOLE NO. **B446**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET **5**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS <i>Trap</i>	REMARKS h
	33	Shale, dusty yellow green 15 GY6/2h weak, weathered.	0				
	34	TD = 33.4' at 1447. Refusal.					



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PROJECT **DCFA**

HOLE NO. **B446**

# HTW DRILLING LOG

HOLE NO. **5447**

1. COMPANY NAME <b>BMCB</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 4 SHEETS
3. PROJECT <b>DLFA</b>	4. LOCATION <b>Bldg 180/181</b>	
5. NAME OF DRILLER <b>Paul Vogelsberg</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N4326056.770 E691112.602</b>	
	9. SURFACE ELEVATION <b>1085.732</b>	
	10. DATE STARTED <b>7-23-02</b>	11. DATE COMPLETED <b>7-23-02</b>
	12. OVERBURDEN THICKNESS <b>30.8</b>	
13. DEPTH DRILLED INTO ROCK <b>0.2</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>	
14. DEPTH OF HOLE <b>31.0</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA %</b>
	<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Dentonite</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hunt</b>		
	<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	clayey silt, grayish brown (5YR 3/2), soft, non-plastic, damp.	0	3.8 40		1530	
	2		0				
	3	Sandy silt, dusky brown (5YR 2/2), soft, non-plastic, damp, fine to very fine sand.	0		5B01 2-31		1534
	4	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp, fine to very fine.	0			1532	
	5						



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PROJECT

**DLFA**

HOLE NO.

**B 447**

# HTW DRILLING LOG

HOLE NO. ~~B446~~

PROJECT

DCFA

INSPECTOR

Rock Mont

SHEET OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GESTECH SAMPLE OR CORE BOX NO. e Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Imp	REMARKS h
	6	Clayey sandy silt, dark yellowish brown (cut R 9/2), soft, nonplastic, damp, very fine sand.	0	27 40	S802 6-7'		1551 2 jars for MS/MSD
	7						
	8		0			1549	
	9	Color change to moderate yellowish brown (cut R 5/4)					
	10		0	3.9 40	S803, S813, S813A 10-11		1616
	11						
	12		0			1614	
	13	Silty sand, moderate yellowish brown (cut R 5/4) soft, nonplastic, damp, fine to very fine.	0	3.1 40			
	14		0		S804 14-15'		1638



PROJECT

DCFA

HOLE NO.

B447

# HTW DRILLING LOG

HOLE NO. **B447**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Silty sand, moderate yellowish brown (10 YR 5/8), soft, non-plastic, damp, fine to very fine.	0				
	16					1632	
	17						
	18		0	$\frac{3.8}{4.0}$	SB05 18-19'		1642
	19						
	20	Clayey silt, dark yellowish brown (10 YR 4/2), soft, non-plastic, damp.	0			1640	
	21						
	22		0	$\frac{3.7}{4.0}$	SB06 22-24'		1648
	23	Silt, dark yellowish brown (10 YR 4/2), soft, slightly plastic, damp, trace of fine sand.					



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PROJECT

**DCFA**

HOLE NO.

**B447**

# HTW DRILLING LOG

HOLE NO. **B447**

PROJECT **DCFA**      INSPECTOR **Rock Mont**      SHEET OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Silty sandy, pale yellowish brown (10% 2/6), soft, nonplastic damp, fine to medium.	0			1646	
	25	Silt, pale yellowish brown (10% 2/6), soft, nonplastic moist, some reddish redox features.	0				
	26		0	$\frac{3.0}{4.0}$			1702
	27	Silty sand, moderate yellowish brown (10% 2/4), soft, nonplastic damp, fine to medium.	0			1700	SB09 26-27'
	28		0				
	29		0				
	30		0	$\frac{3.0}{3.0}$			1710
	31	Limestone, medium gray to tan.	0				SB08 28-30'
	32	TD = 31.0' at 1708. Refusal.					

# HTW DRILLING LOG

HOLE NO. **B448**

1. COMPANY NAME <b>B/MCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/18A</b>		
5. NAME OF DRILLER <b>Paul Vugelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrosond with		8. HOLE LOCATION	
		crotato samples		9. SURFACE ELEVATION <b>1085.306</b>	
				10. DATE STARTED <b>7-24-02</b>	
				11. DATE COMPLETED <b>7-24-02</b>	
12. OVERBURDEN THICKNESS <b>29.1</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>			
13. DEPTH DRILLED INTO ROCK <b>0.4</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>29.5</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>
		✓	<b>NA</b>	<b>NA</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Clayey silt, moderate yellowish brown (10785/4) moderately soft, non-plastic, damp	0			0724	
	2	← 2" of limestone gravel and red brick fragments Clayey silt, dusty brown (5712/2), soft, non-plastic, damp	0	39 — 40	9801 229'		0727
	3	Sandy silty sand, pale yellowish brown (10786/2), soft, non-plastic, damp, fine to very fine sand	0				
	4		0			0725	
	5		0				



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PROJECT

**DLFA**

HOLE NO.

**B448**



# HTW DRILLING LOG

HOLE NO. **B448**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **2**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	6	clayey sandy silt, dark yellowish brown (10 $\gamma$ R4/2) soft, nonplastic, damp, very fine sand,	0	4.0 <u>4.0</u>	SB02 6-7'		0741
	7						
	8		0			0739	
	9	Color change to moderate yellowish brown (10 $\gamma$ R5/4).		3.7 <u>4.0</u>	SB03 10-11'		0800
	10		0				
	11						
	12		0			0757	
	13		0	3.7 <u>4.0</u>			
	14		0		SB04 14-15'		0808



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PROJECT **DLFA**

HOLE NO. **B448**

# HTW DRILLING LOG

HOLE NO. **B448**  
 SHEET OF **3** SHEETS

PROJECT **D C F A**

INSPECTOR **Rock Munt**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Clayey sandy silt, moderate yellowish brown (10% R5/4), soft, non-plastic, dump, very fine sand.	0				
	16		0			0806	
	17		0				
	18	Silty sandy moderate yellowish brown (10% R5/4), soft, non-plastic, dump, fine to very fine	0	3.9 40			
	19				SB05, SB15, SB15 & A 1879		0820
	20		0			0818	
	21		0				
	22		0	3.3 40			
	23				SB06 22-23'		0838



# HTW DRILLING LOG

HOLE NO. **B448**

PROJECT

**DLFA**

INSPECTOR

**Rock Mont**

SHEET **44**  
OF **44** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Silt, moderate yellowish brown (10YR5/4), soft, non-plastic, damp to moist.	0			0836	
	25		0				
	26		0	$\frac{38}{9.0}$			
	27	Silty sand, moderate yellowish brown (10YR5/4), soft, nonplastic, damp, fine to medium.	0		SB07 26-27'		0850
	28		0			0848	
	29	Sandy silty clay, pale olive (10Y 6/2), moderately hard, nonplastic, damp	0		SB08 28-29'		0908
	30	Limestone, weathered, strong in 1/2"-1" pieces.	0				
	30	TD=29.5' at 0856. Refusal.					
	31						
	32						



051601  
Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B448**

# HTW DRILLING LOG

 HOLE NO. **B449**

1. COMPANY NAME <b>BMC O</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 4 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Raul Vuyobong</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Crescent 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocoring with acetate sleeves		8. HOLE LOCATION <b>N43260410.4150 E691090.032</b>			
				9. SURFACE ELEVATION <b>1085.476</b>			
				10. DATE STARTED <b>7-24-02</b>		11. DATE COMPLETED <b>7-24-02</b>	
				12. OVERBURDEN THICKNESS <b>31.4</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>NOHP</b>	
13. DEPTH DRILLED INTO ROCK <b>0.2</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>31.6</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Beaufortite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g T <sub>60</sub> A	REMARKS h
	1	Clayey silt, moderate yellowish brown (10YR 5/4), moderately hard, non-plastic, dry to damp.	0			0928	
	2	3" of limestone gravel and red brick fragments	0	3.6 9.0			
	3	Clayey silt, dusky brown (10YR 5/2), soft, non-plastic, damp.			5801 2-31		0932
	4	Silty sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp	0			0930	
	5		0				

# HTW DRILLING LOG

HOLE NO. **B449**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **22**  
OF **42** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Clayey sandy silt, dark yellowish brown (104R & 2), soft, non-plastic, dump, fine sand.	0	$\frac{4.0}{4.0}$ Recovery			0948
	7						
	8		0			0946	
	9		0				
	10		0	$\frac{3.7}{4.0}$	SB03 1411		0956
	11						
	12		0			0954	
	13						
	14		0	$\frac{3.8}{4.0}$	SB04 1415		1002



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Form MRK-55-2

PROJECT **DLFA**

HOLE NO. **B449**

# HTW DRILLING LOG

HOLE NO. **B449**

PROJECT **DCFA**

INSPECTOR **Rock Mont**

SHEET OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silt/sandy moderate yellowish brown (10YR 5/4) soft, non-plastic, fine to very fine, damp.	0			1000	
	16		0				
	17	Silt, moderate yellowish brown (10YR 5/4) soft, non-plastic damp.	0	37 4.0			
	18				SAB5, SBAS, SB15GA 1879'		1016
	19		0				
	20		0			1013	
	21						
	22		0	3.2 4.0			
	23	Silt/sandy, pale yellowish brown (10YR 6/2) soft, non-plastic, damp, fine to medium.			SB06 22-23'		1030



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Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B449**

# HTW DRILLING LOG

HOLE NO. **B449**

PROJECT **DCEA**

INSPECTOR **Rock Mont**

SHEET **44**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR SORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>11-1</i>	REMARKS h
	24	Silty sand, pale yellowish brown (10YR6/3), soft, non-plastic, damp fine to medium. becomes moderate yellowish brown.	0			1028	
	25		0				
	26	Clayey silty, dark yellowish brown (10YR 4/2), soft, slightly plastic, damp	0	37 — 40	SB07 26-27'		1040
	27						
	28	Sandy silty clay, pale olive (10Y 6/2), soft, moderate plastic, damp fine sand.	0			1038	
	29		0				
	30		0	3.6 — 3.6	SB08 30-31'		1054
	31						
		Shale, dark gray, weak.	0			1052	
	32	TD = 31.6' at 1046. Refusal					



051601  
Form MRK-55-2

PROJECT **DCEA**

HOLE NO. **B449**

# HTW DRILLING LOG

HOLE NO. **B450**

1. COMPANY NAME <b>BMLD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF <b>4</b> SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Rd 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N4326035.300 E691082.368</b>			
				9. SURFACE ELEVATION <b>1085.260</b>			
				10. DATE STARTED <b>7-25-02</b>			
				11. DATE COMPLETED <b>7-25-02</b>			
12. OVERBURDEN THICKNESS <b>2.00</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>				
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>2.1</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		✓	NA	NA	NA	NA	NA
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	1	Clayey silty moderate yellowish brown (10R5/4) moderately hard non-plastic dry to damp.	0			0816	
	2	Fill: Coal, brick, sand.	3.1	3.2 4.0	SBO1 2-31		0820
	3	Silty sand, pale yellowish brown (10YR6/2) soft non-plastic, damp, fine to very fine.					
	4	Clayey silty dusky brown (5YR2/2) soft non-plastic damp	0			0818	
	5						



# HTW DRILLING LOG

HOLE NO. **B450**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET OF **82** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	Clayey sandy silt, moderate yellowish brown (10YR5/4), some nonplastic, dump, fine sand.	0	$\frac{3.7}{4.0}$	SD02 6-7'		0830
	7						
	8		0			0828	
	9		0				
	10		0	$\frac{26}{4.0}$	SD03, SD13, SD13QA 16-11'		0842
	11						
	12		0			0840	
	13			$\frac{3.5}{4.0}$			
	14		0		SD04 14-18'		0858



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B450**

# HTW DRILLING LOG

HOLE NO. **B450**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **X3**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Silt/sand, moderate yellowish brown (10 yrs/4), soft, non-plastic, damp, fine to very fine.	0			0856	
	16		0				
	17		0				
	18	3" of silt, moderate yellowish brown, soft, non-plastic.	0	3.6 40	SB05 18-19'		0907
	19		0				
	20	Sandy silt, moderate yellowish brown (10 yrs/4), soft, non-plastic, damp, fine sand.	0			0905	
	21	Silt/sand moderate yellowish brown (10 yrs/4), soft, non-plastic, damp, fine to medium.	0	3.4 40			
	22		0		SAU6 22-23'		0910
	23						



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PROJECT **DLFA**

HOLE NO. **B450**

HTW DRILLING LOG							HOLE NO.
PROJECT			INSPECTOR			SHEET OF SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g T. and	REMARKS h
	24	Silty sandy moderate yellowish brown (UVR) silty, non-plastic damp, fine to medium.	0			0917	
	25	<del>           Becomes moist.            Limestone, yellowish gray (5F772)         </del>	0	1/1 1-1	9807 24-25'		0930
	26	TD=25.1' at 0924. Refusal					
	27						
	28						
	29						
	30						
	31						
	32						

# HTW DRILLING LOG

HOLE NO **B451**

1. COMPANY NAME <b>BMCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Bldg 180/181</b>			
5. NAME OF DRILLER <b>Paul Vogelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" <b>air-co core with</b>		8. HOLE LOCATION <b>N4321029.970 E691074.925</b>		
				9. SURFACE ELEVATION <b>1084.279</b>		
				10. DATE STARTED <b>7-25-02</b>		11. DATE COMPLETED <b>7-25-02</b>
12. OVERBURDEN THICKNESS <b>15.9</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>			
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>16.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hat</b>	
		<b>✓</b>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Clayey silt, dark yellowish brown (10YR5/4), soft moderately hard, non-plastic, damp to dry.	0	23 40		0950	
	2		0		SR01 2-3'		0454
	3	Sandy yellowish gray (5Y7/2), soft, non-plastic, damp, fine to medium.	0				
	4		0			0952	
	5		0				



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Form MRK -55

PROJECT

**DLFA**

HOLE NO.

**B451**

# HTW DRILLING LOG

HOLE NO. **B451**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <del>Counts</del> <i>Time</i>	REMARKS h
	6	Sands yellowish gray (5.77/4) soft, nonplastic, damp, fine to medium	0				
	7	Clayey sand to silt, moderate yellowish brown (10.18/5.4) soft, nonplastic, damp, fine to very fine sand.	0	$\frac{3.2}{4.0}$	S802 6-7'		1006
	8		0			1003	
	9		0				
	10		0	$\frac{3.3}{4.0}$	S803 10-11'		1015
	11		0				
	12		0			1013	
	13		0	$\frac{2.1}{4.0}$			
	14		0		S804 14-15'		2 jars for MVA 1022

# HTW DRILLING LOG

HOLE NO. **B451**  
 SHEET OF **3** SHEETS

PROJECT **DLFA**

INSPECTOR **Rick Monk**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Clayey sandy silt, moderate yellowish brown (UCR 5/4), soft, non-plastic, clay, fine to very fine sand.		Recovery			
	16	Sandy clayey silt, yellowish gray (SF 7.6), soft, slightly plastic, clay, fine to medium sand. Limestone, yellowish gray (SF 7.2) string.	0			1020	
	17	TO = 16.0' at 1026. Refusal					Tried again to make sure of TO. Refusal to go 16-20 but refusal at 16'.
	18						
	19						
	20						
	21						
	22						
	23						



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Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B451**

# HTW DRILLING LOG

HOLE NO. **B452**

1. COMPANY NAME <b>BMCB</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 180/181</b>				
5. NAME OF DRILLER <b>Paul Vogelberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro probe with acetate sleeves		8. HOLE LOCATION <b>N4376024.470 E691067.726</b>			
				9. SURFACE ELEVATION <b>1083.540</b>			
				10. DATE STARTED <b>7-25-02</b>		11. DATE COMPLETED <b>7-25-02</b>	
12. OVERBURDEN THICKNESS <b>14.8</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>				
13. DEPTH DRILLED INTO ROCK <b>C15</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>15.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		✓	NA	NA	NA	NA	NA
22. DISPOSITION OF HOLE <b>Benfonte</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Pratt</b>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>True</i>	REMARKS h
		Clayey silt, pale yellowish brown (VER 6/2), soft, non-plastic, damp to dry.	0			1343	
	1	Silty sandy, pale yellowish brown (VER 6/2), soft, non-plastic, damp, fine to very fine.	0	31 40			
	2				SB01 231		1347 <div style="border: 1px solid black; padding: 2px; display: inline-block;">2 jars for 10/MSD</div>
	3						
	4	Clayey silt, dusky brown (VER 2/2), soft, non-plastic, damp	0			1345	
	5		0	34 40			

# HTW DRILLING LOG

HOLE NO. **B452**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1198</i>	REMARKS h	
	6	Clayey sandy silt, moderate yellowish brown (10YR 5/4), soft, nonplastic, damp; fine sand.	0					
	7							
	8			0			1401	
	9			0				
	10		0	3.4 <del>8.1</del> 4.0				
	11				S103, S113, S113 GA 10-11"		1418	
	12		0				1416	
	13	Silty sandy moderate yellowish brown (10YR 5/4), soft nonplastic, damp, fine to very fine.	0					
	14		0	3.0 — 9.3		S104 13-14		1432



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B452**



# HTW DRILLING LOG

HOLE NO. **B452**

SHEET **X3**  
OF **3** SHEETS

PROJECT **DCFA**

INSPECTOR **Rick Monk**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>Trail</b>	REMARKS h
------------	------------	-------------------------------	------------------------------	--	----------------------------	-----------------------------	--------------

15		Limestone, highly weathered, weak, yellowish gray (577/2).	0				
----	--	--	---	--	--	--	--

16		TP = 15.3 at 0428 Refusal.					
----	--	-------------------------------	--	--	--	--	--



051601  
Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B452**

**500-Series Borehole Logs  
Transition Zone**

# HTW DRILLING LOG

HOLE NO. **B501**

1. COMPANY NAME <b>B/McD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS	
3. PROJECT <b>DIFA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe SFCO ATU</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION		9. SURFACE ELEVATION	
		<b>2" mucous with absolute sleeves</b>		<b>E 690883.549 N 4326012.160</b>	
				<b>322.471</b>	
				10. DATE STARTED <b>6-17-02</b>	11. DATE COMPLETED <b>6-17-02</b>
12. OVERBURDEN THICKNESS <b>31.8</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>14.8</b>		
13. DEPTH DRILLED INTO ROCK <b>1.2</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>32.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED		UNDISTURBED		19. TOTAL NUMBER OF CORE BOXES <b>NA</b>							
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC		METALS		OTHER (SPECIFY)		OTHER (SPECIFY)		OTHER (SPECIFY)		21. TOTAL CORE RECOVERY	
		<b>Water</b>		<b>✓</b>		<b>NA</b>		<b>NA</b>		<b>NA</b>		<b>NA</b> %	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL		OTHER (SPECIFY)		23. SIGNATURE OF INSPECTOR <b>Rich Hunt</b>					
		<b>✓</b>		<b>NA</b>		<b>NA</b>							

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<b>silty clay, dark brown (comp) soft, slightly elastic, damp</b>	<b>0</b>			<b>1511</b>	
	2	<b>same, highly weathered, dusty yellow green (56% 5/2), dry to damp, some clay of same color.</b>	<b>0</b>	<b>1.7</b>			
	3		<b>0</b>	<b>4.6</b>			
	4		<b>0</b>			<b>1512</b>	
	5	<b>Sandy, pale yellowish brown (10% 6/2), soft, non plastic, damp, fine to very fine.</b>	<b>0</b>				

# HTW DRILLING LOG

HOLE NO. *B 501*

PROJECT *DLFA*

INSPECTOR *Rick Monk*

SHEET OF *4*<sup>2</sup> SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>7.0mp</i>	REMARKS h
	6	<i>Sand, pale yellowish brown (104R 6/2) silt, non plastic, damp; fine to very fine.</i>	<i>0</i>	<i>3.8</i> <hr/> <i>40</i>			
	7						
	8			<i>0</i>			<i>1515</i>
	9			<i>0</i>			
	10		<i>0</i>	<i>3.9</i> <hr/> <i>40</i>			
	11		<i>0</i>				
	12		<i>0</i>			<i>1520</i>	
	13		<i>0</i>	<i>3.8</i> <hr/> <i>40</i>			
	14		<i>0</i>				



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PROJECT *DLFA*

HOLE NO. *B 501*



# HTW DRILLING LOG

HOLE NO. **B501**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Core</i>	REMARKS h
	15	2' <u>Sandy silt, dark yellowish brown, moist</u> Sand, grayish orange (104R7/A), silt, non plastic, damp, fine to medium grained	0			1526	
	16						
	17			$\frac{3.4}{40}$			
	18		0				
	19	Becomes wet	0				
	20					1531	
	21		0		B501/ 6401 A 20-22'		1644
	22		0	$\frac{3.1}{40}$			
	23						



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PROJECT **DCFA**

HOLE NO. **B501**

# HTW DRILLING LOG

HOLE NO. *B-21*

PROJECT *DCFA*

INSPECTOR *Mark Mont*

SHEET *X* OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	CLOW COUNTS Time g	REMARKS h
	<i>24</i>	<i>Sand, grayish orange (WTR 7/11), soft, non-plastic, med. fine to medium grained.</i>	<i>0</i>			<i>1551</i>	<i>Reason for discontinuation of sampling</i>
	<i>25</i>		<i>0</i>				
	<i>26</i>		<i>0</i>	<i>31</i> <hr/> <i>40</i>			
	<i>27</i>						
	<i>28</i>		<i>0</i>			<i>1665</i>	
	<i>29</i>						
	<i>30</i>		<i>0</i>	<i>22</i> <hr/> <i>40</i>			
	<i>31</i>				<i>B-21/ AWOLB 30-32'</i>		<i>1636</i>
	<i>32</i>	<i>Limestone, light gray, grainy, moderate stone</i>	<i>0</i>				
		<i>TO = 32.0 ft at 1624.00</i> <i>in limestone</i>					



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PROJECT

*DCFA*

HOLE NO.

*B-21*

# HTW DRILLING LOG

 HOLE NO. **B 502**

1. COMPANY NAME <b>B.M.C.D</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 4 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" mucron core with		8. HOLE LOCATION			
		4 hole sieves		N 4326011.000 E 690897.610			
				9. SURFACE ELEVATION			
				322.514			
12. OVERBURDEN THICKNESS <b>31.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>22.1</b>				
13. DEPTH DRILLED INTO ROCK <b>0.7</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>32.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		✓	NA	NA	NA	NA	NA %
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Banks</b>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>0745</i>	REMARKS h
	1	Clayey sandy silt, dark yellowish brown (6/12, 56/11), non-plastic, damp. Sand is fine to very fine	0				
	2		0	<del>3.1</del> 3.1 4.0			
	3	Weathered shale, dusky red (5R3/4), weak, crumbly. Some greenish gray (5G6/1)	0				
	4		0			0746	
	5		0				

# HTW DRILLING LOG

HOLE NO. *B 502*

PROJECT *DCEA*

INSPECTOR *Rick Monk*

SHEET *2*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Tim B</i>	REMARKS h
	6	<i>Sand, pale yellowish brown (10% R 6/2), soft, non-plastic, damp, fine to very fine.</i>	0	$\frac{3.7}{4.0}$			
	7						
	8		0			0754	
	9		0				
	10		0	$\frac{3.8}{4.0}$			
	11						
	12		0			0759	
	13		0	$\frac{3.7}{4.0}$			
	14		0				



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PROJECT *DCEA*

HOLE NO. *B 502*




# HTW DRILLING LOG

HOLE NO. *B502*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *3*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h
	15	<i>silty sand, grayish brown (SPT 3/2), soft, non plastic, moist.</i>					
		<i>2" clayey silty, grayish brown, slightly plastic, moist</i>					
	16	<i>Sand, grayish coarse (100% #4), soft, non plastic, clayey fine to medium.</i>	<i>C</i>			<i>0804</i>	
	17		<i>C</i>				
	18		<i>C</i>	<i>2.8 / 4.0</i>			
	19						
	20	<i>Becomes wet.</i>	<i>C</i>			<i>0812</i>	
	21		<i>C</i>				
	22		<i>C</i>	<i>6.2 / 4.0</i>			
	23						



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PROJECT

*DCFA*

HOLE NO.

*B502*

# HTW DRILLING LOG

HOLE NO. **B 502**

PROJECT **DCFA**

INSPECTOR **Rock Monk**

SHEET **44**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Times	REMARKS h
	24	Sandy, grayish orange (16TR7/4) soft, non-plastic, wet, fine to medium.	0			0819	Began discreet sampling.
	25		0				
	26		0	2.2 4.0			0420
	27	Color change to pale yellowish brown (189K 6/2).	0		B 504 Gwi A1 Gwi A15 Gwi A150 26-28'		
	28		0			0844	
	29		0				
	30	Sand and limestone gravel. Sand is light olive gray (5Y6/1), fine to medium, wet to moist. Limestone is same color, strong. 1/4" - 1/2".	0	3.2 4.0			
	31		0				
	32	Clayey shale, dark gray, weak. Clay is moderately plastic, moist.	0			0857	
		<b>TD = 320' at 0857.</b>					



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PROJECT

**DCFA**

HOLE NO.

**B 502**

# HTW DRILLING LOG

 HOLE NO. *P 503*

1. COMPANY NAME <i>BACD</i>	2. DRILLING SUBCONTRACTOR <i>EPI</i>	SHEET 1 OF 4 SHEETS
3. PROJECT <i>DLFA</i>	4. LOCATION <i>Island</i>	
5. NAME OF DRILLER <i>Ryan Weiser</i>	6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 5400 ATC</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <i>N 4326010.000 E 690913.739</i>	
	9. SURFACE ELEVATION <i>322.361</i>	
	10. DATE STARTED <i>6-9-02</i>	11. DATE COMPLETED <i>6-14-02</i>

12. OVERBURDEN THICKNESS <i>36.0</i>	15. DEPTH GROUNDWATER ENCOUNTERED <i>21.1</i>
13. DEPTH DRILLED INTO ROCK <i>28</i>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>
14. DEPTH OF HOLE <i>320</i>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>

18. GEOTECHNICAL SAMPLES <i>NA</i>	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA</i> %
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE <i>Backfilled</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>R. F. Hunt</i>		
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	1	<i>Clayey sandy silt, dark yellowish brown (104R 4/2), 5.44. non-plastic, damp. Sand is fine to very fine.</i>	G	3.1 4.0		0450	
	2		G				
	3	<i>Sand, pale yellowish brown (104R 6/2), soft, non-plastic, damp. fine to very fine.</i>					
	4		U			0951	
	5		G	3.3 4.0			



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 PROJECT *DLFA*

 HOLE NO. *P 503*

# HTW DRILLING LOG

HOLE NO. *B503*

PROJECT *NFA*

INSPECTOR *Nick Mark*

SHEET *82* OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Final</i>	REMARKS h
	6	Sand, pale yellowish brown (10% 6/2), soft, non-plastic, damp, fine to very fine.	0	$\frac{3.3}{4.0}$			
	7						
	8		0			0953	
	9		0				
	10	clayey silt, dark yellowish brown (10% 4/2) soil, slightly plastic, damp. trace of very fine sand.	0	$\frac{3.8}{4.0}$			
	11	Sand, pale yellowish brown (10% 6/2), soft, non-plastic, damp, fine to very fine.					
	12		0			1053	
	13		0				
	14	Silt/sand, grayish brown (10% 4/2), soft, non-plastic, moist. Sand to fine to very fine.	0	$\frac{4.0}{4.0}$			



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PROJECT *DCFA*

HOLE NO. *B503*


# HTW DRILLING LOG

HOLE NO. *R503*

PROJECT *DCFA*

INSPECTOR *Rock Mont*

SHEET *3*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>100g</i>	REMARKS h
	<i>15</i>	<i>Sand, grayish orange (10% R7/4) solid, non-plastic, damp, fine to medium.</i>	<i>0</i>			<i>1007</i>	
	<i>16</i>		<i>0</i>				
	<i>17</i>		<i>0</i>				
	<i>18</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>19</i>		<i>0</i>				
	<i>20</i>	<i>becomes wet.</i>	<i>0</i>			<i>1014</i>	
	<i>21</i>		<i>0</i>				
	<i>22</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>23</i>		<i>0</i>		<i>RS04 6W01A 22-24'</i>		<i>1000</i>



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PROJECT *DCFA*

HOLE NO. *R503*

# HTW DRILLING LOG

HOLE NO. *PSC3*

PROJECT <i>PCFA</i>		INSPECTOR <i>Rick Monk</i>			SHEET <i>4</i> OF <i>4</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1020</i>	REMARKS h
	<i>24</i>	<i>SAME AS ABOVE</i>	<i>0</i>	<i>49/4.0</i>		<i>1020</i>	
	<i>24</i>	<i>weathered limestone, light gray, weakly granular, moist</i>	<i>0</i>				<i>Begin Discontin. Sampling.</i>
	<i>25</i>	<i>Silty clay, pale red-brown color, soft, moderate plastic, moist.</i>	<i>0</i>	<i>23/4.0</i>			
	<i>26</i>	<i>Clayey silt, light brownish gray (5YR 6/1), soft, moderate plastic, moist.</i>	<i>0</i>				
	<i>27</i>		<i>0</i>				
	<i>28</i>		<i>0</i>			<i>1030</i>	
	<i>29</i>		<i>0</i>				
	<i>30</i>	<i>Clayey silt, dark gray, moderate plastic, moderate plastic, damp.</i>	<i>0</i>	<i>27/4.0</i>			
	<i>31</i>		<i>0</i>				
	<i>32</i>		<i>0</i>			<i>1040</i>	
	<i>33</i>	<i>33 = 32.5</i>					



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PROJECT *PCFA*

HOLE NO. *PSC3*

# HTW DRILLING LOG

 HOLE NO. **B504**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N 4326008.280 E 690928.086</b>			
				9. SURFACE ELEVATION <b>322.047</b>			
				10. DATE STARTED <b>6-27-02</b>		11. DATE COMPLETED <b>6-28-02</b>	
12. OVERBURDEN THICKNESS <b>23.6</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>17.4</b>				
13. DEPTH DRILLED INTO ROCK <b>0.4</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>240</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		✓	NA	NA	NA	NA	
22. DISPOSITION OF HOLE <b> Bentonite </b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rich Hunt</i>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	1	9.5 in clay, dark brown (5422/2) moderately soft, slightly plastic, dense	0			1538	
	2		0	2.2 / 4.1			
	3		0				
	4		0				1538
	5		0	3.3 / 4.0			



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 PROJECT **DCFA**

 HOLE NO. **B504**

# HTW DRILLING LOG

HOLE NO. **B504**

PROJECT **DLFA**

INSPECTOR **Rock Mont**

SHEET OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	Silty clay, dusky brown (5R 2/2), moderate soft, non-plastic, damp, slightly	0	3,3 4.8			
	7	Sand, pale yellowish brown (10 YR 6/2), soft, non-plastic, damp, fine to very fine	0			1541	
	8	2" sandy clay, light brownish gray (5YR 6/1), slightly hard, slightly plastic, damp	0				
	9						
	10	2" sandy clay, as above.	0	40 4.6			
	11	Silty sand, dark yellowish brown (10 YR 4/2), soft, slightly plastic, damp, very fine sand.	0			1545	
	12		0				
	13			29 4.0			
	14		0				



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PROJECT **DLFA**

HOLE NO. **B504**



# HTW DRILLING LOG

HOLE NO. *B-504*

PROJECT		INSPECTOR		SHEET			
<i>DCFA</i>		<i>Rick Monk</i>		OF <i>4</i> SHEETS			
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Xerometry</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	<i>Sand, grayish orange (10% 2/4) soft, non-plastic, damp, fine to medium.</i>		<i>2.9/40</i>			
	16		<i>0</i>			<i>1551</i>	
	17		<i>0</i>				
	18		<i>0</i>	<i>40/40</i>			▼
	19						
	20	<i>Sand, light brownish gray (5% 2/4), soft, non-plastic, wet, fine to medium.</i>	<i>1.1</i>			<i>1554</i>	<i>Hydrocarbon odors</i>
	21		<i>0</i>				
	22		<i>6</i>	<i>40/40</i>			
	23		<i>0</i>				



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PROJECT *DCFA*

HOLE NO. *B-504*

# HTW DRILLING LOG

HOLE NO. **B504**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Clear silt, fine yellowish brown (U+R6/2). weak, highly weathered, clay to moist.	b	4.0/4.0		1602	
		TD = 24.0' at 1602					



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PROJECT **DCFA**

HOLE NO. **B504**

# HTW DRILLING LOG

 HOLE NO. *B505*

1. COMPANY NAME <i>B/MCD</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 2 SHEETS		
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Island</i>				
5. NAME OF DRILLER <i>Pat Martin</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe SY00 ATU</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2 1/2 macro core with		8. HOLE LOCATION			
		0.25 core sleeves		<i>N 4326007 E 690944.109</i>			
				9. SURFACE ELEVATION			
				<i>321.454</i>			
		10. DATE STARTED <i>6-28-02</i>		11. DATE COMPLETED <i>6/28/02</i>			
12. OVERBURDEN THICKNESS <i>13.0</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>None</i>				
13. DEPTH DRILLED INTO ROCK <i>0.2</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. DEPTH OF HOLE <i>13.2</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i> %
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		<i>✓</i>	<i>NA</i>	<i>NA</i>			
<i>Bentonite</i>				<i>Rich Frank</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>Silt/clay, grayish brown (GYP 3/2), moderately soft, slightly plastic, damp</i>	0			0810	
	2		0	<i>27/40</i>			
	3						
	4	<i>Sandy clay, moderate dark yellowish brown (UYP 4/2), moderately soft, slightly plastic, damp, fine sand.</i>	0			0811	
	5			<i>3.6/4.6</i>			

# HTW DRILLING LOG

HOLE NO. **B505**

PROJECT

**DLFA**

INSPECTOR

**B505**

SHEET **72**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g <i>Temp</i>	REMARKS h
	6		0				
	7	Silty clay, dusty brown (500/2) slightly hard, slightly plastic damp		$\frac{3.6}{4.0}$			
	8		0			0820	
	9		0				
	10		0	$\frac{3.7}{4.0}$			
	11	Sand, grayish orange (10727/4) soft non-plastic, damp fine to medium.					
	12	Sandy silt, dark yellowish brown (10727/4) soft, non-plastic, damp, fine to very fine sand. breaks at 30° angle from vertical	0			0824	
	13	Sand, grayish orange (10727/4) soft, non-plastic damp, fine to medium. Silt, pale olive (1076/2), moderate string.	0	$\frac{1.2}{1.2}$			
	14	TD = 13.2' at 0827. Retrial					



051601  
Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B505**

# HTW DRILLING LOG

HOLE NO. **B506**

1. COMPANY NAME <b>R/ced</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 2 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Island</b>			
5. NAME OF DRILLER <b>Pat Murfin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5000 ATV</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" microcone with		8. HOLE LOCATION <b>N4326004.760 E 690960.213</b>		
		0.4m to 1.0m		9. SURFACE ELEVATION <b>320.998</b>		
				10. DATE STARTED <b>6-28-02</b>		
				11. DATE COMPLETED <b>6-28-02</b>		
12. OVERBURDEN THICKNESS <b>8.4</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>Nine</b>			
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>8.5</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Ready to rip</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Pat Murfin</b>	
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Sand, pale yellowish brown (10YR6/2) soft, non-plastic damp, fine to very fine.	0			0847	
	2	Silty clay, grayish brown (5YR7/2) moderately soft, slightly plastic, damp.	0	2.9 40			
	3	3" of sandy clay, moderate yellowish brown, soft non-plastic.	0				
	4	Silty sand, moderate yellowish brown (10YR5/0) soft, non-plastic damp, fine to very fine sand.	0			0847	
	5	Silty clay, dusky brown (5YR4/3) moderate to hard, non-plastic, damp.	0	3.8 4.6			



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PROJECT **DLFA**

HOLE NO. **B506**

# HTW DRILLING LOG

HOLE NO. *R506*

PROJECT *DCFA*

INSPECTOR *Rock Monk*

SHEET *2*  
OF *2* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS <i>Temp</i>	REMARKS h
	6	<i>same as above</i>	0				
	7			<i>3.8/4.0</i>			
	8	<p><i>Sand, grayish orange (cut R 714) silt, non-plastic, damp, fine to medium.</i></p> <p><i>9" of sandy silt, dark yellowish brown, fine sand, shale, ripple line (cut 62), strong</i></p>	0			<i>0850</i>	
	9	<i>TD = 8.5' at <del>8.5</del> 0853</i>					
	10	<i>Refusal</i>					



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Form MRK-55-2

PROJECT *DCFA*

HOLE NO. *R506*

# HTW DRILLING LOG

 HOLE NO. **B507**

1. COMPANY NAME <b>B/MC</b>		2. DRILLING SUBCONTRACTOR <b>EP's</b>			SHEET 1 OF 2 SHEETS		
3. PROJECT <b>DCA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Greippick 5400 ATU</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with		8. HOLE LOCATION <b>N. 4326002.600 E 690977.680</b>			
		a corote sleeves.		9. SURFACE ELEVATION <b>321.195</b>			
				10. DATE STARTED <b>6-28-02</b>			
				11. DATE COMPLETED <b>6-28-02</b>			
12. OVERBURDEN THICKNESS <b>9.8</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>				
13. DEPTH DRILLED INTO ROCK <b>0.2</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>10.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Contig. site</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Pat Martin</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Final</i>	REMARKS h
		Sandy, pale yellowish brown (10/26/01), soft, non-plastic, damp, fine to very fine.	0			0908	
	1	Silty clay, grayish brown (5/20/01), moderately soft, slightly plastic, damp.		3.4 — 4.0			
	2		0				
	3						
		<u>2" weathered limestone.</u>	0			0908	
	4	Sandy silt, dark yellowish brown (10/26/01), soft, non-plastic, damp, fine to very fine sand.	0				
	5			3.2 — 4.0			

# HTW DRILLING LOG

HOLE NO. **B 507**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **1**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1.0</i>	REMARKS h
		<u>same as above</u>					
	6	Silty clay, dusky brown (5 YR 2/2), moderately hard, slightly plastic, damp 1" red brick fragment	0	$\frac{3.2}{4.0}$			
	7						
	8		0			0916	
	9	Weathered limestone, pale olive (10 Y 6/2)	0	$\frac{2.0}{3.0}$			
	10	Sand, grayish brown (10 YR 7/4), soft, non-plastic, damp, fine to very coarse, subangular. Limestone, light olive gray (5 Y 5/2), moderately strong	0				
	11	TD = 10.0' at 0914. Refusal.					
	12						



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Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B 507**



# HTW DRILLING LOG

HOLE NO. **B508**

1. COMPANY NAME <b>BMO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 2 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Gregg, Co 5400 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" non-rotary with acetate sleeves		8. HOLE LOCATION <b>N. 4325997.740 E. 690991.630</b>			
				9. SURFACE ELEVATION <b>320.617</b>			
				10. DATE STARTED <b>6-28-02</b>			
				11. DATE COMPLETED <b>6-28-02</b>			
12. OVERBURDEN THICKNESS <b>8.2</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>				
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>8.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Frank</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	1	Sand, pale yellowish brown (UFR6/2) soft, nonplastic damp, fine to very fine	0			0451	
	2		0	3.1' / 40			
	3		0				
	4	Silty clay, dusky brown (5YR2/6) moderately hard, slightly plastic damp. Few reddish redox features	0			0951	
	5		0	3.8			



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PROJECT **DCFA**

HOLE NO. **B508**

# HTW DRILLING LOG

HOLE NO. **B508**

PROJECT

**DLFA**

INSPECTOR

**Rick Monk**

SHEET **X2**  
OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	same as above	0				
	7	Dark, Silty sand (medium to yellowish brown (10CR 5/4) grading to sand, grayish orange (10CR 7/4), soft to plastic, damp, fine to medium.	0	3.8 4.0			
	8	weathered shale, light olive gray	0	0.3/0.3		0954	
	9	TD = 8-31 at <del>0954</del> 0957					
	10	Results					



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PROJECT

**DLFA**

HOLE NO.

**B508**

# HTW DRILLING LOG

HOLE NO. **B509**

1. COMPANY NAME <b>BMLD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 1 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Put Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATU</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" mucrocure with acetate sleeves		8. HOLE LOCATION <b>N 4325992.590 E. 691007.571</b>	
				9. SURFACE ELEVATION <b>320.29</b>	
				10. DATE STARTED <b>6-28-02</b>	
				11. DATE COMPLETED <b>6-28-02</b>	
12. OVERBURDEN THICKNESS <b>5.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>5.4</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
		OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Rank</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time j	REMARKS h
	1	Sand, pale yellowish brown (100R26/24), soft, non-plastic, damp, fine to very fine.	0			1006	
	2	Silty clay, dusky brown (5YR2/4), slightly hard, slightly plastic, damp.	0	$\frac{3.2}{4.0}$			
	3	Silty sand, pale yellowish brown (10YR6/24), soft, non-plastic, damp. Sand is fine to very fine.					
	4		0			1008	
	5	Silty clay, dark yellowish brown (10YR4/4), moderately hard, moderately plastic, damp. Grades to sandy silt, very fine sand. (10YR2/4), weakly weathered limestone, grayish orange (10YR2/4), weak.	0	$\frac{1.2}{1.4}$			



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PROJECT **DCFA**

HOLE NO. **B509**

# HTW DRILLING LOG

 HOLE NO. **6516**

1. COMPANY NAME <b>BMcD</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 2 SHEETS
3. PROJECT <b>DCFA</b>	4. LOCATION <b>Island</b>	
5. NAME OF DRILLER <b>Ryan Weisor</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macroprobe with kerotite sleeves.</b>	8. HOLE LOCATION <b>N 4325989.890 E. 691024.400</b>	
	9. SURFACE ELEVATION <b>322.391</b>	
	10. DATE STARTED <b>6-17-02</b>	11. DATE COMPLETED <b>6-17-02</b>

12. OVERBURDEN THICKNESS <b>12.9</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>
13. DEPTH DRILLED INTO ROCK <b>0.1</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>13.0</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>	VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %

22. DISPOSITION OF HOLE <b>Backfilled</b>	BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Robt. [Signature]</b>
--	---	------------------------------	------------------------------	--

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Sandy pink yellowish brown (50% R6/2), soft, non plastic, damp, fine to very fine	0			1383	
	2	Soft clay, dusky brown (50% R6/2), soft, slight plastic, damp, low to block redox features.	0	2.4 4.6			
	3						
	4		56			1384	
	5		0	3.6 4.0			


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 PROJECT **DCFA**

 HOLE NO. **6516**

# HTW DRILLING LOG

 HOLE NO. **B510**

PROJECT

**DCFA**

INSPECTOR

**Rick Ment**

 SHEET OF **22** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Sandy, pale yellowish brown (10 YR 6/2), soft, non-plastic clay; fine to very fine	0	<del>7</del>			
	7			$\frac{3.6}{4.0}$			
	8		0	<del>7</del>		1347	
	9		0				
	10		0	$\frac{4.0}{4.0}$			
	11		0				
	12	Silty sand, dark yellowish brown (10 YR 4/2), soft, non-plastic, moist	0			1353	
	13	Silty, light olive gray (5Y 5/2), moderate strata.	46.8	1.0/4.0			Remnant odor.
	14	TL = 13.0' at 1359. Refusal on shale.					


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Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B510**

# HTW DRILLING LOG

 HOLE NO. *BS11*

1. COMPANY NAME <i>B/MCD</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 2 SHEETS	
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Island</i>		
5. NAME OF DRILLER <i>Ryan Weiser</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe S400 ATC</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>2" auger cone with vialate sieves</i>		8. HOLE LOCATION <i>N. 4325983.850 E. 691040.330</i>			
		9. SURFACE ELEVATION <i>322.418</i>			
		10. DATE STARTED <i>6-17-02</i>		11. DATE COMPLETED <i>6-17-02</i>	
		12. OVERBURDEN THICKNESS <i>13.5</i>			
13. DEPTH DRILLED INTO ROCK <i>0.3</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>None</i>			
14. DEPTH OF HOLE <i>13.8</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS <i>None</i>		VOC <i>NA</i>	METALS <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>
		OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	21. TOTAL CORE RECOVERY <i>NA</i> %
22. DISPOSITION OF HOLE <i>Backfilled</i>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>Rick Frank</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>TRAC</i>	REMARKS h
	1	<i>Sand, pale yellowish brown (100%<math>\phi</math>), soft, non-plastic, damp, fine to very fine.</i>	50			1369	<i>Moved 5' east from flag.</i>
	2	<i>Silt, clay, dusky brown (SM), 1.1 soft, slightly plastic, damp.</i>		22 7.0			
	3						
	4		0.9			1310	
	5		0.4	3.6/4.0			



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PROJECT

*DCFA*

HOLE NO.

*BS11*

# HTW DRILLING LOG

 HOLE NO. **B511**

 PROJECT **DCFA**

 INSPECTOR **Rich Monk**

 SHEET **2**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>7.14-0</i>	REMARKS h
	6	Sandy, pale yellowish brown (UFR 6/2), soft, non-plastic, damp, fine to very fine.	3.5	3.6 2.0			
	7						
	8		2.0			1314	
	9		1.5				
	10	2" silt seam, dark yellowish brown, slightly plastic, soft, damp	0	4.0 1.8			
	11						
	12	<del>Remains moist and silty.</del> Sandy silt, dark yellowish brown (UFR 4/2), soft, non-plastic, moist. Sand is fine to very fine.	0			1317	
	13	2" sand seam, fine to medium, grayish orange. Sandy, medium dark gray, soft, non-plastic, moist, fine to medium.	9.9	2.8/4.0			Kerosene odor
		shale, light olive gray (SFS 2), weathered, weak.	286	180			
	14	TO = 13.8' at 1320 on shale (refusal).					

# HTW DRILLING LOG

 HOLE NO. **B-512**

1. COMPANY NAME <b>BACD</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 3 SHEETS
3. PROJECT <b>DCFA</b>	4. LOCATION <b>Island</b>	
5. NAME OF DRILLER <b>Ryan Waiser</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 540J ATC</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macro core with acetate sleeves</b>	8. HOLE LOCATION	
	9. SURFACE ELEVATION	
	10. DATE STARTED <b>6-17-02</b>	11. DATE COMPLETED <b>6-17-02</b>

12. OVERBURDEN THICKNESS <b>17.3</b>	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK <b>27</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>29.0</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>Soil</b>	VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %

22. DISPOSITION OF HOLE <b>Bandwidth</b>	BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Munk</b>
---	---	------------------------------	------------------------------	--

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sand, pale yellowish brown (10/16/2), soft, non-plastic, damp, fine to very fine.	0	Recovery		1613	
	2		0	2.8 4.0			
	3	Silty clay, dark brown (5/12/2), soft, slightly plastic, damp.					
	4		0			1614	
	5		0	3.9 4.0			



# HTW DRILLING LOG

HOLE NO. *B512*

PROJECT *PCFA*

INSPECTOR *Mick Munk*

SHEET *12*  
OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recorder</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	<i>Sand, silty yellowish brown (10% s/s) soft, nonplastic, damp, fine to very fine</i>	0	<del>10</del> 3.9 <u>4.0</u>			
	7						
	8		0	<del>10</del>		1018	
	9						
	10		0	3.9 <u>4.0</u>			
	11	<i>Becomes moderate yellowish brown (10% s/s)</i>	0				
	12					1022	
	13	<i>Clayey silt, dark yellowish brown (10% s/s) soft, slight plastic, damp. Trace of very fine sand.</i>	0.3	4.0 <u>4.0</u>			
	14	<i>Sand and limestone.</i>					



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Form MRK-55-2

PROJECT

*PCFA*

HOLE NO.

*B512*

# HTW DRILLING LOG

HOLE NO. **B512**

PROJECT		INSPECTOR			SHEET # 3 OF 3 SHEETS		
<b>DLFA</b>		<b>Rock Monk</b>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand and limestone. Sand is dark yellowish brown (10YR4/2). Fine to medium grained, moist. Limestone is pale yellowish brown (10YR6/2), strong, fractured into 1/2" - 1" fragments.	28				Diurnal color.
	16		266			1038	
	17		262				
	18	Shale, light olive gray (5Y5/2), highly weathered, weak, deep to dry.	187	40 / 20			
	19						
	20		110			1038	
	25	TD = 20.0' at 1038 on scale. Left hole open for 25 minutes and still dia of 20". Contaminated cuttings.					



PROJECT

**DLFA**

HOLE NO.

**B 512**

# HTW DRILLING LOG

 HOLE NO. **B 513**

1. COMPANY NAME <b>BMD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATC</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" mandrel with scotch sleeves.</b>		8. HOLE LOCATION <b>N. 4325972.760 E. 691066.464</b>					
		9. SURFACE ELEVATION <b>322.503</b>					
		10. DATE STARTED <b>6-14-02</b>		11. DATE COMPLETED <b>6-14-02</b>			
		12. OVERBURDEN THICKNESS <b>30.7</b>					
13. DEPTH DRILLED INTO ROCK <b>0.8</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>19.5</b>				
14. DEPTH OF HOLE <b>31.5</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			18. GEOTECHNICAL SAMPLES				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Randy [Signature]</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Silty sand, moderate yellowish brown (WSP 5/10), soft non-plastic, damp. fine to very fine.	0			1258	
	2		0	25 30			
	3	Silty clay, dark brown (WSP 2/4), moderately soft, moderately plastic, damp.	0				
	4		0			1259	
	5		0	2.6 4.0			

# HTW DRILLING LOG

HOLE NO. *B513*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *2*  
OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS. c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>None</i>	REMARKS h
		<i>Same AS ABOVE</i>					
	<i>6</i>	<i>Sandy, pale yellowish brown (10 to 6/2), soft, non-plastic damp, fine to very fine</i>	<i>0</i>				
	<i>7</i>			<i>3.6/4.0</i>			
	<i>8</i>		<i>0</i>			<i>1303</i>	
	<i>9</i>		<i>0</i>				
	<i>10</i>		<i>0</i>	<i>4.0/4.0</i>			
	<i>11</i>		<i>0</i>				
	<i>12</i>		<i>0</i>			<i>1307</i>	
	<i>13</i>		<i>0</i>				
	<i>14</i>		<i>0</i>	<i>3.9/4.0</i>			






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PROJECT *DCFA*

HOLE NO. *B513*

# HTW DRILLING LOG

HOLE NO. **B513**

PROJECT		INSPECTOR			SHEET		
<b>DCRA</b>		<b>Rick Rank</b>			<b>3</b>		
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH. SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS	REMARKS
a	b	c	d	e	f	Time	h
		2" layer soft, non-plastic, dark yellowish brown (104R4/2)					
	15	Weathered limestone and sand. Limestone is medium light gray, strong 1" fragments. Sand is pale yellowish brown (104R6/2), soft, non-plastic, moist, fine to medium.	0	3 9/4.0		1314	
	16		0				
	17						
	18	Soft sand, brownish gray (5TR4/1), soft, non-plastic, wet, fine to very fine.	0	3 7/4.0			
	19	Clayey silt, brownish black (5TR2/1), soft, slightly plastic, moist to wet.			B513/ GW01A 1520'		
	20	Sand, grayish orange (104R7/4), soft, non-plastic, wet, fine to medium.	0			1323	
	21		0.3				Began using direct sampler.
	22						
	23	Sand and limestone sand is. fine to medium gray (5TR4/1), soft, non-plastic, wet, fine to very fine. Limestone is light gray strong 1" fragments.	0	3 1/4.0			



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PROJECT **DCRA**

HOLE NO. **B513**

# HTW DRILLING LOG

HOLE NO. *R 513*

PROJECT *DCFA*

INSPECTOR *Rick Rank*

SHEET *47*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>135613</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h
	24	<i>same as above</i>	0	<i>2.1/4.0</i>		<i>1357</i>	
	25		0				
	26	<i>Silty sand, brownish gray (50% ll), soft, non-plastic, wet, sand is fine to very fine.</i>	0	<i>2.9/4.6</i>			
	27	<i>Sand, brownish gray (50% ll), soft, non-plastic, wet, very fine to medium</i>	0				
	28					<i>1357</i>	
	29	<i>Silty sand, light olive gray (50% ll), soft, non-plastic, wet</i>	0	<i>4.0/4.0</i>	<i>1517/5216</i>		<i>1420</i>
	30		0		<i>28-30'</i>		
	31	<i>Shale, dark gray, moderately strong, top is highly weathered.</i>	0				
	32	<i>TD = 31.5' at 1356.</i>					

# HTW DRILLING LOG

 HOLE NO. **B514**

1. COMPANY NAME <b>BMCN</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS	
3. PROJECT <b>DCEA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe SFCU 4TV</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" imp core with		8. HOLE LOCATION	
		borehole sieves		<b>N. 432596.5430 E. 491080.739</b>	
				9. SURFACE ELEVATION	
				<b>373.008</b>	
12. OVERBURDEN THICKNESS <b>26.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>220</b>		
13. DEPTH DRILLED INTO ROCK <b>0.5</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>26.8</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Pentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>Rick Hank</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Silty clay, grayish brown (USP 7/4), soft, slightly plastic damp  Few limestone fragments.	C			1621	
	2		C	2.9 4.6			
	4	Sand, grayish orange (USP 7/4), soft, non-plastic, damp, fine to medium.	C			1622	
	5	Sand, pale yellowish brown (USP 7/2), soft non-plastic fine to very fine, finely bedded, damp.	C	3.7 4.6			

# HTW DRILLING LOG

 HOLE NO. *B 514*

PROJECT

*DCFA*

INSPECTOR

*Rick Mont*

 SHEET OF *2* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T. 10' 6'	REMARKS h
	<i>6</i>	<i>Sand, pale yellowish brown. (10% 4/2), soft, non-plastic, dry, fine to very fine. Avely bedded</i>	<i>0</i>				
	<i>7</i>			<i>3.7/4.0</i>			
	<i>8</i>			<i>0</i>			<i>10' 6</i>
	<i>9</i>			<i>0</i>			
	<i>10</i>		<i>0</i>	<i>3.7/4.0</i>			
	<i>11</i>						
	<i>12</i>		<i>0</i>			<i>10' 6</i>	
	<i>13</i>			<i>3.3/4.0</i>			
	<i>14</i>		<i>0</i>				

PROJECT

*DCFA*

HOLE NO.

*B 514*




# HTW DRILLING LOG

HOLE NO. *B514*

PROJECT *DCFA*

INSPECTOR *Rock Munk*

SHEET *3*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	15	<i>2" silt 300m, dark yellowish brown moist</i>		<i>33/4.0</i>			
	16	<i>Sand, brownish gray (5TR4/1), soft, non-plastic moist, fine to medium</i>	<i>0</i>			<i>1075</i>	
	17		<i>0</i>				
	18		<i>0</i>	<i>3.0/4.6</i>			
	19	<i>Weathered limestone and sand. Limestone is light gray, strong in 1/2-1" fragments. Sand is fine to medium, pale yellowish brown (10TR6/2), damp to moist</i>					
	20	<i>Becomes wet</i>	<i>0</i>			<i>1052</i>	
	21		<i>0</i>	<i>4.0/4.0</i>			
	22	<i>Becomes wet</i>	<i>0</i>				
	23		<i>0</i>				



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PROJECT *DCFA*

HOLE NO. *B514*

# HTW DRILLING LOG

HOLE NO. *B514*

PROJECT

*DCFA*

INSPECTOR

*Rick McKel-*

SHEET *44*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recording</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS TIME g	REMARKS h
	24		0	4.0/4.0		1059	
	25	<i>Sandy, medium dark gray, soft, non-plastic, wet, fine to medium trace of fines.</i>	0		<i>B5141 Gwof, Gwof A-10 Gwof A-10</i>		<i>Began discont sampling 1140</i>
	26			28/4.0	<i>23-25'</i>		
	26	<i>shale, medium dark gray, weak, weathered upper 5'</i>	0				
	27	<i>TD=26.5' at 1112. Refusal.</i>					
	28						



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PROJECT

*DCFA*

HOLE NO.

*B514*

# HTW DRILLING LOG

 HOLE NO. **B515**

1. COMPANY NAME <b>D.C.F.A</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 2 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" max core with		8. HOLE LOCATION <b>N. 4325959, 820 E. 691093.386</b>	
		safety sleeves		9. SURFACE ELEVATION <b>372.273</b>	
				10. DATE STARTED <b>6/4/02</b>	
				11. DATE COMPLETED <b>6/4/02</b>	
12. OVERBURDEN THICKNESS <b>13.9'</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		
13. DEPTH DRILLED INTO ROCK <b>0.1'</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>14.0'</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
		OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA</b> %
22. DISPOSITION OF HOLE <b>Decontinate</b>		BACKFILLED <b>✓</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Pender</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T. TIME	REMARKS h
	1	Silty clay, dusky brown (57-1/2), sst, moderately plastic, damp	C			0950	
	2	weathered limestone, yellowish gray (57-1/2)	C	3.4 4.0			
	3	Silty sand, pale yellowish brown (60-1/2), sst, non-plastic, damp, fine to very fine sand	C				
	4		C			0951	
	5		C	4.4 4.0			

# HTW DRILLING LOG

 HOLE NO. **B 515**

 PROJECT **DCEA**

 INSPECTOR **Kick Monk**

 SHEET **2**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	SAME AS ABOVE	0				
	7			4.0 / 4			
	8		0			0953	
	9		0				
	10	Clayey silt, medium stiff, slightly plastic, damp, tan reddish brown, silty Sand, grayish orange (10YR 7/4), soft, non plastic, damp, fine to medium.	0	4.0 / 4.6			
	11	Silty sand, dark yellowish brown (10YR 4/2), soft, non plastic, damp, fine to medium grained, very fine grained	0				
	12		0				
	13	Becomes pale brown (5YR 5/4) and moist	0	2.0 / 4.0			
	14	21" of fine to medium sand, grayish orange becomes pale yellowish brown 5YR 5/4	0				
		TP=14' at 1003- Refusal.					


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 PROJECT **DCEA**

 HOLE NO. **B 515**

# HTW DRILLING LOG

 HOLE NO. **B516**

1. COMPANY NAME <b>D.ICO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 2 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 + TL</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" auger core with acrotite sleeves</b>		8. HOLE LOCATION <b>N. 4325951.870 E. 691107.841</b>			9. SURFACE ELEVATION <b>322.066</b>		
		10. DATE STARTED <b>6-12-02</b>		11. DATE COMPLETED <b>6-12-02</b>			
		12. OVERBURDEN THICKNESS <b>13.5</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		
		13. DEPTH DRILLED INTO ROCK <b>1.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>14.5</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	
		21. TOTAL CORE RECOVERY <b>NA %</b>					
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Munk</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time T.M.C	REMARKS h
	1	Silty clay, dusty brown (54R2/2), soft, slightly plastic, damp	0	3.0		1606	
	2		0	4.6			
	3	4" weathered limestone					
	4	Silty sand, pale yellowish brown (104R6/2), soft, non-plastic, damp, fine to very fine.	0			1607	
	5		0	3.8/4.0			


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 PROJECT **DCFA**

 HOLE NO. **B516**

# HTW DRILLING LOG

HOLE NO. **B 516**

SHEET **# 2**  
OF **2** SHEETS

PROJECT **DCFA**

INSPECTOR **Rock Mont**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	Silty sand, pale yellowish brown (10% 6/2), soft, non-plastic, damp, fine to very fine.	0	3.5 4.0			
	7		0				
	8	Sand, pale yellowish brown (10% 6/2), soft, non-plastic, damp, fine to very fine.	0			1612	
	9		0				
	10	Silt, dark brown (5% 2/2), soft, non-plastic, moist to wet.	0	3.7 4.0			
	11	Sand, dark yellowish brown (10% 4/2), soft, non-plastic, moist, fine to very fine.	0				
	12	Becomes fine to medium grained	0			1618	
	13	Red brick fragments (1") Silty sand, brownish gray (5% 4/1) <del>...</del> Silty, non-plastic damp, fine to very fine.	0	2.5 3.5			Noted 20 minutes No water.
	14	Limestone shale, light olive gray (5% 6/1), highly weathered.	0				
	15	Refusal.	0				* TD = 193 at 1624



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PROJECT **DCFA**

HOLE NO. **B 516**

**600-Series Borehole Logs  
Island**

# HTW DRILLING LOG

HOLE NO. **B601**

1. COMPANY NAME <b>PMCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" auger with		8. HOLE LOCATION <b>N. 4325933 .130 E 691127.394</b>	
		uiculate sleeves		9. SURFACE ELEVATION <b>322.388</b>	
				10. DATE STARTED <b>6-16-02</b>	
				11. DATE COMPLETED <b>6-16-02</b>	
12. OVERBURDEN THICKNESS <b>16.2</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		
13. DEPTH DRILLED INTO ROCK <b>3.8</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>20.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Dentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA %</b>
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
		23. SIGNATURE OF INSPECTOR <b>Rich Parks</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1550</i>	REMARKS h
	1	Sandy silt, dark yellowish brown (10/21) soft, non-plastic, damp sand is fine to very fine.	0	3.1 4.0			
	2		0				
	3	Sand, pale yellowish brown (10/21) soft, non-plastic, damp, very fine grained.	0				
	4		0			1551	
	5		0	3.0 4.0			



# HTW DRILLING LOG

HOLE NO. *B60*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *2*  
OF *3* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS T.O.P.	REMARKS h
	<i>6</i>	<i>SAME AS ABOVE</i>	<i>0</i>				
	<i>7</i>	<i>Clayey silt, grayish brown (5 to 3/4), soft, non-plastic, damp</i>	<i>0</i>	$\frac{3.0}{4.0}$			
	<i>8</i>					<i>1553</i>	
	<i>9</i>		<i>0</i>				
	<i>10</i>		<i>0</i>	$\frac{3.2}{4.0}$			
	<i>11</i>	<i>Shale, light brownish gray (5 to 6), moderately strong in 1/4" layers, otherwise highly weathered, dry to damp</i>	<i>0</i>				
	<i>12</i>	<i>Sand, pale yellowish brown (10 to 12), soft, non-plastic, damp, fine to very fine grained.</i>	<i>0</i>			<i>1558</i>	
	<i>13</i>			$\frac{4.0}{4.0}$			
	<i>14</i>		<i>0</i>				

# HTW DRILLING LOG

HOLE NO. *B601*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *3* OF *3* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. i	BLOW COUNTS <i>78.2</i>	REMARKS h
	<i>15</i>	<i>Sand, pale yellowish brown (100% b/s), soft, non plastic, damp, very fine grained.</i>		<i>4.0/4.0</i>			
	<i>16</i>	<i>Same 1" shale fragments, 1/2" thick</i>	<i>0</i>			<i>1607</i>	
	<i>17</i>	<i>Shale, pale yellowish brown (100% b/s), highly weathered, weak, dry.</i>	<i>0</i>				
	<i>18</i>			<i>4.0</i> <i>4.0</i>			
	<i>19</i>						
	<i>20</i>					<i>1620</i>	
		<i>7' ± 20' at 1620 on shale.</i>					



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PROJECT *DCFA*

HOLE NO. *B601*

# HTW DRILLING LOG

 HOLE NO. **5602**

1. COMPANY NAME <b>B MCO</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 3 SHEETS
3. PROJECT <b>DCFA</b>	4. LOCATION <b>Island</b>	
5. NAME OF DRILLER <b>Ryan Weizer</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N. 4325900.920 E. 691179.592</b>	
	9. SURFACE ELEVATION <b>322.150</b>	
	10. DATE STARTED <b>6-10-02</b>	11. DATE COMPLETED <b>6-10-02</b>

12. OVERBURDEN THICKNESS <b>16.1</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>
13. DEPTH DRILLED INTO ROCK <b>0.2</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>16.3</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
<b>None</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
<b>Backfilled</b>	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>Rick Mark</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <del>Recovery</del>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Silty clay, dusky brown (5/2/2), soft, slightly plastic, damp	0			1434	
	2		0	27 — 40			
	3						
	4	Sandy silt, dark yellowish brown (10/2/2), soft, non-plastic, damp	0			1435	
	5		0	3.2 — 4.0			


# HTW DRILLING LOG

HOLE NO. *B602*

SHEET *2*  
OF *3* SHEETS

PROJECT *D CFA*

INSPECTOR *Rich Mont*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TEST TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	<i>6</i>	<i>Sand, grayish orange (10YR7/4), soft, non-plastic, clay, fine to very fine grained</i>	<i>0</i>	<i>0</i>			
	<i>7</i>			<i>3.2 4.0</i>			
	<i>8</i>		<i>0</i>			<i>1438</i>	
	<i>9</i>		<i>0</i>				
	<i>10</i>		<i>0</i>	<i>4.0 4.0</i>		<i>14</i>	
	<i>11</i>						
	<i>12</i>	<i>Silt, grayish brown (5YR3/2), soft, slightly plastic, moist. Some fine sand.</i>	<i>0</i>			<i>1442</i>	
	<i>13</i>			<i>4.0 4.0</i>			
	<i>14</i>	<i>Becomes wet moist</i>					

# HTW DRILLING LOG

HOLE NO. **B602**

PROJECT **D C F A**

INSPECTOR **Rick Mark**

SHEET # **3**  
OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand, grayish orange (10/12-1/4), soft, non plastic, <del>etc</del> fine to very fine grained, moist.	0				
	16	shale, medium gray, moderately strong.	0	4.0/4.0			
	17	TD = 16.3' at 1849 on shale (continued).					



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PROJECT **D C F A**

HOLE NO. **B602**

# HTW DRILLING LOG

HOLE NO. **B603**

1. COMPANY NAME <b>BMCB</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" diameter with 2" auger with acrotite sleeves</b>		8. HOLE LOCATION <b>N. 4325869.290 E. 691230.986</b>		9. SURFACE ELEVATION <b>322.073</b>			
		10. DATE STARTED <b>6-10-02</b>		11. DATE COMPLETED <b>6-10-02</b>			
		12. OVERBURDEN THICKNESS <b>15.8</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>0.2</b>		14. DEPTH OF HOLE <b>16.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>	

18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
22. DISPOSITION OF HOLE <b> Bentonite</b>		BACKFILLED <b>✓</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>	
					21. TOTAL CORE RECOVERY <b>NA %</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <b>Time</b>	REMARKS h
	1	Silt/clay, dusky brown (S <sub>1</sub> R 2/2), soft, slightly plastic, damp.	0	2.9 — 4.0		1329	
	2		0				
	3	Silt, pale yellowish brown (C <sub>1</sub> YR 6/2), soft, non-plastic, damp.	0				
	4					1336	
	5	Clayey silt, grayish brown (5YR 3/2), soft, non-plastic, damp.	0	3.0 — 4.0			
	5	2" silt seam.					

# HTW DRILLING LOG

HOLE NO. **B603**

SHEET **42**  
OF 3 SHEETS

PROJECT **DLFA**

INSPECTOR **Rick Mont**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GERTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	same as above	0	<del>3.0</del>			
	7			3.0 40			
	8	Sand, pale yellowish brown (10YR6/2), soft, non-plastic, damp, very fine grained.	0			1333	
	9			3.3 40			
	10		0				
	11	3" silt seam, grayish brown, moist					
	12		0			1238	
	13		0	3.3 40			
	14		0				



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PROJECT **DLFA**

HOLE NO. **B603**

# HTW DRILLING LOG

HOLE NO. **B603**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	GROW COUNTS g	REMARKS h
	15	<p>Becomes moist</p> <p>1" wet silty clay, dark gray</p>	0	<del>3.3</del> Recovery 4.0			
	16	<p>Shale, medium dark gray, moderately strong.</p>					
		<p>TD=16' at 1344.</p> <p>Refusal.</p> <p>Tried to get deeper with mill slot but still refusal.</p> <p>Took off pre probe and replaced with short point.</p> <p>No water after 10 minutes.</p>					



# HTW DRILLING LOG

HOLE NO. **B604**

1. COMPANY NAME <b>D.M.C.P</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 2 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 85400</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N. 4325835 750 E. 691282.047</b>		
				9. SURFACE ELEVATION <b>323.624</b>		
				10. DATE STARTED <b>6-10-02</b>		
				11. DATE COMPLETED <b>6-10-02</b>		
12. OVERBURDEN THICKNESS <b>5.6</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>None</b>			
13. DEPTH DRILLED INTO ROCK <b>6.4</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>11.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>None</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
22. DISPOSITION OF HOLE <b>Refractory</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rich Monte</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Clayey silt, grayish brown (SR 3/2), soft, non-plastic, damp	C	Recovery			1124 - Reeds probing
	2		C	5.2 / 4.0			
	3		C				
	4	Silt, pale yellowish brown (10YR 6/2), soft, non-plastic, damp	C			1125	
	5		O	2.4 / 4.0			



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PROJECT **DCFA**

HOLE NO. **B604**

# HTW DRILLING LOG

HOLE NO. **D607**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET **1**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS 7.0m f	REMARKS h
	6	Limestone, grayish orange (10 YR 7/4) weathered, broken, 1/2" - 2" pieces.	0				
	7		0	2.6 — 4.0			
	8		0			1128	
	9		0				
	10		0	2.3 — 4.0			
	11		0				
	12		0			1135	
	13	TD = 12' at 1135. Refusal offset 12' southwest and hit refusal at 6'.					
	14						



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PROJECT **DCFA**

HOLE NO. **D604**

# HTW DRILLING LOG

HOLE NO. **B605**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 3 SHEETS	
3. PROJECT <b>DCEA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Ryan Wiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATG</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" max. core with		8. HOLE LOCATION <b>N. 4325799.400 E. 691333.056</b>	
		4" x 6" sections		9. SURFACE ELEVATION <b>320.078</b>	
				10. DATE STARTED <b>6-11-02</b>	
				11. DATE COMPLETED <b>6-11-02</b>	
12. OVERBURDEN THICKNESS <b>12.4 15.9</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>11.7</b>		
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>12.5 16.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Restoration</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich. Munk</b>
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	
21. TOTAL CORE RECOVERY <b>NA</b> %					

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TR on L. 0743	REMARKS h
	1	Sandy silt, pale yellowish brown (C6/16/2), soft non plastic, damp, sand is fine to very fine.	0			0743	
	2		0	28 40			
	3		0				
	4		0			0743	
	5		0	1.9/40			

# HTW DRILLING LOG

HOLE NO. **B605**

PROJECT		INSPECTOR			SHEET		
<b>DCFA</b>		<b>Kirk Mont</b>			OF 3 SHEETS		
ELEV.	DEPTH	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS	GEOTECH SAMPLE OR CORE BOX NO.	ANALYTICAL SAMPLE NO.	BLOW COUNTS Time	REMARKS
a	b	c	d	e	f	g	h
		same as above	0				
	6	Silty sand, dark yellowish brown (10/21/2), soft, non-plastic, moist.		1.9 / 40			
	7	2" weathered limestone, chert.	0				
	8					0745	
	9		C				
	10		C	2.2 / 40			Refusal on limestone at 9' after 12' wash
	11	Sandy, grayish orange (10/27/4), soft, non-plastic, moist, fine to medium grained.					
	12	Becomes wet.	C			0803	▼
		silt, grayish brown (5/21/2), soft, non-plastic, wet.		0.5 / 40			
		<del>limestone, highly weathered grayish orange.</del>					~ W B m
	13	TD= 12.5' at 0806, Refusal					
	14	Pushed mill slot to 15'. Pushed discreet sampler from 14'6" and hit refusal.			B605 / G401 / 1375		0824



# HTW DRILLING LOG

HOLE NO. *B605*

PROJECT		INSPECTOR			SHEET # 3 OF 3 SHEETS		
<i>DCFA</i>		<i>Rock Mark</i>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Test</i>	REMARKS h
	<i>15</i>	<i>Silty clay, moderate yellowish brown (10% s/s) - R<sub>h</sub>, moderate plastic, med.</i>	<i>0</i>	<i>1.6</i> <hr/> <i>2.0</i>			
	<i>16</i>	<i>Shale, moderate yellowish brown, med.</i>	<i>0</i>				
		<i>TH = 16' with discreet sampler.</i>					



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PROJECT *DCFA*

HOLE NO. *B605*

# HTW DRILLING LOG

 HOLE NO. **B606**

1. COMPANY NAME <b>BMC</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 2 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe G6DT</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N. 4325771.570, E. 691385.904</b>		
				9. SURFACE ELEVATION <b>320.602</b>		
				10. DATE STARTED <b>5-30-02</b>		
				11. DATE COMPLETED <b>5-30-02</b>		
12. OVERBURDEN THICKNESS <b>12.3'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>8.77</b>				
13. DEPTH DRILLED INTO ROCK <b>0.3'</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>12.6'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>water</b>		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
						21. TOTAL CORE RECOVERY %
22. DISPOSITION OF HOLE <b> Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>	
			<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	FLOW COUNTS T/Min	REMARKS h
	1	Slightly clayey silt, dark yellowish brown (10% 4/12), very soft, slightly plastic, moist.	0	34 40			1351- Beyond probing
	2		0				
	3						
	4		0			1351	
	5		0		25 40		


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PROJECT

**DCFA**

HOLE NO.

**B 606**

# HTW DRILLING LOG

HOLE NO. **B606**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **X 2**  
OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BEOW COUNTS g <i>Time</i>	REMARKS h
	6		0				
	7	3" of fine sand		3.5/4.0			
	8		0			1353	
	8	<del>Becomes wet</del> Sand, grayish orange (10(R7/4), soft, non, plastic, wet, medium to coarse grained, subrounded.	0				
	9			3.8/4.0	B606/ GWO1A 870'		1425 ▼
	10		0				
	11		0	<del>3.8</del>			
	12		0			-1358	
	12	Limestone, medium light gray, strong	0	0.3/1.0			Discreef sampler.
	13	TD = 126' at 1405					
	14						



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Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B606**

# HTW DRILLING LOG

HOLE NO. **B607**

1. COMPANY NAME <b>BMCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 3 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>			
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 66DT</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macro core with acetate sleeves</b>		8. HOLE LOCATION <b>N. 4325.742. 460 E. 691434.605</b>			9. SURFACE ELEVATION <b>319.065</b>	
		10. DATE STARTED <b>5-30-02</b>		11. DATE COMPLETED <b>5-31-02</b>		
12. OVERBURDEN THICKNESS <b>16.7</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>REMARKS TO 7.7 WBM</b>			
13. DEPTH DRILLED INTO ROCK <b>2.3</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>14.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>water</b>		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA %</b>
		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>						

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sand, pale yellowish brown (16YR6/2), soft, non-plastic, moist, fine to medium grained.	0	Recovery $\frac{2.5}{4.0}$			0928 began probing.
	2		0				
	3	Sand, grayish orange (16YR7/4), soft, non-plastic, moist, medium to very coarse grained, sub rounded, quartz and feldspar.	0				
	4		0			0929	
	5		0	$\frac{2.4}{4.0}$			



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PROJECT **DCFA**

HOLE NO. **B607**



# HTW DRILLING LOG

HOLE NO. **B607**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME <i>Time</i>	REMARKS h
	6	Sand, grayish orange (10R7/4), soft, non-plastic, moist, medium to very coarse grained, sub-rounded, quartz and feldspar.	C				
	7			2.4/4.0			
	8	Becomes wet.	C			0931	▼ Begin discreet sampling
	9						
	10			C 4.0			No recovery with 2 tries.
	11				B607/ GWA 1012		1050
	12	Sand, pale brown (5YR5/2), soft, non-plastic, wet, fine to medium grained.	C				
	13			2.4 4.0			
	14		C				



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PROJECT

**DCFA**

HOLE NO.

**B607**

# HTW DRILLING LOG

HOLE NO. **B607**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET **3**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
		same as above		Recovery			
	15			2.4/4.0			
	16		0			1001	
	17	Shale, dark gray, weedy weathered.	0	2.6 3.0			
	18		0				
	19	Becomes strong.	0				
	20	TD = 19.0 ft at 1030.					refusal of shale 19' on <del>down</del> Offset 8' west and started with discraft sample from 16-20'.
	21						
	22						
	23						



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PROJECT **DCFA**

HOLE NO. **B607**

# HTW DRILLING LOG

 HOLE NO. *B608*

1. COMPANY NAME <i>BMC</i>		2. DRILLING SUBCONTRACTOR <i>EP</i>			SHEET 1 OF 4 SHEETS	
3. PROJECT <i>DIFA</i>			4. LOCATION <i>Island</i>			
5. NAME OF DRILLER <i>Ry. Weiser</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 5400 AT6</i>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" rotary bit		8. HOLE LOCATION <i>N. 4325996.270 E. 690913.810</i>		
		2" rotary bits		9. SURFACE ELEVATION <i>322.244</i>		
				10. DATE STARTED <i>6/4/02</i>		
				11. DATE COMPLETED <i>6/12/02</i>		
12. OVERBURDEN THICKNESS <i>29.8</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>19.35</i>			
13. DEPTH DRILLED INTO ROCK <i>2.2</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
14. DEPTH OF HOLE <i>320</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
22. DISPOSITION OF HOLE <i>Backfilled</i>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>[Signature]</i>	
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time/g	REMARKS h
	1	<i>Sand, pale yellowish brown (15% fines), non-plastic, damp, fine to very fine.</i>	0			<del>126</del> 1312	
	2	<i>Sandy silty clay, grayish brown (5% fines), soft, slightly plastic, damp.</i>	0	$\frac{3.1}{4.0}$			
	3		0				
	4	<i>Silty sand, moderate yellowish brown (10% fines), soft, non-plastic, damp, fine to very fine sand.</i>	0			1313 <del>127</del>	
	5		0	$\frac{2.6}{4.0}$			


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 PROJECT *DIFA*

 HOLE NO. *B608*

# HTW DRILLING LOG

HOLE NO. *REG*

PROJECT *PCFA*

INSPECTOR *Rock Mark*

SHEET *2* OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	<i>Silty sandy moderately yellowish brown (10/25/4) soft non-plastic, damp, fine to very fine sand.</i>	<i>0</i>	$\frac{2.6}{4.6}$			
	7						
	8		<i>0</i>			<i>13/5</i>	
	9		<i>0</i>				
	10		<i>0</i>	$\frac{4.4}{4.6}$			
	11		<i>0</i>				
	12	<i>Sand, grayish orange (10/27/9) soft, non-plastic, damp, fine to medium.</i>	<i>0</i>			<i>1.3/9</i>	
	13		<i>0</i>	$\frac{3.7}{4.6}$			
	14		<i>0</i>				



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PROJECT *PCFA*

HOLE NO. *REG*

# HTW DRILLING LOG

HOLE NO. *B608*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *3*  
OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>17.0g</i>	REMARKS h
	15	<i>Sand, grayish orange (MUR 7/4) silt, non-plastic, damp. Fine to medium.</i>	0	<i>3.7/4.0</i>			
	16		0			1324	
	17		0				
	18		0	<i>3.1/4.0</i>			
	19		0				▼
	20	<i>Sand, grayish orange (MUR 7/4) silt, non-plastic, moist to wet, medium to very coarse grained, sub rounded, quartz and feldspar.</i>	0			<i>1329</i> <del>1329</del>	
	21		0				
	22		0	<i>4.0/5.0</i>			<i>1420</i>
	23		0		<i>B608 G-201A G-201B 21-23'</i>		



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PROJECT *DCFA*

HOLE NO. *B608*

# HTW DRILLING LOG

 HOLE NO. *B608*

PROJECT

*DCFA*

INSPECTOR

*Rick Hunt*

 SHEET OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	24	Weathered limestone, light gray, weak, grainy, moist to wet.	0	4.0/4.0		1340	
	25	Silty clay, pale yellowish brown (CUTP 6/2), soft, moderately plastic, moist.	0				Began discreet sampling
	26	clayey silt, light brownish gray (STR 6/1), soft, moderately plastic, moist.	0	3.6 4.0			
	27						
	28		0			1353	
	29		0				
	30	Clayey shale, dark gray, slightly to strong, clay is moderately plastic, moist.	0	2.4 4.0			
	31						
	32		0			1406	
		TD = 320' at 1406					


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PROJECT

*DCFA*

HOLE NO.

*B608*

# HTW DRILLING LOG

 HOLE NO. *B604*

1. COMPANY NAME <i>PMCO</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 6 SHEETS	
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Island</i>			
5. NAME OF DRILLER <i>Pat Martin</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>625 probe 5400 ATV</i>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with		8. HOLE LOCATION		
		alotone sleeves		<i>N. 432596L 300 E. 690966. 428</i>		
				9. SURFACE ELEVATION		
				<i>322.887</i>		
			10. DATE STARTED <i>6-27-02</i>	11. DATE COMPLETED <i>6-27-02</i>		
12. OVERBURDEN THICKNESS <i>43.6</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>20.6</i>			
13. DEPTH DRILLED INTO ROCK <i>0.4</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
14. DEPTH OF HOLE <i>440</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR	
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	1	<i>Sandy pale yellowish brown (COTAC/2), soft, nonplastic, clay. Fine to very fine.</i>	0			1633	
	2		0	<i>3.1 / 4.0</i>			
	3						
	4		0				1053
	5		0		<i>3.8 / 4.0</i>		


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 PROJECT *DCFA*

 HOLE NO. *B604*

# HTW DRILLING LOG

HOLE NO. *B608*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *2* OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	<i>Sand, pale yellowish brown (STR 6/2) soft, non-plastic, damp, fine to very fine</i>	<i>0</i>	<i>3.8</i> <i>4.0</i>			
	7		<i>0</i>				
	8		<i>0</i>			<i>1055</i>	
	9		<i>0</i>				
	10	<i>Very thin layers (1mm) of <del>fine</del> sand (as abundant silt, grayish brown (STR 3/2), soft, non-plastic, damp.</i>	<i>0</i>	<i>3.6</i> <i>4.0</i>			
	11		<i>0</i>				
	12		<i>0</i>			<i>1100</i>	
	13	<i>Sand, grayish coarse (STR 7/4) soft, non-plastic, damp, fine to medium</i>	<i>0</i>	<i>3.3</i> <i>4.0</i>			
	14		<i>0</i>				





# HTW DRILLING LOG

HOLE NO. **B609**

PROJECT **DCFA**

INSPECTOR **Rich Meek**

SHEET **3** OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	← GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	15	Sand, grayish orange (10/20 7/4), soft, non-plastic, damp, fine to medium.		3.3 / 4.0			
	16		0			NCS	
	17		0				
	18		0	3.7 / 4.0			
	19		0				
	20		0			1109	
	21		0				▼
	22		0	2.6 / 4.0	B609/ G601A 21-23'		1430
	23	<del>fine sand</del> Sand, grayish orange (10/20 7/4), soft, non-plastic, wet, medium to very coarse, subrounded.					



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PROJECT **DCFA**

HOLE NO. **B609**

# HTW DRILLING LOG

HOLE NO. *B624*

PROJECT

*DCFA*

INSPECTOR

*Rock Munk*

SHEET *12*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Registry</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>7.2g</i>	REMARKS h
	<i>24</i>	<i>Sand, greenish orange (LU 4R 7/4), soft, non-plastic, wet, medium to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>	<i>3.0 / 4.0</i>		<i>1114</i>	<i>Began discreet sampling.</i>
	<i>25</i>		<i>0</i>				
	<i>26</i>		<i>0</i>	<i>3.1 / 4.0</i>			
	<i>27</i>		<i>0</i>				
	<i>28</i>		<i>0</i>			<i>1120</i>	
	<i>29</i>		<i>0</i>				
	<i>30</i>		<i>0</i>	<i>3.1 / 4.0</i>			
	<i>31</i>	<i>Sand, dark reddish orange (CU 4R 6/6), soft, non-plastic, wet, medium to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>		<i>B604 / G4015 31331</i>		<i>1416</i>
	<i>32</i>		<i>0</i>			<i>1131</i>	
			<i>0</i>				



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PROJECT

*DCFA*

HOLE NO.

*B604*

# HTW DRILLING LOG

HOLE NO. **B609**

PROJECT **DLFA**

INSPECTOR **Rich Monte**

SHEET **75**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS g	REMARKS h
	33	Color change to grayish orange. Sand, non-plastic, soft, wet, medium to very coarse, subrounded, quartz and feldspar.					
	34		0	$\frac{2.2}{4.0}$			
	35	Color change to dark yellowish orange.	0				
	36	Color change to grayish orange.	0			1146	
	37		0				
	38		0	$\frac{2.7}{4.0}$			
	39		0				
	40		0			1153	
	41		0	$\frac{3.1}{4.0}$			



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PROJECT

**DLFA**

HOLE NO.

**B609**

# HTW DRILLING LOG

HOLE NO. **B609**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **46**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS Time g	REMARKS h
	42	Same as above	0	3.6 4.0	B609/ G401C 41-43'		1356
	43						
	44	Clay shale, light brownish gray (sandy), weak, highly weathered	0				
		TD = 440' at 1206					



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PROJECT **DCFA**

HOLE NO. **B609**

# HTW DRILLING LOG

 HOLE NO. *B610*

1. COMPANY NAME <i>BMLD</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF <i>6</i> SHEETS	
3. PROJECT <i>DCEA</i>			4. LOCATION <i>Island</i>			
5. NAME OF DRILLER <i>Pat Martin</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 5400 ATV</i>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" mucrocure with acetate sleeves		8. HOLE LOCATION <i>N. 4325928.820 E. 691015.696</i>		
		9. SURFACE ELEVATION <i>322.606</i>		10. DATE STARTED <i>6-26-02</i>		
		11. DATE COMPLETED <i>6-27-02</i>		12. OVERBURDEN THICKNESS <i>43.0</i>		
		13. DEPTH DRILLED INTO ROCK <i>1.0</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>20.1</i>		
14. DEPTH OF HOLE <i>44.0</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>			
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>		
20. SAMPLES FOR CHEMICAL ANALYSIS <i>NA</i>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		<i>✓</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>
22. DISPOSITION OF HOLE <i>Backfilled</i>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Pat Martin</i>	
		<i>✓</i>	<i>NA</i>	<i>NA</i>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Per. Serv.</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	<i>Sand, pale yellowish brown (10/20/02), soft, non-plastic, damp fine to very fine.</i>	0				
	2		0	<i>28 / 40</i>			
	3	<i>Silty clay, dusky brown (5/22/02), moderately soft, slight plasticity, damp</i>	0			<i>14/3</i>	
	5	<i>Sand, pale yellowish brown (10/20/02), soft, non-plastic, damp fine to very fine.</i>	0	<i>3.7/4.0</i>			


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 PROJECT *DCEA*

 HOLE NO. *B610*

# HTW DRILLING LOG

HOLE NO. *B610*

PROJECT

*DLFA*

INSPECTOR

*Rick. Fox*

SHEET *2*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	<i>Sand, pale yellowish brown (with 6/4 silt, nonplastic, down fine to very fine.</i>	<i>0</i>	<i>3.7</i> <hr/> <i>4.0</i>			
	7						
	8		<i>0</i>			<i>1415</i>	
	9		<i>0</i>				
	10		<i>0</i>	<i>3.8</i> <hr/> <i>4.0</i>			
	11						
	12		<i>0</i>			<i>1420</i>	
	13		<i>0</i>	<i>3.9</i> <hr/> <i>4.0</i>			
	14		<i>0</i>				
		<i>See next page</i>					



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PROJECT

*DLFA*

HOLE NO.

*B610*

# HTW DRILLING LOG

 HOLE NO. *B610*

 PROJECT *D LFA*

 INSPECTOR *Rock Malt*

 SHEET OF *3* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	<i>15</i>	<i>clay, dark yellowish brown (STRY) / soft, moderately plastic, moist</i>		<i>39/40</i>			
	<i>16</i>		<i>0</i>			<i>1428</i>	
	<i>17</i>		<i>0</i>				
	<i>18</i>		<i>0</i>	<i>24 / 48</i>			
	<i>19</i>	<i>Sand, grayish orange (STRY) / soft, non plastic, damp, fine to medium</i>					
	<i>20</i>		<i>0</i>			<i>1428</i>	▼
	<i>21</i>		<i>0</i>				
	<i>22</i>		<i>0</i>	<i>69 / 40</i>			
	<i>23</i>	<i>becomes wet</i>			<i>B610 / GWS1A / 2234</i>		<i>C94</i>



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 PROJECT *D LFA*

 HOLE NO. *B610*

# HTW DRILLING LOG

HOLE NO. *6610*

PROJECT

*DLFA*

INSPECTOR

*Rock Mark*

SHEET *X 4*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	PROTECT SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	<i>24</i>	<i>Sandy grayish orange (181K7/4) soft, nonplastic, wet, fine to medium.</i>	<i>0</i>	<i>1.9/4.0</i>		<i>1432</i>	
	<i>25</i>	<i>Becomes medium to very coarse.</i>	<i>0</i>				
	<i>26</i>		<i>0</i>	<i>2.0/4.0</i>			
	<i>27</i>		<i>0</i>				
	<i>28</i>	<i>Becomes fine to medium.</i>	<i>0</i>			<i>1453</i>	
	<i>29</i>		<i>0</i>			<i>0753 6-23-02</i>	<i>Shut down due to rig includes problem</i>
	<i>30</i>		<i>0</i>	<i>1.7/4.0</i>			
	<i>31</i>	<i>3" of fine to very fine sand.</i>	<i>0</i>				
	<i>32</i>		<i>0</i>		<i>R001 6-001A 5-35</i>	<i>0801</i>	<i>0910</i>
				<i>2.0/4.0</i>			



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PROJECT

*DLFA*

HOLE NO.

*6610*



# HTW DRILLING LOG

HOLE NO. *R610*

PROJECT *DLFA*

INSPECTOR *Rick Monk*

SHEET OF *15* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS TIME g	REMARKS h
	33	Sand, grayish orange (16 MR 7/4) soft, non-plastic, wet, fine to medium.	0				
	34		0	20 4.6			
	35	Sandy dark yellowish orange (16 MR 6/6), soft, non-plastic, wet, fine to very coarse, medium	0				
	36	subrounded, quartz and feldspar. Trace of 1/4 - 1/2" gravel.	0			0811	
	37		0				
	38		0	22 4.6			
	39		0				
	40		0			0823	
	41		0	28 4.0			



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PROJECT *DLFA*

HOLE NO. *R610*

# HTW DRILLING LOG

HOLE NO. **B610**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **6** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	SECTION SAMPLE OR CORE BOX NO. <del>SECTION</del> e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Same as above	C	Recovery			
	43	clayey shale, dark reddish brown (10R3/4), waxy, highly weathered, damp	C	28 40	B610/6w/4C		41-43'
	44						
	45	TD = 44.0' at 0840					
	46						



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PROJECT **DCFA**

HOLE NO. **B610**

# HTW DRILLING LOG

 HOLE NO. **B611**

1. COMPANY NAME <b>BMC</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 7 SHEETS
3. PROJECT <b>DLFA</b>	4. LOCATION <b>Island</b>	
5. NAME OF DRILLER <b>Pat Martin</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N. 4325897.470 E. 691069.209</b>	
	9. SURFACE ELEVATION <b>323.150</b>	
	10. DATE STARTED <b>6-26-02</b>	11. DATE COMPLETED <b>6-26-02</b>

12. OVERBURDEN THICKNESS <b>51.6</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>20.2</b>
13. DEPTH DRILLED INTO ROCK <b>0.2</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>51.8</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Decontid</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Vreake</b>		
	<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sandy pale yellowish brown (10YR6/2), soft, non-plastic, damp, fine to very fine.	0			0924	
	2		0	3.3 4.6			
	3						
	4	1" of clay: 14, dark yellowish brown (6YR4/6), soft, non-plastic, damp	0			0925	
	5		0	3.9/4.0			

# HTW DRILLING LOG

HOLE NO. *B611*

PROJECT *DCFA*

INSPECTOR *Rick Mont*

SHEET *2* OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>RECOVERY</i>	ANALYTICAL SAMPLE NO. f	SLOW-COUNTS TIME g	REMARKS h
	6	<i>Sand, pale yellowish brown (10YR6/2), soft, non-plastic, clay, fine to very fine.</i>	0	<i>3.4 4.1</i>			
	7						
	8		0			<i>0.928</i>	
	9		0				
	10		0	<i>3.7 4.1</i>			
	11		0				
	12	<i>Silty clay, grayish brown (5YR 3/2), soft, slightly plastic, damp, few reddish mottled features.</i>	0			<i>0.933</i>	
	13		0	<i>3.5 4.0</i>			
	14	<i>Sand, pale yellowish brown (10YR6/2), soft, non-plastic, fine to very fine.</i>	0				



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PROJECT *DCFA*

HOLE NO. *B611*

# HTW DRILLING LOG

HOLE NO. *B611*

PROJECT		INSPECTOR		SHEET			
<i>DCFA</i>		<i>Rich Mont</i>		<i>3</i>			
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	<i>15</i>	<i>Sandy, pale yellowish brown (10YR6.5/1) soft, non-plastic, damp, fine to very fine.</i>	<i>0</i>	<i>35/4.0</i>			
	<i>16</i>		<i>0</i>			<i>0937</i>	
	<i>17</i>		<i>0</i>				
	<i>18</i>	<i>Silty sand, dusky brown (5YR2/1), soft, non-plastic, moist, fine sand.</i>	<i>0</i>	<i>40/4.0</i>			
	<i>19</i>	<i>Silty clay, brownish black (5YR2/1), soft, moderately plastic, damp.</i>					
	<i>20</i>	<i>Sandy, pale yellowish brown (10YR6/2), soft, non-plastic, moist.</i>	<i>0</i>			<i>0942</i>	
	<i>21</i>	<i>Sandy, grayish orange (10YR7/4), soft, non-plastic, wet, fine to medium.</i>	<i>0</i>	<i>38/4.0</i>			
	<i>22</i>		<i>0</i>				
	<i>23</i>				<i>B611 AW01A 22-24'</i>		<i>1208</i>



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PROJECT

*DCFA*

HOLE NO.

*B611*

# HTW DRILLING LOG

HOLE NO. *B611*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *4*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Sand, grayish orange (10 YR 7/4) with, non-plastic, wet fine to medium.	0	3.8/4.0		0948	<i>Reconstruc Sampling</i>
	25		0				
	26		0	3.9 4.0			
	27		0				
	28		0			0954	<i>Reconstruc Sampling</i>
	29	Sand, medium gray, soft, non-plastic, wet, medium to very coarse, subrounded.	0				
	30		0	3.8 4.0			
	31	Sand, dark yellowish orange (10 YR 7/4), soft, non-plastic, wet, medium to very coarse, subrounded, trace of 1/4" - 1/2" angular quartz and feldspar.	0				
	32	Color change to grayish orange (10 YR 7/4).	0	2.4/4.0		1054	



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PROJECT

HOLE NO.

# HTW DRILLING LOG

 HOLE NO. *B611*

 PROJECT *DCFA*

 INSPECTOR *Rick Monk*

 SHEET *85*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp	REMARKS h
	33	<i>Sand, grayish orange (U40-7/4), silt, no. plastic, med. medium, to very coarse, trace of 1/4"-3/8" gravel, sub rounded, quartz and feldspar.</i>					
	34		<i>0</i>	$\frac{24}{4.0}$			
	35				<i>B611/ Geo. B 34-36'</i>		<i>1150</i>
	36		<i>0</i>			<i>1016</i>	
	37		<i>0</i>				
	38		<i>0</i>	$\frac{21}{4.0}$			
	39		<i>0</i>				
	40		<i>0</i>			<i>1030</i>	
	41		<i>0</i>	$\frac{21}{4.0}$			

# HTW DRILLING LOG

HOLE NO. *R611*

PROJECT		INSPECTOR			SHEET OF SHEETS		
<i>DCFA</i>		<i>Rick Monk</i>			<i>10</i>		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	<del>GEOTECH SAMPLE OR CORE BOX NO.</del> <i>Reins</i>	ANALYTICAL SAMPLE NO. f	<del>BLOW COUNTS</del> <i>Tim Ag</i>	REMARKS h
	<i>42</i>	<i>Sand granish orange (w/yr 2%) rath non-plastic wet. medium to very coarse, trace of 1/4"-3/8" gravel, sub rounded, quartz and silt spar.</i>	<i>0</i>	$\begin{array}{r} 21 \\ \hline 40 \end{array}$			
	<i>43</i>		<i>0</i>				
	<i>44</i>		<i>0</i>			<i>1027</i>	
	<i>45</i>		<i>0</i>				
	<i>46</i>		<i>0</i>		$\begin{array}{r} 22 \\ \hline 40 \end{array}$		
	<i>47</i>	<i>0</i>				<i>1102</i>	
	<i>48</i>	<i>0</i>					
	<i>49</i>	<i>0</i>		$\begin{array}{r} 34 \\ \hline 46 \end{array}$	<i>B611/6601C</i> <i>4850</i>		<i>1140</i>
	<i>50</i>	<i>0</i>					



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PROJECT *DCFA*

HOLE NO. *R611*



# HTW DRILLING LOG

HOLE NO. *1611*

PROJECT *DIFA*

INSPECTOR *Rock McInt*

SHEET *7* OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	RADIO-COUNTS g <i>Timfg</i>	REMARKS h
		<p><i>Sandy, greenish orange (10YR 7/4),</i>  <i>soft, non-plastic, wet, medium</i>  <i>to very coarse, trace of 1/4" - 1/2"</i>  <i>grains, subrounded, quartz and</i>  <i>feldspar</i>  <i>fragments fine to medium at 51.8'</i>  <i>weathered limestone, light olive gray (5Y 7/1), weak.</i></p>		<i>3.4/40</i>			
	<i>52</i>	<i>TD = 51.8' at 110.</i>					



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PROJECT *DIFA*

HOLE NO. *1611*

# HTW DRILLING LOG

 HOLE NO. *B612*

1. COMPANY NAME <i>P.M.C.O</i>	2. DRILLING SUBCONTRACTOR <i>EPS</i>	SHEET 1 OF 6 SHEETS
3. PROJECT <i>DCFA</i>	4. LOCATION <i>Island</i>	
5. NAME OF DRILLER <i>Pat Martin</i>	6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 5400 ATV</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>2" macrocore with include sieves</i>	8. HOLE LOCATION <i>N. 4325860.060 E. 691120.484</i>	
	9. SURFACE ELEVATION <i>323158</i>	
	10. DATE STARTED <i>6-25-02</i>	11. DATE COMPLETED <i>6-26-02</i>

12. OVERBURDEN THICKNESS <i>49.7</i>	15. DEPTH GROUNDWATER ENCOUNTERED <i>21.0</i>
13. DEPTH DRILLED INTO ROCK <i>0.2</i>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>
14. DEPTH OF HOLE <i>49.7</i>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>

18. GEOTECHNICAL SAMPLES <i>NA</i>	DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA</i> %
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE <i>Backfilled</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rich Khat</i>		
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Temp</i>	REMARKS h
	1	<i>Sand, pale yellowish brown (very soft) silt, non-plastic clay, fine to very fine.</i>	0	<i>3.6</i>		<i>146</i>	
	2		0	<i>40</i>			
	3						
	4	<i>4" clay silt, dusky brown, moderately silt.</i>	0			<i>146</i>	
	5		0	<i>3.5/4.0</i>			



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PROJECT

*DCFA*

HOLE NO.

*B612*

# HTW DRILLING LOG

HOLE NO. *B612*

SHEET *22*  
OF *6* SHEETS

PROJECT		INSPECTOR					
<i>DLFA</i>		<i>Rick Mark</i>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS <i>142</i>	REMARKS h
	6	<i>Sand, pale yellowish brown (10/20/6/2), soft, non-plastic, clay fine to very fine.</i>	0	$\begin{array}{r} 3.8 \\ \hline 4.0 \end{array}$			
	7		0				
	8					<i>142</i>	
	9	<i>3' silty clay, grayish brown, soft</i>	0				
	10		0	$\begin{array}{r} 3.9 \\ \hline 4.0 \end{array}$			
	11	<i>3' silty clay, grayish brown, soft</i>	0				
	12	<i>Becomes fine to medium grained and grayish orange</i>	0			<i>141</i>	
	13		0	$\begin{array}{r} 4.0 \\ \hline 4.0 \end{array}$			
	14		0				



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PROJECT *DLFA*

HOLE NO. *B612*

# HTW DRILLING LOG

HOLE NO. **B612**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1400</i>	REMARKS h
	15	Sandy grayish orange (10/22/7/9) soft, non-plastic, damp, fine to medium.	0	4.0/4.0			
	16		0			1416	
	17		0				
	18		0	3.8 — 4.6			
	19	Slightly sandy, dark yellowish brown (10/22/6/2), soft, non-plastic, damp, fine to very fine sand.					
	20	Sand, grayish orange (10/22/7/9) soft, non-plastic, damp, fine to medium.	0			1418	
	21		0	3.1 — 4.6			▼
	22		0				
	23	Sandy silt, brownish gray (5/12/4/1), soft, non-plastic, moist, fine to very fine sand.			D6R/ GWS1A 22-241		0824

# HTW DRILLING LOG

HOLE NO. *B612*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET OF *28* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Tim 29</i>	REMARKS h
	24	<i>Sandy silt, brownish gray (5YR4/1), soft, n.p. plastic, moist, fine to very fine sand</i>	0	2		1430	
	25	<i>Becomes moist to wet</i>	0				
	26		0	<i>3.5</i> <i>40</i>			
	27	<i>Sand, brownish gray (4.0 5YR4/1), soft, non plastic, wet, fine to medium,</i>	0				
	28		0			1436	
	29		0				<i>Began discart sampling.</i>
	30		0	<i>1.1</i> <i>40</i>			
	31		0				
	32	<i>Becomes medium to very coarse grained, subrounded</i>	0	1.4/40		1446	



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PROJECT *DCFA*

HOLE NO. *B612*

# HTW DRILLING LOG

HOLE NO. **B612**

SHEET **5**  
OF **6** SHEETS

PROJECT **DCFA**

INSPECTOR **Rock Mark**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	FLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sandy, brownish gray (5YR4/1), soft, non-plastic, wet, medium to very coarse subrounded, quartz and feldspar.					
	34		0	1.4 4.0			
	35				B612 GWB1B +MS/MSD 034-36		0.502
	36		0			1504	
	36	Recons = grayish orange.	0				
	37						
	38		0	1.8 4.0			
	39						
	40	Trace of H <sub>2</sub> O gravel.	0			1523	
	41		0	2.3 4.0			



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PROJECT **DCFA**

HOLE NO. **B612**

# HTW DRILLING LOG

HOLE NO. **1612**

PROJECT

**DCFA**

INSPECTOR

**R. K. Monk**

SHEET **16**  
OF **16** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recover</i>	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS <i>1536</i>	REMARKS h
	42	Sand, grayish orange (10YR7/4), silt, non-plastic, med, medium to very coarse, trace of 1/4" gravel, subrounded, quartz and feldspar.	0	23 — 40			
	43	Sand, dark yellowish orange (10YR6/6), silt, non-plastic, med, coarse to very coarse, trace of 1/4" gravel, subrounded, quartz and feldspar.	0			1536	
	44		0				
	45		0				
	46		0	32 — 40			
	47	<i>Recover grayish orange (10YR7/4)</i>	0				
	48		0		1612/ GWSIC 47-44	1552	0786
	49	1" limestone fragments	0	0.9 — 1.9			
	50	Some cemented weathered limestone (1/4-1")	0				
	51	Limestone, light to med gray (5Y 6/1) - trace	0				
		TD = 44.9 of 1602 Recessed					



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PROJECT

**DCFA**

HOLE NO.

**1612**

# HTW DRILLING LOG

 HOLE NO. **B613**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrotube with acetate sleeves		8. HOLE LOCATION <b>N. 9325833.260, E. 691172.632</b>			
				9. SURFACE ELEVATION <b>322.930</b>			
				10. DATE STARTED <b>6-12-02</b>		11. DATE COMPLETED <b>6-12-02</b>	
				12. OVERBURDEN THICKNESS <b>47.7</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>23.65</b>	
13. DEPTH DRILLED INTO ROCK <b>6.3</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>48.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
22. DISPOSITION OF HOLE <b>Backfilled</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rich Plunk</i>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	GLOW COUNTS TIME g	REMARKS h
	1	Sand, pale yellowish brown (10% (6/2) soft non-plastic dump fine to very fine grained)	C'			0950	
	2		C'	2.3 — 4.0			
	3		C				
	4		C				0951
	5		O	4.0/4.0			


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 PROJECT **DCFA**

 HOLE NO. **B613**



# HTW DRILLING LOG

HOLE NO. **B613**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **2**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TEST TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	Soil, pale yellowish brown (10 yr 6/2), silt, non-plastic, damp, fine to very fine grained.	0	4.0 <hr/> 4.0			
	7		0				
	8		0			1009	
	9		0				
	10		0	4.0 <hr/> 4.0			
	11		0				
	12		0			1015	
	12	2" silt seam, dark yellowish brown, moist.	0				
	13		0	3 8/4.0			
	14		0				



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PROJECT **DCFA**

HOLE NO. **B613**

# HTW DRILLING LOG

HOLE NO. **B613**

PROJECT

**PCFA**

INSPECTOR

**Rick Monte**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	15	Sand, pale yellowish brown (LWR 6/2), soft, non-plastic, damp, fine to very fine grained.		3.5 4.0			
	16	<del>Sand, grayish orange (LWR 7/4), soft, non-plastic, damp, fine to medium grained.</del>	0			1018	
	17	Sandy silt, brownish black (LWR 2/1), soft, slightly plastic, moist.	0	3.9 4.0			
	18	Sand, grayish orange (LWR 7/4), soft, non-plastic, damp, fine to medium grained.					
	19						
	20		0			1024	
	21		0				
	22	Becomes wet.	0	3.2 4.0			
	23	Sand, medium dark gray, soft, non-plastic, wet, fine to medium.	0				



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PROJECT

**PCFA**

HOLE NO. ...

**B613**


# HTW DRILLING LOG

HOLE NO. **B613**

PROJECT **DCFA**

INSPECTOR **Rick Mark**

SHEET OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, medium dark gray, soft, non-plastic, wet, fine to medium grained.	0	3.2/4.0		1033	
	25						Less direct sampling. 1514
	26		0	0.5 4.0	B613/ GW01A 24-26'		
	27						
	28					1039	
	29						
	30	Becomes medium to coarse grained. Little recovery.	0	6.2 4.6			
	31						
	32					1056	



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PROJECT **DCFA**

HOLE NO. **B613**

# HTW DRILLING LOG

HOLE NO: **B613**

PROJECT **DCFA**

INSPECTOR **Rock Monk**

SHEET **5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
		<del>Light brown medium sand</del>	0				
	33	Trace of $\frac{1}{4}$ " gravel. fine sand, medium gray					
	34	Crabby silt, dusky brown (5% R2/2), soft, slightly plastic, moist.	C	1.9 4.6			
	35	Sandy light brown (5% R 5/0) soft, non-plastic, wet, medium to very coarse grained, subrounded.	0		B613 243A 323	1120	1450
	36		0				
	37		0				
	38		B	2.0 4.0			
	39	Sand, grayish orange (5% R 7/4) soft, non-plastic, wet, coarse to very coarse, sub rounded. Quartz and feldspar.	0			1138	
	40		0				
	41		0	2.1/4.0			



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PROJECT **DCFA**

HOLE NO. **B613**

# HTW DRILLING LOG

HOLE NO. **B613**

PROJECT **DCFA**

INSPECTOR **Rick Mant**

SHEET **6**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T <sub>90%</sub>	REMARKS h
	42	Sandy, grayish orange (10767/4), soft, non-plastic, med. coarse to very coarse, sub rounded. Quartz and feldspar	0	$\frac{21}{4.0}$			
	43						
	44		0			1350	
	45		0				
	46		0	$\frac{20}{4.0}$	B613 Gravel C 46-48'		1430
	47						
	48	Shale, pale olive (1076/2), weakly indurated	0				
	49	48-48' at 1408'					
	50						

# HTW DRILLING LOG

HOLE NO. **B614**

1. COMPANY NAME <b>DMCD</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 6 SHEETS
3. PROJECT <b>DCFA</b>	4. LOCATION <b>Island</b>	
5. NAME OF DRILLER <b>Ryan Weiser</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" micro core with 6 contact sensors</b>	8. HOLE LOCATION <b>N. 4325800. 510 E. 691224. 813</b>	
	9. SURFACE ELEVATION <b>321.282</b>	
	10. DATE STARTED <b>6-16-02</b>	11. DATE COMPLETED <b>6-12-02</b>

12. OVERBURDEN THICKNESS <b>45.5'</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>16.6'</b>
13. DEPTH DRILLED INTO ROCK <b>0.1'</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>45.6'</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	<input checked="" type="checkbox"/> DISTURBED <b>NA</b>	<input checked="" type="checkbox"/> UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b> Bentonite</b>	<input checked="" type="checkbox"/> BACKFILLED	<input checked="" type="checkbox"/> MONITORING WELL	<input checked="" type="checkbox"/> OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Mark</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Silty sand, pale yellowish brown (10/10/2), soft, non-plastic, dry, fine to very fine grained.	0			1505	
	2		0	3.2 — 4.0			
	3		0				
	4		0			<del>1506</del>	
	5		0	4.0/4.0			

# HTW DRILLING LOG

HOLE NO. **B614**

PROJECT

**DCFA**

INSPECTOR

**Rick Mark**

SHEET OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	9 1/2" sand, pale yellowish brown (lot 106/2), soft, non-plastic, damp, fine to very fine grained.	0	4.0 <u>4.0</u>			
	7						
	8		0			1508	
	9	Sandy grayish orange (lot 106/4), soft, non-plastic, damp; medium to very coarse grained, sub rounded. Quartz and feldspar.	0	3.8 <u>4.0</u>			
	10		0				
	11						
	12		0			1520	
	13		0	2.4 <u>4.0</u>			
	14	2" silty fine sand.	0				



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PROJECT

**DCFA**

HOLE NO.

**B614**

# HTW DRILLING LOG

HOLE NO. **B614**

PROJECT **DCFA**

INSPECTOR **Kick Monk**

SHEET **3** OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOLOGIC SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sand, grayish orange (log 27/4), soft, non-plastic, d.u. 40; medium to very coarse grained, sub-angular, quartz and feldspar. 1" limestone fragment.	0	24/4.0			
	16		0			1527	
	17		0				▼
	18		0	3.7 4.0	B614 GWA1A 17-19'	0925	
	19	Color change to medium dark gray. becomes wet.	0				
	20		0			1533	
	21		0	0.8 4.0			Began discreef sampling.
	22		0				
	23						



# HTW DRILLING LOG

HOLE NO. *B614*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *8*  
OF *8* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>1542</i>	REMARKS h
	24	<i>Sand, medium dark gray, soft, nonplastic, wet, medium to very coarse grained, subrounded. Quartz and feldspar.</i>	<i>0</i>	<i>0.8 / 4.0</i>		<i>1542</i>	
	25		<i>0</i>				
	26		<i>0</i>	<i>3.8 / 4.0</i>			
	27		<i>0</i>				
	28		<i>0</i>			<i>1600</i>	
	29	<i>Trace of 1/2" gravel, subrounded.</i>	<i>0</i>				
	30		<i>0</i>	<i>3.2 / 4.0</i>			
	31	<i>1" silt seam, dark gray</i>			<i>B614 / G201B</i>		<i>0415</i>
	32	<i>2" silt seam, dark gray.</i>	<i>0</i>			<i>1614</i>	
			<i>0</i>	<i>5.8 / 4.0</i>			

# HTW DRILLING LOG

HOLE NO. *B614*

PROJECT *PCFA*

INSPECTOR *Rick Mauli*

SHEET *5*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	<i>33</i>	<i>Sand, medium dark gray, soft, non-plastic, wet. medium to very coarse grained, subrounded. Quartz and feldspar.</i>					
	<i>34</i>	<i>Becomes light brown (5% S/G).</i>	<i>0</i>	<i>38 4.0</i>			
	<i>35</i>						
	<i>36</i>		<i>0</i>			<i>1636</i>	
	<i>37</i>		<i>0</i>				
	<i>38</i>		<i>0</i>	<i>24 4.0</i>			
	<i>39</i>						
	<i>40</i>		<i>0</i>			<i>1647</i>	
	<i>41</i>		<i>0</i>	<i>1.5 / 4.0</i>			<i>Stopped probing will continue 6/20/02</i>



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PROJECT *PCFA*

HOLE NO. *B614*

# HTW DRILLING LOG

HOLE NO. **B614**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **8.6**  
OF 8 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TEST SAMPLE OR CORE BOX NO. <i>Refusal</i>	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS Time	REMARKS h
	42	Sandy, light brown (SP 5/0), soft, non-plastic, wet, medium to very coarse grained, subrounded. Quartz and feldspar	0				
	43		C	$\frac{1.5}{4.0}$			0900
	44		C		B614/ 6401C 43-45'	0802	(6-12-02)
	45		0	$\frac{0.8}{1.6}$			
Limestone, pale yellowish brown, moderately strong, weathered.							
	46	TD = 45.6' at 0825. Refusal.					
	47						
	48						
	49						
	50						



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PROJECT **DLFA**

HOLE NO. **B614**

# HTW DRILLING LOG

 HOLE NO. *B615*

1. COMPANY NAME <i>BMCB</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>		SHEET 1 OF 6 SHEETS	
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Island</i>		
5. NAME OF DRILLER <i>Ryan Weiser</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 3400 ATG</i>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>2" macro core with acetate sleeves</i>		8. HOLE LOCATION <i>N. 4325770.430 E. 691277.649</i>			
		9. SURFACE ELEVATION <i>321.007</i>			
		10. DATE STARTED <i>6/1/02</i>		11. DATE COMPLETED <i>6/1/02</i>	
		12. OVERBURDEN THICKNESS <i>4.50</i>			
13. DEPTH DRILLED INTO ROCK <i>6.1</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>14.7'</i>		
14. DEPTH OF HOLE <i>45.1</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>		
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>			18. GEOTECHNICAL SAMPLES <i>NA</i>		
19. TOTAL NUMBER OF CORE BOXES <i>NA</i>		DISTURBED <i>NA</i>		UNDISTURBED <i>NA</i>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>	METALS <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>
21. TOTAL CORE RECOVERY <i>NA</i> %		OTHER (SPECIFY) <i>NA</i>		OTHER (SPECIFY) <i>NA</i>	
22. DISPOSITION OF HOLE <i>Backfilled</i>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>Rick Frank</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. i	FLOW COUNTS <i>T. count</i>	REMARKS h
	1	Sand, dark yellowish brown (0.25/2), soft, nonplastic, damp, fine to very fine grained, trace of fines.	0	2.1 4.0		0937	
	2		0				
	3		0				
	4		0				0938
	5		0		2.3/4.0		


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 PROJECT *DCFA*

 HOLE NO. *B615*

# HTW DRILLING LOG

HOLE NO. *B 615*

PROJECT		INSPECTOR			SHEET		
<i>DCFA</i>		<i>Rick Mark</i>			<i>2</i> OF <i>6</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Temp</i>	REMARKS h
	<i>6</i>	<i>Sand, dark yellowish brown (104R4/2), soft, non-plastic, damp, fine to very fine grained, trace of fines</i>	<i>0</i>	<i>2,3</i> <i>4.6</i>			
	<i>7</i>						
	<i>8</i>		<i>0</i>			<i>6941</i>	
	<i>9</i>		<i>0</i>				
	<i>10</i>		<i>0</i>	<i>40</i> <i>4.0</i>			
	<i>11</i>		<i>0</i>				
	<i>12</i>	<i>Clayey silt, grayish brown (57R4/2), soft, slightly plastic, moist.</i>				<i>6944</i>	
	<i>13</i>		<i>0</i>	<i>3.1</i> <i>4.0</i>			
	<i>14</i>		<i>0</i>				



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PROJECT *DCFA*

HOLE NO. *B 615*

# HTW DRILLING LOG

HOLE NO. **B615**

PROJECT **DCFA**

INSPECTOR **Asck Monk**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <del>Recovery</del>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Triax	REMARKS h
	15	Sand, grayish orange (10 to 7/4), soft, non-plastic, wet to moist, medium to very coarse grained, subrounded.	0	3.140			▼ 10Bm
	16	Quartz & feldspar.	0			0948	
	17		0		B615/ 64401 1678'		1440
	18	Color change to medium dark gray.	0	2.8 — 4.6			
	19		0				
	20		0			0954	
	21						Began direct sampling.
	22			0 — 4.0			No recovery.
	23						



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PROJECT **DCFA**

HOLE NO. **B615**

# HTW DRILLING LOG

HOLE NO. **B615**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **6** SHEETS **x 4**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	24	Sand, grayish orange (SYR 7/1), soft, non-plastic. med, medium to very loose (fine med) subangular. 2 units color change to light brownish gray (SYR 6/1).	0	0/40		1034	
	25		0	2.2/40			
	26		0				
	27		0				
	28		0			1015	
	29		0	2.9/40			
	30		0		B6151 G202 30-32'		1414
	31		0				
	32		0			1028	
			0	3.2/40			



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PROJECT **DCFA**

HOLE NO. **B615**

# HTW DRILLING LOG

HOLE NO. *B615*

PROJECT *DLFA*

INSPECTOR *Rock Mack*

SHEET *5* OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	<i>33</i>	<i>Sand, light brownish gray (576/1), soft, non-plastic, wet, medium to very coarse grained, sub-rounded. Quartz and feldspar</i>	<i>C</i>	<i>3.2</i>			
	<i>34</i>	<i>Sandy silt, light olive gray (579/2), soft, non-plastic, wet, sand ps fine to medium</i>	<i>C</i>	<i>4.0</i>			
	<i>35</i>	<i>Sandy silt yellowish orange (10726/6), soft, non-plastic, wet, medium to very coarse grained, sub-rounded. Quartz and feldspar</i>	<i>0</i>				
	<i>36</i>		<i>0</i>			<i>1048</i>	
	<i>37</i>		<i>0</i>				
	<i>38</i>		<i>C</i>	<i>1.7</i>			
	<i>39</i>		<i>0</i>	<i>4.0</i>			
	<i>40</i>		<i>0</i>			<i>1103</i>	
	<i>41</i>		<i>0</i>	<i>3.2</i>			



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PROJECT *DLFA*

HOLE NO. *B615*



# HTW DRILLING LOG

HOLE NO. **1615**

PROJECT <b>DCFA</b>			INSPECTOR <b>Rick Mack</b>			SHEET <b>6</b> OF <b>6</b> SHEETS	
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	42	Sand, dark yellowish orange (10% 6/6), soft, nonplastic, wet, medium to very coarse grained, subrounded. Quartz and feldspar.	0	$\frac{3.2}{40}$			
	43		0		6615/ G403 42-44'		1355
	44	Silty clay, light olive gray (5TS/2), soft, moderately plastic, moist.	0	$\frac{0.8}{1.1}$		1127	
	45	Limstone highly weathered, medium light gray.	0				
	46	TO = 45.1' at 1147. Refusal.					
	47						
	48						
	49						
	50						



# HTW DRILLING LOG

HOLE NO. *B616*

1. COMPANY NAME <i>BMCD</i>	2. DRILLING SUBCONTRACTOR <i>EPS</i>	SHEET 1 OF 5 SHEETS
3. PROJECT <i>DLFA</i>	4. LOCATION <i>Island</i>	
5. NAME OF DRILLER <i>Pat Martin / Paul Vogelburg</i>	6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 66DT</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <i>Island 319.112</i>	
	9. SURFACE ELEVATION <i>N. 4325736.350 E. 691328.208</i>	
	10. DATE STARTED <i>5-29-02</i>	11. DATE COMPLETED <i>5-29-02</i>

12. OVERBURDEN THICKNESS <i>38.2'</i>	15. DEPTH GROUNDWATER ENCOUNTERED <i>7.57</i>
--	--

13. DEPTH DRILLED INTO ROCK <i>0.3'</i>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>
--	---

14. DEPTH OF HOLE <i>38.5'</i>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>
-----------------------------------	---

18. GEOTECHNICAL SAMPLES <i>NA</i>	DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>
---------------------------------------	------------------------	--------------------------	---

20. SAMPLES FOR CHEMICAL ANALYSIS <i>water</i>	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE <i>Bentonite</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rick Mark</i>
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	1	<i>Sand, medium to coarse grained, light brown (S&amp;S) soft, non-plastic, moist.</i>	0	<i>38</i> <i>40</i>			<i>1347-1348 in production</i>
	2		0				
	3		0				
	4		0			<i>1348</i>	
	5		0		<i>31/40</i>		

# HTW DRILLING LOG

HOLE NO. **B616**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6		0	$\frac{3.1}{40}$			
	7						
	8		0			1356	 WL = 7.57'
	9		0		B616/ GW01A 8-10'	0840	at 0740 5-30-02
	10		0	$\frac{2.7}{40}$			
	11	Sand, moderate yellowish brown (104R5/4), sub to non-plastic, wet, medium to very coarse grained, some red and green grains, sub rounded.	0			1355	
	12						Switch to discreef sampler.
	13		0	$\frac{0.1}{40}$			
	14						



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PROJECT **DCFA**

HOLE NO. **B616**

# HTW DRILLING LOG

HOLE NO. **BG16**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **X 3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sand, moderate yellowish brown (10 UG 5/4), soft, non plastic, wet, medium to very coarse grained, some red and green grains, subrounded.	0	B. 1/40		1402	
	16						
	17			0	B. 4 40		
	18						
	19						
	20					1414	
	21		0	B. 6 40			
	22						
	23				BG16/ G401B 22-24'		OHU (S-30-02)



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PROJECT **DCFA**

HOLE NO. **BG16**

# HTW DRILLING LOG

HOLE NO. **B616**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **94**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Sand, pale yellowish brown (100% G/2), soft, non-plastic, wet, fine to medium grained, subrounded.	0	0.4/4.0		1436	
	25		0	1.2/4.0			
	26						
	27						
	28	Sand, clear and reddish (quartz + feld spar), soft, non-plastic, wet, coarse to very coarse grained, sub-rounded. Trace of 1/4 - 1/2" gravel.	0			1510 <del>1450</del>	
	29		0	2.3/4.0			
	30						
	31		0				
	32		0	2.7/4.0		1526	

# HTW DRILLING LOG

HOLE NO. **B616**

PROJECT

**DCFA**

INSPECTOR

**Arch Mont**

SHEET **5** OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	LAB TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sand, clear quartz and reddish feldspar, soft, non-plastic, wet, coarse to very coarse grained, subrounded. Trace of 1/8" - 1/4" gravel.	0				
	34		0	2.7 — 4.0			
	35		0				
	36					1553	
	37		0	2.0 — 3.5	B616/ G401A 36-38'		0750 (5-30-03)
	38	Clayey silt, light olive gray (5Y 6/1), moderately soft, moderately plastic, moist.  Limestone, medium light gray, weathered top 2", then strong.	0				
	39	TD = 38.5' bgs at 160%					
	40						
	41						



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PROJECT

**DCFA**

HOLE NO.

**B616**

# HTW DRILLING LOG

 HOLE NO. **B617**

1. COMPANY NAME <b>B/CO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS	
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Island</b>			
5. NAME OF DRILLER <b>Ryan Waiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 546 ATL</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" measured with <b>acrylic sleeves</b>		8. HOLE LOCATION <b>N. 4325990.210 E 690801.829</b>		
				9. SURFACE ELEVATION <b>322.480</b>		
				10. DATE STARTED <b>6-18-02</b>		11. DATE COMPLETED <b>6-18-02</b>
12. OVERBURDEN THICKNESS <b>50.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>19.7 WBM</b>			
13. DEPTH DRILLED INTO ROCK <b>0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>50.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
22. DISPOSITION OF HOLE <b> Bentonite </b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Rank</b>	
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	1	Sand, pale yellowish brown (over 6/2), soft, non-plastic, damp, fine to very fine.	0			1830	
	2		0	2.8 4.0			
	3		0				
	4		0				1031
	5		0		36/40		


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 PROJECT **DLFA**

 HOLE NO. **B617**

# HTW DRILLING LOG

HOLE NO. *B617*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *2*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	<i>Sand, pale yellowish brown (10YR6/2), soft, non-plastic, damp fine to very fine.</i>	0	$\frac{3.6}{4.0}$			
	7						
	8			0			1134
	9	<i>2" clay silt, dark yellowish brown, moderate silt, non-plastic, damp</i>	0				
	10			0	$\frac{4.0}{4.0}$		
	11			0			
	12					1138	
	13		0	$\frac{3.3}{4.0}$			
	14		0				



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PROJECT *DCFA*

HOLE NO. *B617*




# HTW DRILLING LOG

HOLE NO. *R617*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>1143</i>	REMARKS h
		<i>same as above</i>					
	<i>15</i>	<i>Sandy, grayish orange (10 yr 7/9), soft, non-plastic, dense, fine to medium.</i>	<i>C</i>	<i>33</i> <i>14.0</i>		<i>1143</i>	
	<i>16</i>		<i>C</i>				
	<i>17</i>		<i>C</i>				
	<i>18</i>	<i>1 1/2" sandy silt, dark yellowish brown, soft, dense</i>	<i>C</i>	<i>34</i> <i>4.0</i>			
	<i>19</i>		<i>C</i>				
	<i>20</i>	<i>Becomes wet</i>	<i>C</i>			<i>1148</i>	
	<i>21</i>		<i>C</i>				
	<i>22</i>		<i>C</i>	<i>29</i> <i>4.0</i>			
	<i>23</i>				<i>R617</i> <i>GW01A</i> <i>22-24</i>		<i>1610</i>



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PROJECT *DCFA*

HOLE NO. *R617*

# HTW DRILLING LOG

HOLE NO. **B617**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **X 4**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
		Trace of $\frac{1}{4}$ - $\frac{1}{2}$ " chert and limestone	0	2.9/4.0		1319	
	24	Sand, grayish orange (10/12/14), silt, non-plastic, wet, fine to medium.	0				
	25	Grades to medium to very coarse grained. Subrounded, quartz and feldspar.	0	2.0 / 4.0			
	26		0				
	27	1" of silty clay, dark with brown, silt, slightly plastic	0			1332	
	28		0				
	29		0				
	30		0	1.9 / 4.0			
	31		0				
	32		0			1343	
				0.0/4.0			



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PROJECT

**DCFA**

HOLE NO.

**B617**

# HTW DRILLING LOG

HOLE NO. **B617**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **5**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <del>                    </del> Recovery	ANALYTICAL SAMPLE NO. f	GLOW COUNTS <del>                    </del> Time g	REMARKS h
	33	Sand, grayish orange (10% R74) soft, non-plastic, wet, medium to very coarse, subrounded. quartz and feldspar.	0	1.9 <hr style="width: 50px; margin: 0 auto;"/> 6.0 4.1			No recovery.
	34		0				
	35						
	36		6			1354	
	37		0		B617/ G101B 36-38'		1586
	38		0	2.2 <hr style="width: 50px; margin: 0 auto;"/> 4.8			
	39				<del>B617/ G101B</del> 3		
	40		0			1417	
	41			0.0/4.0			

# HTW DRILLING LOG

HOLE NO. *B617*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *10*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Timed</i>	REMARKS h
		<i>Same as above</i>					
	<i>42</i>			<i>0.0</i> <hr/> <i>40</i>			<i>no recovery</i>
	<i>43</i>						
	<i>44</i>					<i>1433</i>	
	<i>45</i>	<i>Silt &amp; sand, grayish orange (10/127/4), soft, slightly plastic wet, sand is fine to medium. Some to 1/2" limestone and chert fragments.</i>	<i>0</i>				
	<i>46</i>		<i>0</i>	<i>2.7</i> <hr/> <i>40</i>			
	<i>47</i>						
	<i>48</i>		<i>0</i>			<i>1453</i>	
	<i>49</i>		<i>0</i>	<i>1.2</i> <hr/> <i>2.3</i>	<i>B617/ Gw01C, +MS/MSD 48-50'</i>		<i>1528</i>
	<i>50</i>	<i>No bedrock recovery.</i>	<i>0</i>			<i>1502</i>	

*70 = 50.3' at 1502. Refusal.*



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PROJECT *DCFA*

HOLE NO. *B617*

# HTW DRILLING LOG

HOLE NO. *B618*

1. COMPANY NAME <i>BMC</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 6 SHEETS		
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Island</i>				
5. NAME OF DRILLER <i>Kyan Weiser</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe S400 ATV</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore with acetate sleeves		8. HOLE LOCATION <i>N. 4325961.390 E. 690855.149</i>			
				9. SURFACE ELEVATION <i>323.348</i>			
				10. DATE STARTED <i>6-18-02</i>		11. DATE COMPLETED <i>6-18-02</i>	
12. OVERBURDEN THICKNESS <i>47.6</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>228</i>				
13. DEPTH DRILLED INTO ROCK <i>0.4</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. DEPTH OF HOLE <i>48.0</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED <i>NA</i>	UNDISTURBED <i>NA</i>	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA</i> %
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	
22. DISPOSITION OF HOLE <i>Backfilled</i>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rich Frank</i>		
		<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Frank</i>	REMARKS h
	1	<i>Soil, pale yellowish brown (very soft), soft, non-plastic, damp fine to very fine.</i>	0			0812	
	2		0	<i>3.1 / 4.0</i>			
	3		0				
	4	<i>3" silty clay, moderate yellowish brown, soft, non-plastic, damp</i>	0			0813	
	5		0	<i>3.6 / 4.0</i>			



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PROJECT

*DCFA*

HOLE NO.

*B618*

# HTW DRILLING LOG

 HOLE NO. **B618**

 PROJECT **DCFA**

 INSPECTOR **Rick Monk**

 SHEET **2**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	COTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time f	REMARKS h
	6	Sand, pale yellowish brown (10/6/21) soft, non-plastic, damp. Fine to very fine.	0	3.6 — 4.0			
	7		0				
	8		0			0815	
	9		0	4.0 — 4.0			
	10		0				
	11		0				
	12		0			0814	
	13		0	3.8 — 4.0			
	14		0				


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 PROJECT **B618 DCFA**

 HOLE NO. **B618**

# HTW DRILLING LOG

HOLE NO. **B618**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sand, grayish orange (10% 7/4), soft, non-plastic, damp, fine to coarse grained.	0	3.8 — 4.0		0825	
	16	Alternating 1/8 - 1/4" layers of sand and clayey silt. Sand is grayish orange (10% 7/4), soft, non-plastic, damp, fine to very fine. Clayey silt is dusty brown (5% 2/2).	0				
	17	soft, slightly plastic, damp					16.5'
	18	Sand, grayish orange (10% 7/4), soft, non-plastic, damp, fine to medium.	0	3.9 — 4.0			
	19		0				
	20		0			0830	
	21		0				
	22		0	3.2 — 4.0			
	23	Becomes medium to coarse grained and wet.	0				▼



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PROJECT **DCFA**

HOLE NO. **B618**

# HTW DRILLING LOG

HOLE NO. **P618**

PROJECT **DLCA**

INSPECTOR **Rick Monk**

SHEET **8**  
OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>RECOVERY</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Sand, grayish orange (WTR 7/4), soft, non-plastic, med, medium to coarse grained, subrounded.	0	3.2/4.0		0836	
	25		0		P618/ G401A 23-25'		1643
	26		0	2.9 4.0			
	27		0				
	28		0			0843	
	29	Sand, dark yellowish orange (WTR 6/6), soft, non-plastic, med, coarse to very coarse, quartz and feldspar. Subrounded.	0				Began direct sampling
	30		0	2.0 4.0			
	31		0				
	32		0			0854	
				1.2/4.0			



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PROJECT

**DLCA**

HOLE NO.

**P618**



# HTW DRILLING LOG

HOLE NO. *B618*

PROJECT *DCFA*

INSPECTOR *Rick McK*

SHEET *5*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	33	<i>Sand, dark yellowish-brown orange (10R12.6/6), soft, non plastic, wet, coarse to very coarse, quartz and feldspar. Subrounded.</i>	0				
	34		0	<i>1.2 4.0</i>	<i>B6181 G1101B 34-5'</i>		<i>1028</i>
	35						
	36		0			<i>0914</i>	
	37		0				
	38		0	<i>1.7 4.0</i>			
	39						
	40	<i>2" fine sand</i>	0			<i>0928</i>	
	41			<i>0.0/4.0</i>			

# HTW DRILLING LOG

HOLE NO. *B618*

PROJECT		INSPECTOR			SHEET		
<i>DCFA</i>		<i>Rick Mark</i>			OF <i>26</i> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	<i>Sandy, dark yellowish orange (10YR6/6), soft, non-plastic, med. coarse to very coarse, quartz and feldspar, subcrystal.</i>		$\frac{0.0}{4.0}$			<i>Zero recovery.</i>
	43						
	44					<i>0938</i>	
	45		<i>0</i>				
	46		<i>0</i>	$\frac{3.1}{4.0}$			
	47				<i>B618 GWSIC 46-48'</i>		<i>5 1012</i>
	48	<i>Limestone, light brownish gray (5YR6/1), weathered at top. Thin pieces on surface.</i>	<i>0</i>			<i>0954</i>	
		<i>TD = 48.0'</i>					



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PROJECT *DCFA*

HOLE NO. *B618*

# HTW DRILLING LOG

 HOLE NO. *B619*

1. COMPANY NAME <i>B. McD</i>	2. DRILLING SUBCONTRACTOR <i>EPS</i>	SHEET 1 OF 7 SHEETS
3. PROJECT <i>DCFA</i>	4. LOCATION <i>Island</i>	
5. NAME OF DRILLER <i>Ryan Weiser</i>	6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 8400 A-T6</i>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>2" pipe cases with aceto. to sleeves</i>	8. HOLE LOCATION <i>N. 4325927.440 E. 690907.507</i>	
	9. SURFACE ELEVATION <i>324.475</i>	
	10. DATE STARTED <i>6-14-02</i>	11. DATE COMPLETED <i>6-20-02</i>

12. OVERBURDEN THICKNESS <i>56.3</i>	15. DEPTH GROUNDWATER ENCOUNTERED <del>27.9</del> <i>27.7 UBM</i>
13. DEPTH DRILLED INTO ROCK <i>0.0</i>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>
14. DEPTH OF HOLE <i>56.3</i>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>

18. GEOTECHNICAL SAMPLES <i>NA</i>	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>100%</i>
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE <i> Bentonite</i>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rich. Krentz</i>		
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Trials</i>	REMARKS h
	1	<i>Sandy, pale yellowish brown (10 yr old), with non plastic, damp fine to very fine.</i>	C			1521	
	2		C	$\frac{22}{40}$			
	3						
	4		C				1522
	5		C	$\frac{37}{40}$			

# HTW DRILLING LOG

HOLE NO. *B619*

PROJECT *DCFA*

INSPECTOR *Rick Mack*

SHEET *2* OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	TEST TECH SAMPLE OR CORE BOX NO. <i>RECOVERY</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time	REMARKS h
	6	Sand, pale yellowish brown (10/20/2) soft, non-plastic, damp; fine to very fine.	0	3.7 4.0			
	7		0				
	8					1525	
	9		0				
	10	4" of finely laminated sand and silt.	0	3.8 4.0			
	11		0				
	12					1528	
	13	Sandy silt, pale yellowish brown (10/20/2), soft, brittle, non-plastic, damp, sand is very fine.	0	3.9 4.0			
	14	Sand, pale yellowish brown (10/20/2) soft, non-plastic, damp, fine to very fine.	0				



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PROJECT *DCFA*

HOLE NO. *B619*

# HTW DRILLING LOG

HOLE NO. D619

PROJECT DCFA

INSPECTOR Arch Monk

SHEET 3  
OF 7 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	SECTECH SAMPLE OR CORE BOX NO. <u>Recovery</u>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	15	Sand, pale yellowish brown (10YR 6/2), soft non-plastic, damp fine to very fine	0	3.9 <u>4.8</u>		1593	
	16		0				
	17		0				
	18		0	3.7 <u>4.8</u>			
	19		0				
	20	2" silty clay, grayish brown, moderately hard, damp Sand, grayish orange (10YR 7/9), soft, non-plastic, damp, fine to medium	0			1540	
	21		0	4.0 <u>4.0</u>			
	22		0				
	23		0				



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PROJECT DCFA

HOLE NO. D619

# HTW DRILLING LOG

 HOLE NO. *B614*

PROJECT

*DCFA*

INSPECTOR

*Rock Mead*

 SHEET *4*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>T.M.F.</i>	REMARKS h
	<i>24</i>	<i>Sand, grayish orange (COTR 7/4), soft, non-plastic, lamp; fine to medium.</i>	<i>0</i>	<i>4.0 / 4.0</i>		<i>8545</i>	
	<i>25</i>		<i>0</i>				
	<i>26</i>		<i>0</i>	<i>3.2 / 4.0</i>			
	<i>27</i>		<i>0</i>				
	<i>28</i>	<i>Becomes wet, medium to coarse, silty sand.</i>	<i>0</i>			<i>1551</i>	▼
	<i>29</i>		<i>0</i>		<i>B614 GW01A 28-31'</i>		<i>1126</i>
	<i>30</i>		<i>0</i>	<i>3.6 / 4.0</i>			
	<i>31</i>		<i>0</i>				
	<i>32</i>		<i>0</i>			<i>1550</i>	
	<i>33</i>	<i>Clayey silt, grayish black, soft, slightly plastic, moist.</i>	<i>0</i>	<i>2.9 / 4.0</i>			<i>Began discrete sampling</i>

# HTW DRILLING LOG

HOLE NO. **8619**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **Y5**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sand, grayish to fine green (5643/2), soft, nonplastic, wet, fine to medium	0				
	34	Sand, dark yellowish orange (10766/6), soft to nonplastic, wet, medium to very coarse, subrounded, quartz and feldspar	0	29 40			
	35						
	36		0			1618	
	37	Sand, grayish orange (16777/4), soft, nonplastic, wet, medium to very coarse grained, quartz and feldspar, subrounded.	0	20 40		0751	6-20-02
	38						
	39		0				
	40		0			0832	
	41		0	2.2/4.0	8619/ GWOLF 40-42		1105



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PROJECT **DCFA**

HOLE NO. **8619**

# HTW DRILLING LOG

 HOLE NO. **1619**

 PROJECT **DCFA**

 INSPECTOR **Mark Mark**

 SHEET **X 6**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h	
	42	Sandy, grayish orange (164K274), soft, non-plastic, medium to very coarse, quartz and Red spin, subrounded.	6	$\frac{3.2}{4.0}$				
	43							
	44			0			0850	
	45			0				
	46			0	$\frac{1.4}{4.0}$			
	47			0				
	48			0			0700	
	49		0					
	50		0	$\frac{0.0}{4.0}$				



# HTW DRILLING LOG

HOLE NO. **B619**

PROJECT **DLFA**

INSPECTOR **Arck MCK**

SHEET **7**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>BMC</i>	REMARKS h
	51		0	0.0/4.0			No recovery.
	52		0			0924	
	53		0				
	54		0	2 3 / 40			
	55	<p>2" limestone layer, medium sandstone, weak.</p>			B619/ basic <del>53-55'</del> 53-55'		1030
	56	<p>Clayey silt, moderate yellowish brown (10/25/4), soft, slightly elastic <del>and moist</del></p> <p>Sand, dark yellowish orange (10/25/6) soft, non-plastic, wet, medium to very coarse, subrounded, quartz and feldspar.</p>	0			8754	No recovery.
	57	<p>TD = 56.3' at 1011.</p> <p>Refusal. No bedrock recovery.</p>					
	58						
	59						



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PROJECT **DLFA**

HOLE NO. **B619**

# HTW DRILLING LOG

 HOLE NO. *B620*

1. COMPANY NAME <i>B/T/O</i>		2. DRILLING SUBCONTRACTOR <i>EPS</i>			SHEET 1 OF 7 SHEETS		
3. PROJECT <i>DLFA</i>			4. LOCATION <i>Island</i>				
5. NAME OF DRILLER <i>Ryan Weiser</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Geoprobe 5400 APV</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" mercury core with acetate sleeves		8. HOLE LOCATION <i>N. 4325895.040 E. 690959.715</i>			
				9. SURFACE ELEVATION <i>323.233</i>			
				10. DATE STARTED <i>6-20-02</i>			
				11. DATE COMPLETED <i>6-21-02</i>			
12. OVERBURDEN THICKNESS <i>52.6</i>			15. DEPTH GROUNDWATER ENCOUNTERED <i>22.1</i>				
13. DEPTH DRILLED INTO ROCK <i>0.2</i>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>NA</i>				
14. DEPTH OF HOLE <i>52.8</i>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>				
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <i>NA %</i>
		<i>✓</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	
22. DISPOSITION OF HOLE <i> Bentonite</i>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Rick Thaler</i>		
		<i>✓</i>	<i>NA</i>	<i>NA</i>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	1	<i>Sandy, pale yellowish brown (10 in 6/2), soft, non-plastic, damp, fine to very fine.</i>	0			1326	
	2		0	<i>3.6</i> <i>40</i>			
	3						
	4	<i>3" silty clay, dusky brown, slightly hard, damp</i>	0			1326	
	5		0	<i>3.7</i> <i>40</i>			


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PROJECT

*DLFA*

HOLE NO.

*B620*

# HTW DRILLING LOG

HOLE NO. **B620**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **2** OF **2** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GESTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Sand, pale yellowish brown (10YR 6/2), soft, non-plastic, damp, fine to very fine.	0				
	7	Color change to grayish orange (10YR 7/4) <del>See bottom of</del>		3.7 — 4.0			
	8		0			1328	
	9		0				
	10		0	3.8 — 4.0			
	11						
	12		0			1332	
	13		0				
	14		0	3.7 — 4.1			



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PROJECT

**DCFA**

HOLE NO.

**B620**

# HTW DRILLING LOG

HOLE NO. **1620**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET OF **83** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sand, grayish orange (10/100/1/4), soft, non-plastic, clumpy, fine to very fine					
	16	4" of thin bedded sand and silty clay. Sand is same as above, silty clay is dusky brown, non-plastic	0	3.7 /40		1338	
	17		0				
	18		0	3.4 /46			
	19	4" silty clay, grayish brown, slightly plastic, few small roots, few reddish red ox features.					
	20	Sand becomes fine to medium	0			1342	
	21		0				
	22	Becomes wet. 3" sandy silt, dusky brown, non-plastic	0	3.6 /40			▼ musty odor
	23	Sand becomes fine to coarse, medium dark gray	0				



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PROJECT

DLFA

HOLE NO.

1620

# HTW DRILLING LOG

HOLE NO. **B620**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4** OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, medium dark gray, soft, nonsplinted wet, fine to coarse, subangular.		3.4/4.0 <i>Recovery</i>		1348	
	25		0		B620/ G401A 23-25		0876
	26		0	3.7/4.0			
	27						
	28		0			1356	
	29		0				Require direct sampling.
	30		0	2.9/4.0			
	31	Sandy, light brownish gray (SY#6/1), soft, nonsplinted, wet, fine to medium.					
	32		0			1428	
			0				



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PROJECT **DCFA**

HOLE NO. **B620**

# HTW DRILLING LOG

HOLE NO. *0626*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *5*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH. SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Tim 9</i>	REMARKS h
	<i>33</i>	<i>Sandy, light brownish gray (STR 6/1), soft, non-plastic, wet. Fine to medium.</i>					
	<i>34</i>		<i>0</i>	<i>2.3 / 4.0</i>			
	<i>35</i>	<i>Sand, dark yellowish orange (10 YR 6/6), soft, non-plastic, wet, medium to very coarse, sub-rounded, quartz and feldspar</i>	<i>0</i>				
	<i>36</i>		<i>0</i>			<i>1447</i>	
	<i>37</i>		<i>0</i>				
	<i>38</i>		<i>0</i>	<i>1.7 / 4.0</i>	<i>R620 / GWSR / 37-39</i>		<i>0746</i>
	<i>39</i>	<i>Trace of gravel</i>	<i>0</i>				
	<i>40</i>		<i>0</i>			<i>1504</i>	
	<i>41</i>	<i>Sandy, grayish orange (10 YR 7/4), soft, non-plastic, wet, medium to very coarse, sub-rounded, quartz and feldspar.</i>	<i>0</i>	<i>1.5 / 4.0</i>			



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PROJECT *DCFA*

HOLE NO. *R620*

# HTW DRILLING LOG

HOLE NO. *B626*

PROJECT

*DCFA*

INSPECTOR

*Rick Cook*

SHEET *X 5*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS Time	REMARKS h
	<i>42</i>	<i>Sand, grayish orange (100%) soft, non-plastic, med, medium to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>	$\frac{1.5}{4.0}$			
	<i>43</i>						
	<i>44</i>		<i>0</i>			<i>1522</i>	
	<i>45</i>		<i>0</i>				
	<i>46</i>		<i>0</i>	$\frac{2.1}{4.7}$			
	<i>47</i>						
	<i>48</i>		<i>0</i>			<i>1538</i>	
	<i>49</i>		<i>0</i>				
	<i>50</i>		<i>0</i>	$\frac{2.7}{4.7}$			



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PROJECT

*DCFA*

HOLE NO.

*B620*

# HTW DRILLING LOG

HOLE NO. **B620**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **7** OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <del>g</del> Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	51	Sand, grayish orange (100% <sup>+</sup> ) soft, non-plastic, med, medium to very coarse, subrounded, quartz and feldspar.  = 1" chert fragments	0	2.4 / 4.0	B620/ GWBIC 50-52"	1557	0730
	52	limestone, weathered, grayish green (100% <sup>+</sup> ) med. to coarse.	0	0.4 0.8			
	53	TL = 52.8' at 162. Refusal.					
	54						
	55						
	56						
	57						
	58						
	59						



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PROJECT **DCFA**

HOLE NO. **B620**



# HTW DRILLING LOG

HOLE NO **B621**

1. COMPANY NAME <b>BMED</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 7 SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5900 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" microcore w/40		8. HOLE LOCATION <b>N. 4325862.590 E. 691011.195</b>			
		octata sleeves		9. SURFACE ELEVATION <b>323.395</b>			
				10. DATE STARTED <b>6-26-02</b>		11. DATE COMPLETED <b>6-26-02</b>	
12. OVERBURDEN THICKNESS <b>52.3</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b><del>22.1</del> 22.1 WBM</b>				
13. DEPTH DRILLED INTO ROCK <b>0.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>52.3</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b> Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Prate</b>		
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Timog</i>	REMARKS h
	1	Sandy, pale yellowish brown (10" R6/2), soft, non-plastic, damp; fine to very fine.	0			0855	
	2		0	3.0 4.0			
	3		0				
	4	4" clayey silt, grayish brown, moderately soft, non-plastic, damp	0			0855	
	5		0	3.7 4.0			



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PROJECT **DCFA**

HOLE NO. **B621**

# HTW DRILLING LOG

HOLE NO. *B621*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	6	Sand, pale yellowish brown (104R6/2), soft, non-plastic, damp, fine to very fine.	0	$\frac{3.4}{4.0}$			
	7	Sand, grayish orange (104R7/4), soft, non-plastic, damp, fine to very fine.	0				
	8		0			0858	
	9	Sand, pale yellowish brown (104R6/2), soft, non-plastic, fine to very fine.	0				
	10		0	$\frac{3.8}{4.0}$			
	11		0				
	12		0			0902	
	13		0	$\frac{3.7}{4.0}$			
	14		0				



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PROJECT *DCFA*

HOLE NO. *B621*

# HTW DRILLING LOG

HOLE NO. **B621**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>2.2</i>	REMARKS h
	15	Sand, grayish orange (10/27/8) soft, non-plastic damp fine to very fine.	0	3.7/4.0			
	16		0			0906	
	17	Becomes fine to medium.	0				
	18		0	3.8/4.0			
	19		0				
	20		0			0416	
	21		0	4.0/4.0			
	22	Becomes wet.					▼
	23						



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PROJECT

**DLFA**

HOLE NO.

**B621**

# HTW DRILLING LOG

HOLE NO. **B621**

PROJECT **DCFA**

INSPECTOR **Rich Mark**

SHEET **28** OF **28** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, light brownish gray (5% 6/11, soft, non-plastic, wet, <sup>fine</sup> <del>medium</del> very coarse subrounded, quartz and feldspar	0	4.0/4.0		0915	
	25		0				
	26		0	2.3 / 4.0			
	27		0		B621/ Gw01 A 26-28'		1188
	28	1/2" limestone fl. piece, medium light gray.	0			0921	
	29		0				Begin discreet sampling.
	30		0	1.3 / 4.0			
	31		0				
	32	2" sandy silt, soft, non-plastic, wet, gray dusky brown	0			0930	
			0	2.1/4.0			



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PROJECT **DCFA**

HOLE NO. **B621**

# HTW DRILLING LOG

HOLE NO. *B621*

PROJECT

*DCFA*

INSPECTOR

*Rick Monk*

SHEET *5*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	<del>SEOTECH SAMPLE OR CORE BOX NO.</del> <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS Time g	REMARKS h
	33	<i>Sand, light brownish gray (54% G/1), soft, non-plastic, wet, fine to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>				
	34		<i>0</i>	<i>3.1 / 4.0</i>			
	35						
	36	<i>Sand, dark yellowish orange (16% G/6), soft, non-plastic, wet, fine to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>			<i>3443</i>	
	37		<i>0</i>				
	38		<i>0</i>	<i>3.3 / 4.0</i>			
	39	<i>2" of clay, reddish-brown orange, soft, non-plastic to highly plastic, moist to wet.  Becomes medium to very coarse</i>	<i>0</i>		<i>B621 / G401B 38-40'</i>		<i>1136</i>
	40		<i>0</i>			<i>1000</i>	
	41		<i>0</i>	<i>3.1 / 4.0</i>			



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PROJECT

*DCFA*

HOLE NO.

*B621*

# HTW DRILLING LOG

HOLE NO. *B621*

PROJECT *DLFA*

INSPECTOR *Rick Monk*

SHEET *6* OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	42	Sand, dark yellowish orange (10TK6/6), soft, non-plastic, wet, subrounded, quartz and feldspar, medium to very coarse.	0	$\frac{3.1}{4.0}$			
	43						
	44	Color change to grayish orange (10TK7/4).	0			1013	
	45						
	46		0	$\frac{3.2}{4.0}$			
	47						
	48		0			1026	
	49	Color change back to dark yellowish orange (10TK6/6).	0	$\frac{2.8}{4.0}$			
	50		0		B621/ Gwdc 49-51'		110



# HTW DRILLING LOG

HOLE NO. *B62*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET OF *17* SHEETS

ELEV. <small>a</small>	DEPTH <small>b</small>	DESCRIPTION OF MATERIALS <small>c</small>	FIELD SCREENING RESULTS <small>d</small>	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. <small>f</small>	BLOW COUNTS <i>Time</i>	REMARKS <small>h</small>
	51	Sand, dark yellowish orange (67% $\phi$ ), soft, non-plastic with subrounded, medium to very coarse, quartz and feldspar.		3.8/4.0			
	52		C			1042	
	52		0	0.3/0.3			
	53	TP = <del>52.7</del> <sup>52.3</sup> at 1052. Refusal. No bedrock recovery.					
	54						
	55						
	56						



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PROJECT *DCFA*

HOLE NO. *B62*

# HTW DRILLING LOG

 HOLE NO. **B622**

1. COMPANY NAME <b>B/MC</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 7 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ruf Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATU</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" macrocore with acetate sieves</b>		8. HOLE LOCATION <b>N. 4325797.810 E. 69114.828</b>					
		9. SURFACE ELEVATION <b>321.958</b>					
		10. DATE STARTED <b>6-2-02</b>		11. DATE COMPLETED <b>6-24-02</b>			
		12. OVERBURDEN THICKNESS <b>50.6</b>					
13. DEPTH DRILLED INTO ROCK <b>0.1</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>22.4</b>				
14. DEPTH OF HOLE <b>50.7</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			18. GEOTECHNICAL SAMPLES				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b> Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Ruf Martin</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	1	Sandy, pale yellowish brown (very light), soft, non-plastic, damp fine to very fine	0			1842	
	2		0		3.7 / 4.0		
	3		0				
	4		0				1843
	5		d		3.4 / 4.0		


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 PROJECT **DCFA**

 HOLE NO. **B622**



# HTW DRILLING LOG

HOLE NO. *B622*

PROJECT *DLFA*

INSPECTOR *Rick Monk*

SHEET *2*  
OF *2* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	<i>Sandy, pale yellowish brown (10466/2), soft, non plastic, damp, fine to very fine</i>	0	$\frac{34}{40}$			
	7						
	8		0			1044	
	9		0				
	10		0	$\frac{36}{40}$			
	11	<i>1/2" of thinly bedded fine sand and clayey silt.</i>	0				
	12					1045	
	13	<i>Sand, grayish orange (10477/2), soft, non plastic, damp, fine to medium.</i>	0	$\frac{37}{40}$			
	14		0				



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PROJECT *DLFA*

HOLE NO. *B622*

# HTW DRILLING LOG

HOLE NO. **B622**

PROJECT **DLFA**

INSPECTOR **Rich Mont**

SHEET OF **33** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Temp</i>	REMARKS h
	15	Silty clay, dusky yellowish brown (10PR2/2), moderately soft, slightly plastic, damp		3.7/4.0			
	16	Sandy, grayish orange (10PR6/A), soft, non plastic, damp, fine to medium	0			1650	
	17		0				
	18		0	3.7/4.0			
	19	2" clear silt, grayish brown (5PR3/2), soft, slightly plastic, damp					
	20	Sand becomes medium to coarse, subrounded. Very	0			1855	
	21		0				
	22		0	3.3/4.0			
	23	Becomes wet					▼

# HTW DRILLING LOG

HOLE NO. *B622*

PROJECT

*DLFA*

INSPECTOR

*Rick Monk*

SHEET *4*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp g	REMARKS h
	<i>24</i>	<i>Sand, greenish orange (10/22/04), with non-plastic, med, medium to very coarse grained, sub-rounded, quartz and feldspar.</i>	<i>0</i>	<i>3.3 / 4.0</i>	<i>Pic 22 / 23-25</i>	<i>1104</i>	<i>1456</i>
	<i>25</i>		<i>0</i>				
	<i>26</i>		<i>0</i>	<i>3.9 / 4.0</i>			
	<i>27</i>		<i>0</i>				
	<i>28</i>		<i>0</i>			<i>1110</i>	
	<i>29</i>		<i>0</i>				<i>Begin direct sampling.</i>
	<i>30</i>		<i>0</i>	<i>1.7 / 4.0</i>			
	<i>31</i>		<i>0</i>				
	<i>32</i>		<i>0</i>			<i>1121</i>	
				<i>0 / 4.0</i>			



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PROJECT

*DLFA*

HOLE NO.

*B622*

# HTW DRILLING LOG

HOLE NO. *B622*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *85*  
OF *85* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	<i>No recovery</i>					
	34			<i>0.0</i> <hr/> <i>4.0</i>			<i>No recovery</i>
	35						
	36				<i>B622</i> <i>GW01P</i> <i>35-37</i>	<i>1135</i>	<i>1440</i>
	37	<i>Sand, grayish orange (w/lt 7/4), soft, non-plastic, wet, medium to very coarse grained, sub-rounded, quartz and feldspar.</i>	<i>0</i>				
	38	<i>Sand, dark yellowish orange (10YR 6/6), soft, non-plastic, wet, medium to very coarse, sub-rounded, quartz and feldspar.</i>	<i>0</i>	<i>3.7</i> <hr/> <i>4.0</i>			
	39						
	40	<i>Sand, grayish orange (w/lt 7/4), soft, non-plastic, wet, medium to very coarse, sub-rounded, quartz and feldspar.</i>	<i>0</i>			<i>1148</i>	
	41		<i>0</i>	<i>2.3</i> <hr/> <i>4.0</i>			



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PROJECT *DCFA*

HOLE NO. *B622*

# HTW DRILLING LOG

HOLE NO. *B622*

PROJECT

*DCFA*

INSPECTOR

*Rick Mink*

SHEET *6*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS <i>TRAC</i>	REMARKS h
	<i>42</i>	<i>Sandy, granish orange (10-15) 7/8, soft, non-plastic, wet, medium to very coarse, subrounded, quartz and feldspar.</i>	<i>0</i>	<i>23</i> <hr/> <i>46</i>			
	<i>43</i>						
	<i>44</i>		<i>0</i>			<i>120.3</i>	
	<i>45</i>		<i>0</i>				
	<i>46</i>		<i>0</i>	<i>25</i> <hr/> <i>40</i>			
	<i>47</i>						
	<i>48</i>		<i>0</i>			<i>121.7</i>	
	<i>49</i>		<i>0</i>	<i>1.8</i> <hr/> <i>27</i>	<i>B622</i> <i>Sample</i> <i>48-50'</i>		<i>1420</i>
	<i>50</i>		<i>0</i>				

# HTW DRILLING LOG

HOLE NO. *0622*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *7*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. i	BLOW COUNTS <i>None</i>	REMARKS h
		<del>limestone, medium gray, strong</del>					<del>1" of clay silt on top, dark yellowish brown, soft</del>
	<i>51</i>	<i>TD = 56.7 at 1228.</i>		<i>slightly plastic</i>			



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PROJECT *DCFA*

HOLE NO. *0622*

# HTW DRILLING LOG

 HOLE NO. **B623**

1. COMPANY NAME <b>BMCB</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geonrobo 5400 AT1</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core with acetate sleeves		8. HOLE LOCATION <b>N. 4325797.810 E 691114.828</b>			
				9. SURFACE ELEVATION <b>321.958</b>			
				10. DATE STARTED <b>6-24-02</b>		11. DATE COMPLETED <b>6-29-02</b>	
				12. OVERBURDEN THICKNESS <b>48.3</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>18.7 WBM NA</b>	
13. DEPTH DRILLED INTO ROCK <b>0-1</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>48.4</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		✓	NA	NA	NA	NA	
22. DISPOSITION OF HOLE <b>Restoration</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rich Port</b>		
		✓	NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BELOW COUNTS g (NA)	REMARKS h
	1	Sandy, pale yellowish brown (CGR6/S), soft, non-plastic, clay, fine to very fine.	0			1542	
	2		0	3.6" 7.0			
	3		0				
	4		0			1542	
	5	1" silty clay, dusky brown	0	4.0/4.0			

# HTW DRILLING LOG

HOLE NO. *1623*

PROJECT *DLFA*

INSPECTOR *Rick Mark*

SHEET *2*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Tu. g</i>	REMARKS h
	6	<i>Sand, pale yellowish brown (10YR6/2), soft, non plastic, damp, fine to very fine.</i>	0	$\frac{4.0}{4.0}$			
	7						
	8		0			1544	
	9		0				
	10		0	$\frac{3.7}{4.0}$			
	11						
	12		0			1548	
	13		0				
	14	<i>Sand, grayish orange (10YR 7/4), soft, non plastic, damp, fine to medium</i>	0	$\frac{3.7}{4.0}$			



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PROJECT *DLFA*

HOLE NO. *1623*



# HTW DRILLING LOG

HOLE NO. **B623**

PROJECT: **DLFA**

INSPECTOR: **Rick Monk**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand, grayish orange (1070.714), soft, non-plastic, damp, fine to medium.	0	Recovery $\frac{3.7}{4.0}$		1549	
	16		0				
	17		0				
	18		0	$\frac{3.6}{4.0}$			▼
	19	Sandy, light brownish gray (1580.611), soft, non-plastic, wet, fine to medium.	0			1552	
	20						Boyan discrep sampling.
	21			$\frac{0.0}{4.6}$	B623 GMA 20-21		OK  No recovery.
	22						
	23						

# HTW DRILLING LOG

HOLE NO. *B623*

PROJECT *DCFA*

INSPECTOR *Rick Mark*

SHEET *4* OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	24	<i>Same as above</i>	0	<i>0.0/4.0</i>		<i>1612</i>	
	25		0				
	26		0	<i>2.1/4.0</i>			
	27	<i>2" of medium to coarse grained silty sand, brownish gray (5704/1), soft, non-plastic, wet. Sand is fine to very fine</i>	0			<i>1614</i>	
	28		0				
	29		0				
	30		0	<i>2.0/4.0</i>			
	31	<i>Sandy light brownish gray (5704/1), soft, non-plastic, wet, medium to very coarse, sub- rounded, quartz and feldspar.</i>	0			<i>1628</i>	
	32						



# HTW DRILLING LOG

HOLE NO. *B623*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *X5*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Relativity</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T <sub>200</sub> g	REMARKS h
	33	<i>Same as above</i>	0				
	34		0	$\frac{23}{46}$			
	35	<i>Sandy, dark yellowish orange (WPC/G), soft, non-plastic, wet, medium to very coarse, trace of 1/4-3/8" gravel, subrounded, quartz and feldspar.</i>			<i>B623/ G401B 34-36'</i>		<i>CB16</i>
	36		0			<i>1641</i>	
	37		0				
	38		0	$\frac{20}{40}$			
	39		0				
	40	<i>Sand, grayish <del>orange</del> orange (WPC/G), soft, non-plastic, wet, medium to very coarse, subrounded, quartz and feldspar.</i>	0			<i>1657</i>	
	41		0	$\frac{2.0}{4.0}$			



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PROJECT

*DCFA*

HOLE NO.

*B623*

# HTW DRILLING LOG

HOLE NO. *B623*

PROJECT *DCFA*

INSPECTOR *Rick Meek*

SHEET *8* OF *8* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>5-10</i>	REMARKS h
	<i>42</i>	<i>Sand, grayish orange (USR 74) soft, non-plastic, wet, medium to very coarse, sub rounded, quartz and feldspar.</i>	<i>0</i>	<i>2.0 / 4.0</i>			
	<i>43</i>	<i>Trace of 1/2" limestone and chert fragments.</i>					
	<i>44</i>		<i>0</i>			<i>1711</i>	
	<i>45</i>		<i>0</i>				
	<i>46</i>		<i>0</i>	<i>4.0 / 4.0</i>			
	<i>47</i>		<i>0</i>		<i>B623 / G401C</i>		<i>GT50</i>
	<i>48</i>	<i>Limestone, very pale brown (USR 21), mostly highly weathered</i>	<i>0</i>				
		<i>TD = 48.4' at 1723.</i>					



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PROJECT *DCFA*

HOLE NO. *B623*

# HTW DRILLING LOG

HOLE NO. **B624**

1. COMPANY NAME <b>BACD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 5400 ATV</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macrocore w/ w/ w/		8. HOLE LOCATION <b>N. 4325766.460 E. 691166.418</b>			
		acetate sleeves		9. SURFACE ELEVATION <b>320.231</b>			
				10. DATE STARTED <b>6-25-02</b>			
				11. DATE COMPLETED <b>6-25-02</b>			
12. OVERBURDEN THICKNESS <b>42.7</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>16.5</b>				
13. DEPTH DRILLED INTO ROCK <b>0.0</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>42.7</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
		<b>✓</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Recovery to</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Roub</b>		
		<b>✓</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sandy, pale yellowish brown (w/ 1/8" / 2" soft, non-plastic, damp fine to medium)	C			0938	
	2		C	39	41		
	3		C				
	4		C				0939
	5		C		17/4.0		

# HTW DRILLING LOG

HOLE NO. **B624**

PROJECT **DLFA**

INSPECTOR **Rick Kent**

SHEET OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GESTECH SAMPLE OR CORE BOX NO. <del>OR CORE BOX NO.</del> Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <del>COUNTS</del> Time	REMARKS h
	6	Sand, pale yellowish brown (UVR6/2), soft, non-plastic, dry, fine to medium.	0	1.7 — 4.0			
	7		0				
	8		0			0941	
	9		0				
	10	Silty clay, grayish brown (SVR 3/2), soft, moderately plastic, damp.	0	4.0 — 4.0			
	11	Sandy grayish orange (UVR 7/4), soft, non-plastic, moist, medium to very coarse, sub rounded, quartz and feldspar, trace of 1/8 - 3/8 gravel.	0			0946	
	12		0				
	13		0	3.2 — 4.0			
	14		0				



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PROJECT **DLFA**

HOLE NO. **B624**

# HTW DRILLING LOG

HOLE NO. **B624**

PROJECT **DCEA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	Sand, light brownish gray (5YR6/1), soft, non-plastic wet, medium to very coarse, subrounded, quartz and feldspar.	0	3.2 / 4.0			
	16		0			0451	
	17		0				Begin discreet sampling ▼
	18		0 <del>1.3</del> <del>4.0</del>	1.3 / 4.0			
	19	Silty sand, brownish gray (5YR4/1), soft, non-plastic wet, sand is fine to very fine.	0		B624/ JW01A 18-20'		1230
	20	Sandy, brownish gray (5YR4/1), soft, non-plastic wet, fine to medium.	0			1000	
	21		0				
	22		0	1.2 / 4.0			
	23		0				



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PROJECT **DCEA**

HOLE NO. **B624**

# HTW DRILLING LOG

HOLE NO. **B624**

PROJECT **DCFA**

INSPECTOR **Rick Mont**

SHEET **4**  
OF **8** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	SOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	24	Sand, granish orange (10 PR 7/4) soft, non-plastic, wet, medium to very coarse, some 1/2" gravel, subrounded, quartz and feldspar.	0	1.2/4.0		1011	
	25		0				
	26		0	2.4 4.0			
	27	<del>Sand</del> , Sand, dark yellowish orange (10 PR 6/6) soft, non-plastic wet, medium to very coarse trace of 1/2" gravel, sub-rounded quartz and feldspar.	0			1024	
	28		0		B624/ G601B 2830'		1.218
	29	Sand, pale yellowish brown (10 PR 6/2) soft, non-plastic, wet, fine to very fine					
	30	Sand, dark yellowish orange (10 PR 6/6) soft, non-plastic, wet, medium to very coarse, trace of 1/2" gravel.	0	2.8 4.0			
	31	Sand, granish orange (10 PR 7/4) soft, non-plastic, wet, medium to very coarse, trace of 1/2" gravel, subrounded, quartz and feldspar.	0				
	32	Color change back to dark yellowish orange. (1")	0			1038	
			0	2.3/4.0			



051601  
Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B624**



# HTW DRILLING LOG

HOLE NO. *B624*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *5*  
OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	33	<i>Sand, grayish orange (10/22/4) with non-plastic wet, medium to very coarse, trace of 1/2" gravel, subrounded, quartz and Rd. spars.</i>					
	34		0	$\frac{23}{40}$			
	35						
	36		0			10.52	
	37		0				
	38		0	$\frac{27}{40}$			
	39						
	40		0			11.05	
	41	<i>2" class silty fine yellowish brown, soft, non-plastic wet</i>	0	$\frac{23}{27}$	<i>B624/ GWB16 <del>40</del> 42</i>	<i>37-34</i>	1157



051601  
Form MRK-55-2

PROJECT *DCFA*

HOLE NO. *B624*

# HTW DRILLING LOG

HOLE NO. *B624*

PROJECT *DCFA*

INSPECTOR *Rich Monk*

SHEET *A* OF *6* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Time</i>	REMARKS h
	42	<i>Same as above</i>	0	<i>23</i> <hr/> <i>27</i>			
		<i>Silt clay, moderate yellowish brown (10% S<sub>4</sub>), slightly hard and moderately plastic. Moist.</i>					
	43	<i>TD = 42.7' at 1116. Refused to penetrate recovery.</i>					



# HTW DRILLING LOG

 HOLE NO. **B625**

1. COMPANY NAME <b>BACD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 5 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Island</b>		
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprodic 66AT</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" macro core sampler with acetate sleeves		8. HOLE LOCATION <b>N. 4325732.820 E. 691217951</b>	
				9. SURFACE ELEVATION <b>319.190</b>	
				10. DATE STARTED <b>5-29-02</b>	
				11. DATE COMPLETED <b>5-29-02</b>	
12. OVERBURDEN THICKNESS <b>37.2'</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>7.4'</b>		
13. DEPTH DRILLED INTO ROCK <b>B</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>37.2'</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<b>water</b>	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Abandonment</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>Rich Hank</b>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Sand, pale yellowish brown (16 YR 6/2), soft, non-plastic, med. to coarse grained, subrounded.	0	2.2 / 4.0			0867-Begin probing
	2		0				
	3		0				
	4		0			0808	
	5		0	2.7 / 4.0			



051601 Form MRK -55

 PROJECT **DCFA**

 HOLE NO. **B625**

# HTW DRILLING LOG

HOLE NO. **B625**

PROJECT **DCFA**

INSPECTOR **RICK MONT**

SHEET **2**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6		0	$\frac{2.7}{4.0}$			
	7	Silty sand, grayish brown (STR 3/2), soft, non-plastic, moist. Sand is medium grained.					▼
	8	Sand, dark yellowish orange (WYR 6/6), soft, non-plastic, moist to wet, medium to very coarse grained, sub-rounded.	0			0812	
	9		0		B 625/ GW01A 8-10'		11C
	10		0	$\frac{2.3}{4.0}$			
	11	— becomes wet.	0				
	12		0			0816	Begin direct sampling.
	13		0	$\frac{6.9}{9.0}$			
	14		0				



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B625**

# HTW DRILLING LOG

HOLE NO. **B625**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	SLOW COUNTS TIME g	REMARKS h
	15	Sand, dark yellowish orange (104R6/6), soft, non-plastic, wet, medium to very coarse grained, sub rounded.	0	1.9/4.0			
	16	Sand, multicolored clear, green, reddish, soft, non-plastic, coarse to very coarse grained, wet, sub rounded, trace of $\frac{1}{4}$ - $\frac{1}{2}$ " gravel.	0			0834	
	17	Sand, dark yellowish brown (104R4/2), soft, non-plastic, wet, fine to coarse grained, sub rounded.	0	2.1/4.0			
	18		0				
	19		0				
	20	4" fine to very fine sand.	0			0846	
	21	Sand, coarse to very coarse, clear, green, red, soft, non-plastic, wet, sub rounded.	0	2.4			
	22		0				
	23		0		B625/ G401B 22-24'		0857

# HTW DRILLING LOG

HOLE NO. **B625**

PROJECT **DLFA**

INSPECTOR **Rock Monk**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	24	Sand, clear, green, red, coarse to very coarse, soft, non-plastic, subrounded, wet.	0	2.4 / 4.0		0908	
	25		0	2.1 / 4.0			
	26		0				
	27						
	28	3" fine sand, (10 YR 5/4)	0			0930	
	29		0				
	30		0	1.3 / 4.0			
	31						
	32		0			0948	
				2.7 / 4.0			



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PROJECT **DLFA**

HOLE NO. **B625**

# HTW DRILLING LOG

HOLE NO. **B625**

PROJECT **DCFA**

INSPECTOR **Rock McK**

SHEET **5**  
OF **5** SHEETS

ELEV. <small>a</small>	DEPTH <small>b</small>	DESCRIPTION OF MATERIALS <small>c</small>	FIELD SCREENING RESULTS <small>d</small>	GEOTECH SAMPLE OR CORE BOX NO. <small>e</small> <i>Recovery</i>	ANALYTICAL SAMPLE NO. <small>f</small>	BLOW COUNTS <small>g</small> <i>True</i>	REMARKS <small>h</small>
	33	Sand, grayish orange (10# 7/4), soft, non-plastic, wet, fine to medium grained.	0	$\frac{2.7}{4.0}$			
	34		0				
	35						
	36	Becomes medium to very coarse grained. Trace of gravel.	0		B625/ GWHC, DICCA, INC. 3436'	1667	
	37	No bedrock recovery.	0	$\frac{0.2}{1.2}$			1025
	38	TD = 37.2' bps					
	39						
	40						
	41						



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **B625**

# HTW DRILLING LOG

HOLE NO. **SB626**  
SHEET 1 OF 6 SHEETS

1. COMPANY NAME <b>Burns &amp; McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>				
3. PROJECT <b>USFRDCFA</b>		4. LOCATION <b>Island</b>				
5. NAME OF DRILLER <b>Ryan Weiser</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 66DT</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	2" macrocore with acetate sleeves		8. HOLE LOCATION <b>N. 4325700.360 E. 691269.716</b>			
			9. SURFACE ELEVATION <b>320.669</b>			
			10. DATE STARTED <b>5-28-02</b>			
			11. DATE COMPLETED <b>5-28-02</b>			
12. OVERBURDEN THICKNESS <b>42'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>10.25</b>				
13. DEPTH DRILLED INTO ROCK <b>0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>42'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA %</b>
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>Bentonite</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Monk</b>		
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Temp	REMARKS h
	1	Sand, grayish orange (WTR 7/4), soft, non-plastic, moist, fine to medium.	0	2.2 / 4.0			1247 - began probing
	2		0				
	3		0				
	4		0			1248	
	5		0		3.0 / 4.0		



# HTW DRILLING LOG

 HOLE NO. **SB626**

 PROJECT **DCFA**

 INSPECTOR **Rick Mont**

 SHEET **2**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g T: 4 f	REMARKS h
	6	Sand, dusky brown (STRAY) very soft, non plastic, wet, very fine. Some fines.	0				RM
	7						
	8		0			1252	
	9		0				
	10		0	25 40			
	11				SB626/ G4A 10-12'		1656
	12		0			1258	
	13		0	0.5 40	<del>SB626/ G4A 12-14'</del>	1650	Switch to discreet sampler
	14		0				

# HTW DRILLING LOG

HOLE NO. **SB626**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS Time g	REMARKS h
	15	<i>Same as above</i>					
	16	<i>Sand, clear and grayish brown (5YR 3/2), medium to very coarse, soft, non-plastic, wet, sub rounded. Few green and reddish grains.</i>	0			1330	
	17		0	0.5 4.0			
	18		0	1.2 4.0			
	19		0				
	20		0			1350	
	21	<i>Sand, light brownish gray (5YR 6/1), soft, non-plastic, wet, fine to very coarse, sub rounded.</i>	0				
	22		0	1.7 4.0	<i>SB626 GW 01B 2127</i>		1630
	23		0				



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PROJECT

**DCFA**

HOLE NO.

**SB626**

# HTW DRILLING LOG

 HOLE NO. **SB626**

 SHEET **07**  
OF SHEETS

PROJECT		INSPECTOR			SHEET OF SHEETS		
DCFA		Rick Mont			07		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. RECOVERY	ANALYTICAL SAMPLE NO. f	FLOW COUNTS g	REMARKS h
		same as above	0	5/4.0		1407	
	24		0				
	25	Sand, light brown (SP/S/G), soft, non-plastic, wet, medium to very coarse grained, subrounded, trace of 1/4" gravel.	0	2.5 4.0	<del>SB626</del> <del>GW B</del> 25-26		1630
	26		0				
	27		0				
	28		0			1418	
	29		0				
	30		0	2.7 4.0			
	31		0				
	32		0			1431	
			0	1.9/4.0			


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PROJECT

DCFA

HOLE NO.

SB626

# HTW DRILLING LOG

HOLE NO. **SB626**

PROJECT **DCFA**

INSPECTOR **Kirk Monk**

SHEET OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	33	Sand, light brown (54% SL), soft, non-plastic, wet, medium to very coarse grained, subrounded, trace of $\frac{1}{8}$ " gravel.	0				
	34		0	$\frac{6.9}{4.0}$			
	35		0				
	36		0				1510
	37		0	$\frac{3.2}{4.0}$			
	38		0				
	39		0				
	40		0			1528	
	41	Clayey silt, pale yellowish brown, soft, moderately plastic, wet.	0	$\frac{2.0}{2.0}$	SB626/ GWCIC 37-38'		1611



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Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **SB626**

# HTW DRILLING LOG

HOLE NO. **SB626**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4 E**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Clayey silty, pale yellowish brown (10 YR 6/2), soft, moderately plastic, wet.	0	2.0/2.0			
	43	TD = 42' at 1546					Prof 34 mi 11 slot for water samples wL = 10.25' bgs.
	44						
	45						
	46						
	47						
	48						
	49						
	50						



051601  
Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **SB626**

**700-Series Borehole Logs  
Former Building 183**

# HTW DRILLING LOG

 HOLE NO. **B701**

1. COMPANY NAME <b>BMCO</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 3 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 183</b>			
NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe G6DT</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" Macro core with acetate sleeves		8. HOLE LOCATION		
				9. SURFACE ELEVATION <b>1107.7 - concrete slab</b>		
				10. DATE STARTED <b>5-22-02</b>		
				11. DATE COMPLETED <b>5-22-02</b>		
12. OVERBURDEN THICKNESS <b>14.6 6.6 WBM</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>			
13. DEPTH DRILLED INTO ROCK <b>6.4</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>15.0</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)
		✓	NA	NA	NA	NA
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Shantz</b>	
✓		NA	NA			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME	REMARKS h
		Concrete					0507 - begin probing
	1	Sand, dark yellowish orange, (CPT 6/6), soft, non-plastic, moist, fine to very fine grained.	0	3.7 4.0			1
	2						2
	3		14.6		B701/ SB01 2-3'		0812 3
	4	Clayey sand, dark moderate yellowish brown (CPT 5/4), soft slightly plastic, moist	8.2			0810	4
	5		7.1	3.4 4.0			5
			15.6		B701/ SB02-56		0816

# HTW DRILLING LOG

HOLE NO. **B701**

PROJECT **D CFA**

INSPECTOR **Rick Mark**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>R-100114</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Tip</i>	REMARKS h
	6						
	7	Limestone, weathered, very weak, grayish orange (10YR7/4) some fine sands, dark yellowish orange (10YR6/6).	10.1	$\frac{3.4}{4.0}$	B701/ SB02576	0814	
	8						
	9						
	10	Limestone, weathered, medium light gray, top 2" layers of strong and crumbled.		$\frac{2.7}{4.0}$			
	11		346		B701/ SB03, 11-12	0821	0823
	12						
	13		16.8	$\frac{2.3}{3.0}$	B701/ SB03, 13-14		0829
	14						



# HTW DRILLING LOG

HOLE NO. *B701*

PROJECT

*DLFA*

INSPECTOR

*Rock Monk*SHEET *3*  
OF *3* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	<i>15</i>	<i>Shale, pale red (SR612), moderately strong, brittle.</i>					<i>Bedrock</i>
		<i>TD=15' at 0827</i>					<i>End Time=0829</i>

*15*051601  
Form MRK-55-2

PROJECT

*DLFA*

HOLE NO.

*B701*

# HTW DRILLING LOG

 HOLE NO. **B702**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET <b>3</b> OF <b>3</b> SHEETS			
3. PROJECT <b>DCFA</b>			4. LOCATION				
NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 66DT</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2" Macrocore with dentate sleeves.</b>		8. HOLE LOCATION <b>Bldg 183</b>		9. SURFACE ELEVATION <b>1107.7 - Concrete Slab</b>			
		10. DATE STARTED <b>5-22-02</b>		11. DATE COMPLETED <b>5-22-02</b>			
		12. OVERBURDEN THICKNESS <b>at 7.2 WBM</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>at 12.8 WBM</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
14. DEPTH OF HOLE <b>20.0</b>		18. GEOTECHNICAL SAMPLES <b>NA</b>		20. SAMPLES FOR CHEMICAL ANALYSIS			
		DISTURBED		UNDISTURBED			
		VOC <input checked="" type="checkbox"/>		METALS <b>NA</b>			
				OTHER (SPECIFY) <b>NA</b>			
				OTHER (SPECIFY) <b>NA</b>			
				OTHER (SPECIFY) <b>NA</b>			
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>		MONITORING WELL			
				OTHER (SPECIFY) <b>NA</b>			
				23. SIGNATURE OF INSPECTOR <b>Rich Shank</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS <b>Accuracy</b>	GEOTECH SAMPLE OR CORE BOX NO. <b>Recovery</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>TRMP</b>	REMARKS h
		Concrete					0838 - Began probing.
	1	Silty sand, dark yellowish orange (10 YR 6/6), soft, non-plastic, dry to damp	0 <u>3.6</u> 4.0	3.6 4.0			
	2	Soft, moderate yellowish brown (10 YR 5/4), soft, non-plastic, dry to damp. Trace of very fine sand	0				
	3						
	4		0		B702 / SB01 / SPECIM A / SB01 3-4	0842	0844
	4		4.0		B702 / SB02 4.5		0858
	5	Sand, grayish orange (10 YR 7/6), soft, non-plastic, moist		3.5 4.0			

# HTW DRILLING LOG

HOLE NO. **B 702**

PROJECT **DLFA**

INSPECTOR **Rick Mark**

SHEET **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS TIME g	REMARKS h
	6	Sand, grayish orange (10TR 7/4) soft, non-plastic, moist.	3.0	Recovery			
	7	Silty clay, dark yellowish brown (10TR 4/2), moderate soft, slightly plastic, damp.					
	8	Limestone, weathered, light gray, brittle, weak.	3.9				
	9	0					
	10	0		3.2 4.0	B702/ SB03 A-10		0902
	11						
	12	0					
	13	SAME AS ABOVE					0900
	14	Clayey silt, pale yellowish brown, (10TR 6/2), soft to very soft, moderately plastic, moist.					

# HTW DRILLING LOG

HOLE NO. **B702**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **3** SHEETS

DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	BESTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
15	Clayey silt, pale yellowish brown (10YR 6/4), soft to very soft, moderately plastic, moist.	20.2	33 <del>4.0</del>	B704 SB04	0908	15-16'
16		0				
17						
18	Clayey silt, pale olive (10Y 6/2), moderately hard, non-plastic, dry to damp	1.0	3.6 4.0	B704 SB05 18-19'		0920
19	Shale, grayish red (5R 4/2), weak, slightly weathered.	0				
20						
	TD=20' at 0918.					End Time = 0920

# HTW DRILLING LOG

HOLE NO. **B703**

1. COMPANY NAME **Burns & McDonnell**      2. DRILLING SUBCONTRACTOR **EPS**      SHEET 1 OF 3 SHEETS

3. PROJECT **DCFA**      4. LOCATION **Bldg 183**

5. NAME OF DRILLER **Pat Martin**      6. MANUFACTURER'S DESIGNATION OF DRILL **Geoprobe G6DT**

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT  
 2" Macrocore with acetate sleeves

8. HOLE LOCATION

9. SURFACE ELEVATION **1107.7 Concrete Slab**

10. DATE STARTED **5-21-02**      11. DATE COMPLETED **5-21-02**

12. OVERBURDEN THICKNESS **14**      15. DEPTH GROUNDWATER ENCOUNTERED **NA**

13. DEPTH DRILLED INTO ROCK **6.7**      16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED **NA**

14. DEPTH OF HOLE **20.7**      17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES **NA**      DISTURBED      UNDISTURBED      19. TOTAL NUMBER OF CORE BOXES **0**

20. SAMPLES FOR CHEMICAL ANALYSIS

VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA%</b>

22. DISPOSITION OF HOLE **Bentonite**

BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<i>Rich Monks</i>

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Tamp	REMARKS h
	1	Concrete	0				1417 - began probing
	2	Sand, dark yellowish brown (10YR 4/2), soft, non-plastic, damp, fine to very fine grained.	0	290 40			
	3	Sand, dark yellowish orange (10YR 6/6), soft, non-plastic, damp, fine to very fine grained.	0		B703/ SB01, SB11, SB01Q	2-3'	(1424)
	4	Sand with little fines, grayish brown (5YR 3/2), soft, non to slightly plastic, moist.	0			0420	
	5		0	38 40	B703/ SB02 5-6'		1438
			76				

# HTW DRILLING LOG

HOLE NO. **B 703**

PROJECT **OCFA**

INSPECTOR **Rick Monk**

SHEET # **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	Sand with little fines, grayish brown (S <sub>1</sub> R <sub>2</sub> 1/2), soft, non to slightly plastic moist.					
	7		37				
	8	Sand with little fines, darker yellowish brown (C <sub>1</sub> R <sub>2</sub> 2/2), soft, non-plastic moist.				1434	
	9	Color change to dark yellowish orange (10+R <sub>6</sub> 6)	21 9.7		B703/ SB03 8-9'	1448	
	10		1.7	3.7 4.0			
	11				<del>R<sub>8</sub>A B703/ SB03 11-12'</del>		
	12		9.7 2.1			1448	
	13	Becomes gravelly (1/4"-1/2" limestone)		4.0 4.0			
	14	Limestone, medium gray, strong.	59		B703/ SB04	1445'	1456



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PROJECT **OCFA**

HOLE NO. **B 703**

# HTW DRILLING LOG

HOLE NO. **B703**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **#3**  
OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Limestone, medium gray, becomes weathered and sandy.					
	16					1452	
	17		1				
	18		3.5				
	19		5.4		B703/ SB05 18-19'		1503
	20		6.6			<del>1503</del> 1501	
			$\frac{1.1}{1.5}$	$\frac{1.1}{1.5}$	B703/ SB116		1513
	21	TD = 20.7' at 1510 Refusal on limestone.			20-21'		End Time = 1513
	22						
	23						



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Form MRK-55-2

PROJECT

**DLFA**

HOLE NO.

**B703**

# HTW DRILLING LOG

HOLE NO. **SB 704**

1. COMPANY NAME <b>B.M.C.D.</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 3 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Bldg 183</b>				
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>GeoProbe 66 DT</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>2 1/2" mudocore sampler with aquata sleeves.</b>		8. HOLE LOCATION			9. SURFACE ELEVATION <b>1107.1 - Concrete Slab</b>		
		10. DATE STARTED <b>5-21-02</b>		11. DATE COMPLETED <b>5-21-02</b>			
		12. OVERBURDEN THICKNESS <b>22.4</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>		
		13. DEPTH DRILLED INTO ROCK <b>0.8</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>		
14. DEPTH OF HOLE <b>23.2</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	
21. TOTAL CORE RECOVERY <b>NA %</b>							
22. DISPOSITION OF HOLE <b>Bentonite</b>		BACKFILLED <input checked="" type="checkbox"/>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR <b>Robt. Munk</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
		<b>Concrete</b>	0				<b>1305 - Bayan probing</b>
	1	<b>Sand, moderate yellowish brown (5YR 5/4), soft, non-plastic, damp</b>	0	2.9			
	2	<b>Silty c (ay), brownish black (5YR 2/1), soft, non-plastic, dry to damp.</b>	0	3.0	<b>SB704/1-2</b>		<b>1310</b>
	3						
	4	<b>Becomes very soft</b>	0			<b>1307</b>	
	5	<b>NO Recovery 4-8' Hole is still open</b>					



# HTW DRILLING LOG

HOLE NO. **SB704**

PROJECT **DLAA**

INSPECTOR **Rick Monk**

SHEET # **2**  
OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	DETECT SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	<p><b>NO RECOVERY</b> <b>4-8'</b></p>					
	7						
	8	<p><b>No recovery 8-12'.</b> <b>hole is open to 12'.</b></p>	—	—	—	<b>1312</b>	
	9						
	10						
	11						
	12	<p><b>Sand, moderate yellowish brown (NTR 5/4), fine to very fine grained, soft, non-plastic, moist.</b></p>	0			<b>1318</b>	
	13		3.5 <hr/> 4.0		<b>B704/SB04</b> <del>SB704</del> <b>1314</b>	<b>1325</b>	
	14		0				



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PROJECT **DLAA**

HOLE NO. **SB704**

# HTW DRILLING LOG

HOLE NO. *SB704*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET # *3*  
OF *3* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS T. 81 P	REMARKS h
	15	<i>Sand with gravel, dark yellowish orange (4R6/6), fine to very fine grained, soft, non-plastic, damp. Gravel is 3/8" - 1/2" limestone.</i>					
	16					<i>1322</i>	<i>~~~~~</i>
	17		<i>0</i>	<i>26 40</i>	<i>B704/ SB05 17-18</i>		<i>1221</i>
	18		<i>0</i>				
	19	<i>2" Limestone.</i>					
	20		<i>0</i>			<i>1330</i>	
	21	<i>Clayey silt, grayish brown (5R3/2), with 1/4" - 1" gravel, soft, slightly plastic, damp.</i>	<i>0</i>				
	22				<i>B704/ SB06 21-22</i>		<i>1400</i>
	23	<i>Shale, grayish red (5R4/2), weathered, brittle.</i>	<i>0</i>				
		<i>TD = 23.2' at 1357</i>					<i>End Time 1357</i>

# HTW DRILLING LOG

HOLE NO. **SB705**

1. COMPANY NAME <b>BMLD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 4 SHEETS	
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Blkg 1B3</b>		
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 66DT</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" Macrocore with acetate sleeves		8. HOLE LOCATION	
				9. SURFACE ELEVATION <b>1107.7 - concrete slab</b>	
				10. DATE STARTED <b>5-21-02</b>	
				11. DATE COMPLETED <b>5-21-02</b>	
12. OVERBURDEN THICKNESS <b>25.4</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>			
13. DEPTH DRILLED INTO ROCK <b>0.4</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>25.8</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>
22. DISPOSITION OF HOLE <b>Dentonite</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Hank</b>
<input checked="" type="checkbox"/>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. Recovery	ANALYTICAL SAMPLE NO. i	BLOW-COUNTS To mp	REMARKS h
		Sand, Concrete.	0				1025 - began probing.
	9	Sand, dark yellowish brown (10/20/40), soft, non-plastic, damp.		3.0 4.0	SB705/0-1	1027	
	1	clayey silt, grayish brown (5/16 3/2), soft, non-plastic, damp.					
	2	silty clay, light olive gray (5/16 1), soft, non-plastic, damp.	0				
	3						
	4		0			1026	
	5		0	3.4 4.0			



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Form MRK -55

PROJECT

**DCFA**

HOLE NO.

**SB705**

# HTW DRILLING LOG

HOLE NO. *SB 705*

PROJECT

*DLCA*

INSPECTOR

*Rock Meek*

SHEET OF *2* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time T. 90e	REMARKS h
	6	<i>Silty clay, light olive gray (STR 6/1), soft, non-plastic, damp</i>	0				
	7	<i>Slightly clayey, slightly sandy silt, dusky brown (STR 2/2), soft, non-plastic, damp, sand is fine to very fine.</i>	0				
	8		0			<i>1040</i>	
	9		0	$\frac{27}{40}$			
	10		0			<i>SB 705 / 10-11</i>	<i>1052</i>
	11		0				
	12		0			<i>1050</i>	
	13		0				
	14		0				



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PROJECT

*DLCA*

HOLE NO.

*B705*

# HTW DRILLING LOG

HOLE NO. **SB705**

PROJECT **DLFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	14	Slightly clayey, slightly sandy silt, dusky brown (5 PR 2/2) soft non-plastic, damp sand is fine to very fine.	0	40 40	SB705/ 14-15		1104
	15	Sand with fines, moderate yellowish brown (10 PR 5/4), soft, slightly plastic, moist.	0			NOI	
	16		d				
	17		2	2.9 3.0			
	18	Sand, moderate yellowish brown (10 PR 5/4), soft, non-plastic, moist, fine to medium grained.	0				
	19				SB703/ 18-19		1112
	20	2" limestone, dark gray, strong	0			1109	
	21	Sandy silt with gravel, very pale orange (10 PR 8/2), soft, non-plastic, damp to dry. Limestone is dark gray and strong 1/2" - 1".	0				
	22				SB704/ 21-22		1123
	23		0				

14  
15  
16  
17  
18  
19  
20  
21  
22  
23



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PROJECT **DLFA**

HOLE NO. **SB705**

# HTW DRILLING LOG

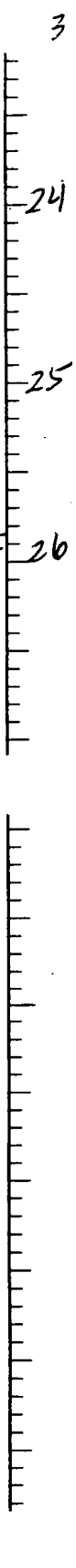
HOLE NO. *SB 705*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *4* OF *4* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	23						
	24	<i>Sand, grayish orange (10TR 7/4) Soft, non-plastic, moist</i>	0			-120	
	25	<i>Sandy silt with gravel, very fine orange (10TR 8/2), soft, non-plastic, damp. Limestone is dark gray and stringy, 1/8" - 1"</i>	0		<i>SB 705/ 2425</i>		<i>1140.</i>
		<i>Shale, grayish red (SR 4/2), weathered brittle.</i>	0				
	26	<i>TD = 25.8' at 1135</i>					<i>End Time = 1135</i>



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PROJECT *DCFA*

HOLE NO. *B 705*

# HTW DRILLING LOG

HOLE NO. **B706**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 4 SHEETS
3. PROJECT <b>DCFA</b>	4. LOCATION <b>Body 153</b>	
5. NAME OF DRILLER <b>Pat Martin</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>GeoProbe 66 DT</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>Macro core sampler with acetate sleeve</b>	8. HOLE LOCATION	
	9. SURFACE ELEVATION <b>1107.7 - concrete slab</b>	
	10. DATE STARTED <b>5-21-02</b>	11. DATE COMPLETED <b>5-21-02</b>

12. OVERBURDEN THICKNESS <b>27.5</b>	15. DEPTH GROUNDWATER ENCOUNTERED <b>NA</b>
13. DEPTH DRILLED INTO ROCK <b>1.0</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>
14. DEPTH OF HOLE <b>29.5</b>	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY %
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	

22. DISPOSITION OF HOLE <b> Bentonite</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>Rick Shanker</b>
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>Time</i>	REMARKS h
		Sand, moderate yellowish brown (SR 5/4), fine grained, soft, non plastic, moist <del>fine</del>	0	2.0 4.0	B706/5801 <del>B706/01</del> 0904		0855 - begin probing concrete 0-6" bss
	1	Silty clay, grayish brown (SR 3/2), soft, slightly brittle, non plastic, dry to damp.	0				
	2		0				
	3		0				
	4	Slightly silty clay, dusky, yellow (SR 6/4), soft, moderate to plastic, moist, few chert pebbles gravel 3/8" - 1"	0	2.9 4.0			0909
	5		0		B706/5802 56		1558

# HTW DRILLING LOG

HOLE NO. **B 706**

PROJECT		INSPECTOR			SHEET		
<b>DLFA</b>		<b>Rock Mont</b>			<b>T 2</b> OF <b>4</b> SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h
	6	Slightly silty clay, dusky yellow (5YR 6/4), soft, moderately plastic, moist, few chert gravel $\frac{1}{8}$ "-1"	0	Recovery			
	7						
	8		0			0912	0772
	9	Sand with fines, dusky brown (5YR 2/2), soft, non plastic, moist. Sand is fine grained.	0	4.0 4.0			
	10		0				
	11	Sand, moderate yellowish brown (10YR 5/4), fine grained, soft, non plastic, damp.	0		B 706/ SB03, SB13, SB03d	10-11' 0915	1600 0915
	12		0			0915	
	13				B 706/ SB04 <del>12-13</del> 13-14		1610
	14						



# HTW DRILLING LOG

HOLE NO. **B706**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **3**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS Time g	REMARKS h	
	15	Sand, moderate yellowish brown (10 PRS/4) fine grains, soft, non plastic, damp						
	16					0925		
	17			0	3.0 4.0	SB706/17A	0935	
	18			0				
	19							
	20		0			0933		
	21		0	2.6 3.0	SB706/ 21-22	0949		
	22	Clayey sand, dark yellowish orange (10 PRS 6/6), slightly stiff, moderately plastic, damp						
	23			0				



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PROJECT **DCFA**

HOLE NO. **B706**

# HTW DRILLING LOG

HOLE NO. **B 706**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **4**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. i	BLOW COUNTS Time	REMARKS h
	24	clayey sand, dark yellowish orange (10R 6/E), slightly stiff, moderately plastic, damp.	0			0948	
	25		0	40 40			1003
	26	silt, moderate yellowish brown (10YR 5/1), soft, slightly plastic, wet. Silty clay, moderate yellowish brown (10YR 5/1), soft, moderately plastic, damp.	0		<del>SB706/</del> 25-26  <del>SB706/</del>		
	27						
	28	2" limestone, medium light gray silt, grayish yellow green, (5YR 7/2), slightly weathered, moderately hard strong.	0				End time 1000
		TD = 28.5' bgs					



051601  
Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**B 706**

**800-Series Borehole Logs  
Island Extension South of UPRR**

# HTW DRILLING LOG

HOLE NO. **B801**

1. COMPANY NAME <b>BURNS + McDONNELL</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 6 SHEETS	
3. PROJECT <b>USFRDCA</b>			4. LOCATION <b>South of UPRR, West of 96-25 well</b>			
5. NAME OF DRILLER <b>PAT MARTIN</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe</b>			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		Continuous Sampling		8. HOLE LOCATION <b>N. 4326016.970 E. 690853.742</b>		
		4" Acetate Sleeve		9. SURFACE ELEVATION <b>522.255</b>		
		2" millislot PEGW		10. DATE STARTED <b>07/01/02</b>		
				11. DATE COMPLETED <b>07/01/02</b>		
12. OVERBURDEN THICKNESS <b>42</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>19 feet</b>			
13. DEPTH DRILLED INTO ROCK <b>2</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>19.1</b>			
14. DEPTH OF HOLE <b>44</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <b>✓</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	
22. DISPOSITION OF HOLE <b>NA</b>		BACKFILLED <b>Bentonite</b>	MONITORING WELL <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA %</b>	
					23. SIGNATURE OF INSPECTOR <b>W. B. McClender</b>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	GLOW COUNTS Time g	REMARKS h
	1	<b>ORGANIC</b> Silt, 7.54-7.13 pink, dry nonplastic, soft consistency	0				<b>START TIME 0905</b>
	1	Silt with organic matter 7.54-6.12 pinkish grey, dry nonplastic, soft consistency	0				
	2						
	3						
	4	Silt, 7.54-6.13, light brown, dry, nonplastic, soft consistency	0	4/4	SSI	0906	4
	5			4/4			5



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PROJECT **USFRDCA**

HOLE NO. **B801**

# HTW DRILLING LOG

HOLE NO. **B801**

PROJECT **USFRDCFA**

INSPECTOR **W B McClendon**

SHEET **2**  
OF **6** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Silt 7.5 to 6/3, light brown, dry to damp, nonplastic to place, soft consistency	0	<del>4/4</del>			
	7						
	8			<del>4/4</del>	SS2	0908	
	9	Silty sand, 10 to 7/3 very pale brown, dry, very fine grained, well sorted, subangular to rounded,	0				
	10						
	11	clay stringer	0				
	12			4/4	SS3	0912	
	13		0				
	14	SAME AS ABOVE		4/4			



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PROJECT  
**USFRDCFA**

HOLE NO.  
**B801**

# HTW DRILLING LOG

HOLE NO. **B801**

PROJECT **USFRDCFA**

INSPECTOR **W B Mc Clendon**

SHEET 1 OF 3 SHEETS 6

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand, 10gr 7/3, very pale brown, dry to damp fine to very fine, well sorted,	0	<i>Recovery</i>			
	16	clay, 10gr all, dark grey, damp medium plastic, med consistency	0	4/4	SS4	0916	
	17	Sand, 10gr 7/3, very pale brown, dry to moist, fine grained to coarse, well sorted	0				
	18						
	19	clay, 10gr all, dark grey, med plastic, med consistency, moist to wet	0				▼
	20	Sand, 10gr 7/3, very pale brown, wet, medium to coarse grained, poorly sorted	0	4/4	SS5	0919	
	21						
	22						
	23	SAME AS ABOVE		4/4			

# HTW DRILLING LOG

HOLE NO. **B801**

PROJECT **USFROCA**

INSPECTOR **WB McClendon**

SHEET **4**  
OF **6** SHEETS **10**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, 10y 0/4, light yellowish brown, wet red to coarse grained, well sorted, subangular to rounded, 90% quartz, L10F	0	0/4	SS6	0925	
	25						
	26						
	27						
	28	<u>same as above</u> Sand, 10y-0/4, light yellowish brown, wet, and to coarse grained, with fines, poorly sorted, angular	0	3/4	SS7	0932	
	29						
	30						
	31						
	32		0	3/4	SS8	0942	
	33	<u>same as above</u>					



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PROJECT **USFROCA**

HOLE NO. **B801**

# HTW DRILLING LOG

HOLE NO. **B801**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET OF **5** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Sand 104-6/4, light yellowish brown, wet, very coarse, with gravel subangular, poorly sorted					
	34						
	35						
	36	Sand 104-6/4, light yellowish brown, wet, coarse, subangular to rounded, poorly sorted	0	3/4	559	0953	
	37						
	38						
	39						
	40		0	3/4	5510	1005	
	41	SAME AS ABOVE					



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PROJECT **USFRDCFA**

HOLE NO. **B801**



# HTW DRILLING LOG

HOLE NO. **B801**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET **6**  
OF **6** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	<u>shale, 2.5-1.5 to, red</u>	R	<u>Recovery</u>		<u>7.2</u>	
	43						
	44	<u>Bottom of Hole</u>			<u>SS11</u>	<u>1015</u>	<u>End Time = 1025</u>
	45						<u>TD=44 feet</u>
	46						
	47						
	48						
	49						
	50						



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PROJECT **USFRDCFA**

HOLE NO. **B801**

# HTW DRILLING LOG

HOLE NO. **B802**

1. COMPANY NAME <b>Burns &amp; McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 6 SHEETS	
3. PROJECT <b>USFRDCFA</b>			4. LOCATION <b>100 feet west of B701</b>		
5. NAME OF DRILLER <b>Pat Martin</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Requize 5400 DT</b>		
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>Continuous Soil Sampling 4 foot ALE face steel</b>		8. HOLE LOCATION <b>N. 4326026.670 E. 690812.666</b>			
		9. SURFACE ELEVATION <b>321.728</b>			
		10. DATE STARTED <b>07/01/02</b>		11. DATE COMPLETED <b>07/01/02</b>	
		12. OVERBURDEN THICKNESS <b>30</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>16.7 LUBm</b>	
13. DEPTH DRILLED INTO ROCK <b>4</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>			
14. DEPTH OF HOLE <b>44</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC <input checked="" type="checkbox"/>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>WB McClendon</b>
		<b>Bentonite</b>	<b>NA</b>	<b>NA</b>	
21. TOTAL CORE RECOVERY <b>NA %</b>					

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<b>0.25 40 ft</b>		<b>Recovery</b>			<b>Start Time 1310</b>
	1	<b>s: 17, 104-6/4, dry, light yellowish brown, non plastic, soft consistency</b>	<b>6</b>				
	1	<b>clay, 104-4, dark grey, clay, red plastic, red to red consistency</b>	<b>0</b>				
	2						
	3						
	4		<b>0</b>	<b>4/4</b>	<b>681</b>	<b>1311</b>	
	4	<b>sandy s: 17, 104-6/4, dry, light yellowish brown, non plastic, soft consistency</b>					
	5			<b>0/4</b>			
		<b>SAN 125 above</b>					



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PROJECT **USFRDCFA**

HOLE NO. **B802**

# HTW DRILLING LOG

HOLE NO. **B802**

PROJECT **USFRDCFA**

INSPECTOR **W B McClendon**

SHEET 1 OF 2 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	6	Sandy silt, 10gr 4/4 light yellowish brown, dry, non plastic, soft consistency, trace fill (black bits).		Recovery			
	7						
	8	<u>same as above</u> Sandy silt, 10gr 5/1, gray, dry, non to trace plastic soft consistency	0	4/4	SS2	1315	
	9		0				
	10						
	11						
	12			4/4	SS3	1319	
	13	Sand, with fines, laminated, 10gr 5/1, gray, fine grained, well sorted.		4/4			
	14						



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PROJECT **USFRDCFA**

HOLE NO. **B802**

# HTW DRILLING LOG

HOLE NO. **15802**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET 1 OF 3 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand, with fines, laminated, 10gr 5/1, grey, fine grained, well sorted, very moist	0	4/4	554	1323	
	17	Sand, 10gr 6/3, pale brown wet, very fine, well sorted, subangular to rounded					▽
	20		0	4/4	555	1324	
	23	SAME AS ABOVE		4/4			



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PROJECT  
**USFRDCFA**

HOLE NO. **15802**

# HTW DRILLING LOG

HOLE NO. **B802**

PROJECT **USFR DCFA**

INSPECTOR **WB McClendon**

SHEET 1 OF 4 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, 1/4-6/3, pale brown, wet, fine grained, well sorted	0	4/4	SS6	1331	
	25						
	26						
	27						
	28	Sand, 5/16-5/8, yellowish red, wet, coarse to med, poorly sorted, angular to subangular	0	2/4	SS7	1340	
	29						
	30						
	31						
	32	same as above	0	3/4	SS8	1350	



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PROJECT **USFR DCFA**

HOLE NO. **B802**

# HTW DRILLING LOG

HOLE NO. **B802**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET 1 OF 5 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Sand, 5-5/4 reddish Med. wt, coarse gravel, poorly sorted					
	34						
	35						
	36	Sandy 10gr 4/3, pale med wt, fine to med gravel, poorly sorted	0	2/4	559	1403	
	37						
	38						
	39						
	40	Shale, 5-5/6	0 R	2/4	5510	1415	
	41						



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PROJECT **USFRDCFA**

HOLE NO. **B802**

# HTW DRILLING LOG

HOLE NO. **B802**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET 1 OF 6 SHEETS 6

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Shale, 5-7-576		Recovery			
	43						
	44					1427	End Time = 1435
	45	Bottom of Hole					TD = 44 feet
	46						
	47						
	48						
	49						
	50						



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PROJECT **USFRDCFA**

HOLE NO. **B802**

# HTW DRILLING LOG

HOLE NO. **B803**

1. COMPANY NAME **Burns & McDonnell**

2. DRILLING SUBCONTRACTOR **EPS**

SHEET 1 OF 6 SHEETS

3. PROJECT **USFRDLFA**

4. LOCATION **3.02' West of B501**

NAME OF DRILLER **Pat Martin**

6. MANUFACTURER'S DESIGNATION OF DRILL **Geoprobe 5400**

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT  
**Continuous Soil Sampling**  
**4' Acetate sleeve**  
**2' Mill slot**

8. HOLE LOCATION **NA**

9. SURFACE ELEVATION **NA**

10. DATE STARTED **07/02/02**

11. DATE COMPLETED **07/02/02**

12. OVERBURDEN THICKNESS **41**

15. DEPTH GROUNDWATER ENCOUNTERED **19.5**

13. DEPTH DRILLED INTO ROCK **2**

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED **19.7**

14. DEPTH OF HOLE **43**

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES

DISTURBED **NA**

UNDISTURBED **NA**

19. TOTAL NUMBER OF CORE BOXES **NA**

20. SAMPLES FOR CHEMICAL ANALYSIS

VOC

METALS **NA**

OTHER (SPECIFY) **NA**

OTHER (SPECIFY) **NA**

OTHER (SPECIFY) **NA**

21. TOTAL CORE RECOVERY **NA** %

22. DISPOSITION OF HOLE

BACKFILLED **Bentonite**

MONITORING WELL **NA**

OTHER (SPECIFY) **NA**

23. SIGNATURE OF INSPECTOR **W B McClendon**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<b>Organic</b> silt clay, 10+ 4/2, dark greyish brown, damp, fine plastic, med consistency	0				Start Time 0720
	2						
	3						
	4	silt, 10+ 5/3, brown, dry non plastic, soft consistency	0	4/4	551	0721	
	5						



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PROJECT **USFRDLFA**

HOLE NO. **B803**



# HTW DRILLING LOG

HOLE NO. **B803**

PROJECT **USFRDLFA**

INSPECTOR **W.B. McClendon**

SHEET 1 OF 2 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Sandy silt, 104.5/3, brown clay, non plastic soft lumps of clay		Recovery		7.02	
	7						
	8		0.4	4/4	552	0724	
	9						
	10						
	11						
	12	Same as above, except 104.5/2, light brownish grey	0.4	4/4	553	0726	
	13	Same, 104.5/2, light brownish grey, dry, fine grained, well sorted					
	14						



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PROJECT

**USFRDLFA**

HOLE NO.

**B803**

# HTW DRILLING LOG

HOLE NO. **B803**

PROJECT **USFRDCFA**

INSPECTOR **WBM McClendon**

SHEET 1 OF 3 SHEETS 6

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>TAL</i>	REMARKS h
	15	<i>Sandy, 10y-6/2, light moist grey, dry, fine grained well sorted</i>					
	16		0	4/4	554	0730	
	17		0				
	18	<i>Sandy, 10y-6/2, light moist grey, moist fine to coarse granular, poorly sorted</i>	0				
	19						
	20	<i>same, except wet</i>	0	4/4	555	0733	▼
	21						
	22						
	23						



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PROJECT **USFRDCFA**

HOLE NO. **B803**

# HTW DRILLING LOG

HOLE NO. **B803**

PROJECT **USFR DCFA**

INSPECTOR **W. B. McClendon**

SHEET 1 OF 4 SHEETS **4**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, 10% 6/2, light brownish grey, wet, fine to med graded; poorly sorted	0	4/4	SS6	0800	
	25		0				
	26	Clay, 10% 6/1, grey, wet, medium plastic, medium consistency					
	27						
	28		0	4/4	SS7	0823	
	29						
	30	Sand stringer					
	31						
	32	Sand, 10% 6/1, grey, wet, medium to coarse, poorly sorted	0	4/4	SS8	0832	



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PROJECT **USFR DCFA**

HOLE NO. **B803**

# HTW DRILLING LOG

HOLE NO. **B803**

PROJECT **USFRDCFA**

INSPECTOR **W B McClendon**

SHEET 1 OF 5 SHEETS 6

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
				<i>Recovery</i>		<i>7.00</i>	
	33	Sand, 10% w/ clay, med to coarse, poorly sorted	0				
	34	Sand, 2.5 to 5/8, light red, wet, medium to coarse, poorly sorted, trace gravel	0				
	35						
	36	same as above, except coarse	0	2/2	559	0842	
	37						
	38						
	39						
	40	same as above	0	3/4	5570	0853	
	41	shale, 2.5 to 1/2, light brown to grey	R				



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PROJECT **USFRDCFA**

HOLE NO. **B803**

# HTW DRILLING LOG

HOLE NO. **B803**

PROJECT **USFR DCFA**

INSPECTOR **W B McClendon**

SHEET **1** OF **6** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	42	<i>Shale, 2-5 y 1/2, Light brown. 3/4 grey</i>	<b>R</b>				
	43		<b>0</b>	<b>3/3</b>	<b>SS 11</b>	<b>DF 07</b>	<i>End Time</i>
		<b>Bottom of Hole</b>					<b>TD = 43 feet</b>
	44		<i>WBM</i> <b>X</b>	<b>X</b>	<b>SS 11</b>	<b>X</b>	
	45						
	46						
	47						
	48						
	49						
	50						

# HTW DRILLING LOG

HOLE NO. **B804**

1. COMPANY NAME <b>Burns + McDonnell</b>	2. DRILLING SUBCONTRACTOR <b>EPS</b>	SHEET 1 OF 6 SHEETS
3. PROJECT <b>USFRDCFA</b>		4. LOCATION
5. NAME OF DRILLER <b>Pat Martin</b>		6. MANUFACTURER'S DESIGNATION OF DRILL <b>Bequaite 5400</b>
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	8. HOLE LOCATION <b>N. 4325996.550 E. 690818.177</b>	
	9. SURFACE ELEVATION <b>321.763</b>	
	10. DATE STARTED <b>07/02/02</b>	11. DATE COMPLETED <b>07/02/02</b>
12. OVERBURDEN THICKNESS <b>46.8</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>18.5</b>
13. DEPTH DRILLED INTO ROCK <b>0.2</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>17.6</b>
14. DEPTH OF HOLE <b>47</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>

18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
	<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>NA</b>	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>WB McClendon</b>		
	<b>Bentonite</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Silt, 10# 7/2, very pale brown, dry, non plastic, soft consistency		<b>Recovery</b>			Start Time 1358
	2	Clay, 10# 4/2, dark greyish brown, dry to damp med plastic, hard consistency					
	3						
	4		<b>0</b>	<b>4/4</b>	<b>551</b>	<b>1359</b>	
	5	Silt, 10# 6/2, light brownish grey, dry, non plastic, soft consistency					

# HTW DRILLING LOG

HOLE NO. **B804**

PROJECT **USFRDCFA**

INSPECTOR **W B McCloud**

SHEET 1 OF 2 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>Ready</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>Flow</b>	REMARKS h
	6	Silty, 10yr 1/2, light brownish grey, dry, non plastic, soft consistency					
	7						
	8		0	4/4	652	1403	
	9						
	10	Clay, sandy, 10yr 5/7 greenish brown, dry to damp, slight plastic, soft consistency	6				
	11						
	12	Sand, 10yr 6/3, pale, brown, dry, fine grain well sorted	0	4/4	653	1405	
	13						
	14						



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PROJECT **USFRDCFA**

HOLE NO. **B804**

# HTW DRILLING LOG

HOLE NO. **B004**

PROJECT **USFRDLFA**

INSPECTOR **WB McCloud**

SHEET 1 OF 3 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Reloay</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	15	<i>Sand, 10gr5/4, yellowish brown, damp, fine gravel well sorted</i>					
	16		0	4/4	554	1408	
	17						
	18						
	19	<i>wet</i>					▼
	20		0	4/4	555	1412	
	21						
	22	<i>Sand, 10gr5/4, yellowish brown, wet, coarse to medium, poorly sorted</i>					
	23						



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PROJECT **USFRDLFA**

HOLE NO. **B004**



# HTW DRILLING LOG

HOLE NO. **B804**

PROJECT **USFR DCFA**

INSPECTOR **W.B. McClendon**

SHEET 1 OF 4 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, 10% s <sub>1/4</sub> yellowish brown, wet, medium to coarse, poorly sorted, stringy	0	2/4	556	1418	
	25	clay, s <sub>1/2</sub> , olive gray, wet, med plastic & consist					
	26						
	27	Sand, 7.5% s <sub>1/4</sub> , strong med wet, med to coarse, poorly sorted, angular to subrounded	0	4/4	557	1426	
	28						
	29						
	30						
	31						
	32		0	4/4	558	1437	
		same as above					



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PROJECT **W.B. McClendon**

HOLE NO. **B804**

# HTW DRILLING LOG

HOLE NO. **B804**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET 1 OF 5 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Sand, 7.5 yr 5/3, brown, wet, coarse, poorly sorted, angular to subangular		Recovery			
	34						
	35						
	36	same as above	0	4/4	559	1448	
	37						
	38						
	39	same as above	0	3/3	5510	1500	
	40	Sand 7.5 yr 6/3, light brown, wet, fine to medium grained, poorly sorted, with gravel					
	41	Gravelly Sand 7.5 yr 6/3, light brown, wet, coarse, poorly sorted, angular					



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PROJECT  
**USFRDCFA**

HOLE NO.  
**B804**

# HTW DRILLING LOG

HOLE NO. **B804**

PROJECT **USFRDCFA**

INSPECTOR **WB McClender**

SHEET 1 OF 6 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Sand, 7.54r Gtz, light brown, wet, fine to medium grained,					
	43		0	4/4	6511	1575	
	44						
	45						
	46	sand					
		clay					
	47	Limestone	R	4/4	6512	1535	Encl T. no = 1540
	48	Bottom of Hole					TD = 47 feet



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PROJECT **USFR DCFA**

HOLE NO. **B804**

# HTW DRILLING LOG

HOLE NO. **B305**

1. COMPANY NAME <b>SACD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>		SHEET 1 OF 10 SHEETS			
3. PROJECT <b>USFRDCFA</b>			4. LOCATION <b>South JUPPER, SW of 180181</b>				
5. NAME OF DRILLER <b>PAT MARTIN</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Reprobe 5400</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		4ft macrocore		8. HOLE LOCATION <b>N. 4325985.540, E. 690853.450</b>			
		4' Acetate sieve		9. SURFACE ELEVATION <b>322.555</b>			
		2' Mill Slot		10. DATE STARTED <b>07/03/02</b>		11. DATE COMPLETED <b>07/03/02</b>	
12. OVERBURDEN THICKNESS <b>43.5</b>			15. DEPTH GROUNDWATER ENCOUNTERED <b>18.7</b>				
13. DEPTH DRILLED INTO ROCK <b>BB.5</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>18.8</b>				
14. DEPTH OF HOLE <b>44</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY <b>NA</b> %
		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	
22. DISPOSITION OF HOLE <b>NA</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <b>W. B. McClendon</b>		
		<b>Bentonite</b>	<b>NA</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<b>ORGANIC</b> Silt, 10yr 6/2, light macmill grey, dy, non plastic soft consistency					<b>Start Trial 0730</b>
	2						
	3						
	4		<b>0</b>	<b>4/4</b>	<b>551</b>	<b>0734</b>	
	5						

**SAR AS ABOVE**

# HTW DRILLING LOG

HOLE NO. **B805**

PROJECT **USFRDCFA**

INSPECTOR **WBM Clendon**

SHEET 1 OF 2 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Silt, 10% 6/2, light medium grey, dry to damp, non plastic, soft consistency		4/4			
	7						
	8		0	4/4	552	0735	
	9						
	10						
	11	clay, 10% 5/2, grayish heavy damp, and plastic and consistency	0	4/4	553	0737	
	12	Sandy silt, 10% 5/3, medium damp, non plastic, soft consistency					
	13						
	14	See in chart					



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PROJECT **USFRDCFA**

HOLE NO. **B805**

# HTW DRILLING LOG

HOLE NO. **B805**

PROJECT **USFRDCFA**

INSPECTOR **WB McClendon**

SHEET OF **3** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sandy Silt, 10% s <sub>73</sub> , brown, clay, non plastic, soft consistency					
	16		0	4/4	554	0740	
	17	clay, 10% s <sub>41</sub> , dark grey, med plastic, soft to med consistency					
	18						
	19	Sandy Clay, 10% s <sub>41</sub> , dark clay, sand, grey, very fine, well sorted, wet					▼
	20		0	4/4	555	0742	
	21						
	22	Sand, 10% s <sub>67</sub> , pale brown, wet, well sorted fine grained					
	23						

# HTW DRILLING LOG

HOLE NO. **B805**

PROJECT **USFRDCFA**

INSPECTOR **W B M <sup>Mc</sup>Clendon**

SHEET OF **4** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Total</i>	REMARKS h
	24	Sand, 10 yr 6/3, pale brown, wet, fine grained, well sorted	0	4/4	556	0747	
	25	Sand, 10 yr 6/3, pale brown, wet, medium to coarse grained, poorly sorted, subangular to rounded.					
	26						
	27						
	28		0	2/4	557	0757	
	29						
	30						
	31						
	32		0	2/4	558	0807	



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PROJECT **USFRDCFA**

HOLE NO. **B805**

# HTW DRILLING LOG

HOLE NO. *B805*

PROJECT *USFRDCFA*

INSPECTOR *WB McCloud*

SHEET *1* OF *5* SHEETS *6*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	<i>Sands, 10-gr 6/4, light yellowish brown, wet, coarse grained, poorly sorted</i>		<i>Recovery</i>		<i>Time</i>	
	34	----- <i>clay</i> -----					
	35						
	36	<i>same as above</i>	0	2/4	559	0817	
	37						
	38						
	39						
	40	<i>same as above</i>	0	2/4	5570	0826	
	41						



# HTW DRILLING LOG

HOLE NO. *B305*

PROJECT *USFRDCFA*

INSPECTOR *WBM Clenden*

SHEET OF *6* SHEETS *6*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <i>Time</i>	REMARKS h
	42	<i>Sand 10% fine, light yellowish brown, wet fine grained, porous</i>					
	43						
	44	<i>Side</i>	<i>R</i>		<i>5511</i>	<i>0838</i>	<i>End sec = 0844</i>
	45	<i>Bottom of Hole</i>					<i>70 = 44 ft</i>
	46						
	47						
	48						
	49						
	50						



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PROJECT  
*USFRDCFA*

HOLE NO.  
*B305*

**900-Series Borehole Logs  
Extension North of UPRR**

# HTW DRILLING LOG

 HOLE NO. B903  
B902

 1. COMPANY NAME BM-D      2. DRILLING SUBCONTRACTOR EPJ      SHEET 1 OF 4 SHEETS

 3. PROJECT DLFA      4. LOCATION

 5. NAME OF DRILLER Paul Vogelsberg      6. MANUFACTURER'S DESIGNATION OF DRILL Geoprobe 4200

 7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT 2" macrologs with acetate sleeves      8. HOLE LOCATION N43260.42.780 E690864.191

 9. SURFACE ELEVATION 1069.754

 10. DATE STARTED 7-22-02      11. DATE COMPLETED 7-22-02

 12. OVERBURDEN THICKNESS 24.8      15. DEPTH GROUNDWATER ENCOUNTERED None 23.7

 13. DEPTH DRILLED INTO ROCK 0.2      16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED NA

 14. DEPTH OF HOLE 25.0      17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) NA

 18. GEOTECHNICAL SAMPLES NA      DISTURBED NA      UNDISTURBED NA      19. TOTAL NUMBER OF CORE BOXES NA

 20. SAMPLES FOR CHEMICAL ANALYSIS      VOC      METALS      OTHER (SPECIFY)      OTHER (SPECIFY)      OTHER (SPECIFY)      21. TOTAL CORE RECOVERY NA %

 22. DISPOSITION OF HOLE Bentonite      BACKFILLED ✓      MONITORING WELL NA      OTHER (SPECIFY) NA      23. SIGNATURE OF INSPECTOR Rick Thoms

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Time</i>	REMARKS h
	1	Silty sand, pale yellowish brown (10 PR 5/2), moderately silty, non-plastic, dry to damp, fine to very fine sand.	0			1113	
	2	2' of clayey silt, brownish black (5 PR 2/1), soft, loose, non-plastic damp	0	3.5 — 4.0			
	3	clayey silt, moderate yellowish brown (10 PR 5/4), silty, non-plastic, damp	0				
	4		0				
	5		0				

# HTW DRILLING LOG

HOLE NO. **B903**

PROJECT **DCFA**

INSPECTOR **Rick Mount**

SHEET **2**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	silty sand, pale yellowish brown (1074/2), soft, non-plastic, damp, fine to very fine sand.	0	Recovery		3.6 40	
	7	Color change to dark yellowish brown (1074/2)	0				
	8	Clayey silty, dark yellowish brown (1074/2), soft, non-plastic, damp	0				1124
	9		0				
	10	1" of highly weathered shale, grayish olive (1074/2).	0			3.4 40	
	11		0				
	12	1/4" layer of coal/black fibrous material Sandy, pale yellowish brown (1074/2), soft, non-plastic, damp, fine to very fine, trace of fines.	0				1128
	13		0				
	14	Color change to yellowish gray (2547/2).	0				



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PROJECT **DCFA**

HOLE NO. **B903**

# HTW DRILLING LOG

HOLE NO. **B903**

PROJECT **DLFA**

INSPECTOR **Rock Mont**

SHEET **23**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Sand, yellowish gray (5/7/2), soft, nonplastic damp, fine to very fine, trace of fines.	0	$\frac{3.5}{4.0}$			
	16		0			1137	
	17		0				
	18		0	$\frac{4.0}{4.0}$			
	19		0				
	20	2" of silty clay, dark yellowish brown (10/14/2), soft, moderately plastic, damp	0			1144	
	21		0				
	22		0	$\frac{3.2}{4.0}$			
	23	Silt, grayish brown (5/11/2), soft, nonplastic moist. <del>Silt-sandy silt</del> dark yellowish brown (10/14/2), soft, nonplastic moist, very fine sand	0				

# HTW DRILLING LOG

HOLE NO. **B903**

PROJECT **DLFA**

INSPECTOR **Rick Mont**

SHEET **16** OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <del>                    </del> Recovery	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS 6-8	REMARKS h
	24	sandy silt Silt, sand, dark yellowish brown (10YR 7/2), silt, nonplastic, moist, very fine 0 becomes wet.				1253	▼
	25	Sand, grayish orange (10YR 7/4), silt, nonplastic, damp Silt, dark yellowish brown (10YR 7/2), silt, nonplastic, moist. weathered shale, light olive gray (5Y 5/2) wet.					

	26	TO = 25.0' at 1300. Refusal.					
	27						
	28						
	29						
	30						
	31						
	32						



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PROJECT **DLFA**

HOLE NO. **B903**

# HTW DRILLING LOG

 HOLE NO. **B906**

1. COMPANY NAME <b>B/MCD</b>		2. DRILLING SUBCONTRACTOR <b>EPS</b>			SHEET 1 OF 5 SHEETS		
3. PROJECT <b>DLFA</b>			4. LOCATION <b>West of Former Building 180/181</b>				
5. NAME OF DRILLER <b>Paul Vujelsberg</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Geoprobe 4200</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		2" <i>main-line with acetate sleeves</i>		8. HOLE LOCATION <b>N4326051.000 E690818.423</b>			
				9. SURFACE ELEVATION <b>1068.179</b>			
				10. DATE STARTED <b>7-23-02</b>		11. DATE COMPLETED <b>7-23-02</b>	
				12. OVERBURDEN THICKNESS <b>39.9</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>26.5 <del>29.0</del> UBM</b>	
13. DEPTH DRILLED INTO ROCK <b>0.3</b>			16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>				
14. DEPTH OF HOLE <b>40.2</b>			17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>				
18. GEOTECHNICAL SAMPLES <b>NA</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>				
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
<b>NA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
<b>Bentonite</b>		<input checked="" type="checkbox"/>	<b>NA</b>	<b>NA</b>	<b>Rick Phank</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g Time	REMARKS h
	1	Sandy silt, moderate yellowish brown (107RS/W), soft, non-plastic, damp, very fine sand.	0			0758	
	2		0				
	3						
	4		0			0759	
	5		0				
		<b>2" of black clayey silt soil, nonplastic damp</b>					


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PROJECT

**DLFA**

HOLE NO.

**B906**

# HTW DRILLING LOG

HOLE NO. *B906*

SHEET *2*  
OF *5* SHEETS

PROJECT

*DLFA*

INSPECTOR

*Rick Monk*

ELEV.  
a

DEPTH  
b

DESCRIPTION OF MATERIALS  
c

FIELD SCREENING  
RESULTS  
d

~~GEOTECH SAMPLE  
OR CORE BOX NO.~~  
*Recovery*

ANALYTICAL  
SAMPLE NO.  
f

~~BLOW  
COUNTS~~  
*Time*

REMARKS  
h

6

*Silty sand, pale yellowish brown (10% 2/2), soft, non-plastic, damp, fine to very fine.*

0

$\frac{3.1}{4.0}$

7

8

*Clayey silt, dark yellowish brown (10% 4/2), soft, slightly plastic, damp.*

0

*0806*

0

9

10

*Sand, pale yellowish brown (10% 2/2), soft, non-plastic, fine to very fine, trace of fines, damp.*

0

$\frac{3.8}{4.0}$

11

12

0

*0813*

0

13

$\frac{3.6}{4.0}$

14

0



# HTW DRILLING LOG

HOLE NO. **B906**

PROJECT

**D L F A**

INSPECTOR

**Rick Monk**

SHEET OF **5** x **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>TDMP</i>	REMARKS h
	15	Sand, pale yellowish brown (UVR 6/2), soft, non-plastic, damp, fine to very fine, trace of fines	0			0816	
	16		0				
	17	2" of clayey silt, dark yellowish brown soft, slightly plastic.	0	40 60			
	18		0				
	19	Silty clay, dark yellowish brown (UVR 4/2), soft, moderately plastic, damp.	0				
	20	Sand, grayish orange (UVR 7/4), soft, non-plastic, damp, fine to very fine.	0			0822	
	21		0				
	22	1" of clayey silt, dark yellowish brown	0	3.8 40			
	23	Sand, grayish orange (UVR 7/4), soft non-plastic, damp, fine to medium.	0				



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PROJECT

**D L F A**

HOLE NO.

**B906**

# HTW DRILLING LOG

 HOLE NO. *B406*

PROJECT

*DLFA*

INSPECTOR

*Rick Mont*

 SHEET *74*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <del>COUNTS</del> Time	REMARKS h
	24	<i>Sand, grayish orange (10/27/11), soft, nonplastic, damp, fine to very fine medium.</i>	0			0830	
	25		0				
	26		0	$\frac{3.2}{4.0}$			
	27	<i>Sand, pale yellow with brown (10/26/12), soft, nonplastic wet, fine to very fine, trace of fines.</i>	0			0838	▼
	28		0				
	29	<i>Silty sand, brownish gray (5/22/11), soft, nonplastic, wet, fine to very fine sand.</i>	0	$\frac{3.8}{4.0}$			
	30		0				
	31	<i>Sand, pale yellow with brown (10/26/12), soft, nonplastic, wet, fine to very fine.</i>	0				
	32		0			0846	<i>Began using discrete sampler.</i>

# HTW DRILLING LOG

HOLE NO. **B906**

PROJECT **DCFA**

INSPECTOR **Rick Munk**

SHEET **5**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>Temp</i>	REMARKS h
	33	<i>No recovery 32-36'</i>		<i>0.0 1 4.0</i>			<i>Had to pull sampler up to unstick plunger.</i>
	34						
	35						
	36					<i>0943</i>	
	37	<i>Sand, medium dark gray, soft, nonplastic, wet, medium to very coarse, subrounded.</i>		<i>2.8 4.0</i>			
	38	<i>Clay, medium dark gray, moderately soft, moderately to highly plastic, lump.</i>					
	39						
	40	<i>Shale, dark gray weak, some clay.</i>					
	41	<i>TO = 40.2' at 0.95, Refusal.</i>					



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PROJECT

**DCFA**

HOLE NO.

**B906**

**Boring ACOEB  
Training Area 2**

# HTW DRILLING LOG

HOLE NO.  
ACOE B

1. COMPANY NAME *BURNS + McDonnell*      2. DRILLING SUBCONTRACTOR *Environmental Priority Service*      SHEET 1 OF 6 SHEETS

7. PROJECT *DCFA - Training Area 2*      4. LOCATION *South of Kansas River, SE of DCF 96-36*

5. NAME OF DRILLER *Pat Martin*      6. MANUFACTURER'S DESIGNATION OF DRILL *Geo probe*

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	4-foot rods	8. HOLE LOCATION <i>N 14191588.9950 E 2268292.455</i>	9. SURFACE ELEVATION <i>1058.4177</i>
	4-foot macrocode sampler		
	4-foot inner acetate sleeves		
		10. DATE STARTED <i>10/08/01</i>	11. DATE COMPLETED <i>10/08/01</i>

12. OVERBURDEN THICKNESS *49.5 feet*      15. DEPTH GROUNDWATER ENCOUNTERED *19.0 feet bgs*

13. DEPTH DRILLED INTO ROCK *0 feet*      16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED *NA*

14. TOTAL DEPTH OF HOLE *49.5 feet*      17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) *NA*

18. GEOTECHNICAL SAMPLES *None*      DISTURBED *NA*      UNDISTURBED *NA*      19. TOTAL NUMBER OF CORE BOXES *NA*

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY % <i>NA</i>
	<input checked="" type="checkbox"/>	<i>NA</i>	<i>NA</i>	<i>NA</i>	<i>NA</i>	

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR <i>Walter B. McClendon</i>
	<i>Bentonite Backfilled</i>	<i>NA</i>	<i>NA</i>	

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>silty clay (topsoil), 10yr 3/2, very dark grayish brown, dry, non plastic, hard consistency</i>	0				<i>START Time</i>
	2	<i>silty clay, 10yr 6/2, light brownish gray, dry, non plastic, hard consistency</i>	0				
	3		0				
	4	<i>SAME AS ABOVE</i>	0	<i>4/4</i>	<i>SSI</i>	<i>NA</i>	
	5		0				

# HTW DRILLING LOG

HOLE NO. **AC023**

PROJECT **DCFA - Training Area 2**

INSPECTOR

SHEET 1 OF 2 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Silty clay, 10yr 6/2, light brownish gray, dry, nonplastic, hard consistency					
	6	Silt, 10yr 6/2, light brownish gray, dry, nonplastic, soft to medium consistency	0				
	7		0				
	8		0	4/4	SSZ	NA	
	9		0				
	10	Silty clay, 10yr 4/1, dark gray, med. st., medium plastic, soft to medium consistency	0				
	11		0				
	12		0	4/4	SS3	NA	
	13		0				
	14	same as above	0	-	-	-	



051601  
Form MRK-55-2

PROJECT **DCFA - Training Area 2**

HOLE NO. **AC023**

# HTW DRILLING LOG

HOLE NO. **AC023**

PROJECT **DCFA - Training Area 2**

INSPECTOR

SHEET 1 OF 3 SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	Silty clay, 10yr 4h, dark grey, damp to moist, medium plastic, soft to medium consistency	0				
	16	Sand, 10yr 5h brown, damp, fine to medium grained, well sorted, rounded, 90% quartz	0	4/4	SS4	NA	
	17		0				
	18		0				
	19		0				
	20	Sand, 10yr 5h, gray, wet, fine to medium grained, moderately sorted, subrounded to rounded, trace gravel, 90% quartz, 45% to 1/16"	0	4/4	SS5	NA	▽
	21						
	22						
	23						



051601  
Form MRK-55-2

PROJECT **DCFA - Training Area 2**

HOLE NO. **AC023**

# HTW DRILLING LOG

HOLE NO.  
**AC063**

SHEET 1  
OF 4 SHEETS **6**

PROJECT  
**DCFA Training Area 2**

INSPECTOR  
**1**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>Recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, 10-15% silt, wet, fine to medium grained, moderately sorted, subrounded to rounded; 90% quartz, 25% feldspar; trace gravel	0	4/4	SS6	NA	
	25		0				
	26		0				
	27		0				
	28	SAME AS ABOVE	0	4/4	SS7	NA	
	29		0				
	30		0				
	31		0				
	32	SAME AS ABOVE	0	4/4	SS8	NA	



051601  
Form MRK-55-2

PROJECT  
**DCFA Training Area 2**

HOLE NO.  
**AC06B**



# HTW DRILLING LOG

HOLE NO. **AC025**

PROJECT **DCFA-Training Area 2**

INSPECTOR

SHEET **1**  
OF **5** SHEETS **6**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	Sand, 10y:5h, gray, wet, medium to coarse grained, poorly sorted, subangular to rounded; 75% quartz, >15% feldspar	0				
	34		0				
	35		0				
	36	same as above, except 25y 5/3, light olive brown, trace gravel	0	4/4	558	NA	
	37		0				
	38		0				
	39		0				
	40		0	4/4	559	NA	
	41	Fine gravel with sand, 10y:6h, light yellowish brown, sand fine to coarse, poorly sorted, very irregular to rounded 50% quartz, 30% feldspar, wet					



051601  
Form MRK-55-2

PROJECT **DCFA-Training Area 2**

HOLE NO. **AC025**

# HTW DRILLING LOG

HOLE NO. **ACOEB**

SHEET 1 OF 6 SHEETS 6

PROJECT **DCFA- Training Area 2**

INSPECTOR

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Fine gravel with sand, 10yr 1/4, light yellowish brown, sand fine to coarse, poorly sorted, very angular to rounded; 50% quartz, 30% feldspar, wet	0				
	43		0				
	44		0	4/4	SS10	NA	
	45	Gravelly sand, 10yr 1/4, light yellowish brown, fine to coarse grained, poorly sorted, subangular to rounded, 75% quartz, 20% feldspar	0				
	46		0				
	47		0				
	48	same as above	0	4/4	SS11	NA	
	49		0	-	SS12	NA	
		Bottom of hole					TD=49.5



051601  
Form MRK-55-2

PROJECT **DCFA- Training Area 2**

HOLE NO. **ACOEB**

**Appendix C –  
Survey Data**

Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
<b>Bedrock Survey</b>				
cp5	4325725.296	691527.785	1064.16	*
te4	4325762.213	691861.326	1112.98	*
te5	4325745.509	691815.725	1111.28	*
te6	4325741.637	691773.595	1111.35	*
gorge e	4325759.404	691577.904	1110.04	*
gorge c	4325788.577	691559.179	1114.38	*
gorge w	4325759.453	691529.506	1105.06	*
tw1	4325766.311	691502.701	1105.58	*
gorge2 e	4325786.506	691469.367	1106.77	*
gorge2 c	4325814.470	691464.310	1110.74	*
gorge2 w	4325806.370	691437.037	1108.66	*
tw2	4325820.813	691399.889	1109.35	*
tw3	4325844.539	691347.571	1107.82	*
tw4	4325873.204	691309.852	1111.53	*
top form 1	4325898.109	691253.986	1100.69	*
tw5	4325935.204	691228.776	1103.33	*
tw6	4326003.332	691197.240	1098.31	*
ne183	4326155.348	691076.330	1113.35	*
se183	4326115.884	691101.170	1104.32	*
sw183	4326076.158	691030.278	1104.22	*
93-08	4326024.625	690995.786	1085.07	*
92-04	4326027.623	691027.203	1086.27	*
93-13	4326003.747	691098.930	1084.16	*
01-40	4326024.254	691102.069	1084.89	*
31pz	4325774.657	691127.407	1058.84	*
mid tt	4325970.897	691111.596	1068.97	*
cp1	4325972.812	691116.641	1067.25	*
mh343	4325970.375	691127.855	1067.34	*
wf1	4325960.077	691143.214	1068.23	*
cp2	4325946.832	691145.986	1066.02	*
west wet	4325909.517	691209.974	1068.28	*
cp3	4325890.549	691245.093	1067.43	*
bf1	4325885.564	691244.304	1067.96	*
bw3	4325824.783	691334.852	1067.46	*
bw4	4325850.858	691294.460	1067.77	*
cp4	4325799.415	691371.311	1065.90	*
bw2	4325795.175	691386.199	1067.11	*
b2 c	4325767.114	691441.057	1066.93	*
b2 e	4325760.349	691455.680	1066.66	*
bw1	4325744.313	691492.308	1066.45	*
bg3	4325734.329	691517.051	1066.40	*
north river	4325677.117	691367.000	1039.42	*

Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
00-34b	4325730.041	691375.544	1048.47	*
00-34c	4325731.014	691375.408	1048.20	*
bg2	4325723.252	691546.810	1066.03	*
bg1	4325714.576	691572.048	1065.99	*
west 354	4325678.858	691648.028	1064.68	*
cp6	4325677.306	691722.749	1064.41	*
be6	4325678.383	691779.040	1064.15	*
be5	4325680.199	691821.149	1063.94	*
be4	4325687.357	691875.960	1063.79	*
cp7	4325687.051	691895.310	1062.12	*
be3	4325704.556	691946.075	1063.93	*
be2	4325727.895	692007.462	1064.07	*
te3	4325777.694	691931.251	1111.57	*
te2	4325785.159	691990.091	1098.47	*
top horse	4325814.669	692044.219	1095.50	*
horse lim	4325772.427	692077.040	1063.65	*
354-99-11	4325750.417	692129.757	1057.20	*
354-99-11c	4325753.617	692128.835	1057.04	*
135.74	4325818.082	692159.418	1064.60	*
<b>Monitoring Wells</b>				
DCF02-41	4325968.07	691069.68	1057.96	1060.16
DCF02-42	4326041.74	690851.11	1069.63	1072.27
DCF02-43	4325995.58	690799.23	1056.13	1058.51
DCF02-44a	4325952.74	690979.22	1058.80	1061.15
DCF02-44c	4325952.35	690981.27	1058.76	1061.01
DCF02-45a	4325833.97	691179.72	1060.00	1062.26
DCF02-45c	4325834.17	691177.65	1060.14	1062.35
DCF02-46a	4325927.89	690905.64	1065.05	1067.40
DCF02-46c	4325926.45	690906.64	1064.97	1067.10
DCF02-47a	4325863.98	691011.73	1060.75	1063.18
DCF02-47c	4325865.44	691011.19	1060.84	1062.86
DCF02-48a	4325800.94	691115.53	1057.01	1059.49
DCF02-48c	4325803.10	691116.38	1056.87	1059.44
DCF02-49a	4325724.21	691251.63	1049.75	1052.19
DCF02-49c	4325725.56	691252.15	1049.66	1051.87
DCF03-50a	4325598.79	691188.12	1059.73	1061.87
DCF03-50c	4325598.82	691187.14	1059.61	1061.90
<b>Training Area 2</b>				
AC0	14191589.19	2268284.753	1058.50	*
AC0E	14191589	2268292.455	1058.42	*
AE1	14191583.3	2268334.214	1059.15	*
AW1	14191584.47	2268238.656	1059.28	*
BC0	14191538.81	2268288.572	1059.75	*

Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
BE1	14191532.07	2268337.707	1059.05	*
BE2	14191525.36	2268384.586	1059.04	*
BE3	14191519.77	2268435.483	1059.80	*
BE4	14191512.17	2268479.031	1060.09	*
BW1	14191532.19	2268239.505	1058.58	*
BW2	14191527.09	2268188.962	1058.54	*
F1	14190945.72	2268599.16	1060.94	*
F2	14191050.77	2268539.024	1060.31	*
F3	14191142.48	2268445.035	1059.65	*
F4	14191227.26	2268350.767	1059.49	*
F5	14191297.51	2268245.745	1059.05	*
F6	14191378.08	2268147.951	1059.13	*
F7	14191473.3	2268057.795	1059.19	*
F8	14191570.05	2267978.744	1060.20	*
G1a	14190072.86	2265351.057	1061.36	*
G2a	14190039.16	2265445.375	1060.76	*
G3a	14189988.53	2265533.151	1061.42	*
G1	4325594.587	691254.887	1060.17	*
G2	4325593.386	691224.788	1059.80	*
G3	4325595.900	691194.789	1059.88	*
G4	4325596.108	691164.304	1059.01	*
G5	4325603.194	691135.811	1059.43	*
G6	4325610.997	691105.915	1060.12	*
G7	4325609.852	691075.887	1061.28	*
G8	4325606.863	691048.388	1061.53	*
G9	4325610.379	691018.265	1062.03	*
G10	4325609.144	690989.886	1062.72	*
H1	4325435.570	691271.622	1059.63	*
H2	4325388.496	691302.886	1061.28	*
H3	4325341.846	691344.652	1061.60	*
H4	4325291.363	691369.675	1062.70	*
H5	4325232.678	691389.745	1062.78	*
H6	4325241.717	691448.380	1061.43	*
H7	4325249.528	691510.383	1062.11	*
<b>Spring/Summer 2002 Borings</b>				
201	4326032.260	691000.055	1086.18	*
203	4326043.780	691064.941	1086.39	*
204	4326020.830	691084.971	1084.14	*
204	4326020.830	691084.976	1084.14	*
205	4325999.600	691101.248	1081.34	*
206	4326062.440	691089.276	1087.90	*
207	4326048.940	691104.333	1085.34	*

Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
208	4326020.950	691125.324	1081.63	*
209	4326057.850	691130.888	1085.98	*
210	4326012.740	691063.069	1083.71	*
211	4326018.720	691069.804	1083.23	*
212	4326024.600	691076.371	1083.57	*
213	4326030.590	691083.600	1084.69	*
214	4326036.530	691090.311	1085.39	*
215	4326043.030	691098.120	1085.02	*
216	4326049.050	691103.790	1085.31	*
217	4326055.010	691111.858	1085.53	*
217	4326051.430	691105.044	1085.47	*
218	4326007.020	691069.832	1083.59	*
219	4326011.110	691074.984	1083.51	*
220	4326017.380	691082.215	1083.99	*
221	4326023.590	691089.259	1084.24	*
222	4326029.170	691095.897	1084.90	*
223	4326035.640	691103.165	1084.85	*
224	4326041.840	691109.939	1084.89	*
226	4326004.480	691080.608	1083.78	*
227	4326009.950	691087.789	1083.85	*
228	4326016.150	691094.523	1084.16	*
229	4326022.140	691101.551	1084.20	*
230	4326028.230	691108.649	1084.36	*
231	4326034.330	691115.274	1084.70	*
232	4326040.060	691121.927	1085.02	*
233	4325997.650	691086.968	1082.93	*
234	4326002.970	691092.851	1083.19	*
235	4326008.990	691100.070	1083.38	*
236	4326014.640	691106.625	1083.74	*
237	4326020.800	691113.696	1083.96	*
238	4326026.840	691120.472	1084.25	*
239	4326032.890	691127.321	1084.65	*
401	4326020.660	691076.022	1083.59	*
402	4326026.210	691083.340	1084.14	*
403	4326031.430	691091.148	1085.00	*
404	4326036.420	691098.471	1084.95	*
405	4326041.850	691105.877	1084.97	*
406	4326046.730	691113.117	1085.01	*
407	4326052.250	691120.303	1085.09	*
408	4326058.400	691126.818	1085.34	*
409	4326037.550	691108.552	1084.64	*
410	4326042.520	691111.046	1084.88	*

Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
411	4326042.390	691116.070	1084.99	*
412	4326047.890	691118.543	1085.04	*
412	4326048.130	691116.744	1085.04	*
413	4326047.970	691123.518	1084.67	*
414	4326052.890	691126.914	1085.00	*
415	4326011.580	691076.700	1083.56	*
416	4326016.730	691084.380	1084.07	*
417	4326021.570	691088.123	1084.09	*
418	4326022.410	691092.291	1084.30	*
419	4326027.530	691099.223	1084.57	*
420	4326032.890	691106.602	1084.72	*
421	4326038.050	691113.949	1084.82	*
422	4326040.840	691117.932	1084.92	*
423	4326043.470	691121.706	1085.06	*
424	4326048.630	691129.129	1084.01	*
425	4326033.710	691112.164	1084.55	*
426	4326033.880	691116.821	1084.62	*
427	4326038.660	691119.680	1084.85	*
428	4326038.920	691125.166	1084.95	*
429	4326043.650	691127.247	1084.53	*
430	4326007.990	691085.567	1083.95	*
431	4326013.310	691092.808	1083.97	*
432	4326018.610	691100.442	1084.30	*
433	4326023.990	691108.019	1084.24	*
434	4326029.160	691115.133	1084.55	*
435	4326034.710	691122.791	1084.89	*
436	4326039.840	691129.519	1083.92	*
437	4326029.640	691121.550	1084.29	*
438	4326030.200	691125.855	1084.29	*
439	4326035.380	691127.992	1084.67	*
440	4326000.060	691087.750	1083.43	*
441	4326003.230	691094.565	1083.06	*
442	4326009.580	691101.374	1083.53	*
443	4326015.150	691109.070	1083.39	*
444	4326000.810	691102.484	1081.70	*
445	4326006.420	691109.859	1080.91	*
446	4326056.690	691112.598	1085.78	*
446	4326056.770	691112.602	1085.73	*
448	4326045.830	691097.644	1085.31	*
449	4326040.460	691090.032	1085.48	*
450	4326035.300	691082.368	1085.26	*
451	4326029.970	691074.925	1084.28	*



Appendix C  
Global Survey Data  
DCF Study Area  
RI Addendum Report

Location	Northing	Easting	Ground Surface Elevation	TOC Elevation
452	4326024.470	691067.726	1083.54	*
901	4326037.340	690894.509	1069.33	*
902	4326038.750	690879.791	1069.62	*
903	4326042.780	690864.191	1069.75	*
904	4326045.450	690850.770	1069.24	*
905	4326049.870	690834.554	1068.78	*
906	4326051.000	690818.423	1068.18	*
907	4326053.790	690803.284	1067.48	*
908	4326056.890	690788.215	1067.31	*
909	4326067.110	690806.011	1066.90	*
910	4326062.680	690822.454	1068.45	*
911	4326058.850	690836.850	1070.30	*
912	4326053.490	690853.102	1071.85	*
913	4326072.530	690792.308	1066.11	*
914	4326070.320	690839.542	1069.95	*
915	4326075.840	690824.289	1068.55	*
916	4326083.320	690812.146	1066.72	*
917	4326090.440	690797.689	1065.55	*
918	4326095.570	690783.199	1064.82	*
919	4326101.380	690769.062	1064.06	*
<b>Former Building 183 Locations</b>				
B701	*	*	1107.70	*
B702	*	*	1107.70	*
B703	*	*	1107.70	*
B704	*	*	1107.70	*
B705	*	*	1107.70	*
B706	*	*	1107.70	*

TOC = Top of Casing

\* = Not Applicable

All elevations in feet above mean sea level.

All borings and wells measured by KAW Valley Engineering.

All bedrock survey points measured by Burns and McDonnell.

**Appendix D –  
Geologic Mapping Field Notes**

04/23/02, USFR DCFA, McClendon, Legate, Gossett <sup>1</sup>

1405 Arrived on site, dropped DCFA driller  
pictures off to Jeff Keating for review

1415 Left Jeff's office for Pol Tank Farm  
to measure product and water levels.

1515 Finished recording levels for Pol  
Tank Farm. Called and checked in with  
Brian to see if Chris was free.

1555 - Benchmark located at MAPF has  
been moved from original location to side  
of Fire station and is useless. Left site  
for DES

1620 Rick Chubb has already left. Coworker  
save us location of possible benchmark  
at Outdoor chapel.

1640 At Outdoor chapel, found (BM), KAW Valley  
set up over it, called KAW Valley, there  
crew is Mike Melner, who has just shown  
up. They have the coordinates for (BM) - Eden

is  
%  
d  
4  
0  
2  
7

2

DCFA  
4/23/02, USFR P222, McClendon, Legate, Blum

Coordinates for BM are

39 04 00.43499(N) Ogden

096 47 34.83345 (W)

EL = 1265.15

1655 Chris called, they have finished

sampling, we will meet them at the  
office and help pack coolers, then

Mike Fosset will switch out with Chris

1715 left Field Office for DCFA

1720 arrived DCFA, walked track, heavy

foliage, steep cliffs will hamper Trimmark 3

Trimble RTK unit - (Real Time Kinematic)

may have to also use Total station. Will

shoot basic points w/ RTK and then use

total station to branch off. Will have to

call Bob and have him meet us at Toposa

Staff w/ banner 5.17 feet

3

4/23/02, USFR DCFA, McClendon, Legate, Blum

CP1 Notch in concrete @ end of access road.

(N) 4325972.822

(E) 691116.673

Elev = 325.333

CP2 100ft. South side of Tracks

(N) 4325946.828

(E) 691145.952

Elev = 325.009

CP3 North side tracks opposite green sign

(N) 4325990.561

(E) 691245.094

Elev = 325.398

CP4 South side of track by pink flag &

USGS box.

N = 4325799.421

E = 691371.313

Elev = 324.962

4 4/23/02, USFR DCFA, McClendon, Legate, Blum

CP5 South side of tracks opposite pole.

N = 4325725.071

E = 691527.865

Elev = 324.475

CP6 200 FT EAST OF CP5 ON S. SIDE

OF TRACKS ETCHED INTO SCREW ON

CONCRETE STRUCTURE

N = 4325677.340

E = 691722.737

Elev = 324.430

CP7 SOUTH SIDE OF TRACKS NEAR

136 MILE MARKER

N = 4325687.085

E = 691895.314

Elev = 323.743

4/23/02, USFR DCFA, McClendon, Legate, Blum 5

2010 back at field office, unloaded

truck, left for Manhattan

WB McClendon

6 9/24/02, USFROCEA, McClelland, Legate, Blum

0710 - arrived at field office, cloudy, misting.

0720 - Sent DQCR

0745 - arrived at Bm "Osden", began

setting up. Winds increase w/ rain.

\* Ant Height = 1.10 - Constant Day to Day

Bipod Height = 1.339

### DCEA BASE

N = 4326012.292

E = 491063.785

Elev = 330.272

4/24 Tripod = 1.503

1004 - Chad and Chris have setup secondary

base station at DCEA 180181 building area.

Called and updated manna

1100 Dropped Chris off w/ Brian Mann to continue sampling

Picked up Mike Gossett

4/24/02 USFROCEA, McClelland, Legate, Gossett 7

1120 Stopped @ Shoppette so Mike could grab lunch.

1245

Time	Shot #	Shot Location	Comment
1250	I	Henry Drive Bridge - UP 135.71	UP MARKER

1300 - Instrument would not build base survey.

Chad took instrument back to DCEA to recalibrate / build base.

1310 north of Tracks, north of Horse Corral

Limestone, massive, blocky

stratigraphic column in this area is

Three mile L.S. - light gray to nearly

white, cherty, massive, 6-23 ft

Wesford L.S. - 2 LS & a shale

Abundance of chert 30 to 40 feet

Speiser Sh upper gray fossil. shale

underlain by a LS, commonly less than 1 foot

and occurs about 3 feet below the Wesford

8 4/24/02, USER <sup>DCFA</sup> PZ2, McClendon, Legets, Gossett

Furnston L.S. - light to bluish gray

separated by gray to yellowish gray shale  
that is fossiliferous.

Blue Rapids - shale, gray, green, red.

thin coal bed may be present.

Crooze L.S. upper end lenses separated by  
a few feet of fossil. shale.

shot #8 Limestone, massive, 10yr 8/2, very pale

orange.

1515 - Rob Weber on site

1630 - lost battery power, Rob Weber off site.

1710 - got field OFFER

1730 left field OFFER

WB McClendon

hi  
39  
id  
4  
6  
re  
7

4/24/02, USER <sup>DCFA</sup> PZ2, McClendon, Legets, Annett

9

Shot # Shot Location Comment

1 TTmid Trestle middle

2 (1345) DCF93-11 set 15 min, would not initiate

3 (1400) DCF96-27 set 15 min, would not initiate

4 (1430) Western Lake West Wet RR

Loss of area  
on tracks

5 (1445) DCF0034C sand bar on P.V.102

6 (1447) DCF0034B " " " "

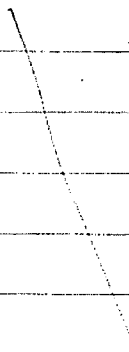
7 (1453) North River bumpy OK

8 (1515) Island LS Lodge not Init.

9 (1547) West 354 PZ OK

10 (1620) West MH, south of tracks not Init.

11 (1630) Top #1, not Init



10

4/25/02 USEFDCEA McCLENDON, LEGATE, BLUM

ANT HEIGHT = 1.871 m

Tripod Height = 1.401  
3.272

354-99-11 + 11C

354-00-P222

Manhole

1000 Setup over Ogden Benchmark

Ant. Height = 1.871

Tripod Height = 1.368  
3.239

1020 PT 1 = 135.74 sign (12)

1030 PT 2 = 354-99-11 (13)

1032 PT 3 = 354-99-11C (14)

1048 PT 4 = Top Form 1 (15)

1120 - Reset base at "Ogden" B.M., shots

can now be taken, although there is a

slight delay based on Initialization Time.

11

Time	Shot #	Spot Location	Comment
1124	16 attempt	NEAR House Trail, East end of Canal	① Limestone

Fossiliferous  
① Limestone, weathered, massive, hard, grayish  
orange 10yr 7d, fine grained, jointed,  
vuggy due to weathering, 2.5 feet thick,  
underlain by Limey Shale

Junston

Ls

Rod = 5.22 ft

L.S. set 323.937 m  
meters.bottom of F.L.S. is  
3 x 5.22 ft

shale

Talus

shuttle

1150 would not initialize shot due to tracks

near and measured to formation using

Jacobs Staff.

1200: Could not shoot mH 250. Shot 17 attempt

1230: Shot 17 Top House Trail.

1245: Shot 18 T&amp;E Top East trail

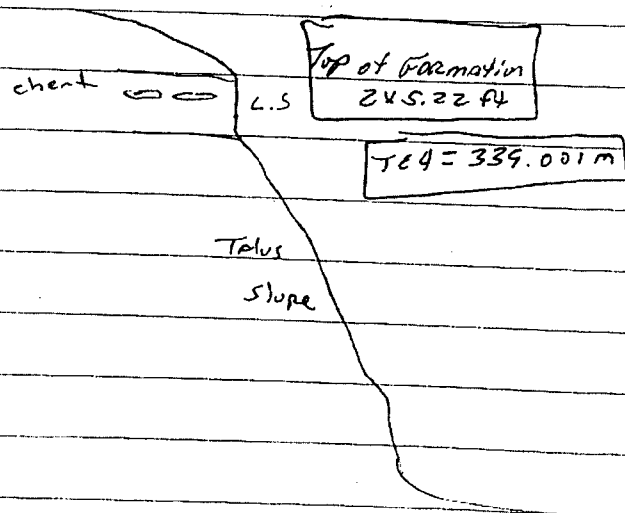


shot 19 [TE3] upper Horse land  
eastern Fence corner, Top of Cliff.

I am following the cliff top so as  
then will follow tracks back.

shot-20, [TE4] by Horse land, upper,  
down slope, Three mile LS. ②

② Limestone, weathered, pocked, with solution  
pits, cherty, massive, hard, white to  
very pale orange 104n e/2, jointed,  
chert 0.3 ft thick



shot 21

1310 [TE5] upper Horse land, Top of Cliff

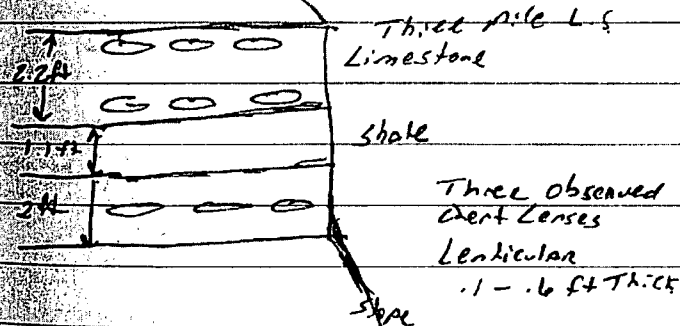
③ Limestone, Three mile LS with chert  
9.22 feet from Top of Cliff

TE5 elev = 338.435 m

5110 [TE6] upper Horse Corral, Top of  
Cliff

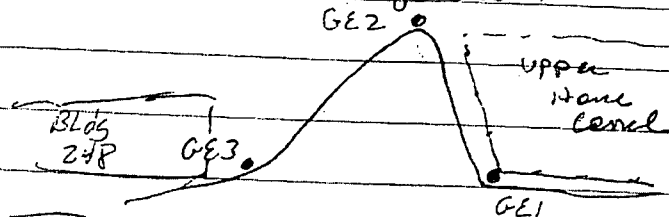
338.475 m

9.12 ft from Top of Cliff  
to Top of 7m LS.



1335 - just west of location, seven m.H  
by western end of Horse corral  
dumps to lower m.H.

Shot 23 Gorge East 1



1407

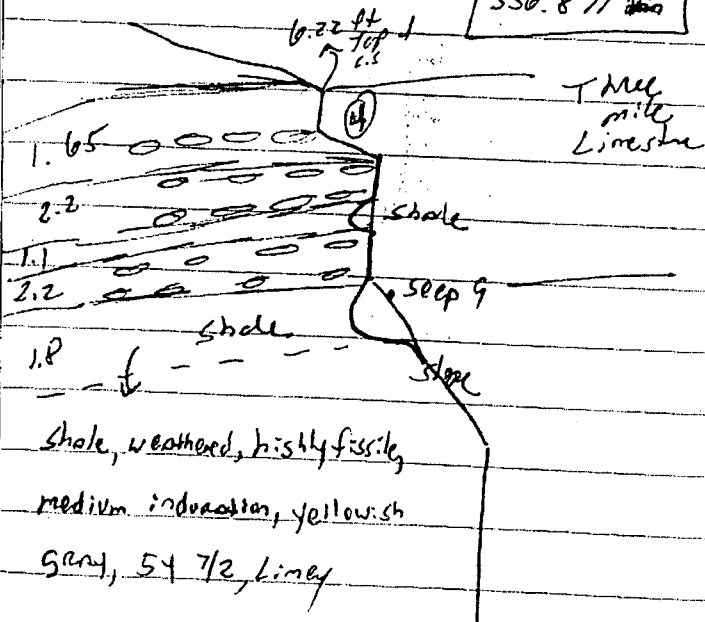
Shot 24 Gorge Center

1410 Shot 25 Gorge West

Shot 26 TW1 at Seep 5 location

Top of cliff

336.871 m



① Limestone, not weathered, hard, massive  
 dirty at bottom, white to very pale  
 range 1048 8/2 1.45 feet thick  
 loc. 1: Leans

1440 Gorge 2 E G2C



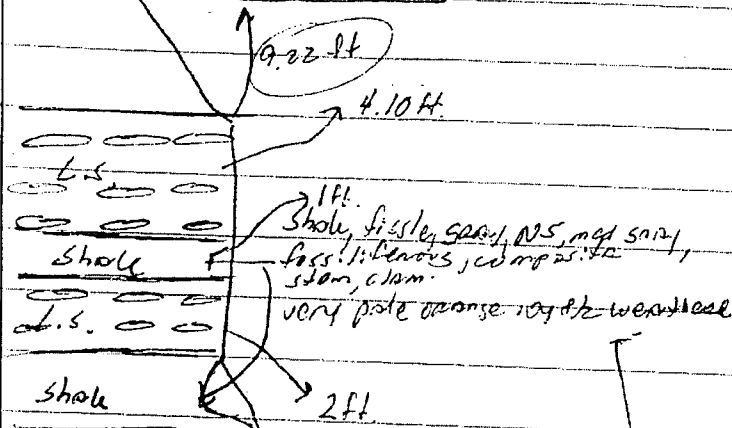
1445 Shot 28 G2C

1446 Shot 29 G2W

TW2, top of cliff, this is across  
 from USGS station for 003454c. The  
 station can be seen from this location

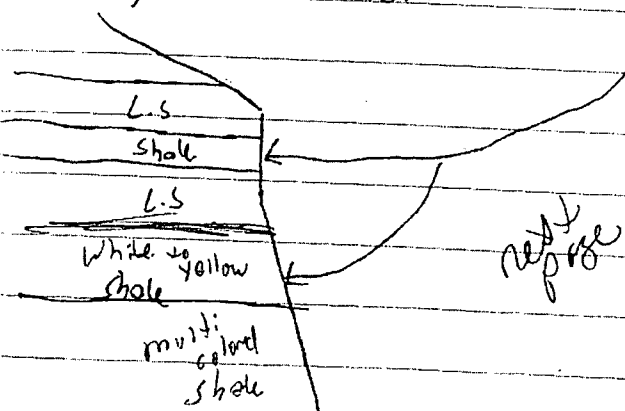
16

TW2  
337.934 m



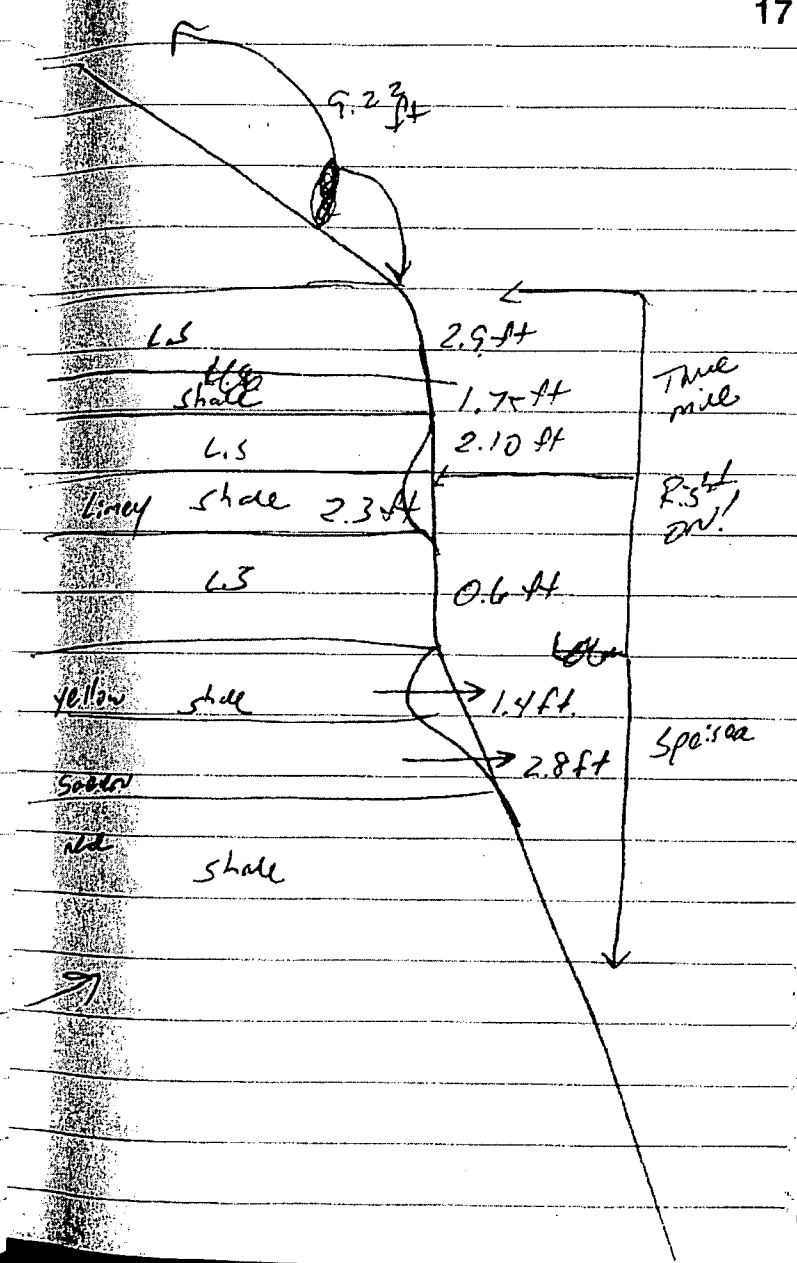
Shale, fissile, sandy, MS, med sand,  
foss. indeterminate, calc. imp. etc.  
SDM, clam.  
very pale orange. 100 ft west hole.

RR  
1517 - TW3  
Top of cliff by B's black  
pipe 337.429 m



next page

17



True  
mud

Right  
on!

Sp. sea

Tw4, large consolidated pile

Elev. = 338.560 m

~~Tw5~~

Tw5 Top of cliff, showing North Trend

Tw6 Top of cliff, showing North Trend

Bottom Form Ore (BFO), counterpart

to Top Form Ore (TFO), This is

along tracks, counterpart

1607 Shot BW4 (Tw4)

1610 Shot BW3 (Tw3)

1611 Shot BW2 (Tw2) 0034 HC Control Box

1613 Shot BEC (GE2C) Gorse<sup>2</sup> Center

1614 Shot BEE (GE2E) Gorse<sup>2</sup> East

1615 Shot BW1 (Tw1)

1620 Shot ~~BE3~~ ~~GE3~~ BG3 (GE3) Gorse 1 West

1625 Shot BG2 (GE2) Gorse 1 Center

1627 Shot BG1 (GE1) Gorse 1 East

1637 Shot BE6 (TE6)

1634 shot BE5 (TE5)

1635 shot BE4 (TE4)

1637 shot BE3 (TE3)

1638 shot BE2 (TE2)

1655 Picked up mine and Equip  
at BM

1733 Left Field Office for Manhattan

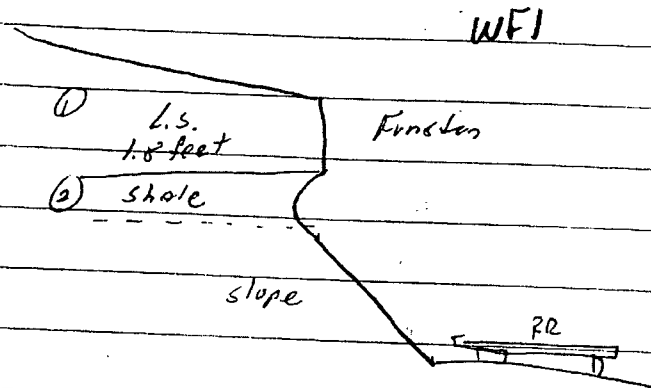
WB Macdonald

20

04/26/07, USFR <sup>DIFA</sup> ~~PA~~, McClendon, Legate, ~~Asax~~

0715 arrival Field Office, cool, cloudy  
misty, sent JOCR.

0735 arrival at DIFA.



measurement point is 64 feet east of

traverse survey point

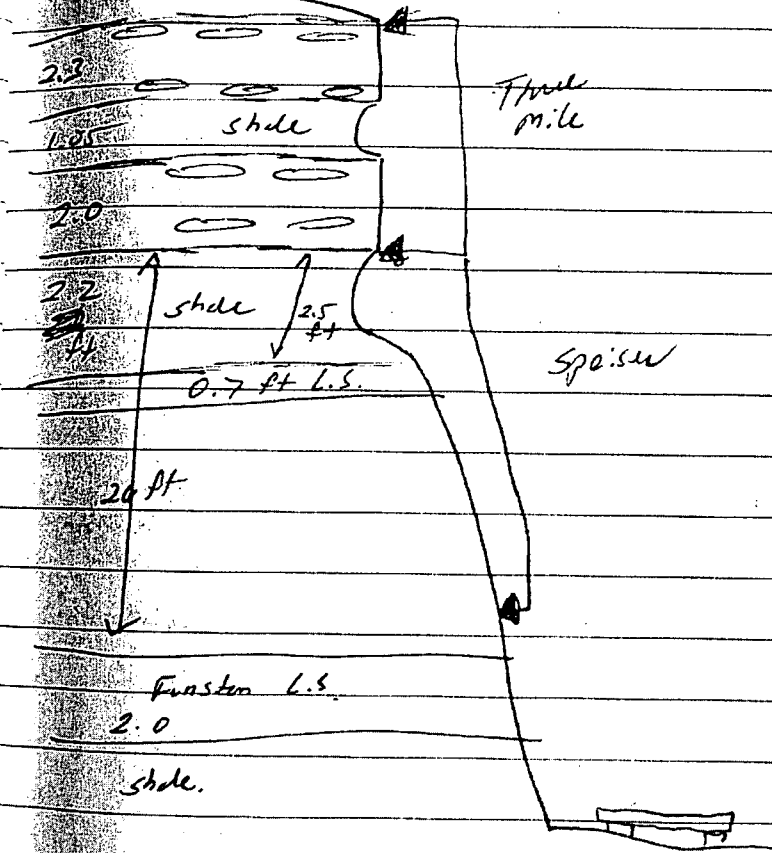
① Limestone, weathered, massive, hard,  
light gray, NT, fossiliferous, fine grained,  
jointed, underlain by shaly l.s. / limest. shale

0800 measured section, western end

at CP3 control point.

21

CP3



Ant Height = 1.871

Tripod Height = 1.350

3.221

0900 Finished setting up Base of "Ogden"

0915 Since it is misting and windy, left

for office to get trap and rope to build  
font for mine

0945 arrived at DCPA

0947 shot mt 343

0950 attempted shot w/F1 35 feet north  
West Finster #1 is actual location.

1010 attempted Island Bridge shot, no initialization

1032 attempted 31 P2 near river, UK

1047 attempted 96-30 P2, no shot

1110 Bldg 183 SE corner

1115 Bldg 183 SU corner

1120 Bldg 183 NW corner @ NO!

1125 Bldg 183 NE corner

1127 DCPA  
01-40

1130 DCP 93-13

1132 DCP 92-4

1134 DCP 93-08

**Monitoring Wells  
Installed 2002 and 2003**

# HTW DRILLING LOG

HOLE NO. **DCF-02-4441**

1. COMPANY NAME **Burns m cDonnell**

2. DRILLING SUBCONTRACTOR **Funkee Drilling**

SHEET 1 OF SHEETS

3. PROJECT **USFRDCFA**

4. LOCATION **Fort Riley, KS**

5. NAME OF DRILLER **Glen Kurte**

6. MANUFACTURER'S DESIGNATION OF DRILL **GB47**

7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT  
 8 1/2" OD HSA  
 5 Split barrel  
 2.5" Shelby tubes

8. HOLE LOCATION **Island**

9. SURFACE ELEVATION **1058**

10. DATE STARTED **9-23-02**

11. DATE COMPLETED **9-24-02**

12. OVERBURDEN THICKNESS **31'**

15. DEPTH GROUND WATER ENCOUNTERED **20.5**

13. DEPTH DRILLED INTO ROCK **0'**

16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED **NA**

14. DEPTH OF HOLE **31'**

17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) **NA**

18. GEOTECHNICAL SAMPLES **3**

DISTURBED **NA**

UNDISTURBED **3**

19. TOTAL NUMBER OF CORE BOXES **NA**

20. SAMPLES FOR CHEMICAL ANALYSIS

VOC

METALS

OTHER (SPECIFY)

OTHER (SPECIFY)

OTHER (SPECIFY)

21. TOTAL CORE RECOVERY

**1**

**NA**

**NA**

**TOC 1**

**NA**

**NA**

**NA %**

22. DISPOSITION OF HOLE

BACKFILLED

MONITORING WELL

OTHER (SPECIFY)

23. SIGNATURE OF INSPECTOR

**NA**

**NA**

**NA**

*[Signature]*

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS Time g	REMARKS h
	1	SILT, some clay, (10yr 3/2) to (10yr 4/3) very dark grayish brown to brown, dry, non-plastic, stiff,	∅	42/5	TOC Sample # DCF-02-41/01	1610	
	2		∅				
	3		∅				
	4		∅				
	5	Shelby tube ↓		1.5/2			1625



051601 Form MRK -55

PROJECT **USFR35DCFA**

HOLE NO. **DCF-02-41**



# HTW DRILLING LOG

HOLE NO.  
DCF-02-41

PROJECT  
USFR DCF1

INSPECTOR  
N. Watson

SHEET 2  
OF 4 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Shelby tube ↓		15/2		trace	Shelby tube ↑ 1628
	7	SILT, (2.5y 5/3) lt. olive brown, dry, loose, non-plastic, very soft	0				
	8		0	3/3			
	9						
	10		0				9/23 0845
	11		0				
	12		0	3.5/5			
	13		0				
	14	SAND (10y 4/3) pale brown, dry, very loose, fine-med grained, poorly sorted angular-subangular quartz, feldspar	0				



051601  
Form MRK-55-2

PROJECT  
USFR DCF1

HOLE NO.  
DCF-02-41

# HTW DRILLING LOG

HOLE NO. **DCF-02-41**

PROJECT <b>USFRDCFA</b>		INSPECTOR <b>N. Watson</b>		SHEET <b>3</b> OF <b>4</b> SHEETS			
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>True</i>	REMARKS h
	15	same as above	0	3.5/5			
	16	↑ Shelby tube ↓		5/2			0850 Shelby tube ↓
	17	SAND, (10yr 2/3) pale brown, dry, very loose, fine-med. grain, poor grade, some coarse grain angular sub-angular, quartz & feldspar	0			0900	↓ bent tube
	18	clayey silt. (2.5y 4/1) dark gray, damp moist, soft, nonplastic, has limestone pieces in it	0	1/3			- super hard, remove sampler insert bit
	19						- reinsert sampler
	20	Shelby tube ↓				0910	- WT.
	21			0/2			bent tube @ 20.5'
	22	same as above	0	1/3.5		0930	
	23						

# HTW DRILLING LOG

HOLE NO. DCF-02-41

PROJECT **USFRDCFA**

INSPECTOR **N. Watson**

SHEET **4**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above					
	24			1/3.5			
	25						1952
	26		0	2/5			
	27		0				
	28		0				
	29		0				
	30	Clay (Clay 1, 3N) very dark gray, dry, med. stiff, non-plastic					1003
	31						1010
	32	BOH = 31.0'					



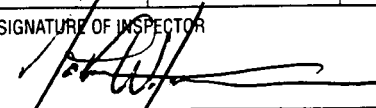
051601  
Form MRK-55-2

PROJECT **USFRDCFA**

HOLE NO. **DCF-02-41**

# HTW DRILLING LOG

HOLE NO. **DCF-02-42**

1. COMPANY NAME <b>Burns McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>Funkce Drilling</b>		SHEET 1 OF 4 SHEETS			
3. PROJECT <b>USFRDCFA</b>			4. LOCATION <b>Ft. Riley, KS</b>				
NAME OF DRILLER <b>Glen Kurtz</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>GB47</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION <b>1 Stand</b>		9. SURFACE ELEVATION <b>1069.6</b>			
		10. DATE STARTED <b>9-26-02</b>		11. DATE COMPLETED <b>9-26-02</b>			
		12. OVERBURDEN THICKNESS		15. DEPTH GROUNDWATER ENCOUNTERED <b>27.8</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>∅</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		14. DEPTH OF HOLE	
18. GEOTECHNICAL SAMPLES <b>3</b>		DISTURBED <b>∅</b>	UNDISTURBED <b>3</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	
<b>1</b>		<b>NA</b>	<b>NA</b>	<b>TOC</b>	<b>NA</b>	<b>NA</b>	
21. TOTAL CORE RECOVERY <b>NA %</b>		22. DISPOSITION OF HOLE		23. SIGNATURE OF INSPECTOR			
<b>NA</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)			
<b>NA</b>		<b>NA</b>	<b>✓</b>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	SILT, trace gravel, (10YR 4/3) brown, dry, soft, non-plastic	0	<del>RELATORY</del>	0-1' TOC sample DCF-02-42/01 1315		
	2		0				
	3	limestone rock -	0				sampler refusal
	4						
	5	Shelby tube	0			1320	



051601  
Form MRK -55

PROJECT **USFRDCFA**

HOLE NO. **DCF-02-42**

# HTW DRILLING LOG

HOLE NO. **DCF-02-42**

PROJECT **USFRDCFA**

INSPECTOR **N. Watson**

SHEET **12**  
OF **4** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e <i>recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>time</i>	REMARKS h
	6	<i>Shaly fine</i>					
	7	<i>SILTY CLAY, (10YR 4/2) dark grayish brown, moist, soft, non-plastic</i>	0			1330	
	8		0				
	9		0				
	10		0			1340	
	11		0				
	12		0				
	13	<i>Clayey silt, (10YR 4/3) brown, mixed w/ 1" to 2" layers of silty sand (10YR 6/5), moist, soft, nonplastic</i>	6				
	14						



051601  
Form MRK-55-2

PROJECT **USFRDCFA**

HOLE NO. **DCF-02-42**

# HTW DRILLING LOG

HOLE NO. **DCF-02-42**

PROJECT **USFRDCEA**

INSPECTOR **N. Watson**

SHEET OF **3** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h
		same as above		recovery		time	
	15					1350	
	16	SHELBY TUBE ↓		2/2			
	17	SILT (10y 5/3), brown, very soft, dry, non-plastic	0			1355	
	18	SILT (2.5y 5/3) lt. olive brown, dry, very soft non-plastic	0	2.7/3			
	19		0				
	20	SAND (2.5y 6/3) lt. yellowish brown, fine grain, poor grade, dry, very loose, quartz + trace feldspar	0			1358	
	21			1.9/5			
	22		0				
	23		0				

# HTW DRILLING LOG

42  
HOLE NO.  
DCF-02-40

PROJECT USFRDCFA		INSPECTOR N. Watson			SHEET OF 4 SHEETS		
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. recovery	ANALYTICAL SAMPLE NO. f	BLOW COUNTS time	REMARKS h
	24	Same as above	0	1.9/5			
	25		0			1400	
	24	SHELBY TUBE ↓		2/2			
	27					1410	
	27	SILTY CLAY (10YR 4/2) dark grayish brown, moist, soft, plastic	0				
	28	SAND (10YR 6/4) light yellowish brown, fine-med. grain, poor grade, very loose sub-angular, quartz + feldspar	0	2.6/3			
	29	CLAYEY Silt (10YR 4/2) dk. grayish brown, moist, soft, plastic	0				
	30	SILTY SAND (2.5Y 4/2) dk. grayish brown, wet, fine grain, loose, quartz feldspar	0			1415	
	30	clay (10YR 4/2) wet, soft, plastic	0	.5/5		1420	
	31	BOH = 30.5					
	32						

# HTW DRILLING LOG

HOLE NO.  
DCF-02-43

1. COMPANY NAME <b>Burns McDonnell</b>	2. DRILLING SUBCONTRACTOR <b>Funklee Drilling</b>	SHEET 1 OF 5 SHEETS
3. PROJECT <b>USFR DCFA</b>	4. LOCATION <b>Fort Riley, Kansas</b>	
5. NAME OF DRILLER <b>Ken Kurtz</b>	6. MANUFACTURER'S DESIGNATION OF DRILL <b>G1347</b>	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <b>8 1/4" OD HSA 5' split barrels</b>	8. HOLE LOCATION <b>Island</b>	
	9. SURFACE ELEVATION <b>1056.1</b>	
	10. DATE STARTED <b>9-24-02</b>	11. DATE COMPLETED

12. OVERBURDEN THICKNESS	15. DEPTH GROUNDWATER ENCOUNTERED
13. DEPTH DRILLED INTO ROCK <b>0'</b>	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED
14. DEPTH OF HOLE	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)

18. GEOTECHNICAL SAMPLES <b>0</b>	DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>		
20. SAMPLES FOR CHEMICAL ANALYSIS <b>0</b>	VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA %</b>

22. DISPOSITION OF HOLE <b>NA</b>	BACKFILLED <b>NA</b>	MONITORING WELL <input checked="" type="checkbox"/>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR 

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	SILT (10YR 4/2) dark grayish brown, dry, stiff, non-plastic	0				
	2	clayey silt, (10YR 7/2) very dark brown, dry, stiff, non-plastic	0	25/3			
	3		0			0945	barrel refused drill out to 5'
	4	NO RECOVERY ↓					
	5	SILT, (10YR 6/3) pale brown, very stiff, non-plastic		2/5			



051601  
Form MRK -55

PROJECT  
**USFR DCFA**

HOLE NO.  
**DCF-02-43**



# HTW DRILLING LOG

HOLE NO.  
DCF-02-43

PROJECT  
USFRDLCA

INSPECTOR  
N. Watson

SHEET  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS <del>0</del>	GEOTECH SAMPLE OR CORE BOX NO. <del>0</del>	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS time	REMARKS h
	6	Same as above	0				
	7		0				
	8		0	2/5			
	9		0				
	10		0				0900
	11	SAND (1 CYR 7/3) Very fine brown, dry, very loose, fine grained, poor grade, quartz and feldspar	0				
	12		0	1/5			
	13		0				
	14						



051601  
Form MRK-55-2

PROJECT  
USFRDLCA

HOLE NO.  
DCF-02-43

# HTW DRILLING LOG

HOLE NO.  
DCF-02-43

PROJECT  
USFRDCFA

INSPECTOR  
N. Watson

SHEET  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e <i>recovery</i>	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g <i>fine</i>	REMARKS h
	15	<i>same as above</i>	0	1/5			0910
	16	<i>SAND (10YR 7/3) very pale brown, wet, loose, fine med grains, med. grade, feldspar &amp; quartz</i>	0				
	17		0	2/5			
	18		0				▼
	19		0				
	20	<i>NO recovery</i>				0915	<i>sand heaved 4'</i>
	21						
	22						
	23						<i>logs from cuttings</i>

# HTW DRILLING LOG

HOLE NO. **DCF-02-43**

PROJECT **USFRDCFA**

INSPECTOR **N. Watson**

SHEET **4**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		same as above		relodng			
	24			NA			logging from cuttings
	25		∅			0920	
	26						
	27	SAND (10YR5/4) yellowish brown, wet, loose, fine-coarse grained, some grade, quartz & feldspar, lincz - subangular					
	28						
	29						
	30		∅			0925	
	31						
	32						



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Form MRK-55-2

PROJECT **USFRDCFA**

HOLE NO. **DCF-02-43**

# HTW DRILLING LOG

HOLE NO. **USFR DCF-02-43**

PROJECT **USFR DCF A**

INSPECTOR **N. Watson**

SHEET **15**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h
	33	same as above		NA			100 ft from cuttings
	34						
	35		Ø	NA		0945	
	36						
	37						
	38						
	39						
	40		Ø	NA		0954	
	41	BOTH = 40.2'					↓



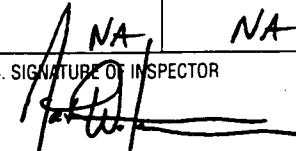
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PROJECT **USFR DCF A**

HOLE NO. **DCF-02-43**

# HTW DRILLING LOG

HOLE NO.  
DCF-02-44a

1. COMPANY NAME <b>Burns McDonnell</b>		2. DRILLING SUBCONTRACTOR <b>Funkce Drilling</b>			SHEET 1 OF 5 SHEETS		
3. PROJECT <b>USFRDCFA</b>			4. LOCATION <b>Fort Riley, KS</b>				
5. NAME OF DRILLER <b>Glen Kurst</b>			6. MANUFACTURER'S DESIGNATION OF DRILL				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE-LOCATION <b>Island</b>		9. SURFACE ELEVATION <b>1058.8</b>			
		10. DATE STARTED <b>9-11-02</b>		11. DATE COMPLETED <b>9-11-02</b>			
		12. OVERBURDEN THICKNESS <b>40.0'</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>21'</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>	
		13. DEPTH DRILLED INTO ROCK <b>0'</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>		14. DEPTH OF HOLE <b>40.0'</b>	
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS <b>NA</b>		VOC <b>NA</b>	METALS <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	OTHER (SPECIFY) <b>NA</b>	21. TOTAL CORE RECOVERY <b>NA %</b>	
		BACKFILLED <b>NA</b>	MONITORING WELL <input checked="" type="checkbox"/>	OTHER (SPECIFY) <b>NA</b>	23. SIGNATURE OF INSPECTOR 		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	Clayey silt, 10yR 7/2 very dark brown, dry med stiff, non-plastic	0	2.4/5			
	2		0				
	3		0				
	4	SILT, (10yR 7/2) light gray. very soft, dry, non-plastic					
	5		0	2.3/4			



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Form MRK - 55

PROJECT  
**USFRDCFA**

HOLE NO.  
**DCF-02-44a**

# HTW DRILLING LOG

HOLE NO.  
DF-02-44C

PROJECT  
USFRDLFA

INSPECTOR  
N. Watson

SHEET 2  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	same as above	0	2.3/45		fine	
	7		0				
	8						
	9						
	10					1308	
	11		0 CEL = 10				
	12		0	3/5			
	13	SAND (1 py 6/4) H. yellow brown, dry, fine grained, well sorted, sub-angular, QUARTZ & feldspar	0				
	14						

# HTW DRILLING LOG

HOLE NO.  
DLF-02-44c  
SHEET 3  
OF 5 SHEETS

PROJECT  
USFRDCFA

INSPECTOR  
N. Watson

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above		3/5		1314	
15			∅ LEL = ∅				
16			∅	1.5/5			rock
17							
18							
19							
20			∅ LEL = ∅			1320	
21				0/5			▲ = WT
22							
23							

# HTW DRILLING LOG

HOLE NO.  
DCF-02-41c

PROJECT  
USFRDCA

INSPECTOR  
N. Watson

SHEET  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24			recovery			
	25		∅ LEL = ∅			1332	heave-d to 16' - locked in auger
	26						
	27						
	27						
	29						
	30		∅ LEL = ∅			1340	logged from cuttings
	31	SAND, (10yr <sup>6/4</sup> ) light yellowish brown, med- coarse grain, very loose, angular sub- angular, poorly sorted quartz, feldspar					
	32						



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PROJECT  
USFRDCA

HOLE NO.  
DCF-02-41c



# HTW DRILLING LOG

HOLE NO. **DLF 02-44c**

SHEET **5**  
OF **5** SHEETS

PROJECT **USFR DLFA**

INSPECTOR **N. Watson**

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW-COUNTS g	REMARKS h
		Same as above					
	33						logged from cuttings
	34						
	35		$\phi$ LEL = $\phi$			1350	
	36						
	37						
	38						
	39						
	40		$\phi$ LEL = $\phi$			1354	
		BOH = 40.0'					
	41						



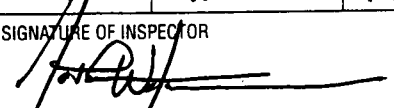
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PROJECT **USFR DLFA**

HOLE NO. **DLF 02-44c**

# HTW DRILLING LOG

HOLE NO.  
**DCF02-49c**

1. COMPANY NAME <b>Burns m=Donnell</b>		2. DRILLING SUBCONTRACTOR <b>Fruke Drilling</b>		SHEET 1 OF 5 SHEETS			
3. PROJECT <b>USFRDCFA</b>			4. LOCATION <b>Fort Riley Kansas</b>				
5. NAME OF DRILLER <b>Glen Kurtz</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>mobile B470</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		8. HOLE LOCATION <b>island</b>		9. SURFACE ELEVATION <b>1049.7</b>			
		10. DATE STARTED <b>9-5-02</b>		11. DATE COMPLETED <b>9-5-02</b>			
		12. OVERBURDEN THICKNESS <b>40.0'</b>		15. DEPTH GROUND WATER ENCOUNTERED <b>13.5</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	
		13. DEPTH DRILLED INTO ROCK <b>Ø</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>			
14. DEPTH OF HOLE <b>40.0'</b>		18. GEOTECHNICAL SAMPLES					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED <b>NA</b>	UNDISTURBED <b>NA</b>	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)		
		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>		
22. DISPOSITION OF HOLE <b>NA</b>		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
		<b>NA</b>	<input checked="" type="checkbox"/>	<b>NA</b>			

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<b>Silty SAND, fine grained, 10yrs/4 yellowish brown, well sorted quartz</b>	<b>0</b>				
	2		<b>0</b>	<b>4.2/5.0</b>			
	3		<b>0</b>				
	4		<b>0</b>				
	5		<b>0</b>			<b>1315</b>	



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Form MRK -55

PROJECT  
**USFRDCFA**

HOLE NO.  
**DCF-02-49c**

# HTW DRILLING LOG

HOLE NO. **DLF 02-49c**

SHEET **12**  
OF **5** SHEETS

PROJECT <b>DLFA</b>		INSPECTOR <b>N. Watson</b>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. <b>1.5/5.0</b>	ANALYTICAL SAMPLE NO. f	BLOW COUNTS <b>flow</b>	REMARKS h
		<i>same as above</i>	0				
	6	<i>SAND, med - coarse grain, very loose, 10yr 1/4 H. yellowish brown, dry, gtz + feldspar poorly graded</i>	0	<b>1.5/5.0</b>			
	7		0				
	8		0				
	9		0				
	10		0			1327	
	11		0				
	12		0	<b>0.8/5.0</b>			
	13		0				✕ ▼
	14		0				— ▼
						1330	

# HTW DRILLING LOG

HOLE NO.  
DCE 02-490

PROJECT  
DCEFA

INSPECTOR  
N. Watson

SHEET 1/3  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. V. C. 01/01/01	ANALYTICAL SAMPLE NO. 1	BLOW COUNTS 4100	REMARKS h
	15	<del>same as above</del> SAND w/ trace gravel, 10% RSK grayish brown, wet, very loose, poorly graded angular-subangular gravel + field spar	-	0.7/5.0		1300	heaving sand to 13'
	16		-				
	17		-				
	18			0/0			
	19		-				
	20		-			1400	logged from cuttings
	21						↓
	22						↓
	23						↓



051601  
Form MRK-55-2

PROJECT  
DCEFA

HOLE NO.  
DCE 02-490

# HTW DRILLING LOG

HOLE NO. **DCF 02-49c**

PROJECT **USFR DCA**

INSPECTOR **N. Watson**

SHEET **4**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g <i>time</i>	REMARKS h
	24			<i>recovery</i>			logged from cuttings
	25	SILTY SAND, 10yr 4/2 dark grayish brown wet, loose, med grade coarse poorly graded quartz + feldspar					
	26						
	27						
	28						
	29						
	30					-1443	<del>*</del>
	31						
	32						↓


# HTW DRILLING LOG

HOLE NO.

PROJECT **USFRDCFA**

INSPECTOR **N. Watson**

SHEET **15**  
OF **5** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33						logged from cuttings  
	34						
	35	SAND, some gravel, 10YR5/1, wet, poorly graded, loose, gtz, feldspar, subangular					
	36						
	37						
	38						
	39						
	40					1453	
	41						
			Bott = 40.0'				



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Form MRK-55-2

PROJECT **USFR DCFA**

HOLE NO. **DCF 02-49c**

# HTW DRILLING LOG

 HOLE NO. *DCF03-50A*

1. COMPANY NAME <i>Burns &amp; McDonnell</i>		2. DRILLING SUBCONTRACTOR <i>Funklee Drilling</i>			SHEET 1 OF 5 SHEETS		
3. PROJECT <i>DCFA</i>			4. LOCATION <i>Trainous Area 2</i>				
5. NAME OF DRILLER <i>Glen &amp; Donna Kurtz</i>			6. MANUFACTURER'S DESIGNATION OF DRILL <i>Tractor-Mounted Mobile B-40</i>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT <i>7 1/2" HSA</i>		8. HOLE LOCATION <i>West of DCF96-36</i>		9. SURFACE ELEVATION			
		10. DATE STARTED <i>7-16-03</i>		11. DATE COMPLETED <i>7-16-03</i>			
		12. OVERBURDEN THICKNESS <i>28.2</i>		15. DEPTH GROUNDWATER ENCOUNTERED <i>22 ft bgs</i>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <i>23:19, 22 hours</i>	
		13. DEPTH DRILLED INTO ROCK <i>0.0</i>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <i>NA</i>		14. DEPTH OF HOLE <i>28.2</i>	
18. GEOTECHNICAL SAMPLES <i>NA</i>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <i>NA</i>			
20. SAMPLES FOR CHEMICAL ANALYSIS <i>NA</i>		VOC <i>NA</i>	METALS <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	OTHER (SPECIFY) <i>NA</i>	
21. TOTAL CORE RECOVERY <i>NA</i> %		BACKFILLED <i>NA</i>	MONITORING WELL <i>✓ 2"</i>	OTHER (SPECIFY) <i>NA</i>	23. SIGNATURE OF INSPECTOR <i>Rick Monte</i>		
22. DISPOSITION OF HOLE							

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	1	<i>Silty clay, grayish brown (SYR3/2), soft, nonplastic, damp.</i>				<del>BLOW COUNTS</del> <i>Time</i>	<i>0757-began drilling.</i>
	2						<i>Logged from cuttings. See log for DCF03-50C.</i>
	3	<i>Sandy, pale yellowish brown (SYR6/2), soft, loose, nonplastic, dry to damp, very fine.</i>					
	4						
	5		<i>0.0</i>			<i>0802</i>	


 051601  
Form MRK -55

PROJECT

*DCFA*

HOLE NO.

*DCF03-50A*

# HTW DRILLING LOG

HOLE NO. *DCFA 3-50A*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET *2*  
OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Sand, pale yellowish brown (STR6/2), soft, loose, non-plastic; dry to damp, very fine				<u>Time</u>	
	7						
	8	Same as above but dark yellowish brown (10YR9/2).					
	9						
	10		0.0			0.815	
	11	Silty clay, grayish brown (5YR3/2), soft, medium plastic; moist					
	12	Sand, grayish orange (10YR7/4), soft, loose, non-plastic, damp; fine to medium.					
	13						
	14						



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PROJECT *DCFA*

HOLE NO. *DCFA 3-50A*



# HTW DRILLING LOG

HOLE NO. *DCP03-50.A*

PROJECT *DCFA*      INSPECTOR *Rick Monk*      SHEET *X3* OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	<i>Sandy, grayish orange (101R714) soft, loose, non-plastic, damp, fine to medium.</i>	<i>0.0</i>			<i>Time 0829</i>	
	16						
	17						
	18						
	19						
	20		<i>0.0</i>			<i>0848</i>	
	21						
	22	<i>Sandy grayish orange (101R714), soft, loose, non-plastic, wet, medium to very coarse, subangular</i>					
	23						



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PROJECT *DCFA*

HOLE NO. *DCP03-50.A*

# HTW DRILLING LOG

HOLE NO. *DLA03-50A*

PROJECT *DLFA*

INSPECTOR *Rick Monk*

SHEET *X4*  
OF 5 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	<p><i>Sand, grayish orange (WTR 7/4) soft, loose, nonplastic, medium to very coarse, subangular.</i></p> <p><i>Color change to medium dark gray. Some fines.</i></p>				<i>Time</i>	
	25		<i>0.0</i>	<i>0848</i>			
	26						
	27						
	28						
	29	<i>TD = 28.2' bgs at 0902.</i>					
	30						
	31						
	32						



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Form MRK-55-2

PROJECT *DLFA*

HOLE NO. *DLA03-50A*

# HTW DRILLING LOG

HOLE NO. *DCFA 03-50A*

PROJECT *DCFA*

INSPECTOR *Rick Monk*

SHEET OF *5* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		<p><i>2.5' stick up</i></p> <p><i>19.4'</i> <del><i>4.4'</i></del> <i>15.50' of 2" 2D</i> <i>PVC schedule 40 riser.</i></p> <p><i>Enviroplug medium bentonite chips hydrated in one-foot lifts.</i></p> <p><i>9.5' bgs</i></p> <p><i>15.00' of 2" 2D 0.020 slot Sched. 40 screen</i></p> <p><i>4 bags of Filter #1 20x40 quartz sand.</i></p> <p><i>0.05'</i></p> <p><i>Slip on cap with screws.</i></p> <p><i>Not To Scale.</i></p>					



051601  
Form MRK-55-2

PROJECT *DCFA*

HOLE NO. *DCFA 03-50 A*

# HTW DRILLING LOG

HOLE NO. **DLF03-50C**

1. COMPANY NAME <b>Burns &amp; McDonnell V</b>		2. DRILLING SUBCONTRACTOR <b>Funkee Drilling</b>			SHEET 1 OF 7 SHEETS		
3. PROJECT <b>DCFA</b>			4. LOCATION <b>Training Area 2</b>				
5. NAME OF DRILLER <b>Glenn Bonna Kurtz</b>			6. MANUFACTURER'S DESIGNATION OF DRILL <b>Tractor Mounted Mobile P-40</b>				
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT		7 7/8" OD HSA		8. HOLE LOCATION <b>West of DCF 96-36</b>			
		5" split barrel sampler		9. SURFACE ELEVATION			
12. OVERBURDEN THICKNESS <b>53.0</b>		15. DEPTH GROUNDWATER ENCOUNTERED <b>22.0 ft bss</b>					
13. DEPTH DRILLED INTO ROCK <b>0.0</b>		16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED <b>NA</b>					
14. DEPTH OF HOLE <b>53.0</b>		17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY) <b>NA</b>					
18. GEOTECHNICAL SAMPLES <b>NA</b>		DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES <b>NA</b>			
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
<b>NA</b>		<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b>	<b>NA</b> %
22. DISPOSITION OF HOLE		BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR		
<b>NA</b>		<b>NA</b>	<b>✓ 2"</b>	<b>NA</b>	<b>Rick Monk</b>		

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	SLOW-COUNTS g	REMARKS h
	1	Silty clay, grayish brown (STRAY), soft, non-plastic, damp.	0.0	Recovery 2.8 4.0			0400-Dejan drilling.
	2						
	3	Sand, fine yellowish brown (STRAY), soft, loose, no-plastic, dry to damp, very fine	0.0				
	4						
	5					0905	

# HTW DRILLING LOG

HOLE NO. **DLA03-50C**

PROJECT **DCFA**

INSPECTOR **Rick Mork**

SHEET **7.2**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	SECTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	6	Sand, pale yellowish brown (STR 6/2), soft, loose, non-plastic, dry to damp, very fine	0.0	Recovery <u>2.8</u> 4.0		Time	
	7						
	8	Same as above but dark yellowish brown (STR 4/2).					
	9		0.0 0.0			0918	
	10						
	11			<u>1.4</u> 4.0			
	12	Silty clay, <del>dark</del> grayish brown (STR 3/2), soft, medium plastic, moist.				<del>0938</del>	
	13	Sand, grayish orange (STR 2/4), soft, loose, non-plastic, damp, fine to medium.	0.0 0.0 0.0	<u>1.6</u> 3.0		0938	
	14					<del>0938</del>	



051601  
Form MRK-55-2

PROJECT

**DCFA**

HOLE NO.

**DLA03-50C**

# HTW DRILLING LOG

HOLE NO. DLA03-504  
 SHEET X3 OF 7 SHEETS

PROJECT		INSPECTOR					
<u>DCFA</u>		<u>Rick Monk</u>					
ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEO TECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	15	<u>Sand, grayish orange (WPA 7/4), soft, loose, non-plastic, damp, fine to medium.</u>	<u>0.0</u>	<u>Recovery</u>		<u>Time</u> <u>0950</u>	
	16		<u>0.0</u>				
	17			<u>21</u> <u>5.0</u>			
	18						
	19						
	20		<u>0.0</u>			<u>1004</u>	
	21		<u>0.0</u>				
	22						
	23	<u>Becomes wet. Sand, grayish orange (WPA 7/4), soft, loose, non-plastic, wet, medium to very coarse, subangular.</u>					



051601  
Form MRK-55-2

PROJECT DCFA

HOLE NO. DLA03-504

# HTW DRILLING LOG

HOLE NO. **DLF03-50C**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **X 4**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	24	Sand, grayish orange (100% 7/4), soft, loose, nonplastic, wet, medium to very coarse, subangular color change to medium dark gray, some fines.	0.0	Recovery  1.9 5.0		Time	
	25					1029	<del>Sand is</del> heaving. Logged from cuttings
	26						
	27						
	28						
	29						
	30		0.0			1050	
	31						
	32						



051601  
Form MRK-55-2

PROJECT **DCFA**

HOLE NO. **DLF03-50C**

# HTW DRILLING LOG

HOLE NO. *DCP03-50C*

PROJECT *DCFA*

INSPECTOR *Rick Mont*

SHEET *X 5*  
OF *7* SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	33	<i>Sand, medium dark gray, soft, loose, nonplastic, medium to very coarse, subangular, some fines, wet.</i>				<u>Time</u>	
	34						
	35		0.0			1057	
	36						
	37						
	38						
	39						
	40		0.0			1103	
	41						



# HTW DRILLING LOG

HOLE NO. **DCA03-50C**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET **6**  
OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	42	Sand, medium dark gray, soft, loose, nonplastic, medium to very coarse, subangular, some fines, wet					
	43						
	44						
	45		0.0			1111	
	46						
	47						
	48						
	49						
	50		0.0			1120	

# HTW DRILLING LOG

HOLE NO. **DCFO3-9C**

PROJECT **DCFA**

INSPECTOR **Rick Monk**

SHEET OF **7** SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
	51	Sand, medium dark gray, loose, non-plastic, medium to very coarse, subangular, some fines, wet.				<u>Time</u>	
	52	Some 1/2" - 1" gravel.					
	53	Shale, medium dark gray, weathered.	0.0				
		<p>TD = 53.0' bgs at 1131.</p> <p>2.5' stickup.</p> <div style="display: flex; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; width: 20px; height: 300px; margin-right: 5px;"></div> <div style="flex-grow: 1;"> <p style="margin-left: 20px;"><del>54.03</del></p> <p style="margin-left: 20px;">45.30'</p> <p style="margin-left: 20px;"><del>50.03' of 2"</del></p> <p style="margin-left: 20px;">9' schod, 40' PVC riser.</p> <div style="margin-left: 20px;"> <p>3.55' bgs</p> <p>1/4" bentonite pellets (non-activated)</p> <p>40.00' bgs</p> </div> <div style="margin-left: 20px;"> <p>2 bags of Unimin 20-40 silica sand.</p> <p>Sand heaved when plug was knocked out.</p> </div> <p style="margin-left: 20px;">10.00' of 2" 20 010 slot PVC screen.</p> <p style="margin-left: 20px;">0.05'</p> </div> <div style="margin-left: 20px;"> <p>Screen</p> <p>10.01</p> <p>10.04' cap.</p> <p><u>riser</u></p> <p>10.00</p> <p>10.01</p> <p><del>10.01</del></p> <p>10.00</p> <p>10.01</p> <hr style="width: 50%; margin-left: 0;"/> <p>50.03</p> <p>-3.98'</p> <p>-0.75</p> <hr style="width: 50%; margin-left: 0;"/> <p>45.30</p> </div> </div> <p style="margin-left: 20px;">Not to scale.</p>					

51  
52  
53



**Appendix E –  
Monitoring Well  
Installation Diagrams and  
Development Forms**

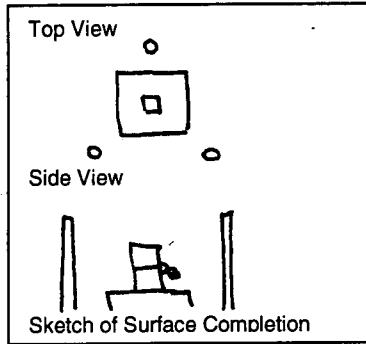
**Monitoring Well DCF02-41**

Project Number: 27979  
 Monitoring Well No: DCF02-41  
 Installation Start (Date/Time): 09/24/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/25/02

Well casing, top elevation 1060.16 ft. msl

Land surface elevation 1058.0 ft. msl



Annular seal, top 2.0 ft bgs / 1056.0 ft msl

Bentonite seal, top 14.0 ft bgs / 1044.0 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 18.0 ft bgs / 1040.0 ft msl

Screen joint, top 23.5 ft bTOC / 1036.7 ft msl

Bottom of end cap 33.5 ft bTOC / 1026.7 ft msl

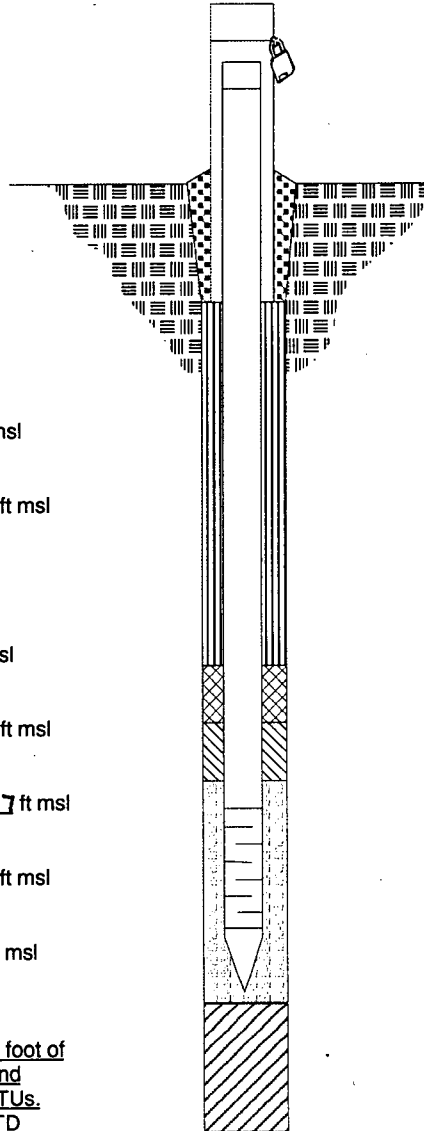
Filter pack, bottom 31.0 ft bgs / 1027.0 ft msl

Borehole, bottom 31.0 ft bgs / 1027.0 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. Later pumped until the measured TD equaled constructed TD.  
 Date: 10/01/02 and 10/04/02

Date	Time	Level below TOC
10/11/02	1029	20.17

Comments Added 5 gallons of water to hydrate bentonite seal.



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, silica, 20-40  
 Volume added 300 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Nathan Watson  
 Checked by: WME Clendenen Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-41</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DLFA</b>		Ground Surface Elevation (GS):	
Location: <b>N E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		<b>Well Volume Calculation</b>	
Date Well Installed: <b>9-24-02</b>		$  \begin{array}{r}  2.24 \\  16.37 \\  30.96 \\  20.59 \\  \hline  10.57 \times 1.63 \\  \hline  17.220 \\  103700 \\  \hline  16903.1  \end{array}  $	
Total Depth of Well: <b>33.48</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>23.47</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10</b> feet			
Type of Formation Screened: <b>sand</b>			
5 gallon put in = <b>20 gal</b> $8.0 \text{ gallon} \times 5 = 40 \text{ gal}$ $20 \text{ gal} + 40 \text{ gal} = 60 \text{ gal}$ $60 \text{ gal} - 15 \text{ gal} = 45 \text{ gal}$			
1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in)) <sup>2</sup>			

<b>Well Development Method</b>			
Equipment: <b>2 stage 12 volt whale</b>		Method Description: <b>Surge well 2-3 minutes/foot. put on bottom of well and begin taking readings</b>	
Surge	<input type="checkbox"/>	Bail	<input type="checkbox"/>
Airlift	<input type="checkbox"/>	Pump	<input checked="" type="checkbox"/>

Observations During Well Development													
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)			
				Gallons	Total								
10/1	1000	20.59	30.96	0	0	18.3	7.5	1300	71000	muddy			
	1020			20	20	16.3	7.4	1410	71000				
	1030			10	10	16.5	7.4	1410	71000				
	1040			7	15	16.2	7.4	1380	71000				
	1050			5	20	15.8	7.4	1370	71000				
	1130			10	20	17.3	7.4	1380	71000				
	1140			10	30	17.3	7.4	1340	71000				
	1145			- pump stop working									
	1345			20	50	17.9	7.2	1380	304				
	1400			10	60	17.2	7.6	1370	246				
	1410			10	70	17.5	7.7	1360	129				
	1420			5	75	17.3	7.7	1340	59.5				
	1430			5	80	17.3	7.8	1350	32.6				
	1440			5	85	17.4	7.7	1370	29.6				
10/4	0900	20.56	29.73	0	85								
10/4	0935	22.25	33.55	40	125								

\* From TOC unless otherwise noted in Remarks



# Well Development Form (continuation)

Project Number: 27979 Well Number: DCF-02-41

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/4	0945	22.25	33.55	<del>50</del>	125	13.9	7.1	1440	71000	
	0950			5	130	13.9	7.1	1400	>1000	
	0955			105	135	14.2	7.1	1430	539	
	1000			155	140	14.2	7.1	1400	605	
	1005			205	145	14.1	7.1	1390	240	
	1010			255	150	14.2	7.1	1380	119	
	1015			305	155	14.1	7.1	1390	38.9	
	1020	25.75	33.55	355	160	14.1	7.1	1370	21.4	

\* From:   less otherwise noted in Remark



**Monitoring Well DCF02-42**

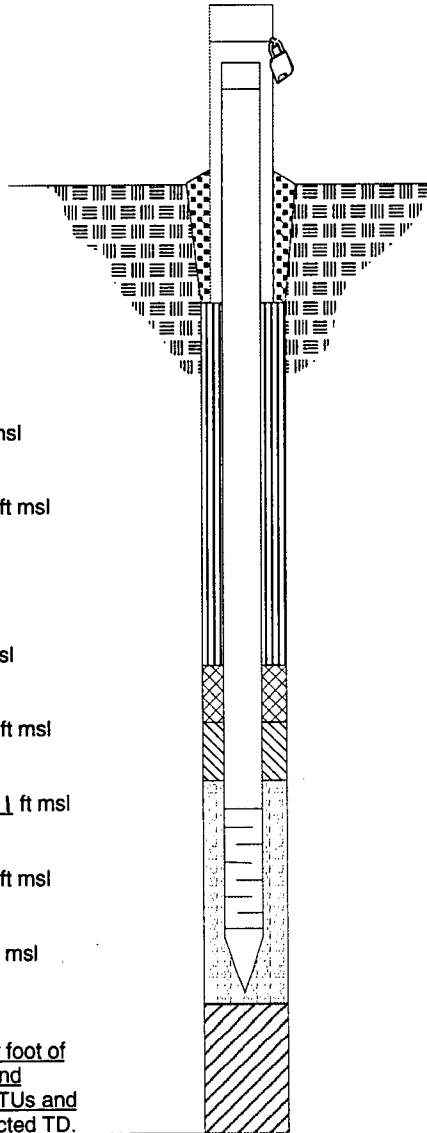
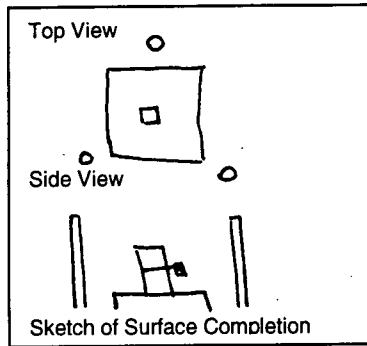


Project Number: 27979  
 Monitoring Well No: DCF02-42  
 Installation Start (Date/Time): 09/26/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1072.27 ft. msl

Land surface elevation 1069.6 ft. msl



Annular seal, top 2.0 ft bgs / 1067.6 ft msl

Bentonite seal, top 13.0 ft bgs / 1056.6 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 17.0 ft bgs / 1052.6 ft msl

Screen joint, top 23.2 ft bTOC / 1049.1 ft msl

Bottom of end cap 33.2 ft bTOC / 1039.1 ft msl

Filter pack, bottom 30.5 ft bgs / 1039.1 ft msl

Borehole, bottom 30.5 ft bgs / 1039.1 ft msl

**Development:**

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/07/02

Date	Time	Level below TOC
10/11/02	0830	32.30

Comments Added 9 gallons of water to hydrate bentonite seal.

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, Silica, 20-40  
Volume added 250 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):
  - None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
If yes, Type/material \_\_\_\_\_  
Number \_\_\_\_\_  
Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: WMS Clenden Date: 10/15/2002

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-42</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		<b>Well Volume Calculation</b>	
Date Well Installed: <b>9/26/02</b>		1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in)) <sup>2</sup>	
Total Depth of Well: <b>33.35</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>23.32</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10.03</b> feet			
Type of Formation Screened: <b>sand</b>			

<b>Well Development Method</b>			
Equipment: <b>12 volt, 2 stage whale</b>		Method Description: <b>Swag 2-3 minutes, put pump on bottom and let recharge and began taking readings pumped dry 3 times. Each time let recharge to capacity. After pumping dry 3 times well considered developed</b>	
Surge	<input type="checkbox"/>	Ball	<input type="checkbox"/>
Airlift	<input type="checkbox"/>	Pump	<input checked="" type="checkbox"/>

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>10/7/02</b>	<b>1035</b>	<b>32.22</b>	<b>33.21</b>	<b>0</b>	<b>0</b>	<b>14.8</b>	<b>7.1</b>	<b>1890</b>	<b>71000</b>	
	<b>1037</b>			<b>.2</b>	<b>.2</b>					
	<b>1055</b>	<b>32.25</b>		<b>.2</b>	<b>.4</b>	<b>14.8</b>	<b>7.1</b>	<b>1880</b>	<b>&gt;1000</b>	<b>pumped dry</b>
	<b>1115</b>	<b>32.23</b>		<b>.2</b>	<b>.6</b>	<b>14.8</b>	<b>6.9</b>	<b>1890</b>	<b>71000</b>	<b>pumped dry</b>

\* From TOC unless otherwise noted in Remarks



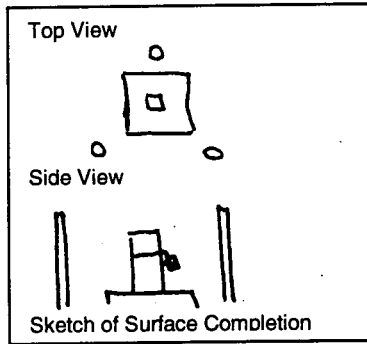
**Monitoring Well DCF02-43**

Project Number: 27979  
 Monitoring Well No: DCF02-43  
 Installation Start (Date/Time): 09/25/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/26/02

Well casing, top elevation 1058.50 ft. msl

Land surface elevation 1056.1 ft. msl



Annular seal, top 2.0 ft bgs / 1054.1 ft msl

Bentonite seal, top 24.0 ft bgs / 1032.1 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 27.0 ft bgs / 1029.1 ft msl

Screen joint, top 32.0 ft bTOC / 1026.5 ft msl

Bottom of end cap 42.0 ft bTOC / 1016.5 ft msl

Filter pack, bottom 40.0 ft bgs / 1016.1 ft msl

Borehole, bottom 40.0 ft bgs / 1016.1 ft msl

**Development:**

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/02/02

Date	Time	Level below TOC
10/11/02	0825	18.70

Comments Added 10 gallons of water while placing sand.

1. Cap and Lock?  Yes  No

2. Protective cover:  
 a. Inside Diameter 4 in.  
 b. Length 5 ft.  
 c. Material Metal  
 d. Weep hole location/size: 1/8", 1/2" off concrete pad  
 e. Add. protection?  Yes  No

3. Pad type/dimensions: 3' x 3' x 4"

4. Surface Seal:  Concrete  \_\_\_\_\_

5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC

6. Annular seal:  Granular bentonite  
 Bentonite slurry  
 Bentonite-cement  
 Other \_\_\_\_\_

7. Bentonite seal:  Granular bentonite  
 Bentonite pellets \_\_\_\_\_ inch  
 Bentonite chips 3/8 inch  
 Other \_\_\_\_\_

8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
 Volume added \_\_\_\_\_ lbs.

9. Filter pack: Manufacturer, name, & size Oglebay Norton, Silica, 20-40  
 Volume added 50 lbs

10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.020 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_

13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: WME Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-43</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		Well Volume Calculation	
Date Well Installed: <b>9/25/02</b>		$\frac{42.05 \times 23.24 \times 1.163}{23.24} = 3.79$ $3.79 \times 5 = 18.95 \text{ gal}$	
Total Depth of Well: <b>42.58</b> feet from <b>TOC</b>		<b>10 → introduced x 3 = 30 gal</b>	
Depth to Top of Screen: <b>32.55</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10.03</b> feet			
Type of Formation Screened: <b>sand</b>			

1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup>

<b>Well Development Method</b>			Method Description: <b>Surge 2-3 minutes/foot, then place well pump on bottom and begin taking readings</b>
Equipment: <b>2 stage, 12 volt whale</b>			
Surge	Bail		
Airlift	Pump	<input checked="" type="checkbox"/>	

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/2/02	1515	18.81	42.05	0	0	14.7	7.2	870	>1000	
	1525			5	5	14.7	7.2	870	71000	
	1535			5	10	14.8	7.0	870	71000	
	1545			5	15	14.4	7.1	870	997	
	1555			10	25	14.6	7.1	870	257	
	1605			10	35	14.4	7.0	870	35.9	
	1615			10	45	14.5	7.0	870	763	
	1625			10	55	14.4	7.1	870	46.8	
	1635			10	65	14.4	7.0	870	174	
	1645			10	75	14.3	7.0	870	78.2	
1655		18.82	42.05	10	85	14.4	7.1	880	26.7	

\* From TOC unless otherwise noted in Remarks



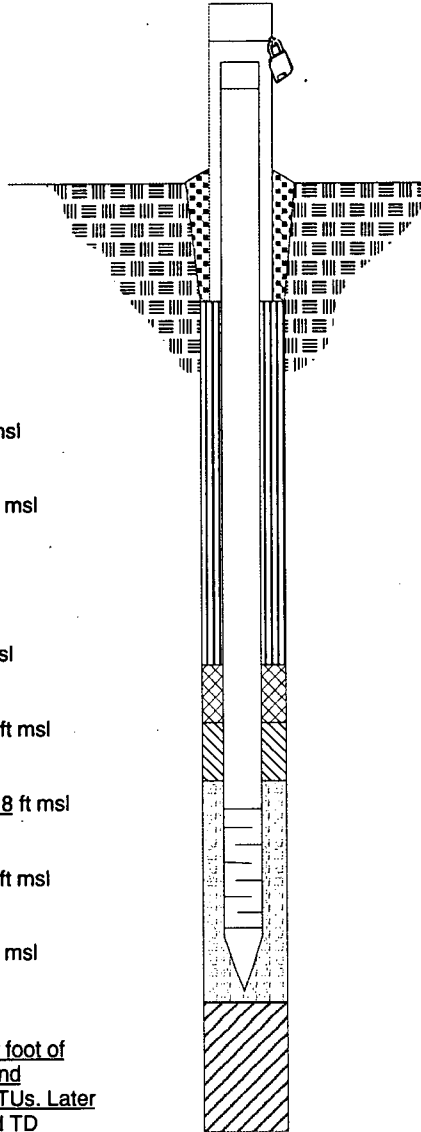
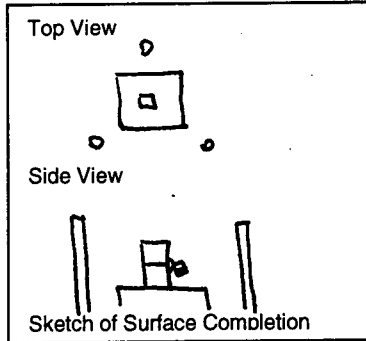
**Monitoring Well DCF02-44a**

Project Number: 27979  
 Monitoring Well No: DCF02-44a  
 Installation Start (Date/Time): 09/11/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1061.15 ft. msl

Land surface elevation 1058.8 ft. msl



Annular seal, top 2.0 ft bgs / 1056.8 ft msl

Bentonite seal, top 6.0 ft bgs / 1052.8 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 10.5 ft bgs / 1048.3 ft msl

Screen joint, top 16.3 ft bTOC / 1044.8 ft msl

Bottom of end cap 31.3 ft bTOC / 1029.8 ft msl

Filter pack, bottom 28.5 ft bgs / 1030.3 ft msl

Borehole, bottom 28.5 ft bgs / 1030.3 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. Later jiggle tube used until the measured TD equaled constructed TD.  
 Date: 10/01/02, 10/03/02, and 10/04/02

Date	Time	Level below TOC
10/11/02	1012	21.59

Comments

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 300 lbs
10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.
11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.020 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Nathan Watson  
 Checked by: Wm McClendon Date: 10/15/02

# Well Development Form

Project Number: <u>27979</u>	Well Number: <u>DLF-02-44A</u>
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<b>Project Information</b>	<b>Elevation of Well</b>
Facility Name: <u>DLFA</u>	Ground Surface Elevation (GS):
Location: <u>N</u> <u>E</u>	Top of Casing Elevation (TOC):

<b>Well Information</b>	<b>Well Volume Calculation</b>
Date Well Installed:	$  \begin{array}{r}  8.4 \times 21 \\  163 \times 8.4 \\  \hline  175.2 \\  13040 \\  \hline  13215.2  \end{array}  $ $  \begin{array}{r}  21 \\  1.3 \\  \hline  5 \\  6.5 \text{ gal}  \end{array}  $
Total Depth of Well: <u>31.66</u> feet from <u>TOC</u>	
Depth to Top of Screen: <u>16.65</u> feet from <u>TOC</u>	
Length of Casing Screened: <u>15.01</u> feet	
Type of Formation Screened: <u>sand</u>	
<p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></p>	

<b>Well Development Method</b>	
Equipment: <u>12 volt, 2 stage, whale</u>	Method Description: <u>surge 2-3 minutes/foot. put on bottom and begin taking readings</u>
Surge <input type="checkbox"/>	Bail <input type="checkbox"/>
Airlift <input type="checkbox"/>	Pump <input checked="" type="checkbox"/>

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/1	1505	21.91	30.31	5	5	16.3	7.4	1590	>1000	
	1520			5	10	18.0	7.5	1630	>1000	
	1530			5	15	16.6	7.4	1650	>1000	
	1540			5	20	16.8	7.6	1700	152	
	1550			10	30	16.6	7.4	1680	561	
	1600			10	40	16.5	7.5	1680	146	
	1610			5	45	16.5	7.4	1710	37.4	
	1620			15	60	16.5	7.4	1690	981	
	1645			10	70	16.9	7.3	1720	135	
	1655			10	80	16.6	7.3	1690	19.7	
10/3	1750	21.90	29.85							
	1915	21.94	31.34							- can feel bottom
10/4	0855	21.98	31.11	0	80	13.7	7.2	1100	>1000	
	0900			5	85	14.1	7.0	1680	>1000	
	0905			10	95	14.4	7.0	1720	>1000	
	0910			10	105	14.0	6.9	1720	>1000	- surge bottom w/ pump

\* From TOC unless otherwise noted in Remarks





### Well Development Form (continuation)

Project Number: 27979 Well Number: DLF-02-44A

**Observations During Well Development**

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>10/4/02</u>	<u>0915</u>			<u>5</u>	<u>110</u>	<u>14.1</u>	<u>6.9</u>	<u>1740</u>	<u>30.4</u>	
	<u>0920</u>			<u>5</u>	<u>115</u>	<u>14.1</u>	<u>6.9</u>	<u>1750</u>	<u>14.8</u>	
	<u>0925</u>	<u>21.77</u>	<u>31.34</u>	<u>5</u>	<u>120</u>	<u>14.1</u>	<u>6.9</u>	<u>1740</u>	<u>6.48</u>	

\* From TOC : otherwise noted in Remarks



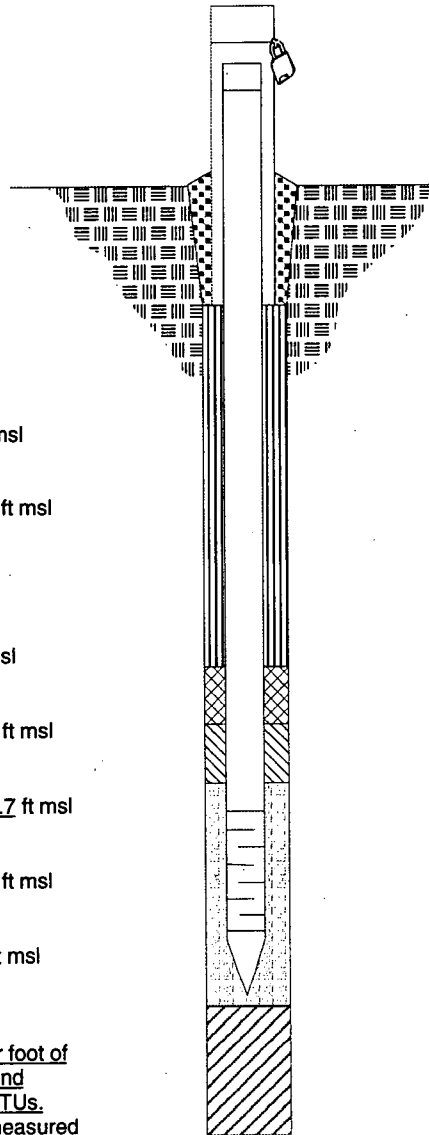
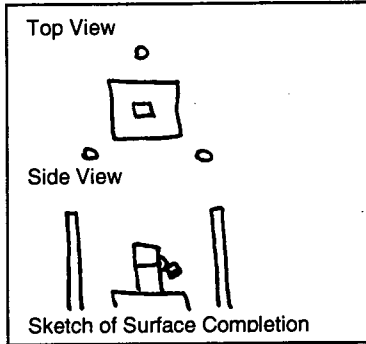
**Monitoring Well DCF02-44c**

Project Number: 27979  
 Monitoring Well No: DCF02-44c  
 Installation Start (Date/Time): 09/11/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1061.01 ft. msl

Land surface elevation 1058.8 ft. msl



Annular seal, top 3.0 ft bgs / 1055.8 ft msl

Bentonite seal, top 20.0 ft bgs / 1038.8 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 26.0 ft bgs / 1032.8 ft msl

Screen joint, top 32.3 ft bTOC / 1028.7 ft msl

Bottom of end cap 42.3 ft bTOC / 1018.7 ft msl

Filter pack, bottom 40.0 ft bgs / 1018.8 ft msl

Borehole, bottom 40.0 ft bgs / 1018.8 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. Later a jiggle tube used until the measured TD equaled constructed TD.  
 Date: 10/01/02, 10/03/02, and 10/04/02

Date	Time	Level below TOC
10/11/02	1013	21.47

Comments

1. Cap and Lock?  Yes  No

2. Protective cover:  
 a. Inside Diameter 4 in.  
 b. Length 5 ft.  
 c. Material Metal  
 d. Weep hole location/size: 1/8", 1/2" off concrete pad  
 e. Add. protection?  Yes  No

3. Pad type/dimensions: 3' x 3' x 4"

4. Surface Seal:  Concrete  \_\_\_\_\_

5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC

6. Annular seal:  Granular bentonite  
 Bentonite slurry  
 Bentonite-cement  
 Other \_\_\_\_\_

7. Bentonite seal:  Granular bentonite  
 Bentonite pellets \_\_\_\_\_ inch  
 Bentonite chips 3/8 inch  
 Other \_\_\_\_\_

8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.

9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 150 lbs

10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.020 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_

13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Nathan Watson  
 Checked by: 10/15/02 Date: WME Clenden

# Well Development Form

Project Number: <u>27979</u>		Well Number: <u>DLF-02-44e</u>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <u>DLFA</u>		Ground Surface Elevation (GS):	
Location: <u>N</u> <u>E</u>		Top of Casing Elevation (TOC): <u>3.2</u>	
<b>Well Information</b>		<b>Well Volume Calculations</b>	
Date Well Installed: <u>9/11/02</u>		$  \begin{array}{r}  39.87 \\  21.61 \\  18.26 \\  \hline  1826 \\  15478 \\  109560 \\  \hline  297638  \end{array}  $	
Total Depth of Well: <u>42.81</u> feet from <u>TOC</u>			
Depth to Top of Screen: <u>32.81</u> feet from <u>TOC</u>			
Length of Casing Screened: <u>10.0</u> feet			
Type of Formation Screened: <u>sand</u>			
		$  \begin{array}{r}  2.97 \\  3 \\  \hline  8.91 \text{ gallon} \approx 9 \text{ gallon}  \end{array}  $ <p style="text-align: right;"><u>3 introduced</u> <u>x 3</u></p> <p><small>1 well volume (gallons) = (total height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></small></p>	

<b>Well Development Method</b>			
Equipment: <u>12 volt, 2 stage whale</u>		Method Description: <u>Surge well 2-3 minutes/ft. Place pump @ bottom</u>	
Surge	Bail	<u>and begin sampling</u>	
Airlift	Pump <input checked="" type="checkbox"/>		

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<u>10/2</u>	<u>0930</u>	<u>21.61</u>	<u>39.87</u>	<u>0</u>	<u>0</u>	<u>15.3</u>	<u>7.1</u>	<u>1630</u>	<u>&gt;1000</u>	
	<u>1000</u>			<u>35</u>	<u>35</u>	<u>15.6</u>	<u>6.9</u>	<u>1540</u>	<u>11.4</u>	<u>- Had to go get rain gauge, surged when got back</u>
	<u>1010</u>			<u>10</u>	<u>45</u>	<u>15.5</u>	<u>6.9</u>	<u>1610</u>	<u>18.4</u>	
	<u>1020</u>			<u>10</u>	<u>55</u>	<u>15.4</u>	<u>6.9</u>	<u>1620</u>	<u>14.2</u>	
<u>10/3</u>	<u>1030</u>	<u>21.64</u>	<u>40.01</u>	<u>10</u>	<u>65</u>	<u>15.4</u>	<u>6.9</u>	<u>1640</u>	<u>6.45</u>	
	<u>1030</u>	<u>21.60</u>	<u>40.02</u>	<u>0</u>	<u>65</u>					<u>- surged/pumped until bottom was reached</u>
	<u>1210</u>	<u>21.58</u>	<u>42.21</u>	<u>45</u>	<u>110</u>					
	<u>1745</u>			<del><u>050</u></del>	<u>110</u>	<u>14.8</u>	<u>8.6</u>	<u>1370</u>	<u>&gt;1000</u>	<u>- began taking readings</u>
	<u>1750</u>			<u>5</u>	<u>115</u>	<u>14.7</u>	<u>9.0</u>	<u>1320</u>	<u>&gt;1000</u>	
	<u>1755</u>			<u>5</u>	<u>120</u>	<u>15.3</u>	<u>7.9</u>	<u>1460</u>	<u>71000</u>	
	<u>176-1800</u>			<u>5</u>	<u>125</u>	<u>14.7</u>	<u>7.4</u>	<u>1420</u>	<u>211</u>	
	<u>1805</u>			<u>5</u>	<u>130</u>	<u>14.7</u>	<u>7.3</u>	<u>1490</u>	<u>86.3</u>	
	<u>1810</u>			<u>5</u>	<u>135</u>	<u>14.6</u>	<u>7.2</u>	<u>1500</u>	<u>45.9</u>	
	<u>1815</u>			<u>5</u>	<u>140</u>	<u>14.7</u>	<u>7.1</u>	<u>1550</u>	<u>104</u>	<u>surged</u>
<u>1820</u>			<u>5</u>	<u>145</u>	<u>14.5</u>	<u>7.1</u>	<u>1560</u>	<u>42.1</u>		
<u>1825</u>			<u>5</u>	<u>150</u>	<u>14.4</u>	<u>7.1</u>	<u>1550</u>	<u>34.8</u>		

\* From TOC unless otherwise noted in Remarks



# Well Development Form (continuation)

Project Number: 27979 Well Number: DCF-02-47c

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/3	1830	21.62	42.32	5	155	14.4	7.1	1560	25.1	

\* From TOI s otherwise noted in Remarks



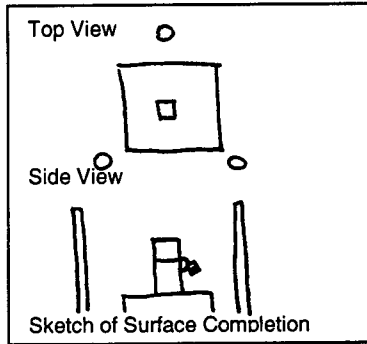
**Monitoring Well DCF02-45a**

Project Number: 27979  
 Monitoring Well No: DCF02-45a  
 Installation Start (Date/Time): 09/06/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/25/02

Well casing, top elevation 1062.26 ft. msl

Land surface elevation 1060.0 ft. msl



Annular seal, top 2.0 ft bgs / 1058.0 ft msl

Bentonite seal, top 4.0 ft bgs / 1056.0 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 10.5 ft bgs / 1049.5 ft msl

Screen joint, top 15.9 ft bTOC / 1046.4 ft msl

Bottom of end cap 30.9 ft bTOC / 1031.4 ft msl

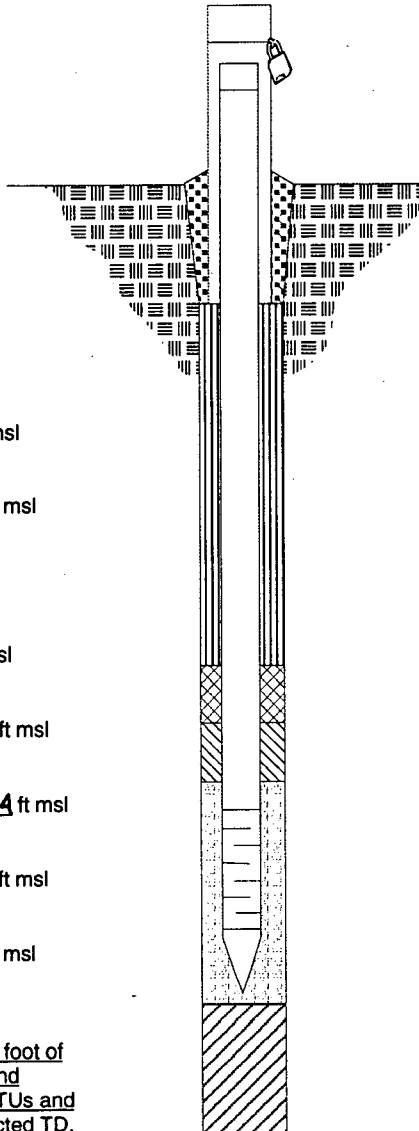
Filter pack, bottom 28.5 ft bgs / 1031.5 ft msl

Borehole, bottom 28.5 ft bgs / 1031.5 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.  
 Date: 10/01/02

Date	Time	Level below TOC
10/11/02	0916	23.02

Comments Added seven gallons of water while placing sand.



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 400 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: W M E Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-45a</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		Well Volume Calculation	
Date Well Installed: <b>9-6-02</b>		$7 \times 3 = 21 \text{ gal}$	
Total Depth of Well: <b>31.30</b> feet from <b>TOC</b>		$23.41$	
Depth to Top of Screen: <b>16.29</b> feet from <b>TOC</b>		$6.97 \times 1.63 = 1.136 \times 5 = 5.680$	
Length of Casing Screened: <b>15.01</b> feet			
Type of Formation Screened: <b>Sandy silt</b>		1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in)) <sup>2</sup>	

<b>Well Development Method</b>		Method Description: <b>surge 2-3 minutes/foot, put</b>	
Equipment: <b>12 volt, 2 stage whale</b>			
Surge	Bail		
Airlift	Pump	✓	

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/1	0855	23.41	30.38	0	0	16.7	7.7	1190	71000	muddy
	0910			10	10	15.7	7.2	1400	600	
	0920			10	20	15.5	7.1	1410	159	
	0930			10	30	15.4	7.2	1390	36.6	
	0940			10	40	15.1	7.3	1350	17.8	
	0950	23.56	30.91	10	50	15.3	7.2	1370	4.26	clear

\* From TOC unless otherwise noted in Remarks





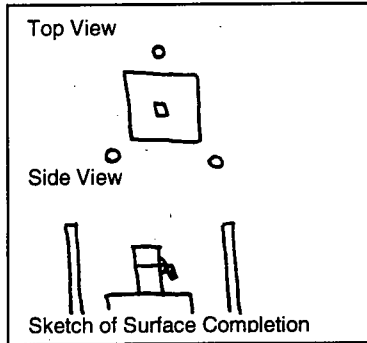
**Monitoring Well DCF02-45c**

Project Number: 27979  
 Monitoring Well No: DCF02-45c  
 Installation Start (Date/Time): 09/09/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/25/02

Well casing, top elevation 1062.35 ft. msl

Land surface elevation 1060.1 ft. msl



Annular seal, top 2.0 ft bgs / 1058.1 ft msl

Bentonite seal, top 32.0 ft bgs / 1028.1 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 36.0 ft bgs / 1024.1 ft msl

Screen joint, top 42.0 ft bTOC / 1020.3 ft msl

Bottom of end cap 52.0 ft bTOC / 1010.3 ft msl

Filter pack, bottom 50.0 ft bgs / 1010.1 ft msl

Borehole, bottom 50.0 ft bgs / 1010.1 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. Later jiggle tube used until the measured TD equaled constructed TD.  
 Date: 09/30/02 and 10/04/02

Date	Time	Level below TOC
10/11/02	0915	23.16

Comments Added 20 gallons of water prior to removing auger plug to try and keep sand from heaving.

1. Cap and Lock?  Yes  No

2. Protective cover:  
 a. Inside Diameter 4 in.  
 b. Length 5 ft.  
 c. Material Metal  
 d. Weep hole location/size: 1/8", 1/2" off concrete pad  
 e. Add. protection?  Yes  No

3. Pad type/dimensions: 3' x 3' x 4"

4. Surface Seal:  Concrete  \_\_\_\_\_

5. Material between well casing and protective cover: concrete to surface sand to 1" below TOC

6. Annular seal:  Granular bentonite  
 Bentonite slurry  
 Bentonite-cement  
 Other \_\_\_\_\_

7. Bentonite seal:  Granular bentonite  
 Bentonite pellets \_\_\_\_\_ inch  
 Bentonite chips 3/8 inch  
 Other \_\_\_\_\_

8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.

9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, Silica 20-40  
 Volume added 50 lbs

10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.020 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_

13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: WME Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>				Well Number: <b>DCF-02-45c</b>						
<b>Project Information</b>				<b>Elevation of Well</b>						
Facility Name: <b>DLFA</b>				Ground Surface Elevation (GS):						
Location: <b>N</b> <span style="margin-left: 150px;"><b>E</b></span>				Top of Casing Elevation (TOC):						
<b>Well Information</b>				<b>Well Volume Calculation</b>						
Date Well Installed: <b>9/9</b>				$27.87 \times .163 = 4.54 = 22.7 \text{ gal}$ <p style="font-size: small;">1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></p>						
Total Depth of Well: <del>43.42</del> <b>53.42</b> feet from <b>TOC</b>										
Depth to Top of Screen: <b>43.42</b> feet from										
Length of Casing Screened: <b>10</b> feet										
Type of Formation Screened: <b>sand</b>										
<b>Well Development Method</b>										
Equipment: <b>2 stage 12 volt w/alc</b>				Method Description: <b>surge pump for 2-3 minutes/foot. Then put pump on bottom &amp; begin taking readings</b>						
Surge		Bail								
Airlift		Pump <input checked="" type="checkbox"/>								
<b>Observations During Well Development</b>										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
9/30/02	1535	23.41	51.28	0	0	17.3	7.3	1180	>1000	
	1545			10	10	19.0	7.3	1270	>1000	
	1600			5	15	17.3	7.4	1230	>1000	
	1615			10	25	15.7	7.6	1230	64.6	
	1625			10	35	17.3	7.3	1110	>1000	
	1635			10	45	15.8	7.6	1250	>1000	
	1645			10	55	16.5	7.8	1260	>1000	
	1655			10	65	16.3	7.8	1250	>1000	
	1705			10	75	15.9	7.6	1260	62.3	
	1715			10	85	15.8	7.7	1240	47.1	
	1725			10	95	15.8	7.8	1270	46.3	
	1735			10	105	15.5	7.6	1250	45.3	
	1745			10	115	15.6	7.7	1250	47.8	
10/4/02	1445	23.45	52.02	10	125	15.5	1.5	1270	28.5	- can feel bottom

\* From TOC unless otherwise noted in Remarks



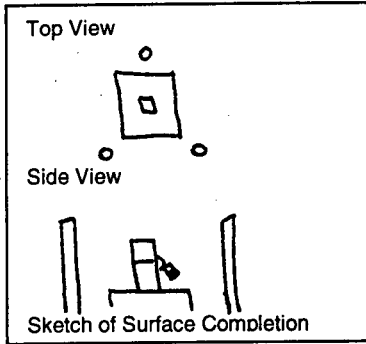
**Monitoring Well DCF02-46a**

Project Number: 27979  
 Monitoring Well No: DCF02-46a  
 Installation Start (Date/Time): 09/13/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1067.40 ft. msl

Land surface elevation 1065.0 ft. msl



Annular seal, top 2.0 ft bgs / 1063.0 ft msl

Bentonite seal, top 12.0 ft bgs / 1053.0 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 16.5 ft bgs / 1048.5 ft msl

Screen joint, top 21.0 ft bTOC / 1046.4 ft msl

Bottom of end cap 36.0 ft bTOC / 1031.4 ft msl

Filter pack, bottom 35.0 ft bgs / 1030.0 ft msl

Borehole, bottom 35.0 ft bgs / 1030.0 ft msl

Development:

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/02/02

Date	Time	Level below TOC
10/11/02	1010	27.82

Comments Added 8 gallons of water to hydrate bentonite seal.

1. Cap and Lock?  Yes  No

2. Protective cover:

a. Inside Diameter 4 in.

b. Length 5 ft.

c. Material Metal

d. Weep hole location/size:

1/8", 1/2" off concrete pad

e. Add. protection?  Yes  No

3. Pad type/dimensions: 3' x 3' x 4"

4. Surface Seal:  Concrete  \_\_\_\_\_

5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC

6. Annular seal:  Granular bentonite  
 Bentonite slurry  
 Bentonite-cement  
 Other \_\_\_\_\_

7. Bentonite seal:  Granular bentonite  
 Bentonite pellets \_\_\_\_\_ inch  
 Bentonite chips 3/8 inch  
 Other \_\_\_\_\_

8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.

9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 400 lbs

10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.020 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.

12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_

13. Centralizers:  No  Yes

If yes, Type/material \_\_\_\_\_

Number \_\_\_\_\_

Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: Wm Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-46a</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		<b>Well Volume Calculation</b>	
Date Well Installed: <b>9/13/02</b>		$  \begin{array}{r}  28.91 \\  + 6.74 \\  \hline  35.65 \\  \times 1.1 \\  \hline  28.91 \\  + 6.74 \\  \hline  35.65 \\  \times 0.2 \\  \hline  7.13 \\  \hline  42.78 \\  \hline  1.09762  \end{array}  $ $1.09 \times 1.1 \times 2 = 2.4$ <b>5.5 gal on 24 gal</b>	
Total Depth of Well: <b>36.98</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>21.98</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>15.0</b> feet			
Type of Formation Screened: <b>sand</b>			

<b>Well Development Method</b>			
Equipment: <b>2 volt, 2 stage whale</b>		Method Description: <b>Surge well for 2-3 minutes/foot. Place pump on bottom and begin taking readings</b>	
Surge	<input type="checkbox"/>	Ball	<input type="checkbox"/>
Airlift	<input type="checkbox"/>	Pump	<input checked="" type="checkbox"/>

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Feet					
10/2/02	1100	28.91	35.65	0	5	16.4	6.9	1280	71000	
	1110			16	10	16.1	6.9	1210	71000	
	1120			20	10	15.9	6.9	1260	71000	
	1130			30	10	15.9	6.9	1240	71000	
	1140			40	10	16.0	6.9	1210	71000	
	1150			50	10	15.6	6.9	1310	444	
	1200			60	10	15.4	6.9	1320	390	
	1210	28.95	36.03	65	5	15.5	6.9	1320	26.7	
	1215	28.95	36.03							

\* From TOC unless otherwise noted in Remarks



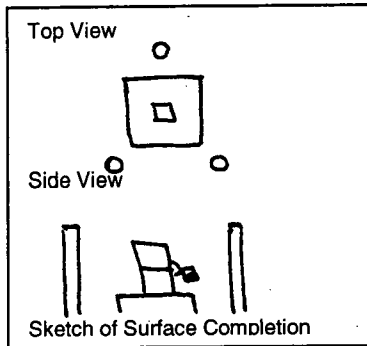
**Monitoring Well DCF02-46c**

Project Number: 27979  
 Monitoring Well No: DCF02-46c  
 Installation Start (Date/Time): 09/16/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1067.10 ft. msl

Land surface elevation 1065.0 ft. msl



Annular seal, top 2.0 ft bgs / 1063.0 ft msl

Bentonite seal, top 36.5 ft bgs / 1028.5 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 41.0 ft bgs / 1024.0 ft msl

Screen joint, top 45.4 ft bTOC / 1021.7 ft msl

Bottom of end cap 55.4 ft bTOC / 1011.7 ft msl

Filter pack, bottom 54.0 ft bgs / 1011.0 ft msl

Borehole, bottom 54.0 ft bgs / 1011.0 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. Later pumped until the measured TD equaled constructed TD.  
 Date: 10/02/02 and 10/04/02

Date	Time	Level below TOC
10/11/02	1009	27.52

Comments Added 10 gallons of water while placing sand.



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 50 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: W M<sup>rs</sup> Clenden Date: 10/15/02



# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-46e</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		$  \begin{array}{r}  \text{Well Volume Calculation} \\  27.56 \times 3.14 \times 5 = 27.37 \\  46.11 \times 3.14 \times 5 = 723.00 \\  \hline  27.37 + 723.00 = 750.37 \\  750.37 \times 0.0408 = 30.61 \text{ gal}  \end{array}  $	
Date Well Installed: <b>9/16/02</b>		$  \begin{array}{r}  27.37 \times 3.14 \times 5 = 213.5 \\  46.11 \times 3.14 \times 5 = 723.00 \\  \hline  213.5 + 723.00 = 936.5 \\  936.5 \times 0.0408 = 38.21 \text{ gal}  \end{array}  $	
Total Depth of Well: <b>56.11</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>46.11</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10.0</b> feet			
Type of Formation Screened: <b>Sand</b>			

<b>Well Development Method</b>			
Equipment: <b>2 stage 12 volt whale</b>		Method Description:	
Surge	<input type="checkbox"/>	Bail	<input type="checkbox"/>
Airlift	<input type="checkbox"/>	Pump	<input checked="" type="checkbox"/>

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>10/2/02</b>	<b>1220</b>	<b>27.56</b>	<b>54.93</b>	<b>0</b>	<b>0</b>	<b>15.5</b>	<b>7.0</b>	<b>1130</b>	<b>71000</b>	
	<b>1230</b>			<b>10</b>	<b>10</b>	<b>15.8</b>	<b>7.1</b>	<b>1150</b>	<b>71000</b>	
	<b>1240</b>			<b>5</b>	<b>205</b>	<b>15.6</b>	<b>7.1</b>	<b>1130</b>	<b>951</b>	
	<b>1250</b>			<b>5</b>	<b>2520</b>	<b>15.9</b>	<b>6.8</b>	<b>1140</b>	<b>652</b>	
	<b>1300</b>			<b>5</b>	<b>3025</b>	<b>16.0</b>	<b>6.9</b>	<b>1140</b>	<b>211</b>	
	<b>1310</b>			<b>5</b>	<b>3530</b>	<b>15.7</b>	<b>6.9</b>	<b>1150</b>	<b>&gt;1000</b>	
	<b>1320</b>			<b>5</b>	<b>4035</b>	<b>16.1</b>	<b>6.9</b>	<b>1140</b>	<b>71000</b>	
	<b>1330</b>			<b>5</b>	<b>40</b>	<b>15.5</b>	<b>6.9</b>	<b>1140</b>	<b>509</b>	
	<b>1340</b>			<b>5</b>	<b>45</b>	<b>15.4</b>	<b>6.9</b>	<b>1140</b>	<b>71000</b>	
	<b>1350</b>			<b>5</b>	<b>50</b>	<b>15.1</b>	<b>6.9</b>	<b>1150</b>	<b>108</b>	
	<b>1400</b>			<b>5</b>	<b>55</b>	<b>15.3</b>	<b>6.9</b>	<b>1150</b>	<b>95.6</b>	
	<b>1410</b>			<b>5</b>	<b>60</b>	<b>15.3</b>	<b>6.9</b>	<b>1150</b>	<b>817</b>	
	<b>1420</b>			<b>5</b>	<b>65</b>	<b>15.3</b>	<b>6.9</b>	<b>1130</b>	<b>551</b>	
	<b>1430</b>			<b>5</b>	<b>70</b>	<b>15.1</b>	<b>6.9</b>	<b>1140</b>	<b>128</b>	
	<b>1440</b>			<b>10</b>	<b>80</b>	<b>15.3</b>	<b>6.9</b>	<b>1140</b>	<b>83.0</b>	
<b>1450</b>		<b>27.59</b>	<b>54.85</b>	<b>10</b>	<b>90</b>	<b>15.2</b>	<b>6.9</b>	<b>1140</b>	<b>28.6</b>	

\* From TOC unless otherwise noted in Remarks



## Well Development Form (continuation)

Project Number: 27979

Well Number: DCF-02-46c

**Observations During Well Development**

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/4/02	1300	27.41	<del>54.85</del> 55.35	0	90	14.4	7.0	1320	>1000	
	1325		20	110						
	1350			5	115	15.3	7.1	1160	>1000	
	1355			5	120	15.3	7.1	1140	>1000	
	1400			5	125	15.1	7.1	1150	>1000	
	1405			5	130	14.9	7.1	1150	28.4	
	1410			5	135	15.1	7.1	1150	80.4	
	1415			5	140	15.0	7.1	1150	51.4	
	1420			5	145	15.1	7.1	1150	42.7	
	1425			5	150	14.9	7.1	1150	33.6	
	1430			5	155	15.2	7.1	1140	28.4	
	1435		29.63	55.35						

\* From TOC ; otherwise noted in Remarks



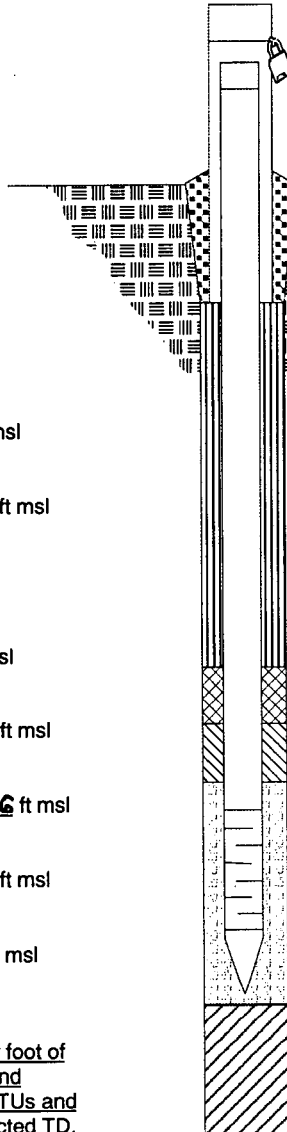
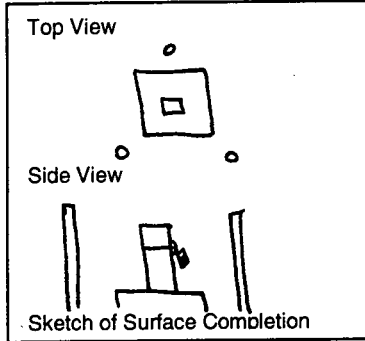
**Monitoring Well DCF02-47a**

Project Number: 27979  
 Monitoring Well No: DCF02-47a  
 Installation Start (Date/Time): 09/17/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/24/02

Well casing, top elevation 1063.18 ft. msl

Land surface elevation 1060.7 ft. msl



Annular seal, top 2.0 ft bgs / 1058.7 ft msl

Bentonite seal, top 10.0 ft bgs / 1050.7 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 13.0 ft bgs / 1047.7 ft msl

Screen joint, top 18.6 ft bTOC / 1044.6 ft msl

Bottom of end cap 33.6 ft bTOC / 1029.6 ft msl

Filter pack, bottom 33.0 ft bgs / 1027.7 ft msl

Borehole, bottom 33.0 ft bgs / 1027.7 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.  
 Date: 10/03/02

Date	Time	Level below TOC
10/11/02	0948	23.78

Comments Eight gallons of water added to hydrate bentonite seal.

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, silica, 20-40  
 Volume added 350 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Nathan Watson  
 Checked by: W McClendon Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>				Well Number: <b>DCF-02-47A</b>						
<b>Project Information</b>				<b>Elevation of Well</b>						
Facility Name: <b>DCFA</b>				Ground Surface Elevation (GS):						
Location: <b>N</b> <b>E</b>				Top of Casing Elevation (TOC):						
<b>Well Information</b>				<div style="font-size: small;">                     Well Volume Calculation  <math display="block">  \begin{array}{r}  33.15 \\  - 24.05 \\  \hline  9.10  \end{array}  </math> <math display="block">  \begin{array}{r}  9.10 \times 1.63 \\  \hline  14.833 \\  \hline  14.7330  \end{array}  </math> </div> <div style="font-size: small; margin-top: 5px;">                     1 well volume (gallons) = (initial height of water column (ft) x 0.0408 x (casing diameter (in)))<sup>2</sup> </div>						
Date Well Installed:				$  \begin{array}{r}  2.3 \\  7.47 \\  \hline  5 \\  \hline  7.35 \text{ gallon or } 34 \text{ gal.}  \end{array}  $						
Total Depth of Well: <del>15.00</del> <b>33.71</b> feet from <b>TOC</b>				$  \begin{array}{r}  33.71 \\  - 15.01 \\  \hline  18.70  \end{array}  $						
Depth to Top of Screen: <del>15.00</del> <b>18.70</b> feet from <b>TOC</b>										
Length of Casing Screened: <del>15.01</del> <b>15.01</b> feet										
Type of Formation Screened: <b>Sand</b>										
<b>Well Development Method</b>										
Equipment: <b>12 volt, 2 stage whale</b>				Method Description: <b>surge p well w/ surge block 2-3 minutes/ft screen</b>						
Surge		Bail		<b>then surge bottom w/ pump &amp; block until @ bottom of pipe. place pump @ bottom and begin taking readings</b>						
Airlift		Pump <input checked="" type="checkbox"/>								
<b>Observations During Well Development</b>										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>10/3</b>	<b>1625</b>	<b>24.05</b>	<b>33.15</b>	<b>0</b>	<b>0</b>	<b>15.0</b>	<b>6.9</b>	<b>0r</b>	<b>&gt;1000</b>	
	<b>1635/1645</b>		<b>33.57</b>	<b>40</b>	<b>40</b>					
	<b>161705</b>		<b>33.61</b>	<b>80</b>	<b>80</b>					
	<b>1710</b>			<b>10</b>	<b>90</b>	<b>15.1</b>	<b>7.0</b>	<b>2.3</b>	<b>&gt;1000</b>	<b>- can feel bottom put on bottom</b>
	<b>1715</b>			<b>10</b>	<b>100</b>	<b>14.8</b>	<b>6.8</b>	<b>2.3</b>	<b>62.3</b>	
	<b>1720</b>			<b>10</b>	<b>110</b>	<b>14.8</b>	<b>6.9</b>	<b>2.2</b>	<b>27.3</b>	
	<b>1725</b>			<b>10</b>	<b>120</b>	<b>14.7</b>	<b>6.9</b>	<b>2.2</b>	<b>21.6</b>	
	<b>1730</b>	<b>21.11</b>	<b>33.60</b>	<b>10</b>	<b>130</b>	<b>14.8</b>	<b>6.9</b>	<b>2.2</b>	<b>215.7</b>	
										<b>* forget to subtract 15" from TD of well.</b>

\* From TOC unless otherwise noted in Remarks



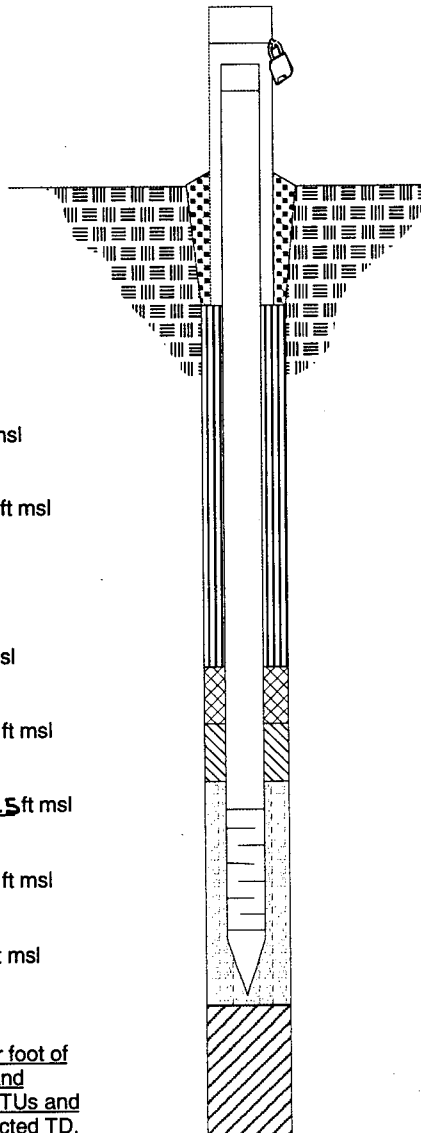
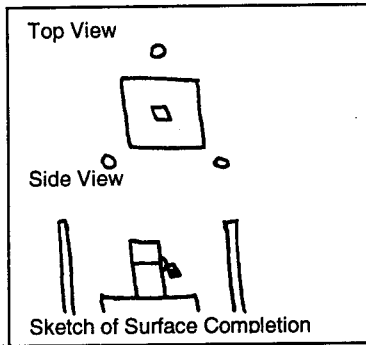
**Monitoring Well DCF02-47c**

Project Number: 27979  
 Monitoring Well No: DCF02-47c  
 Installation Start (Date/Time): 09/18/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/24/02

Well casing, top elevation 1062.86 ft. msl

Land surface elevation 1060.8 ft. msl



Annular seal, top 2.0 ft bgs / 1058.8 ft msl

Bentonite seal, top 32.0 ft bgs / 1028.8 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 36.0 ft bgs / 1024.8 ft msl

Screen joint, top 42.4 ft bTOC / 1020.5 ft msl

Bottom of end cap 52.4 ft bTOC / 1010.5 ft msl

Filter pack, bottom 50.0 ft bgs / 1010.8 ft msl

Borehole, bottom 50.0 ft bgs / 1010.8 ft msl

Development:

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/03/02

Date	Time	Level below TOC
10/11/02	0950	23.45

Comments Sixty gallons of water added to kepp sand from heaving.

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, silica, 20-40  
Volume added 50 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):
  - None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
If yes, Type/material \_\_\_\_\_  
Number \_\_\_\_\_  
Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: W M Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-47c</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC): <b>42</b>	
<b>Well Information</b>		<b>Well Volume Calculation</b>	
Date Well Installed: <b>9/18/02</b>		$  \begin{array}{r}  48.92 \\  23.71 \\  24.21 \\  \hline  1452.60 \\  \hline  3946.23  \end{array}  $	
Total Depth of Well: <b>52.51</b> feet from <b>TOC</b>		$  \begin{array}{r}  24.21 \\  163 \\  \hline  17263 \\  \hline  19.70 \text{ gal or } 36 \text{ gal} \\  \hline  12 \text{ gallon added} \\  \hline  \times 3  \end{array}  $	
Depth to Top of Screen: <b>42.51</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10.0</b> feet			
Type of Formation Screened: <b>sand</b>			

<b>Well Development Method</b>			Method Description: <b>surge bottom w/ surge block 2-3 minutes/foot</b> <b>surge bottom until all and pump until bottom is found.</b> <b>Put pump on bottom and begin taking readings.</b>
Equipment: <b>12 volt, 2 stage whale c</b>			
Surge	<input type="checkbox"/>	Ball	
Airlift	<input type="checkbox"/>	Pump <input checked="" type="checkbox"/>	

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/3/02	0835	23.71	48.92	0	0	14.0	7.7	1290	>1000	
	1050	23.75	52.35	70	70	14.3	7.1	1280	652	stop to go get tanks
	1540	23.72		0	70	14.7	6.9	1240	113	
	1550			10	80	14.6	7.0	1240	78.9	
	1555			20	100	14.4	6.9	1260	65.1	
	1600			10	110	14.4	6.9	1250	51.5	
	1605			10	120	14.4	6.9	1250	45.8	
	1610			10	130	14.4	6.9	1250	34.3	
	1615	23.74	52.37	10	140	14.4	6.9	1250	27.0	

\* From TOC unless otherwise noted in Remarks





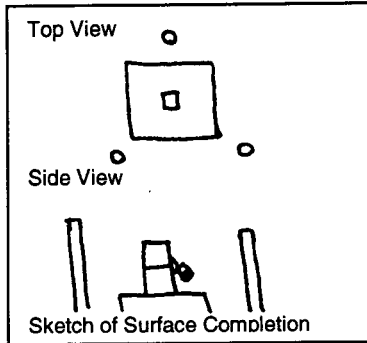
**Monitoring Well DCF02-48a**

Project Number: 27979  
 Monitoring Well No: DCF02-48a  
 Installation Start (Date/Time): 09/19/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/24/02

Well casing, top elevation 1059.49 ft. msl

Land surface elevation 1057.0 ft. msl



Annular seal, top 2.0 ft bgs / 1055.0 ft msl

Bentonite seal, top 4.0 ft bgs / 1053.0 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 10.3 ft bgs / 1046.7 ft msl

Screen joint, top 15.5 ft bTOC / 1044.0 ft msl

Bottom of end cap 30.5 ft bTOC / 1029.0 ft msl

Filter pack, bottom 28.0 ft bgs / 1029.0 ft msl

Borehole, bottom 28.0 ft bgs / 1029.0 ft msl

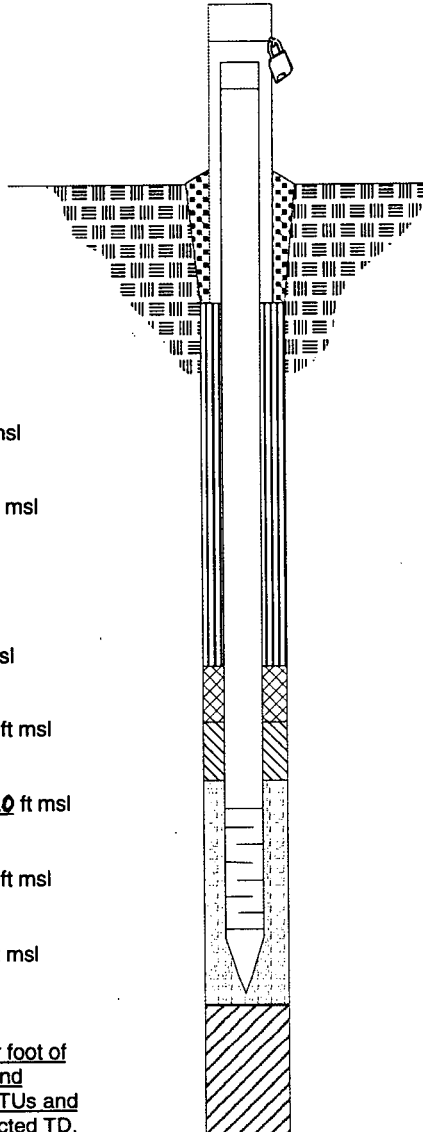
**Development:**

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/04/02

Date	Time	Level below TOC
10/11/02	0942	20.22

Comments Five gallons of water added to hydrate bentonite.



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
Volume added 350 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
If yes, Type/material \_\_\_\_\_  
Number \_\_\_\_\_  
Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: WME Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>				Well Number: <del>DCF-02-46a</del> <b>DCF-02-48a</b>						
<b>Project Information</b>				<b>Elevation of Well</b>						
Facility Name: <b>DCFA</b>				Ground Surface Elevation (GS):						
Location: <b>N</b> <b>E</b>				Top of Casing Elevation (TOC):						
<b>Well Information</b>				<b>Well Volume Calculation</b>						
Date Well Installed: <b>9/19/02</b>				$  \begin{array}{r}  1039 \\  28.56 \quad 30.47 \\  \hline  20.08 \\  \hline  10.39 \quad 31.187 \\  \hline  62340 \\  \hline  103900 \\  \hline  1.67357  \end{array}  $						
Total Depth of Well: <b>31.79</b>		feet from <b>TOC</b>		$  \begin{array}{r}  15 \\  34 \\  \hline  169 \\  \hline  5 \\  \hline  8.45 \text{ gallon}  \end{array}  $		$  \begin{array}{r}  5 \text{ added} \\  \hline  \times 3 \\  \hline  15 \text{ gallon}  \end{array}  $				
Depth to Top of Screen: <b>16.79</b>		feet from <b>TOC</b>								
Length of Casing Screened: <b>15.0</b>		feet								
Type of Formation Screened: <b>sand</b>				1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in)) <sup>2</sup>						
<b>Well Development Method</b>										
Equipment: <b>2 stage, 12 volt whale</b>				Method Description: <b>surge/pump 2-3 minutes/foot, then surge/pump the bottom until cap is reached, then place pump on bottom and begin taking readings</b>						
Surge		Bail								
Airlift		Pump								
<b>Observations During Well Development</b>										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc)
				Gallons	Total					
<b>10/4/02</b>	<b>1020</b>	<b>20.08</b>	<b>28.56</b>	<b>0</b>	<b>0</b>	<b>13.5</b>	<b>7.1</b>	<b>1740</b>	<b>71000</b>	
	<b>1050</b>		<b>30.47</b>	<b>25</b>	<b>25</b>					<b>-can feel bottom</b>
	<b>1305</b>	<b>20.10</b>	<b>30.47</b>	<b>0</b>	<b>25</b>	<b>14.8</b>	<b>7.2</b>	<b>1510</b>	<b>71000</b>	
	<b>1310</b>			<b>5</b>	<b>1035</b>	<b>14.8</b>	<b>7.1</b>	<b>1490</b>	<b>179</b>	
	<b>1315</b>			<b>5</b>	<b>40</b>	<b>14.8</b>	<b>7.1</b>	<b>1500</b>	<b>121</b>	
	<b>1320</b>			<b>5</b>	<b>45</b>	<b>14.8</b>	<b>7.1</b>	<b>1500</b>	<b>54.5</b>	
	<b>1325</b>			<b>5</b>	<b>50</b>	<b>14.8</b>	<b>7.1</b>	<b>1500</b>	<b>36.4</b>	
	<b>1330</b>	<b>20.14</b>	<b>30.47</b>	<b>5</b>	<b>55</b>	<b>14.8</b>	<b>7.1</b>	<b>1500</b>	<b>23.6</b>	<b>21.3</b>

\* From TOC unless otherwise noted in Remarks



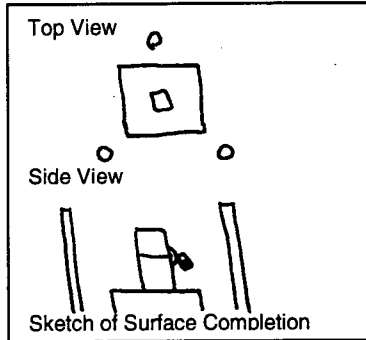
**Monitoring Well DCF02-48c**

Project Number: 27979  
 Monitoring Well No: DCF02-48c  
 Installation Start (Date/Time): 09/20/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/24/02

Well casing, top elevation 1059.44 ft. msl

Land surface elevation 1056.9 ft. msl



Annular seal, top 2.0 ft bgs / 1054.9 ft msl

Bentonite seal, top 30.0 ft bgs / 1026.9 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 34.0 ft bgs / 1022.9 ft msl

Screen joint, top 40.4 ft bTOC / 1019.0 ft msl

Bottom of end cap 50.4 ft bTOC / 1009.0 ft msl

Filter pack, bottom 47.0 ft bgs / 1009.9 ft msl

Borehole, bottom 47.0 ft bgs / 1009.9 ft msl

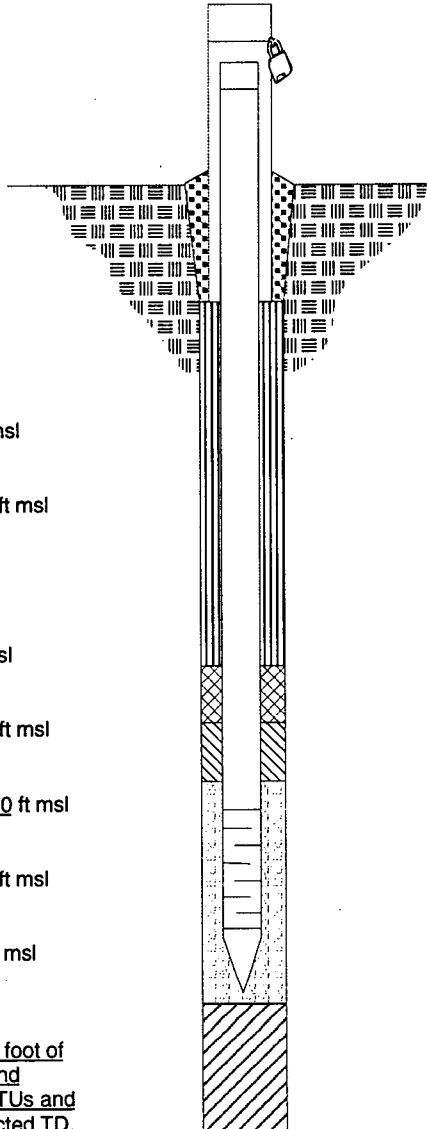
**Development:**

Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs and the measured TD equaled constructed TD.

Date: 10/04/02

Date	Time	Level below TOC
10/11/02	0943	20.17

Comments Fifteen gallons of water added while placing sand.



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, silica, 20-40  
Volume added 150 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
If yes, Type/material \_\_\_\_\_  
Number \_\_\_\_\_  
Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: Wm E Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-48c</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>DCFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		Well Volume Calculation	
Date Well Installed: <b>9-20-02</b>		$  \begin{array}{r}  50.35 \\  - 20.15 \\  \hline  30.17 \\  \hline  19051 \\  181020 \\  \hline  301700 \\  \hline  191771  \end{array}  $ $  \begin{array}{r}  4 \\  4.9 \\  \hline  5 \\  \hline  24.5 \text{ gallon on } \\  \hline  45 \text{ gal.}  \end{array}  $ <small>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></small>	
Total Depth of Well: <b>50.38</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>40.37</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10.01</b> feet			
Type of Formation Screened: <b>Sand</b>			

<b>Well Development Method</b>			
Equipment: <b>12 volt, 2 stage whale</b>		Method Description: <b>surge 2-3 minutes / foot screen, then surge / pump bottom until depth is reached. Then place pump on bottom and begin taking measurements</b>	
Surge	<input type="checkbox"/>	Bail	<input type="checkbox"/>
Airlift	<input type="checkbox"/>	Pump	<input checked="" type="checkbox"/>
Jiggletube	<input checked="" type="checkbox"/>		

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
10/4/02	0950	20.18	48.27	0	0	13.7	7.5	1130	71000	
	1020	20.21	50.35	40	40					
	1045	20.20	50.35	0	40	14.5	7.1	1460	71000	
	1050			5	45	14.4	6.9	1470	71000	
	1055			5	50	14.4	6.9	1510	71000	
	1100			5	55	14.5	6.9	1510	71000	
	1105			5	60	14.4	6.9	1530	846	
	1110			5	65	14.4	7.0	1510	268	
	1115			5	70	14.4	7.0	1510	175	
	1120			5	75	14.4	6.9	1520	118	
	1125			5	80	14.4	7.0	1510	89.7	
	1130			5	85	14.4	6.9	1520	54.6	
	1135	20.81	50.36	5	90	14.2	7.0	1520	23.6	

\* From TOC unless otherwise noted in Remarks



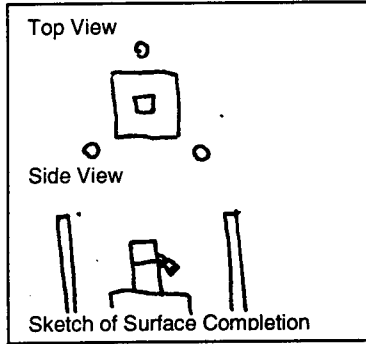
**Monitoring Well DCF02-49a**

Project Number: 27979  
 Monitoring Well No: DCF02-49a  
 Installation Start (Date/Time): 09/05/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1052.19 ft. msl

Land surface elevation 1049.8 ft. msl



Annular seal, top \_\_\_\_\_ ft bgs / 1049.8 ft msl

Bentonite seal, top 2.0 ft bgs / 1047.8 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 5.5 ft bgs / 1044.3 ft msl

Screen joint, top 9.6 ft bTOC / 1042.6 ft msl

Bottom of end cap 19.6 ft bTOC / 1032.6 ft msl

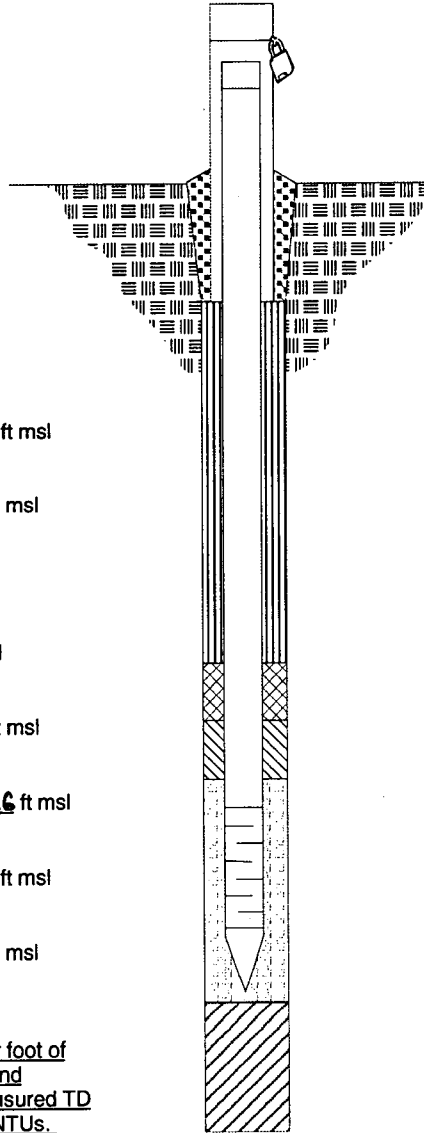
Filter pack, bottom 18.5 ft bgs / 1031.3 ft msl

Borehole, bottom 18.5 ft bgs / 1031.3 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until measured TD equalled constructed TD and <30 NTUs.  
 Date: 09/30/02

Date	Time	Level below TOC
10/11/02	0921	13.17

Comments Added 4 gallons of water while placing sand



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets \_\_\_\_\_ inch
  - Bentonite chips 3/8 inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Oglebay Norton, silica, 20-40  
 Volume added 150 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Nathan Watson

Discrepancies: \_\_\_\_\_

Checked by: Wm S Clenden Date: 10/15/02



# Well Development Form

Project Number: <b>27979</b>				Well Number: <b>DCF-02-49A</b>						
Project Information <b>DLFA</b>				Elevation of Well						
Facility Name:				Ground Surface Elevation (GS):						
Location: <b>N</b> <b>E</b>				Top of Casing Elevation (TOC):						
Well Information				Well Volume Calculation						
Date Well Installed: <b>9/5/02</b>				$6.36 \text{ ft} \times .0408 = .261$ $.261 \times 4 = 1.03 \text{ gal}$ <p>1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></p>						
Total Depth of Well: <b>20.01</b> feet from <b>TOC</b>										
Depth to Top of Screen: <b>10.01</b> feet from <b>TOC</b>										
Length of Casing Screened: <b>10</b> feet										
Type of Formation Screened: <b>SAND</b>										
Well Development Method				Method Description:						
Equipment: <b>2 stage 12 volt whale</b>				-surge pump for 2-3 minutes every 2 feet. Place on bottom and begin taking readings						
Surge		Bail								
Airlift		Pump <input checked="" type="checkbox"/>								
Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>9/30</b>	<b>1055</b>	<b>13.44</b>	<b>19.64.59</b>	<b>—</b>	<b>—</b>					
	<b>1115</b>		<b>19.63</b>	<b>15</b>	<b>15</b>	<b>20.0°</b>	<b>6.7</b>	<b>930</b>	<b>356</b>	
	<b>1128</b>			<b>5</b>	<b>20</b>	<b>21.4</b>	<b>6.7</b>	<b>880</b>	<b>56.9</b>	
	<b>1135</b>			<b>10</b>	<b>30</b>	<b>21.3</b>	<b>6.6</b>	<b>900</b>	<b>8.28</b>	
	<b>1145</b>	<b>13.45</b>	<b>19.63</b>	<b>10</b>	<b>40</b>	<b>21.3</b>	<b>6.6</b>	<b>870</b>	<b>8.63</b>	

\* From TOC unless otherwise noted in Remarks



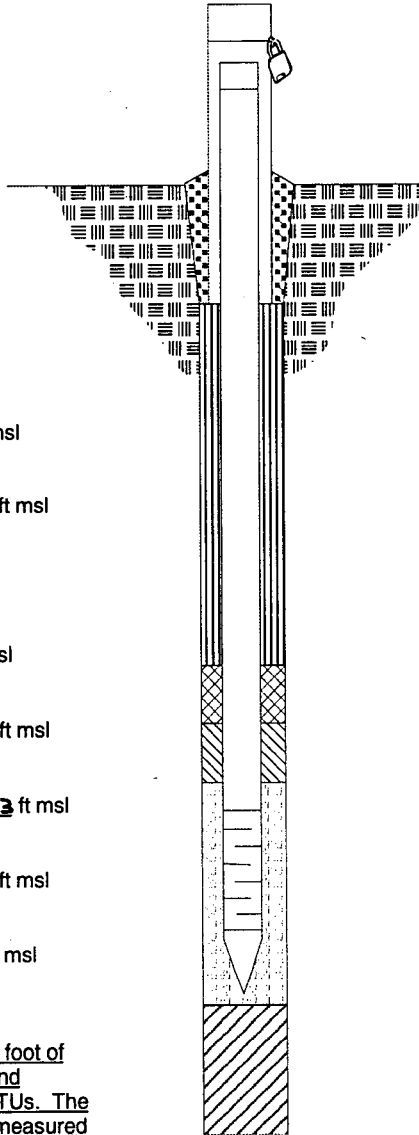
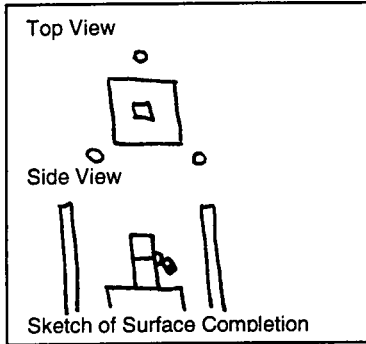
**Monitoring Well DCF02-49c**

Project Number: 27979  
 Monitoring Well No: DCF02-49c  
 Installation Start (Date/Time): 09/05/02

Project Name: USFRDCFA  
 Well Location: Island  
 Completion (Date/Time): 09/27/02

Well casing, top elevation 1051.87 ft. msl

Land surface elevation 1049.7 ft. msl



Annular seal, top 4.0 ft bgs / 1045.7 ft msl

Bentonite seal, top 22.0 ft bgs / 1027.7 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 26.0 ft bgs / 1023.7 ft msl

Screen joint, top 31.6 ft bTOC / 1020.3 ft msl

Bottom of end cap 41.6 ft bTOC / 1010.3 ft msl

Filter pack, bottom 40.0 ft bgs / 1009.7 ft msl

Borehole, bottom 40.0 ft bgs / 1009.7 ft msl

Development:  
 Method: Surged well for 2-3 min. per foot of screen. Placed pump on bottom and removed silt and water until <30 NTUs. The well was pumped again later until measured TD equaled constructed TD.  
 Date: 09/30/02 and 10/04/02

Date	Time	Level below TOC
10/11/02	0920	12.85

Comments

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface, sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets 1/4 inch
  - Bentonite chips \_\_\_\_\_ inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Oglebay Norton, silica, 20-40  
 Volume added 50 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.020 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Nathan Watson  
 Checked by: W Mc Clenden Date: 10/15/02

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF-02-49c</b>	
Project Information <b>DCFA</b>		Elevation of Well	
Facility Name:		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
Well Information		Well Volume Calculation	
Date Well Installed: <b>9/30/02</b>		$27.58 \times .163 = 4.49 \times 5 = 22.48 \text{ gal.}$ $(\text{shut}) \times 3 = 12 \text{ gal add}$ <p style="font-size: small;">1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></p>	
Total Depth of Well: <b>42.55</b> feet from <b>TOC</b>			
Depth to Top of Screen: <b>32.55</b> feet from <b>TOC</b>			
Length of Casing Screened: <b>10</b> feet			
Type of Formation Screened: <b>sand</b>			

Well Development Method				Method Description:	
Equipment: <b>2 stage 12 volt whale</b>				- surge pump for 2-3 minutes every foot of screen put on bottom and begin taking readings	
Surge		Bail			
Airlift		Pump	✓		

Observations During Well Development											
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)	
				Gallons	Total						
9/30/02	1155	13.11	40.69	—	—	17.1	6.7	1300	>1000		
	1210			10	10	18.6	6.8	1390	>1000		
	1220			10	20	17.6	6.8	1380	>1000		
	1230			10	30	18.7	6.7	1370	256		
	1240			10	40	18.9	6.9	1400	33.9		
	1250			10	50	17.5	6.6	1440	78.8		
	1300			10	60	17.2	6.7	1400	25.3		
10/4/02	1310	13.12	40.82	10	70	17.4	6.6	1410	12.3		
	1500			0	70	15.7	7.0	1530	71000	surge pump to get bottom	
	1515			15	85	14.7	15.7	7.1	1510	71000	can feel cap
	1520			5	90	14.7	7.1	1510	71000		
	1525			5	95	14.7	7.1	1490	490		
	1530			5	100	14.7	7.1	1520	123		
	1535			5	105	14.7	7.2	1510	46.0		
	1540			5	110	14.7	7.2	1510	34.6		
1545	5	115	14.7	7.2	1510	24.0					
		13.11	41.65								

\* From TOC unless otherwise noted in Remarks.



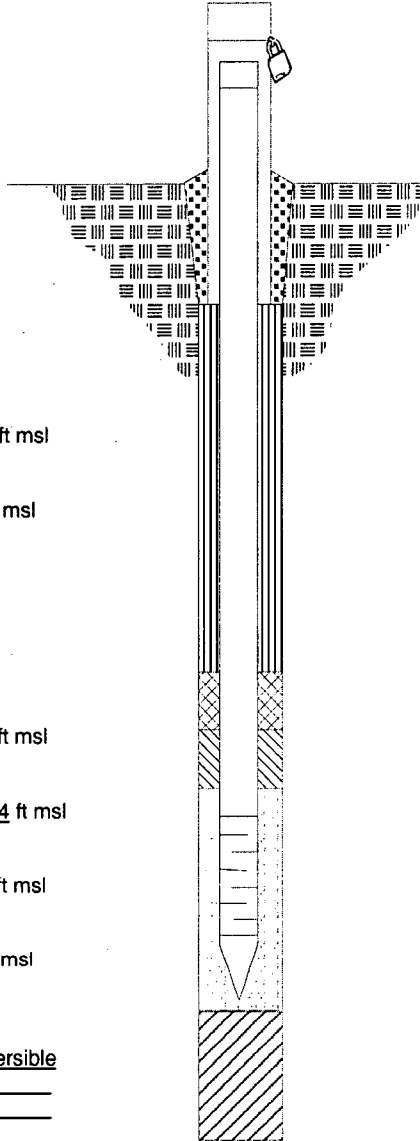
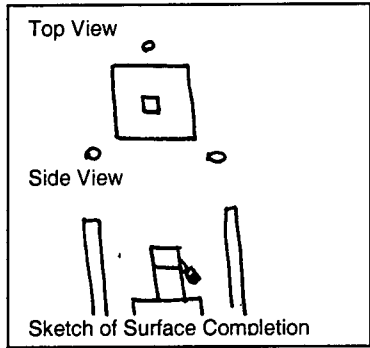
**Monitoring Well DCF02-50a**

Project Number: 27979  
 Monitoring Well No: DCF03-50a  
 Installation Start (Date/Time): 7/16/03 0757

Project Name: USFRDCFA  
 Well Location: TA2  
 Completion (Date/Time): 7/16/03 0848

Well casing, top elevation 1061.87 ft. msl

Land surface elevation 1059.70 ft. msl



Annular seal, top \_\_\_\_\_ ft bgs / 1059.7 ft msl

Bentonite seal, top 2.0 ft bgs / 1057.7 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 9.5 ft bgs / 1050.2 ft msl

Screen joint, top 15.5 ft bTOC / 1046.4 ft msl

Bottom of end cap 30.5 ft bTOC / 1031.4 ft msl

Filter pack, bottom 28.2 ft bgs / 1031.5 ft msl

Borehole, bottom 28.2 ft bgs / 1031.5 ft msl

Development:

Method: Surge and purge with submersible pump  
 Date: 7/17/03

Static water level >24hr. after development

Date	Time	Level below TOC
7/17/03	0735	23.71
7/18/03		23.28

Comments \_\_\_\_\_

1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface sand to 1" below TOC
6. Annular seal:
  - Granular bentonite
  - Bentonite slurry
  - Bentonite-cement
  - Other \_\_\_\_\_
7. Bentonite seal:
  - Granular bentonite
  - Bentonite pellets 1/4 inch
  - Bentonite chips \_\_\_\_\_ inch
  - Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size  
Unimin, silica, 20-40  
 Volume added 200 lbs
10. Well casing:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
11. Screen material:
  - Type Schedule 40 PVC
  - Manufacturer Environ Manufacturing
  - Slot size 0.010 in.
  - Outside diameter \_\_\_\_\_ in.
  - Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling

Inspector: Rick Monk

Discrepancies: \_\_\_\_\_

Checked by: Wm E Clenden Date: 09/02/03

# Well Development Form

Project Number: <b>27479</b>		Well Number: <b>DCR03-50A</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>USFADLFA</b>		Ground Surface Elevation (GS):	
Location: <b>N</b> <b>E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		<b>Well Volume Calculation</b>	
Date Well Installed: <b>7-16-03</b>		$(2\frac{1}{2})^2 \times (30.01 - 23.19) \times 0.0408 \times 0.3 = 4.4$ $(2)^2 \times (30.01 - 23.19) \times 0.0408 = 11$ <p style="text-align: center;"><u>5.5 gallons/WV</u></p> <p style="font-size: small;">1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in))<sup>2</sup></p>	
Total Depth of Well: <b>30.50</b> feet from <b>T.O.C.</b>			
Depth to Top of Screen: <b>15.50</b> feet from <b>T.O.C.</b>			
Length of Casing Screened: <b>15.00</b> feet			
Type of Formation Screened: <b>Sand</b>			

<b>Well Development Method</b>			
Equipment:		Method Description: <b>Surge and pump with 12-Volt submersible pump.</b>	
Surge	<b>12-volt</b>	Bail	
Airlift		Pump	<b>12-volt</b>

Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. C (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>7-17-03</b>	<b>0817</b>	<b>23.19</b>	<b>30.01</b>	<b>I</b>	<b>I</b>	<b>17.6</b>	<b>7.4</b>	<b>1650</b>	<b>OR</b>	<b>Brown</b>
	<b>0827</b>	<b>23.27</b>		<b>6</b>	<b>6</b>	<b>15.7</b>	<b>7.1</b>	<b>1650</b>	<b>888</b>	<b>Light brown</b>
	<b>0837</b>	<b>23.28</b>		<b>6</b>	<b>12</b>	<b>15.5</b>	<b>7.1</b>	<b>1690</b>	<b>OR</b>	<b>Brown</b>
	<b>0847</b>									<b>Pump quit</b>
	<b>0903</b>	<b>23.37</b>		<b>5</b>	<b>17</b>	<b>15.2</b>	<b>7.1</b>	<b>1650</b>	<b>OR</b>	<b>Brown</b>
	<b>0913</b>	<b>23.34</b>		<b>7</b>	<b>24</b>	<b>15.0</b>	<b>7.1</b>	<b>1630</b>	<b>625</b>	<b>Milky</b>
	<b>0923</b>	<b>23.33</b>		<b>6</b>	<b>30</b>	<b>14.9</b>	<b>7.1</b>	<b>1640</b>	<b>216</b>	<b>Slightly milky</b>
	<b>0933</b>	<b>23.31</b>		<b>7</b>	<b>37</b>	<b>15.0</b>	<b>7.1</b>	<b>1630</b>	<b>19.3</b>	<b>Clear</b>

\* From TOC unless otherwise noted in Remarks



**Monitoring Well DCF02-50c**

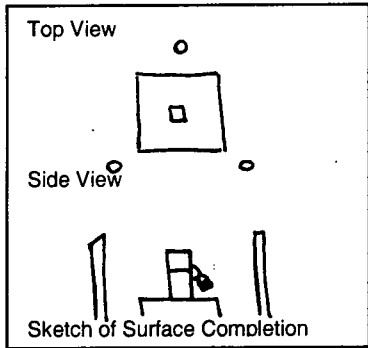


Project Number: 27979  
 Monitoring Well No: DCF03-50c  
 Installation Start (Date/Time): 7/15/03 0900

Project Name: USFRDCFA  
 Well Location: TA2  
 Completion (Date/Time): 7/16/03 1610

Well casing, top elevation 1061.90 ft. msl

Land surface elevation 1059.61 ft. msl



Annular seal, top 2.0 ft bgs / 1057.6 ft msl

Bentonite seal, top 35.5 ft bgs / 1024.1 ft msl

Fine sand, top NA ft bgs / 0.0 ft msl

Filter pack, top 40.0 ft bgs / 1019.6 ft msl

Screen joint, top 45.3 ft bTOC / 1016.6 ft msl

Bottom of end cap 55.3 ft bTOC / 1006.6 ft msl

Filter pack, bottom 53.0 ft bgs / 1006.6 ft msl

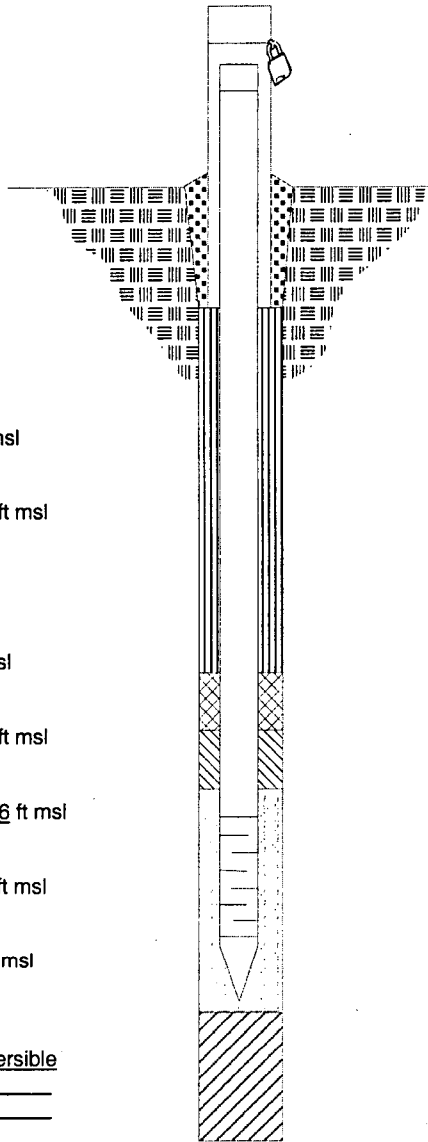
Borehole, bottom 53.0 ft bgs / 1006.6 ft msl

Development:

Method: Surge and purge with submersible pump  
 Date: 07/17/03

Static water level >24hr. after development		
Date	Time	Level below TOC
7/18/03		23.41

Comments \_\_\_\_\_



1. Cap and Lock?  Yes  No
2. Protective cover:
  - a. Inside Diameter 4 in.
  - b. Length 5 ft.
  - c. Material Metal
  - d. Weep hole location/size: 1/8", 1/2" off concrete pad
  - e. Add. protection?  Yes  No
3. Pad type/dimensions: 3' x 3' x 4"
4. Surface Seal:  Concrete  \_\_\_\_\_
5. Material between well casing and protective cover: concrete to surface sand to 1" below TOC
6. Annular seal:  Granular bentonite  
 Bentonite slurry  
 Bentonite-cement  
 Other \_\_\_\_\_
7. Bentonite seal:  Granular bentonite  
 Bentonite pellets 1/4 inch  
 Bentonite chips \_\_\_\_\_ inch  
 Other \_\_\_\_\_
8. Fine sand: Manufacturer, name, & size \_\_\_\_\_  
 Volume added \_\_\_\_\_ lbs.
9. Filter pack: Manufacturer, name, & size Unimin, silica, 20-40 Native material (sand) bottom portion of screen  
 Volume added 100 lbs
10. Well casing:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.
11. Screen material:  
 Type Schedule 40 PVC  
 Manufacturer Environ Manufacturing  
 Slot size 0.010 in.  
 Outside diameter \_\_\_\_\_ in.  
 Inside diameter 2 in.
12. Backfill material (below filter pack):  
 None  Other \_\_\_\_\_
13. Centralizers:  No  Yes  
 If yes, Type/material \_\_\_\_\_  
 Number \_\_\_\_\_  
 Depth(s) \_\_\_\_\_

Driller: Funkee Drilling  
 Discrepancies: \_\_\_\_\_

Inspector: Rick Monk  
 Checked by: W McClenden Date: 09/2/03

# Well Development Form

Project Number: <b>27979</b>		Well Number: <b>DCF03-50C</b>	
<b>Project Information</b>		<b>Elevation of Well</b>	
Facility Name: <b>USFRDCEA</b>		Ground Surface Elevation (GS):	
Location: <b>N E</b>		Top of Casing Elevation (TOC):	
<b>Well Information</b>		<b>Well Volume Calculation</b> $(7\frac{1}{4})^2 \times (55.31 - 13.0) \times 0.0408 \times 0.3 = 3.75$ $(21)^2 \times (55.31 - 23.23) \times 0.0408 = \frac{8.25}{9.0}$ <b>9.0 gallons/wr. Note: 13.0' of RH for pack.</b> 1 well volume (gallons) = initial height of water column (ft) x 0.0408 x (casing diameter (in)) <sup>2</sup>	
Date Well Installed: <b>7-15-03</b>			
Total Depth of Well: <b>55.31</b> feet from <b>T.C.</b>			
Depth to Top of Screen: <b>42.30</b> feet from <b>T.O.C.</b>			
Length of Casing Screened: <b>10</b> feet			
Type of Formation Screened: <b>Sand</b>			

<b>Well Development Method</b>			
Equipment:		Method Description: <b>Surge and pump with 12-volt submersible pump</b>	
Surge	<b>12-volt</b>	Bail	
Airlift		Pump	<b>12-volt</b>

Observations During Well Development										
Date	Time	Depth to Water* (ft)	Total Depth* (ft)	Fluid Removed		Temp. (degrees F)	pH (units)	S.C. (S/cm)	Turbidity (NTU)	Fluid Appearance and Remarks (color, odor, etc.)
				Gallons	Total					
<b>7-17-03</b>	<b>1040</b>	<b>23.23</b>	<b>55.01</b>	<b>2</b>	<b>2</b>	<b>15.5</b>	<b>7.2</b>	<b>1230</b>	<b>0R</b>	<b>Light brown / tan</b>
	<b>1050</b>	<b>23.30</b>		<b>9</b>	<b>9</b>	<b>14.9</b>	<b>7.1</b>	<b>1290</b>	<b>0R</b>	<b>Dark tan</b>
	<b>1100</b>	<b>23.32</b>		<b>10</b>	<b>29</b>	<b>15.0</b>	<b>7.1</b>	<b>1310</b>	<b>0R</b>	<b>Dark tan</b>
	<b>1110</b>	<b>23.30</b>		<b>11</b>	<b>40</b>	<b>15.2</b>	<b>7.1</b>	<b>1310</b>	<b>281</b>	<b>Tan</b>
	<b>1120</b>	<b>23.31</b>		<b>11</b>	<b>52</b>	<b>15.1</b>	<b>7.1</b>	<b>1300</b>	<b>192</b>	<b>Tan</b>
	<b>1130</b>	<b>23.29</b>		<b>11</b>	<b>63</b>	<b>15.1</b>	<b>7.1</b>	<b>1300</b>	<b>284</b>	<b>Cloudy</b>
	<b>1140</b>	<b>23.29</b>		<b>12</b>	<b>75</b>	<b>15.1</b>	<b>7.1</b>	<b>1290</b>	<b>90.2</b>	<b>Slightly cloudy</b>
	<b>1150</b>	<b>23.30</b>		<b>12</b>	<b>87</b>	<b>15.2</b>	<b>7.1</b>	<b>1290</b>	<b>65.6</b>	<b>Clear</b>
	<b>1200</b>	<b>23.28</b>		<b>12</b>	<b>99</b>	<b>15.1</b>	<b>7.1</b>	<b>1280</b>	<b>58.6</b>	<b>Clear</b>
	<b>1210</b>	<b>23.29</b>		<b>6</b>	<b>105</b>	<b>15.3</b>	<b>7.1</b>	<b>1280</b>	<b>27.2</b>	<b>Clear</b>

\* From TOC unless otherwise noted in Remarks



**Appendix F –  
Low Flow Groundwater  
Sampling Procedures**

**Low Flow Sampling Procedures  
Dry Cleaning Facilities Area  
RI Report Addendum  
Fort Riley, Kansas**

**Monitoring Well Purging and Sampling**

**Sampling method for high and low recharge wells screened below the water table**

The initial pumping rate is set at 100 ml/min or the rate at which a stabilized water elevation was obtained in previous sampling events as long as this rate does not exceed 500 ml/min. If a stabilized water elevation is obtained (constant or increasing water elevation), the flow rate can be increased up to a maximum flow rate of 500 ml/min as long as a stabilized water elevation continues to be maintained. If field parameters stabilize (see below for stabilization criteria) over at least three consecutive readings while a stabilized water elevation is maintained, the final set of field parameters are recorded, a sample is collected for field ferrous iron determination (see below), the flow-through cell is disconnected, and samples for the lab are collected at a pump rate at or below the rate where water elevation stability was obtained. The pump rate will be reduced to 100 ml/min when collecting samples for VOC analysis.

If a stabilized water elevation can not be obtained at 100 ml/min, the flow rate is increased (up to approximately 2.5 L/min) and the water level in the well lowered to a level not less than 1 foot above the top of the screen. The rate is then reduced to less than 500 ml/min to determine if a stabilized water elevation can be obtained at the lower water elevation. If a stabilized water elevation is obtained and the field parameters stabilize, a final set of water quality parameters are recorded, a sample is collected for field ferrous iron, the flow-through cell is disconnected, and samples for the lab are collected at a pump rate at or below the rate where water elevation stability was obtained. The pump rate will be reduced to 100 ml/min when collecting samples for VOC analysis.

If a stabilized water elevation is not obtained at the lowered water elevation, the pumping rate is increased to either run the well dry or to purge three well volumes. If three well volumes can be purged and the field parameters are stable, a final set of lab parameters are recorded, the flow-through cell is disconnected, a sample for field ferrous iron is collected, and samples for lab analysis

are then collected. If field parameters are not stable, the flow rate is decreased as feasible to see if field parameter stabilization can be obtained at a lower flow rate. If field parameter stabilization occurs at the lower flow rate, a final set of lab parameters are recorded, a sample for field ferrous iron is collected, the flow-through cell is disconnected, and samples for lab analysis are then collected. If the field parameters do not stabilize at the lowered flow rate, the well is purged dry. Once dry, the well is allowed to recharge, a set of field parameters is recorded, a final set of lab parameters are recorded, a sample for field ferrous iron is collected, the flow-through cell is disconnected, and samples for lab analysis are collected at a pump rate at or below the rate where water elevation stability was obtained. The pump rate will be reduced to 100 ml/min when collecting samples for VOC analysis.

Stabilization of parameters will be based on the USEPA criteria (USEPA 1996), with a modification of the USEPA stability criteria for low DO (less than 0.5 mg/L). The USEPA DO criteria ( $\pm 10\%$ ) will be used for DO readings greater than 0.5 mg/L. For DO readings less than or equal to 0.5 mg/L, the stability criteria will be  $\pm 0.1$  mg/L. This modification is designed to avoid stability requirements that are stricter than the variability in the DO measuring device and to ensure that purging of wells with DO below 0.5 mg/L (anaerobic conditions as defined by USEPA (1998)) will be continued until the 0.5 mg/L level is reached. The following is a summary of the stabilization criteria to be used in the sampling round. These criteria will meet over three readings taken at least 5 minutes apart.

- $\pm 0.1$  pH units for pH measurements
- $\pm 3\%$  for conductivity measurements
- $\pm 0.5^\circ$  C (USACE requirement) for temperature measurements
- $\pm 10\%$  for dissolved oxygen (DO) measurements greater than 0.5 mg/L and  $\pm 0.1$  mg/L for DO measurements less than 0.5 mg/L
- $\pm 10$  mV for oxidation reduction potential (ORP)
- $<30$  NTUs (USACE requirement) for turbidity or  $\pm 10\%$  if turbidity levels consistently remain above 30 NTUs

During purging and sampling of each well, field parameters and water elevations will be recorded every five minutes on sample collection log sheets along with the date, time, sampling personnel, and other pertinent sampling information. A final water level after completion of sampling will also be recorded on the log sheet.

A field-test for ferrous iron will be performed just prior to analytical sample collection. Water for this test will be obtained directly from the discharge of the flow-through cell at the time that final field parameters are measured. The result will be recorded on the sample collection log sheet.

### **Sampling method for high and low recharge wells screened across the water table**

The initial pumping rate is set at 100 ml/min or the rate (maximum of 500 ml/min) at which a stabilized water elevation with a drawdown of less than 0.3 feet was obtained in previous sampling events. If a stabilized water elevation is obtained (constant or increasing water elevation) with a drawdown of less than 0.3 ft, the flow rate can be increased up to a maximum flow rate of 500 ml/min as long as a stabilized water elevation and a drawdown of less than 0.3 ft continue to be maintained. If field parameters stabilize (see below for stabilization criteria) over at least three consecutive readings while a stabilized water elevation is maintained with less than a 0.3 ft drawdown, the final set of field parameters are recorded, a sample is collected for field ferrous iron determination (see below), the flow-through cell is disconnected, and samples for the lab are collected at a pump rate at or below the rate where water elevation stability was obtained. The pump rate will be reduced to 100 ml/min when collecting samples for VOC analysis.

If a stabilized water elevation within a 0.3 ft drawdown is not obtained, pumping is continued to either run the well dry or to purge three well volumes. If three well volumes can be purged and the field parameters are stable, a final set of lab parameters are recorded, the flow-through cell is disconnected, a sample for field ferrous iron is collected, and samples for lab analysis are then collected. If field parameters are not stable, the pump rate is increased and the well is purged dry.

Once dry, the well is allowed to recharge, a set of field parameters is recorded, a final set of lab parameters are recorded, a sample for field ferrous iron is collected, the flow-through cell is

disconnected, and samples for lab analysis are collected at a pump rate at or below the rate where water elevation stability was obtained. The pump rate will be reduced to 100 ml/min when collecting samples for VOC analysis.

Stabilization of parameters will be based on the USEPA criteria (USEPA 1996), with a modification of the USEPA stability criteria for low DO (less than 0.5 mg/L). The USEPA DO criteria ( $\pm 10\%$ ) will be used for DO readings greater than 0.5 mg/L. For DO readings less than or equal to 0.5 mg/L, the stability criteria will be  $\pm 0.1$  mg/L. This modification is designed to avoid stability requirements that are stricter than the variability in the DO measuring device and to ensure that purging of wells with DO below 0.5 mg/L (anaerobic conditions as defined by USEPA (1998)) will be continued until the 0.5 mg/L level is reached. The following is a summary of the stabilization criteria to be used in the sampling round. These criteria will meet over three readings taken at least 5 minutes apart.

- $\pm 0.1$  pH units for pH measurements
- $\pm 3\%$  for conductivity measurements
- $\pm 0.5^\circ$  C (USACE requirement) for temperature measurements
- $\pm 10\%$  for dissolved oxygen (DO) measurements greater than 0.5 mg/L and  $\pm 0.1$  mg/L for DO measurements less than 0.5 mg/L
- $\pm 10$  mV for oxidation reduction potential (ORP)
- $<30$  NTUs (USACE requirement) for turbidity or  $\pm 10\%$  if turbidity levels consistently remain above 30 NTUs

During purging and sampling of each well, field parameters and water elevations will be recorded every five minutes on sample collection log sheets along with the date, time, sampling personnel, and other pertinent sampling information. A final water level after completion of sampling will also be recorded on the log sheet.

A field-test for ferrous iron will be performed just prior to analytical sample collection. Water for

this test will be obtained directly from the discharge of the flow-through cell at the time that final field parameters are measured. The result will be recorded on the sample collection log sheet.



**Appendix G –  
Geotechnical Analyses  
of Soil Samples**

**Geotechnical Analyses –  
Soil Borings**



August 30, 2002

GEOTECHNICAL SERVICES: DESIGN • CONSTRUCTION • FORENSIC

Ms. Martha Hildebrandt, P.G.  
Burns & McDonnell  
9400 Ward Parkway  
Kansas City, MO 64114

Fax # (816) 822-3463

USFRDCFA, (A-OG Project #02-399T)(B&M Project #27979-3.20.20)

Dear Ms. Hildebrandt:

We have completed our laboratory testing services for your above-referenced project.

The detailed results of these tests are enclosed. As you directed, these testing services were provided in accordance with test methods that you specified.

If you have any questions regarding this information or require any further testing, please contact me at your convenience. We enjoy doing business with you.

Sincerely,  
ALPHA-OMEGA GEOTECH, INC.

A handwritten signature in black ink, appearing to read 'J. Allan Bush', written over a white background.

J. Allan Bush, P.E.  
President & Chief Engineer

Enclosures

dla

## SUMMARY OF LABORATORY TESTING



PROJECT NAME: USFRDCFA (B&M Project#27979-3.20.20)  
 PROJECT LOCATION: \_\_\_\_\_

PROJECT NUMBER: 02-399T  
 DATE: 8/23/2002

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits			USCS Class.	% Passing No. 200	Porosity Calculations	Gs	% Swell	Remarks
						LL	PL	PI						
B-440	SS2	4'-8'	Brown silty GRAVEL w/sand	10.4	99.1	24	19	5	GM	23.2	0.410	2.69		*k20=1.8E-04 cm/s
B-440	SS4	12'-16'	Brown LEAN CLAY w/sand	18.8	102.8	38	18	20	CL	70.4	0.390	2.70		*k20=2.6E-07 cm/s
B-440	SS11	40'-42'	Gray sandy LEAN CLAY	22.5	110.5	29	17	12	CL	54.3	0.342	2.69		
B-422	SS2	4'-8'	Brown LEAN CLAY w/sand	20.0	93.3	32	17	15	CL	71.9	0.442	2.68		*k20=2.3E-05 cm/s
B-422	SS4	12'-16'	Brown LEAN CLAY	26.0	97.5	41	20	21	CL	94.9	0.423	2.71		*k20=6.3E-07 cm/s
B-422	SS10	39'-40'	Brown-mottled olive brown SILTY SAND	20.0	110.8	NL	NPL	NPI	SM	40.3	0.342	2.70		

**"REVISED SUMMARY"**

# Alpha-Omega Geotech, Inc.

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Kansas City, Kansas 66110

Voice: (913) 371-0000 FAX: (913) 371-6710

## POROSITY CALCULATIONS

**Project Name:** USFRDCFA  
**Project No.:** 02-399T  
**Date:** 22-Oct-02

Sample Number	Depth (feet)	Dry Unit Weight (pcf)	Specific Gravity	Porosity
B-440, SS2	4'-8'	99.1	2.69	0.410
B-440, SS4	12'-16'	102.8	2.70	0.390
B-440, SS11	40'-42'	110.5	2.69	0.342
B-422, SS2	4'-8'	93.3	2.68	0.442
B-422, SS4	12'-16'	97.5	2.71	0.423
B-422, SS10	39'-40'	110.8	2.70	0.342

POROSITY =  $1 - (\text{Dry Unit Wt. of Soil} / (\text{Unit Wt. of Water} * \text{Specific Gravity}))$



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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: B-422, SS2 Date: 08/14/2002  
Soil Description: Brown LEAN CLAY w/sand Depth: 4'-8'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	W33			
Dish + Dry Soil, g	125.8			
Dish, g	100.0			
Dry Soil, g (Ws)	25.8			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.8			
Flask + water + immersed soil, g (Wbwe)	666.2			
Displaced water, Ws + Wbw - Wbwe	9.6			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.68			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T

LOCATION: \_\_\_\_\_

BORING NO.: B-422 SAMPLE NO.: SS2 DEPTH: 4'-8'

SAMPLE TYPE: Undisturbed % COMPACTION: ----

INITIAL DATA		FINAL DATA	
MOISTURE:	<u>20.0</u> %	MOISTURE:	<u>28.9</u> %
DRY UNIT WEIGHT:	<u>93.3</u> pcf	DRY UNIT WEIGHT:	<u>93.3</u> pcf
HEIGHT:	<u>2.00</u> inches	HEIGHT:	<u>2.00</u> inches
DIAMETER:	<u>1.42</u> inches	DIAMETER:	<u>1.42</u> inches
WEIGHT:	<u>93.0</u> grams	WEIGHT:	<u>99.8</u> grams
SATURATION:	<u>67.0</u> %	SATURATION:	<u>100.0</u> %
PERMEANT LIQUID:	<u>Deaired tap water</u>		
EFFECTIVE CONSOLIDATION STRESS:	Maximum <u>5.4</u> psi	Minimum	<u>5.0</u> psi
BACK PRESSURE:	<u>90</u> psi	RANGE OF HYDRAULIC GRADIENT:	<u>4.3 to 3.9</u>
SAMPLE DESCRIPTION:	<u>Brown LEAN CLAY w/sand</u>		

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
08/13/2002	1	720	22.0	20.0	26°
08/13/2002	2	720	22.0	20.0	26°
08/13/2002	3	720	22.0	20.0	26°
08/13/2002	4	720	22.0	20.0	26°
AVERAGE		720	22.0	20.0	26°

k= 2.7E-05 cm/s

k20= 2.3E-05 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-422

SAMPLE No.: SS2

DEPTH: 4'-8'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	1.7	98.3
Sieve Number 40	6.5	93.5
Sieve Number 60	15.1	84.9
Sieve Number 80	19.5	80.5
Sieve Number 100	21.2	78.8
Sieve Number 200	28.1	71.9



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-422

SAMPLE No.: SS2

DEPTH: 4'-8'

PERCENT PASSING No. 200: 71.9

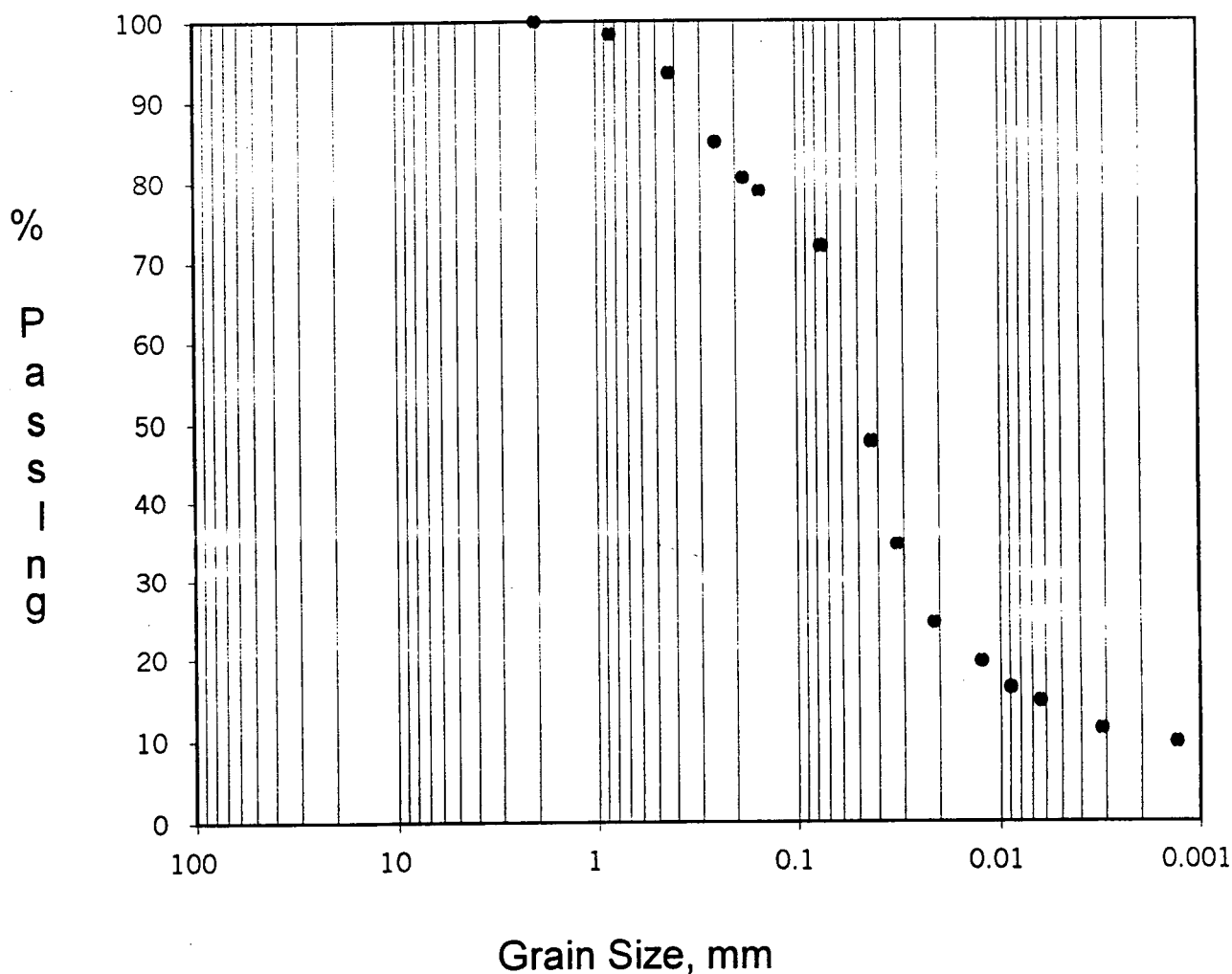
LIQUID LIMIT: 32

PLASTIC LIMIT: 17

PLASTICITY INDEX: 15

CLASSIFICATION: CL

## GRAIN SIZE DISTRIBUTION CURVE



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-422

SAMPLE No.: SS4

DEPTH: 12'-16'

PERCENT PASSING No. 200: 94.9

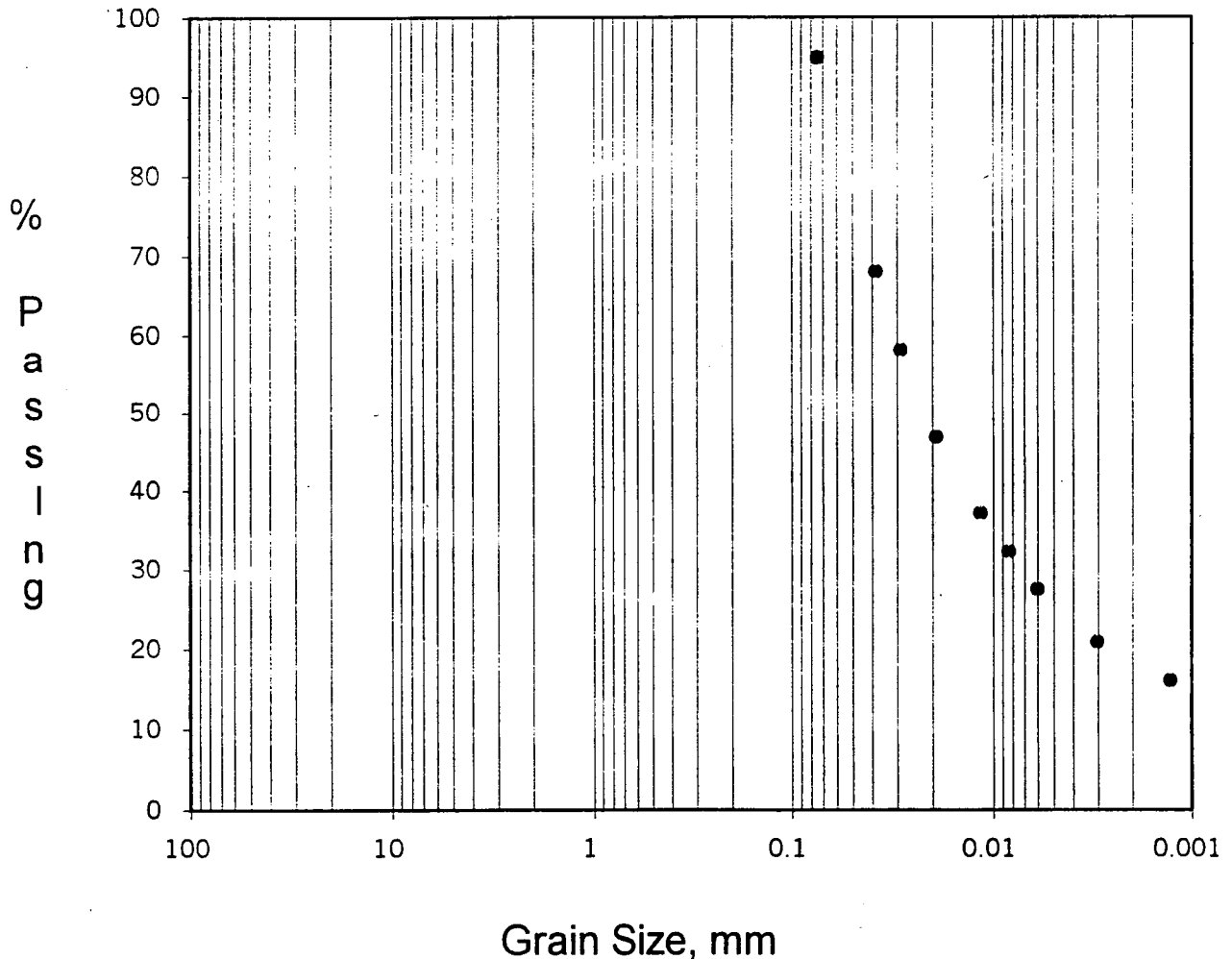
LIQUID LIMIT: 41

PLASTIC LIMIT: 21

PLASTICITY INDEX: 20

CLASSIFICATION: CL

## GRAIN SIZE DISTRIBUTION CURVE



# Alpha-Omega Geotech, Inc.

P.O. Box 2670

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCA Project No.: 02-399T  
Sample Number: B-422, SS4 Date: 08/17/2002  
Soil Description: Brown LEAN CLAY Depth: 12'-16'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	F-16			
Dish + Dry Soil, g	75.1			
Dish, g	50.1			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.8			
Displaced water, Ws + Wbw - Wbwe	9.2			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.71			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T

LOCATION: \_\_\_\_\_

BORING NO.: B-422 SAMPLE NO.: SS4 DEPTH: 12'-16'

SAMPLE TYPE: Undisturbed % COMPACTION: -----

INITIAL DATA		FINAL DATA	
MOISTURE:	<u>26.0</u> %	MOISTURE:	<u>26.1</u> %
DRY UNIT WEIGHT:	<u>97.5</u> pcf	DRY UNIT WEIGHT:	<u>97.5</u> pcf
HEIGHT:	<u>2.82</u> inches	HEIGHT:	<u>2.82</u> inches
DIAMETER:	<u>1.40</u> inches	DIAMETER:	<u>1.40</u> inches
WEIGHT:	<u>139.9</u> grams	WEIGHT:	<u>140.0</u> grams
SATURATION:	<u>96.4</u> %	SATURATION:	<u>100.0</u> %
PERMEANT LIQUID:	<u>Deaired tap water</u>		
EFFECTIVE CONSOLIDATION STRESS:	Maximum <u>12</u> psi	Minimum	<u>11.6</u> psi
BACK PRESSURE:	<u>90</u> psi	RANGE OF HYDRAULIC GRADIENT:	<u>3.1 to 2.5</u>
SAMPLE DESCRIPTION:	<u>Brown LEAN CLAY</u>		

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
08/15/2002	1	90,540	22.0	17.6	26°
08/16/2002	2	90,540	22.0	17.6	26°
08/17/2002	3	90,540	22.0	17.6	26°
08/18/2002	4	90,540	22.0	17.6	26°
AVERAGE		90,540	22.0	17.6	26°

k = 7.2E-07 cm/s  
k20 = 6.3E-07 cm/s

n/n20 = 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
k20 = Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# Alpha-Omega Geotech, Inc.

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: B-422, SS10 Date: 08/28/2002  
Soil Description: Brown-mottled olive brown SILTY SAND Depth: 39'-40'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	S1			
Dish + Dry Soil, g	79.5			
Dish, g	51.7			
Dry Soil, g (Ws)	27.8			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	677.8			
Flask + water + immersed soil, g (Wbwe)	667.5			
Displaced water, Ws + Wbw - Wbwe	10.3			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.70			

Remarks:

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-422

SAMPLE No.: SS10

DEPTH: 39'-40'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.2	99.8
Sieve Number 40	4.5	95.5
Sieve Number 60	24.6	75.4
Sieve Number 80	39.6	60.4
Sieve Number 100	45.0	55.0
Sieve Number 200	59.7	40.3

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

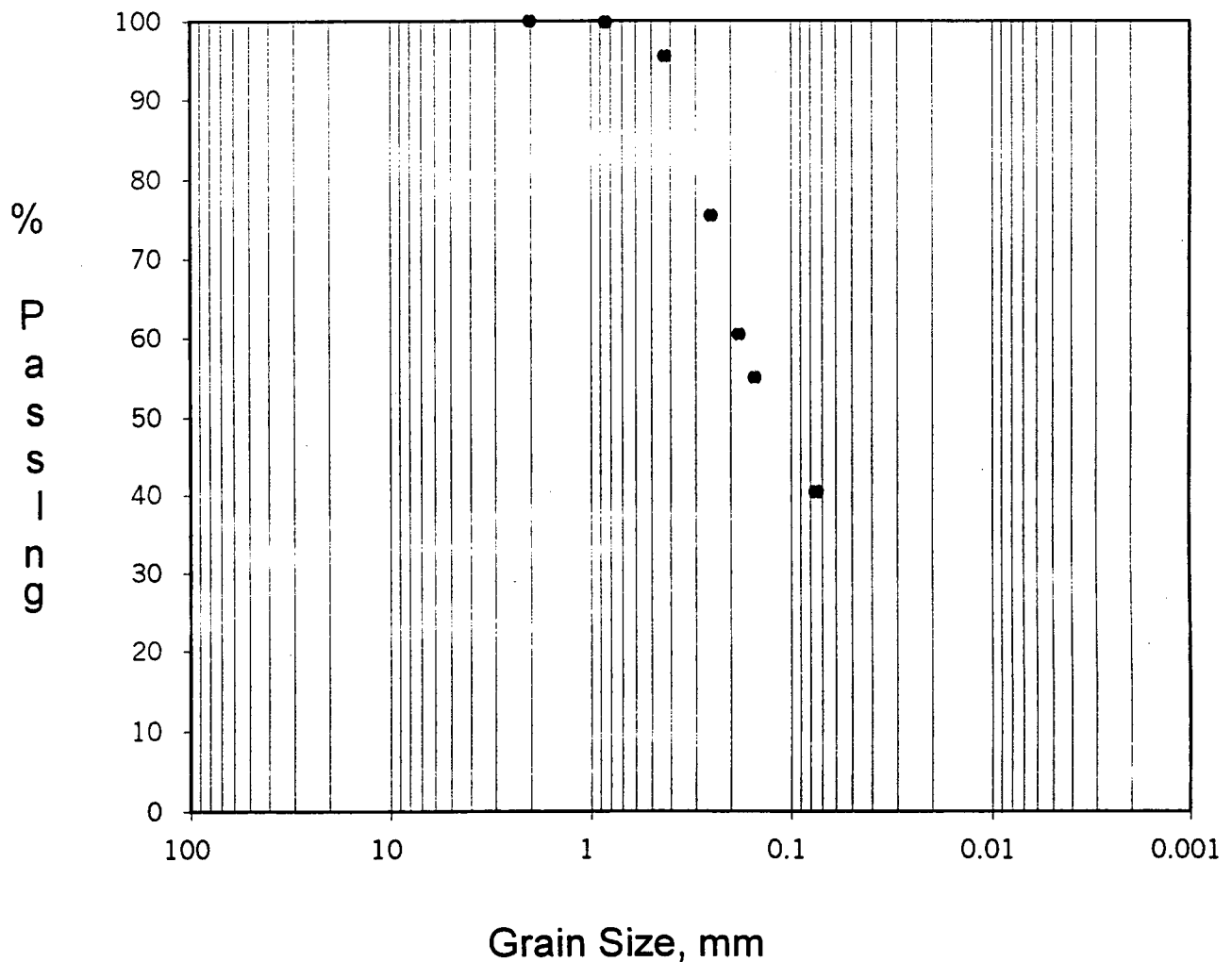
BORING No.: B-422

SAMPLE No.: SS10

DEPTH: 39'-40'

PERCENT PASSING No. 200: 40.3

## GRAIN SIZE DISTRIBUTION CURVE



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS2

DEPTH: 4'-8"

PERCENT PASSING No. 200: 23.2

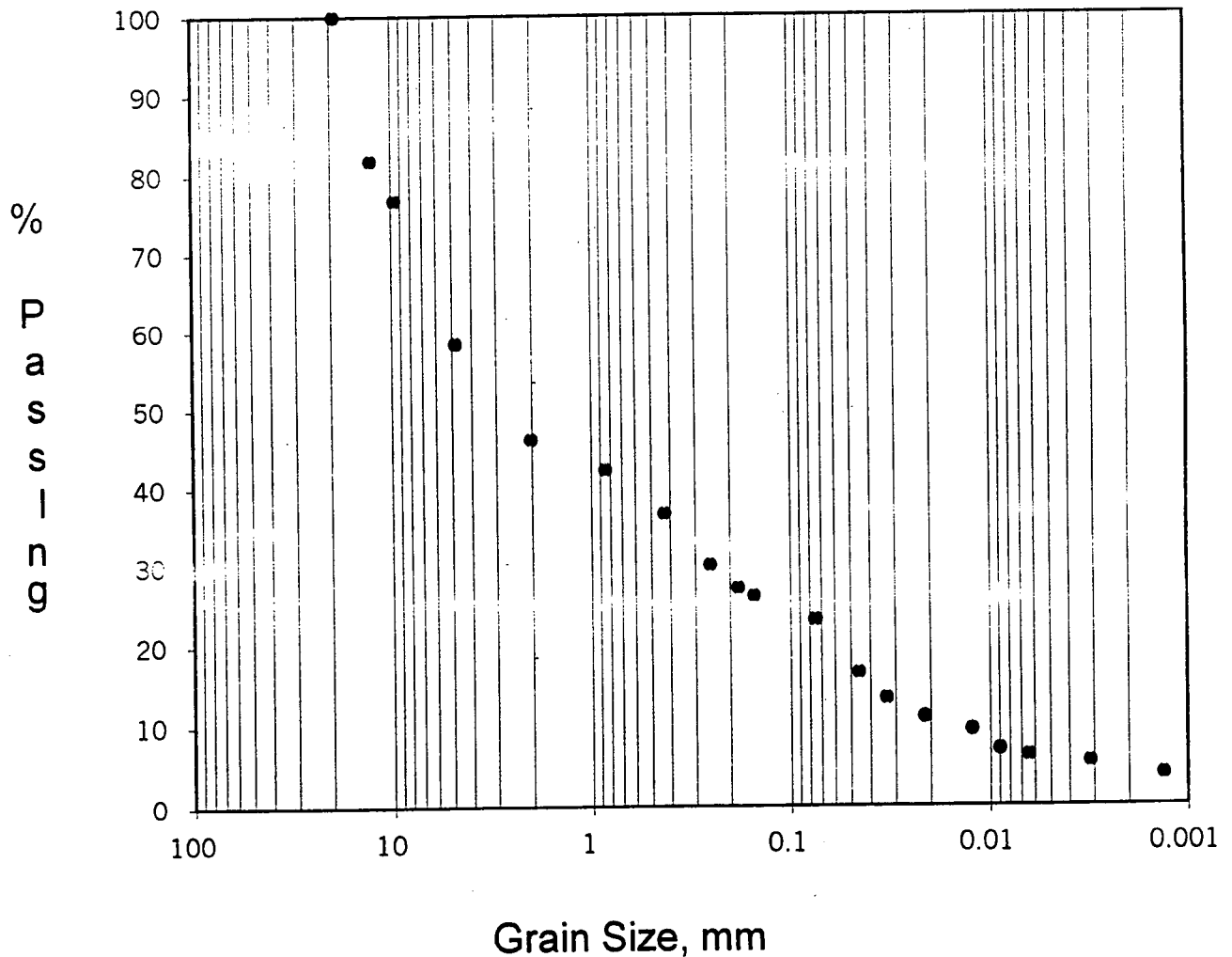
LIQUID LIMIT: 24

PLASTIC LIMIT: 19

PLASTICITY INDEX: 5

CLASSIFICATION: CL

## GRAIN SIZE DISTRIBUTION CURVE





# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS2

DEPTH: 4'-8'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
0.75 inch sieve	0.0	100.0
0.5 inch sieve	18.2	81.8
0.375 inch sieve	23.2	76.8
Sieve Number 4	41.5	58.5
Sieve Number 10	53.8	46.2
Sieve Number 20	57.7	42.3
Sieve Number 40	63.4	36.6
Sieve Number 60	70.0	30.0
Sieve Number 80	72.9	27.1
Sieve Number 100	73.9	26.1
Sieve Number 200	76.8	23.2



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T  
 LOCATION: \_\_\_\_\_  
 BORING NO.: B-440 SAMPLE NO.: SS2 DEPTH: 4'-8"  
 SAMPLE TYPE: Undisturbed % COMPACTION: -----  
**INITIAL DATA** **FINAL DATA**  
 MOISTURE: 10.4 % MOISTURE: 26.2 %  
 DRY UNIT WEIGHT: 99.1 pcf DRY UNIT WEIGHT: 99.1 pcf  
 HEIGHT: 2.80 inches HEIGHT: 2.80 inches  
 DIAMETER: 1.30 inches DIAMETER: 1.30 inches  
 WEIGHT: 106.7 grams WEIGHT: 121.9 grams  
 SATURATION: 40.1 % SATURATION: 100.0 %  
 PERMEANT LIQUID: Deaired tap water  
 EFFECTIVE CONSOLIDATION STRESS: Maximum 5.4 psi Minimum 5.0 psi  
 BACK PRESSURE: 90 psi RANGE OF HYDRAULIC GRADIENT: 3.1 to 2.9  
 SAMPLE DESCRIPTION: Brown silty GRAVEL w/sand

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
08/13/2002	1	120	22.0	20.4	26°
08/13/2002	2	120	22.0	20.4	26°
08/13/2002	3	120	22.0	20.4	26°
08/13/2002	4	120	22.0	20.4	26°
AVERAGE		120	22.0	20.4	26°

k= 2.1E-04 cm/s  
 k20= 1.8E-04 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
 k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# Alpha-Omega Geotech, Inc.

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: B-440, SS2 Date: 08/12/2002  
Soil Description: Brown silty GRAVEL w/sand Depth: 4'-8'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	G14			
Dish + Dry Soil, g	125.0			
Dish, g	100.0			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.7			
Displaced water, Ws + Wbw - Wbwe	9.3			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS4

DEPTH: 12'-16'

PERCENT PASSING No. 200: 70.4

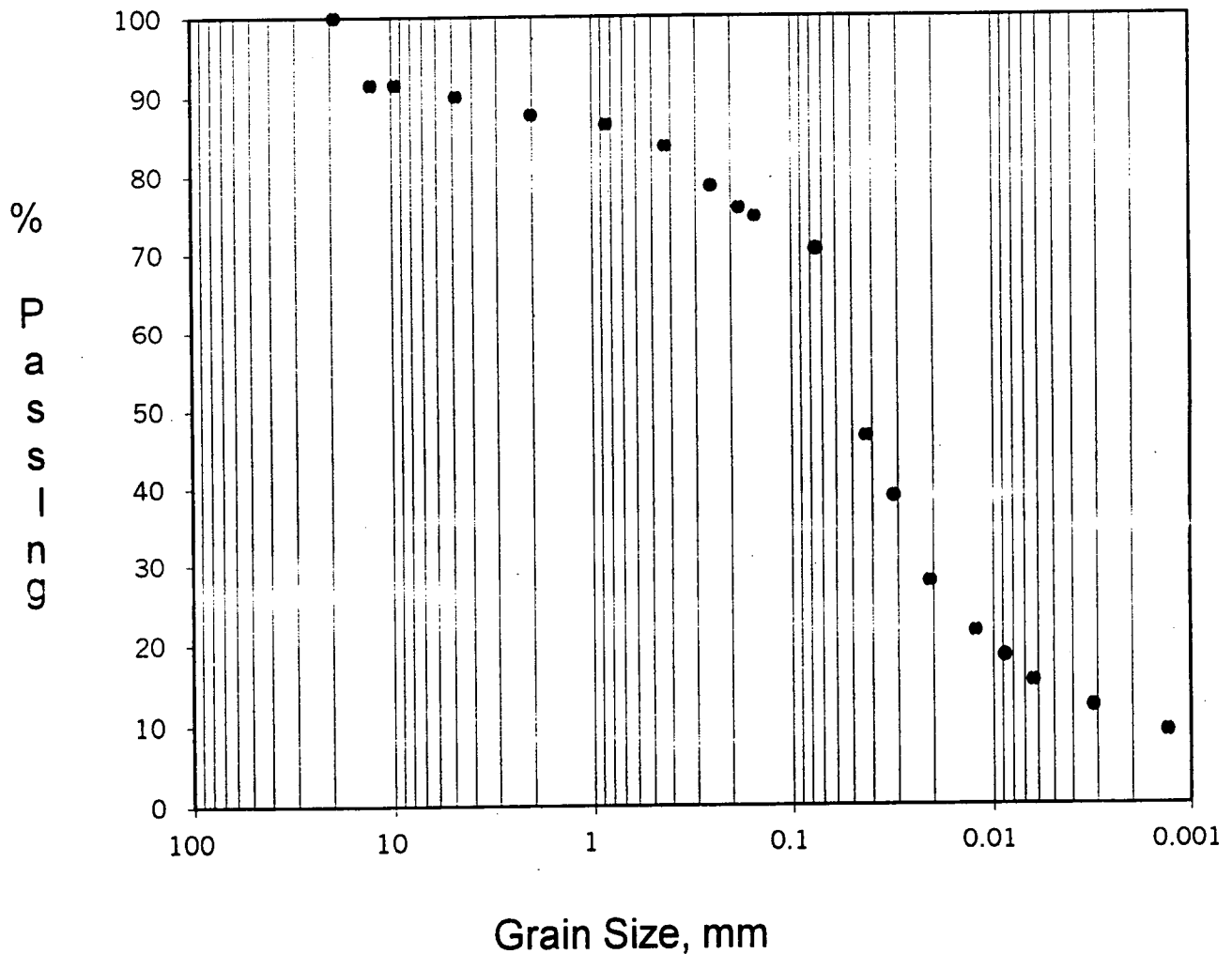
LIQUID LIMIT: 38

PLASTIC LIMIT: 18

PLASTICITY INDEX: 20

CLASSIFICATION: CL

## GRAIN SIZE DISTRIBUTION CURVE



# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS4

DEPTH: 12'-16'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
0.75 inch sieve	0.0	100.0
0.5 inch sieve	8.5	91.5
0.375 inch sieve	8.5	91.5
Sieve Number 4	10.0	90.0
Sieve Number 10	12.3	87.7
Sieve Number 20	13.6	86.4
Sieve Number 40	16.4	83.6
Sieve Number 60	21.5	78.5
Sieve Number 80	24.3	75.7
Sieve Number 100	25.4	74.6
Sieve Number 200	29.6	70.4

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: B-440, SS4 Date: 08/13/2002  
Soil Description: Brown LEAN CLAY w/sand Depth: 12'-16'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	T12			
Dish + Dry Soil, g	125.7			
Dish, g	100.0			
Dry Soil, g (Ws)	25.7			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.7			
Flask + water + immersed soil, g (Wbwe)	666.2			
Displaced water, Ws + Wbw - Wbwe	9.5			
Correction Factor, K	.9988			
$(W_s K) / (W_s + W_{bw} - W_{bwe}) = G_s$	2.70			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T

LOCATION: \_\_\_\_\_

BORING NO.: B-440 SAMPLE NO.: SS4 DEPTH: 12'-16'

SAMPLE TYPE: Undisturbed % COMPACTION: -----

INITIAL DATA		FINAL DATA	
MOISTURE:	<u>18.8</u> %	MOISTURE:	<u>21.8</u> %
DRY UNIT WEIGHT:	<u>102.8</u> pcf	DRY UNIT WEIGHT:	<u>102.8</u> pcf
HEIGHT:	<u>2.80</u> inches	HEIGHT:	<u>2.80</u> inches
DIAMETER:	<u>1.55</u> inches	DIAMETER:	<u>1.55</u> inches
WEIGHT:	<u>169.0</u> grams	WEIGHT:	<u>173.2</u> grams
SATURATION:	<u>79.4</u> %	SATURATION:	<u>100.0</u> %
PERMEANT LIQUID:	<u>Deaired tap water</u>		
EFFECTIVE CONSOLIDATION STRESS:	Maximum <u>12</u> psi	Minimum <u>11.6</u> psi	
BACK PRESSURE:	<u>90</u> psi	RANGE OF HYDRAULIC GRADIENT:	<u>3.1 to 3.0</u>
SAMPLE DESCRIPTION:	<u>Brown LEAN CLAY w/sand</u>		

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
08/16/2002	1	28,800	22.0	21.2	26°
08/19/2002	2	28,800	22.0	21.2	26°
08/20/2002	3	28,800	22.0	21.2	26°
08/21/2002	4	28,800	22.0	21.2	26°
AVERAGE		28,800	22.0	21.2	26°

k = 3.0E-07 cm/s  
k20 = 2.6E-07 cm/s

n/n20 = 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
k20 = Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# Alpha-Omega Geotech, Inc.

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Voice: (913) 371-0000 FAX: (913) 371-6710

## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: B-440, SS11 Date: 08/28/2002  
Soil Description: Gray sandy LEAN CLAY Depth: 40'-42'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	P16			
Dish + Dry Soil, g	125.8			
Dish, g	100.8			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.7			
Displaced water, Ws + Wbw - Wbwe	9.3			
Correction Factor, K	.9988			
$(Wsk) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:



# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS11

DEPTH: 40'-42'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
0.5 inch sieve	0.0	100.0
0.375 inch sieve	0.3	99.7
Sieve Number 4	0.8	99.2
Sieve Number 10	1.6	98.4
Sieve Number 20	3.8	96.2
Sieve Number 40	19.1	80.9
Sieve Number 60	37.1	62.9
Sieve Number 80	41.4	58.6
Sieve Number 100	42.4	57.6
Sieve Number 200	45.7	54.3

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

BORING No.: B-440

SAMPLE No.: SS11

DEPTH: 40'-42'

PERCENT PASSING No. 200: 54.3

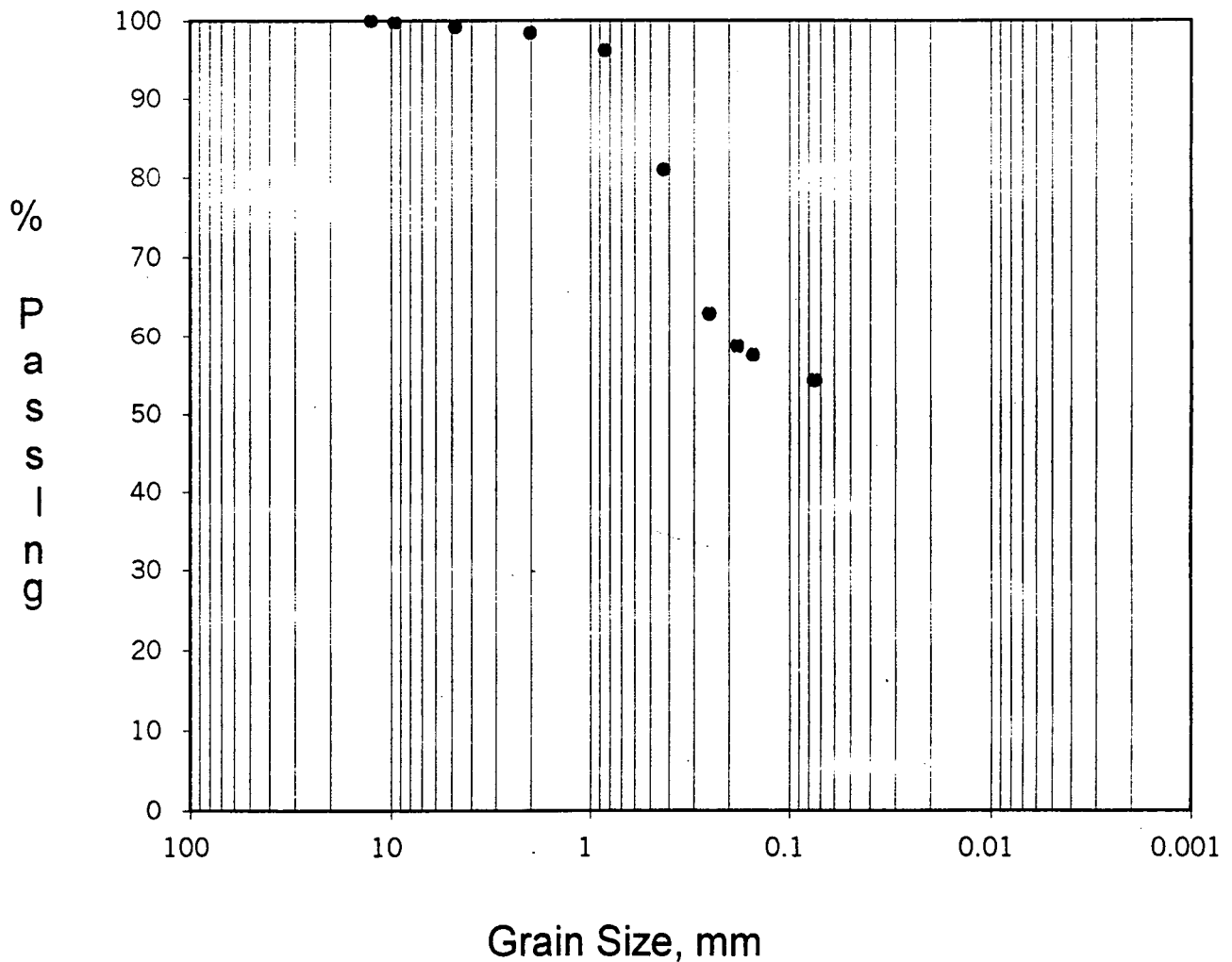
LIQUID LIMIT: 29

PLASTIC LIMIT: 17

PLASTICITY INDEX: 12

CLASSIFICATION: CL

## GRAIN SIZE DISTRIBUTION CURVE



**Geotechnical Analyses –  
Monitoring Wells**



October 23, 2002

GEOTECHNICAL SERVICES: DESIGN • CONSTRUCTION • FORENSIC

Mr. Walter McClendon  
Burns & McDonnell  
9400 Ward Parkway  
Kansas City, Missouri 64114

FAX: (816) 822-3463

USFRDCFA (A-OG 2-399T)

Dear Mr. McClendon:

We have completed our laboratory testing services for your above-referenced project.

The detailed results of these tests are enclosed. As you directed, these testing services were provided in accordance with test methods that you specified.

If you have any questions regarding this information or require any further testing, please contact me at your convenience. We enjoy doing business with you.

Sincerely,  
ALPHA-OMEGA GEOTECH, INC.

A handwritten signature in cursive script that reads "Thomas J. Burdick".

Thomas J. Burdick  
Laboratory Manager

Enclosures

# SUMMARY OF LABORATORY TESTING



PROJECT NAME: USFRDCFA, #27979-3.20.20  
 PROJECT LOCATION: \_\_\_\_\_

PROJECT NUMBER: 02-399T  
 DATE: 10/23/2002

Boring Number	Sample Number	Depth or Elevation	Description	Natural Moisture (%)	Dry Unit Weight (pcf)	Atterberg Limits			USCS Class.	% Passing No. 200	Porosity Calculations	Gs	Remarks
						LL	PL	PI					
	02-41	15'-17'	Light brown silty, clayey SAND w/gravel	10.0	-----	-----	-----	-----	SC-SM	40.0	-----	-----	
	02-41	5'-7'	Brown SILT	4.2	89.8	NL	NPL	NPI	ML	87.3	0.465	2.69	k20=7.9E-05 cm/s
	02-42	5'-7'	Brown-mottled dark brown LEAN CLAY	16.8	110.9	33	18	15	CL	90.7	0.339	2.69	k20=4.9E-07 cm/s
	02-42	15'-17'	Light brownish gray SILT	13.1	92.5	NL	NPL	NPI	ML	94.0	0.449	2.69	k20=1.3E-04 cm/s
	02-42	25'-27'	Light brown & light reddish brown poorly graded SAND w/silt	4.4	101.3	-----	-----	-----	SP-SM	9.1	0.392	2.67	
	02-47C	5'-7'	Dark brown SILT	18.8	92.5	25	22	3	ML	91.8	0.449	2.69	k20=1.3E-05 cm/s
	02-47C	15'-17'	Light brown poorly graded SAND	8.6	98.6	NL	NPL	NPI	SP	3.9	0.413	2.69	k20=3.06E-01 cm/s
			***Due to insufficient sample provided for (02-41, 15'-17') we were unable to perform many of the tests requested.										

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## POROSITY CALCULATIONS

**Project Name:** USFRDCFA  
**Project No.:** 02-399T  
**Date:** 24-Oct-02

Sample Number	Depth (feet)	Dry Unit Weight (pcf)	Specific Gravity	Porosity
02-41	5'-7'	89.8	2.69	0.465
02-42	5'-7'	110.9	2.69	0.339
02-42	15'-17'	92.5	2.69	0.449
02-42	25'-27'	101.3	2.67	0.392
02-47C	5'-7'	92.5	2.69	0.449
02-47C	15'-17'	98.6	2.69	0.413

POROSITY =  $1 - (\text{Dry Unit Wt. of Soil} / (\text{Unit Wt. of Water} * \text{Specific Gravity}))$



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-41

DEPTH: 5'-7"

PERCENT PASSING No. 200: 87.3

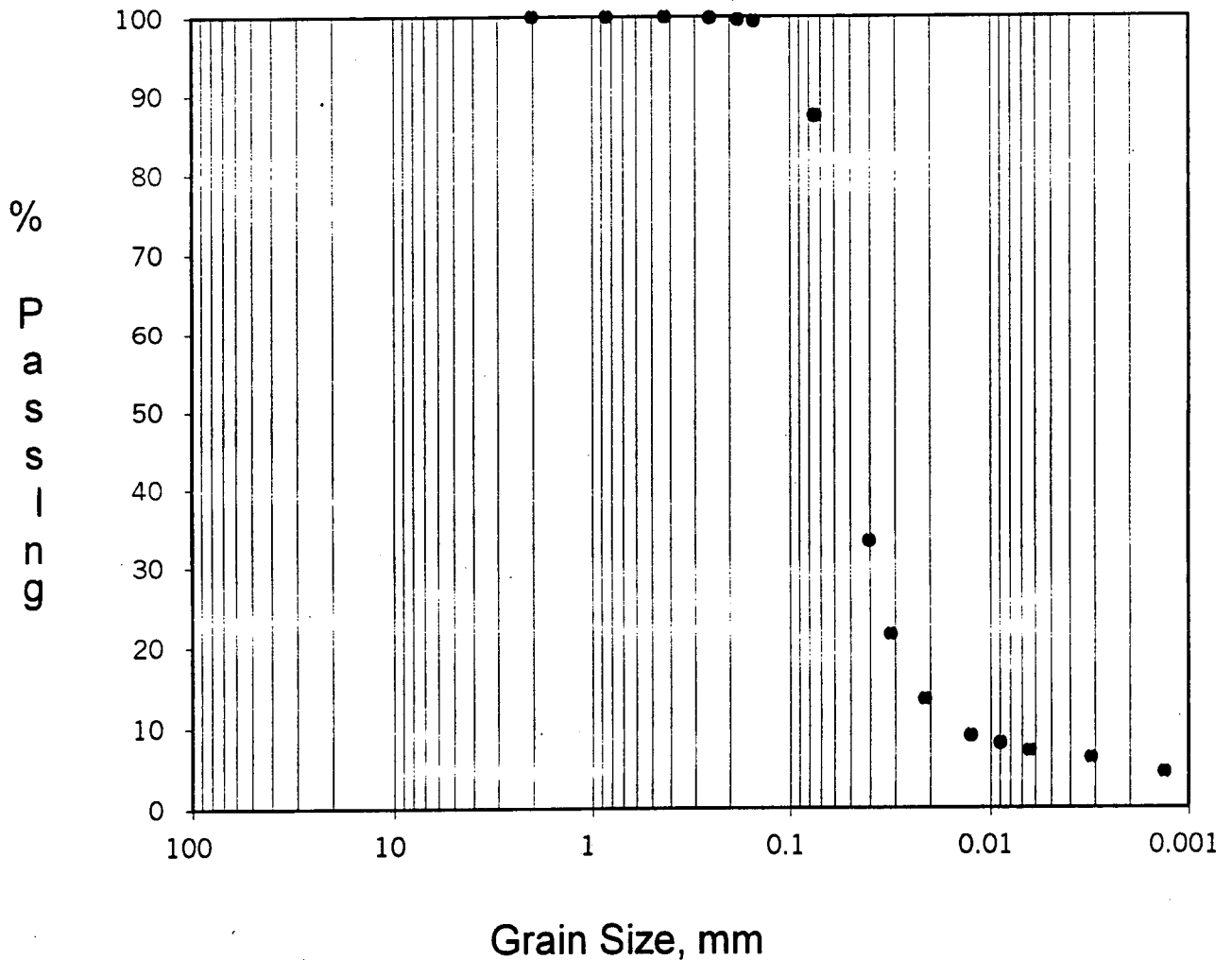
LIQUID LIMIT: NL

PLASTIC LIMIT: NPL

PLASTICITY INDEX: NPI

CLASSIFICATION ML

## GRAIN SIZE DISTRIBUTION CURVE



# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-41

DEPTH: 5'-7'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.0	100.0
Sieve Number 40	0.0	100.0
Sieve Number 60	0.2	99.8
Sieve Number 80	0.4	99.6
Sieve Number 100	0.5	99.5
Sieve Number 200	12.7	87.3



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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: 02-41 Date: 10/23/2002  
Soil Description: Brown SILT Depth: 5'-7'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	P13			
Dish + Dry Soil, g	125.6			
Dish, g	100.0			
Dry Soil, g (Ws)	25.6			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.6			
Flask + water + immersed soil, g (Wbwe)	666.1			
Displaced water, Ws + Wbw - Wbwe	9.5			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T  
 LOCATION: \_\_\_\_\_  
 BORING NO.: \_\_\_\_\_ SAMPLE NO.: 02-41 DEPTH: 5'-7'  
 SAMPLE TYPE: Undisturbed % COMPACTION: -----  
**INITIAL DATA** **FINAL DATA**  
 MOISTURE: 4.2 % MOISTURE: 28.3 %  
 DRY UNIT WEIGHT: 89.8 pcf DRY UNIT WEIGHT: 89.8 pcf  
 HEIGHT: 2.25 inches HEIGHT: 2.25 inches  
 DIAMETER: 2.80 inches DIAMETER: 2.80 inches  
 WEIGHT: 340.5 grams WEIGHT: 419.2 grams  
 SATURATION: 12.9 % SATURATION: 100.0 %  
 PERMEANT LIQUID: Deaired tap water  
 EFFECTIVE CONSOLIDATION STRESS: Maximum 5.4 psi Minimum 5.0 psi  
 BACK PRESSURE: 40 psi RANGE OF HYDRAULIC GRADIENT: 3.9 to 3.7  
 SAMPLE DESCRIPTION: Brown SILT

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
10/22/2002	1	30	22.0	21.0	26°
10/22/2002	2	30	22.0	21.0	26°
10/22/2002	3	30	22.0	21.0	26°
10/22/2002	4	30	22.0	21.0	26°
AVERAGE		30	22.0	21.0	26°

k= 9.0E-05 cm/s  
 k20= 7.9E-05 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
 k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-41

DEPTH: 15'-17'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
0.5 inch sieve	0.0	100.0
0.375 inch sieve	14.5	85.5
Sieve Number 4	18.9	81.1
Sieve Number 10	27.9	72.1
Sieve Number 20	35.8	64.2
Sieve Number 40	42.5	57.5
Sieve Number 60	48.8	51.2
Sieve Number 80	52.6	47.4
Sieve Number 100	54.5	45.5
Sieve Number 200	60.0	40.0

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

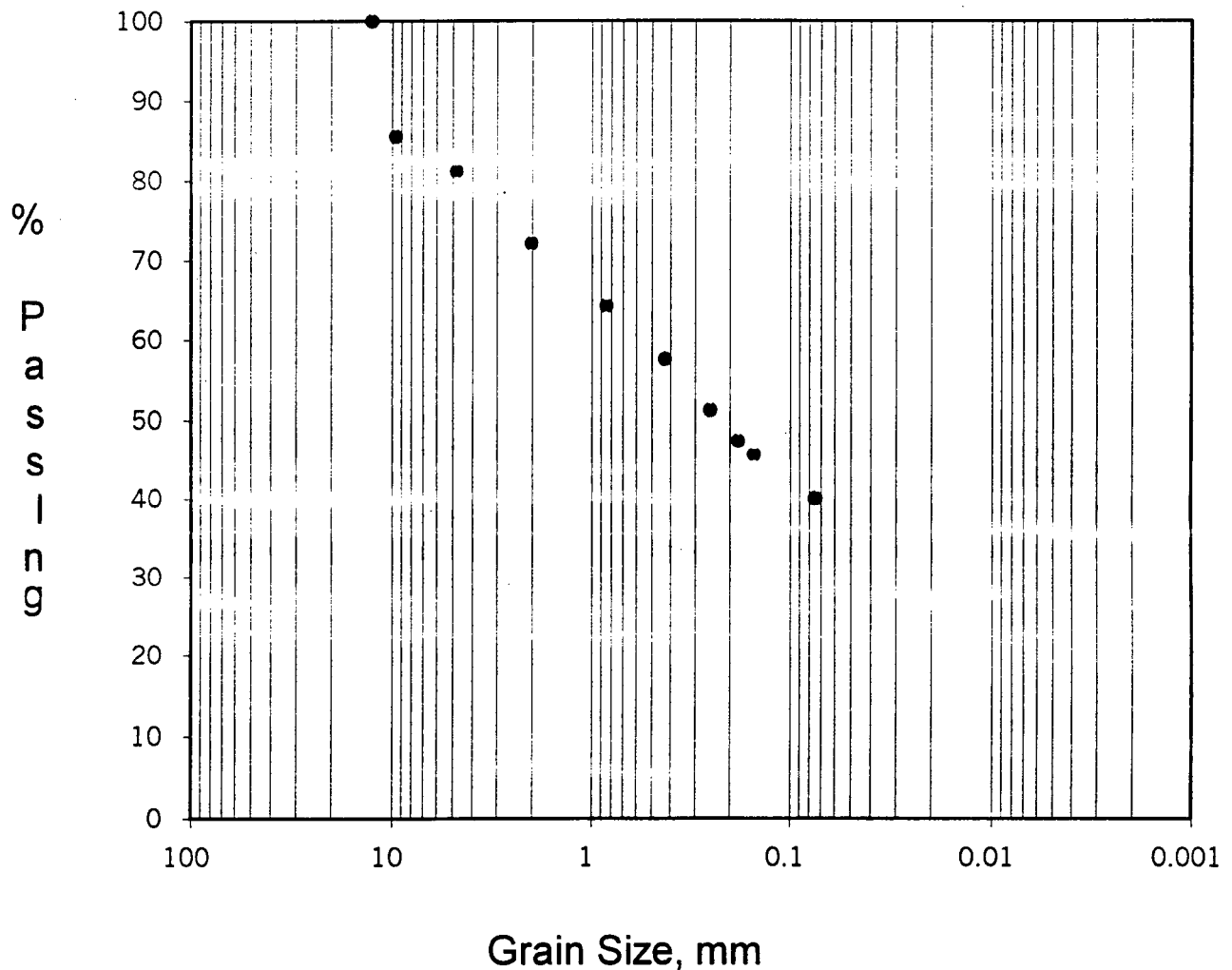
PROJECT No.: 02-399T

SAMPLE No.: 02-41

DEPTH: 15'-17'

PERCENT PASSING No. 200: 40.0

## GRAIN SIZE DISTRIBUTION CURVE



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-42

DEPTH: 5'-7'

PERCENT PASSING No. 200: 90.7

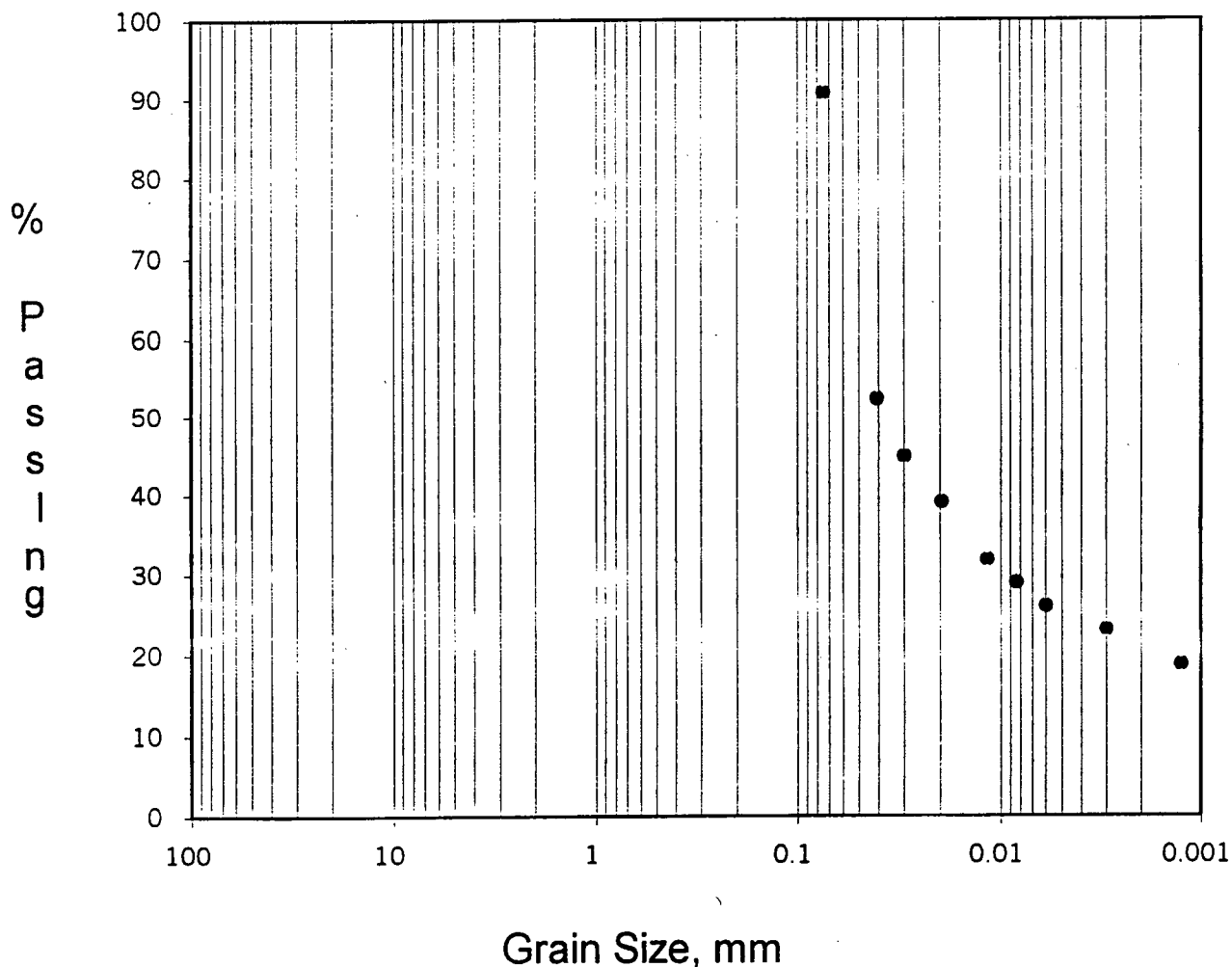
LIQUID LIMIT: 33

PLASTIC LIMIT: 18

PLASTICITY INDEX: 15

CLASSIFICATION CL

## GRAIN SIZE DISTRIBUTION CURVE



# Alpha-Omega Geotech, Inc.

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: 02-42 Date: 10/23/2002  
Soil Description: Brown-mottled dark brown LEAN CLAY Depth: 5'-7'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	W3			
Dish + Dry Soil, g	75.7			
Dish, g	50.7			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.7			
Displaced water, Ws + Wbw - Wbwe	9.3			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T  
 LOCATION: \_\_\_\_\_  
 BORING NO.: \_\_\_\_\_ SAMPLE NO.: 02-42 DEPTH: 5'-7'  
 SAMPLE TYPE: Undisturbed % COMPACTION: -----  
**INITIAL DATA** **FINAL DATA**  
 MOISTURE: 16.8 % MOISTURE: 21.1 %  
 DRY UNIT WEIGHT: 110.9 pcf DRY UNIT WEIGHT: 110.9 pcf  
 HEIGHT: 1.75 inches HEIGHT: 1.75 inches  
 DIAMETER: 2.85 inches DIAMETER: 2.85 inches  
 WEIGHT: 376.3 grams WEIGHT: 390.1 grams  
 SATURATION: 87.4 % SATURATION: 100.0 %  
 PERMEANT LIQUID: Deaired tap water  
 EFFECTIVE CONSOLIDATION STRESS: Maximum 5.4 psi Minimum 5.0 psi  
 BACK PRESSURE: 90 psi RANGE OF HYDRAULIC GRADIENT: 5.0 to 4.7  
 SAMPLE DESCRIPTION: Brown-mottled dark brown LEAN CLAY

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
10/18/2002	1	3,600	22.0	21.0	26°
10/18/2002	2	3,600	22.0	21.0	26°
10/18/2002	3	3,600	22.0	21.0	26°
10/18/2002	4	3,600	22.0	21.0	26°
AVERAGE		3,600	22.0	21.0	26°

k= 5.7E-07 cm/s  
 k20= 4.9E-07 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
 k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may var.

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-42

DEPTH: 15'-17'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.0	100.0
Sieve Number 40	0.1	99.9
Sieve Number 60	0.2	99.8
Sieve Number 80	0.3	99.7
Sieve Number 100	0.4	99.6
Sieve Number 200	6.0	94.0



# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-42

DEPTH: 15'-17'

PERCENT PASSING No. 200: 94.0

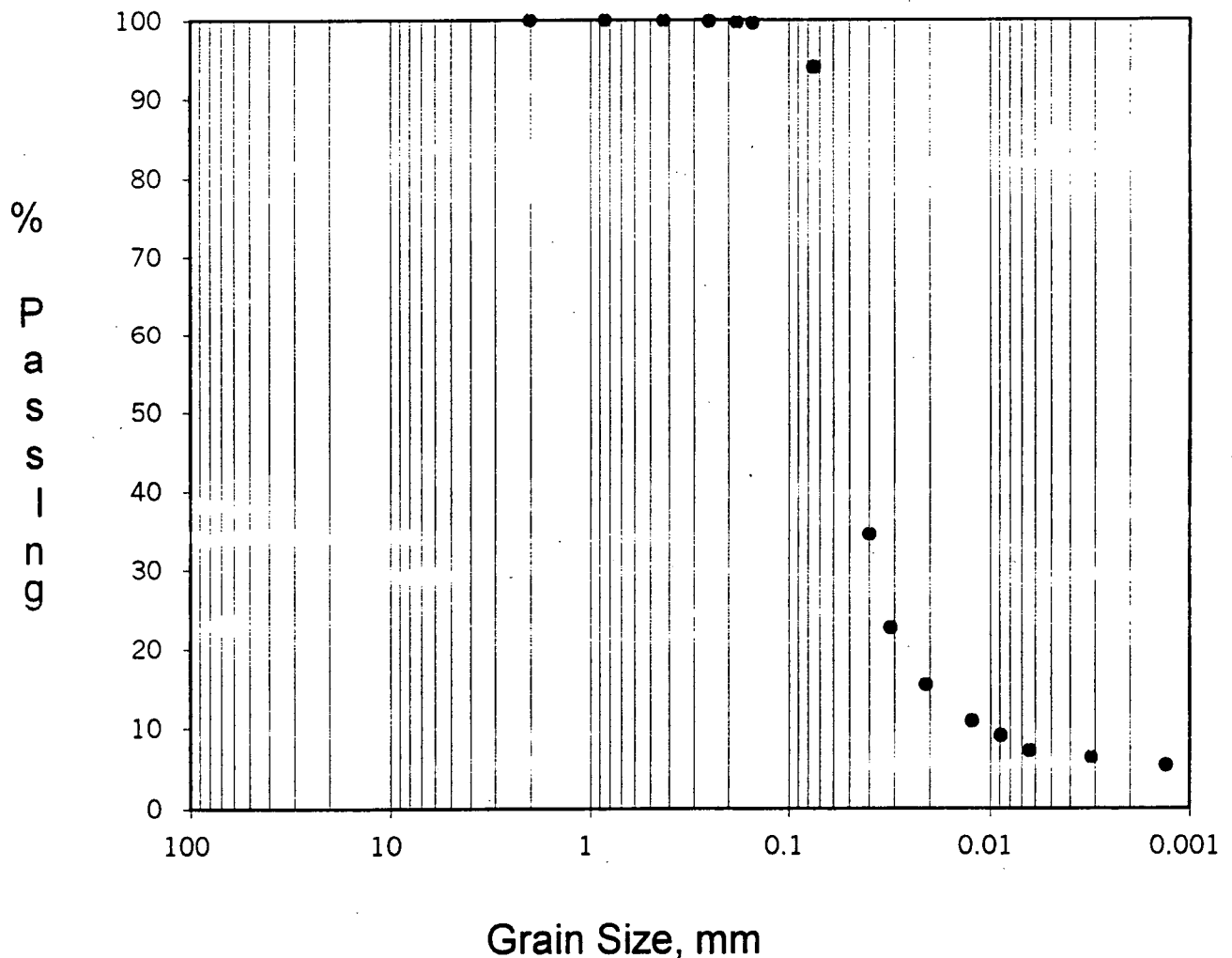
LIQUID LIMIT: NL

PLASTIC LIMIT: NPL

PLASTICITY INDEX: NPI

CLASSIFICATION ML

## GRAIN SIZE DISTRIBUTION CURVE



# Alpha-Omega Geotech, Inc.

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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T

Sample Number: 02-42 Date: 10/23/2002

Soil Description: Light brownish gray SILT Depth: 15'-17'

Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	P6			
Dish + Dry Soil, g	125.6			
Dish, g	100.0			
Dry Soil, g (Ws)	25.6			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.6			
Flask + water + immersed soil, g (Wbwe)	666.1			
Displaced water, Ws + Wbw - Wbwe	9.5			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T  
 LOCATION: \_\_\_\_\_  
 BORING NO.: \_\_\_\_\_ SAMPLE NO.: 02-42 DEPTH: 15'-17'  
 SAMPLE TYPE: Undisturbed % COMPACTION: -----  
**INITIAL DATA** **FINAL DATA**  
 MOISTURE: 13.1 % MOISTURE: 30.3 %  
 DRY UNIT WEIGHT: 92.5 pcf DRY UNIT WEIGHT: 92.5 pcf  
 HEIGHT: 3.25 inches HEIGHT: 3.25 inches  
 DIAMETER: 2.82 inches DIAMETER: 2.82 inches  
 WEIGHT: 557.1 grams WEIGHT: 641.8 grams  
 SATURATION: 43.1 % SATURATION: 100.0 %  
 PERMEANT LIQUID: Deaired tap water  
 EFFECTIVE CONSOLIDATION STRESS: Maximum 13.7 psi Minimum 13.3 psi  
 BACK PRESSURE: 60 psi RANGE OF HYDRAULIC GRADIENT: 2.7 to 2.5  
 SAMPLE DESCRIPTION: Light brownish gray SILT

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD1 (cm)	HEAD 2 (cm)	TEMP °C
10/18/2002	1	30	22.0	20.8	26°
10/18/2002	2	30	22.0	20.8	26°
10/18/2002	3	30	22.0	20.8	26°
10/18/2002	4	30	22.0	20.8	26°
AVERAGE		30	22.0	20.8	26°

k= 1.6E-04 cm/s  
 k20= 1.3E-04 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
 k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-42

DEPTH: 25'-27'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.9	99.1
Sieve Number 40	14.4	85.6
Sieve Number 60	63.1	36.9
Sieve Number 80	78.8	21.2
Sieve Number 100	82.8	17.2
Sieve Number 200	90.9	9.1

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

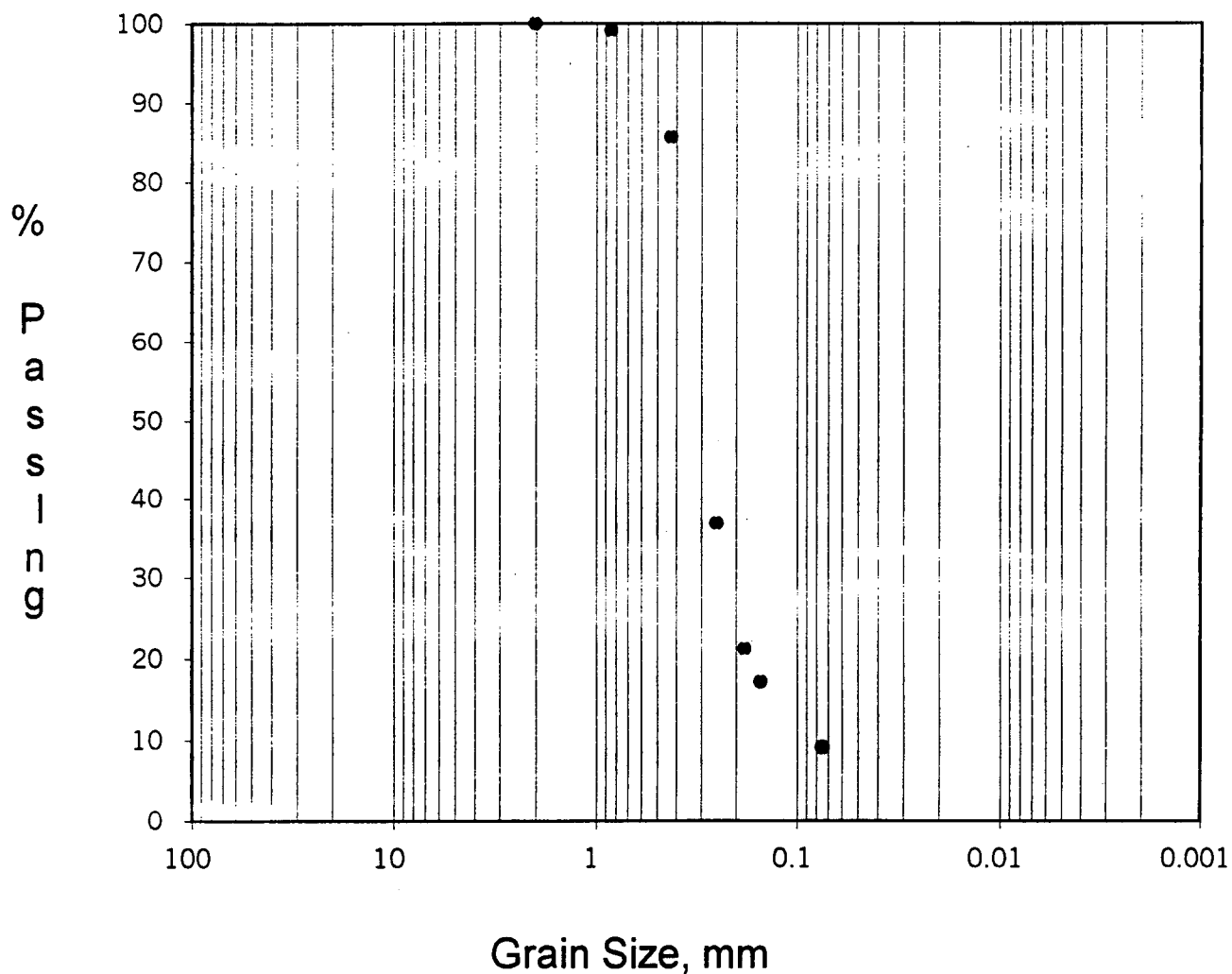
PROJECT No.: 02-399T

SAMPLE No.: 02-42

DEPTH: 25'-27'

PERCENT PASSING No. 200: 9.1

## GRAIN SIZE DISTRIBUTION CURVE



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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: 02-42 Date: 10/23/2002  
Soil Description: Light brown & light reddish brown poorly graded Depth: 25'-27'  
SAND w/silt  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	A			
Temp, water + soil, T, Celcius	25°			
Dish No.	P16			
Dish + Dry Soil, g	76.1			
Dish, g	50.7			
Dry Soil, g (Ws)	25.4			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.4			
Flask + water + immersed soil, g (Wbwe)	665.9			
Displaced water, Ws + Wbw - Wbwe	9.5			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.67			

Remarks:

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-47C

DEPTH: 5'-7'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.1	99.9
Sieve Number 40	0.3	99.7
Sieve Number 60	0.5	99.5
Sieve Number 80	0.7	99.3
Sieve Number 100	0.8	99.2
Sieve Number 200	8.2	91.8

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-47C

DEPTH: 5'-7'

PERCENT PASSING No. 200: 91.8

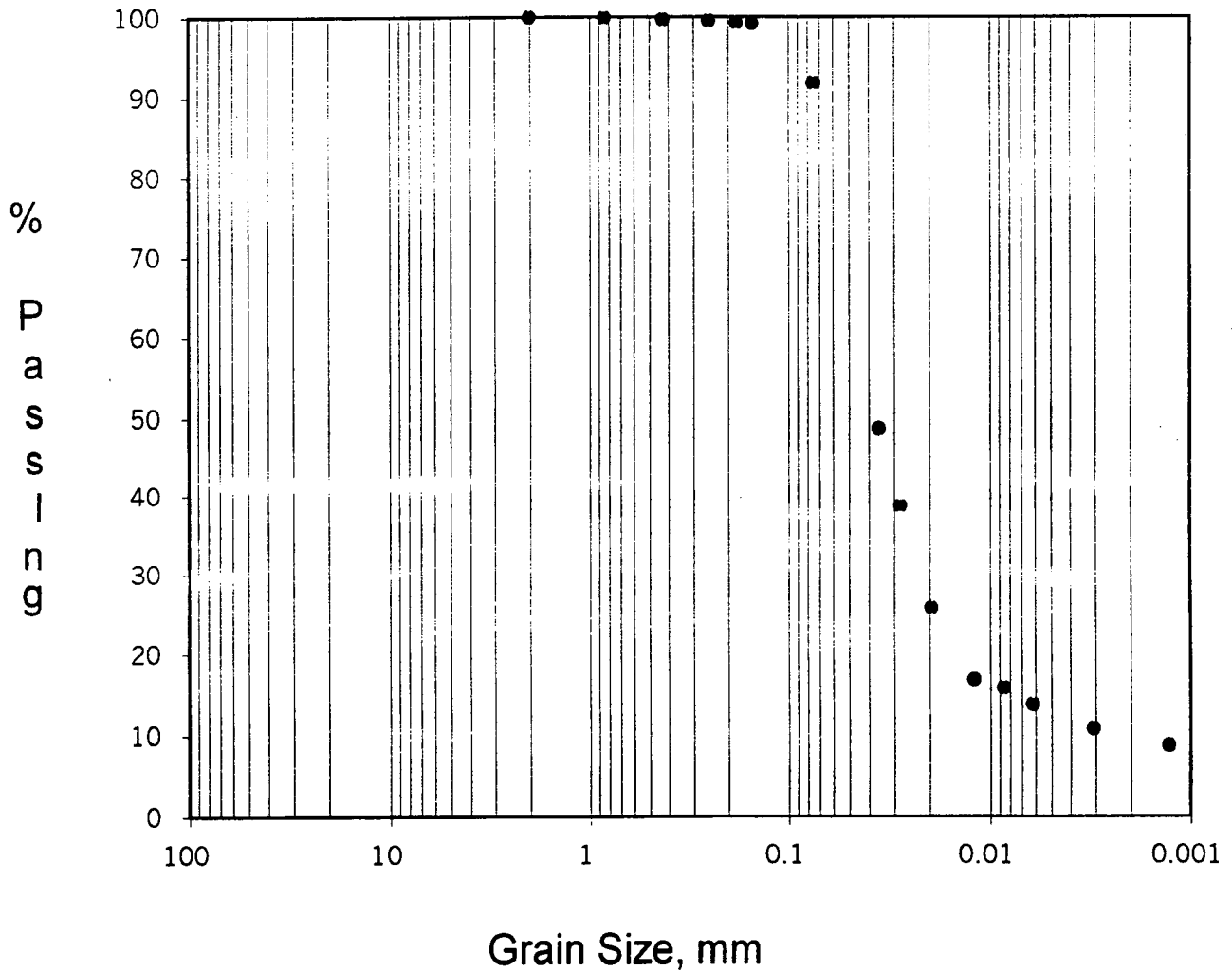
LIQUID LIMIT: 25

PLASTIC LIMIT: 22

PLASTICITY INDEX: 3

CLASSIFICATION ML

## GRAIN SIZE DISTRIBUTION CURVE





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## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: 02-47C Date: 10/23/2002  
Soil Description: Dark brown SILT Depth: 5'-7'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	W5			
Dish + Dry Soil, g	125.0			
Dish, g	100.0			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.7			
Displaced water, Ws + Wbw - Wbwe	9.3			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:



# FALLING HEAD PERMEABILITY REPORT

(Method C: Rising Tail-Water)

ASTM D 5084

PROJECT NAME: USFRDCFA PROJECT NO.: 02-399T  
 LOCATION: \_\_\_\_\_  
 BORING NO.: \_\_\_\_\_ SAMPLE NO.: 02-47C DEPTH: 5'-7'  
 SAMPLE TYPE: Undisturbed % COMPACTION: -----  
**INITIAL DATA** **FINAL DATA**  
 MOISTURE: 18.8 % MOISTURE: 29.4 %  
 DRY UNIT WEIGHT: 92.5 pcf DRY UNIT WEIGHT: 92.5 pcf  
 HEIGHT: 2.60 inches HEIGHT: 2.60 inches  
 DIAMETER: 2.84 inches DIAMETER: 2.84 inches  
 WEIGHT: 473.6 grams WEIGHT: 515.9 grams  
 SATURATION: 61.8 % SATURATION: 100.0 %  
 PERMEANT LIQUID: Deaired tap water  
 EFFECTIVE CONSOLIDATION STRESS: Maximum 5.4 psi Minimum 5.0 psi  
 BACK PRESSURE: 60 psi RANGE OF HYDRAULIC GRADIENT: 3.3 to 3.2  
 SAMPLE DESCRIPTION: Dark brown SILT

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD 1 (cm)	HEAD 2 (cm)	TEMP °C
10/17/2002	1	120	22.0	21.4	26°
10/17/2002	2	120	22.0	21.4	26°
10/17/2002	3	120	22.0	21.4	26°
10/17/2002	4	120	22.0	21.4	26°
AVERAGE		120	22.0	21.4	26°

k= 1.5E-05 cm/s  
 k20= 1.3E-05 cm/s

n/n20= 0.8694

k = Hydraulic Conductivity before n/n20 correction factor  
 k20= Hydraulic Conductivity after correction to 20 ° Celsius

This is a laboratory testing result. Field values may vary.

# SIEVE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-47C

DEPTH: 15'-17'

SIEVE SIZE	TOTAL % RETAINED	TOTAL % PASSING
Sieve Number 10	0.0	100.0
Sieve Number 20	0.0	100.0
Sieve Number 40	2.2	97.8
Sieve Number 60	39.8	60.2
Sieve Number 80	76.2	23.8
Sieve Number 100	86.1	13.9
Sieve Number 200	96.1	3.9

# GRAIN SIZE ANALYSIS (ASTM D422)

PROJECT: USFRDCFA

PROJECT No.: 02-399T

SAMPLE No.: 02-47C

DEPTH: 15'-17'

PERCENT PASSING No. 200: 3.9

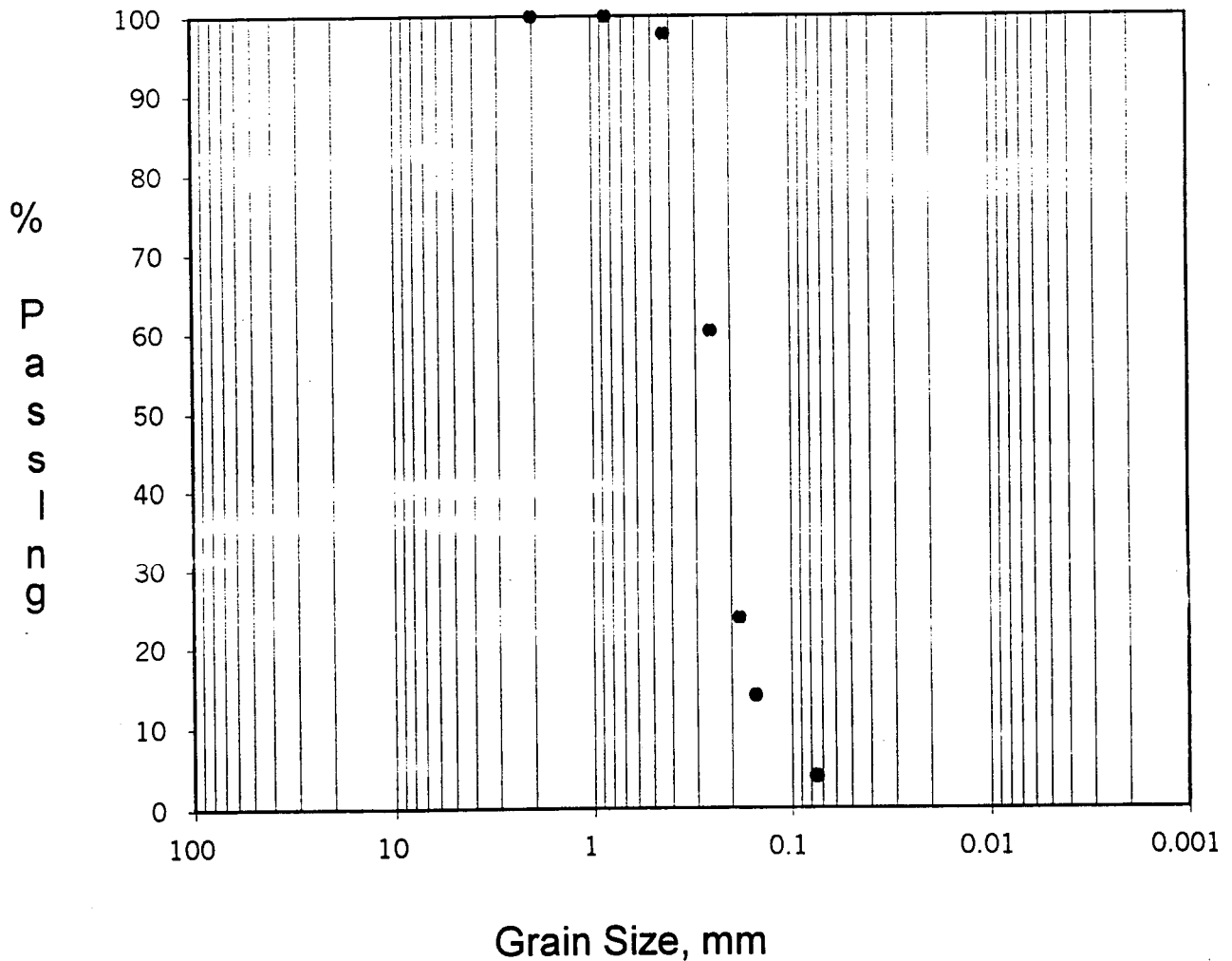
LIQUID LIMIT: NL

PLASTIC LIMIT: NPL

PLASTICITY INDEX: NPI

CLASSIFICATION: SP

## GRAIN SIZE DISTRIBUTION CURVE



# Alpha-Omega Geotech, Inc.

P.O. Box 2670

Kansas City, Kansas 66110

Voice: (913) 371-0000 FAX: (913) 371-6710

## SPECIFIC GRAVITY OF SOLIDS ASTM D854

Project Name: USFRDCFA Project No.: 02-399T  
Sample Number: 02-47C Date: 10/23/2002  
Soil Description: Light brown poorly graded SAND Depth: 15'-17'  
Tested by: T. Burdick

Specimen Number:	1			
Flask Number:	E			
Temp, water + soil, T, Celcius	25°			
Dish No.	P6			
Dish + Dry Soil, g	125.5			
Dish, g	100.5			
Dry Soil, g (Ws)	25.0			
Flask + water at T, g (Wbw)	650.0			
Ws + Wbw, g	675.0			
Flask + water + immersed soil, g (Wbwe)	665.7			
Displaced water, Ws + Wbw - Wbwe	9.3			
Correction Factor, K	.9988			
$(WsK) / (Ws + Wbw - Wbwe) = Gs$	2.69			

Remarks:

# CONSTANT HEAD PERMEABILITY REPORT

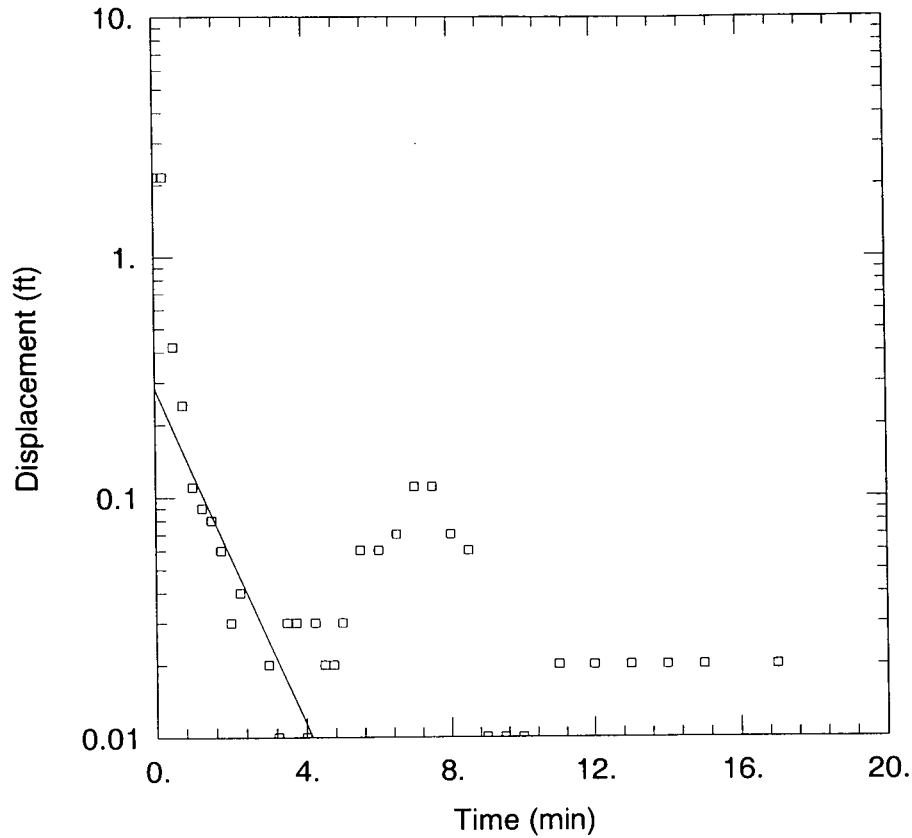
PROJECT NAME	USFRDCFA	PROJECT NO	02-399T
LOCATION			
BORING NO.	SAMPLE NO. 02-47C	DEPTH	15'-17'
SAMPLE TYPE	Remold (Vibrating Method)	% COMPACTION	-----
	<b>INITIAL DATA</b>	<b>FINAL DATA</b>	
MOISTURE	0.3	23.5	%
DRY UNIT WT.	99.1	99.1	pcf
HEIGHT	3.68	3.68	inches
DIAMETER	4	4	inches
WEIGHT	1209.8	1489.6	grams
SATURATION	1.3	100	%
PERMEANT LIQ.	City Water		
PERMETER NO.	C-2		
SAMPLE DESC.	Light brown poorly graded SAND		

## TEST DATA

DATE	TEST NO.	TIME (sec)	HEAD (cm)	TEMP °C	Q cc	HYDRAULIC CONDUCTIVITY cm/s
10/23/2002	1	28.0	0.7938	26	100.00	3.52E-01
10/23/2002	2	28.0	0.7938	26	100.00	3.52E-01
10/23/2002	3	28.0	0.7938	26	100.00	3.52E-01
10/23/2002	4	28.0	0.7938	26	100.00	3.52E-01
AVERAGE		28	0.7938	26	100	3.52E-01

$k = \underline{3.52E-01} \text{ cm/s}$	$n/n_{20} = \underline{0.8694}$
$k = \underline{3.52E-03} \text{ m/s}$	
$k_{20} = \underline{3.06E-01} \text{ cm/s}$	
$k_{20} = \underline{3.06E-03} \text{ m/s}$	

**Appendix H –  
Slug Test Results**



WELL TEST ANALYSIS

Data Set: C:\AQTW\SLUG41.AQT

Date: 01/14/03

Time: 17:10:12

PROJECT INFORMATION

Company: Burns & McDonnell

Client: USACE

Project: 27979

Test Location: DCF Study Area

Test Well: DCF02-41

Test Date: 10/14/02

SOLUTION

Aquifer Model: Unconfined

Solution Method: Bower-Rice

K = 0.02445 cm/sec

y0 = 0.2808 ft

AQUIFER DATA

Saturated Thickness: 13.54 ft

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Initial Displacement: 2.16 ft

Casing Radius: 0.83 ft

Screen Length: 10. ft

Water Column Height: 10. ft

Wellbore Radius: 0.666 ft

Gravel Pack Porosity: 0.3



### WELL TEST ANALYSIS

Data Set: C:\AQTW\SLUG42.AQT

Date: 01/14/03

Time: 17:14:24

### PROJECT INFORMATION

Company: Burns & McDonnell

Client: Fort Riley

Project: 27979

Test Location: DCF Study Area

Test Well: DCF02-42

Test Date: 10/14/02

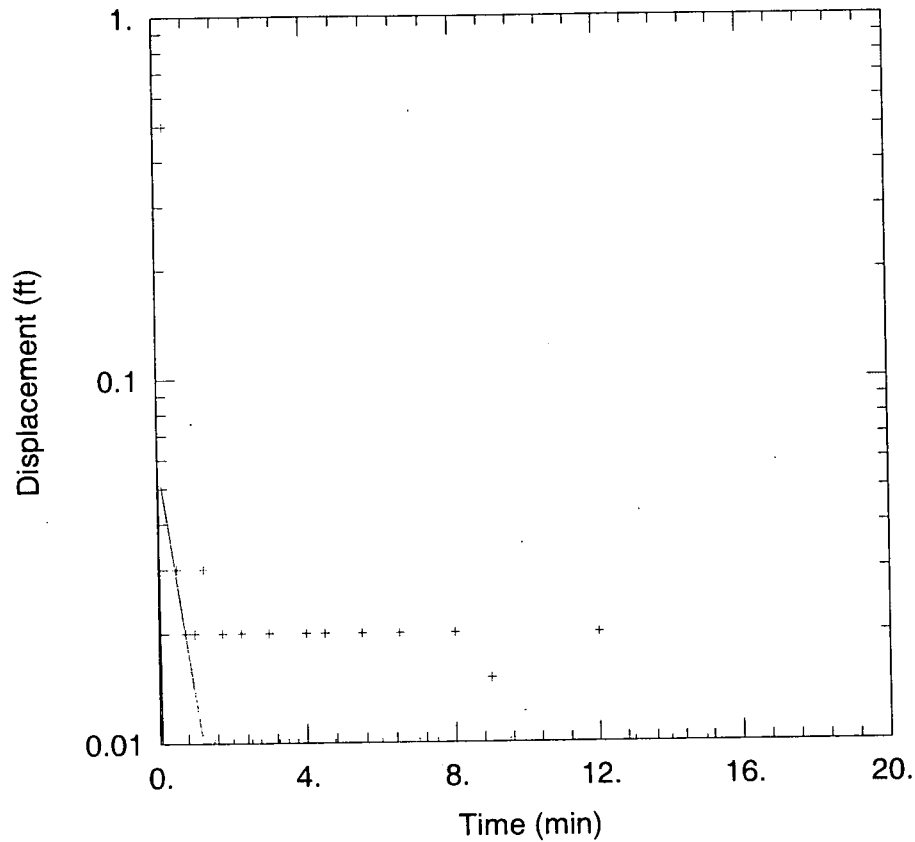
### SOLUTION

Aquifer Model: Unconfined

Solution Method: Bouwer-Rice

$K = 0.002277$  cm/sec

$y_0 = 0.06007$  ft



### AQUIFER DATA

Saturated Thickness: 1.12 ft

Anisotropy Ratio ( $K_z/K_r$ ): 1.

### WELL DATA

Initial Displacement: 0.5 ft

Casing Radius: 0.083 ft

Screen Length: 10. ft

Water Column Height: 1.12 ft

Wellbore Radius: 0.666 ft

Gravel Pack Porosity: 0.3

**Appendix I –  
Toxicity Summaries**

## APPENDIX I - TOXICITY SUMMARIES

This appendix presents a brief overview of toxicological information for the chemicals of potential concern (COPC) at the DCF Study Area, Fort Riley, Kansas. Information includes symptoms of exposure, whether the substance is known or believed to cause cancer, and the toxicity values used for characterizing carcinogenic and noncarcinogenic risks. This information was compiled from the United States Environmental Protection Agency (USEPA) *Integrated Risk Information System (IRIS)* database (USEPA, 2003), USEPA's *Health Effects Assessment Summary Tables (HEAST)* (USEPA, 1997) and USEPA's *Region IX Preliminary Remediation Goals Table* (USEPA, 2002). Additionally, general chemical information was compiled from The National Library of Medicine (NLM), ToxFAQs™ published by the Agency for Toxic Substances and Disease Registry (ATSDR), and the ATSDR chemical-specific toxicity profiles.

To establish human toxicity values from animal studies for noncarcinogenic risk assessment, USEPA applies uncertainty and modifying factors to the no observed adverse effect level (NOAEL) or lowest observed adverse effect level (LOAEL) dose from the studies. Uncertainty factors of 10 are used to account for each of the uncertainties assumed when extrapolating from animal data to humans, evaluating human variability in response, extrapolating from a LOAEL to a NOAEL, and when extrapolating from subchronic to chronic exposure. An additional modifying factor from 1 through 10 is used to reflect the quality of the study and database which is not explicitly addressed by the above uncertainty factors.

The Reference Dose (RfD) and Reference Concentration (RfC) are the toxicity values used in assessing noncarcinogenic health effects from oral and inhalation exposures, respectively. Reference doses and reference concentrations represent exposure levels which are well below a toxic effect threshold. Each is an estimate of daily exposure to the general human population (including sensitive subpopulations) that is unlikely to pose an appreciable likelihood of adverse effects during a given term of exposure. Reference dose values are expressed as milligrams of chemical per kilogram body weight per day (mg/kg/day), and reference concentration values are expressed as a chemical concentration in air in milligrams per cubic meter (mg/m<sup>3</sup>). For consistency with the inhalation intake dose units, reference concentration values may be converted to inhalation reference dose values, which are then expressed as mg/kg/day. Reference dose values are not available for exposure through dermal contact. USEPA guidance outlines a procedure for adapting oral reference dose values to dermal reference dose values by applying absorption efficiency factors.

1 Toxicity values used in assessing carcinogenic risk are slope factors. A slope factor represents the 95  
2 percent upper confidence limit on the probability that a carcinogen will cause cancer at a dose of one  
3 mg/kg/day over a lifetime. It is generally assumed that even the smallest dose of a carcinogen can lead to  
4 a clinical state of disease. Dose estimates are used along with the slope factor to calculate the statistical  
5 probability of a carcinogenic response. Toxicity values for assessing carcinogenic risk from inhalation  
6 exposure are sometimes expressed as unit risks (micrograms per cubic meter)  $[(\mu\text{g}/\text{m}^3)^{-1}]$ , which can be  
7 converted to units of  $(\text{mg}/\text{kg}/\text{day})^{-1}$ . As with noncarcinogenic risk, toxicity values for assessing risk from  
8 dermal exposure must be converted from oral toxicity values by applying absorption efficiency factors.

9 USEPA has established a weight-of-evidence classification to assess the carcinogenic potential of  
10 chemicals based on the available evidence from epidemiological studies and animal studies. A Class A  
11 chemical is considered a human carcinogen based on sufficient evidence from human studies. A Class B  
12 chemical is considered a probable carcinogen based on limited evidence in humans or sufficient evidence  
13 in animals. A Class C chemical is a possible human carcinogen based on limited evidence in animals and  
14 inadequate or lack of evidence in humans. Class D includes chemicals which are not classifiable  
15 regarding carcinogenicity because of inadequate or no evidence. Class E is assigned to chemicals with  
16 evidence of noncarcinogenicity from adequate studies.

17 The COPCs identified for the DCF Study Area fall into one chemical family, volatiles. The volatiles  
18 include 1,2,4-trimethylbenzene, cis-1,2-dichloroethene (cis-1,2-DCE), ethylbenzene, isopropylbenzene,  
19 tert-butylbenzene, tetrachloroethene (PCE), toluene, trans-1,2-dichloroethene (trans-1,2-DCE),  
20 trichloroethene (TCE), trichloromethane, m,p-xylene, o-xylene, and vinyl chloride.

## 21 **VOLATILE ORGANIC COMPOUNDS (VOCs)**

### 22 **cis-1,2-Dichloroethene (CAS No. 156-59-2)**

23 This summary is based on information provided in IRIS (USEPA, 2003), the ATSDR ToxFAQ™ sheet  
24 (1997), ATSDR (1996) toxicity profile, and the Health Effects Assessment Summary Tables (HEAST)  
25 (USEPA, 1997).

26 Cis-1,2-DCE is used to produce solvents and is present in chemical mixtures. Cis-1,2-DCE exists in the  
27 environment as a breakdown product of other chlorinated solvents such as PCE and TCE.

28 Inhalation of high levels of cis-1,2-DCE can result in nausea and drowsiness. Inhalation of extremely  
29 high levels can be fatal. Lower exposure levels can result in liver damage and decreased numbers of red  
30 blood cells. Effects of long-term exposures (365 days or longer) at low levels is unknown.

1 An oral reference dose of 1E-02 mg/kg/day is listed in HEAST (USEPA, 1997). An inhalation reference  
2 dose is not available in either IRIS, HEAST, or RIX.

3 Cis-1,2-DCE is not classifiable as a human carcinogen (Category D).

#### 4 **Isopropylbenzene (CAS No. 98-82-8)**

5 This summary is based on information provided in IRIS (USEPA, 2003) and the National Library of  
6 Medicine (NLM) (TOXNET, 2003).

7 Isopropylbenzene is also called cumene. It is a petrochemical that is used in the manufacture of several  
8 chemicals, such as phenol and acetone.

9 Currently, no data are available that quantify human exposure. In animal studies, isopropylbenzene  
10 caused increased organ weights (primarily in the kidneys) through either the oral or inhalation route of  
11 exposure. Short-term exposure to isopropylbenzene may cause dizziness, drowsiness, slight  
12 incoordination, and unconsciousness.

13 Toxicity values for assessing noncarcinogenic effects were available in IRIS. The oral reference dose for  
14 isopropylbenzene was 1E-01 mg/kg/day, and the inhalation reference dose was 1E-01 mg/kg/day.

15 Isopropylbenzene is not classifiable as a human carcinogen (Category D).

#### 16 **tert-Butylbenzene (CAS No. 98-06-6)**

17 This summary is based on information provided in USEPA Region IX Preliminary Remediation Goals  
18 Table (RIX) (USEPA, 2002) and the National Library of Medicine (NLM) (TOXNET, 2003).

19 Tert-Butylbenzene is an industrial contaminant associated with such activities as, printing, painting, and  
20 car repair. Possible exposure routes of tert-Butylbenzene are inhalation and dermal contact.

21 Toxicity values for assessing noncarcinogenic effects were not available in IRIS, but RIX provided data  
22 for this risk assessment. The oral reference dose for tert-Butylbenzene was 4E-02 mg/kg/day. An  
23 inhalation reference dose is unavailable.

24 No carcinogenic effect information is available for tert-Butylbenzene.

#### 25 **Tetrachloroethene (CAS No. 127-18-4)**

26 This summary is based on information provided in IRIS (USEPA, 2003), by STSC (USEPA, 2002a), and  
27 in the ATSDR (1993) toxicity profile.

1 PCE is also called perchloroethene. It is used as a dry-cleaning chemical and as a metal parts degreaser.  
2 Human studies indicate that some of the short-term health effects of PCE inhalation exposure can be  
3 dizziness, headache, sleepiness, nausea, difficulty walking and talking, and confusion. Continued high  
4 exposure could also lead to unconsciousness and death. In animal studies, exposure to high  
5 concentrations of PCE resulted in liver and kidney damage. Exposure to high levels of PCE during  
6 pregnancy was determined to be toxic to unborn pups of rats and mice. Behavioral changes were noted in  
7 the offspring of rats that were exposed to PCE during pregnancy. Dermal exposure can cause skin  
8 irritation. The noncancer effect of concern is hepatotoxicity (i.e., increased liver/kidney weights in ratio  
9 to body weight).

10 The oral reference dose value, found in IRIS, is 1E-02 mg/kg/day. This incorporates an uncertainty factor  
11 of 1,000 to account for intraspecies and interspecies variability and extrapolation of a subchronic effect  
12 level to its chronic equivalent. Confidence in the study is low whereas confidence in the database and  
13 reference dose is medium. STSC recommends an inhalation reference dose of 2E-01 mg/kg/day.

14 In animals, high doses of PCE can cause liver cancer; however, PCE is under USEPA review as to its  
15 carcinogenic potency. STSC provided oral and inhalation slope factors of 5.2E-02 (mg/kg/day)<sup>-1</sup> and  
16 1.1E-02 (mg/kg/day)<sup>-1</sup>, respectively.

### 17 **Toluene (CAS No. 108-88-3)**

18 This summary is based on information found in IRIS (USEPA, 2003) and in the ATSDR (1989) toxicity  
19 profile.

20 Toluene is a constituent of gasoline along with benzene, ethylbenzene, and xylene. It occurs naturally in  
21 crude oil and the tolu tree. Toluene is used in making paints, paint thinners, adhesives, rubber, and in  
22 some printing and leather tanning processes.

23 Exposure to moderate levels of toluene can cause tiredness, confusion, weakness, memory loss, nausea,  
24 and loss of appetite. These effects usually go away once the exposure has ended. Exposure to large  
25 amounts of toluene can cause dizziness, unconsciousness, and even death. Repeated exposure can cause  
26 brain damage as well as liver and kidney damage. The toxic effects of concern are changes in liver and  
27 kidney weights and neurological effects for oral and inhalation exposure, respectively.

28 The oral reference dose, available in IRIS, is 2E-01 mg/kg/day. It includes an uncertainty factor of 1,000  
29 (to account for interspecies and intraspecies variability and extrapolation, for subchronic-to-chronic

1 extrapolation, and for limited reproductive and developmental toxicity data). As determined by USEPA,  
2 confidence in the study was high and in the database and reference dose was medium.

3 The inhalation reference dose for toluene is 1E-01 mg/kg/day, which includes an uncertainty factor of 10  
4 to account for intraspecies variability and another factor of 10 for the use of a LOAEL. An additional  
5 factor of 3 is applied for data base deficiencies, including the lack of data and well-characterized  
6 laboratory animal exposures evaluating neurotoxicity and respiratory irritation. Overall confidence in the  
7 study, database, and reference concentration is reported as medium.

8 Toluene is not classifiable as a carcinogen (Category D) based on a lack of human data and inadequate  
9 animal data.

#### 10 **trans-1,2-Dichloroethene (CAS No. 156-60-5)**

11 The summary is based on information provided in IRIS (USEPA, 2003) and in the ATSDR (1996)  
12 toxicity profile.

13 Of the 1,2-DCE isomers, trans-1,2-DCE is considered the more common industrial product. It is highly  
14 flammable and often used to produce solvents and chemical mixtures.

15 Increased serum alkaline phosphatase in male mice was observed in a 90-day study on trans-1,2-DCE.  
16 The oral reference dose value of 2E-02 mg/kg/day is listed in IRIS. It includes an uncertainty factor of  
17 1,000 (10 to account for extrapolation of dose levels from laboratory animals to humans, 10 for the  
18 uncertainty in the threshold for sensitive humans, and 10 for uncertainty in the effect of duration when  
19 extrapolating from subchronic to chronic exposure). Confidence in the study is medium while confidence  
20 in the reference dose and the database is reported as low. There is no inhalation reference dose listed in  
21 IRIS, HEAST, or RIX.

22 trans-1,2-DCE has not been classified for carcinogenicity due to a lack of data.

#### 23 **Trichloroethene (CAS No. 79-01-6)**

24 This summary is based on information provided by the ATSDR ToxFAQ™ sheet for trichloroethene  
25 (1997a) and the ATSDR toxicity profile (1993a).

26 TCE is used primarily as a solvent to degrease metal parts. It is also used in making adhesives, paint  
27 removers, typewriter correction fluids, and spot removers.

1 Small inhaled doses of TCE can cause headaches, lung irritation, dizziness, poor coordination, and  
2 difficult concentrating. Large inhaled doses of TCE can cause impaired heart function, unconsciousness,  
3 and death. Inhalation can also damage the nerves of the face. Long-term exposure to small amounts of  
4 TCE in drinking water may result in liver and kidney damage, impaired immune system function, and  
5 impaired fetal development in pregnant women. Long-term exposure to large amounts of TCE in  
6 drinking water may cause nausea, liver damage, unconsciousness, impaired heart function, or death.  
7 Dermal contact can result in a skin rash.

8 Toxicity values for assessing noncarcinogenic effects were not available in IRIS, and the appropriateness  
9 of the most recent set of values put forth by STSC is currently under debate. For this reason, the older  
10 withdrawn oral reference dose of 6E-03 mg/kg/day was used.

11 TCE is under review by USEPA to determine its carcinogenic classification. Given the current debate on  
12 TCE, the withdrawn oral and inhalation slope factors of  $1.1E-02$  (mg/kg/day)<sup>-1</sup> and  $6E-03$ (mg/kg/day)<sup>-1</sup>,  
13 respectively, were used.

#### 14 **Trichloromethane (CAS No. 67-66-3)**

15 This summary is based on information provided by IRIS (USEPA, 2003), the ATSDR ToxFAQ™ sheet  
16 for trichloromethane (1997b), and the ATSDR toxicity profile (1993b).

17 Trichloromethane, also known as chloroform, is used primarily in the production of other chemicals. It  
18 can also be formed when chlorine is added to water.

19 The main pathways of exposure to trichloromethane include inhalation and ingestion. Inhalation of  
20 trichloromethane can cause dizziness, fatigue, and headaches. Long-term exposure may cause damage to  
21 the kidneys and liver. Dermal contact with a large amount of trichloromethane may result in the  
22 formation of sores.

23 Toxicity values for assessing noncarcinogenic effects were available in IRIS. The oral reference dose for  
24 trichloromethane was 1E-02 mg/kg/day. No inhalation reference dose was available.

25 Trichloromethane is classified by the USEPA as a B2 carcinogen. Mechanistic data indicate that the  
26 carcinogenicity of trichloromethane is an effect of noncancer cytotoxicity in the liver; thus, the noncancer  
27 oral reference dose is considered protective of the cancer endpoint. The inhalation slope factor was 8.1E-  
28 02.



**1 Vinyl Chloride (CAS No. 75-01-4)**

2 This summary is based on information provided in IRIS (USEPA, 2003), the ATSDR ToxFAQ™ sheet  
3 (1997c), and the ATSDR (1997d) toxicity profile.

4 Vinyl chloride is used in making polyvinyl chloride (PVC), which is used to make a variety of plastic  
5 products, furniture, and automobile upholstery. Vinyl chloride exists in the environment as a breakdown  
6 product of other chlorinated solvents such as PCE, TCE, and cis-1,2-DCE.

7 Liver cell polymorphism is the toxic effect of concern from oral exposure. An oral reference dose value  
8 of 3E-03 mg/kg/day is listed in IRIS. The oral reference dose incorporates uncertainty factors of 10 for  
9 protection of sensitive human subpopulations and 3 for animal to human extrapolation. Confidence in the  
10 oral reference dose is high for the study, medium to high for the database, and medium for the reference  
11 dose. The reference concentration value of 1E-1 mg/m<sup>3</sup> also includes an uncertainty of 30 for the same  
12 reasons. This value converts to an inhalation reference dose of 3E-02 mg/kg/day.

13 Vinyl chloride is considered a Class A (known) human carcinogen by both oral and inhalation routes of  
14 exposure. There is consistent epidemiologic evidence that vinyl chloride causes the development of  
15 angiosarcoma and suggestive evidence that it causes cancers in the brain, lung, and connective tissue.  
16 There is also consistent evidence of carcinogenicity in rats, mice, and hamsters via the oral and inhalation  
17 routes. Oral and inhalation slope factors are listed in IRIS for exposure during adulthood and over a  
18 lifetime since birth. The oral and inhalation values used in this risk assessment are 7.5E-01 and 1.5E-02  
19 (mg/kg/day)<sup>-1</sup>, respectively.

**REFERENCES**

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3 December.
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- 11 ATSDR, 1997c. ToxFAQ™ for Vinyl chloride. [www.atsdr.cdc.gov/toxfaq.html#alpha](http://www.atsdr.cdc.gov/toxfaq.html#alpha).
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- 15 USEPA, 2002. USEPA Region IX Preliminary Remediation Goals Table. October.
- 16 USEPA, 2002a. “Request for Toxicity Information on Acetone, Benzene, Benzo(a)pyrene, Carbon  
17 tetrachloride, cis-1,2-Dichloroethylene, and Tetrachloroethylene (*Fort Riley*)”. December 18.
- 18 TOXNET, 2003. National Library of Medicine. <http://toxnet.nlm.nih.gov/>
- 19 USEPA, 2003. Integrated Risk Information System.

20

\* \* \* \* \*

**Appendix J –  
Vapor Modeling**

## APPENDIX J – VAPOR MODELING

Concentrations of chemical vapors in outdoor air were not directly measured prior to or during the Remedial Investigation (RI) Addendum at the DCF Study Area site (Site). Since vapor concentrations are not typically measured at environmental sites, numerous models have been developed to estimate chemical vapor concentrations in air. The available vapor models range in sophistication from complex computer codes to simple conservative algorithms. This appendix describes the methods used to model the migration of chemical vapors from soil and groundwater and estimate vapor concentrations in outdoor air.

### J.1 METHODOLOGY OVERVIEW

Chemical vapor migration from soil or groundwater to an outdoor environment consists of three steps: chemical partitioning from soil or groundwater to soil gas, migration of chemical vapors through the soil column and subsequent emission to ambient air, and mixing of chemical vapors within the ambient environment. Vapor concentrations were estimated by applying chemical-specific volatilization factors (VFs) to chemical concentrations in soil and groundwater. VFs represent media transfer factors that account for all three steps of the vapor migration process. Chemical-specific VFs are calculated for each medium (soil or groundwater) and for the ambient environment (outdoor air).

Vapor migration is dependent on both chemical characteristics and soil physical properties. The chemical properties influencing vapor transport include the Henry's law constant (H), organic carbon-water partitioning coefficient ( $K_{oc}$ ), diffusivity in air ( $D_i$ ), and diffusivity in water ( $D_w$ ). Values for each of these properties were obtained from United States Environmental Protection Agency's (USEPA's) *Soil Screening Guidance: Technical Background Document* (USEPA, 1996) for all of the chemicals of potential concern (COPCs).

Where available, the soil parameters used in this evaluation represent site-specific measurements obtained from soil sampling activities conducted within the Former Building 180/181 Area and monitoring well installation on the Transition Zone/Island Area. Table 4-4 in the *RI Report Addendum* presents the measured and total organic carbon (TOC) data. For the Building 180/181 Area, the calculated TOC value represents the average of measurements for locations B422 and B440. Site-specific measures of total porosity ranged from approximately 15 - 25 percent. A value of 25 percent (as determined by the USGS for Kansas River alluvial deposits [Meyer, 2002]) will be used. Site-specific data were not available for air-filled porosity or water-filled porosity. Given the high degree of variability that would be expected in

1 such data, single point-in-time measurements would likely be considered inappropriate for use in the risk  
2 assessment.

3 Water-filled porosity was calculated using an equation obtained from USEPA's *Soil Screening Guidance:  
4 User's Guide* (USEPA, 1996a). The infiltration rate variables were obtained from Table 6 of *Soil  
5 Screening Guidance: Technical Background Document* (USEPA, 1996) and represent alluvium with  
6 overbank deposits for Building 180/181 and alluvium without overbank deposits for the Transition  
7 Zone/Island Area. The variable values for Ks and b were obtained from USEPA's *Soil Screening  
8 Guidance: User's Guide* and *Superfund Exposure Assessment Manual* (USEPA, 1998), respectively.  
9 Selection of the Ks and b variables was based on soil texture, which was determined to most closely  
10 resemble a silty loam in the Building 180/181 Area and a sandy loam in the Transition Zone/Island Area.  
11 For capillary fringe soils, the relative percent contributions were obtained from ASTM's (1995) *Standard  
12 Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*, resulting in water-filled  
13 porosity estimates equaling 90 percent of the total porosity and air-filled porosity estimates equaling 10  
14 percent of the total porosity. The calculations of water-filled porosity are presented on Table J-1.

15 Other variables impacting the vapor modeling calculations include depth to groundwater or soil source  
16 areas, source width parallel to groundwater flow, and wind speed. In general, depth to groundwater was  
17 based on average measurements from the monitoring wells included in the groundwater data sets for each  
18 area. Depth to soil source areas was based on the average depth at which the highest chemical  
19 concentrations were detected in a given area of the Site. Source width in groundwater was based on the  
20 measured distance between monitoring wells MW93-13 and DCF01-40 in the Building 180/181 Area and  
21 between monitoring wells DCF02-42 and DCF02-44a in the Transition Zone/Island Area. The wind  
22 speed was based on Fort Riley measurements (see Section 3.4 of the RI Report Addendum).

23 The volatilization factors described in Sections J.2 and J.3 were subsequently combined with chemical  
24 concentrations in soil or groundwater to derive vapor concentrations in air. These vapor concentrations in  
25 air are presented in Tables 6-20 through 6-22 of the *RI Report Addendum*.

## 26 **J.2 VOLATILIZATION FACTORS FROM SOIL**

27 Vapor migration from soil to outdoor air was evaluated in the Building 180/181 Area. The equations and  
28 variables used to calculate the VFs from soil are described in the following paragraphs and provided on  
29 Tables J-1 through J-4.

30 The equation for calculating the VF from soil to outdoor air was obtained from USEPA's *Supplemental  
31 Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA, 2002) and combines an

1 estimate of the chemical flux from soil with a simulation of contaminant dispersion in ambient air. The  
2 estimate of chemical flux from soil is based on a commonly used partitioning equation, and the simulation  
3 of contaminant dispersion in ambient air is represented by the Q/C term. The chemical flux component of  
4 the equation is based on the site-specific soil properties and chemical-specific physical properties  
5 described in Section J.1. The Q/C term reflects the results of air dispersion modeling conducted by  
6 USEPA using varying contaminant source sizes and meteorological conditions. The Q/C value was  
7 calculated using equation D-1 from USEPA's *Supplemental Guidance for Developing Soil Screening*  
8 *Levels for Superfund Sites* (USEPA, 2002). Constants used to calculate the Q/C value were based on  
9 values for Zone 5, Lincoln, Nebraska. The calculation of the Q/C value is presented on Table J-2. This  
10 VF equation is based on the assumption that the source of contamination in soil is at the surface, which is  
11 likely true for the excavation, groundskeeper, and trespasser scenarios in the Building 180/181 Area. The  
12 VF calculations from soil to outdoor air are presented on Tables J-3 and J-4.

### 13 **J.3 VOLATILIZATION FACTORS FROM GROUNDWATER**

14 Vapor migration from groundwater to outdoor air was evaluated in the Building 180/181 Area and the  
15 Transition Zone/Island Area. The equations and variables used to calculate the VFs from groundwater are  
16 described in the following paragraphs and provided on Tables J-5 through J-12.

17 The VF from groundwater to outdoor air was calculated using an equation from the *Standard Guide for*  
18 *Risk-Based Corrective Action at Petroleum Release Sites* (ASTM, 1995) that represents a combination of  
19 the effective diffusion coefficients for capillary fringe and vadose zone soils and a traditional box model.  
20 The effective diffusion coefficients account for the migration of chemical vapors from groundwater to the  
21 soil surface, while the box model estimates chemical dispersion in outdoor air. Chemical partitioning  
22 from groundwater to soil gas is accounted for through the application of the Henry's Law constant. The  
23 wind speed used in this evaluation was based on Fort Riley measurements (see Section 3.4 of the RI  
24 Report Addendum), and the mixing zone height was based on the standard assumed breathing-zone height  
25 of two meters, as noted on Tables J-11 and J-12.

26 It should be noted that all of the volatilization equations used in this risk assessment incorporate several  
27 conservative assumptions. These calculations ignore biodegradation, removal by leaching, and the  
28 adsorption of vapor to soil. They also assume no depletion of the source over time to reduce the emission  
29 rate. These fundamental assumptions likely result in a highly conservative estimate of chemical vapor  
30 concentrations in outdoor air.

**J.4 REFERENCES**

- 1  
2 American Society for Testing and Materials (ASTM), 1995. *Standard Guide for Risk-Based Corrective*  
3 *Action Applied at Petroleum Release Sites*. E 1739-95.
- 4 U.S. Environmental Protection Agency (USEPA), 1988. *Superfund Exposure Assessment Manual*.  
5 EPA/540/1-88/001. April
- 6 U.S. Environmental Protection Agency (USEPA), 1996. *Soil Screening Guidance: Technical*  
7 *Background Document*. EPA/540/R-96/018. April.
- 8 USEPA, 1996a. *Soil Screening Guidance: User's Guide*. EPA/540/R-96/018. April.
- 9 USEPA, 2002. *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites*. Office  
10 of Solid Waste and Emergency Response, OSWER 9355.4-24. December.

11 \* \* \* \* \*

**Table J-1**  
**Calculation of Water-Filled Porosity Values\***  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$O_{ws} = O_t \times \left( \frac{I}{K_s} \right)^{\frac{1}{2b+3}}$$

Where:

- Ows = Water-filled porosity (liters per liter [L/L])
- Ot = Total soil porosity (L/L) (See text)
- I = Infiltration rate (meter per year [m/yr])
- Ks = Saturated hydraulic conductivity (m/yr)
- b = Soil-specific exponential parameter (unitless)

Variable Values:

Location	Ot (L/L)	I (m/yr)	Ks (m/yr)	1/(2b+3) (unitless)	Ows (L/L)
Buildings 180/181 Area	0.25	0.14	120	0.074	0.152
Island Area	0.25	0.32	230	0.08	0.148

**Notes:**

Infiltration rates obtained from Table 6 of "Soil Screening Guidance: Technical Background Document" (USEPA, 1996) and represents alluvium with overbank deposits for Building 180/181 and alluvium without overbank deposits for the Island. Variable values for Ks and b were obtained from "Soil Screening Guidance: User's Guide" (USEPA, 1996a) and represent silty loam in the Building 180/181 and sandy loam in the Island.

\*USEPA, 1996



**Table J-2**  
**Calculation of Q/C Term**  
**Buildings 180/181 Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

**Equation:**

$$\frac{Q}{C} = A \times \exp\left[\frac{(\ln A_{\text{site}} - B)^2}{C}\right]$$

**Where:**

- Q/C = Inverse of the mean concentration at the center of a 0.5 acre square source (grams per squared meter-seconds per kilogram per cubic meter [g/m<sup>2</sup>-s per kg/m<sup>3</sup>])
- A = Constant based on air dispersion modeling for specific climate zones [unitless]
- A<sub>site</sub> = Extent of the site or contamination [acres]
- B = Constant based on air dispersion modeling for specific climate zones [unitless]
- C = Constant based on air dispersion modeling for specific climate zones [unitless]

**Variables:**

- Q/C = Calculated
- A = 14.1901 (site-specific) (represents Zone 5-Lincoln, NE) (USEPA, 2002)
- A<sub>site</sub> = 3.5 acres (total acreage of Former Buildings 180/181 Area)
- B = 18.5634 (site-specific) (represents Zone 5-Lincoln, NE) (USEPA, 2002)
- C = 210.5281 (site-specific) (represents Zone 5-Lincoln, NE) (USEPA, 2002)

Chemical	Q/C g/m <sup>2</sup> -s per kg/m <sup>3</sup>
Former Buildings 180/181 Area	5.89E+01

\*USEPA, 2002

**Table J-3**  
**Volatilization Factor to Outdoor Air from Soil\***  
**Buildings 180/181 Area**  
**Outdoor Worker Scenarios**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$VF_{out} = \frac{Q/C \times (3.14 \times D_a \times T)^{1/2} \times UC}{(2 \times P_b \times D_a)} \quad \text{Where} \quad D_a = \frac{[(\Theta_{as}^{3.33} \times D^i \times H' + \Theta_{ws}^{3.33} \times D_w) / \Theta_t^2]}{P_b \times K_d + \Theta_{ws} + \Theta_{as} \times H'}$$

Where:

- VFout = Volatilization factor from soil to outdoor air (cubic meters per kilogram [m³/kg])
- Q/C = Inverse of the mean concentration at the center of a 0.5 acre square source (grams per squared meter-second per kilogram per cubic meter [g/m²-s per kg/m³])
- Da = Apparent diffusivity (squared centimeters per second [cm²/s])
- T = Exposure interval (seconds [s])
- UC = er [m²/cm²]
- Pb = Dry soil bulk density (grams per cubic centimeter [g/cm³])
- Oas = Air-filled porosity in vadose zone soil (liters per liter [L/L])
- Di = Diffusion coefficient in air (cm²/s)
- H' = Henry's law constant (unitless)
- Ows = Water-filled porosity in vadose zone soil (L/L)
- Dw = Diffusion coefficient in water (cm²/s)
- Ot = Total soil porosity (L/L)
- Kd = Soil-water sorption coefficient (cubic centimeters per gram [cm³/g]) (Koc x foc)
- Koc = Carbon-water sorption coefficient (cm³/g)
- foc = Fraction organic carbon (unitless)

Variables:

- VFout = Calculated
- Da = Calculated
- Q/C = 5.89E+01 g/m²-sec per kg/m³ (See Table J-2)
- T = 8E+08 s (represents 25-year exposure duration)
- UC = 1E-04 m²/cm²
- Pb = 1.69 g/cm³ (USEPA, 1996)
- Oas = 0.098 L/L (site-specific) (Ot - Ows)
- Di = Chemical-specific (USEPA, 1996)
- H' = Chemical-specific (USEPA, 1996)
- Ows = 0.152 L/L (site-specific) (See Table J-1)
- Dw = Chemical-specific (USEPA, 1996)
- Ot = 0.25 L/L (See text)
- Kd = Chemical-specific (calculated)
- Koc = Chemical-specific (USEPA, 1996)
- foc = 0.012 unitless (site-specific) (average of samples from locations B422 and B440)

Chemical	H' (unitless)	Koc (cm³/g)	Kd (cm³/g)	Di (cm²/s)	Dw (cm²/s)	Da (cm²/s)	VFout (m³/kg)
<b>Volatiles</b>							
Tetrachloroethylene	7.54E-01	2.65E+02	3.18E+00	7.20E-02	8.20E-08	6.75E-05	1.06E+04

\*USEPA, 2002

**Table J-4**  
**Volatilization Factor to Outdoor Air from Soil \***  
**Buildings 180/181 Area**  
**Youth Trespasser Scenario**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

**Equation:**

$$VF_{out} = \frac{Q/C \times (3.14 \times D_a \times T)^{1/2} \times UC}{(2 \times P_b \times D_a)} \quad \text{Where } D_a = \frac{[(\Theta_{as}^{3.33} \times D_i \times H' + \Theta_{ws}^{3.33} \times D_w) / \Theta_t^2]}{P_b \times K_d + \Theta_{ws} + \Theta_{as} \times H'}$$

**Where:**

- VF<sub>out</sub> = Volatilization factor from soil to outdoor air (cubic meters per kilogram [m<sup>3</sup>/kg])
- Q/C = Inverse of the mean concentration at the center of a 0.5 acre square source (grams per squared meter-seconds per kilogram per cubic meter [g/m<sup>2</sup>-s per kg/m<sup>3</sup>])
- Da = Apparent diffusivity (squared centimeters per second [cm<sup>2</sup>/s])
- T = Exposure interval (seconds [s])
- UC = er [m<sup>2</sup>/cm<sup>2</sup>])
- Pb = Dry soil bulk density (grams per cubic centimeter [g/cm<sup>3</sup>])
- Oas = Air-filled porosity in vadose zone soil (liters per liter [L/L])
- Di = Diffusion coefficient in air (cm<sup>2</sup>/s)
- H' = Henry's law constant (unitless)
- Ows = Water-filled porosity in vadose zone soil (L/L)
- Dw = Diffusion coefficient in water (cm<sup>2</sup>/s)
- Ot = Total soil porosity (L/L)
- Kd = Soil-water sorption coefficient (cubic centimeters per gram [cm<sup>3</sup>/g]) (Koc x foc)
- Koc = Carbon-water sorption coefficient (cm<sup>3</sup>/g)
- foc = Fraction organic carbon (unitless)

**Variables:**

- VF<sub>out</sub> = Calculated
- Da = Calculated
- Q/C = 5.89E+01 g/m<sup>2</sup>-sec per kg/m<sup>3</sup> (See Table J-2)
- T = 9E+07 s (represents 3-year exposure duration)
- UC = 1E-04 m<sup>2</sup>/cm<sup>2</sup>
- Pb = 1.69 g/cm<sup>3</sup> (USEPA, 1996)
- Oas = 0.098332 L/L (site-specific) (Ot - Ows)
- Di = Chemical-specific (USEPA, 1996)
- H' = Chemical-specific (USEPA, 1996)
- Ows = 0.152 L/L (site-specific) (See Table J-1)
- Dw = Chemical-specific (USEPA, 1996)
- Ot = 0.25 L/L (See text)
- Kd = Chemical-specific (calculated)
- Koc = Chemical-specific (USEPA, 1996)
- foc = 0.012 unitless (site-specific) (average of samples from locations B422 and B440)

Chemical	H' (unitless)	Koc (cm <sup>3</sup> /g)	Kd (cm <sup>3</sup> /g)	Di (cm <sup>2</sup> /s)	Dw (cm <sup>2</sup> /s)	Da (cm <sup>2</sup> /s)	VF <sub>out</sub> (m <sup>3</sup> /kg)
Tetrachloroethylene	7.54E-01	2.65E+02	3.18E+00	7.20E-02	8.20E-06	6.86E-05	3.63E+03

\*USEPA, 2002

**Table J-5**  
**Volatilization Factor to Outdoor Air from Groundwater \***  
**Buildings 180/181 Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$VF_{wamb} = \frac{H'}{1 + \left[ \frac{U_{air} \times S_{air} \times L_{gw}}{W \times D_{ws}^{eff}} \right]} \times 10^3 \frac{L}{m^3}$$

Where:

- VFwamb = Volatilization factor from groundwater to outdoor air (Liters per cubic meter [L/m<sup>3</sup>])  
H' = Henry's law constant (unitless)  
Uair = Wind speed above ground surface in ambient mixing zone (centimeters per second [cm/s])  
Sair = Ambient air mixing zone height (centimeters [cm])  
Lgw = Depth to groundwater, which = hcap + hv (cm)  
hcap = Thickness of capillary fringe (cm)  
hv = Thickness of vadose zone (cm)  
W = Width of source area parallel to wind, or groundwater flow direction (cm)  
Deffws = Effective diffusion coefficient between groundwater and soil surface (squared centimeters per second [cm<sup>2</sup>/s])

Variables:

- VFwamb = Calculated  
H' = Chemical-specific (USEPA, 1996)  
Uair = 447 cm/s (site-specific) (See Section 3.3)  
Sair = 200 cm (default breathing zone height)  
hcap = 5 cm (ASTM, 1995)  
hv = 1,226 cm (site-specific)  
Lgw = 1,231 cm (site-specific) (average distance from 10-ft excavation to groundwater)  
W = 3,048 cm (site-specific) (distance between DCF93-13 and DCF01-40)  
Deffws = Calculated (See Table K-7)

Chemical	H' (unitless)	Deffws (cm <sup>2</sup> /s)	VFwamb (L/m <sup>3</sup> )
cis-1,2-Dichloroethylene	1.67E-01	4.51E-04	2.09E-06
Isopropylbenzene	NAv	NC	NC
tert-Butylbenzene	NAv	NC	NC
Tetrachloroethylene	7.54E-01	3.88E-04	8.11E-06
trans-1,2-Dichloroethylene	3.85E-01	4.07E-04	4.34E-06
Trichloroethylene	4.22E-01	4.40E-04	5.14E-06
Trichloromethane	1.50E-01	6.18E-04	2.57E-06
Vinyl chloride	1.11E+00	5.44E-04	1.67E-05

Notes:

NAv - Value not available

NC - Value not calculated

\*ASTM, 1995

**Table J-6**  
**Volatilization Factor to Outdoor Air from Groundwater \***  
**Transition Zone/Island Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$VF_{wamb} = \frac{H'}{1 + \left[ \frac{U_{air} \times S_{air} \times L_{gw}}{W \times D_{ws}^{eff}} \right]} \times 10^3 \frac{L}{m^3}$$

Where:

- VFwamb = Volatilization factor from groundwater to outdoor air (Liters per cubic meter [L/m<sup>3</sup>])  
H' = Henry's law constant (unitless)  
Uair = Wind speed above ground surface in ambient mixing zone (centimeters per second [cm/s])  
Sair = Ambient air mixing zone height (centimeters [cm])  
Lgw = Depth to groundwater, which = hcap + hv (cm)  
hcap = Thickness of capillary fringe (cm)  
hv = Thickness of vadose zone (cm)  
W = Width of source area parallel to wind, or groundwater flow direction (cm)  
Deffws = Effective diffusion coefficient between groundwater and soil surface (squared centimeters per second [cm<sup>2</sup>/s])

Variables:

- VFwamb = Calculated  
H' = Chemical-specific (USEPA, 1996)  
Uair = 447 cm/s (site-specific) (See Section 3.3)  
Sair = 200 cm (default breathing zone height)  
hcap = 5 cm (ASTM, 1995)  
hv = 647 cm (site-specific)  
Lgw = 652 cm (site-specific)  
W = 30,480 cm (site-specific) (distance between DCF02-42 and DCF02-44A)  
Deffws = Calculated (See Table J-8)

Chemical	H' (unitless)	Deffws (cm <sup>2</sup> /s)	VFwamb (L/m <sup>3</sup> )
cis-1,2-Dichloroethylene	1.67E-01	4.43E-04	3.87E-05
Tetrachloroethylene	7.54E-01	3.47E-04	1.37E-04
Toluene	2.72E-01	4.58E-04	6.52E-05
trans-1,2-Dichloroethylene	3.85E-01	3.82E-04	7.68E-05
Trichloroethylene	4.22E-01	4.02E-04	8.88E-05
Vinyl Chloride	1.11E+00	4.71E-04	2.73E-04

\*ASTM, 1995

**Table J-7**  
**Effective Diffusion Coefficient Between Groundwater and Soil Surface\***  
**Buildings 180/181 Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_{ws}^{eff} = \frac{(h_{cap} + h_v)}{\left[ \frac{h_{cap}}{D_{cap}^{eff}} + \frac{h_v}{D_s^{eff}} \right]}$$

Where:

- Deffws = Effective diffusion coefficient between groundwater and soil surface (squared centimeters per second [cm<sup>2</sup>/s])  
hcap = Thickness of capillary fringe (centimeters [cm])  
hv = Thickness of vadose zone (cm)  
Deffcap = Effective diffusion coefficient through capillary fringe (cm<sup>2</sup>/s)  
Deffs = Effective diffusion coefficient in soil based on vapor-phase concentration (cm<sup>2</sup>/s)

Variables:

- Deffws = Calculated  
hcap = 5 cm (ASTM, 1995)  
hv = 1,226 cm (site-specific) (average distance from 10-ft excavation to groundwater)  
Deffcap = Chemical-specific (See Table J-9)  
Deffs = Chemical-specific (See Table J-11)

Chemical	Deffcap (cm <sup>2</sup> /s)	Deffs (cm <sup>2</sup> /s)	Deffws (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	1.30E-05	5.23E-04	4.51E-04
Isopropylbenzene	NC	NC	NC
tert-Butylbenzene	NC	NC	NC
Tetrachloroethylene	6.54E-06	5.10E-04	3.88E-04
trans-1,2-Dichloroethylene	8.68E-06	5.01E-04	4.07E-04
Trichloroethylene	8.25E-06	5.60E-04	4.40E-04
Trichloromethane	1.51E-05	7.38E-04	6.18E-04
Vinyl chloride	7.97E-06	7.50E-04	5.44E-04

Notes:

NC - Value not calculated

\*ASTM, 1995

**Table J-8**  
**Effective Diffusion Coefficient Between Groundwater and Soil Surface\***  
**Transition Zone/Island Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_{ws}^{eff} = \frac{(h_{cap} + h_v)}{\left[ \frac{h_{cap}}{D_{cap}^{eff}} + \frac{h_v}{D_s^{eff}} \right]}$$

Where:

- Deffws = Effective diffusion coefficient between groundwater and soil surface (squared centimeters per second [cm<sup>2</sup>/s])
- hcap = Thickness of capillary fringe (centimeters [cm])
- hv = Thickness of vadose zone (cm)
- Deffcap = Effective diffusion coefficient through capillary fringe (cm<sup>2</sup>/s)
- Deffs = Effective diffusion coefficient in soil based on vapor-phase concentration (cm<sup>2</sup>/s)

Variables:

- Deffws = Calculated
- hcap = 5 cm (ASTM, 1995)
- hv = 647 cm (site-specific)
- Deffcap = Chemical-specific (See Table J-10)
- Deffs = Chemical-specific (See Table J-12)

Chemical	Deffcap (cm <sup>2</sup> /s)	Deffs (cm <sup>2</sup> /s)	Deffws (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	1.30E-05	5.96E-04	4.43E-04
Tetrachloroethylene	6.54E-06	5.81E-04	3.47E-04
Toluene	9.96E-06	7.03E-04	4.58E-04
trans-1,2-Dichloroethylene	8.68E-06	5.71E-04	3.82E-04
Trichloroethylene	8.25E-06	6.38E-04	4.02E-04
Vinyl Chloride	7.97E-06	8.55E-04	4.71E-04

\*ASTM, 1995

**Table J-9**  
**Effective Diffusion Coefficient Through Capillary Fringe\***  
**Buildings 180/181 Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_{cap}^{eff} = D^i \frac{\Theta_{acap}^{3.33}}{\Theta_T^2} + \left( D^w \times \frac{1}{H'} \times \frac{\Theta_{wcap}^{3.33}}{\Theta_T^2} \right)$$

Where:

- Deffcap = Effective diffusion coefficient through capillary fringe (squared centimeters per second [cm<sup>2</sup>/s])
- Di = Diffusion coefficient in air (cm<sup>2</sup>/s)
- Oacap = Air-filled porosity in capillary fringe soils (liters per liter [L/L])
- Dw = Diffusion coefficient in water (cm<sup>2</sup>/s)
- Owcap = Water-filled porosity in capillary fringe soils (L/L)
- Ot = Total soil porosity (L/L)
- H' = Henry's law constant (unitless)

Variable Values:

- Deffcap = Calculated
- Di = Chemical-specific (USEPA, 1996)
- Oacap = 0.025 L/L (site-specific) (10 percent of Ot)
- Dw = Chemical-specific (USEPA, 1996)
- Owcap = 0.225 L/L (site-specific) (90 percent of Ot)
- Ot = 0.25 L/L (See text)
- H' = Chemical-specific (USEPA, 1996)

Chemical	Di (cm <sup>2</sup> /s)	Dw (cm <sup>2</sup> /s)	H' (unitless)	Deffcap (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	1.67E-01	1.30E-05
Isopropylbenzene	NAv	NAv	NAv	NC
tert-Butylbenzene	NAv	NAv	NAv	NC
Tetrachloroethylene	7.20E-02	8.20E-06	7.54E-01	6.54E-06
trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	3.85E-01	8.68E-06
Trichloroethylene	7.90E-02	9.10E-06	4.22E-01	8.25E-06
Trichloromethane	1.04E-01	1.00E-05	1.50E-01	1.51E-05
Vinyl chloride	1.06E-01	1.23E-06	1.11E+00	7.97E-06

Notes:

NAv - Value not available

NC - Value not calculated

\* ASTM, 1995



**Table J-10**  
**Effective Diffusion Coefficient Through Capillary Fringe\***  
**Transition Zone/Island Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_{cap}^{eff} = D^i \frac{\Theta_{acap}^{3.33}}{\Theta_T^2} + \left( D^w \times \frac{1}{H'} \times \frac{\Theta_{wcap}^{3.33}}{\Theta_T^2} \right)$$

Where:

- Deffcap = Effective diffusion coefficient through capillary fringe (squared centimeters per second [cm<sup>2</sup>/s])
- Di = Diffusion coefficient in air (cm<sup>2</sup>/s)
- Oacap = Air-filled porosity in capillary fringe soils (liters per liter [L/L])
- Dw = Diffusion coefficient in water (cm<sup>2</sup>/s)
- Owcap = Water-filled porosity in capillary fringe soils (L/L)
- Ot = Total soil porosity (L/L)
- H' = Henry's law constant (unitless)

Variable Values:

- Deffcap = Calculated
- Di = Chemical-specific (USEPA, 1996)
- Oacap = 0.025 L/L (site-specific) (10 percent of Ot)
- Dw = Chemical-specific (USEPA, 1996)
- Owcap = 0.225 L/L (site-specific) (90 percent of Ot)
- Ot = 0.25 L/L (See text)
- H' = Chemical-specific (USEPA, 1996)

Chemical	Di (cm <sup>2</sup> /s)	Dw (cm <sup>2</sup> /s)	H' (unitless)	Deffcap (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	1.67E-01	1.30E-05
Tetrachloroethylene	7.20E-02	8.20E-06	7.54E-01	6.54E-06
Toluene	8.70E-02	8.60E-06	2.72E-01	9.96E-06
trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	3.85E-01	8.68E-06
Trichloroethylene	7.90E-02	9.10E-06	4.22E-01	8.25E-06
Vinyl Chloride	1.06E-01	1.23E-06	1.11E+00	7.97E-06

\* ASTM, 1995

**Table J-11**  
**Effective Diffusion Coefficient in Soil\***  
**Buildings 180/181 Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_s^{eff} = D^i \frac{\Theta_{as}^{3.33}}{\Theta_T^2} + \left( D^w \times \frac{1}{H'} \times \frac{\Theta_{ws}^{3.33}}{\Theta_T^2} \right)$$

Where:

- Deffs = Effective diffusion coefficient in soil (squared centimeters per second [cm<sup>2</sup>/s])
- Di = Diffusion coefficient in air (cm<sup>2</sup>/s)
- Oas = Air-filled porosity in vadose zone soils (liters per liter [L/L])
- Dw = Diffusion coefficient in water (cm<sup>2</sup>/s)
- Ows = Water-filled porosity in vadose zone soils (L/L)
- Ot = Total soil porosity (L/L)
- H' = Henry's law constant (unitless)

Variable Values:

- Deffs = Calculated
- Di = Chemical-specific (USEPA, 1996)
- Oas = 0.098 L/L (site-specific) (Ot - Ows)
- Dw = Chemical-specific (USEPA, 1996)
- Ows = 0.152 L/L (site-specific) (See Table J-1)
- Ot = 0.25 L/L (See text)
- H' = Chemical-specific (USEPA, 1996)

Chemical	Di (cm <sup>2</sup> /s)	Dw (cm <sup>2</sup> /s)	H' (unitless)	Deffs (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	1.67E-01	5.23E-04
Isopropylbenzene	NAv	NAv	NAv	NC
tert-Butylbenzene	NAv	NAv	NAv	NC
Tetrachloroethylene	7.20E-02	8.20E-06	7.54E-01	5.10E-04
trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	3.85E-01	5.01E-04
Trichloroethylene	7.90E-02	9.10E-06	4.22E-01	5.60E-04
Trichloromethane	1.04E-01	1.00E-05	1.50E-01	7.38E-04
Vinyl chloride	1.06E-01	1.23E-06	1.11E+00	7.50E-04

Notes:

NAv - Value not available

NC - Value not calculated

\*ASTM, 1995

**Table J-12**  
**Effective Diffusion Coefficient in Soil\***  
**Transition Zone/Island Area**  
**RI Report Addendum**  
**DCF Study Area - Fort Riley, Kansas**

Equation:

$$D_s^{eff} = D^i \frac{\Theta_{as}^{3.33}}{\Theta_T^2} + \left( D^w \times \frac{1}{H'} \times \frac{\Theta_{ws}^{3.33}}{\Theta_T^2} \right)$$

Where:

- Deffs = Effective diffusion coefficient in soil (squared centimeters per second [cm<sup>2</sup>/s])
- Di = Diffusion coefficient in air (cm<sup>2</sup>/s)
- Oas = Air-filled porosity in vadose zone soils (liters per liter [L/L])
- Dw = Diffusion coefficient in water (cm<sup>2</sup>/s)
- Ows = Water-filled porosity in vadose zone soils (L/L)
- Ot = Total soil porosity (L/L)
- H' = Henry's law constant (unitless)

Variable Values:

- Deffs = Calculated
- Di = Chemical-specific (USEPA, 1996)
- Oas = 0.102 L/L (site-specific) (Ot - Ows)
- Dw = Chemical-specific (USEPA, 1996)
- Ows = 0.148 L/L (site-specific) (See Table J-1)
- Ot = 0.25 L/L (See text)
- H' = Chemical-specific (USEPA, 1996)

Chemical	Di (cm <sup>2</sup> /s)	Dw (cm <sup>2</sup> /s)	H' (unitless)	Deffs (cm <sup>2</sup> /s)
cis-1,2-Dichloroethylene	7.36E-02	1.13E-05	1.67E-01	5.96E-04
Tetrachloroethylene	7.20E-02	8.20E-06	7.54E-01	5.81E-04
Toluene	8.70E-02	8.60E-06	2.72E-01	7.03E-04
trans-1,2-Dichloroethylene	7.07E-02	1.19E-05	3.85E-01	5.71E-04
Trichloroethylene	7.90E-02	9.10E-06	4.22E-01	6.38E-04
Vinyl Chloride	1.06E-01	1.23E-06	1.11E+00	8.55E-04

\*ASTM, 1995