ABBREVIATED WORK PLAN – DECEMBER 2013
OUTPOST MONITORING WELL REHABILITATION (BPOW 4-1 and BPOW 4-2)
PRE-DESIGN FIELD INVESTIGATION, OPERABLE UNIT 2 GROUNDWATER
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP), BETHPAGE, NEW YORK

This abbreviated work plan addendum has been prepared for the Mid-Atlantic Division of the Naval Facilities Engineering Command (NAVFAC) pursuant to Contract Task Order (CTO) WE15, issued under Comprehensive Long-term Environmental Action Navy (CLEAN) contract number N62470-11-D-8013. This abbreviated work plan addresses activities to be conducted at the Naval Weapons Industrial Reserve Plant (NWIRP) located in Bethpage, New York.

Scope and Objectives

The objective of the field activities defined in this abbreviated work plan is to rehabilitate two outpost monitoring wells (BPOW 4-1 and BPOW 4-2) that have failed well integrity testing performed in September 2013 in accordance with the UFP SAP Addendum – Well Integrity Testing Investigation and Testing Protocol (Resolution Consultants, 2013). New 2-inch wells will be installed inside of the 4-inch casings. The rehabilitated outpost monitoring wells will be land surveyed and one round of groundwater samples will be collected for VOC analysis following repair. The location of the wells is shown on Figure 1.

Background

As part of the Public Water Supply Contingency Plan (PWSCP) two outpost monitoring wells (BPOW 4-1 and 4-2) were installed for purposes of providing an early warning of potential impacts to the Levittown public water supply (5303). In May 2012, Trichlorotrifluoroethane (Freon 113) was detected in outpost well 4-1 at a concentration that met the established trigger value of 1.5 micrograms per liter (ug/L) for this well. As directed in the PWSCP, outpost well 4-1 was re-sampled and similar results were detected. The integrity of both of the wells was tested according to the procedures outlined in the UFP SAP Addendum – Well Integrity Investigation and Testing Protocol, and it was determined that both were compromised. Because of the potential for the migration of contaminated shallow groundwater to deeper intervals via the compromised wells, it is determined that they should be rehabilitated. Rehabilitation will be performed according to the UFP SAP Addendum – Outpost Monitoring Well Rehabilitation (Resolution Consultants, 2013).

Well Repair Task Plan

Details of the repair plan are provided below. All aspects of the field investigation specified in the UFP SAP Addendum - Outpost Monitoring Well Rehabilitation - Operable Unit 2 (Resolution Consultants, 2013) will be followed.

Outpost Monitoring Well Installation

The construction of the 2-inch wells will be as close as possible to the original construction of the existing outpost wells. Specifications for the existing wells are listed in Table 1. BPOW 4-1 has a total well depth of 692 feet (ft) below ground surface (bgs). The screened interval is 652 to 692 ft bgs. BPOW 4-2 has a total well depth of 765 ft bgs. The screened intervals are 725 to 735 ft bgs and 745 to 765 ft bgs. The repair of BPOW 4-2 will be finished off with one 40 foot screen. The boring logs and well construction logs for the two outpost monitoring wells are provided in Appendix A.

The 2-inch wells will be installed to the same depth as the original outpost monitoring wells. The wells will be constructed of 2-inch diameter, Schedule 80, National Sanitation Foundation-approved polyvinyl chloride (PVC) well screen and riser pipe. The well screens will have slot sizes of 0.010 inches (10 slot). Threaded bottom caps will be fitted to the bottom of each well. All pipe sections and bottom caps will be flush-jointed and flush-threaded.

Primary filter packs will be installed in the annuli around the well screens. The filter packs will consist of FilterPro #1 quartz sand installed using a tremie pipe. The depths of the primary filter pack for BPOW 4-1 and BPOW 4-2 are listed in Table 1. For BPOW 4-1, the original primary filter pack is approximately 70 ft thick. For BPOW 4-2, the original primary filter pack is approximately 60 ft thick. The replacement primary filter pack for both BPOW 4-1 and 4-2 will be 65 feet thick to follow the current work practices.

Secondary filter packs comprised of a finer sand (FilterPro #0 quartz sand) will be installed in the annulus around the well riser above the primary filter pack. The depths of the secondary filter pack for BPOW 4-1 and BPOW 4-2 are listed in Table 1. For BPOW 4-1, the secondary filter pack is approximately 20 ft thick. For BPOW 4-4, the secondary filter pack is approximately 15 ft thick.

A 2- to 4-foot thick bentonite seal will be installed above the secondary filter pack. The annulus above the bentonite seal will be grouted with high-solids bentonite slurry. Both the bentonite seal and bentonite slurry will be installed using a tremie pipe.

The existing BPOW 4-1 has a K packer and 2-inch stainless steel screen inside the 4-inch casing. The K packer and screen will be removed and properly disposed.

Monitoring Well Development and Groundwater Sample Collection

BPOW 4-1 and 4-2 will be developed using a combination of air lift and mechanical surging. Field parameters, including pH, temperature, specific conductivity, and turbidity will be monitored and recorded throughout well development.

Well development of BPOW 4-1 and 4-2 will also include purging stagnant water from the well above the screen interval and rinsing the interior well casing above the water table using only water from that well. The well will be covered with a clean well cap.

In compliance with New York State Department of Environmental Conservation (NYSDEC) policy, wells will be developed until turbidity is less than 50 nephelometric turbidity units (NTU). However, in some instances, the 50 NTU standard may not be attainable. If after a "best well development effort", the 50 NTU standard cannot be attained and turbidity stabilizes (above the 50 NTU standard), the well will be considered acceptable.

After initial sampling, which will be conducted according to the UFP SAP Addendum - Groundwater Sampling Using Low Stress (Low Flow) Purging and Sampling Protocol (Resolution Consultants, 2013), a dedicated sampling pump system may be installed in the monitoring wells. These pumps will be 3-inch variable speed submersibles with an associated packer system. The pumps will be installed at a depth of approximately 20 feet above the screen interval, but no deeper than 500 feet below top of well casing.

IDW

Investigation Derived Waste (IDW) accumulated during drilling activities will be collected, containerized, accumulated at NWIRP Bethpage, and disposed off-site. All IDW activities will be consistent with the UFP SAP Addendum – VPB and Monitoring Well Installation and Sampling (Resolution Consultants, November 2013).

Decontamination

A centrally located decontamination pad at NWIRP Bethpage will be used for the collection of all decontamination-generated fluids. All decontamination fluids will be collected and staged for characterization and subsequent disposal. All decontamination activities will be consistent with the UFP SAP Addendum – VPB and Monitoring Well Installation and Sampling (Resolution Consultants, November 2013).

Surveying

Upon completion of the well repair, BPOW 4-1 and 4-2 will be surveyed by a New York State licensed surveyor. All surveying activities will be consistent with the UFP SAP Addendum – VPB and Monitoring Well Installation and Sampling (Resolution Consultants, November 2013).

Data Validation

Data validation will be conducted for the VOC groundwater samples scheduled for analyses. Data will be reviewed and qualified in accordance with the requirements of the EPA National Functional Guidelines, modified as appropriate for the DoD Quality Systems Manual (QSM) version 4.2 and method-specific requirements. The TOC data and data generated for waste characterization will not be validated or reviewed. Validation will consist of reviewing of the associated QA/QC samples and measurement performance indicators as presented on the summary forms provided in the laboratory deliverable, and will not include confirmation of calculations or review of raw data. The results of the data validation will be documented in reports which will detail any issues impacting the data quality along with qualifications affecting data bias and usability. All data validation activities will be consistent with the UFP SAP Addendum – VPB and Monitoring Well Installation and Sampling (Resolution Consultants, November 2013)

Reporting

A summary report will be developed to provide documentation of this investigation. Documentation required to support this project will consist of the following items:

- Field notebook
- Groundwater and air sample log sheets
- Well completion form for each well
- Well development record
- Map identifying newly repaired outpost monitoring wells.

Tables

Table 1

Outpost Monitoring Well Summary
Pre-Design Field Investigation Analysis
Page 1 of 1

Well Number	Casing Set (ft bgs)	Total Depth (ft bgs)	Total Well Depth (ft bgs)	Screened Interval (ft bgs)	Top of Primary Sand Pack (ft bgs)	Top of Secondary Sand Pack (ft bgs)	Comments
BPOW4-1	87	700	692	652-692	620	602	Primary filter pack will be brought up to 627 feet
BPOW4-2	100	780	765	725-735 and 745-765	705	690	Well will have a 40 ft screen; Primary filter pack will be brought up to 700 feet

ft bgs: feet below ground surface
Blank Sect.: schedule 80 PVC riser place between screened sections of the well

Figures

F:\Projects\Navy\Bethpage\WX0257.0 Deliverables\7.1 Work Plans, Sampling and Analysis Plans\WP-OMW_resleeve\Addendum LetterFiguresF1 OMW Locations 2013 11 26.mxd

TCE Deep

TCE Shallow

HWD-10208
HWD-8779
BWD-8768
BWD-8767
BWD-9591
S Broadway
State Hwy 135
Hempstead Tpke
N
VPB-21
VPB-27
VPB-19A
MW-201-1
MW-200-1
MW-202-1
MW-203-1
HN-24S
HN-24I
HN-29IR
HN-29D
FW-01
FW-02
FW-03
VPB-134
HN-42S
HN-42I
VPB-106
MW-108-1
VPB-107
MW-102-1
VPB-105
VPB-108
VPB-135
VPB-136
MW-100-1
MW-100-2
MW-100-3
MW-107-1
VPB-102
GM-13D
HN-40S
HN-40I
GM-16I
GM-16SR
VPB-100
VPB-115
N-10597
MW-109-3
GP-3 WELL 3
MW-1GF
GM-32S
VPB-109R
VPB-101
VPB-109
GM-17I
GM-17D
GM-17SR
GP-1 WELL 1
MW-5
MW-6
GM-19I
GM-19S
GM-15S
GM-15I
GM-15D
GM-15D2
MW-2GF
MW-2
MW-4
VPB-113
GM-18S
GM-18I
GM-18D
GM-39DA
GM-39DB
VPB-39
VPB-110R
MW-111-4
MW-3
Well-19
VPB-110
GM-73D
GM-73D2
VPB-73
GM-33D2
N-10631
Well 18
GM-74I
GM-74D
GM-74D2
VPB-111
MW-3R
Well-17
N-10600
GM-20I
GM-20D
GM-21I
GM-21S
GM-21D
VPB-103
GM-78S
GM-78I
N-10633
N-10628
GM-79D
GM-79I
VPB-49C
N-9921
VPB-114
GM-75D2
N-10624
N-10627
VPB-104
GM-37D
GM-37D2
N-10634
GM-71D2
GM-70D2
VPB-112
VPB-121
GM-35D2
MW-116-5
VPB-116
VPB-42
GM-36D
GM-36D2
VPB-117
MW-117-5
VPB-138
BWD-6915
BWD-6916
N-10821
VPB-137
VPB-51
GM-38RW03
GM-38D2
GM-38D
VPB-123
GM-34D
GM-34D2
BWD-8941
BWD-3876
VPB-48
VPB-38
GM38-RW01
VPB-47
VPB-118
MW-118-5
VPB-139
VPB-40
BWD-8004
VPB-119
VPB-77
LWD-7076
VPB-122
VPB-76
VPB-129
TT-101D
TT-101D1
BPOW 1-4
BPOW 1-5
VPB-127
VPB-43
BPOW 1-1
BPOW 1-2
BPOW 1-3
SFWD-7377
VPB-45
SFWD-5148
SFWD-4043
BPOW4-1
BPOW4-2
VPB-46
VPB-44
BPOW 4-1
BPOW 4-2
LWD-5303
5 µg/L
VPB-50
VPB-128
VPB-130
VPB-131
BPOW 2-1
BPOW 2-2
BPOW 2-3
SFWD-6150
VPB-126
BPOW 3-3
BPOW 3-4
BPOW 3-1
BPOW 3-2
VPB-125
AQUA-9338
AQUA-8480
5 µg/L
BPOW 5-1
BPOW 5-2
VPB-132
VPB-124
SFWD-6866
SFWD-8665
VPB-133
0 750 1,500 3,000 Feet

Legend

- Monitoring Well
- Monitoring Well Proposed
- Water Supply Well
- Vertical Profile Boring
- TCE Contour µg/L
- TCE Contour µg/L (inferred)

LOCATION OF BPOW4-1 AND BPOW4-2

NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK

CONTRACT NUMBER	CTO NUMBER
N62470-11-D8013	WE15
APPROVED BY —	DATE —
APPROVED BY —	DATE —
FIGURE NO. 1	REV 0

Appendix A

Outpost Monitoring Well Completion Logs and Boring Logs

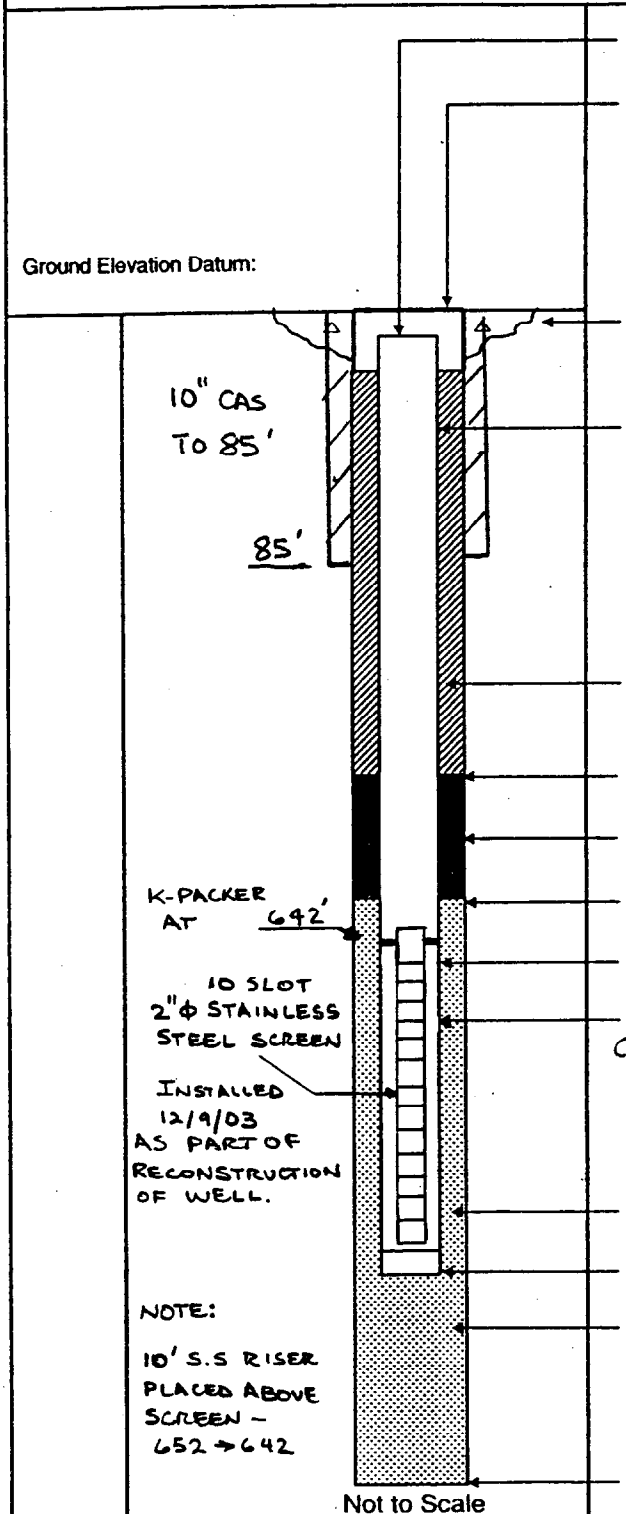
Tetra Tech NUS, Inc.

WELL No.: BPOW4-1

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NWIRP	DRILLING Co.:	UNITECH	BORING No.:	BPOW4-1
PROJECT No.:	N4037	DRILLER:	BLEMMINGS	DATE COMPLETED:	7/17/03
SITE:	BETHPAGE	DRILLING METHOD:	MUD ROT	RECONSTRUCTED 2→ NORTHING:	12/9/03
GEOLOGIST:	CONTI	DEV. METHOD:	AIR/PUMP	EASTING:	



Elevation / Depth of Top of Riser: 1

Elevation / Height of Top of Surface Casing: 1

I.D. of Surface Casing: 9"

Type of Surface Casing: STEEL

Type of Surface Seal: CONCRETE PAD 2'x2'x6"

I.D. of Riser: 3 13/16"

Type of Riser: PVC SCH 80

Borehole Diameter: 8 3/4 ≈ 9"

Type of Backfill: VOLCLAY GROUT

Elevation / Depth of ~~Seal~~: F SAND #0 1602

Type of Seal: NA

Elevation / Depth of Top of ~~Filter Pack~~: C. SAND 1620

Elevation / Depth of Top of Screen: 1652

Type of Screen: PVC SCH 80 (PLACED 7/17/03)

Slot Size x Length: 10 SL x 40'

I.D. of Screen: INITIAL 3 13/16"

Type of Filter Pack: #1 SILICA SAND

Elevation / Depth of Bottom of Screen: 1692

Elevation / Depth of Bottom of Filter Pack: 1693

Type of Backfill Below Well: SILICA SAND

Elevation / Total Depth of Borehole: 1700

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-1
DATE: 7-8-03
GEOLOGIST: Conti / ShickorA
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	0						TOP 6" TOPSOIL						
	10						SAND AND GRAVEL		(FROM CUTTINGS)				0
	20												0
	30												0
	40						SAND AND GRAVEL		1" Φ SUB ROUND FROM CUTTINGS				0
	50												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: START W 8" Φ MUD ROTARY - REAM TO 12" TO SET 10" CASING.

Converted to Well: Yes V No _____ Well I.D. #: BPOW4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-1
DATE: 7-8-03 / 7-9-03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	50				DENSE		SAND AND GRAVEL						0
	60												
7/8	70												0
7/9													
	80						SAND						
	90						CLAYEY SAND		± 90'				0
7/11									80-90' - STABILIZER BAR - HAD SANDY				
↓									CLAY / CLAYEY SAND ENTIRE 10' LENGTH.				
									JAY WILL SET 10" CAS ≈ 90'.				
	100						Sand and Gravel		1/4" ϕ sub round				0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: Ream to 12" ϕ on 7-10-03
Set 10" CASING TO 85' on 7-10-03
8 3/4" ϕ drilling from 85' to T.D.

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-1
DATE: 7-11-03 / 7-14-03
GEOLOGIST: Conti / ShickorA
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	100												
1055	110						Sand (Trace gravel)		(from cuttings)				0
0925													
	120						Sand + Gravel		½" ϕ sub round				
1050	130						Sand and Gravel		1" ϕ sub round from cuttings				0
1445	140												
1515	150						clayey Sand + Gravel		1" ϕ sub round				0

7/11 ↑
7/14 ↓

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-14-03
GEOLOGIST: Conti / ShickorA
DRILLER: J. Blening

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	150												
1540	160						Sand + Gravel		1"ϕ subround				0
1617	170						Same as above						0
1647	180												
1719	190						Same as above						0
	200												

7/14 ↑
7/15 ↓

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	200												
0930	210						Clayey Sand (Trace gravel)		From cuttings				0
	220												
1005	230						Sandy Silt + Clay		From cuttings				0
	240						Same as above						0
1033	250						Sand (Trace clay)						0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	250												
	260												
1059	270					Black	Sand (Trace Silt/clay) some lignite		From cuttings				0
	280												
1123	290						Sand (some clay)		From cuttings				0
	300												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J-Blemings

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	300												
1151	310						Sand (some clay)		From cuttings				0
	320												
1320	330						Same as above		From cuttings				0
	340												
1957	350						Same as above		From cuttings				0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Centi~~ ShickorA
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	350												
	360												
1423	370						Sand (Trace Silt/Clay)		From cuttings				0
	380												
1455	390						Same as above		From cuttings				0
	400												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: ~~Uni-Tech~~
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J Blenings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	400												
1521	410						Same as above		From cuttings				0
	420												
1605	430						Sandy clay (Trace silt)		From cuttings				0
	440												
1642	450						Same as above						0

↑ 7/15

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-15-03
GEOLOGIST: ~~Contr~~ Shickora
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
7/16 ↓													
	450												
	460												
0940	470						Sand (Trace Silt and Clay and Lignite)		From cuttings				0
	480												
1009	490						Same as above		From cuttings				0
	500												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No ____ Well I.D. #: BPOW4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-16-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J Blemings

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	500						Same as above		From cuttings				0
1038	510						Sand (Trace silt and clay)						
	520												
1103	530						Same as above		From Cuttings				0
	540												
1132	550						Same as above		From Cuttings				0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOWA-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW4-1
DATE: 7-16-03
GEOLOGIST: ~~Conti~~ ShickorA
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	550												
	560												
1334	570						Sand (Trace Fine Gravel + lignite)		From cuttings				0
	580												
1402	590						Sand (Trace clay and Gravel		From cuttings				0
	600												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-16-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	600												
1433	610						Sand (Trace clay and lignite)		From cuttings				0
	620												
1508	630						Sand (Trace Clay)		From cuttings				0
									Losing mud				
									To Formation				
									at ± 635' BGS				
							medium to course grain						
	640						Sand & Fine Gravel						
									Losing mud				
									To formation				
7/16 1710	650						Sand + Fine Gravel						0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-1

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: Failing 1500

BORING No.: BPOW 4-1
DATE: 7-17-03
GEOLOGIST: ~~Conti~~ Shickora
DRILLER: J. Blemings

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	650			652									
							Medium to course grain						
0852	660						Sand (Trace Silt and Clay fine gravel)		From cuttings				0
0923	670						Same as above		From cuttings				0
	680												
1005	690						Same as above		From cuttings				0
				692									
1031	700			EOB			Same as above						0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks:

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW 4-1

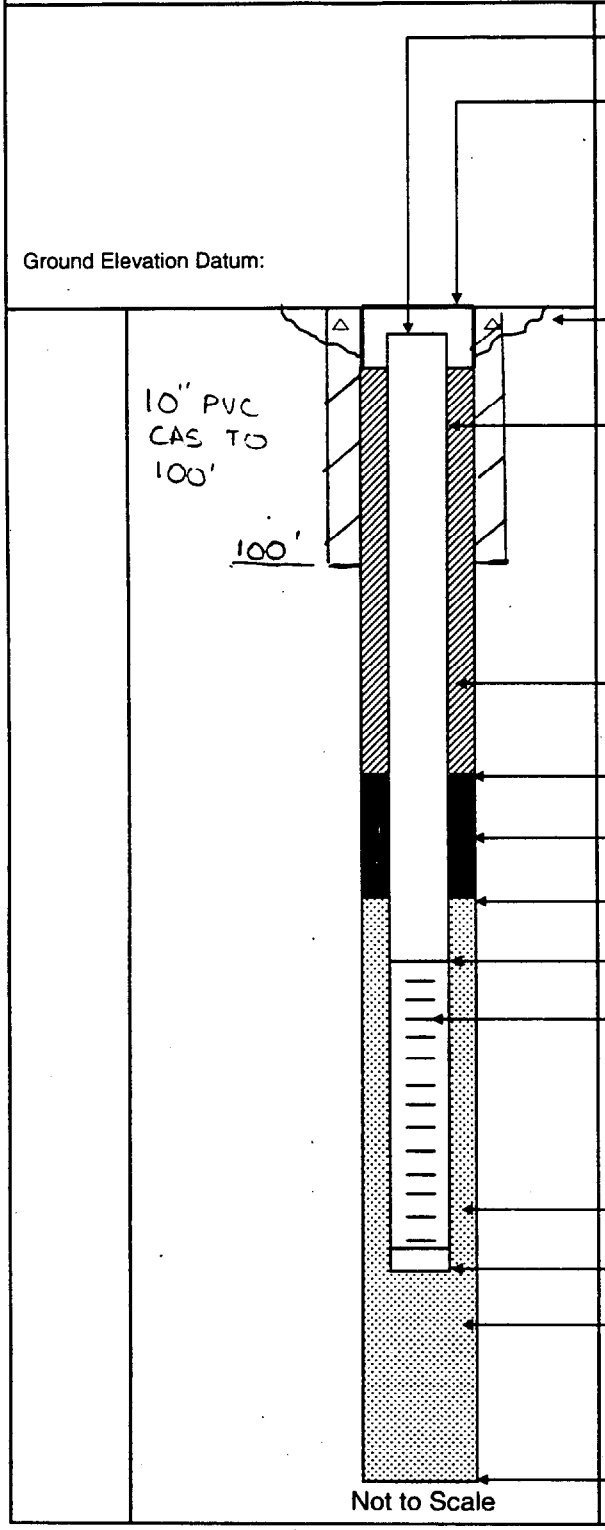
Tetra Tech NUS, Inc.

WELL No.: BPOW4-2

MONITORING WELL SHEET

PERMIT No:

PROJECT:	NWIRP	DRILLING Co.:	UNITECH	BORING No.:	BPOW4-2
PROJECT No.:	N4037	DRILLER:	BLEMINGS	DATE COMPLETED:	7/7/03
SITE:	BETHPAGE	DRILLING METHOD:	MUD ROT	NORTHING:	
GEOLOGIST:	CONTI	DEV. METHOD:	AIR/PUMP	EASTING:	



Ground Elevation Datum:

Elevation / Depth of Top of Riser: 1

Elevation / Height of Top of Surface Casing: 1

I.D. of Surface Casing: 9"

Type of Surface Casing: STEEL

Type of Surface Seal: CONCRETE PAD 2'x2'x6"

I.D. of Riser: 3 13/16"

Type of Riser: PVC SCH 80

Borehole Diameter: 9 1/2"

Type of Backfill: VOLCLAY GROUT

Elevation / Depth ~~of Seal~~: F SAND #0 — 1690

Type of Seal: NA

Elevation / Depth of Top of ~~Filter Pack~~: C SAND — 1705

Elevation / Depth of Top of Screen: 1725

Type of Screen: PVC SCH 80

Slot Size x Length: 10 x 30 W 10' BLANK 735→745

I.D. of Screen: 3 13/16"

Type of Filter Pack: #1 SILICA SAND

Elevation / Depth of Bottom of Screen: 1765

Elevation / Depth of Bottom of Filter Pack: 1766

Type of Backfill Below Well: SILICA SAND

Elevation / Total Depth of Borehole: 1780

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/4/03 →
GEOLOGIST: Conti
DRILLER: J. BLEMINGS

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
6/4	1130	0				DENSE	BRN	SAND AND GRAVEL		LOGGED FROM				0
										CUTTINGS				
	0900									IN BETWEEN SAMPLES				
										RODS " CHATTERING "				
6/5		10								FROM 0' TO 20'.				0
										RESTART @ NEW				
										LOCATION - ≈ 1' WEST -				
										0-20 ≈ 15 MIN. NO OBSTRUCTIONS				
										GOOD RETURN OF DRILL CUTTINGS.				
	0915	20				M DENSE	BRN	SAND - SOME GRAVEL	SW					0
										MIX MORE MUD				
	1030	30												0
	1100	40						SAND AND GRAVEL		(FROM CUTTINGS)				0
	1120	50												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: START W/ 8" Φ MUD ROT. GOT TO 6' - LOST RETURN
TOO CLOSE TO STORM SEWER - MOVE ≈ 1' WEST (CLOSER TO CURB)
DRILL TO 150 ± W/ 8" Φ - REAM W/ 12" Φ TO 150 - SET 10" Φ CASING.

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6-5-03 / 6-17-03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	50												
S-1 @ 1120	52	100/6"	.5/.5		V DENSE	YELLOW BRN	SAND AND GRAVEL	GW	WET SUBROUND 1" GRAVEL. W/ 1 1/2" PCS IN WASH PORTION OF SAMPLE.	0			0
1200	60												0
1230	70						SAND AND GRAVEL		LESS GRAVEL ≈ 70' TO 80'				0
1300	80												0
					DENSE	BRN	SILTY F/M SAND	SP					
1330	90												0
1400	100												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: SET 10" @ 110' (GROUTED IN) SEE NB1351 FOR DETAILS - SET 10" @ 100' ON 6/17/03 - AT 2ND LOCATION.

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/5/03 / 6/17/03 / 6/19/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
6/17	100												
6/19					DENSE	BRN	SILTY F/M SAND	SM/SP					0
1130	110								10"Φ SET @ 110				
									AND GROUTED IN PERM. HAD TO MOVE 10' N. DUE TO LEAKAGE AROUND CAS. SET 2ND CAS TO 100' ON 6/17/03.				0
1230	120												
													0
	130												
													0
	140												
													0
1415	150												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/19/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	150												
S-2	152	100/6	.5/.5		V DENSE	BRN	SAND - SOME GRAVEL	SP	WET	0			0
1440							TR WHITE CLAY						
1500	160												0
1520	170												0
1540	180												0
1600	190												0
1620	200												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/19/03 → 6/20/03
GEOLOGIST: Conti
DRILLER: J. BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	200												0
S-3	210	50/48	2/2										
K640	212	28/32			V DENSE	BRN TO GRAY	F/M SAND - TR CLAY SEAM ≈ 211' ≈ 2" THICK	SP	WET	0			0
1700	220								HIT SOME CLAY				
													0
6/19 1730	230								REACHED 230' ON 6/19/03				0
6/20									MORE CLAY NOTICED ≈ 230 IN CUTTINGS.				
0900	240												
													0
0930	250												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/30/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	250												
S-4 @ 0945		28/38 10%/6	1.5/2.0		V. DENSE	MOTTLED ORANG BRN GRAY	SILTY F/M SAND SOME CLAY IN "WASH" PORTION OF SAMPLE.	SM	WET/MICACEOUS	0			0
	260												0
	270												0
	280												0
	290												0
	300												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: _____

Drilling Area Background (ppm): 0

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/20/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	300												0
S-5	310												
1145	311	10%	4/5		V DENSE	GRAY	SILTY F/M SAND	SP	WET	0			0
6/20							TR GRAVEL						
6/23													
1200	320												
													0
1230	330								DRILLER NOTED POSSIBLE CLAY.				0
1300	340												0
	350												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/23/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	350												
S-6 @	351	50/50	1/1		V STIFF / HARD	BRN GRAY	SILTY CLAY	CL	MOIST VERY HARD - WAS DIFFICULT TO PRY LOOSE FROM SPOON	0			0
1345													
—	360												
													0
1400	370												
													0
1430	380												
													0
1500	390												
													0
1515	400												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes X No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/23/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	400												
S-7	410												
6/23/03 @ 1550	411	100/6	.9/1		V DENSE /STIFF	GRAY	SANDY CLAY - STREAKS OF LIGNITE MATL	SC	MOIST MICACEOUS	0			0
1600	420						STILL IN SOME CLAY		(CUTTINGS)				
													0
MON 6/23 1630	430												
6/24 TUE.													0
0900	440												
													0
0930	450												

* When rock coring, enter rock brokeness.

** Include monitor reading in 5 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/24/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	450												
S-8 c		100/6"	2/5		V DENSE	GRAY	SILTY F/M SAND	SM	WET	0			0
0930								SP	MICACEOUS				
0945	460												0
1000	470												0
1030	480												0
1100	490												0
	500												

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/24/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	500												0
S-9 C	510	100/6"			V DENSE	GRAY	F/M SAND-TR F GRAVEL	SP	WET	0			0
1130	511						TR BLACK STREAKS (LIGNITE)?		MICACEOUS				
1200	520												0
1230	530												0
1245	540												0
1300	550												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/24/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	MATERIAL DESCRIPTION: Color	MATERIAL DESCRIPTION: Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	550												
S-10 @ 1330	551	100/6"	4/.5		V DENSE	GRAY	F/M SAND	SP	WET MICACEOUS	0			0
	560												0
	570												0
1430	580												0
	590												0
1500	600												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes V No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/24/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	600												
1530													0
S-1 @	610	100/											
1550	611	6"	5/1.5		V DENSE	TAN GRAY	F/M SAND - SOME TAN SANDY CLAY - TOP 2" OF SPOON	SP/ SM	WET → MOIST				0
	620												
													0
	630												0
	640												0
6/24	650												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes ✓ No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/25/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

	Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
		650												
6/25	S-12 @ 0935	651	100/6"	5/7.5		V DENSE	GRAY	SAND AND GRAVEL TR CLAY	SW	WET ≈ 3/4" ϕ SUB ROUND GRAVEL	0			0
		660												0
		670												0
		680												0
		690												0
		700												0

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes ✓ No ____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/25/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (FL) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/FL) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
1100	700												0
1115	710				DENSE	GRAY	COARSE SAND - SOME F/M SAND	SP	WET - FROM CUTTINGS NO SPOON HERE				0
	720												0
				725									
	730												0
	740												0
	742						SANDY SOME V CLAY @ 742'		DRILLER NOTED SOME CLAY AT ~ 742 W STREAKS				
							NOTED THEN						
							F TO C SAND		TO 747.				
1500	750												0

BLANK

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks: _____

Converted to Well: Yes V No _____ Well I.D. #: BPOW4-2

Tetra Tech NUS, Inc.

BORING LOG

PROJECT NAME: NWIRP Bethpage
PROJECT NUMBER: N4037
DRILLING COMPANY: Uni-Tech
DRILLING RIG: FAILING 1500

BORING No.: BPOW4-2
DATE: 6/25/03
GEOLOGIST: Conti
DRILLER: J BLEMINGS

Sample No. and Type or RQD	Depth (Ft.) or Run No.	Blows / 6" or RQD (%)	Sample Recovery / Sample Length	Lithology Change (Depth/Ft.) or Screened Interval	MATERIAL DESCRIPTION: Soil Density/ Consistency or Rock Hardness	Color	Material Classification	USCS *	Remarks	PID/FID Reading (ppm): Sample	Sampler BZ	Borehole**	Driller BZ**
	750				DENSE	GRAY	F/C SAND						0
1540	760												0
				765									
	770								NOTICED SOME				0
									CLAY IN CUTTINGS				
									DRILLER ALSO NOTED CLAY				
									~ 770' ±				
	780												0
									GAMMA LOG TO 775.				

* When rock coring, enter rock brokeness.

** Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Drilling Area Background (ppm): 0

Remarks:

Converted to Well: Yes V No _____ Well I.D. #: BPOW4-2