FOSTER WHEELER ENVIRONMENTAL CORPORATION

June 29, 2000
File #: 1284-0004-00-0259

JUL - 5

Mr. Steve Lehman, P.E. (Code 4022)
U.S. Navy Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, PA 19113-2090

SUBJECT: U.S. NAVY CONTRACT N62472-94-D-0398
DELIVERY ORDER NO. 0004
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
BETHPAGE, NEW YORK
MAY 2000 MONTHLY OPERATIONS SUMMARY

Dear Mr. Lehman:

This letter and its attachments document the operational activities performed during the period of 1 May 2000 through 31 May 2000 at the Bethpage NWIRP Soil Vapor Extraction/Air Sparging System and presents the results of the associated sampling events. Attachment 1 contains the Monthly Operations Summary, Attachment 2 summarizes Monthly Monitoring Data, and Attachment 3 contains a plot of the influent concentrations of the four constituents and total VOCs of concern over time.

The soil vapor extraction (SVE) system operated for approximately 744 hours. The average system extraction-rate at the blower was 272.5 scfm at a vacuum of 1.67 inches of water. An average influent VOC level of 2.75 ppm was drawn into the treatment system. Valves to EW-3 and EW-5 were closed on 23 May due to results from the vapor samples taken from the wellheads in April. The valves to EW-17 and EW-18 were opened from 50% to 100% on 5 May and the valves to EW-3 and EW-5 were closed from 100% to 0% due to results from extraction well headspace samples taken in April. After EW-17 and EW-18 were opened fully, the vacuum and flow dropped at almost every wellhead except EW-17 and EW-18. This is most likely due to the feet that two wells that were opened are shallow-screened wells and caused a "shortcircuiting" of the system by drawing more air through the shallow wells than the deep-screened wells. When the extraction wells EW-3 and EW-5 were closed the vacuum at each wellhead rose to previous or higher readings than at the beginning of the month and the flow increased slightly in most wells. Extraction well EW-16 had very low flow rates. This is most likely due to the wells' close proximity to EW-17 and the fact that EW-16 is a deep-screened well and that EW-17 is a shallow-screened well.

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The air sparging system (AS) operated for approximately 744 hours. The average injection rate for the system at the blower was 105 scfm @ 4.7 psig. This pressure is a 10 psig drop from the pressure maintained at the end of 1999. The injection system had a small leak that was observed and fixed on 23 May. The break in the injection system would explain the low readings obtained on 18 May. Injection wells IW-04 and IW-05 were turned off due to their location near extraction well EW-03 which was shut off. The pressure at all the wellheads decreased after the two injection wells were shut off and the flow varied either higher or lower depending on the extraction well. The flow rates at the injection wells at the southern portion of the site continue to be much lower than the injection wells at the northern portion of the site. The reason for this is unknown.

The maintenance activities performed for the month of April are documented in Attachment 1. Such maintenance activities include preventive maintenance of the blowers, changing of the air filters, and aesthetic maintenance of the site grounds. Trace amounts of moisture were detected in the extraction system piping at the beginning of this month with no water being observed near the end of the month. Water was found in some of the injection piping, but not at quantities seen previously.

The results of the extracted vapor sampling, which is conducted every other week, are presented in the Vapor Monitoring Table in Attachment 2. The data includes the list of contaminants and concentrations in the air stream. The concentrations of the four primary constituents of concern and the total quantity removed for the month of May 2000 and the total quantity removed are listed below:

Contaminant	May 2000 Average Daily Concentration (ppbv)	May 2000 Total Influent Flow (scfm)	May 2000 Removal (pounds)	Previous Removal (pounds)	Cumulative Removal (pounds)
1,1-Dichloroethane	0.00	272.5	0.00	3.35	3.35
Trichloroethene	812.5	272.5	3.41	67.43	70.85
Trichloroethane	540	272.5	2.23	117.56	119.79
Tetrachloroethene	2,395.5	272.5	12.18	286.56	298.74
Total VOCs	3,748		17.82	474.91	492.73

Attachment 2 also provides the total VOC concentrations from screenings at three sample locations using a photoionization detector. The pressure and vacuum readings at the injection and extraction wells respectively, the vacuum readings or smoke test results at the soil vapor pressure monitors, and the laboratory results of biweekly extracted vapor samples collected prior to the carbon units.

The results of the extracted vapor sampling are shown over time in Attachment 3. This graph shows that the concentrations of volatile organic compounds being pulled into the system decreased at first, but then increased for the month of May. This could be due to the closing of

selected valves. It is anticipated that if the system runs continuously and that there are more system enhancements that the compound concentrations will decrease.

Sincerely,

Marlene Lindhardt, CHMM
Delivery Order Manager

cc: J. Colter (Northdiv)
C. Davis (Northdiv)
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M. Helmset (NYSDEC) ✓
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ATTACHMENT 1
MONTHLY OPERATIONS SUMMARY
BETHPAGE NWIRP SOIL VAPOR EXTRACTION/ AIR SPARGING SYSTEM

May 2000

Bethpage NWIRP Soil Vapor Extraction and Air Sparging System
Monthly Operations Summary

Month: May 2000

Hours Operational	
Extraction System	744 hours
Injection System	744 hours
Average Extraction Rate (at blower)	272.5 scfm @ 1.67" Hg
Average Injection Rate (at blower)	113.75 scfm @ 2.75 psig
Average Influent VOC Level	2.75 ppm
Average Effluent VOC Level	0.225 ppm
Carbon Changeout	No
Condensate Volume Discharged	0 gallons
Vacuum Capture Confirmation	Yes
LEL% and O_2%	Normal

Operational Notes:

1) The soil vapor extraction system operated continuously though out the month with the exception of minor shutdowns due to maintenance activities.

2) Maintenance was performed on the blowers where the oil and filters were changed.

3) Trace amounts of moisture were observed in the extraction piping and significant quantities of water were observed in the injection piping.

4) Repaired PVC piping in Injection System.

5) Repaired vacuum gauge at Extraction Well EW-14

6) Placed mosquito donuts in standing water puddles.

ACTION ITEMS FOR NEXT MONTH

1) Observe vegetative growth and determine if it needs to be cut.

2) Replace ¼" plugs in extraction-system, as required.

3) Determine source of water in the injection piping.

4) Drain water/condensate from the extraction piping.

5) Replace/repair flat tire on 55-gallon drum dolly.

ATTACHMENT 2
TREATMENT PLANT DATA
BETHPAGE NWIRP SOIL VAPOR EXTRACTION/ AIR SPARGING SYSTEM

April 2000

NWIRP-BETHPAGE
Monthly Monitoring Data
System Operation

Date	B-01		B-02		VOC				LEL%	O_2%
	Vacuum ("Hg)	Flow (SCFM)	Pressure (psig)	Flow (SCFM)	Influent BV-18 (ppm)	Middle BV-32 (ppm)	Effluent BV-19 (ppm)	Background (ppm)		
05/05/2000	-	270	4.6	105	3.0	1.0	0.4	0.8	0.0	20.8
05/11/2000	1.5	270	4.0	90	3.5	0.5	0.0	0.0	0.0	20.5
05/18/2000	2.0	280	1.2	130	2.5	0.0	0.0	0.0	0.0	20.5
05/23/2000	1.5	270	1.2	130	2.0	0.0	0.5	0.5	0.0	20.5

Notes:
ND - Non-detected

NWIRP-BETHPAGE
Monthly Monitoring Data
Extraction Welll Operation

Date	EW-01			EW-02			EW-03			EW-04			EW-05		
	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O
05/05/2000	900	100	4.00	1100	100	4.50	1250	100	5.00	1000	100	4.50	10	100	3.50
05/11/2000	800	100	4.00	1000	100	3.50	1000	100	4.00	1000	100	4.50	40	100	2.00
05/18/2000	600	100	4.00	1000	100	5.00	0	0	0.00	1200	100	5.00	0	0	0.00
05/23/2000	500	100	4.00	1100	100	4.50	0	0	0.00	1250	100	4.50	0	0	0.00

Date	EW-06			EW-07			EW-08			EW-09			EW-10		
	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O
05/05/2000	1250	100	5.00	1000	100	4.50	1300	100	5.00	600	100	3.00	1100	100	3.00
05/11/2000	1200	100	4.00	1500	100	4.00	1100	100	4.00	750	100	2.50	1000	100	2.50
05/18/2000	1200	100	4.00	1200	100	5.00	1200	100	5.00	1000	100	4.00	1000	100	4.00
05/23/2000	1200	100	4.00	1500	100	4.50	1500	100	4.50	800	100	4.00	1000	100	4.00

Date	EW-11			EW-12			EW-13			EW-14			EW-15		
	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O
05/05/2000	1100	100	3.00	1000	100	3.00	800	100	3.00	600	100	3.00	750	100	3.50
05/11/2000	1000	100	2.00	800	100	3.00	700	100	2.50	500	100	2.00	800	100	2.50
05/18/2000	1000	100	3.00	500	100	3.00	500	100	3.00	600	100	3.00	1000	100	4.00
05/23/2000	1000	100	3.00	350	100	3.00	400	100	4.00	600	100	3.00	800	100	3.00

Date	EW-16			EW-17			EW-18		
	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O	Flow (ft/min)	Valve (%open)	Vacuum " H_2O
05/05/2000	20	100	4.00	1450	50	2.00	800	50	2.00
05/11/2000	110	100	2.50	>6000	100	2.50	>6000	100	3.00
05/18/2000	150	100	4.00	1300	100	4.00	800	100	4.00
05/23/2000	200	100	3.50	1500	100	3.50	1000	100	3.50

NWIRP-BETHPAGE
Monthly Monitoring Data
Injection Well Operation

Date	IW-01			IW-02			IW-03			IW-04		
	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)
05/05/2000	750	100	3.90	850	100	4.00	800	100	4.00	25	100	4.00
05/11/2000	500	100	3.70	300	100	3.70	150	100	3.60	30	100	3.70
05/18/2000	25	100	0.00	50	100	0.25	150	100	0.00	0	0	0.00
05/23/2000	250	100	3.60	500	100	3.60	175	3.8	0.00	0	0	0.00

Date	IW-05			IW-06			IW-07			IW-08		
	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)
05/05/2000	75	100	3.70	600	100	3.70	25	100	4.00	700	100	3.70
05/11/2000	30	100	3.50	1800	100	3.60	110	100	3.80	2500	100	3.50
05/18/2000	0	0	0.00	25	100	0.00	50	100	0.00	25	100	0.00
05/23/2000	0	0	0.00	1800	100	3.50	200	100	3.80	1800	100	3.40

Date	IW-09			IW-10			IW-11		
	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)	Flow (ft/min)	Valve (%open)	Pressure (psig)
05/05/2000	1500	100	3.80	600	100	4.00	400	1	4.00
05/11/2000	2000	100	3.80	1600	100	3.90	700	100	3.70
05/18/2000	25	100	0.00	100	100	0.00	50	100	0.00
05/23/2000	1800	100	3.80	1600	100	3.60	800	100	3.80

NWIRP-BETHPAGE
Monthly Monitoring Data
SVPM Operation

Date	SVPM-10		SVPM-10S		SVPM-11		SVPM-11S		SVPM-12		SVPM-12S	
	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)
05/05/2000	Pass	0.00	Pass	0.00	Fail	0.00	Pass	0.00	Pass	0.00	Pass	0.00
05/11/2000	Pass	0.00	Pass	0.00	Fail	0.00	Pass	0.00	Pass	0.00	Pass	0.00
05/18/2000	Pass	0.00	Pass	0.00	Fail	0.00	Pass	0.00	Pass	0.00	Pass	0.00
05/23/2000	Pass	0.00	Pass	0.00	Fail	0.00	Pass	0.00	Pass	0.00	Pass	0.00

Date	SVPM-13		SVPM-13S		SVPM-14		SVPM-14S		SVPM-15		SVPM-15S	
	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)	Smoke Test	Vacuum (" w.c.)
05/05/2000	Pass	0.00	Pass	0.00	Pass	1.20	Pass	0.00	Pass	0.66	Pass	0.00
05/11/2000	Pass	0.00	Pass	0.00	Pass	1.00	Pass	0.00	Pass	0.00	Pass	0.00
05/18/2000	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.00
05/23/2000	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.00	Pass	0.25

NWIRP-BETHPAGE
Monthly Monitoring Data
Vapor Monitoring

Parameter	Sampling Event		
	BLDG-18-050500 05/05/2000	EV-03051900 05/19/2000	
Freon 12			
Freon 114			
Chloromethane			
Vinyl Chloride			
Bromomethane			
Chloroethane			
Freon 11			
1,1-Dichloroethene			
Freon 113			
Methylene Chloride			
1,1-Dichloroethane			
cis-1,2-Dichloroethene	335	329	
Chloroform			
1,1,1-Trichloroethane	350	730	
Carbon Tetrachloride			
Benzene			
1,2-Dichloroethane			
Trichloroethene	691	934	
1,2-Dichloropropane			
cis-1,3-Dichloropropene			
Toluene			
trans-1,3-Dichloropropene			
1,1,2-Trichloroethane			
Tetrachloroethene	2,116	2,675	
Ethylene Dibromide			
Chlorobenzene			
Ethyl Benzene			
m+p-Xylene			
o-Xylene			
Styrene			
1,1,1,2-Tetrachloroethane			
1,3,5-Trimethylbenzene			
1,2,4-Trimethylbenzene			
1,3-Dichlorobenzene			
1,4-Dichlorobenzene			
Chlorotoluene			
1,2-Dichlorobenzene			
1,2,4-Trichlorobenzene			
Hexachlorobutadiene			
Propylene			
1,3-Butadiene			
Acetone			
Carbon Disulfide			
2-Propanol			
Trans-1,2-Dichloroethene			

NWIRP-BETHPAGE
Monthly Monitoring Data
Vapor Monitoring

Parameter	Sampling Event		
	BLDG-18-050500 05/05/2000	EV-03051900 05/19/2000	
Vinyl Acetate			
2-Butanone (Methyl Ethyl Ketone)			
Hexane			
Tetrahydrofuran			
Cyclohexane			
1,4-Dioxane			
Bromodichloromethane			
4-Methyl-2-pentanone			
2-Hexanone			
Dibromochloromethane			
Bromoform			
4-Ethyltoluene			
Ethanol			
Methyl tertiary butyl ether			
Heptane			
Total VOCs	3,492.0	4,668.0	0.0

Notes:

1) All results are expressed in parts per billion volume (ppbv).

2) A blank indicates that the compound was not detected.

ATTACHMENT 3
EXTRACTED VAPOR CONSTITUENTS OF CONCERN
BETHPAGE NWIRP SOIL VAPOR EXTRACTION/ AIR SPARGING SYSTEM

April 2000

BETHPAGE

		Compound				
Sampling Event	Date	1,1-Dichloroethane	Trichloroethene	Trichloroethane	Tetrachloroethene	Total VOCs
EV-01	06/30/1998		3,900	8,400	12,000	25,740
EV-02	07/02/1998		3,200	6,500	10,000	20,720
EV-03	07/07/1998		2,500	6,400	9,200	19,010
EV-04	07/09/1998		2,400	6,500	9,400	19,230
EV-05	07/14/1998	190	2,200	5,300	8,700	24,897
EV-06	07/17/1998	180	2,300	5,300	9,200	25,406
EV-07	07/21/1998	58	1,900	4,400	7,800	23,175
EV-08	07/23/1998	150	2,000	4,600	7,900	23,779
EV-09	07/28/1998	17	87	170	460	4,979
EV-10	07/30/1998	83	1,400	3,600	5,700	12,001
EV-11	08/03/1998	150	1,400	2,200	4,600	13,267
EV-12	08/05/1998	0	0	0	0	102
EV-13	08/11/1998	110	1,200	2,200	4,200	9,235
EV-14	08/13/1998	100	1,200	2,200	4,200	8,705
EV-15	08/18/1998	100	1,200	3,000	4,400	9,585
EV-16	08/20/1998	110	1,300	2,000	4,100	7,959
EV-17	08/24/1998	130	1,300	1,300	4,200	12,978
EV-18	08/27/1998	100	1,200	1,500	3,700	6,878
EV-19	09/01/1998	190	1,300	2,400	4,600	8,911
EV-20	09/03/1998	170	1,300	2,600	4,100	11,374
EV-21	09/22/1998	130	1,500	4,100	4,800	11,263
EV-22	09/25/1998	180	1,300	3,400	4,100	9,396
EV-23	09/29/1998	150	1,200	3,400	4,000	9,471
EV-24	10/06/1998	140	1,100	3,400	3,600	9,100
EV-25	10/13/1998	120	1,200	3,200	4,200	9,141
EV-26	10/27/1998	180	1,700	4,200	5,900	12,470
EV-27	11/12/1998	160	1,800	4,900	6,400	14,869
EV-28	11/24/1998	130	1,400	3,800	4,300	10,434
EV-29	12/08/1998	170	1,800	5,900	5,800	14,278
EV-01	03/23/1999	170	1,200	2,200	6,800	11,500
EV-02	03/31/1999	56	990	1,300	5,700	8,939
EV-03	04/07/1999	47	950	1,500	2,600	5,679
EV-04	04/20/1999	42	730	1,300	2,300	5,014
EV-05	05/07/1999	32	530	840	1,700	3,408
EV-06	05/19/1999	2	33	40	130	214
EV-07	06/09/1999	70	837	1,080	3,120	5,463
EV-08	06/21/1999	68	791	1,150	2,780	5,096
EV-09	06/29/1999	0	921	934	3,050	4,905
EV-10	07/13/1999	43	691	664	2,070	3,468
EV-11	07/30/1999	0	1,070	1,160	3,010	5,240
EV-12	08/10/1999	41	637	814	1,330	2,886
EV-13	08/26/1999	0	526	714	1,010	2,250
EV-14	09/08/1999	0	977	1,134	1,989	4,100
EV-15	09/20/1999	0	94	51	191	336
EV-16	10/06/1999	0	30	0	58	88

EV-17	10/19/1999	0	1,146	802	2,952	4,900
EV-18	11/03/1999	0	1,573	1,161	4,753	7,487
EV-19	11/16/1999	0	691	725	2,823	7,691
EV-20	12/03/1999	0	617	575	2,188	3,380
EV-21	12/16/1999	0	742	441	2,424	3,607
EV-22	12/28/1999	0	456	323	2,108	2,887
EV-01	04/18/2000	0	1,459	818	4,362	6,639
EV-02	05/05/2000	0	691	350	2,116	3,157
EV-03	05/19/2000	0	934	730	2,675	4,668