RETURN TO 1998 ROD AR INDEX

7.2d

Perland Memorandum

New Bedford Harbor Hot Spot Field Office

Superfund Records Center
SITE: NEW BEDFORD
BREAK: 7.2
OTHER: 46726

TO: Mark Pelson **DATE:** 08/16/94

FROM: Michael A. Grasso, CIH

RE: CDF

On July 25 and 26, 1994 a composite sample of dredge material and supernate were collected from CDF cell number 1. The composite consisted of twelve random samples collected at various locations in the north quadrant of cell 1.

The purpose of the sampling was to determine the chemical composition of the dredged material in the CDF and to evaluate any potential health hazard the material may present to site personnel.

The samples of dredge material was analyzed for:

Metals EPA Method 6010
PCBs EPA Method 8080
Semi Volatile Organic Compounds EPA Method 8270 plus Tentatively Identified Compounds (TICS)
Volatile Organic Compounds EPA Method 8240 (VOC) plus Tentatively Identified Compound (TICS)
Oil and Grease EPA Method 9071
Petroleum Hydrocarbons EPA Method 418.1
Total Organic Carbon (TOC)

The samples of supernate were analyzed for:

Biological Oxygen Demand (BOD)
Chemical Oxygen Demand (COD)
Coliform, Total and fecal

The results of the analytical test performed on the dredged material and supernate can be found in Attachment A.

The results of the sampling indicates that the sediments primary contaminant is PCBs, at a concentration of 33,400 ppm. The dredge material was also found to contain high concentrations of oil and grease(81,00 ppm) and petroleum hydrocarbons (4,900 ppm).

SDMS DocID 46726

The total organic carbons in the dredged material is 110,000 ppm which is characteristic of river sediments. As expected the concentration of copper was elevated 180 ppm and the concentration of lead in the material was 200 ppm. The dredged material was also found to contain reactive sulfide at 160 ppm which is a characteristic of sediment. The dredged material did not contain semi volatile organic compounds or TICs at or above their quantitation limit.

The following volatile organic compounds have been identified in the sediment:

1,2 - dichloroethene	67 ppm
Vinyl Chloride	9.00 ppm
Toluene	0.17 ppm
Ethylbenzene	0.15 ppm
Xylene total	0.39 ppm

It is assumed that 1,2-dichloroethene and vinyl chloride are indices of anaerobic decomposition of halogenated hydrocarbons and organic material.

The dredged material was also found to contain several known and unknown VOC -TICs. The known TICs are as follows:

1,4-dichlorobenzene	1.4 ppm
1,2-dichlorobenzene	4.7 ppm

The dichlorobenzenes are common environmental contaminants. The unknown alkanes found in the dredged material may be indicators of anaerobic decomposition of organic material.

The supernate sample represents water that lies above the dredged material and below the floating cover. The BOD of the supernate is 180 ppm. For comparison, the BOD of typical domestic waste water is 175 ppm. The COD of the supernate is at 850 ppm is comparable to a strong domestic wastewater. The supernate was found to contain total and fecal coliform bacteria which is characteristic of surface water that is influenced by humans and animal waste. As noted during collection of the supernate an oil sheen existed on the surface of the sample.

The majority of the dredge material in CDF 1 has come from Area G of the Acushnet River. Area G represents the highest concentrations of PCBs in the river. As additional dredged material is placed in the CDF in will settle over or mix with the material present in the cell.

Based on these sample results, the dredged material exists in an anaerobic state as it did prior to dredging. The dredged material has the potential to release methane, carbon dioxide, hydrogen sulfide and vinyl chloride gases to the water column. The dredged material when disturbed has the potential to also release oil, grease and light hydrocarbons into the water column. These products also can influence the transfer of PCBs into the water column. The floating cover prevents ultra violet light from influencing the water column and the underlying dredged material.

The dredged material appears to pose one hazard that was not addressed in the site specific health and safety plan. As indicated by the sample results, the dredged material contains vinyl chloride. It is assumed that the vinyl chloride may have entered the sediment from anaerobic decomposition of halogenated hydrocarbons and organic material including any plastics that may have been disposed of in the river. The 1,2-dichloroethene, sulfides and dichlorobenzene compounds, vinyl chloride and petroleum hydrocarbons may contribute to the transient odor that is associated with the dredged material. It should be noted that the presences of these compounds in the sediment does not necessarily mean that they can be transported into the ambient air at concentrations above the OSHA permissible exposure level.

The transport of the above mentioned dredged material contaminant into the ambient air within CDF 1 is limited by their low concentrations in the sediment, the overlying water and the floating cover. The transport of the contaminant during dredging is controlled by the cover over the cutter head and, to some extent by, the water column. Ambient air samples collected on the dredge indicate the occasional presence of gases and vapors that have ionization potential below the value of the photoionization detector. These ionizable gases and vapors may originate from the gas bubbles being released from the sediment as the dredge swings to a new cut.

The use of respiratory protection will be required for a cover event and while working on the dredge. Supplemental industrial hygiene sampling for vinyl chloride will be implemented. Dermal protection is required when contact is anticipated with the dredged material or supernate.

To ensure the compatibility of the HDPE CDF liner and floating cover with the sediment and supernate it is recommended that a compatibility test (EPA Test Method 9090) be conducted.

ATTACHMENT A

Inchcape Testing Services
Aquatec Laboratories

Laboratory Locations
53 South Park Drive
Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

Perland Environmental
Technologies, Inc.
103 Sawyer Street
New Bedford, MA 02746

Attention : Charles Barbanti

Date : 08/11/94
ETR Number : 25303
Project No.: 94800
No. Samples: 2
Arrived : 07/26/94
P.O. Number: 120-158

Page 1

Project: New Bedford Hot Spot

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
25303-1	CDF1:07/26/94 @1430(WATER)	
405.1	BOD5	180
410.1	Chemical Oxygen Demand	850
9221B	Coliform,Total(col/100ml)	420
9221C	Coliform,Fecal(col/100ml)	120
25303-2	CDF1:07/25/94 @1500(SLUDGE)	
9071	Oil/Grease	8100 f
418.1	Petroleum Hydrocarbons	4,900 f
IN703	Reactive Sulfide	160 e
6010	Cadmium, Total	2.5 f
6010	Chromium, Total	55 f
6010	Copper, Total	180 f
6010	Lead, Total	200 f
IN623	% Solids	67.2 c
SUBOUT	Total Organic Carbon	110000 f

Comments/Notes

f = mg/Kg dry weight
e = mg/Kg as received
c = %

Aquatec Inc.

Inchcape Testing Services
Aquatec Laboratories

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Colchester, VT 05446

75 Green Mountain Drive
South Burlington, VT 05403

150 Herman Melville Boulevard
New Bedford, MA 02740

Analytical Report

EPA METHOD 8080
PCB'S

CLIENT: PERLAND ENVIROMENTAL TECHNOLOGIES, Inc.
ETR: 25303

PROJECT: NEW BEBFORD HOT SPOT
DATE COLLECTED: 7/25/94
DATE EXTRACTED: 7/26/94
DATE ANALYZED: 7/28/94
LAB ID: 25303-2
SAMPLE ID: CDF1

Parameter	Concentration in ug/kg dry weight
Aroclor 1016	BDL(1)
Aroclor 1242	6,600,000
Aroclor 1221	BDL
Aroclor 1232	BDL
Aroclor 1248	BDL
Aroclor 1254	26,800,000
Aroclor 1260	BDL

Surrogate	% Recovery
TMX	DL
DC8	DL

(1) BDL = Below Detection Limit
DL - DILUTED OUT

Detection Limit : 200 ug/kg
Percent Solid: 52%
Wet Weight (Grams): 6.61
Dry Weight (Grams): 3.4

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New Bedford, MA 02740

Analytical Report

EPA METHOD 8080
PCB'S

EXTRACTION BLANK

CLIENT: PERLAND ENVIROMENTAL TECHNOLOGIES, Inc.
ETR: 25303

PROJECT: NEW BEBFORD HOT SPOT
DATE EXTRACTED: 7/26/94
DATE ANALYZED: 7/27/94

Parameter	Concentration in ug/kg dry weight
Aroclor 1016	BDL (1)
Aroclor 1242	BDL
Aroclor 1221	BDL
Aroclor 1232	BDL
Aroclor 1248	BDL
Aroclor 1254	BDL
Aroclor 1260	BDL

Surrogate	% Recovery
TMX	73%
DCB	73%

(1) BDL = Below Detection Limit

Detection Limit : 200ug/kg

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New Bedford, MA 02740

Analytical Report

PCB'S
BLANK SPIKE/BLANK SPIKE DUPLICATE DATA
CLIENT: Perland Environmental Technologies, Inc.
ETR: 25303

PROJECT: New Bedford Hot Spot
DATE EXTRACTED: 7/26/94
DATE ANALYZED: 7/27/94

	BLANK SPIKE		BLANK SPIKE DUPLICATE		
Parameter	ug/kg dry weight	% REC	ug/kg dry weight	% REC	%RPD
Aroclor 1248	4799	96.0	3885	77.7	21.1

Spike Concentration: 5000 ug/kg

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Aquatec Laboratories

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Analytical Report

Client : Perland Environmental
Project: New Bedford Hot Spot

Date Received: 7/26/94
Collected by: Client

ETR No. : 25303

Date Extracted : 7/29/94
Date Analyzed : 8/01/94
Analyzed By : ZLC
Dilution Factor: 25

Sample ID: 25303-2; CDF1 collected 7/25/94 @ 1500.

Semi Volatile Organic Compounds in µg/Kg (dry weight)
EPA Method 8270

Phenol	8200 U	3-Nitroaniline	42000 U
bis(2-Chloroethyl)Ether	8200 U	Acenaphthene	8200 U
2-Chlorophenol	8200 U	2,4-Dinitrophenol	42000 U
1,3-Dichlorobenzene	8200 U	4-Nitrophenol	42000 U
1,4-Dichlorobenzene	8200 U	Dibenzofuran	8200 U
Benzyl Alcohol	8200 U	2,4-Dinitrotoluene	8200 U
1,2-Dichlorobenzene	8200 U	Diethylphthalate	8200 U
2-Methylphenol	8200 U	4-Chlorophenyl-phenylether	8200 U
bis(2-chloroisopropyl)ether	8200 U	Fluorene	8200 U
4-Methylphenol	8200 U	4-Nitroaniline	42000 U
N-Nitroso-Di-n-propylamine	8200 U	4,6-Dinitro-2-methylphenol	42000 U
Hexachloroethane	8200 U	N-Nitrosodiphenylamine	8200 U
Nitrobenzene	8200 U	4-Bromophenyl-phenylether	8200 U
Isophorone	8200 U	Hexachlorobenzene	8200 U
2-Nitrophenol	8200 U	Pentachlorophenol	42000 U
2,4-Dimethylphenol	8200 U	Phenanthrene	88 J
bis(2-Chloroethoxy)methane	8200 U	Anthracene	8200 U
2,4-Dichlorophenol	8200 U	Di-n-butylphthalate	8200 U
1,2,4-Trichlorobenzene	380 J	Fluoranthene	80 J
Naphthalene	8200 U	Pyrene	79 J
4-Chloroaniline	8200 U	Butylbenzylphthalate	8200 U
Hexachlorobutadiene	8200 U	Benzo(a)anthracene	32 J
4-Chloro-3-methylphenol	8200 U	Chrysene	43 J
2-Methylnaphthalene	8200 U	bis(2-Ethylhexyl)phthalate	57 J
Hexachlorocyclopentadiene	8200 U	Di-n-octylphthalate	8200 U
2,4,6-Trichlorophenol	8200 U	Benzo(b)fluoranthene	8200 U
2,4,5-Trichlorophenol	42000 U	Benzo(k)fluoranthene	8200 U
2-Chloronaphthalene	8200 U	Benzo(a)pyrene	8200 U
2-Nitroaniline	42000 U	Indeno(1,2,3-cd)pyrene	8200 U
Dimethylphthalate	8200 U	Dibenzo(a,h)anthrcene	8200 U
Acenaphthylene	8200 U	Benzo(g,h,i)perylene	8200 U
2,6-Dinitrotoluene	8200 U		

Key to the letters used to qualify the results of analyses:

U : Analyzed for but not detected
J : Estimated value, below quantitation limit

Method 8240

TENTATIVELY IDENTIFIED COMPOUND SUMMARY

Sample 25303-2(H3I ID 941691-1) H3970

Retention Time:	Identification:	Concentration: ug/kg
4.04 min	Air peak	32
19.57 min	Unknown Alkane	270
19.85 min	.alpha.-Pinene	420
20.88 min	Unknown Alkane	460
21.46 min	4-methyldecane	340
22.15 min	Unknown	180
22.27 min	Unknown	190
22.41 min	1,4-dichlorobenzene	1400
22.59 min	1,2-dichlorobenzene	4700
23.21 min	Unknown Alkane	740
23.63 min	Unknown	230
24.44 min	Unknown alkane with coelution with another compound	420

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Aquatec Laboratories

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Analytical Report

Client : Perland Environmental
Project: New Bedford Hot Spot

ETR No. : 25303

Date Received: 7/26/94
Collected by: Client

Date Analyzed : 7/26/94
Analyzed By : E3I

Sample ID: 25303-2; CDF1 collected 7/25/94 @ 1500.

Volatile Organic Compounds in ug/Kg (dry weight)
EPA Method 8240

Chloromethane	85 U
Bromomethane	85 U
Vinyl Chloride	9000
Chloroethane	85 U
Methylene Chloride	18 JB
Acetone	45 JB
Carbon Disulfide	11 J
1,1-Dichloroethene	53 J
1,1-Dichloroethane	85 U
1,2-Dichloroethene (total)	67000
Chloroform	85 U
2-Butanone	85 U
1,2-Dichloroethane	85 U
1,1,1-Trichloroethane	85 U
Carbon Tetrachloride	85 U
Vinyl Acetate	85 U
Bromodichloromethane	85 U
1,2 Dichloropropane	85 U
Cis-1,3-Dichloropropene	85 U
Trichloroethene	20 J
Dibromochloromethane	85 U
1,1,2-Trichloroethane	85 U
Benzene	85 U
trans-1,3-Dichloropropene	85 U
Bromoform	85 U
4-Methyl-2-pentanone	85 U
2-Hexanone	85 U
Tetrachloroethene	75 J
1,1,2,2-Tetrachloroethane	19 JB
Toluene	170
Chlorobenzene	15 J
Ethylbenzene	150
Styrene	85 U
Xylene (total)	390

Key to the letters used to qualify the results of the analysis:

U - Analyzed for but not detected.
B - Found in associated laboratory blank as well as sample.
J - Estimated value, below quantitation limit.

Vinyl Chloride and 1,2 D-chloroethene were analyzed at a 1 to 125 dilution.

SAMPLE NO.

CDF1

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: Inchcape Testing Services

Project No.: Perlan

Matrix: (soil/water) SOIL

Sample wt/vol: 30.0 (g/mL) g

Level: (low/med) LOW

% Solid: 67.2

Concentrated Extract Volume: 1000 (uL)

Injection Volume: 1.0 (uL)

Lab Sample ID: 25303-2

Lab File ID: A0801011.D

Date Received: 7/26/94

Date Extracted: 7/29/94

Date Analyzed: 8/1/94

Dilution Factor: 25.0

Concentration Units: (ug/L or ug/Kg) ug/Kg

Number TICs Reported: 20

CAS Number	Compound Name	RT	Est. Conc.	Q
1.	Dichlorobiphenyl isomer	14.82	9900	J
2.	Dichlorobiphenyl isomer	14.94	37200	J
3. 55720-40-6	Naphthalene, 2,3,6-trichloro	15.32	18200	J
4.	Trichlorobiphenyl isomer	16.09	18600	J
5.	Trichlorobiphenyl isomer	16.55	27900	J
6.	Trichlorobiphenyl isomer	16.59	27900	J
7.	Trichlorobiphenyl isomer	16.75	24200	J
8.	Trichlorobiphenyl isomer	16.88	14500	J
9.	Tetrachlorobiphenyl isomer	17.24	15400	J
10.	Tetrachlorobiphenyl isomer	17.53	18600	J
11.	Trichlorobiphenyl isomer	17.61	11700	J
12.	Tetrachlorobiphenyl isomer	17.74	14300	J
13.	Tetrachlorobiphenyl isomer	18.19	20500	J
14.	Tetrachlorobiphenyl isomer	18.54	16700	J
15.	Pentachlorobiphenyl isomer	18.63	33500	J
16.	Pentachlorobiphenyl isomer	18.71	12800	J
17.	Pentachlorobiphenyl isomer	19.24	29800	J
18.	Pentachlorobiphenyl isomer	19.65	26000	J
19.	Hexachlorobiphenyl isomer	19.99	10800	J
20.	Hexachlorobiphenyl isomer	20.44	16900	J

FORM I SV-TIC