M.I. HOLDINGS INC.
223 West Side Ave., Jersey City, New Jersey 07305, [illegible]

June 17, 1993

Mr. Scott A. Weiner, Commissioner
New Jersey Department of Environmental Protection and Energy
401 East State Street, 7th Floor
Trenton, New Jersey 08625

Re: NJDEPE Voluntary Site Remediation Program
M.I. Holdings, Inc.
223 West Side Avenue
Jersey City, NJ 07305

Dear Mr. Weiner:

The purpose of this letter is two fold, 1) To enthusiastically report to you that the NJDEPE voluntary site remediation program is a success and 2) To seek your guidance, given this success, as to how we might now proceed with a more streamlined ECRA review submittal so as to avoid the possibility of and duplicate efforts and costly delays, given the negative historical perception of ECRA as a site remediation process.

M.I. Holdings executed a Memorandum of Agreement (MOA) with NJDEPE in October, 1992 to begin NJDEPE oversight of the cleanup of M.I. Holdings' Jersey City, New Jersey facility. Our properties are comprised of 11.65 acres of land which are divided into three separate parcels of land. Among the submittals to NJDEPE shortly after the execution of the MOA was a report on the cleanup (at risk) of the eastern portion of the above referenced facility. The cleanup activities on this portion of our properties included the excavation and off-site disposal of over 2,000 tons of mercury contaminated soils. As a result, these properties have been rezoned by the City of Jersey City to accommodate recreational activities and are presently leased to the Jersey City State College.

NJDEPE's review of that report, as well as the oversight of on-going remedial activities for the western portion of the facility, has been conducted by NJDEPE's West Orange, New Jersey field office. The support from the West Orange office has been excellent. The NJDEPE oversight manager is Mr. Gary Greulich, a Senior Environmental Specialist in the West Orange office. Mr. Greulich's responsiveness to our needs has kept the project on schedule and a letter of no further action (for the eastern portion of the facility) was issued by NJDEPE to M.I. Holdings, Inc. on May 17, 1993 (copy attached).

Considering the large amount of data to be reviewed, NJDEPE's timely decision on the cleanup of this site is a success story. The cooperation we received from NJDEPE to bring this project to completion has allowed M.I. Holdings to now consider selling that portion of the Jersey City facility to the Jersey City State College. It is my understanding that such a sale of former industrial property would trigger the ECRA process. A preliminary phone call to the ECRA information line in NJDEPE's Trenton office indicated that the sale of the property would necessitate the filing of the ECRA Initial Notice Review forms. The representative on the information line also indicated that additional sampling and/or remediation of the site is not necessary due to the successful completion of the voluntary cleanup.

M.I. Holdings is concerned that the triggering of the ECRA process might lead to either miscommunication or disagreement within the various NJDEPE elements on the completeness and results of this voluntary cleanup. If that were to happen, it would significantly undermine the voluntary cleanup program. In many instances, clients are desirous of cleaning up property prior to sale in order to factor in the real price and eliminate the uncertainties of cleanup cost. This thought is also contained in your June 1992 Description of the Program at Page 2. We certainly hope that the NJDEPE's voluntary site remediation program will be a way to further streamline the newly enacted ISRA legislation which was signed by Governor Florio on June 16. This new legislation, which replaces ECRA, is more consistent with other regulatory programs and clearly the voluntary cleanup program is far more responsive that the former ECRA process has been. Accordingly, I would appreciate your feedback on how we may now proceed in a manner that will avoid the potential for duplication of efforts regarding the voluntary site cleanup and the newly enacted ISRA process.

Very truly yours,

W. Fred Robinson
Vice President and General Manager

cc: G. Greulich (NJDEPE, West Orange)
B. Van Fossen (NJDEPE, West Orange)
W. Lyon
J. Klock

Document No. 5
Confidential Business Information

Report

Preliminary Site Characterization
M.I. Holdings' Jersey City Facility

Volume 1

Prepared for

M.I. Holdings, Inc.

223 Westside Avenue
Jersey City, New Jersey

Prepared by

AWD TECHNOLOGIES, INC.

710 Route 46 East Suite 401
Fairfield, New Jersey 07006

10 December 1987

AWD TECHNOLOGIES

BAF000001

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1.0 INTRODUCTION

This report summarizes preliminary site characterization activities performed by AWD Technologies, Inc. at M.I. Holdings' facility in Jersey City, New Jersey. The objective of this preliminary investigation was an initial evaluation of soil and groundwater conditions at the site. Field investigations began on June 29, 1987 and included the installation of monitoring wells, and the chemical analysis of soil and groundwater samples.

2.0 BACKGROUND INFORMATION

The M.I. Holdings facility in Jersey City is located between West Side Avenue and Route 440 near Carbon Place. The surrounding area is a combination of industrial and mixed residential use. The facility consists of 22 buildings that occupy approximately 11 acres. A variety of chemical products were produced continuously at the site for approximately 90 years.

Mercury products were manufactured at this facility until 1977. In 1977 production of all products, except Flowco(R) (calcium stearate), was discontinued.

2.1 Geology

The bedrock beneath the M.I. Holdings site is the Triassic Newark Formation which consists of red sandstones and shale with occasional layers of conglomerate. To the east of the property, the Triassic Palisade Diabase forms a linear hill that extends the entire length of Jersey City and eventually emerges to the north along the Hudson River.

The actual depth to bedrock at this site is unknown. Lovegreen (1974) estimates that the depth to bedrock in this area is 160 ft to 200 ft. The slope of the bedrock surface beneath the site generally dips from east to west.

Bedrock is overlain by stratified glacial drift and fluvial deposits that consist of reddish brown silty sand.

2.2 Hydrogeology

Review of local geography suggests that groundwater probably flows east to west across the site from the topographic high of the Palisade Diabase towards the Hackensack Meadows.

3.0 FIELD INVESTIGATIONS

3.1 Soil Borings and Monitoring Well Installation

Three pairs of clustered monitor wells were installed between June 29, 1987 and July 7, 1987. Each cluster consists of one shallow and one deep 4-in. O.D. PVC well. Shallow monitoring wells are screened in the unconfined aquifer, and are generally completed 10 ft below grade. Deep wells were installed to a maximum depth of 50 ft. Well construction details are summarized on Table 1.

Figure 1 shows the location of the three well clusters installed by AWD Technologies at the plant. MW-1A and MW-1B were installed in the northeast corner of the property and were expected to be on the upgradient side of the property. Clusters MW-2A, MW-2B and MW-3A, MW-3B were installed along the western edge of the property and were expected to be on the downgradient side of the property. The

elevation of the wells was surveyed to the nearest 0.01-ft by Howard F. Greenspan Associates, a New Jersey licensed surveyor.

Drilling was performed by the Eastern Drilling Company of Woodbury Heights, New Jersey using a George E. Failing 1250 Holemaster rig. The drilling was inspected in the field by a geologist, Mr. Paul Kareth, who also prepared the boring logs and monitor well installation reports. Water rotary techniques and drag bits were used to advance the boreholes, except where sediment characteristics required the use of drilling mud to maintain an open hole. Specifically, mud was used during the first 14 ft of drilling at MW-1B and throughout the drilling of MW-3B where fluid loss dictated the use of mud to maintain an open hole. Split-spoon soil samples were collected during well installation. Continuous samples were collected to the top of the water table, and at 5-ft intervals thereafter.

Throughout the drilling, air quality was monitored with an HNU (11.7 EV probe) and a mercury vapor analyzer both at the borehole and in the breathing zone.

All monitor wells were completed using 4 in. diameter flush threaded PVC casing and .020-in. machine-slotted, 4-in.-diameter PVC screens. Five feet of screen was installed in shallow wells, and 10 feet in deep wells. A filter pack consisting of No. 1 Jesse Morie Sand and was placed 1 ft to 2 ft above the top of the screen. This was followed by a 2-ft thick layer of bentonite pellets. The remaining annular space was filled with a cement/bentonite slurry. Monitor well details are shown on Figure 2.

A relatively impermeable soil layer was encountered 11 ft below grade in MW-1B. This boring was reamed to 12-in.-diameter and an 8-in.-diameter steel outer casing was set to a depth of 14 ft (i.e.,

3 ft below the top of the relatively impervious soil layer). The annular space between the borehole and casing was filled with a cement/bentonite slurry and allowed to set overnight before drilling continued.

Split-spoon samples were collected during the drilling of monitor wells MW-1B, MW-2B and MW-3A. The samples were collected continuously to the top of the water table in the shallow wells and at 5-ft intervals below the water table in the three deep monitor wells MW-1B, MW-2B, MW-3B.

Soils were examined in the field for evidence of contamination by visual inspection and head space analysis with an HNU and a mercury vapor meter. There were no indications in the field that any of the soils collected contained contaminants. In the absence of field evidence, the soil sample collected from immediately above the water table was selected for laboratory analysis.

Descriptions of the soils encountered during drilling are presented on the boring logs included in Appendix A. Appendix B contains monitoring well installation reports.

3.2 Monitoring Well Development

Monitoring wells were developed as each cluster was completed. MW-1A and MW-1B were developed with air, whereas the other four wells were developed using a submersible pump. A steady flow rate was maintained in MW-2B and MW-3B during development. MW-2A and MW-3A were pumped dry several times during development because the minimum pump rate of 5 GPM resulted in evacuation of the casing.

Each well was developed for 30 to 45 minutes or until a silt free discharge was achieved. A silt-free discharge could not be obtained from MW-3A due to the slow recharge of that well.

3.3 Groundwater Sampling

Groundwater samples were collected from all of the monitoring wells on three occasions: July 27 and 28, 1987; September 23, 1987; and October 16, 1987.

The first round of samples consisted of unfiltered samples analyzed for priority pollutants plus a library search for 40 additional tentatively identified compounds. Filtered groundwater samples were collected and analyzed for priority pollutant metals during the next two rounds. Filtered samples were collected to evaluate the influence of suspended particles on the analytical results for metals.

Laboratory analyses were performed by YWC, Inc., of Monroe, CT and Whippany, NJ. YWCI is a NJDEP certified laboratory.

The protocols used to collect soil and groundwater samples at this site were consistent with NJDEP guidance contained in the Draft ECRA Sampling Plan Guide dated 6 June 1986, and the field sampling procedures manual of June 1986. Laboratory analyses were reported at NJDEP's Tier II QA level.

A decontamination area was established to clean purging equipment between monitoring wells. Plastic sheeting was laid out to prevent sampling equipment from contacting the ground. Alconox soap and potable water were used to clean sampling equipment between wells.

The three deep wells (MW-1B, MW-2B and MW-3B) were purged of a minimum three casing volumes of water using a submersible pump. Alconox and potable water were used to wash the pump. Approximately 30 gallons of potable water were flushed through the pump after purging each monitor well.

The three shallow wells (MW-1A, MW-2A and MW-3A) were purged using a centrifugal pump and dedicated black PVC hose. The shallow wells were pumped dry and allowed to recharge for 2 hours, and then pumped dry a second time before sampling.

Each well was sampled with a laboratory-cleaned, dedicated bailer constructed of stainless steel tubing with teflon check valves.

The volatile organic vials were filled first. The remaining containers were filled in rotation to avoid developing a stratified sample. Samples were not filtered in the field during the first sampling event. Consequently, the measured concentration of metals included both dissolved metals and metals attached to particulates in the sample. Subsequent samples submitted to the laboratory for metals analysis were filtered in the field using a 40 micron millipore filter.

A field blank was collected each day by pouring laboratory-supplied distilled water into a clean bailer, and then transferring the water to the appropriate containers. A trip blank also accompanied each day's samples, when analysis included volatile organic compounds (VOCs).

All samples were transported directly to York Laboratories in Whippany, New Jersey at the end of each day. Chain-of-custody was

maintained throughout the sampling period, and is documented in the laboratory reports included in Appendix C. This Appendix is bound separately, and divided into two parts, because of its size.

4.0 DATA ANALYSIS AND RESULTS

4.1 Site Geology

Information included on boring logs (Appendix A) indicates that the site is underlain by approximately 10 ft of man-made fill which overlies at least 50 ft of natural soil deposits. The fill consists mainly of sand with some construction debris. The fill on the eastern side of the site overlies reddish brown silty sands of glacial or fluvial origin. A layer of peat and organic silt was encountered at a depth of 8 ft to 10 ft, indicating that the Hackensack Meadows probably extended onto the site along the western boundary of the site. The eastern extent of the marshland is unknown. Reddish brown silty sands were encountered below the marsh deposit.

The soil borings were terminated at a maximum depth of 50 ft. Bedrock was not encountered in any of the borings.

4.2 Site Hydrology

Water level measurements (Table 2) were used to estimate groundwater flow patterns at the site. Static water level measurements from shallow and deep wells indicate that at least two water bearing zones are present beneath the site. The upper water bearing zone is under water table conditions, and groundwater is generally encountered within 10 ft of the ground surface. The deeper water bearing zone occurs under confined or semi-confined conditions, and at the western end of the property is separated from the shallow zone by the marsh deposits.

Groundwater elevations in shallow wells are uniformly higher than the deeper wells (Figure 1). The differences in water elevations between shallow and deep wells indicate a potential for downward vertical movement of groundwater.

Plant north is defined on Figure 1 and our discussions of flow directions are referenced to plant north. The water level data are insufficient to develop a contour map of the piezometric surface due to the limited number of observation points. In general, water level measurements from both the shallow and deep monitor wells indicate that groundwater flows predominately from east to west across the site. A maximum gradient was calculated based on water elevations at the three well cluster locations. The maximum calculated gradient for the shallow water-bearing zone was 0.009 and the maximum gradient for the deep zone was 0.007. The components of gradient in the north-south and east-west directions, and the direction of flow are as follows:

	Gradient, Flow Direction	
	East-West	North-South
Shallow wells	.008W	.003N
Deeper wells	.006W	.002S

It should be emphasized that these calculated gradients provide only a general indication of the direction of groundwater flow. Water level observations at three points are the minimum number required to define the general direction of flow, and assume that the water table is a flat plane. This is most likely an oversimplification of actual conditions in the field.

4.3 Results of Chemical Analyais

Measurements of pH, electrical conductivity and temperature were obtained in the field at the time of groundwater sampling. The results of these measurements are shown in Table 2. The pH at monitor well cluster 3 is quite high (about 10 and 11) in both the shallow and deep wells. The pH at monitor well clusters 1 and 2 is about neutral (6.5) in the shallow wells and quite high (about 10) in the deeper wells.

Electrical conductivity is consistently higher in the deep wells. MW-1A had the lowest conductivity (111 umhos/cm) and MW-1B had the highest (500 umhos/cm). HNU readings of the atmosphere in each monitoring well indicate that only MW-3B contained VO vapors above background levels. The HNU reading of 7 ppm for MW-3B is corroborated by laboratory analysis of groundwater from this location.

Laboratory analyses were performed on one soil sample from each cluster location, and on groundwater samples collected from each well. First round analyses included priority pollutants plus forward library search for both soil and groundwater. Subsequent analyses were limited to priority pollutant metals on groundwater samples. Analytical results for the last round of samples were received on October 26, 1987.

Analytical results are summarized on Tables 3 through 6. Complete laboratory reports are included in Appendix C. Elevated concentrations of volatile organic compounds and some metals were detected in groundwater collected from MW-3B. Soil from MW-3A, which is adjacent to MW-3B, contained chromium and nickel in significant concentrations. Soils and groundwater analyzed from elsewhere at the site showed little evidence of contamination.

The presence of high chromium and nickel concentrations in soil at the site may be attributed to the use of contaminated fill, a common problem in Jersey City.

The monitoring wells were sampled and analyzed for priority pollutant metals on two occasions after the first sampling event. Samples collected during events two and three were filtered in the field to remove any suspended solids that might be present. Filtering significantly reduced the observed concentration of metals in groundwater.

The most significant concentrations of VOCs were detected in groundwater collected from MW-3B. MW-3B is a deep well which contains 11 ppm of trichloroethylene. MW-3A, the companion shallow well, contains several organic compounds but in the low ppb range. The high concentrations of VOCs in deep well MW-3B, and their virtual absence in other wells at the site suggest one of the following:

- a contaminant source exists at the site, and a pathway exists between the shallow and deep water bearing zones; or
- a contaminant source exists off site and it is being transported to M.I. Holdings' property by groundwater flow.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The results of this investigation indicate that soil and groundwater in the vicinity of the well cluster Number 3 are contaminated with metals and organic compounds. The elevated

concentrations of chrome and nickel in the soil may be attributed to the use of contaminated fill at the site, a common problem in Jersey City.

The source of VOCs detected in MW-3B is not known at the present time. This is due in part to open questions regarding the direction of groundwater flow at the site.

5.2 Recommendations

AWD Technologies proposes the following activities be performed at the site as the next step toward defining subsurface conditions, hydrogeology, soil and groundwater contamination, and contamination sources.

- Install two additional well clusters on either side of MW-3. This will provide better definition of the extent of VOCs in groundwater, and may provide some information on the direction of the source.

- Perform a soil gas survey to assess the possibility that a source of VOCs is present in soil at the site.

- Install a network of shallow and deep piezometers at the site to better define vertical and horizontal groundwater gradients and establish the pattern of groundwater flow across the site.

We will prepare a work plan describing these work items in more detail, when requested by M.I. Holdings.

TABLE 1
SUMMARY OF MONITORING WELL CONSTRUCTION

MW	Depth (ft)	Screen Length (ft)	Length of Riser (ft) (Including stickup)	Elevation Top of Casing (ft)
1A	13.5	5	8.94	23.98
1B	52.0	9.7	38.9	23.48
2A	9.0	5.1	2.2	7.79
2B	47.0	10.1	35.0	7.77
3A	10.5	5.1	2.2	7.73
3B	47.0	10.0	35.0	7.25

TABLE 2
FIELD PARAMETER MEASUREMENTS ON JULY 27 AND 28, 1987

Well Number	Elevation (ft) Water	Elevation (ft) Top of Casing	Water Quality Smell, Color	Time	pH	Temp. °C	Cond. (umhos/cm)	HNU Background/ Well Sample (ppm)
MW-1B	12.18	23.98	silty, cleared after several minutes	14:15	8.6	22	500	.6/.6
MW-2B	4.88	7.77	silty, cleared up after several	14:45	10.1	28	324	.4/.4
MW-3B	4.65	7.25	silty, strong odor brown suds	15:30	10.2	26	240	.4/7.0
MW-1A	13.47	23.98	pumped dry twice, brownish color	12:30	6.3	30	111	.6/.6
MW-2A	5.37	7.79	dirty brown, sand in bucket	13:00	6.7	28	155	.6/.6
MW-3A	4.08	7.73	silty, odor, pumped dry twice	13:30	10.9	23	191	.6/.6

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TABLE 3
GROUNDWATER ANALYSIS - ORGANIC COMPOUNDS

Well:	MW-1A	MW-1B	MW-2A	MW-2B	MW-3A	MW-3B
Volatile Organic Compounds						
Methylene Chloride	2JB	2JB	3JB	3JB	10B	2,000B
Trichlorofluoromethane	U	U	U	2J	1J	U
Chloroform	U	4J	U	U	U	U
1,1,1-Trichloroethane	U	U	U	1JB	U	100JB
1,1-Dichloroethene	U	U	U	U	U	U
Trichloroethylene	U	U	U	U	3	11,000
Benzene	U	U	U	U	14	360J
Toluene	1JB	2JB	1JB	2JB	3JB	490JB
Ethylbenzene	U	1J	U	U	6	200J
trans-1,2-Dichloroethane	U	U	U	U	2J	U
Library Search	180B	U	598	107	733	U
Base/Neutral Compounds						
1,2-Dichlorobenzene	U	U	U	U	U	6J
Naphthalene	U	U	U	1J	U	3J
Fluoranthene	U	U	U	U	U	U
Pyrene	U	U	U	U	U	U
Acid Extractable Compounds						
Phenol	U	U	U	9J	U	18J
2,4-Dimethylphenol	U	U	U	U	U	2J
Library Search BNA	31	U	130	U	50	2,052
Pesticides/PCB's						
Gamma BHC	U	U	U	U	U	0.05
Cyanide (aqueous, ug/l)	<5	<5	<5	<5	25	<5
Cyanide (dry weight, mg/kg)						
Phenols (aqueous, ug/l)	55	6	40	18	9	82
Phenols (dry weight, mg/kg)						
Petroleum Hydrocarbons (mg/l)	2	<1	<1	2	<1	<1

All values in ug/l unless otherwise indicated.
U = Compound was analyzed for but not detected.
J = Compound was detected but is below the specified minimum detection limits, concentration listed is an estimated value.
B = Possible laboratory contamination.
NT = Not tested.

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TABLE 4
GROUNDWATER ANALYSIS - METALS

Parameter:	Antimony	Arsenic	Beryllium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Zinc
MW-1A:										
7/27/87 unfiltered	<60	<10	<5.0	46	36	48	4.6	<40	<5.0	84
9/23/87 filtered	<60	<10	<5.0	14	<25	<5.0	1	<40	<5.0	112
10/16/87 filtered	101	<10	<9	<10	<25	<5.0	0.45	<40	8.6	30
MW-1B:										
7/27/87 unfiltered	<60	<10	<5.0	<10	<25	<5.0	<0.2	<40	5.6	<20
9/23/87 filtered	<60	<10	<5.0	<10	<25	<5.0	<0.2	<40	<5.0	60
10/16/87 filtered	<60	<10	<5	<10	<25	<5.0	<0.2	90	6.0	39

TABLE 4, CONTINUED
GROUNDWATER ANALYSIS - METALS

Parameter:	Antimony	Arsenic	Beryllium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Zinc
MW-2A:										
7/27/87 unfiltered	<60	46	<5.0	202	<25	21	45.6	<40	<5.0	64
9/23/87 filtered	<60	4	<5.0	11	<25	<5.0	<0.2	<40	<5.0	81
10/16/87 filtered	102	21	<5	<10	<25	<5.0	<0.2	<40	<5.0	<20
MW-2B:										
7/27/87 unfiltered	<60	<10	<5.0	<10	<25	5.2	3.6	<40	<20	<20
9/23/87 filtered	<60	<10	<5.0	<10	<25	<5.0	<0.2	<40	<5.0	58
10/16/87 filtered	8.3	<10	<5	<10	<25	<5.0	<0.2	<40	<5.0	37

TABLE 4, CONCLUDED
GROUNDWATER ANALYSIS - METALS

Parameter:	Antimony	Arsenic	Beryllium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Zinc
MW-3A:										
7/27/87 unfiltered	151	37	<5.0	2,240	113	193	240	206	<5.0	306
9/23/87 filtered	<60	21	<5.0	1,970	<25	<5.0	9.3	<40	<5.0	114
10/16/87 filtered	133	42	<5	2,000	<25	<5.0	15.1	K40	K5.0	24
MW-3B:										
7/27/87 unfiltered	<60	45	<5.0	1,000	48	5.2	22	<40	<5.0	41
9/23/87 filtered	<60	6.2	K5.0	<10	<25	<5.0	0.27	<40	<5.0	50
10/16/87 filtered	<60	<10	<5	<10	<25	<5.0	<0.2	<40	<5.0	30

f = filtered groundwater sample.
unf = unfiltered groundwater sample.
All values in parts per billion except where noted.

NJ101T33

AWD Technologies, Inc.

TABLE 5
SOIL ANALYSIS, METALS

Well	Soil MW-1B	Soil MW-2B	Soil MW-3A
Parameter:			
Antimony	<12	<12	728
Arsenic	<2.0	<2.0	5.3
Beryllium	<1.0	<5.0	1.3
Chromium	9.2	14	36,000
Copper	<5.0	10	45
Lead	3.3	14	8.3
Mercury	<0.1	<0.1	0.62
Nickel	<8.0	<8.0	950
Selenium	<1.0	<1.0	296
Zinc	29	36	1.05

All values in parts per million.
Soil samples collected between June 29 and July 6, 1987.

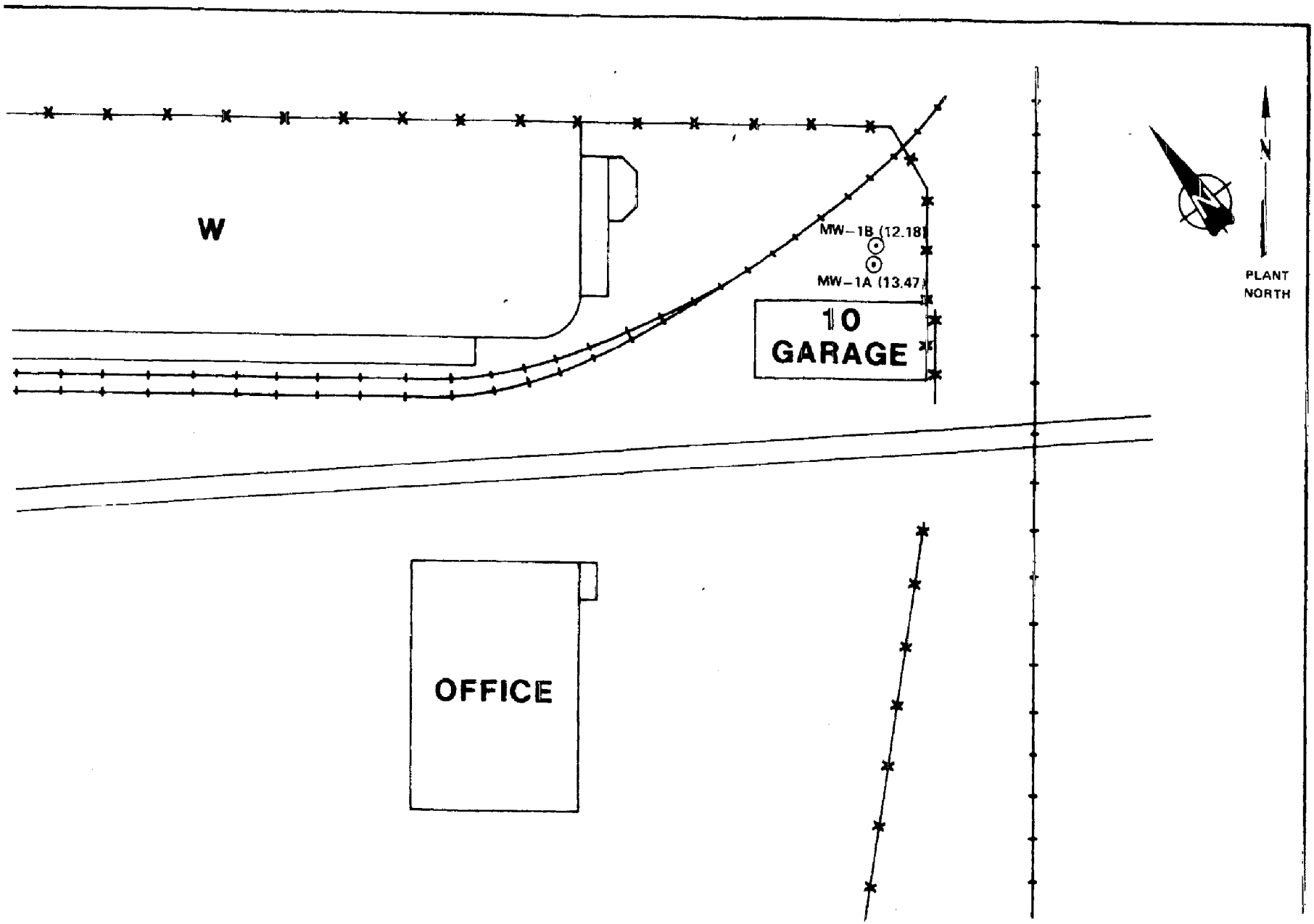
NJ101T6

TABLE 6
SOIL ANALYSIS, ORGANIC COMPOUNDS

Well	Soil MW-1B	Soil MW-2B	Soil MW-3A
Volatile Organic Compounds:			
Methylene Chloride	5 JB	32 B	17 B
Trichlorofluromethane	5 JB	4 J	7 J
Chloroform	U	U	U
1,1,1-Trichloroethane	35 B	50 B	7 JB
1,1-Dichloroethene	2 JB	U	U
Trichloroethylene	U	U	U
Benzene	3 JB	10 JB	6 JB
Toluene	U	U	U
Ethylbenzene	U	U	U
trans-1,2-Dichloroethane	U	U	U
Library Search	U	U	U
Base/Neutral Compounds:			
1,2-Dichlorobenzene	U	U	U
Naphthalene	U	U	U
Fluoranthene	73 J	U	U
Pyrene	88 J	U	U
Acid Extractable Compounds:			
Phenol	U	U	U
2,4-Dimethylphenol	U	U	U
Library Search BNA	9270 B	12,960 B	11,060 B
Pesticides/PCB's			
Gamma BHC	U	U	U
Cyanide (aqueous, ug/l)	<0.10	<0.1	<0.10
Cyanide (dry weight, mg/kg)			
Phenols (aqueous, ug/l)	<0.5	<0.5	1.05
Phenols (dry weight, mg/kg)			
Petroleum Hydrocarbons (mg/l)	NT	NT	NT

All values in ug/l unless otherwise indicated.
U = Compound was analyzed for but not detected
J = Compound was detected by is below the specified minimum detection limits, concentration listed is an estimated value.
B = Possible laboratory contamination.
NT = Not tested.

NJ101T5



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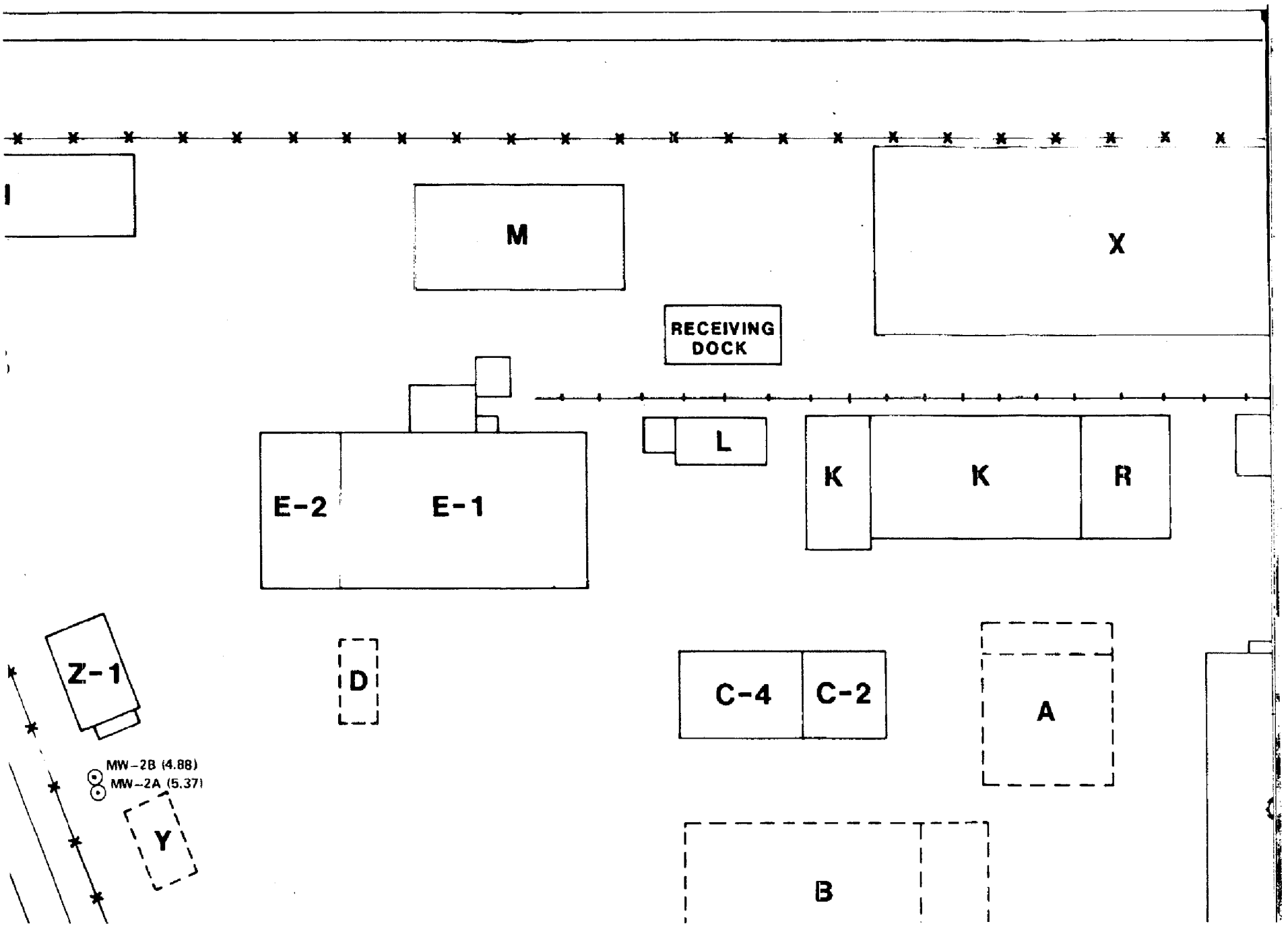

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OFFSHORE INVESTIGATION
RESULTS SUMMARY REPORT

OCTOBER 2003 TO JANUARY 2004 ACTIVITIES

STUDY AREA 7
JERSEY CITY, NEW JERSEY

Prepared For:

Honeywell International, Inc.
101 Columbia Road
Morristown, NJ 07962

Prepared By:

Parsons
200 Cottontail Lane
Somerset, NJ 08873

ENVIRON International Corporation
214 Carnegie Center
Princeton, NJ 08540-6284

April 29, 2004

OFFSHORE INVESTIGATION
RESULTS SUMMARY REPORT

OCTOBER 2003 TO JANUARY 2004 ACTIVITIES

STUDY AREA 7
JERSEY CITY, NEW JERSEY

Prepared For:

Honeywell International, Inc.
101 Columbia Road
Morristown, NJ 07962

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ENVIRON International Corporation
214 Carnegie Center
Princeton, NJ 08540-6284

April 29, 2004

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1.0 INTRODUCTION

1.1 Purpose

This Offshore Investigation Results Summary Report represents a compilation of the results of sediment chemistry and physical testing of sediments performed as part of the offshore investigation activities conducted between October 2003 and January 2004 in the Hackensack River in the vicinity of Study Area 7 (hereafter referred to as "SA7", or the "Site") located in Jersey City, New Jersey. Offshore investigation activities included sediment sampling, field surveys, pore water characterization, water column characterization, and geotechnical characterization of the sediment. The field work discussed herein was implemented in compliance with two stipulated Immediate Action Orders entered into by the parties pursuant to the judgment entered by the United States District Court of New Jersey in Interfaith Community Organization, et. al. v. Honeywell International et al (Civil Action No. 95-2097 DMC, May 15, 2003). In particular, the field activities summarized herein were specified in the Sediment Sampling Plan (Immediate Action Stipulation Item 13) and the Bathymetric and Waterside Geophysical Survey Plan (Immediate Action Stipulation Item 20) contained in the court order.

The chemical data included in this report have been independently reviewed and validated by VALIDATA, LLC under contract to Honeywell. All chemical data collected during the offshore investigation was evaluated and validated according to the Standard Operating Procedures (SOP) established by the New Jersey Department of Environmental Protection (NJDEP 2001). The data presented in this report supersede the preliminary results reported periodically by Honeywell to The Louis Berger Group previously. The procedures used during implementation of the field work are summarized in the *Offshore Investigation Post - Field Sampling Report October 2003 To January 2004 Activities, Study Area 7, Jersey City, New Jersey* (Parsons and ENVIRON 2004).

1.2 Site Description

A site map is provided in Figure 1. The Study Area 7 site ("Site") is a 34-acre parcel located on Route 440 in Jersey City, New Jersey. The Site includes three separate, contiguous sites:

- Roosevelt Drive-In Site (NJDEP Site 115),
- Trader Horn Site (NJDEP Site 120),
- Clean Machine Car Wash Site (NJDEP Site 157).

The Site is primarily a vacant lot, although the Trader Horn facility is still in operation. All portions of the site have some form of cover: the eastern portion of the site is paved with asphalt; the western portion was capped with a PVC cover and overlain with gravel as an Interim Remedial Measure (IRM); and the middle of the site still contains a concrete slab that was formerly the foundation for the Valley Fair department store. With the exception of Trader Horn, no buildings exist on the property.

The site is bordered on the north by the Jersey City Incineration Authority (NJDEP Site 087), the Jersey City Incineration Authority Well (NJDEP Site 088); on the east by Route 440; on the south by the Roosevelt Bowling Lanes (NJDEP Site 124), Delphic Consolidated (NJDEP Site 125), ABF Trucking (NJDEP Site 140), Old Dominion (NJDEP Site 134), and Degen Oil (NJDEP Site 073); and on the west by the Hackensack River. The Site is currently vacant but was formerly used for commercial purposes. SA7 is surrounded by a perimeter security fence on three sides and a wooden bulkhead along the waterfront adjoining the Hackensack River. Surrounding land use is industrial and commercial.

1.3 Overview of Offshore Investigation Results

The offshore field work activities completed as part of the October 2003 to January 2004 field investigation included the following:

- Bathymetric, Geophysical, and Hydrodynamic Field Surveys
- Sediment Grab Sampling for Chemical Characterization
- Water Column Sampling for Chemical Characterization
- Sediment Coring for Chemical and Geotechnical Characterization and Radiodating

- Sediment Collection for Sediment Toxicity and Bioaccumulation Testing and Benthic Infaunal Survey
- Drilling of Rotary Borings for an Offshore Geotechnical Engineering Evaluation
- A Groundwater Upwelling Investigation and In Situ Testing

This report summarizes the results of the above investigations.

2.0 RESULTS OF BATHYMETRIC, GEOPHYSICAL, AND HYDRODYNAMIC FIELD SURVEYS

2.1 Bathymetric Surveys

A two-person field team of Ocean Surveys, Inc. (OSI), operating under the direction of an American Congress on Surveying and Mapping (ACSM) certified hydrographer, conducted the bathymetric surveys. The surveys were performed in accordance with the United States Army Corps of Engineers' (ACOE) *Engineering Manual EM 1110-2-1003 for Hydrographic Surveys* (EM 1110-2-1003) for navigation and dredging support in soft bottom materials. Bathymetric survey data were collected from the vicinity of the Site and surrounding offshore areas between October 17 and 22, 2003. The results of the bathymetric survey are presented in the *Honeywell SA7 Sediment Program Bathymetric Survey, Jersey City, New Jersey* report prepared by OSI (2004a).

2.2 Geophysical Survey

The geophysical survey was conducted between October 22 and 28, 2003. The geophysical field team used remote sensing technology to collect sub-bottom stratigraphy, magnetic field intensity, and geomorphology information. Geophysical survey data were collected from the vicinity of the Site and surrounding offshore areas. The geophysical field survey consisted of an integrated suite of remote sensing technologies including sub-bottom profiling, magnetic field intensity mapping, and side scan sonar imaging. The results of the geophysical survey are presented in the *Honeywell SA7 Sediment Program Geophysical Survey, Jersey City, New Jersey* report prepared by OSI (2004b).

2.3 Oceanographic/Hydrodynamic Characterization

Oceanographic and hydrodynamic survey data were collected from the vicinity of the Site and surrounding offshore areas to collect water level, current velocity, and basic water quality data for input to a sediment transport study and for evaluation and design of sediment remediation options. The survey consisted of both an in situ program and a real-time boat-mounted program using specialized field instrumentation. The in situ instrument program consisted of measurement of current velocities, riverbed current

velocities, sediment bed elevation, in situ river conductivity and temperature measurements versus depth (CTD), and tidal variation around the Site. As an adjunct to the longer-term in situ instrument program, the oceanographic field team conducted a pair of real-time boat-mounted current velocity and CTD-Turbidity profiling surveys over nominal 13-hour tidal cycles along four cross-river transects. The results of the oceanographic/hydrodynamic characterization are presented in the *Honeywell SA7 Sediment Program Oceanographic Survey, Jersey City, New Jersey* report prepared by OSI (2004c).

2.4 Groundwater Upwelling Study and In Situ Testing

The groundwater upwelling study was conducted to obtain supporting data for the groundwater investigations being conducted onshore at the Site. Specifically, the purpose was to obtain data on potential areas of groundwater to surface water seepage in the immediate vicinity of SA7. Because the installation of permanent piezometers in the riverbed was not possible, the investigation utilized a Trident Probe system to collect specific conductance and temperature measurements as indirect measures of potential areas of groundwater upwelling. In addition, hand penetrometers were inserted into the sediments to evaluate the bearing capacity of the sediments and vane shear tests were conducted to evaluate the undrained shear strength of the sediments in the vicinity of the Site. The results of the groundwater upwelling study and in situ testing are presented in the *Honeywell SA7 Sediment Program Vibratory Coring, Trident Probing, Hand Penetrometer and Vane Shear Investigation, Hackensack River, Jersey City, New Jersey* report prepared by OSI (2004d).

3.0 SEDIMENT CHEMICAL CHARACTERIZATION RESULTS

Sediment grab and core sampling was conducted from the vicinity of the Site and surrounding offshore areas (Figures 2A, 2B, and 3). The field sampling procedures used are documented in the *Offshore Investigation Post - Field Sampling Report October 2003 To January 2004 Activities, Study Area 7, Jersey City, New Jersey* (Parsons and ENVIRON 2004). A total of 1,429 surface and subsurface sediment samples were collected and analyzed for 212 chemicals and 8 physical parameters, including:

Chemicals

- Total chromium and chromium VI
- Target Analyte List (TAL) metals
- Acid volatile sulfide and simultaneously extracted metals (AVS/SEM)
- Semi-volatile organic compounds (SVOCs)
- Polycyclic aromatic hydrocarbons (PAHs)
- Pesticides
- Polychlorinated biphenyls (PCBs)
- Polychlorinated dibenzodioxins and dibenzofurans (PCDDs/PCDFs)
- Polybrominated diphenyl ethers (PBDEs)
- Ammonia and pH

Physical Parameters

- Bulk density, water content, percent solids and total organic carbon
- Atterberg limits, grain size, standard oedometer and permeability (presented in Section 5.1 of this report).

3.1 Data Validation

VALIDATA, LLC evaluated and validated the analytical data according to the Standard Operating Procedure (SOP) established by the New Jersey Department of

Environmental Protection. During the data validation process, the laboratory reports were reviewed and quality assurance/quality control parameters were evaluated (where applicable) as described in the data validation SOP (NJDEP 2001). The following qualifiers were used where applicable:

- "R" indicates that the reporting limit or sample result has been determined to be unusable due to a major deficiency in the data generation process. The data should not be used for any qualitative or quantitative purposes.
- "J" indicates that the concentration should be considered approximate. This qualifier indicates that the data validation process identifies a deficiency in the data generation process.
- "UJ" indicates that the sample-specific reporting limit for the analyte in this sample should be considered approximate. This qualifier is used when the data validation process identifies a deficiency in the data generation process.
- "B" indicates that detectable levels of the analyte were found in the associated method blank.

3.2 Summary of Chemicals Detected

Summaries of the chemicals detected in sediment are presented in Tables 1, 2, and 3. The data tables include for each chemical the frequency of detection, the concentration range, and the average detected concentration in sediment. In addition to the summary statistics, the frequency of exceedance of chemical screening criteria established by New Jersey Department of Environmental Protection and the National Oceanic and Atmospheric Administration (NJDEP/NOAA) are also shown. Table 1 presents a summary of chemicals detected in sediment samples collected at all depths of sampling in the vicinity of SA7. Table 2 presents a summary of chemicals detected in sediment samples from 0 to 0.5 feet below the sediment surface in the vicinity of SA7. Table 3 presents a summary of chemicals detected in sediment samples collected from the reference areas.

3.3 Cross-Sections of Sediment Depths in the Hackensack River Adjacent to SA7

Offshore sediment borings were drilled between November and December 2003 at a total of 41 locations in the vicinity of Study Area 7 for physical and chemical characterization of river sediments. Sediment cores were collected using piston and vibracoring methods at 33 of the 41 locations and deep geotechnical borings were drilled using rotary drilling techniques at the remaining eight locations. Of the 33 sediment coring locations, 26 were completed to a nominal depth of 10 feet below the sediment surface (or "mudline") and seven were completed to depths greater than 10 feet (i.e., as great as 17 feet) below the mudline. The deep geotechnical borings were typically drilled approximately 20 feet into bedrock (i.e., a total depth of approximately 120 feet below the mudline). The boring locations are shown on Figure 4.

Unconsolidated sediments consisting primarily of clays, silts and sands were encountered in the upper 25 feet. Deposits found deeper than 25 feet are discussed in the *Subsurface Investigation, Study Area – 7 (Daylin-Grace Site), Jersey City, New Jersey* report prepared by Mueser Rutledge Consulting Engineers (MRCE) dated April 15, 2004 (MRCE 2004). Draft sediment core boring logs were previously included in the *Offshore Investigation Post - Field Sampling Report October 2003 To January 2004 Activities, Study Area 7, Jersey City, New Jersey* (Parsons and ENVIRON 2004) and deep geotechnical boring logs were included in the Subsurface Investigation report (MRCE 2004). Subsurface deposits encountered at shallow depths (i.e. upper 25 feet) include:

- Stratum D, Grey to Black Peat and Organic Clay: Typically dark grey organic clay and clayey silt, scattered fine sand laminations, very loose to loose.
- Stratum S1, Grey Sand: Typically light to medium grey fine to medium-grained sand, trace coarse sand and gravel, trace organic material, scattered laminations of fine sand or silt, generally dense.
- Stratum RC, Reddish Brown Silty Clay/Clayey Silt: Typically reddish brown silty clay and clayey silt, trace silty sand, dense to very dense.

Cross-sections showing the different shallow subsurface deposits in the sediment and total chromium concentrations have been prepared for each cross-sections. Figure 4

shows the locations of the cross-sections offshore from the Site. Sediment cross-sections extending parallel to the waterfront bulkhead at the Site are shown in Figures 5A through 5E. Sediment cross-sections extending perpendicular to the waterfront bulkhead are shown in Figures 5F through 5K.

3.4 Metals

3.4.1 Total Chromium and Chromium VI

Total chromium and chromium VI in sediment samples were analyzed by Columbia Analytical Services, Inc. (Columbia). Total chromium was analyzed using United States Environmental Protection Agency (EPA) Method 6010B. Chromium VI analyses were conducted by two analytical methods, EPA Methods 7196A and 7199, following extraction by two different methods (NJDEP and EPA). Table 4 presents the analytical results of chromium and chromium VI in sediment. Summaries of chromium and chromium VI concentrations in sediment are presented in Tables 1, 2, and 3.

Total chromium was detected in all sediment samples collected, with a concentration range of 3.9 milligrams per kilogram (mg/kg) to 33,500 mg/kg and an average concentration of 534 mg/kg. Figures 6A through 6X show the concentration of chromium in sediment in the vicinity of SA7. Of the 421 total chromium samples collected, 280 samples exceeded the NJDEP/NOAA Effects Range Low (ERL) screening criterion of 81 mg/kg, 137 samples exceeded the NJDEP/NOAA Effective Range Medium (ERM) screening criterion of 370 mg/kg, and 288 samples exceeded the NOAA Apparent Effects Threshold (AET) of 62 mg/kg.

Figures 7A through 7E display the estimated median chromium concentration in sediment in the vicinity of SA7 using a three-dimensional interpolation method. These figures show the offshore areas where total chromium concentrations are below the screening criteria, or exceed the AET, ERL, and ERM benchmarks.

Chromium VI concentrations in sediment are shown in Figures 8A through 8X. Chromium VI was detected in 218 samples, with a concentration range of 0.5 mg/kg to 57 mg/kg.

3.4.2 *Target Analyte List Metals*

TAL metals analyses were conducted by Severn Trent Laboratories in Edison, New Jersey (STL-Edison) using EPA Methods 6010B and 7471. Table 5 presents the analytical results of TAL metals in sediment. Summaries of TAL metals concentrations in sediment and their screening criteria exceedances are also presented in Tables 1, 2 and 3. All TAL metals with the exception of thallium were detected in sediment samples. To illustrate the presence of other metals in sediment, concentration profiles of arsenic, lead, and mercury, are shown in Figures 9A through 9C, 10A through 10D, and 11A through 11C, respectively.

3.4.3 *Acid Volatile Sulfide and Simultaneously Extracted Metals*

Acid volatile sulfide and simultaneously extracted metals (AVS/SEM) analyses were conducted by Severn Trent Laboratories in Colchester, Vermont (STL-VT) using EPA Draft Method AVS/SEM. Table 7 presents the analytical results of AVS/SEM in sediment. Of the 39 samples in the vicinity of SA7, 35 have an AVS/SEM ratio of less than 1.

3.5 Semi-Volatile Organic Compounds and Polycyclic Aromatic Hydrocarbons

SVOC analyses were conducted by STL-Edison using EPA Method 8270C. Table 8 presents the analytical results of SVOCs in sediment. Summaries of detected SVOC concentrations in sediment and their NOAA AET screening criteria exceedances are presented in Tables 1, 2 and 3. PAH analyses were conducted by STL-Edison using EPA Method SW8270. Table 9 presents the PAHs results and total PAHs concentrations in sediment. In the calculation of total PAHs, one-half of the detection limit was used for non-detect samples. Total PAHs concentrations in sediment are also shown in Figures 12A through 12C. Summaries of detected PAHs and total PAHs concentrations in sediment and their screening criteria exceedances are presented in Tables 1, 2 and 3.

3.6 Pesticides and Organotins

Pesticide analyses were conducted by STL-Edison using EPA Method 8081. Table 10 presents the analytical results of pesticides in sediment. Summaries of detected pesticide concentrations in sediment and their screening criteria exceedances are

presented in Tables 1, 2 and 3. Organotin analyses were conducted by STL-VT using Method OR560. Table 6 shows the analytical results of organotin concentrations in sediment and summaries of organotins are shown in Tables 1, 2, and 3. Dibutyltin, tributyltin, and tetrabutytin were detected in sediment samples with a concentration range of 1.9 micrograms per kilogram (ug/kg) to 16 ug/kg.

3.7 Polychlorinated Biphenyls, Polychlorinated Dibenzodioxins and Dibenzofurans, and Polybrominated Diphenyl Ethers

Polychlorinated biphenyls (PCBs), polychlorinated dibenzodioxins (PCDDs) and dibenzofurans (PCDFs), and polybrominated diphenyl ethers (PDBE) analyses were conducted by Alta Analytical Laboratory, Inc. (Alta) in El Dorado Hills, California. In addition to measured concentrations, the Toxicity Equivalency Quotient (TEQ) of the PCBs, PCDDs, and PCDFs was calculated to provide a single value normalized to the toxicity of 2,3,7,8-TCDD for all dioxin-equivalent compounds contained in a given sediment sample. The total TEQ was calculated by summing the product of the measured concentration of each dioxin or PCB congener and its Toxicity Equivalent Factor (TEF) using the dioxin-equivalent toxicity scheme for human exposure developed by the World Health Organization (Van den Berg *et al.* 1998). The TEQ calculations include analytical results of seven PCDD congeners, ten PCDF congeners and twelve coplanar PCB congeners. In the calculation of PCB and PCDD/F TEQs, one-half of the detection limit was used for non-detect samples.

3.7.1 Polychlorinated Biphenyls

Total PCB analyses were conducted by Alta using EPA Method 8081 and coplanar PCB analyses using EPA Method 1668. Table 11 presents the analytical results of PCBs in sediment. Summaries of PCB concentrations in sediment and their screening criteria exceedances are presented in Tables 1, 2 and 3. TEQ concentrations of PCBs were calculated and are shown in Figures 13A through 13C.

3.7.2 Polychlorinated Dibenzodioxins and Dibenzofurans

PCDD and PCDF analyses were conducted by Alta using EPA Method 8290. Table 12 presents the analytical results of PCDDs and PCDFs in sediment. Summaries of

PCDD/F concentrations in sediment are presented in Tables 1, 2 and 3. TEQ concentrations of PCDDs and PCDFs were calculated and are shown in Figures 14A through 14C.

3.7.3 Polybrominated Diphenyl Ethers

PBDE analyses were conducted by Alta using EPA Method 8290. Table 13 presents the analytical results of PBDE in sediment. Summaries of PBDE concentrations in sediment are presented in Tables 1, 2 and 3.

3.8 Other Parameters

Nitrogen ammonia, total organic carbon (TOC), and pH analyses were conducted by STL-Edison using EPA Method 350.1-350.2, modified ASTM Method D 2579, and EPA Method 9040B, respectively. Bulk density and percent solids analyses were conducted by STL-Edison and STL-VT, respectively. Table 14 presents the analytical results of nitrogen ammonia, total organic carbon (TOC), bulk density, solids, and pH in sediment.

3.9 Pore Water Characterization Results

Pore water, the water occupying the space between sediment or soil particles, was extracted from sediment of the nine stations sampled for toxicity and bioaccumulation testing. The isolation of pore water from these sediments occurred at the Site between November 11 and 13, 2003. Total suspended solids (TSS), chromium, and metals in pore water were analyzed by MEC Analytical Systems (MEC) in Calsbad, California and STL-Edison. TSS results are presented in the *Offshore Investigation, Sediment Toxicity Characterization Report for November 2003 Sampling Activities, Honeywell Study Area 7, Jersey City, New Jersey* prepared by MEC (2004). Table 15 presents the analytical results of total chromium and chromium VI in pore water. Table 16 presents the analytical results of metals in pore water.

4.0 WATER COLUMN CHARACTERIZATION RESULTS

4.1 Total Suspended Solids

Water column samples for TSS analysis were collected in November and December 2003 during the oceanographic/hydrodynamic survey operations. The results of TSS in the water column are included in the oceanographic-hydrodynamic characterization report entitled *Honeywell SA7 Sediment Program Oceanographic Survey, Jersey City, New Jersey* report prepared by OSI (2004c).

4.2 Chromium

A water column sampling event was also implemented to evaluate the potential presence of chromium in surface water adjacent to the Site and in the identified reference areas. On October 16, 2003, shallow surface water samples were collected for chromium analysis from three locations near SA7 and from two locations in each of the three targeted reference areas. Figures 2 and 3 show the locations of water column samples in the vicinity of Study Area 7 and the reference areas. All chromium grab water column samples were submitted to Columbia for analysis of total chromium and chromium VI. Total chromium was analyzed using EPA Method 6010B and chromium VI was analyzed using EPA Method 7199. Table 17 presents the analytical results of total chromium and chromium VI in water column samples.

5.0 GEOTECHNICAL CHARACTERIZATION RESULTS

5.1 Geotechnical Parameters

To collect information on the physical sediment characteristics necessary both for evaluating potential sediment remedies and in possible designing of near-shore structures (e.g., docks or shoring) to be used as part of the SA7 remedy, a number of sediment boring samples were collected for geotechnical evaluation. Figure 2b shows the locations of sediment borings for geotechnical characterization. The offshore geotechnical boring program was implemented between December 3 and 23, 2003 under the oversight of MRCE. Table 18 presents the results of the sediment geotechnical parameters, which included natural water content, liquid limit, plasticity index, gradation (grain size), organic content, and specific gravity of the sediment samples.

Core sediment samples were also obtained for standard oedometer (consolidation) and permeability testing. The sediment samples were collected with piston cores during November and December 2003. However, these samples appeared to have been disturbed either as a result of the coring, storage, or transportation procedures, and were considered too disturbed to obtain meaningful consolidation and permeability results. MRCE has undisturbed sediment core samples collected with a fixed piston from the shallow portions of the deep borings, GEO-1 through GEO-8, which can be used to run these tests. The locations of these borings are shown in Figure 2B. ENVIRON requested the results of standard oedometer and permeability testing of sediment borings (GEO-2, GEO-4, GEO-5, GEO-7, and GEO-8) from MRCE. The results of the standard oedometer and permeability testing are shown in Table 19.

5.2 Self-Weight Consolidation/Column Settling

In addition to the geotechnical samples, surface sediment was sampled from three locations for self-weight consolidation and column settling tests on November 22, 2003. The self-weight consolidation/column settling test samples were submitted to Trident Tech Services, Inc. (Trident) of Chesterton, Indiana for analysis. The results of the self-weight consolidation-column settling tests are presented in the *Sediment Testing Report – SA7, Jersey City, New Jersey* report dated February 20, 2004 prepared by Trident (2004).

5.3 Radiodating Analysis

To age-date different sediment depth intervals, sediment samples were collected from certain sediment cores during the offshore sediment coring program for isotopic radiodating testing and evaluating the depositional history of the offshore area near the Site and the stability of the sediments. The radiodating samples were analyzed by Flett Research, Ltd. (Flett) of Winnipeg, Manitoba, Canada for isotopic constituents using lead-210 (Pb-210) and cesium-137 (Cs-137) as indicator elements. Sediments to a depth of 10 cm were also analyzed for beryllium-7 (Be-7), and a very limited subset of sample intervals was analyzed for radium-226 (Ra-226). The radiochemistry results are presented in the Radiodating Analytical Report dated April 25, 2004 prepared by Flett (2004).

6.0 ECOLOGICAL TOXICITY STUDIES

6.1 Sediment Toxicity and Bioaccumulation Samples

Composite sediment samples for the analysis of toxicity were collected between November 7 and 11, 2003. A description of the sampling process was discussed in Section 3.7.2.1 of the *Offshore Investigation Post - Field Sampling Report October 2003 To January 2004 Activities, Study Area 7, Jersey City, New Jersey* (Parsons and ENVIRON 2004). The composite sediment toxicity samples were analyzed for total chromium, chromium VI, TAL metals, AVS/SEM, SVOCs, PAHs, pesticides, PCBs, PCDD/Fs, PBDEs, and other parameters. Results were compared to those from similar testing performed concurrently at three locations elsewhere in the Hackensack River and upper Newark Bay. Bioassays were performed in accordance with USEPA and U.S. Army Corps of Engineer test methods. The methods and more detailed results of the sediment toxicity study are presented in the *Offshore Investigation, Sediment Toxicity and Benthic Infaunal Characterization Report for November 2003 Sampling Activities, Honeywell Study Area 7, Jersey City, New Jersey* prepared by MEC (2004). Results of the sediment toxicity samples were validated using the data validation method described in Section 3.1 of this report and are shown in Tables 4 through 14.

6.2 Benthic Infaunal Survey

Sediment samples were collected offshore from SA7 and in three reference locations to determine the abundance and diversity of the benthic infaunal community in the sediment. The benthic infaunal survey was performed in accordance with EPA methods. The methods and results of the benthic infaunal survey are presented in the *Offshore Investigation, Sediment Toxicity Characterization Report for November 2003 Sampling Activities, Honeywell Study Area 7, Jersey City, New Jersey* prepared by MEC (2004).

7.0 REFERENCES

Flett Research Ltd. (Flett). 2004. Results of Hackensack River/Newark Bay Radiochemistry Measurements. Letter from R.J. Flett to C. Stubbs, Environ. April 25.

MEC Analytical Systems, Inc. (MEC). 2004. Offshore Investigation Sediment Toxicity and Benthic Infaunal Characterization Report for November 2003 Sample Activities; Honeywell Study Area 7; Jersey City, New Jersey.

Mueser Rutledge Consulting Engineers (MRCE). 2004. Subsurface Investigation, Study Area – 7, (Daylin-Grace Site), Jersey City, New Jersey. April 15.

New Jersey Department of Environmental Protection (NJDEP). 2001. Standard Operating Procedure for the Completion of the Data Validation Report Forms and the Preparation of the Final Data Validation Report, SOP No. 5.A.15, Trenton, New Jersey. October.

Ocean Surveys, Inc. (OSI). 2004a. Honeywell SA7 Sediment Program Bathymetric Survey; Jersey City, New Jersey.

Ocean Surveys, Inc. (OSI). 2004b. Honeywell SA7 Sediment Program Geophysical Survey; Jersey City, New Jersey.

Ocean Surveys, Inc. (OSI). 2004c. Honeywell SA7 Sediment Program Oceanographic Survey; Jersey City, New Jersey.

Ocean Surveys, Inc. (OSI). 2004d. Honeywell SA7 Sediment Program Vibratory Coring, Trident Probing, Hand Penetrometer and Vane Shear Investigation; Hackensack River, Jersey City, New Jersey.

Parsons and ENVIRON International Corporation (Parsons and ENVIRON). 2004. Offshore Investigation Post-Field Sampling Report October 2003 to January 2004 Activities; Study Area 7; Jersey City, New Jersey. February 27.

Trident Tech Services, Inc. (Trident). 2004. Sediment Testing Report – SA7; Jersey City, New Jersey. February 20.

Van den Berg, *et al.* (1998). Toxic Equivalency Factors (TEFs) for PCBs, PCDDs, PCDFs for Humans and for Wildlife. *Environmental Health Perspectives* 106, 775.

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Metals (mg/kg):									
Aluminum	63/63	2380 - 15800	8,630	---	---	---	---	---	---
Antimony	3/63	2.3 - 2.9	2.6	---	---	---	---	9.3	0/3
Arsenic	60/63	1.3 - 113	19	8.2	39/60	70	3/60	35	7/60
Barium	63/63	5.6 - 638	137	---	---	---	---	48	48/63
Beryllium	62/63	0.11 - 1	0.5	---	---	---	---	---	---
Cadmium	54/68	0.14 - 10.1	1.7	1.2	28/54	9.6	1/54	3	7/54
Calcium	63/63	345 - 37000	6,213	---	---	---	---	---	---
Chromium	421/421	3.9 - 33500	534	81	280/421	370	137/421	62	288/421
Hexavalent Chromium NJDEP 7196A	7/304	5.49 - 23.1	10	---	---	---	---	---	---
Hexavalent Chromium NJDEP 7199	218/304	0.478 - 40.9	3.7	---	---	---	---	---	---
Hexavalent Chromium EPA 7196A	1/304	5.86 - 5.86	5.9	---	---	---	---	---	---
Hexavalent Chromium EPA 7199	144/304	0.516 - 56.5	4.4	---	---	---	---	---	---
Cobalt	63/63	2.1 - 21	7.6	---	---	---	---	10	18/63
Copper	64/68	4.5 - 715	129	34	48/64	270	7/64	390	3/64
Iron	63/63	5310 - 38900	21,373	---	---	---	---	---	---
Lead	64/207	2.1 - 520	137	47	50/64	218	13/64	400	2/64
Magnesium	63/63	1160 - 9390	5,051	---	---	---	---	---	---
Manganese	63/63	46.3 - 623	298	---	---	---	---	260	40/63
Mercury	60/203	0.041 - 64	6.8	0.15	53/60	0.71	45/60	0.41	48/60
Nickel	64/68	1.6 - 120	28	21	37/64	52	3/64	110	1/64
Potassium	63/63	298 - 2600	1,411	---	---	---	---	---	---
Selenium	3/63	2.7 - 3.7	3.2	---	---	---	---	1	3/3
Silver	51/63	0.44 - 8.8	2.4	1	39/51	3.7	6/51	3.1	10/51
Sodium	63/63	551 - 10900	4,290	---	---	---	---	---	---
Thallium	0/63	---	---	---	---	---	---	---	---
Vanadium	63/63	5.8 - 98.5	28	---	---	---	---	57	3/63
Zinc	64/68	14.2 - 842	252	150	40/64	410	13/64	410	13/64
Organotins (ug/kg):									
Dibutyltin	21/63	1.9 - 14	5.1	---	---	---	---	---	---
Monobutyltin	7/63	1.2 - 2.3	1.7	---	---	---	---	---	---
Tetrabutyltin	7/63	2.6 - 5.4	3.4	---	---	---	---	---	---
Tributyltin	19/63	1.9 - 19	5.8	---	---	---	---	---	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Semi-volatile Organic Compounds (ug/kg):									
1,2,4-Trichlorobenzene	15/64	13 - 140	49	---	---	---	---	4.8	15/15
1,2-Dichlorobenzene	11/64	17 - 51	27	---	---	---	---	13	11/11
1,3-Dichlorobenzene	13/64	20 - 40	26	---	---	---	---	---	---
1,4-Dichlorobenzene	34/64	8.8 - 160	71	---	---	---	---	110	4/34
2,4,5-Trichlorophenol	0/64	---	---	---	---	---	---	3	---
2,4,6-Trichlorophenol	0/64	---	---	---	---	---	---	6	---
2,4-Dichlorophenol	0/64	---	---	---	---	---	---	5	---
2,4-Dimethylphenol	0/64	---	---	---	---	---	---	18	---
2,4-Dinitrophenol	0/64	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	0/64	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	0/64	---	---	---	---	---	---	---	---
2-Chlorophenol	0/64	---	---	---	---	---	---	8	---
2-Methylphenol	0/64	---	---	---	---	---	---	8	---
2-Nitroaniline	0/64	---	---	---	---	---	---	---	---
2-Nitrophenol	0/64	---	---	---	---	---	---	---	---
3,3'-Dichlorobenzidine	0/64	---	---	---	---	---	---	---	---
3-Nitroaniline	0/64	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	0/64	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	0/64	---	---	---	---	---	---	---	---
4-Chloroaniline	27/64	12 - 380	111	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	0/64	---	---	---	---	---	---	---	---
4-Methylphenol	45/64	8.8 - 280	75	---	---	---	---	100	10/45
4-Nitroaniline	0/64	---	---	---	---	---	---	---	---
4-Nitrophenol	0/64	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	0/64	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1/64	120 - 120	120	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	0/64	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	45/64	80 - 33000	4,370	---	---	---	---	---	---
Butylbenzyl phthalate	7/64	97 - 2600	861	---	---	---	---	63	7/7
Carbazole	51/64	8.2 - 390	85	---	---	---	---	---	---
Dibenzofuran	52/64	11 - 2000	254	---	---	---	---	110	20/52
Diethyl phthalate	5/64	16 - 210	98	---	---	---	---	6	5/5
Dimethyl phthalate	0/64	---	---	---	---	---	---	6	---
Di-n-butyl phthalate	1/64	140 - 140	140	---	---	---	---	58	1/1
Di-n-octyl phthalate	0/64	---	---	---	---	---	---	61	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Hexachlorobenzene	0/64	---	---	---	---	---	---	6	---
Hexachlorobutadiene	0/64	---	---	---	---	---	---	1.3	---
Hexachlorocyclopentadiene	0/64	---	---	---	---	---	---	---	---
Hexachloroethane	0/64	---	---	---	---	---	---	73	---
Isophorone	1/64	420 - 420	420	---	---	---	---	---	---
Nitrobenzene	5/64	26 - 250	123	---	---	---	---	21	5/5
N-Nitroso-di-n-propylamine	0/64	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	7/64	18 - 440	171	---	---	---	---	28	6/7
Pentachlorophenol	0/64	---	---	---	---	---	---	17	---
Phenol	0/64	---	---	---	---	---	---	130	---
Polycyclic Aromatic Hydrocarbons (ug/kg):									
2-Chloronaphthalene	0/64	---	---	---	---	---	---	---	---
2-Methylnaphthalene	51/64	12 - 4900	316	70	30/51	670	5/51	64	33/51
Acenaphthene	55/64	8.9 - 11000	873	16	53/55	500	15/55	130	26/55
Acenaphthylene	57/64	8.6 - 4700	480	44	53/57	640	12/57	71	52/57
Anthracene	57/64	28 - 10000	1,556	85	53/57	1,100	17/57	280	37/57
Benzo(a)anthracene	59/64	34 - 16000	2,362	261	53/59	1,600	22/59	960	34/59
Benzo(a)pyrene	58/64	30 - 8800	1,574	430	48/58	1,600	19/58	1,100	24/58
Benzo(b)fluoranthene	58/64	19 - 5200	1,212	---	---	---	---	1,800	13/58
Benzo(g,h,i)perylene	58/64	16 - 2600	641	170*	51/58	---	---	670	19/58
Benzo(k)fluoranthene	58/64	27 - 6900	1,511	240*	53/58	---	---	1,800	16/58
Chrysene	59/64	40 - 20000	2,780	384	52/59	2,800	17/59	950	39/59
Dibenzo(a,h)anthracene	49/64	20 - 880	266	63	45/49	260	18/49	230	19/49
Fluoranthene	58/64	34 - 18000	3,837	600	47/58	5,100	14/58	1,300	32/58
Fluorene	48/64	8.6 - 4600	514	19	47/48	540	10/48	120	21/48
Indeno(1,2,3-cd)pyrene	58/64	13 - 2300	596	200*	48/58	---	---	600	20/58
Naphthalene	54/64	18 - 10000	1,310	160	42/54	2,100	9/54	230	35/54
Phenanthrene	57/64	21 - 18000	2,219	240	42/57	1,500	15/57	660	24/57
Pyrene	58/64	65 - 28000	5,115	665	51/58	2,600	27/58	2,400	29/58
Pesticides (ug/kg):									
4,4'-DDD	52/136	11 - 76000	16,964	---	---	20	48/52	16	49/52
4,4'-DDE	70/136	12 - 820000	42,088	2.2	69/70	27	63/70	9	69/70
4,4'-DDT	12/136	13 - 210000	18,972	1	12/12	7	12/12	12	12/12
Aldrin	0/94	---	---	2*	---	---	---	9.5	---
alpha-BHC	5/94	12 - 38	23	6*	5/5	---	---	---	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
beta-BHC	4/94	18 - 23	21	5*	4/4	---	---	---	---
Chlordane	0/64	---	---	0.5	---	6	---	2.8	---
delta-BHC	0/94	---	---	---	---	---	---	---	---
Dieldrin	6/94	14 - 78	27	0.02	6/6	8	6/6	1.9	6/6
Endosulfan I	11/94	3200 - 37000	12,382	---	---	---	---	---	---
Endosulfan II	0/94	---	---	---	---	---	---	---	---
Endosulfan sulfate	1/94	4900 - 4900	4,900	---	---	---	---	---	---
Endrin	6/94	19 - 24000	12,003	3*	6/6	---	---	---	---
Endrin aldehyde	5/94	19 - 140	48	---	---	---	---	---	---
Endrin ketone	14/94	8.2 - 180	38	---	---	---	---	---	---
gamma-BHC (Lindane)	1/94	19 - 19	19	3*	1/1	---	---	4.8	1/1
Heptachlor	3/94	13 - 62	44	---	---	---	---	0.3	3/3
Heptachlor epoxide	3/94	15 - 140	70	5*	3/3	---	---	---	---
Methoxychlor	11/94	13 - 210000	22,837	---	---	---	---	---	---
Toxaphene	0/94	---	---	---	---	---	---	---	---
Dioxins and Furans (pg/g)									
Dioxins and Furans TEQ**	64/64	0.3 - 171	16	---	---	---	---	3.6	37/64
2,3,7,8-TCDD	48/68	2.47 - 2570	175	---	---	---	---	---	---
1,2,3,7,8-PeCDD	21/68	0.933 - 56.2	10	---	---	---	---	---	---
1,2,3,4,7,8-HxCDD	23/68	0.87 - 40.5	8.1	---	---	---	---	---	---
1,2,3,7,8,9-HxCDD	29/68	0.451 - 75.2	14	---	---	---	---	---	---
1,2,3,6,7,8-HxCDD	34/68	0.773 - 128	25	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDD	59/68	3.04 - 1560	247	---	---	---	---	---	---
OCDD	63/68	6.31 - 14400	2,531	---	---	---	---	---	---
Total TCDD	49/68	2.47 - 3060	209	---	---	---	---	---	---
Total PeCDD	40/68	2.77 - 304	51	---	---	---	---	---	---
Total HxCDD	54/68	5.09 - 1100	166	---	---	---	---	---	---
Total HpCDD	60/68	2.4 - 4180	614	---	---	---	---	---	---
2,3,7,8-TCDF	48/68	0.906 - 491	31	---	---	---	---	---	---
1,2,3,7,8-PeCDF	46/68	0.993 - 315	30	---	---	---	---	---	---
2,3,4,7,8-PeCDF	47/68	1.53 - 421	43	---	---	---	---	---	---
1,2,3,4,7,8-HxCDF	55/68	2.89 - 4720	274	---	---	---	---	---	---
1,2,3,7,8,9-HxCDF	28/68	0.319 - 142	15	---	---	---	---	---	---
1,2,3,6,7,8-HxCDF	54/68	1.46 - 1020	74	---	---	---	---	---	---
2,3,4,6,7,8-HxCDF	46/68	0.862 - 352	29	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDF	59/68	1.57 - 7820	716	---	---	---	---	---	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
1,2,3,4,7,8,9-HpCDF	37/68	0.727 - 165	26	---	---	---	---	---	---
OCDF	58/68	15.5 - 25560	1,559	---	---	---	---	---	---
Total TCDF	53/68	4.1 - 11800	1,188	---	---	---	---	---	---
Total PeCDF	55/68	1.63 - 9180	756	---	---	---	---	---	---
Total HxCDF	56/68	2.54 - 8780	678	---	---	---	---	---	---
Total HpCDF	61/68	1.57 - 22510	1,196	---	---	---	---	---	---
Polychlorinated Biphenyls (pg/g)									
Coplanar PCBs TEQ**	64/64	1.9 - 2855	172	22,700	0/64	180,000	0/64	130,000	0/64
PCB-77	44/64	63.5 - 43200	3,902	---	---	---	---	---	---
PCB-81	37/64	5.22 - 5210	488	---	---	---	---	---	---
PCB-105	46/64	53.2 - 114000	9,103	---	---	---	---	---	---
PCB-106/118	50/64	16.2 - 295000	22,861	---	---	---	---	---	---
PCB-114	38/64	6.69 - 7570	685	---	---	---	---	---	---
PCB-123	38/64	7.28 - 5640	549	---	---	---	---	---	---
PCB-126	29/64	10.2 - 1050	191	---	---	---	---	---	---
PCB-156	43/64	37.1 - 23800	2,771	---	---	---	---	---	---
PCB-157	37/64	9.24 - 5190	599	---	---	---	---	---	---
PCB-167	41/64	15.8 - 8950	984	---	---	---	---	---	---
PCB-169	7/64	9.06 - 97.3	27	---	---	---	---	---	---
PCB-170	45/64	91.5 - 43100	4,950	---	---	---	---	---	---
PCB-180	49/64	7.85 - 103000	11,723	---	---	---	---	---	---
PCB-189	34/64	10.2 - 1660	257	---	---	---	---	---	---
Total monoCB	47/55	32.3 - 11500	1,653	---	---	---	---	---	---
Total diCB	48/55	8.4 - 208000	20,351	---	---	---	---	---	---
Total triCB	47/55	5.46 - 1970000	117,257	---	---	---	---	---	---
Total tetraCB	49/55	30.4 - 4010000	211,574	---	---	---	---	---	---
Total pentaCB	43/55	75.2 - 2320000	161,466	---	---	---	---	---	---
Total hexaCB	41/55	28.4 - 1010000	93,010	---	---	---	---	---	---
Total heptaCB	40/55	13.1 - 389000	44,466	---	---	---	---	---	---
Total octaCB	36/55	104 - 107000	19,237	---	---	---	---	---	---
Total nonaCB	36/55	97.1 - 114000	10,082	---	---	---	---	---	---
Total decaCB	38/55	59.2 - 42000	5,073	---	---	---	---	---	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7: Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Aroclor (mg/kg)									
Aroclor-1016	0/72	---	---	---	---	---	---	---	---
Aroclor-1221	0/72	---	---	---	---	---	---	---	---
Aroclor-1232	0/72	---	---	---	---	---	---	---	---
Aroclor-1242	0/72	---	---	---	---	---	---	---	---
Aroclor-1248	37/72	46 - 960	260	---	---	---	---	---	---
Aroclor-1254	20/72	48 - 720	289	---	---	---	---	---	---
Aroclor-1260	18/72	46 - 420	191	---	---	---	---	---	---
Polybrominated Diphenyl Ethers (pg/g)									
BDE-1	22/64	17.5 - 693	193	---	---	---	---	---	---
BDE-2	17/64	11.2 - 439	148	---	---	---	---	---	---
BDE-3	31/64	9.82 - 1380	355	---	---	---	---	---	---
BDE-7	42/64	1.36 - 1160	242	---	---	---	---	---	---
BDE-10	14/64	1.03 - 14.8	4.9	---	---	---	---	---	---
BDE-13	32/64	0.646 - 283	54	---	---	---	---	---	---
BDE-15	53/64	0.685 - 4000	351	---	---	---	---	---	---
BDE-17	40/64	2.73 - 1190	310	---	---	---	---	---	---
BDE-25	7/64	3.34 - 45.2	12	---	---	---	---	---	---
BDE-28	44/64	3.2 - 316	85	---	---	---	---	---	---
BDE-35	15/64	1.27 - 107	35	---	---	---	---	---	---
BDE-47	64/64	34.3 - 6460	630	---	---	---	---	---	---
BDE-49	43/64	2.9 - 3070	634	---	---	---	---	---	---
BDE-66	31/64	3.61 - 234	67	---	---	---	---	---	---
BDE-75	28/64	1.01 - 501	134	---	---	---	---	---	---
BDE-77	7/64	0.635 - 8.96	2.7	---	---	---	---	---	---
BDE-85	32/64	3.56 - 189	34	---	---	---	---	---	---
BDE-99	64/64	31.5 - 6550	597	---	---	---	---	---	---
BDE-100	62/64	7.27 - 1480	152	---	---	---	---	---	---
BDE-116	7/64	6.82 - 29.6	13	---	---	---	---	---	---
BDE-126	7/64	2.13 - 9.97	4.1	---	---	---	---	---	---
BDE-138	10/64	5.49 - 120	37	---	---	---	---	---	---
BDE-153	36/64	11.5 - 1120	273	---	---	---	---	---	---
BDE-154	36/64	7.52 - 936	210	---	---	---	---	---	---
BDE-155	19/64	3.38 - 107	42	---	---	---	---	---	---
BDE-156	7/64	3.74 - 42.9	10	---	---	---	---	---	---
BDE-181	7/64	4.57 - 51	16	---	---	---	---	---	---

Table 1
Summary of Chemicals Detected in Sediment Samples in the Vicinity of SA7
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
BDE-183	38/64	10.4 - 4940	803	---	---	---	---	---	---
BDE-197	33/64	7.28 - 2930	676	---	---	---	---	---	---
BDE-203	32/64	11.1 - 1910	609	---	---	---	---	---	---
BDE-207	36/64	28 - 6980	2,017	---	---	---	---	---	---
BDE-209	52/64	178 - 291000	59,384	---	---	---	---	---	---
Total Mono-BDE	32/64	12.1 - 1650	540	---	---	---	---	---	---
Total Di-BDE	53/64	0.936 - 4190	832	---	---	---	---	---	---
Total Tri-BDE	45/64	3.25 - 3780	1,005	---	---	---	---	---	---
Total Tetra-BDE	64/64	34.3 - 11500	1,890	---	---	---	---	---	---
Total Penta-BDE	64/64	38.7 - 8520	806	---	---	---	---	---	---
Total Hexa-BDE	36/64	19.6 - 2950	775	---	---	---	---	---	---
Total Hepta-BDE	38/64	10.4 - 6580	1,178	---	---	---	---	---	---
Total Octa-BDE	34/64	9.31 - 8930	2,212	---	---	---	---	---	---
Total Nona-BDE	36/64	28 - 13600	4,034	---	---	---	---	---	---

Sources:

New Jersey Department of Environmental Protection (NJDEP). 1998. Guidance for Sediment Quality Evaluations. November.

Buchman, M.F., 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pages.

Notes:

All analyses are based on validated data from the October 2003 through January 2004 field sampling events and from the 2002 Remedial Investigation Report prepared by Tetra Tech.
Hexavalent chromium analyses were conducted by two analytical methods (7196A and 7199) following extraction by two methods (NJDEP and EPA).
ERL = Effects Range Low.
ERM = Effects Range Medium.
NJDEP = New Jersey Department of Environmental Protection.
NOAA = National Oceanic and Atmospheric Administration.
AET = Apparent Effects Threshold.
EPA = United States Environmental Protection Agency.
mg/kg = Miligrams per kilogram.
ug/kg = Micrograms per kilogram.
pg/g = picograms per gram.
--- = Value not available for this chemical
* = Marine/Estuarine sediment screening criteria not available, the freshwater sediment screening criteria was used.
** TEQ = Toxicity Equivalency Quotient; TEQ calculations do not include data from the 2002 Remedial Investigation Report.

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Metals (mg/kg):									
Aluminum	40/40	2380 - 14700	7,948	---	---	---	---	---	---
Antimony	1/40	2.3 - 2.3	2.3	---	---	---	---	9.3	0/1
Arsenic	40/40	1.4 - 113	17	8.2	24/40	70	2/40	35	4/40
Barium	40/40	9.1 - 325	112	---	---	---	---	48	31/40
Beryllium	39/40	0.11 - 0.97	0.5	---	---	---	---	---	---
Cadmium	38/45	0.14 - 8.1	1.5	1.2	15/38	9.6	0/38	3	4/38
Calcium	40/40	345 - 37000	6,643	---	---	---	---	---	---
Chromium	115/49	7.4 - 14200	824	81	100/115	370	50/115	62	104/115
Hexavalent Chromium NJDEP 7196A	0/45	---	---	---	---	---	---	---	---
Hexavalent Chromium NJDEP 7199	30/45	0.593 - 11.3	3.7	---	---	---	---	---	---
Hexavalent Chromium EPA 7196A	0/45	---	---	---	---	---	---	---	---
Hexavalent Chromium EPA 7199	34/45	0.744 - 12.4	3.2	---	---	---	---	---	---
Cobalt	40/40	2.4 - 21	7.3	---	---	---	---	---	---
Copper	41/45	6.4 - 715	119	34	32/41	270	3/41	390	2/41
Iron	40/40	5310 - 38900	20,051	---	---	---	---	---	---
Lead	41/130	7 - 476	122	47	34/41	218	6/41	400	1/41
Magnesium	40/40	1250 - 9390	4,825	---	---	---	---	---	---
Manganese	40/40	51.6 - 520	269	---	---	---	---	260	24/40
Mercury	41/126	0.041 - 64	6.2	0.15	35/41	0.71	29/41	0.41	32/41
Nickel	41/45	1.6 - 120	26	21	22/41	52	1/41	110	1/41
Potassium	40/40	298 - 2600	1,349	---	---	---	---	---	---
Selenium	3/40	2.7 - 3.7	3.2	---	---	---	---	1	3/3
Silver	35/40	0.44 - 8.8	2.3	1	25/35	3.7	4/35	3.1	7/35
Sodium	40/40	551 - 9360	4,243	---	---	---	---	---	---
Thallium	0/40	---	---	---	---	---	---	---	---
Vanadium	40/40	5.8 - 98.5	26	---	---	---	---	57	2/40
Zinc	41/45	19.2 - 842	231	150	24/41	410	6/41	410	6/41
Organotins (ug/kg):									
Dibutyltin	17/40	1.9 - 14	5.2	---	---	---	---	---	---
Monobutyltin	5/40	1.2 - 2	1.6	---	---	---	---	---	---
Tetrabutyltin	5/40	2.6 - 5.4	3.3	---	---	---	---	---	---
Tributyltin	16/40	1.9 - 19	6.3	---	---	---	---	---	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Semi-volatile Organic Compounds (ug/kg):									
1,2,4-Trichlorobenzene	13/41	13 - 140	51	---	---	---	---	4.8	13/13
1,2-Dichlorobenzene	9/41	17 - 51	27	---	---	---	---	13	9/9
1,3-Dichlorobenzene	11/41	20 - 30	25	---	---	---	---	---	---
1,4-Dichlorobenzene	29/41	8.8 - 160	68	---	---	---	---	110	3/29
2,4,5-Trichlorophenol	0/41	---	---	---	---	---	---	3	---
2,4,6-Trichlorophenol	0/41	---	---	---	---	---	---	6	---
2,4-Dichlorophenol	0/41	---	---	---	---	---	---	5	---
2,4-Dimethylphenol	0/41	---	---	---	---	---	---	18	---
2,4-Dinitrophenol	0/41	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	0/41	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	0/41	---	---	---	---	---	---	---	---
2-Chlorophenol	0/41	---	---	---	---	---	---	8	---
2-Methylphenol	0/41	---	---	---	---	---	---	8	---
2-Nitroaniline	0/41	---	---	---	---	---	---	---	---
2-Nitrophenol	0/41	---	---	---	---	---	---	---	---
3,3'-Dichlorobenzidine	0/41	---	---	---	---	---	---	---	---
3-Nitroaniline	0/41	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	0/41	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	0/41	---	---	---	---	---	---	---	---
4-Chloroaniline	23/41	12 - 380	110	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	0/41	---	---	---	---	---	---	---	---
4-Methylphenol	33/41	8.8 - 220	68	---	---	---	---	---	---
4-Nitroaniline	0/41	---	---	---	---	---	---	100	6/33
4-Nitrophenol	0/41	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	0/41	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	1/41	120 - 120	120	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	0/41	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	34/41	80 - 20000	3,456	---	---	---	---	---	---
Butylbenzyl phthalate	7/41	97 - 2600	861	---	---	---	---	---	---
Carbazole	35/41	8.7 - 350	76	---	---	---	---	63	7/7
Dibenzofuran	37/41	11 - 1800	189	---	---	---	---	---	---
Diethyl phthalate	5/41	16 - 210	98	---	---	---	---	110	10/37
Dimethyl phthalate	0/41	---	---	---	---	---	---	6	5/5
Di-n-butyl phthalate	1/41	140 - 140	140	---	---	---	---	6	---
Di-n-octyl phthalate	0/41	---	---	---	---	---	---	58	1/1
								61	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Hexachlorobenzene	0/41	---	---	---	---	---	---	6	---
Hexachlorobutadiene	0/41	---	---	---	---	---	---	1.3	---
Hexachlorocyclopentadiene	0/41	---	---	---	---	---	---	---	---
Hexachloroethane	0/41	---	---	---	---	---	---	73	---
Isophorone	0/41	---	---	---	---	---	---	---	---
Nitrobenzene	3/41	26 - 250	142	---	---	---	---	21	3/3
N-Nitroso-di-n-propylamine	0/41	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	3/41	73 - 440	208	---	---	---	---	28	3/3
Pentachlorophenol	0/41	---	---	---	---	---	---	17	---
Phenol	0/41	---	---	---	---	---	---	130	---
Polycyclic Aromatic Hydrocarbons (ug/kg):									
2-Chloronaphthalene	0/41	---	---	---	---	---	---	---	---
2-Methylnaphthalene	37/41	12 - 900	136	70	18/37	670	1/37	64	21/37
Acenaphthene	38/41	8.9 - 11000	627	16	37/38	500	6/38	130	13/38
Acenaphthylene	40/41	8.6 - 1400	336	44	37/40	640	5/40	71	36/40
Anthracene	39/41	28 - 6900	954	85	36/39	1,100	6/39	280	23/39
Benzo(a)anthracene	40/41	34 - 7500	1,729	261	36/40	1,600	11/40	960	20/40
Benzo(a)pyrene	40/41	30 - 5300	1,208	430	33/40	1,600	9/40	1,100	13/40
Benzo(b)fluoranthene	40/41	19 - 5200	978	---	---	---	---	1,800	5/40
Benzo(g,h,i)perylene	40/41	16 - 1800	517	170*	36/40	---	---	670	9/40
Benzo(k)fluoranthene	40/41	27 - 5500	1,223	240*	37/40	---	---	1,800	7/40
Chrysene	40/41	40 - 9000	2,028	384	36/40	2,800	9/40	950	25/40
Dibenzo(a,h)anthracene	35/41	20 - 870	211	63	32/35	260	8/35	230	9/35
Fluoranthene	40/41	34 - 18000	3,070	600	32/40	5,100	7/40	1,300	20/40
Fluorene	33/41	33 - 2000	223	19	33/33	540	3/33	120	10/33
Indeno(1,2,3-cd)pyrene	40/41	13 - 1800	477	200*	33/40	---	---	600	10/40
Naphthalene	39/41	18 - 6400	776	160	28/39	2,100	3/39	230	21/39
Phenanthrene	39/41	25 - 4900	819	240	27/39	1,500	5/39	660	13/39
Pyrene	40/41	65 - 18000	3,892	665	36/40	2,600	16/40	2,400	18/40
Pesticides (ug/kg):									
4,4'-DDD	40/91	11 - 76000	17,346	---	---	20	36/40	16	37/40
4,4'-DDE	54/91	12 - 820000	47,000	2.2	53/54	27	48/54	9	53/54
4,4'-DDT	10/91	13 - 46000	11,763	1	10/10	7	10/10	12	10/10
Aldrin	0/71	---	---	2*	---	---	---	9.5	---
alpha-BHC	5/71	12 - 38	23	6*	5/5	---	---	---	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
beta-BHC	1/71	20 - 20	20	5*	1/1	---	---	---	---
Chlordane	0/41	---	---	0.5	---	6	---	2.8	---
delta-BHC	0/71	---	---	---	---	---	---	---	---
Dieldrin	5/71	14 - 20	17	0.02	5/5	8	5/5	1.9	5/5
Endosulfan I	11/71	3200 - 37000	12,382	---	---	---	---	---	---
Endosulfan II	0/71	---	---	---	---	---	---	---	---
Endosulfan sulfate	1/71	4900 - 4900	4,900	---	---	---	---	---	---
Endrin	6/71	19 - 24000	12,003	3*	6/6	---	---	---	---
Endrin aldehyde	4/71	19 - 140	51	---	---	---	---	---	---
Endrin ketone	11/71	8.2 - 64	29	---	---	---	---	---	---
gamma-BHC (Lindane)	0/71	---	---	3*	---	---	---	4.8	---
Heptachlor	2/71	13 - 62	38	---	---	---	---	0.3	2/2
Heptachlor epoxide	2/71	15 - 140	78	5*	2/2	---	---	---	---
Methoxychlor	7/71	13 - 210000	35,874	---	---	---	---	---	---
Toxaphene	0/71	---	---	---	---	---	---	---	---
Dioxins and Furans (pg/g)									
Dioxins and Furans TEQ**	37/37	1.3 - 82	16	---	---	---	---	3.6	24/37
2,3,7,8-TCDD	36/39	2.47 - 1350	127	---	---	---	---	---	---
1,2,3,7,8-PeCDD	17/39	0.953 - 56.2	9.3	---	---	---	---	---	---
1,2,3,4,7,8-HxCDD	18/39	0.965 - 40.5	8.4	---	---	---	---	---	---
1,2,3,7,8,9-HxCDD	22/39	0.451 - 75.2	14	---	---	---	---	---	---
1,2,3,6,7,8-HxCDD	25/39	0.773 - 128	25	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDD	37/39	10.5 - 1390	279	---	---	---	---	---	---
OCDD	38/39	90.1 - 12370	2,738	---	---	---	---	---	---
Total TCDD	36/39	2.47 - 1520	153	---	---	---	---	---	---
Total PeCDD	26/39	9.61 - 304	54	---	---	---	---	---	---
Total HxCDD	35/39	5.09 - 1100	176	---	---	---	---	---	---
Total HpCDD	37/39	24.4 - 4180	706	---	---	---	---	---	---
2,3,7,8-TCDF	31/39	0.906 - 491	36	---	---	---	---	---	---
1,2,3,7,8-PeCDF	30/39	0.993 - 315	35	---	---	---	---	---	---
2,3,4,7,8-PeCDF	30/39	1.53 - 421	52	---	---	---	---	---	---
1,2,3,4,7,8-HxCDF	36/39	5.99 - 4720	356	---	---	---	---	---	---
1,2,3,7,8,9-HxCDF	22/39	0.319 - 142	16	---	---	---	---	---	---
1,2,3,6,7,8-HxCDF	34/39	2.87 - 1020	98	---	---	---	---	---	---
2,3,4,6,7,8-HxCDF	30/39	0.862 - 352	34	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDF	38/39	13.3 - 7820	885	---	---	---	---	---	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7, Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
1,2,3,4,7,8,9-HpCDF	26/39	0.727 - 165	27	---	---	---	---	---	---
OCDF	38/39	38.1 - 25560	1,974	---	---	---	---	---	---
Total TCDF	37/39	4.1 - 11700	1,167	---	---	---	---	---	---
Total PeCDF	37/39	2.46 - 9180	818	---	---	---	---	---	---
Total HxCDF	37/39	4.96 - 8780	821	---	---	---	---	---	---
Total HpCDF	38/39	18.3 - 22510	1,625	---	---	---	---	---	---
Polychlorinated Biphenyls (pg/g)									
Coplanar PCBs TEQ**	37/37	6.9 - 1510	182	22,700	---	180,000	---	130,000	---
PCB-77	35/39	63.5 - 28700	3,002	---	---	---	---	---	---
PCB-81	29/39	5.22 - 2750	370	---	---	---	---	---	---
PCB-105	36/39	143 - 52800	7,041	---	---	---	---	---	---
PCB-106/118	37/39	62.9 - 133000	18,910	---	---	---	---	---	---
PCB-114	30/39	6.69 - 3640	520	---	---	---	---	---	---
PCB-123	30/39	7.28 - 3150	417	---	---	---	---	---	---
PCB-126	22/39	10.2 - 512	156	---	---	---	---	---	---
PCB-156	34/39	37.1 - 23800	2,412	---	---	---	---	---	---
PCB-157	29/39	9.24 - 2060	480	---	---	---	---	---	---
PCB-167	33/39	15.8 - 3590	781	---	---	---	---	---	---
PCB-169	7/39	9.06 - 97.3	27	---	---	---	---	---	---
PCB-170	35/39	91.5 - 18200	4,106	---	---	---	---	---	---
PCB-180	36/39	242 - 42700	10,391	---	---	---	---	---	---
PCB-189	26/39	10.2 - 678	218	---	---	---	---	---	---
Total monoCB	28/36	32.3 - 8550	1,722	---	---	---	---	---	---
Total diCB	28/36	174 - 187000	20,165	---	---	---	---	---	---
Total triCB	28/36	272 - 1160000	98,519	---	---	---	---	---	---
Total tetraCB	28/36	760 - 2030000	181,026	---	---	---	---	---	---
Total pentaCB	28/36	321 - 1050000	126,136	---	---	---	---	---	---
Total hexaCB	28/36	126 - 412000	74,727	---	---	---	---	---	---
Total heptaCB	27/36	263 - 163000	37,524	---	---	---	---	---	---
Total octaCB	27/36	104 - 46900	13,730	---	---	---	---	---	---
Total nonaCB	27/36	97.1 - 53000	6,408	---	---	---	---	---	---
Total decaCB	27/36	59.2 - 42000	4,142	---	---	---	---	---	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Aroclor (mg/kg)									
Aroclor-1016	0/50	---	---	---	---	---	---	---	---
Aroclor-1221	0/50	---	---	---	---	---	---	---	---
Aroclor-1232	0/50	---	---	---	---	---	---	---	---
Aroclor-1242	0/50	---	---	---	---	---	---	---	---
Aroclor-1248	25/50	59 - 720	215	---	---	---	---	---	---
Aroclor-1254	12/50	48 - 420	232	---	---	---	---	---	---
Aroclor-1260	15/50	67 - 370	174	---	---	---	---	---	---
Polybrominated Diphenyl Ethers (pg/g)									
BDE-1	17/37	27.8 - 693	203	---	---	---	---	---	---
BDE-2	11/37	17.8 - 255	87	---	---	---	---	---	---
BDE-3	23/37	15.6 - 812	280	---	---	---	---	---	---
BDE-7	34/37	3.77 - 1160	233	---	---	---	---	---	---
BDE-10	12/37	1.03 - 14.8	5.4	---	---	---	---	---	---
BDE-13	25/37	0.646 - 160	37	---	---	---	---	---	---
BDE-15	36/37	3.43 - 2580	306	---	---	---	---	---	---
BDE-17	33/37	4.42 - 1190	297	---	---	---	---	---	---
BDE-25	5/37	3.34 - 45.2	13	---	---	---	---	---	---
BDE-28	34/37	3.39 - 301	79	---	---	---	---	---	---
BDE-35	13/37	1.27 - 107	39	---	---	---	---	---	---
BDE-47	37/37	90.1 - 6460	869	---	---	---	---	---	---
BDE-49	34/37	5.8 - 2540	568	---	---	---	---	---	---
BDE-66	24/37	4.11 - 234	66	---	---	---	---	---	---
BDE-75	23/37	1.01 - 389	117	---	---	---	---	---	---
BDE-77	5/37	0.635 - 8.96	2.8	---	---	---	---	---	---
BDE-85	24/37	6.44 - 189	37	---	---	---	---	---	---
BDE-99	37/37	94.8 - 6550	842	---	---	---	---	---	---
BDE-100	37/37	23.1 - 1480	203	---	---	---	---	---	---
BDE-116	5/37	7.11 - 29.6	13	---	---	---	---	---	---
BDE-126	5/37	2.26 - 9.97	4.2	---	---	---	---	---	---
BDE-138	7/37	5.49 - 78.9	34	---	---	---	---	---	---
BDE-153	28/37	17.3 - 1120	262	---	---	---	---	---	---
BDE-154	28/37	11.3 - 936	206	---	---	---	---	---	---
BDE-155	14/37	3.81 - 107	44	---	---	---	---	---	---
BDE-156	5/37	3.74 - 42.9	13	---	---	---	---	---	---
BDE-181	5/37	7.36 - 51	21	---	---	---	---	---	---

Table 2
Summary of Chemicals Detected in Sediment from 0 to 0.5 ft Below Mudline
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
BDE-183	30/37	18.3 - 4940	640	---	---	---	---	---	---
BDE-197	26/37	12.5 - 2780	574	---	---	---	---	---	---
BDE-203	25/37	11.1 - 1550	536	---	---	---	---	---	---
BDE-207	29/37	70.4 - 5740	1,793	---	---	---	---	---	---
BDE-209	35/37	2070 - 291000	65,442	---	---	---	---	---	---
Total Mono-BDE	24/37	19.2 - 1650	437	---	---	---	---	---	---
Total Di-BDE	36/37	3.43 - 2830	828	---	---	---	---	---	---
Total Tri-BDE	34/37	4.42 - 3360	974	---	---	---	---	---	---
Total Tetra-BDE	37/37	100 - 11500	2,398	---	---	---	---	---	---
Total Penta-BDE	37/37	118 - 8520	1,120	---	---	---	---	---	---
Total Hexa-BDE	28/37	19.6 - 2520	705	---	---	---	---	---	---
Total Hepta-BDE	30/37	18.3 - 6450	922	---	---	---	---	---	---
Total Octa-BDE	27/37	14.5 - 7080	1,852	---	---	---	---	---	---
Total Nona-BDE	29/37	70.4 - 11200	3,553	---	---	---	---	---	---

Sources:
New Jersey Department of Environmental Protection (NJDEP). 1998. Guidance for Sediment Quality Evaluations. November.
Buchman, M.F., 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pages.

Notes:
All analyses are based on validated data from the October 2003 through January 2004 field sampling events and from the 2002 Remedial Investigation Report prepared by Tetra Tech.
Hexavalent chromium analyses were conducted by two analytical methods (7196A and 7199) following extraction by two methods (NJDEP and EPA).
ERL = Effects Range Low.
ERM = Effects Range Medium.
NJDEP = New Jersey Department of Environmental Protection.
NOAA = National Oceanic and Atmospheric Administration.
AET = Apparent Effects Threshold.
EPA = United States Environmental Protection Agency.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
pg/g = picograms per gram.
--- = Value not available for this chemical.
* = Marine/Estuarine sediment screening criteria not available, the freshwater sediment screening criteria was used.
** TEQ = Toxicity Equivalency Quotient; TEQ calculations do not include data from the 2002 Remedial Investigation Report.

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Metals (mg/kg):									
Aluminum	6/6	8500 - 14600	10,642	---	---	---	---	---	---
Antimony	0/6	---	---	---	---	---	---	9.3	---
Arsenic	6/6	8 - 24.8	14	8.2	5/6	70	0/6	35	0/6
Barium	6/6	98.6 - 127	113	---	---	---	---	48	6/6
Beryllium	6/6	0.62 - 0.93	0.7	---	---	---	---	---	---
Cadmium	5/6	0.27 - 4.5	2.0	1.2	3/5	9.6	0/5	3	1/5
Calcium	6/6	2680 - 6930	4,732	---	---	---	---	---	---
Chromium	6/6	122 - 227	167	81	6/6	370	0/6	62	6/6
Hexavalent Chromium NJDEP 7196A	0/6	---	---	---	---	---	---	---	---
Hexavalent Chromium NJDEP 7199	4/6	1.09 - 11	4.6	---	---	---	---	---	---
Hexavalent Chromium EPA 7196A	0/6	---	---	---	---	---	---	---	---
Hexavalent Chromium EPA 7199	6/6	0.903 - 5.9	2.5	---	---	---	---	---	---
Cobalt	6/6	7.6 - 11.3	9.2	---	---	---	---	---	---
Copper	6/6	90.1 - 176	132	34	6/6	270	0/6	390	0/6
Iron	6/6	20600 - 31700	24,667	---	---	---	0/6	---	---
Lead	6/6	99.6 - 225	158	47	6/6	218	1/6	400	0/6
Magnesium	6/6	4700 - 8100	6,050	---	---	---	---	---	---
Manganese	6/6	263 - 536	356	---	---	---	---	260	6/6
Mercury	6/6	1.2 - 5.5	2.7	0.15	6/6	0.71	6/6	0.41	6/6
Nickel	6/6	22.7 - 44.2	33	21	6/6	52	0/6	110	0/6
Potassium	6/6	1540 - 2340	1,843	---	---	---	---	---	---
Selenium	0/6	---	---	---	---	---	---	1	---
Silver	5/6	0.65 - 3.3	2.3	1	4/5	3.7	0/5	3.1	2/5
Sodium	6/6	4040 - 10800	6,917	---	---	---	---	---	---
Thallium	0/6	---	---	---	---	---	---	---	---
Vanadium	6/6	22.9 - 38.7	29	---	---	---	---	57	0/6
Zinc	6/6	200 - 466	333	150	6/6	410	3/6	410	3/6
Organotins (ug/kg):									
Dibutyltin	4/6	11 - 22	16	---	---	---	---	---	---
Monobutyltin	0/6	---	---	---	---	---	---	---	---
Tetrabutyltin	0/6	---	---	---	---	---	---	---	---
Tributyltin	4/6	8.4 - 20	13	---	---	---	---	---	---

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Semi-volatile Organic Compounds (ug/kg):									
1,2,4-Trichlorobenzene	4/6	22 - 50	38	---	---	---	---	4.8	4/4
1,2-Dichlorobenzene	3/6	19 - 46	31	---	---	---	---	13	3/3
1,3-Dichlorobenzene	3/6	19 - 35	26	---	---	---	---	---	---
1,4-Dichlorobenzene	5/6	33 - 100	75	---	---	---	---	110	0/5
2,4,5-Trichlorophenol	0/6	---	---	---	---	---	---	3	---
2,4,6-Trichlorophenol	0/6	---	---	---	---	---	---	6	---
2,4-Dichlorophenol	0/6	---	---	---	---	---	---	5	---
2,4-Dimethylphenol	0/6	---	---	---	---	---	---	18	---
2,4-Dinitrophenol	0/6	---	---	---	---	---	---	---	---
2,4-Dinitrotoluene	0/6	---	---	---	---	---	---	---	---
2,6-Dinitrotoluene	0/6	---	---	---	---	---	---	---	---
2-Chlorophenol	0/6	---	---	---	---	---	---	8	---
2-Methylphenol	0/6	---	---	---	---	---	---	8	---
2-Nitroaniline	0/6	---	---	---	---	---	---	---	---
2-Nitrophenol	0/6	---	---	---	---	---	---	---	---
3,3'-Dichlorobenzidine	0/6	---	---	---	---	---	---	---	---
3-Nitroaniline	0/6	---	---	---	---	---	---	---	---
4,6-Dinitro-2-methylphenol	0/6	---	---	---	---	---	---	---	---
4-Chloro-3-methylphenol	0/6	---	---	---	---	---	---	---	---
4-Chloroaniline	4/6	57 - 280	127	---	---	---	---	---	---
4-Chlorophenyl phenyl ether	0/6	---	---	---	---	---	---	---	---
4-Methylphenol	6/6	52 - 110	74	---	---	---	---	100	1/6
4-Nitroaniline	0/6	---	---	---	---	---	---	---	---
4-Nitrophenol	0/6	---	---	---	---	---	---	---	---
bis(2-Chloroethoxy)methane	0/6	---	---	---	---	---	---	---	---
bis(2-Chloroethyl)ether	0/6	---	---	---	---	---	---	---	---
bis(2-Chloroisopropyl)ether	0/6	---	---	---	---	---	---	---	---
bis(2-Ethylhexyl)phthalate	6/6	260 - 5800	2,130	---	---	---	---	63	---
Butylbenzyl phthalate	0/6	---	---	---	---	---	---	---	---
Carbazole	6/6	58 - 390	194	---	---	---	---	110	2/6
Dibenzofuran	6/6	42 - 2100	709	---	---	---	---	6	---
Diethyl phthalate	0/6	---	---	---	---	---	---	6	---
Dimethyl phthalate	0/6	---	---	---	---	---	---	58	---
Di-n-butyl phthalate	0/6	---	---	---	---	---	---	61	---
Di-n-octyl phthalate	0/6	---	---	---	---	---	---		

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Hexachlorobenzene	0/6	---	---	---	---	---	---	6	---
Hexachlorobutadiene	0/6	---	---	---	---	---	---	1.3	---
Hexachlorocyclopentadiene	0/6	---	---	---	---	---	---	---	---
Hexachloroethane	0/6	---	---	---	---	---	---	73	---
Isophorone	0/6	---	---	---	---	---	---	---	---
Nitrobenzene	0/6	---	---	---	---	---	---	21	---
N-Nitroso-di-n-propylamine	0/6	---	---	---	---	---	---	---	---
N-Nitrosodiphenylamine	0/6	---	---	---	---	---	---	28	---
Pentachlorophenol	0/6	---	---	---	---	---	---	17	---
Phenol	0/6	---	---	---	---	---	---	130	---
Polycyclic Aromatic Hydrocarbons (ug/kg):									
2-Chloronaphthalene	0/6	---	---	---	---	---	---	---	---
2-Methylnaphthalene	6/6	52 - 3100	819	70	5/6	670	2/6	64	5/6
Acenaphthene	6/6	81 - 12000	3,035	16	6/6	500	2/6	130	4/6
Acenaphthylene	6/6	150 - 2400	950	44	6/6	640	2/6	71	6/6
Anthracene	6/6	260 - 7900	2,883	85	6/6	1,100	2/6	280	5/6
Benzo(a)anthracene	6/6	590 - 12000	4,458	261	6/6	1,600	3/6	960	4/6
Benzo(a)pyrene	6/6	660 - 11000	4,087	430	6/6	1,600	4/6	1,100	4/6
Benzo(b)fluoranthene	6/6	660 - 7900	3,123	---	---	---	---	1,800	2/6
Benzo(g,h,i)perylene	6/6	400 - 5300	2,002	170*	6/6	---	---	670	4/6
Benzo(k)fluoranthene	6/6	760 - 9300	3,593	240*	6/6	---	---	1,800	2/6
Chrysene	6/6	870 - 13000	5,028	384	6/6	2,800	2/6	950	5/6
Dibenzo(a,h)anthracene	6/6	130 - 1900	713	63	4/6	260	2/6	230	2/6
Fluoranthene	6/6	1800 - 25000	9,917	600	6/6	5,100	2/6	1,300	6/6
Fluorene	6/6	75 - 2000	674	19	6/6	540	2/6	120	4/6
Indeno(1,2,3-cd)pyrene	6/6	340 - 4900	1,863	200*	6/6	---	---	600	4/6
Naphthalene	6/6	95 - 14000	3,874	160	4/6	2,100	2/6	230	4/6
Phenanthrene	6/6	690 - 9100	2,918	240	6/6	1,500	2/6	660	6/6
Pyrene	6/6	1400 - 20000	8,000	665	6/6	2,600	4/6	2,400	4/6
Pesticides (ug/kg):									
4,4'-DDD	0/6	---	---	2	---	20	---	16	---
4,4'-DDE	1/6	20 - 20	20	2.2	1/1	27	0/1	9	---
4,4'-DDT	0/6	---	---	1	---	7	---	12	---
Aldrin	0/6	---	---	2*	---	---	---	9.5	---
alpha-BHC	5/6	17 - 40	27	6*	5/5	---	---	---	---

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
beta-BHC	0/6	---	---	5*	---	---	---	---	---
Chlordane	0/6	---	---	0.5	---	6	---	2.8	---
delta-BHC	0/6	---	---	---	---	---	---	---	---
Dieldrin	0/6	---	---	0.02	---	8	---	1.9	---
Endosulfan I	0/6	---	---	---	---	---	---	---	---
Endosulfan II	0/6	---	---	---	---	---	---	---	---
Endosulfan sulfate	0/6	---	---	---	---	---	---	---	---
Endrin	0/6	---	---	---	---	---	---	---	---
Endrin aldehyde	0/6	---	---	3*	---	---	---	---	---
Endrin ketone	1/6	38 - 38	38	---	---	---	---	---	---
gamma-BHC (Lindane)	0/6	---	---	---	---	---	---	---	---
Heptachlor	0/6	---	---	3*	---	---	---	4.8	---
Heptachlor epoxide	0/6	---	---	---	---	---	---	0.3	---
Methoxychlor	1/6	26 - 26	26	5*	---	---	---	---	---
Toxaphene	0/6	---	---	---	---	---	---	---	---
Dioxins and Furans (pg/g)									
Dioxins and Furans TEQ**	6/6	66 - 3769	1,728	---	---	---	---	3.6	6/6
2,3,7,8-TCDD	6/6	1.31 - 207	96	---	---	---	---	---	---
1,2,3,7,8-PeCDD	5/6	0.561 - 7.04	3.6	---	---	---	---	---	---
1,2,3,4,7,8-HxCDD	6/6	0.5 - 6.15	3.5	---	---	---	---	---	---
1,2,3,7,8,9-HxCDD	6/6	0.98 - 24.1	9.5	---	---	---	---	---	---
1,2,3,6,7,8-HxCDD	6/6	1.01 - 51.9	17	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDD	6/6	20.3 - 702	299	---	---	---	---	---	---
OCDD	6/6	793 - 6140	3,284	---	---	---	---	---	---
Total TCDD	6/6	12.3 - 249	129	---	---	---	---	---	---
Total PeCDD	6/6	6.77 - 40.4	22	---	---	---	---	---	---
Total HxCDD	6/6	24.5 - 488	157	---	---	---	---	---	---
Total HpCDD	6/6	53.9 - 1450	642	---	---	---	---	---	---
2,3,7,8-TCDF	6/6	3.23 - 29.2	14	---	---	---	---	---	---
1,2,3,7,8-PeCDF	6/6	2.48 - 23	11	---	---	---	---	---	---
2,3,4,7,8-PeCDF	6/6	2.44 - 47.9	21	---	---	---	---	---	---
1,2,3,4,7,8-HxCDF	6/6	5.35 - 219	98	---	---	---	---	---	---
1,2,3,7,8,9-HxCDF	6/6	0.748 - 11.2	4.6	---	---	---	---	---	---
1,2,3,6,7,8-HxCDF	6/6	3.39 - 146	68	---	---	---	---	---	---
2,3,4,6,7,8-HxCDF	6/6	1.57 - 24.6	12	---	---	---	---	---	---
1,2,3,4,6,7,8-HpCDF	6/6	28.5 - 1570	700	---	---	---	---	---	---

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7: Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
1,2,3,4,7,8,9-HpCDF	6/6	1.08 - 25.3	11	---	---	---	---	---	---
OCDF	6/6	32 - 1700	694	---	---	---	---	---	---
Total TCDF	6/6	50.9 - 1790	809	---	---	---	---	---	---
Total PeCDF	6/6	39.3 - 1660	755	---	---	---	---	---	---
Total HxCDF	6/6	34.8 - 1660	766	---	---	---	---	---	---
Total HpCDF	6/6	34.7 - 1840	835	---	---	---	---	---	---
Polychlorinated Biphenyls (pg/g)									
Coplanar PCBs TEQ**	6/6	20 - 645	238	22,700	---	180,000	---	130,000	---
PCB-77	6/6	78 - 6410	2,888	---	---	---	---	---	---
PCB-81	6/6	9.71 - 366	203	---	---	---	---	---	---
PCB-105	6/6	134 - 20300	7,024	---	---	---	---	---	---
PCB-106/118	6/6	398 - 51500	18,171	---	---	---	---	---	---
PCB-114	6/6	9.71 - 1330	447	---	---	---	---	---	---
PCB-123	6/6	9.71 - 792	272	---	---	---	---	---	---
PCB-126	5/6	9.71 - 248	110	---	---	---	---	---	---
PCB-156	6/6	38.1 - 6550	2,132	---	---	---	---	---	---
PCB-157	6/6	10.6 - 1080	412	---	---	---	---	---	---
PCB-167	6/6	16.5 - 2700	904	---	---	---	---	---	---
PCB-169	4/6	8.79 - 59.6	29	---	---	---	---	---	---
PCB-170	6/6	95.6 - 31900	8,207	---	---	---	---	---	---
PCB-180	6/6	277 - 81900	21,058	---	---	---	---	---	---
PCB-189	6/6	97.1 - 1220	345	---	---	---	---	---	---
Total monoCB	---	---	---	---	---	---	---	---	---
Total diCB	---	---	---	---	---	---	---	---	---
Total triCB	---	---	---	---	---	---	---	---	---
Total tetraCB	---	---	---	---	---	---	---	---	---
Total pentaCB	---	---	---	---	---	---	---	---	---
Total hexaCB	---	---	---	---	---	---	---	---	---
Total heptaCB	---	---	---	---	---	---	---	---	---
Total octaCB	---	---	---	---	---	---	---	---	---
Total nonaCB	---	---	---	---	---	---	---	---	---
Total decaCB	---	---	---	---	---	---	---	---	---

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
Aroclor (mg/kg)									
Aroclor-1016	---	---	---	---	---	---	---	---	---
Aroclor-1221	---	---	---	---	---	---	---	---	---
Aroclor-1232	---	---	---	---	---	---	---	---	---
Aroclor-1242	---	---	---	---	---	---	---	---	---
Aroclor-1248	---	---	---	---	---	---	---	---	---
Aroclor-1254	---	---	---	---	---	---	---	---	---
Aroclor-1260	---	---	---	---	---	---	---	---	---
Polybrominated Diphenyl Ethers (pg/g)									
BDE-1	4/6	99.1 - 208	142	---	---	---	---	---	---
BDE-2	4/6	45.2 - 450	181	---	---	---	---	---	---
BDE-3	4/6	196 - 420	329	---	---	---	---	---	---
BDE-7	5/6	35.5 - 552	318	---	---	---	---	---	---
BDE-10	1/6	3.1 - 3.1	3.1	---	---	---	---	---	---
BDE-13	4/6	45.8 - 159	90	---	---	---	---	---	---
BDE-15	6/6	8.4 - 1050	405	---	---	---	---	---	---
BDE-17	6/6	20.4 - 1250	438	---	---	---	---	---	---
BDE-25	0/6	---	---	---	---	---	---	---	---
BDE-28	5/6	21.5 - 553	242	---	---	---	---	---	---
BDE-35	4/6	43.1 - 153	99	---	---	---	---	---	---
BDE-47	6/6	201 - 7090	2,413	---	---	---	---	---	---
BDE-49	6/6	42.3 - 3800	1,293	---	---	---	---	---	---
BDE-66	3/6	71.9 - 300	188	---	---	---	---	---	---
BDE-75	3/6	3.71 - 383	135	---	---	---	---	---	---
BDE-77	0/6	---	---	---	---	---	---	---	---
BDE-85	4/6	29.8 - 209	106	---	---	---	---	---	---
BDE-99	6/6	230 - 7240	2,449	---	---	---	---	---	---
BDE-100	6/6	59.7 - 1880	636	---	---	---	---	---	---
BDE-116	1/6	76.8 - 76.8	77	---	---	---	---	---	---
BDE-126	0/6	---	---	---	---	---	---	---	---
BDE-138	3/6	80.2 - 104	95	---	---	---	---	---	---
BDE-153	4/6	378 - 1260	802	---	---	---	---	---	---
BDE-154	5/6	54.4 - 1120	545	---	---	---	---	---	---
BDE-155	4/6	40.6 - 122	70	---	---	---	---	---	---
BDE-156	0/6	---	---	---	---	---	---	---	---
BDE-181	0/6	---	---	---	---	---	---	---	---

Table 3
Summary of Chemicals Detected in Sediment from the Reference Areas
Study Area 7; Jersey City, New Jersey

Chemicals	Detection Frequency	Range of Detection	Average Detected Concentration	ERL (NJDEP/ NOAA)	ERL Exceedance Frequency	ERM (NJDEP/ NOAA)	ERM Exceedance Frequency	NOAA AET	NOAA AET Exceedance Frequency
BDE-183	5/6	59.1 - 4930	1,918	---	---	---	---	---	---
BDE-197	4/6	763 - 4880	2,503	---	---	---	---	---	---
BDE-203	4/6	755 - 4170	2,166	---	---	---	---	---	---
BDE-207	4/6	3760 - 23600	12,333	---	---	---	---	---	---
BDE-209	6/6	3580 - 470000	226,225	---	---	---	---	---	---
Total Mono-BDE	4/6	340 - 1000	651	---	---	---	---	---	---
Total Di-BDE	6/6	8.4 - 2460	1,079	---	---	---	---	---	---
Total Tri-BDE	6/6	33.9 - 3220	1,517	---	---	---	---	---	---
Total Tetra-BDE	6/6	243 - 13600	6,537	---	---	---	---	---	---
Total Penta-BDE	6/6	290 - 9750	3,359	---	---	---	---	---	---
Total Hexa-BDE	5/6	54.4 - 3550	2,081	---	---	---	---	---	---
Total Hepta-BDE	5/6	59.1 - 8230	3,176	---	---	---	---	---	---
Total Octa-BDE	4/6	2840 - 18800	9,275	---	---	---	---	---	---
Total Nona-BDE	4/6	7360 - 41800	22,115	---	---	---	---	---	---

Sources:
New Jersey Department of Environmental Protection (NJDEP). 1998. Guidance for Sediment Quality Evaluations. November.
Buchman, M.F., 1999. NOAA Screening Quick Reference Tables, NOAA HAZMAT Report 99-1, Seattle WA, Coastal Protection and Restoration Division, National Oceanic and Atmospheric Administration, 12 pages.

Notes:
All analyses are based on validated data from the October 2003 through January 2004 field sampling events and from the 2002 Remedial Investigation Report prepared by Tetra Tech.
Hexavalent chromium analyses were conducted by two analytical methods (7196A and 7199) following extraction by two methods (NJDEP and EPA).
ERL = Effects Range Low.
ERM = Effects Range Medium.
NJDEP = New Jersey Department of Environmental Protection.
NOAA = National Oceanic and Atmospheric Administration.
AET = Apparent Effects Threshold.
EPA = United States Environmental Protection Agency.
mg/kg = Milligrams per kilogram.
ug/kg = Micrograms per kilogram.
pg/g = picograms per gram.
--- = Value not available for this chemical.
* = Marine/Estuarine sediment screening criteria not available, the freshwater sediment screening criteria was used.
** TEQ = Toxicity Equivalency Quotient; TEQ calculations do not include data from the 2002 Remedial Investigation Report.

Table 4
Analytical Results of Total Chromium and Hexavalent Chromium in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
Reference Samples:							
SD001-RF1-000005-103	10/16/2003	0 - 0.5	183	8.25 UJ	1.18 J	8.25 UJ	5.9 J
SD001-RF2-000005-103	10/16/2003	0 - 0.5	143	13.3 UJ	1.67 UJ	13.3 UJ	3.73 J
SD001-RF3-000005-103	10/16/2003	0 - 0.5	122	7.95 UJ	5.29 J	7.95 UJ	0.903 JB
SD002-RF1-000005-103	10/16/2003	0 - 0.5	193	9.43 UJ	11 J	9.43 UJ	1.45 JB
SD002-RF2-000005-103	10/16/2003	0 - 0.5	133	11.8 UJ	1.48 J	11.8 UJ	1.59 JB
SD002-RF3-000005-103	10/16/2003	0 - 0.5	227	8.15 UJ	1.09 J	8.15 UJ	1.43 JB
Study Area 7 Samples:							
SD001-200-000005-203	11/25/2003	0 - 0.5	161	5.13 UJ	11.3 J	5.13 UJ	1.1 J
SD001-200-005010-203	11/25/2003	0.5 - 1	263	5.45 UJ	8.68 J	5.45 UJ	1.65 J
SD001-200-015020-203	11/25/2003	1.5 - 2	1,700	9.3 UJ	1.16 UJ	9.3 UJ	39.3 J
SD001-200-025030-203	11/25/2003	2.5 - 3	526	6.8 UJ	0.85 UJ	6.8 UJ	4.51 J
SD001-200-035040-203	11/25/2003	3.5 - 4	352	7.22 UJ	0.903 UJ	7.22 UJ	1.44 J
SD001-200-065070-203	11/25/2003	6.5 - 7	589	9.26 UJ	1.16 UJ	9.26 UJ	8.5 J
SD001-200-090095-203	11/25/2003	9 - 9.5	55.5	5.11 UJ	5.15 J	5.11 UJ	1.29 J
SD004-200-000005-203	11/22/2003	0 - 0.5	24.1 J	4.84 UJ	1.91 J	4.84 UJ	0.897 J
SD004-200-005010-203	11/22/2003	0.5 - 1	42.4 J	4.84 UJ	0.906 JB	4.84 UJ	0.621 J
SD004-200-015020-203	11/22/2003	1.5 - 2	170 J	5.84 UJ	2.01 J	5.84 UJ	0.756 J
SD004-200-025030-203	11/22/2003	2.5 - 3	373 J	7.81 UJ	1.32 JB	7.81 UJ	13.6 J
SD004-200-035040-203	11/22/2003	3.5 - 4	355 J	8.53 UJ	1.29 JB	8.53 UJ	1.07 J
SD004-200-065070-203	11/22/2003	6.5 - 7	310 J	7.89 UJ	0.994 JB	7.89 UJ	0.986 UJ
SD004-200-085090-203	11/22/2003	8.5 - 9	357 J	8.23 UJ	3.77 J	8.23 UJ	4.84 J
SD00A-005-000005-203	12/1/2003	0 - 0.5	304	5.63 UJ	2.03 J	5.63 UJ	0.563 U
SD00A-005-005010-203	12/1/2003	0.5 - 1	358	5.98 UJ	0.598 UJ	5.98 UJ	0.598 U
SD00A-005-015020-203	12/1/2003	1.5 - 2	337	6.46 UJ	0.646 UJ	6.46 UJ	0.646 U
SD00A-005-025030-203	12/1/2003	2.5 - 3	2,170	7.53 UJ	0.753 UJ	7.53 UJ	0.753 U
SD00A-005-035040-203	12/1/2003	3.5 - 4	2,570	8.6 UJ	0.86 UJ	8.6 UJ	0.86 U
SD00A-005-065070-203	12/1/2003	6.5 - 7	675	9.85 UJ	0.985 UJ	9.85 UJ	13.2 J
SD00A-005-095100-203	12/1/2003	9.5 - 10	16.9	4.51 UJ	2.83 UJ	4.51 UJ	0.595 B
SD00A-025-000005-203	11/23/2003	0 - 0.5	241	6.96 U	0.696 UJ	6.96 UJ	2.26 JB
SD00A-025-005010-203	11/23/2003	0.5 - 1	514	7.05 U	0.769 JB	7.05 UJ	0.882 UJ
SD0DA-025-005010-203	11/23/2003	0.5 - 1*	477	7.26 UJ	0.748 JB	7.26 UJ	0.907 UJ
SD00A-025-015020-203	11/23/2003	1.5 - 2	659 J	10.1 UJ	1.01 UJ	10.1 UJ	6.49 J
SD00A-025-025030-203	11/23/2003	2.5 - 3	1,050 J	8.23 UJ	5.62 J	8.23 UJ	5.58 J
SD00A-025-035040-203	11/23/2003	3.5 - 4	497 J	6.84 UJ	40.9 J	6.84 UJ	0.855 J
SD00A-025-065070-203	11/23/2003	6.5 - 7	540	8.28 UJ	3.21 JB	8.28 UJ	3.31 JB
SD00A-025-095100-203	11/23/2003	9.5 - 10	4.8	4.89 U	0.489	4.89 UJ	0.611 J
SD00A-050-000005-203	11/23/2003	0 - 0.5	332	7.14 UJ	0.714 UJ	7.14 UJ	8.96 J
SD00A-050-005010-203	11/23/2003	0.5 - 1	435	9.05 UJ	0.905 UJ	9.05 UJ	7.92 J
SD00A-050-015020-203	11/23/2003	1.5 - 2	1,690	10.2 UJ	1.72 JB	10.2 UJ	56.5 J
SD00A-050-025030-203	11/23/2003	2.5 - 3	727	8.4 U	0.884 JB	8.4 UJ	1.98 JB
SD00A-050-035040-203	11/23/2003	3.5 - 4	1,520	8.37 U	1.38 JB	8.37 UJ	3.54 JB
SD00A-050-065070-203	11/23/2003	6.5 - 7	669	8.73 UJ	9.04 J	8.73 UJ	3.23 JB
SD00A-050-095099-203	11/23/2003	9.5 - 9.9	7.9	4.82 UJ	0.916 JB	4.82 UJ	0.602 J
SD00A-100-000005-203	11/24/2003	0 - 0.5	1,230 J	8.68 UJ	3.43 J	8.68 UJ	6.62 J
SD00A-100-005010-203	11/24/2003	0.5 - 1	483 J	8.02 UJ	9.54 J	8.02 UJ	1.9 JB
SD00A-100-015020-203	11/24/2003	1.5 - 2	464 J	8.05 UJ	0.861 JB	8.05 UJ	1.01 UJ
SD00A-100-025030-203	11/24/2003	2.5 - 3	530 J	7.23 UJ	1.1 JB	7.23 UJ	4.68 J
SD00A-100-035040-203	11/24/2003	3.5 - 4	713	7.78 UJ	1.3	7.78 UJ	4.51
SD00A-100-065070-203	11/24/2003	6.5 - 7	27.3	5.08 UJ	4.31	5.08 UJ	0.779 B
SD00A-100-095100-203	11/24/2003	9.5 - 10	7	4.71 UJ	0.597 JB	4.71 UJ	0.589 U

Table 4
Analytical Results of Total Chromium and Hexavalent Chromium in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SD00A-200-000005-203	12/1/2003	0 - 0.5	1,360	9.78 UJ	0.978 UJ	9.78 UJ	0.978 U
SD00A-200-005010-203	12/1/2003	0.5 - 1	415	7.91 UJ	1.78 J	7.91 UJ	7.59 J
SD00A-200-015020-203	12/1/2003	1.5 - 2	211	7.21 UJ	0.721 UJ	7.21 UJ	1.27 B
SD00A-200-025030-203	12/1/2003	2.5 - 3	275	7.71 UJ	13.4 J	7.71 UJ	4.53
SD00A-200-035040-203	12/1/2003	3.5 - 4	189	6.29 UJ	5.82 J	6.29 UJ	2.61 JB
SD00A-200-065070-203	12/1/2003	6.5 - 7	380	7.39 UJ	21.3 J	7.39 UJ	0.739 JB
SD00A-200-095100-203	12/1/2003	9.5 - 10	7.1	4.87 UJ	1.4 JB	4.87 UJ	0.65 B
SD00B-005-000005-203	12/1/2003	0 - 0.5	130	4.61 UJ	3.03 J	4.61 UJ	0.942 B
SD0DB-005-000005-203	12/1/2003	0 - 0.5*	32.8	4.66 UJ	1.02 JB	4.66 UJ	0.466 U
SD00B-005-005010-203	12/1/2003	0.5 - 1	175	5.16 UJ	0.516 UJ	5.16 UJ	0.516 U
SD00B-005-015020-203	12/1/2003	1.5 - 2	390	9.85 J	16.2 J	4.88 UJ	3.79 JB
SD00B-005-025030-203	12/1/2003	2.5 - 3	89.6	5.2 UJ	2.24 J	5.2 UJ	3.26 JB
SD00B-005-035040-203	12/1/2003	3.5 - 4	501	7.38 UJ	0.738 UJ	7.38 UJ	0.738 U
SD00B-005-065070-203	12/1/2003	6.5 - 7	72.2	5.11 UJ	0.633 JB	5.11 UJ	0.571 B
SD00B-005-095100-203	12/1/2003	9.5 - 10	5.4	4.98 UJ	0.664 JB	4.98 UJ	0.542 B
SD00B-025-000005-203	12/1/2003	0 - 0.5	126	4.95 UJ	6.09 J	4.95 UJ	1.2 J
SD00B-025-005010-203	12/1/2003	0.5 - 1	573	5.26 UJ	5.57 J	5.86 J	13.4 J
SD0DB-025-005010-203	11/25/2003	0.5 - 1*	602	5.17 UJ	12 J	5.17 UJ	5.98 J
SD00B-025-015020-203	12/1/2003	1.5 - 2	116	5.98 UJ	2.74 J	5.98 UJ	0.598 UJ
SD00B-025-025030-203	12/1/2003	2.5 - 3	785	8.13 UJ	1.02 UJ	8.13 UJ	0.813 UJ
SD00B-025-035040-203	12/1/2003	3.5 - 4	406	7.45 UJ	0.931 UJ	7.45 UJ	0.745 UJ
SD00B-025-065070-203	11/25/2003	6.5 - 7	10.3	5.05 UJ	0.896 J	5.05 UJ	0.687 J
SD00B-025-095099-203	11/25/2003	9.5 - 9.9	8.1	4.91 UJ	0.747 J	4.91 UJ	0.491 UJ
SD00B-050-000005-203	11/23/2003	0 - 0.5	372	5.23 UJ	0.654 JB	5.23 UJ	0.654 UJ
SD00B-050-005010-203	11/23/2003	0.5 - 1	670	6.63 UJ	23.4 J	6.63 UJ	1.91 JB
SD0DB-050-005010-203	11/23/2003	0.5 - 1*	522	7.1 UJ	0.908 JB	7.1 UJ	4.71 J
SD00B-050-015020-203	11/23/2003	1.5 - 2	421	8.2 UJ	4.88 J	8.2 UJ	1.26 JB
SD00B-050-025030-203	11/23/2003	2.5 - 3	47.1	4.85 UJ	1.24 JB	4.85 UJ	4.32 JB
SD00B-050-035040-203	11/23/2003	3.5 - 4	10.2	5.69 UJ	0.844 JB	5.69 UJ	0.787 B
SD00B-050-065070-203	11/23/2003	6.5 - 7	6.4	4.23 UJ	0.537 JB	4.23 UJ	0.535 B
SD00B-050-095098-203	11/23/2003	9.5 - 9.8	5.2	4.87 U	0.526 JB	4.87 UJ	0.816 B
SD00B-100-000005-203	11/22/2003	0 - 0.5	156	4.94 UJ	5.36	4.94 UJ	1.88 JB
SD00B-100-005010-203	11/22/2003	0.5 - 1	306	7.8 UJ	15.1	7.8 UJ	22.6
SD00B-100-015020-203	11/22/2003	1.5 - 2	10.6	5.15 UJ	1.33	5.15 UJ	0.99 B
SD00B-100-025030-203	11/22/2003	2.5 - 3	6.3	4.87 UJ	0.569	4.87 UJ	0.655 B
SD00B-100-035040-203	11/22/2003	3.5 - 4	4.5	4.86 UJ	0.486 U	4.86 UJ	0.608 U
SD00B-100-065070-203	11/22/2003	6.5 - 7	4.6	4.71 UJ	0.471 U	4.71 UJ	0.589 U
SD00B-100-080085-203	11/22/2003	8 - 8.5	6.7	4.72 UJ	0.472 U	4.72 UJ	0.59 U
SD00B-200-000005-203	11/22/2003	0 - 0.5	72.7	5.04 UJ	6.6	5.04 UJ	3.19 B
SD00B-200-005010-203	11/22/2003	0.5 - 1	208	6.43 UJ	6.72	6.43 UJ	1.88 B
SD00B-200-015020-203	11/22/2003	1.5 - 2	163	6.97 UJ	13.8	6.97 UJ	1.04 B
SD00B-200-025030-203	11/22/2003	2.5 - 3	224 J	7.27 UJ	2.6 J	7.27 UJ	1.45 J
SD00B-200-035040-203	11/22/2003	3.5 - 4	122 J	6.09 UJ	0.609 UJ	6.09 UJ	3.58 JB
SD00B-200-065070-203	11/22/2003	6.5 - 7	376 J	7.27 UJ	0.835 JB	7.27 UJ	0.909 UJ
SD00B-200-090094-203	11/22/2003	9 - 9.4	437 J	7.14 UJ	3.98 J	7.14 UJ	4.38 J
SD00C-005-000005-203	11/20/2003	0 - 0.5	170	10.3 UJ	1.03 UJ	10.3 UJ	1.03 UJ
SD00C-005-005010-203	11/20/2003	0.5 - 1	166	11 UJ	1.1 UJ	11 UJ	1.1 UJ
SD00C-005-015020-203	11/20/2003	1.5 - 2	194	9.85 UJ	0.985 UJ	9.85 UJ	0.985 UJ
SD00C-005-025030-203	11/20/2003	2.5 - 3	181	9.59 UJ	0.959 UJ	9.59 UJ	0.959 UJ
SD00C-005-035040-203	11/20/2003	3.5 - 4	206	8.93 UJ	1.33 JB	8.93 UJ	0.893 UJ
SD00C-005-065070-203	11/20/2003	6.5 - 7	198	8.75 UJ	12.7 J	8.75 UJ	0.875 UJ

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Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SD00C-005-085090-203	11/20/2003	8.5 - 9	198	6.85 UJ	3.72 J	6.85 UJ	0.685 UJ
SD00C-025-000005-103	10/16/2003	0 - 0.5	149	10.9 UJ	1.37 J	10.9 UJ	2.1 JB
SD00C-025-000005-203	11/19/2003	0 - 0.5	180	9.76 UJ	0.976 UJ	9.76 UJ	4.59
SD00C-025-005010-203	11/19/2003	0.5 - 1	203	11.2 UJ	1.12 UJ	11.2 UJ	3.6
SD00C-025-015020-203	11/19/2003	1.5 - 2	197	9.41 UJ	1.96 J	9.41 UJ	3.93
SD00C-025-025030-203	11/19/2003	2.5 - 3	226	8.95 UJ	0.895 UJ	8.95 UJ	5.32
SD00C-025-035040-203	11/19/2003	3.5 - 4	197	6.99 UJ	0.699 UJ	6.99 UJ	0.874 U
SD00C-025-065070-203	11/19/2003	6.5 - 7	311	8.42 UJ	1 JB	8.42 UJ	1.05 U
SD00C-050-D65070-203	11/19/2003	6.5 - 7*	768	8.85 UJ	0.885 UJ	8.85 UJ	1.11 U
SD00C-025-095100-203	11/19/2003	9.5 - 10	593	7.74 UJ	0.942 JB	7.74 UJ	0.967 U
SD00C-050-000005-203	11/19/2003	0 - 0.5	274	9.43 UJ	0.943 UJ	9.43 UJ	3.28
SD00C-050-005010-203	11/19/2003	0.5 - 1	224	9.35 UJ	1.72 J	9.35 UJ	1.17 U
SD00C-050-015020-203	11/19/2003	1.5 - 2	234	8.79 UJ	1.38 J	8.79 UJ	8.73
SD00C-050-025030-203	11/19/2003	2.5 - 3	181	6.05 UJ	8.73 J	6.05 UJ	0.756 U
SD00C-050-035040-203	11/19/2003	3.5 - 4	576	8.83 UJ	0.905 JB	8.83 UJ	1.1 U
SD00C-050-065070-203	11/19/2003	6.5 - 7	696	8.64 UJ	0.864 UJ	8.64 UJ	1.08 U
SD00C-050-095100-203	11/19/2003	9.5 - 10	309	6.86 UJ	2.71 J	6.86 UJ	0.858 U
SD00C-050-D95100-203	11/19/2003	9.5 - 10*	294	6.66 UJ	3.28 J	6.66 UJ	0.832 U
SD00C-100-000005-103	10/16/2003	0 - 0.5	127	7.58 UJ	1.27 J	7.58 UJ	1.05 JB
SD0DC-100-000005-103	10/16/2003	0 - 0.5*	136	7.52 UJ	5.45 J	7.52 UJ	7.61 J
SD00C-100-000005-203	11/21/2003	0 - 0.5	136	6.73 UJ	4.14 J	6.73 U	12.4 J
SD00C-100-005010-203	11/21/2003	0.5 - 1	159	6.39 UJ	4.76 J	6.39 U	4.98 J
SD0DC-100-005010-203	11/21/2003	0.5 - 1*	126	5.91 UJ	4.49 J	5.91 U	2.6 J
SD00C-100-015020-203	11/21/2003	1.5 - 2	175	7.05 UJ	0.705 UJ	7.05 U	0.705 U
SD00C-100-025030-203	11/21/2003	2.5 - 3	199	7.94 UJ	7.98 J	7.94 UJ	4.15 J
SD00C-100-035040-203	11/21/2003	3.5 - 4	228	7.87 UJ	0.787 UJ	7.87 UJ	10.5 J
SD00C-100-065070-203	11/21/2003	6.5 - 7	293	8.32 UJ	10.1 J	8.32 UJ	0.832 UJ
SD00C-100-090095-203	11/21/2003	9 - 9.5	170	6.08 UJ	0.766 J	6.08 UJ	6.63 J
SD00C-200-000005-203	11/21/2003	0 - 0.5	53.4	5.76 UJ	5.56 J	5.76 UJ	1.82 J
SD00C-200-005010-203	11/21/2003	0.5 - 1	50.3	5.04 UJ	1.46 J	5.04 UJ	1.07 J
SD00C-200-015020-203	11/21/2003	1.5 - 2	321	8.46 UJ	2.98 J	8.46 UJ	3.78 J
SD00C-200-025030-203	11/21/2003	2.5 - 3	456	8.95 UJ	2.01 J	8.95 UJ	3.56 J
SD00C-200-035040-203	11/21/2003	3.5 - 4	388	8.02 UJ	1.71 J	8.02 UJ	0.802 UJ
SD00C-200-065070-203	11/21/2003	6.5 - 7	602	8.32 UJ	1.31 J	8.32 UJ	0.832 UJ
SD00C-200-090095-203	11/21/2003	9 - 9.5	334	8.28 UJ	1.7 J	8.28 UJ	0.828 UJ
SD00D-050-000005-103	10/16/2003	0 - 0.5	320	7.63 UJ	0.95 UJ	7.63 UJ	1.59 JB
SD00D-150-000005-103	10/16/2003	0 - 0.5	1,400	11.7 UJ	1.46 UJ	11.7 UJ	3.79 J
SD01W-010-065070-203	11/15/2003	6.5 - 7	299	6.55 UJ	1.75 J	6.55 U	9.18 J
SD01W-010-115120-203	11/15/2003	11.5 - 12	6.6	4.68 UJ	0.987 JB	4.68 U	0.468 U
SD02C-010-065070-203	11/13/2003	6.5 - 7	430	8.7 UJ	2.17 JB	8.7 UJ	0.87 UJ
SD02C-010-115120-203	11/13/2003	11.5 - 12	7.3	4.69 UJ	0.501 B	4.69 UJ	0.469 UJ
SD02C-010-165170-203	11/13/2003	16.5 - 17	7.8	4.68 UJ	0.468 UJ	4.68 UJ	0.468 UJ
SD02E-010-065070-203	11/15/2003	6.5 - 7	285	5.87 UJ	0.75 JB	5.87 U	3.45 J
SD02E-010-115120-203	11/15/2003	11.5 - 12	7.6	4.56 UJ	0.456 UJ	4.56 U	0.456 U
SD02E-010-165170-203	11/15/2003	16.5 - 17	6.8	4.85 UJ	0.601 JB	4.85 U	0.485 U
SD02E-025-000005-203	11/21/2003	0 - 0.5	216	9.37 UJ	0.937 UJ	9.37 UJ	5.41 J
SD02E-025-005010-203	11/21/2003	0.5 - 1	271	9.41 UJ	0.941 UJ	9.41 UJ	3.44 J
SD02E-025-015020-203	11/21/2003	1.5 - 2	208	8.25 UJ	0.825 UJ	8.25 UJ	0.825 UJ
SD02E-025-025030-203	11/21/2003	2.5 - 3	207	6.45 UJ	0.84 J	6.45 UJ	3.15 J
SD02E-025-035040-203	11/21/2003	3.5 - 4	860	7.09 UJ	2.18 J	7.09 UJ	0.709 UJ
SD02E-025-065070-203	11/21/2003	6.5 - 7	406	8.26 UJ	1.9 J	8.26 UJ	6.71 J

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Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SD02E-025-090095-203	11/21/2003	9 - 9.5	5.3	4.85 UJ	0.738 J	4.85 UJ	0.485 UJ
SD02E-075-000005-103	10/16/2003	0 - 0.5	331	10 UJ	3.25 JB	10 UJ	1.52 JB
SD02E-075-000005-203	11/20/2003	0 - 0.5	157	9.8 UJ	2.45 J	9.8 UJ	1.23 U
SDD2E-075-000005-203	11/20/2003	0 - 0.5*	158	9.83 UJ	0.983 UJ	9.83 UJ	1.6
SD02E-075-005010-203	11/20/2003	0.5 - 1	185	10.2 UJ	11.9 J	10.2 UJ	1.02 UJ
SDD2E-075-005010-203	11/20/2003	0.5 - 1*	174	9.76 UJ	3.46 J	9.76 UJ	0.976 UJ
SD02E-075-015020-203	11/20/2003	1.5 - 2	189	9.46 UJ	0.946 UJ	9.46 UJ	0.946 UJ
SD02E-075-025030-203	11/20/2003	2.5 - 3	231	8.83 UJ	0.936 JB	8.83 UJ	3.51 J
SD02E-075-035040-203	11/20/2003	3.5 - 4	218	8.42 UJ	3.22 J	8.42 UJ	1.04 J
SD02E-075-065070-203	11/20/2003	6.5 - 7	7.2	4.63 UJ	1.12 JB	4.63 UJ	0.463 UJ
SD02E-075-085090-203	11/20/2003	8.5 - 9	7.4	4.87 UJ	0.598 JB	4.87 UJ	0.487 UJ
SD02W-200-000005-203	12/2/2003	0 - 0.5	7.4	4.67 UJ	0.593 JB	4.67 UJ	0.467 UJ
SD02W-200-005010-203	12/2/2003	0.5 - 1	10.7	4.6 UJ	0.597 JB	4.6 UJ	0.46 UJ
SD02W-200-015020-203	12/2/2003	1.5 - 2	7.9	4.88 UJ	1.22 JB	4.88 UJ	0.629 B
SD02W-200-025030-203	12/2/2003	2.5 - 3	22.9	4.98 UJ	0.498 UJ	4.98 UJ	0.498 UJ
SD02W-200-035040-203	12/2/2003	3.5 - 4	18.5	5.03 UJ	0.869 JB	5.03 UJ	0.503 UJ
SD02W-200-065070-203	12/2/2003	6.5 - 7	11.4	4.63 UJ	0.463 UJ	4.63 UJ	0.463 U
SD02W-200-095100-203	12/2/2003	9.5 - 10	17.7	4.96 UJ	0.496 UJ	4.96 UJ	0.496 UJ
SD03E-010-000005-203	11/11/2003	0 - 0.5	3,070 J	7.13 UJ	0.713 UJ	7.13 UJ	1.07 J
SD03E-010-005010-203	11/11/2003	0.5 - 1	126 J	5.78 UJ	0.591 JB	5.78 UJ	0.578 UJ
SD03E-010-015020-203	11/11/2003	1.5 - 2	466 J	8.83 UJ	3.36 J	8.83 UJ	0.883 UJ
SD03E-010-025030-203	11/11/2003	2.5 - 3	939 J	8.71 UJ	0.871 UJ	8.71 UJ	0.871 UJ
SD03E-010-035040-203	11/11/2003	3.5 - 4	315 J	7.74 UJ	8.49 J	7.74 UJ	0.897 J
SD03E-010-045050-203	11/11/2003	4.5 - 5	127 J	6.27 UJ	0.627 UJ	6.27 UJ	1.08 J
SD03E-010-055060-203	11/11/2003	5.5 - 6	4.3 J	5.21 UJ	0.75 JB	5.21 UJ	0.521 UJ
SD03E-010-065070-203	11/11/2003	6.5 - 7	5.1 J	5.01 UJ	0.613 JB	5.01 UJ	0.501 UJ
SD03E-010-075080-203	11/11/2003	7.5 - 8	8.8 J	4.83 UJ	1.1 J	4.83 UJ	0.483 UJ
SD03E-010-085090-203	11/11/2003	8.5 - 9	99.4 J	15.2 J	21.5 J	4.8 UJ	4.56 J
SD03E-010-095100-203	11/11/2003	9.5 - 10	225 J	4.63 UJ	1.63 J	4.63 UJ	6.19 J
SD03E-010-105110-203	11/11/2003	10.5 - 11	167 J	6.12 J	2.57 J	4.63 UJ	0.463 UJ
SD03E-010-115120-203	11/11/2003	11.5 - 12	132 J	5.94 J	10.2 J	4.78 UJ	2.6 J
SD03E-010-125130-203	11/11/2003	12.5 - 13	15.8 J	4.71 UJ	0.634 JB	4.71 UJ	0.471 UJ
SD03E-010-135140-203	11/11/2003	13.5 - 14	23.5 J	4.71 UJ	0.538 JB	4.71 UJ	0.471 UJ
SD03E-025-000005-203	11/16/2003	0 - 0.5	299 J	5.88 UJ	8.91 J	5.88 UJ	0.744 JB
SD03E-025-005010-203	11/16/2003	0.5 - 1	229 J	7.26 UJ	6.73 J	7.26 UJ	4.26 JB
SD03E-025-015020-203	11/16/2003	1.5 - 2	450 J	7.97 UJ	20.7 J	7.97 UJ	9.96 J
SD03E-025-025030-203	11/16/2003	2.5 - 3	283 J	7.04 UJ	1.3 J	7.04 UJ	12.4 J
SD03E-025-038043-203	11/16/2003	3.8 - 4.3	9 J	4.96 UJ	1.04 JB	4.96 UJ	0.496 UJ
SD03E-025-065070-203	11/16/2003	6.5 - 7	8.5 J	4.88 UJ	1.9 J	4.88 UJ	0.488 UJ
SD03E-025-093098-203	11/16/2003	9.3 - 9.8	7 J	4.87 UJ	0.661 JB	4.87 UJ	0.487 UJ
SD03E-050-000005-103	10/16/2003	0 - 0.5	377	6.91 UJ	1.45 JB	6.91 UJ	1.37 JB
SD03E-050-065070-203	11/12/2003	6.5 - 7	6.7	4.77 UJ	1.01 JB	4.77 UJ	0.909
SD03E-050-115120-203	11/12/2003	11.5 - 12	6.4	4.83 UJ	0.596 JB	4.83 UJ	0.598
SD03E-075-000005-203	11/17/2003	0 - 0.5	536 J	8.58 UJ	0.858 U	8.58 UJ	1.99 J
SD03E-075-005010-203	11/17/2003	0.5 - 1	361 J	7.63 UJ	3.13 J	7.63 UJ	0.763 UJ
SD03E-075-015020-203	11/17/2003	1.5 - 2	128 J	5.43 UJ	0.978 JB	5.43 UJ	2.45 J
SD03E-075-025030-203	11/17/2003	2.5 - 3	386 J	6.34 UJ	0.634 U	6.34 UJ	1.76 J
SD03E-075-035040-203	11/17/2003	3.5 - 4	9 J	4.91 UJ	2.2 J	4.91 UJ	0.491 UJ
SD03E-075-055060-203	11/17/2003	5.5 - 6	6.4 J	4.73 UJ	0.473 UJ	4.73 UJ	0.473 UJ
SD03E-075-062067-203	11/17/2003	6.2 - 6.7	6.5 J	4.8 UJ	0.48 UJ	4.8 UJ	0.48 UJ
SD03W-150-000005-103	10/16/2003	0 - 0.5	27.8	5.03 UJ	4.7 J	5.03 UJ	1.08 JB

Table 4
Analytical Results of Total Chromium and Hexavalent Chromium in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SD03W-200-000005-203	11/24/2003	0 - 0.5	53.8	4.8 UJ	3.16	4.8 UJ	3.3 JB
SD03W-200-005010-203	11/24/2003	0.5 - 1	25	4.88 UJ	5.45	4.88 UJ	1.39 JB
SDD3W-200-005010-203	11/24/2003	0.5 - 1*	13.7	5.08 UJ	3.93	5.08 UJ	0.635 U
SD03W-200-015020-203	11/24/2003	1.5 - 2	5.8	4.72 UJ	0.478 JB	4.72 UJ	0.59 U
SD03W-200-025030-203	11/24/2003	2.5 - 3	7.1	4.82 UJ	0.966 JB	4.82 UJ	0.602 U
SD03W-200-035040-203	11/24/2003	3.5 - 4	7	4.9 UJ	0.49 U	4.9 UJ	0.613 U
SD03W-200-065070-203	11/24/2003	6.5 - 7	6.6	4.8 UJ	0.929 JB	4.8 UJ	0.6 U
SD03W-200-085090-203	11/24/2003	8.5 - 9	5.5 J	4.85 UJ	0.751 J	4.85 UJ	0.607 UJ
SD13E-005-000005-203	11/17/2003	0 - 0.5	2,850 J	7.26 UJ	0.726 UJ	7.26 UJ	0.726 UJ
SD13E-005-005010-203	11/17/2003	0.5 - 1	2,190 J	9.64 UJ	0.964 UJ	9.64 UJ	3.01 J
SD13E-005-015020-203	11/17/2003	1.5 - 2	537 J	7.63 UJ	16.2 J	7.63 UJ	2.4 J
SD13E-005-025030-203	11/17/2003	2.5 - 3	298 J	7.45 UJ	1.36 J	7.45 UJ	3.28 J
SD13E-005-035040-203	11/17/2003	3.5 - 4	898 J	7.97 UJ	0.797 UJ	7.97 UJ	0.797 UJ
SD13E-005-065070-203	11/17/2003	6.5 - 7	289 J	8.03 UJ	1.51 J	8.03 UJ	0.803 UJ
SD13E-005-095100-203	11/17/2003	9.5 - 10	4.1	4.81 UJ	0.481 UJ	4.81 U	0.481 U
SD13E-010-000005-203	11/12/2003	0 - 0.5	2,180 J	7.31 UJ	0.731 UJ	7.31 UJ	0.987 J
SD13E-010-005010-203	11/12/2003	0.5 - 1	734 J	9.11 UJ	0.989 JB	9.11 UJ	1.85 J
SD13E-010-015020-203	11/12/2003	1.5 - 2	1,900 J	8.73 UJ	3.86 J	8.73 UJ	30.3 J
SD13E-010-025030-203	11/12/2003	2.5 - 3	162 J	6.91 UJ	0.824 JB	6.91 UJ	0.691 UJ
SD13E-010-035040-203	11/12/2003	3.5 - 4	918 J	8.85 UJ	1.43 J	8.85 UJ	0.885 UJ
SD13E-010-045050-203	11/12/2003	4.5 - 5	519	7.26 UJ	1.57 J	7.26 UJ	2.12
SD13E-010-055060-203	11/12/2003	5.5 - 6	414	8.81 UJ	1.07 JB	8.81 UJ	6.56
SD13E-010-065070-203	11/12/2003	6.5 - 7	4.1	5.44 UJ	0.812 JB	5.44 UJ	1.29
SD13E-010-075080-203	11/12/2003	7.5 - 8	7.1	5.08 UJ	0.508 UJ	5.08 UJ	0.508 U
SD13E-010-085090-203	11/12/2003	8.5 - 9	3.9	4.9 UJ	0.597 J	4.9 UJ	0.49 U
SD13E-010-D85090-203	11/12/2003	8.5 - 9*	3.9	4.9 UJ	0.49 UJ	4.9 UJ	0.49 U
SD13E-010-095100-203	11/12/2003	9.5 - 10	5.3	4.71 UJ	0.471 UJ	4.71 UJ	0.471 U
SD13E-010-105110-203	11/12/2003	10.5 - 11	9.7	4.54 UJ	0.508 JB	4.54 UJ	0.454 U
SD13E-010-115120-203	11/12/2003	11.5 - 12	8.1	4.8 UJ	0.48 UJ	4.8 UJ	0.48 U
SD13E-010-125130-203	11/12/2003	12.5 - 13	13.7	4.79 UJ	0.786 JB	4.79 UJ	0.479 U
SD13E-010-135140-203	11/12/2003	13.5 - 14	16.3	4.79 UJ	0.479 UJ	4.79 UJ	0.479 U
SD13E-010-145150-203	11/12/2003	14.5 - 15	15.6	4.74 UJ	0.572 JB	4.74 UJ	0.474 U
SD13E-010-155160-203	11/12/2003	15.5 - 16	11.6	4.63 UJ	0.697 JB	4.63 UJ	0.463 U
SD13E-050-000005-203	11/17/2003	0 - 0.5	290	6.33 UJ	1.22	6.33 UJ	7.12 J
SD13E-050-005010-203	11/17/2003	0.5 - 1	168	6.99 UJ	0.699 U	6.99 UJ	0.699 UJ
SD13E-050-015020-203	11/17/2003	1.5 - 2	521	8.75 UJ	1.73	8.75 UJ	0.875 UJ
SD13E-050-025030-203	11/17/2003	2.5 - 3	730	7.91 UJ	1.67	7.91 UJ	9.84 J
SD13E-050-035040-203	11/17/2003	3.5 - 4	470	7.91 UJ	1.59	7.91 UJ	19 J
SD13E-050-065070-203	11/13/2003	6.5 - 7	5	4.78 UJ	0.738 B	4.78 UJ	0.478 UJ
SD13E-050-D65070-203	11/13/2003	6.5 - 7*	4.9	4.72 UJ	0.472 UJ	4.72 UJ	0.472 UJ
SD13E-050-115120-203	11/13/2003	11.5 - 12	8.3	4.52 UJ	0.647 B	4.52 UJ	0.452 UJ
SD13E-100-000005-103	10/16/2003	0 - 0.5	144	6.03 UJ	1.67 JB	6.03 UJ	10.5 J
SD13E-100-000005-203	11/18/2003	0 - 0.5	264	7.35 UJ	0.943 JB	7.35 UJ	0.735 UJ
SD13E-100-005010-203	11/18/2003	0.5 - 1	502	8.81 UJ	29.3	8.81 UJ	0.881 UJ
SD13E-100-015020-203	11/18/2003	1.5 - 2	367	7.5 UJ	2.14	7.5 UJ	0.75 UJ
SD13E-100-025030-203	11/18/2003	2.5 - 3	335	7.43 UJ	7.81	7.43 UJ	0.743 UJ
SD13E-100-035040-203	11/18/2003	3.5 - 4	509	8.58 UJ	3.8	8.58 UJ	0.858 UJ
SD13E-100-065070-203	11/18/2003	6.5 - 7	5.3	4.76 UJ	0.898 JB	4.76 UJ	0.476 UJ
SD13E-100-095100-203	11/18/2003	9.5 - 10	7.8	4.81 UJ	0.64 JB	4.81 UJ	0.481 UJ
SD13W-200-000005-203	12/2/2003	0 - 0.5	25.3	4.97 UJ	1.73 UJ	4.97 UJ	1.9 JB
SD13W-200-005010-203	12/2/2003	0.5 - 1	7.5	4.8 UJ	1.15 JB	4.8 UJ	0.727 B

Table 4
Analytical Results of Total Chromium and Hexavalent Chromium in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SD13W-200-D00005-203	12/2/2003	0 - 0.5*	17.1	4.87 UJ	2.99 UJ	4.87 UJ	1.12 JB
SD13W-200-015020-203	12/2/2003	1.5 - 2	8.8	4.67 UJ	0.711 JB	4.67 UJ	0.467 UJ
SD13W-200-025030-203	12/2/2003	2.5 - 3	9.6	4.77 UJ	1.82 UJ	4.77 UJ	0.477 UJ
SD13W-200-035040-203	12/2/2003	3.5 - 4	8.1	4.82 UJ	1.11 JB	4.82 UJ	0.618 B
SD13W-200-065070-203	12/2/2003	6.5 - 7	14	4.64 UJ	0.771 JB	4.64 UJ	0.464 UJ
SD13W-200-095100-203	12/2/2003	9.5 - 10	5.9	4.83 UJ	0.483 UJ	4.83 UJ	0.483 UJ
SDGE1-020-000005-203	12/3/2003	0 - 0.5	2,450	7.08 UJ	1.16 JB	7.08 UJ	1.29 JB
SDGE1-020-020040-203	1/14/2004	2 - 4	346	---	---	---	---
SDGE1-020-075080-203	12/3/2003	7.5 - 8	7.5	5.12 UJ	1.34 JB	5.12 UJ	0.512 UJ
SDGE1-020-125130-203	12/3/2003	12.5 - 13	38.2	5.49 J	9.07 J	4.65 UJ	0.717 B
SDGE1-020-180185-203	12/3/2003	18 - 18.5	35.1	4.85 UJ	1.25 JB	4.85 UJ	0.908 B
SDGE1-020-200205-203	12/3/2003	20 - 20.5	35.8	4.88 UJ	0.967 B	4.88 UJ	0.737 J
SDGE2-020-000005-203	1/14/2004	0 - 0.5	464	---	---	---	---
SDGE2-020-020040-203	1/14/2004	2 - 4	473	---	---	---	---
SDGE2-020-040060-203	12/16/2003	4 - 6	560	7.58 UJ	1.27 JB	7.58 UJ	0.758 UJ
SDGE2-020-060080-203	12/16/2003	6 - 8	13.4	4.8 UJ	1.25 JB	4.8 UJ	0.567 JB
SDGE2-020-100120-203	12/16/2003	10 - 12	6.8	5 UJ	0.625 UJ	5 UJ	0.5 UJ
SDGE2-020-120140-203	12/16/2003	12 - 14	13.1	4.62 UJ	0.577 UJ	4.62 UJ	0.462 UJ
SDGE2-020-160180-203	12/16/2003	16 - 18	13.8	4.84 UJ	0.605 UJ	4.84 UJ	0.484 UJ
SDGE2-020-200220-203	12/16/2003	20 - 22	9.2	4.85 UJ	0.606 UJ	4.85 UJ	0.485 UJ
SDGE2-020-240245-203	12/16/2003	24 - 24.5	7.4	4.73 UJ	0.915 B	4.73 UJ	0.473 UJ
SDGE3-038-000005-203	12/9/2003	0 - 0.5	127	4.92 UJ	4.37	4.92 UJ	5.99
SDGE3-038-035040-203	12/9/2003	3.5 - 4	11.6	4.78 UJ	1.32 JB	4.78 UJ	0.591 B
SDGE3-038-060065-203	12/9/2003	6 - 6.5	18.3	4.61 UJ	1.07 B	4.61 UJ	0.461 U
SDGE3-038-120125-203	12/9/2003	12 - 12.5	21.9	5.11 UJ	0.788 B	5.11 UJ	0.511 U
SDGE3-038-160165-203	12/9/2003	16 - 16.5	20.7	5.2 UJ	0.906 B	5.2 UJ	0.52 U
SDGE3-D38-160165-203	12/9/2003	16 - 16.5*	20.4	5.28 UJ	1.08 B	5.28 UJ	0.528 U
SDGE3-038-220225-203	12/9/2003	22 - 22.5	24	5.13 UJ	0.642 U	5.13 UJ	0.513 U
SDGE4-040-000005-203	12/11/2003	0 - 0.5	333	6.33 UJ	6.28 J	6.33 UJ	4.59 J
SDGE4-040-005010-203	12/11/2003	0.5 - 1	423	6.79 UJ	1.13 JB	6.79 UJ	0.679 UJ
SDGE4-040-033038-203	12/11/2003	3.3 - 3.8	755	23.1 J	36.8 J	4.69 UJ	3.2 J
SDGE4-040-085090-203	12/11/2003	8.5 - 9	227	6.46 J	8.74 J	4.67 UJ	3.15 J
SDGE4-040-120125-203	12/11/2003	12 - 12.5	94.4	4.94 UJ	3 JB	4.94 UJ	0.494 UJ
SDGE4-040-165170-203	12/11/2003	16.5 - 17	9.4	4.73 UJ	0.608 B	4.73 UJ	0.473 UJ
SDGE4-040-220225-203	12/11/2003	22 - 22.5	9.3	4.94 UJ	0.881 B	4.94 UJ	0.494 UJ
SDGE5-060-000005-203	1/14/2004	0 - 0.5	202	---	---	---	---
SDGE5-060-020025-203	12/18/2003	2 - 2.5	191	7.04 UJ	0.704 UJ	7.04 UJ	4.81 J
SDGE5-060-070075-203	12/18/2003	7 - 7.5	8.5	4.78 UJ	0.846 J	4.78 UJ	0.478 UJ
SDGE5-060-D70075-203	12/18/2003	7 - 7.5*	7.8	4.77 UJ	1.61 J	4.77 UJ	0.477 UJ
SDGE5-060-100105-203	12/18/2003	10 - 10.5	7.4	4.65 UJ	0.99 J	4.65 UJ	0.465 UJ
SDGE5-060-150155-203	12/18/2003	15 - 15.5	9.8	4.93 UJ	0.493 UJ	4.93 UJ	0.493 UJ
SDGE5-D60-150155-203	12/18/2003	15 - 15.5*	15.3	5 UJ	0.5 UJ	5 UJ	0.5 UJ
SDGE5-060-190195-203	12/18/2003	19 - 19.5	15.3	5.31 UJ	0.531 UJ	5.31 UJ	0.531 UJ
SDGE5-060-230235-203	12/18/2003	23 - 23.5	22	5.35 UJ	0.535 UJ	5.35 UJ	0.535 UJ
SDGE6-062-000005-203	12/8/2003	0 - 0.5	621	7.75 UJ	9.46 J	7.75 UJ	0.775 UJ
SDGE6-062-020040-203	1/14/2004	2 - 4	320	---	---	---	---
SDGE6-062-070075-203	12/8/2003	7 - 7.5	6.8	4.87 UJ	1.41 JB	4.87 UJ	0.487 U
SDGE6-062-115120-203	12/8/2003	11.5 - 12	8.8	4.73 UJ	0.967 B	4.73 UJ	0.473 U
SDGE6-062-155160-203	12/8/2003	15.5 - 16	20.5	4.69 UJ	0.709 B	4.69 UJ	0.469 U
SDGE6-062-235240-203	12/8/2003	23.5 - 24	12.4	4.93 UJ	0.617 U	4.93 UJ	0.493 U
SDGE7-018-000005-203	1/14/2004	0 - 0.5	263	---	---	---	---

Table 4
Analytical Results of Total Chromium and Hexavalent Chromium in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth Below Mudline (feet)	Total Chromium (mg/kg)	Hexavalent Chromium NJDEP Extraction 7196A (mg/kg)	Hexavalent Chromium NJDEP Extraction 7199 (mg/kg)	Hexavalent Chromium EPA Extraction 7196A (mg/kg)	Hexavalent Chromium EPA Extraction 7199 (mg/kg)
SDGE7-018-020040-203	1/14/2004	2 - 4	419	---	---	---	---
SDGE7-018-055060-203	12/20/2003	5.5 - 6	115	5.57 UJ	14.2 J	5.57 UJ	3.84 J
SDGE7-018-060065-203	12/20/2003	6 - 6.5	50.5	5.08 UJ	1.74 JB	5.08 UJ	1.4 JB
SDGE7-018-130135-203	12/20/2003	13 - 13.5	12.3	4.93 UJ	0.537 B	4.93 UJ	0.493 UJ
SDGE7-018-190195-203	12/20/2003	19 - 19.5	7.1	4.76 UJ	0.476 UJ	4.76 UJ	0.476 UJ
SDGE7-018-230235-203	12/20/2003	23 - 23.5	8.1	4.63 UJ	0.463 UJ	4.63 UJ	0.463 UJ
SDGE7-018-240245-203	12/20/2003	24 - 24.5	19.6	5.03 UJ	0.608 B	5.03 UJ	0.503 UJ
SDGE8-018-000005-203	1/14/2004	0 - 0.5	204	---	---	---	---
SDGE8-018-020040-203	1/14/2004	2 - 4	735	---	---	---	---
SDGE8-018-050055-203	12/22/2003	5 - 5.5	764	7.22 UJ	1.36 JB	7.22 UJ	0.724 B
SDGE8-018-080085-203	12/22/2003	8 - 8.5	13	4.72 UJ	2.09 JB	4.72 UJ	0.472 UJ
SDGE8-018-120125-203	12/22/2003	12 - 12.5	4.9	4.71 UJ	0.471 UJ	4.71 UJ	0.471 UJ
SDGE8-018-130135-203	12/22/2003	13 - 13.5	17.9	4.82 UJ	3.11 J	4.82 UJ	0.482 UJ
SDGE8-018-185190-203	12/22/2003	18.5 - 19	8.2	4.83 UJ	0.592 B	4.83 UJ	0.516 B
SDGE8-018-205210-203	12/22/2003	20.5 - 21	6.4	4.69 UJ	0.469 UJ	4.69 UJ	0.469 UJ
Sediment Toxicity Composite Samples:							
XS001-RF1-C00005-103	11/10/2003	0 - 0.5	202	8.62 UJ	0.89 J	8.62 UJ	0.862 UJ
XS0D1-RF1-C00005-103	11/10/2003	0 - 0.5*	164	8.18 UJ	0.818 UJ	8.18 UJ	0.818 J
XS001-RF2-C00005-103	11/9/2003	0 - 0.5	137	11.1 UJ	8.81 J	11.1 UJ	1.11 UJ
XS001-RF3-C00005-103	11/9/2003	0 - 0.5	228	8.62 UJ	4.12 J	8.62 UJ	1.4 J
XS00C-100-C00005-103	11/9/2003	0 - 0.5	136	7.08 UJ	1.11 J	7.08 UJ	0.742 J
XS00D-150-C00005-103	11/8/2003	0 - 0.5	1,780	11.9 UJ	48.8 J	11.9 UJ	1.19 UJ
XS01W-175-C00005-103	11/8/2003	0 - 0.5	135	6.25 UJ	2.77 J	6.25 UJ	0.625 UJ
XS03E-050-C00005-103	11/9/2003	0 - 0.5	320	7.55 UJ	0.802 J	7.55 UJ	0.955 J
XS13E-100-C00005-103	11/8/2003	0 - 0.5	234	6.86 UJ	2.57 J	6.86 UJ	0.686 UJ

Notes:
Chromium and hexavalent chromium analyses conducted by Columbia Analytical Services, Inc. (Rochester, New York).
Hexavalent chromium analyses were conducted by two analytical methods (7196A and 7199) following extraction by two methods (NJDEP and EPA).
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
R = The result is unuseable.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.
B = The parameter was detected in the Blank sample(s).
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.
--- = Not analyzed.

Table 5
TAL Metals Results in Sediment
Study Area 7, Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Aluminum (mg/kg)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Calcium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Magnesium (mg/kg)	Manganese (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Potassium (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Sodium (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
Reference Samples:																									
SD001-REF1-000005-103	10/16/2003	0.0 - 0.5	9130	2.2 UJ	19.8	112	0.69 J	0.27 J	3070 J	131	8.2 J	90.1 J	21600	129	4810	263	1.2	22.7	1600 J	1.6 U	0.53 U	4040 J	1.8 U	23.3	219 J
SD001-REF2-000005-103	10/16/2003	0.0 - 0.5	14600	3.9 UJ	10	127 J	0.93 J	2.2 J	6170 J	116	13.3 J	166 J	31700	191	8100	536	2.5	38.3	2340 J	2.8 U	3.3 J	10800 J	3.1 U	38.7	466 J
SD001-REF3-000005-103	10/16/2003	0.0 - 0.5	8500	2.3 UJ	8	98.6	0.62 J	0.9 J	4640 J	92.2	7.6 J	94 J	20600	99.6	5320	276	2.2	29.4	1600 J	1.7 U	1.5 J	5260 J	1.9 U	22.8	200 J
SD002-REF1-000005-103	10/16/2003	0.0 - 0.5	8600	2.5 UJ	24.8	102	0.68 J	0.17 U	2680 J	136	7.8 J	102 J	22000	122	4300	270	2.6	23.3	1540 J	1.8 U	0.65 J	5050 J	2 U	22.9	241 J
SD002-REF2-000005-103	10/16/2003	0.0 - 0.5	14100	3.4 UJ	9.9	120	0.9 J	2.2	6930 J	113	11.7	163 J	31300	184	8060	504	3.1	37.7	2320 J	2.4 U	2.9 J	9390 J	2.7 U	37.7	439 J
SD002-REF3-000005-103	10/16/2003	0.0 - 0.5	8930	2.6 UJ	10.7	119	0.63 J	4.5	4900 J	212	9.4 J	176 J	20800	225	5310	288	5.5	44.2	1660 J	1.9 U	3.2 J	6960 J	2.1 U	28	437 J
Study Area 7 Samples:																									
SD001-200-000005-203	11/25/2003	0.0 - 0.5	4990	1.6 UJ	12.9	93.1	0.23 J	0.82 J	7010 J	152	4.3 J	72	12400	73.8	2760	165	2.6	15.3	717 J	1.1 U	0.97 J	1720	1.3 U	15 J	139 J
SD004-200-000005-203	11/22/2003	0.0 - 0.5	2690	0.93 U	1.9	9.1	0.13	0.095 U	2160	23.3	2.4	10.2	5330	11.7	1290	51.6	0.22	6	334	0.93 U	0.17 U	1050	1 U	5.8	33.4
SD004-200-015020-203	11/22/2003	1.5 - 2.0	4980	0.93 U	6.6	64.6	0.38	2.1	3080	138	4.6	77.1	12000	87.7	2780	156	2.5	19.5	856	0.98 U	1.1	2800	1.1 U	18.8	170
SD004-200-035040-203	11/22/2003	3.5 - 4.0	14100	1.8 U	59.8	362	0.96	3.3	4710	341	11.5	322	35400	360	7810	410	3.3	47.9	2460	4.3 U	2.9	7250	1.8 U	47.5	510
SD005A-005-000005-203	12/1/2003	0.0 - 0.5	6920 J	1.7 UJ	8.4	128	0.41 J	2.1	7860	353	7.8 J	215	20300	216	4230	276	4.3 J	43.4	1150 J	1.2 U	3.4	3240	1.4 U	25.9	565 J
SD005A-025-000005-203	11/23/2003	0.0 - 0.5	9400	1.9 UJ	10.4	129	0.6 J	2.4	9980	173 J	8.3 J	151	23200	146	5780	362	4.1	39	1740	1.4 U	3.7	3910	1.5 U	29.2	342 J
SD005A-025-000005-203	11/23/2003	0.0 - 0.5*	7760	1.9 UJ	9.2	116	0.49 J	2.1	9540	282 J	6.9 J	158	19900	171	4760	321	4.1	42.2	1360 J	1.4 U	2.8 J	3440	1.5 U	26.4	405 J
SD005A-050-000005-203	11/23/2003	0.0 - 0.5	8230	2 UJ	11.3	112	0.52 J	2.5	7760	235 J	7.2 J	147	20800	149	5150	327	5.1	30.3	1450 J	1.5 U	2.8 J	4360	1.7 U	28.5	310 J
SD005A-050-035040-203	11/23/2003	3.5 - 4.0	14700	2.3 UJ	20.2	572	0.87	1.8 J	6950	1010 J	12.2 J	189	33400	180	8040	481	17.3	40.4	2160	1.6 U	1.6 J	4120	1.8 U	33	407 J
SD005A-200-000005-203	12/1/2003	0.0 - 0.5	12500 J	2.7 UJ	84.5	230	0.83 J	6.5	4250	954 J	9 J	489	27900	362	5560	320	40.2 J	39.2	1700 J	1.8 U	5.6	5830	2 U	40.2	564 J
SD005B-005-000005-203	12/1/2003	0.0 - 0.5	2550 J	1.4 UJ	1.4	15.8 J	0.072 U	0.2 J	6070	66.8	4.1 J	17.7	7600	20.5	3270	95.7	0.11 J	16.8	343 J	1 U	0.33 U	1180	1.1 U	19	59.1 J
SD005B-025-000005-203	11/25/2003	0.0 - 0.5	3600	1.7 UJ	7.2	30.4 J	0.22 J	1.1 J	7250 J	145	4.7 J	66.1	12100	61.7	2970	114	3.2	19	611 J	1.2 U	0.89 J	1840	1.4 U	13.7 J	175 J
SD005B-025-015020-203	11/25/2003	1.5 - 2.0	2760	1.4 UJ	3.3	27.6 J	0.18 J	0.75 J	4180 J	135	2.9 J	45	7340	48.2	2230	84	1.2	12.7	424 J	1 U	0.68 J	1400	1.2 U	10.7 J	121 J
SD005B-025-035040-203	11/25/2003	3.5 - 4.0	12800	2.1 UJ	27.3	205	0.82	1.2 J	7620 J	298	11.1 J	152	31800	185	7430	544	5.5	35	1960 J	1.5 U	1.1 J	4120	1.7 U	31.8	317 J
SD005B-050-000005-203	11/23/2003	0.0 - 0.5	9310	1.9 UJ	17	224	0.63 J	1.1 J	4380	706 J	8.6 J	110	22700	129	5530	293	4.1	31.8	1470 J	1.4 U	1.1 J	3890	1.5 U	24.9	270 J
SD005B-050-035040-203	11/23/2003	3.5 - 4.0	7690	1.6 UJ	13.6	135	0.46 J	2.4	4480	616 J	7.9 J	131	18300	118	4630	235	2.2	39.1	1190 J	1.2 U	1.4 J	3000	1.3 U	29.3	385 J
SD005B-100-000005-203	11/22/2003	0.0 - 0.5	4830	0.91 U	7.2	59.8	0.28	0.71	2200	176	4.3	45.8	10800	48.9	2520	128	1.6	15.4	863	0.91 U	0.58	1550	1 U	13.7	128
SD005B-100-015020-203	11/22/2003	1.5 - 2.0	4500	0.94 U	4.6	5.6	0.14	0.096 U	531	10.2	2.6	11	6240	12.6	1160	58.6	0.23	5.6	302	0.94 U	0.67	1290	1.1 U	13.2	128
SD005B-200-000005-203	11/22/2003	0.0 - 0.5	2840	0.95 U	2.9	15.5	0.14	0.098 U	819	33.8	2.5	15.2	5740	15.2	1380	58.2	0.56	6.7	356	0.95 U	0.17 U	1370	1.1 U	8.5	25.9
SD005C-005-000005-203	11/20/2003	0.0 - 0.5	13100	2.8 U	12	104	0.81 J	1.3 J	6620 J	142	10.3 J	129	31500	136	9210	495	2.7 J	38	2340 J	2.3 U	2.9 J	8550	2.3 U	36	743
SD005C-005-015020-203	11/20/2003	1.5 - 2.0	13500	3 U	12	106	0.73 J	1.6 J	6000 J	140	10.4 J	138	31600	149	8410	548	2.6 J	44.6	2300 J	2.2 U	3.1 J	10900	2.5 U	36.3	268
SD005C-005-035043-203	11/20/2003	3.5 - 4.0	14700	2.9 U	13.2	117	0.83	2.2 J	6010 J	158	10.7 J	154	33400	171	7980	586	2.7 J	36.4	2360 J	2.1 U	3.5 J	10000	2.3 U	39.2	314
SD005C-025-000005-103	10/16/2003	0.0 - 0.5	11700	3.1 UJ	9.6	94.4 J	0.82 J	0.4 J	6680 J	122	9.8 J	110 J	27400	110	7550	417	2.7	33	2350 J	2.2 U	2.2 J	9070 J	2.5 U	31.6	312 J
SD005C-025-000005-203	11/19/2003	0.0 - 0.5	13000	3 U	13	104	0.78 J	1.3 J	18100 J	161	10.4 J	135	31100	147	8210	484	2.8 J	42	2300 J	2.2 U	2.8 J	8910	2.4 U	36.5	269
SD005C-050-000005-203	11/19/2003	0.0 - 0.5	11300	2.7 U	11.8	93.4	0.66 J	1.2 J	10500 J	181	9.5 J	138	27700	133	7680	409	2.8 J	43.1	2050 J	2 U	2.4 J	9170	2.2 U	32.5	235
SD005C-100-000005-103	10/16/2003	0.0 - 0.5	7660	2.1 UJ	7.6	81.4	0.57 J	0.24 J	4490 J	109	6.6 J	71.7	18600	77.3	4750	270	2.6	21.4	1440 J	1.5 U	1.1 J	4680 J	1.7 U	21.2	144 J
SD005C-100-000005-203	11/21/2003	0.0 - 0.5*	7830	2.2 UJ	7	88.1	0.58 J	0.18 J	4560 J	120	6.8 J	78.7 J	18800	86.3	4840	276	2.3	22.4	1470 J	1.6 U	1.1 J	4740 J	1.8 U	21.5	151 J
SD005C-100-000005-203	11/21/2003	0.0 - 0.5*	7680	1.9 UJ	6.9	88.5	0.42 J	0.86 J	5350 J	148	6 J	87.2	17600	84.8	4600	263	2.1	23.3	1190 J	1.4 U	1.5 J	4220	1.5 U	20.5	160
SD005C-200-000005-203	11/21/2003	0.0 - 0.5	7210	1.9 UJ	7.5	76.6	0.41 J	0.77 J	4160 J	138	6.3 J	81.8	17700	80.9	4670	261	2.7	26.2	1220 J	1.3 U	1.3 J	4070	1.5 U	20.9	135
SD005D-050-000005-103	10/16/2003	0.0 - 0.5	6700	2 UJ	7.9	126	0.43 J	1.2 J	4840 J	287	8.4 J	162 J	19100	249	4280	173	6.2	37	1130 J	1.4 U	3.1 J	3600 J	1.6 U	25.1	442 J
SD005D-150-000005-103	10/16/2003	0.0 - 0.5	12100	3.5 UJ	113	220	0.97 J	6	4500 J	1160	9.7 J	670 J	31100	425	6310	314	66	42	2280 J	3.3	6.6	9360 J	2.8 U	51.7	725 J
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	12900	2.7 UJ	13.9	123	0.75 J	2.7	7290 J	200	10.4 J	175	32000	184	7720	444	4	40.2	2240 J	2 U	3.5 J	7480	2.2 U	37.2	364
SD02E-025-000005-103	10/16/2003	0.0 - 0.5	10600	2.9 UJ	9.9	122	0.79 J	0.89 J	6450 J	197	9.2 J	145 J	27000	171	6720	377	3.5	34.7	2060 J	2.1 U	2.5 J	7240 J	2.3 U	31	342 J
SD02E-025-000005-203	11/20/2003	0.0 - 0.5	12700	2.8 U	11.9	105	0.72 J	1.2 J	6940 J	192	10 J	126	30300	131	8110	503	2.9 J	36.8	2280 J	2 U	2.6 J	7540	2.2 U	33.2	250
SD02E-025-015020-203	11/20/2003	1.5 - 2.0	13200	2.7 U	13.3	110	0.78 J	1.5 J	6350 J	177	10.7 J	141	32200	157	8200	599	3.1 J	45.7	2190 J	2 U	2.8 J	7370	2.2 U	35.1	281
SD02E-025-035040-203	11/20/2003	3.5 - 4.0	11700	2.5 U	13.5	113	0.71 J	1.9 J	6730 J	181	9.6 J	145	29100	148	6770	451	3.4 J	35.3	1940 J	1.8 U	3 J	5030	2 U	34.9	269

Parsons

ENVIRON

Table 5
TAL Metals Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Aluminum (mg/kg)	Antimony (mg/kg)	Arsenic (mg/kg)	Barium (mg/kg)	Beryllium (mg/kg)	Cadmium (mg/kg)	Calcium (mg/kg)	Chromium (mg/kg)	Cobalt (mg/kg)	Copper (mg/kg)	Iron (mg/kg)	Lead (mg/kg)	Magnesium (mg/kg)	Manganese (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Potassium (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Sodium (mg/kg)	Thallium (mg/kg)	Vanadium (mg/kg)	Zinc (mg/kg)
SD01W-200-000005-203	12/2/2003	0.0 - 0.5	2870	0.99 UJ	2.9	19.6 J	0.17 J	0.091 U	345 J	7.9	2.5 J	6.8	7990 J	7	1250	67.6	0.06 J	5.7 J	298 J	0.89 U	0.16 U	551 J	1 U	9.7 J	19.2
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	2720	0.92 UJ	0.8 U	27.6 J	0.17 J	0.094 U	650 J	6.7	2.4 J	4.5 J	7110 J	2.1	1360	72.6	0.02 U	5.7 J	318 J	0.92 U	0.17 U	658 J	1 U	12	14.2
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	2170	0.96 UJ	1.3	67.2	0.32 J	0.097 U	18600 J	12.8	7.4 J	14.7	16500 J	8	4200	599	0.02 U	16.2	1290 J	0.94 U	0.17 U	1120 J	1.1 U	16.7	57.1
SD01E-025-000005-203	11/16/2003	0.0 - 0.5	8170	1.2 UJ	17.3	109	0.55 B	0.91 B	12400 J	315	8.8 J	28.7 J	22200	107	5770	376	1.6	31.5	1430	1.2 U	0.74 J	2810	1.3 U	24.9	212 J
SD01E-025-015020-203	11/20/2003	1.5 - 2.0	13000	2.4 U	27.7	638	0.78 J	1.6 J	7630 J	1110	11.1 J	214	33600	226	7600	447	10.1 J	45	2040 J	1.8 U	1.7 J	6740	2 U	32 B	430
SD01E-025-035040-203	11/20/2003	3.5 - 4.0	8280	1.8 U	31.9	119	0.55 J	0.77 J	6840 J	184	7.6 J	129	21600	165	4850	331	2.5 J	39.9	1250 J	1.3 U	1.3	2980	1.5 U	23.2	344
SD01E-050-000005-103	10/16/2003	0.0 - 0.5	6840	1.9 UJ	12.6	87.6	0.55 J	0.43 J	6080 J	231	7.1 J	127 J	17700	101	4360	259	2.1	25.1	1210 J	1.4 U	0.78 J	3140 J	1.6 U	20.5	204 J
SD01E-075-000005-203	11/17/2003	0.0 - 0.5	14700	2.3 UJ	36.2	289	0.96 B	1.3 B	6650 J	401	12.1 J	207 J	36800	281	7870	520	8.2	40.3	2600 J	2.7 J	1.6 J	5220	2.6 U	36.6	454 J
SD01E-075-015020-203	11/17/2003	1.5 - 2.0	3710	0.95 UJ	5.1	47.6	0.23 B	0.097 U	3820 J	40.1	3.4 J	23.3 J	8750	30.9	3210	143	0.38	9.3 J	555 J	0.95 U	0.17 U	1160 J	1.1 U	10.3 J	64.2 J
SD01E-075-035040-203	11/17/2003	3.5 - 4.0	4330	0.93 UJ	2	7.48	0.23 B	0.095 U	400 BJ	9	2.1 J	6.3 J	5810	5.5	1360	46.3	0.07	6.4 J	347 J	0.93 U	0.17 U	797 J	1 U	7.5 J	19.9 J
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	2380	1.4 UJ	2.9	14.3 J	0.15 J	0.099 U	2230 J	23	2.5 J	12 J	5310	14.5	1250	39.6	0.38	6.5 J	325 J	1 U	0.35 U	1050 J	1.2 U	5.8 J	37.2 J
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	3170 J	1.3 UJ	8.2	27.3 J	0.16 J	0.25 J	870 J	58.5 J	2.7 J	42.8	6920	52.6	1470	67.9	0.58 J	10.5	398 J	0.96 U	0.49 J	1210	1.1 U	8.1 J	90.4 J
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	5940 J	2.1 UJ	1.2 U	7.7 J	0.18 J	0.15 U	572 J	9.4 J	4.8 J	9.2	9340	3.9	2580	75.4	0.031 UJ	10.8 J	407 J	1.5 U	0.51 U	1460 J	1.7 U	12.7 J	29.7 J
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	4320 J	1.8 UJ	1 U	5.7 J	0.22 J	0.13 U	465 J	7 J	3.8 J	5.7 J	6990	3.2	1820	65	0.026 UJ	10 J	344 J	1.3 U	0.44 U	1350 J	1.5 U	8.2 J	23.6 J
SD11E-005-000005-203	11/17/2003	0.0 - 0.5	12900	2.3 BJ	15.8	149	0.72 B	3.8	37000 J	2170	21	262 J	38500	540	9390	409	6.3	120	1690 J	1.5 U	4.2	6550	1.7 U	98.5	712 J
SD11E-005-015020-203	11/17/2003	1.5 - 2.0	10900	2.5 BJ	46.8	256	0.74 B	4.3	6470 J	2090	10.6 J	405 J	30000	362	5580	333	28.3	48.1	1880 J	2.2 U	6.4	3850	2.5 U	53	630 J
SD11E-005-035040-203	11/17/2003	3.5 - 4.0	13600	1.5 UJ	28.4	470	0.88	2.7	6800 J	565	13.4 J	219 J	33500	264	7330	483	8.4	38.9	2300	1.5 U	3.8 J	4110	1.7 U	36.1	519 J
SD11E-050-000005-103	10/16/2003	0.0 - 0.5	4760	1.6 UJ	9.1	55.1	0.36 J	0.22 J	7300 J	81.8	4.4 J	53.6 J	11400	60.6	2830	169	2.2	12.8	834 J	1.2 U	0.44 J	2440 J	1.3 U	12.7 J	111 J
SD11E-100-000005-203	11/18/2003	0.0 - 0.5	13000 J	1.5 UJ	32.2	325	0.88	1.6 J	7500 J	348	10.9 J	220 J	32000	255	7480	463	4.5	36.5	2280 J	1.5 U	3.7 J	5710 J	1.7 U	33.1	452 J
SD11E-100-015020-203	11/18/2003	1.5 - 2.0	15800 J	1.5 UJ	31.3	285	1	1.3 J	7360 J	392	13.4 J	196 J	37500	233	8580	623	5.4	40.8	2450 J	1.5 U	3.2 J	5030 J	1.7 U	39.6	444 J
SD11E-100-035040-203	11/18/2003	3.5 - 4.0	13500 J	2.9 J	87	277	0.89 J	1.5 J	4220 J	544	10.1 J	387 J	38600	520	6240	344	6.5	64.1	2210 J	2.8 U	3.1 J	6240 J	3.2 U	44.1	701 J
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	3820	0.92 UJ	3.2	13.1 J	0.14 J	0.094 U	678 J	14.9	2.8 J	12.2	6150 J	12	1300	59.1	0.15 J	6.6 J	328 J	0.92 U	0.17 U	1290	1 U	7.5 J	28.1
Sediment Toxicity Composite Samples:																									
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	14200	1.7 U	38.8	193	0.99	0.88 B	5990	238	12.4 B	171	36700	218	8000	508	2.3	38.2	2580	2.1	1.3 B	6050	1.9 U	36.5	394
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5*	14200 J	1.7 U	38.8	193	0.99	0.89 J	5990 J	238	12.4 J	171 J	36700	218 J	8000	508	3.3	38.2 J	2580 J	2.1	1.3 J	6050 J	1.9 U	36.5	394 J
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	17500 J	2.3 U	14.5	165	1.1 J	2.9 J	8430 J	157	13.6 J	201 J	41700	250 J	10000	660	1.9	51.9 J	2960 J	2.3 U	3.8 J	12500 J	2.6 U	48.9	527 J
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	10000 J	1.6 J	12.3	128	0.67 J	2.4 J	7310 J	148	9.1 J	136 J	24900	162 J	6150	340	2.8	38.3 J	1910 J	1.6 U	2.4 J	7630 J	1.8 U	30	301 J
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	9280 J	1.6 U	10	96.5	0.61 J	0.49 J	5420 J	171	8.2 J	106 J	23100	105 J	5790	335	3.3	29.2 J	1780 J	1.6 U	2.5 J	3580 J	1.8 U	27	185 J
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	14500 J	1.7 U	10.5	219	0.98 J	8.6 J	5970 J	1900	10.8 J	949 J	37800	644 J	7330	346	74.9	54.3 J	2690 J	1.7 U	10.8	10600 J	4.2 U	71.1	1190 J
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	5350 J	1.2 U	7.5	65.9	0.35 J	0.54 J	6940 J	139	4.7 J	63.6 J	13700	70.5 J	3260	196	3.1	15.2 J	949 J	1.2 U	0.71 J	2800 J	1.4 U	16.6	183 J
XS01E-050-C00005-103	11/9/2003	0.0 - 0.5	9940 J	2.3 U	19.4	166	0.67 J	0.95 J	10300 J	329	8.5 J	281 J	24600	191 J	5830	357	3.4	30.6 J	1910 J	2.3 U	1.2 J	5180 J	2.6 U	28 J	341 J
XS11E-100-C00005-103	11/8/2003	0.0 - 0.5	8960 J	1.4 U	18.4	153	0.59 J	0.92 J	12100 J	223	7.5 J	123 J	21900	141 J	5120	303	2.8	24.7 J	1610 J	1.6 U	0.95 J	4110 J	1.5 U	24	250 J

Notes:
* = The sample is a field duplicate
* = The results associated with this sample are preliminary and unvalidated
J = The associated value is an estimated quantity
R = The result is unusable
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.
B = The parameter was detected in the Blank sample(s).
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity

Table 6
Acid Volatile Sulfide and Simultaneously Extracted Metals Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Acid Volatile Sulfide (mg/kg)	Cadmium-Volatile Component (mg/kg)	Copper-Volatile Component (mg/kg)	Lead-Volatile Component (mg/kg)	Mercury-Volatile Component (mg/kg)	Nickel-Volatile Component (mg/kg)	Zinc - Volatile Component (mg/kg)	Ratio of SEM/AVS[1]
Reference Samples:										
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	424 J	0.14 J	34.9	70.1	0.0053 R	3.6 J	88.7	0.17
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	145 J	1 J	60.7	108	0.03 R	6.4 J	196	1.02
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	101 J	0.6 J	44.1	65.5	0.077 R	4.6 J	89.9	0.78
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	361 J	0.15 J	42.2	91.8	0.015 R	4.5 J	114	0.26
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	1940 J	1 J	54.6	113	0.022 R	6.7 J	201	0.08
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	591 J	3.6 J	111	173	0.46 R	13.4 J	268	0.38
Study Area 7 Samples:										
SD001-200-000005-203	11/25/2003	0.0 - 0.5	32.8	0.33 J	23.3 J	27.1 J	0.13	3.8 J	49 J	1.29
SD004-200-000005-203	11/22/2003	0.0 - 0.5	57.6	0.18 J	6.4 J	9.6 J	0.14	1.7	20.1 J	0.27
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	225	0.78	67.6 J	132 J	0.037	50.9 J	332 J	1.09
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	1230	0.96 J	54.2 J	140 J	0.018 B	25.1 J	367 J	0.20
SD0DA-025-000005-203	11/23/2003	0.0 - 0.5*	435	1.1 J	71.7 J	122 J	0.054 B	11.8 J	309 J	0.49
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	1140	1.3 J	49.7 J	92.2 J	0.064 B	5.7 J	151 J	0.10
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	368	1.8	83.1	143	0.081	7.5	171	0.41
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	3400	4.3	148 J	297 J	0.066	11 J	283 J	0.08
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	131	0.16	9.2 J	11.8 J	0.036	2.5 J	38.6 J	0.20
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	164	0.8 J	38.6 J	72 J	0.056	7.5 J	118 J	0.57
SD0DB-025-000005-203	11/25/2003	0.0 - 0.5*	80.9	0.43 J	24.1 J	43.8 J	0.15	5.1 J	77.1 J	0.74
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	456	0.43 J	9 J	268 J	0.0056 B	9.8 J	267 J	0.40
SD0DB-050-000005-203	11/23/2003	0.0 - 0.5*	207	1.4 J	61.3 J	90.1 J	0.04 B	12 J	265 J	0.88
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	359	0.54 J	35 J	34.8 J	0.18	10.9	68.5 J	0.17
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	10.2	0.46 J	23.4 J	46.5 J	0.0059	1.6	60.6 J	4.88
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	389 J	0.8 J	45.1 J	71.8 J	0.027	6.7 J	101 J	0.22
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	524 J	0.14 J	60.9	76.1	0.24 R	11.6 J	107	0.19
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	1750 J	1.2 J	62.5 J	85.9 J	0.097	9.4 J	129 J	0.06
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	968 J	0.83 J	34.1 J	66.2 J	0.018	6.7 J	105 J	0.09
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	352 J	0.12 J	43.1	54.2	0.3 R	7.7 J	79.1	0.21
SD0DC-100-000005-103	10/16/2003	0.0 - 0.5*	365 J	0.12 J	43.3	54.2	0.33 R	7.6 J	77.6	0.20
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	608 J	0.61 J	36.4 J	43.7 J	0.24 J	6.7 J	90.8 J	0.12
SD0DC-100-000005-203	11/21/2003	0.0 - 0.5*	208 J	0.64	36.8	46.2 J	0.024 J	3.1 J	77.6 J	0.32
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	221 J	0.47	17.3	25 J	0.051 J	3.4 J	48.3 J	0.17
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	1520 J	0.54 J	64.8	162	0.0019 R	12.3 J	219	0.11
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	4170 J	3.2 J	282	305	0.0038 R	14.1 J	375	0.09

Table 6
Acid Volatile Sulfide and Simultaneously Extracted Metals Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Acid Volatile Sulfide (mg/kg)	Cadmium-Volatile Component (mg/kg)	Copper-Volatile Component (mg/kg)	Lead-Volatile Component (mg/kg)	Mercury-Volatile Component (mg/kg)	Nickel-Volatile Component (mg/kg)	Zinc-Volatile Component (mg/kg)	Ratio of SEM/AVS[1]
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	3670 J	2.2	203	178 J	0.72 J	20.3 J	431 J	0.10
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	408 J	0.26 J	76.5	121	0.003 R	11.7 J	170	0.36
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	1150 J	0.83 J	43.6 J	73.2 J	0.04	6.8 J	105 J	0.08
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	14.9 J	0.028 J	2.9	17.1	0.023	1.1 J	10.2	0.65
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	246 J	0.13	28.8	55 J	0.021 B	8.1 J	78.6 J	0.27
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	189 J	0.3 J	59.4	74	0.0019 R	9.4 J	108	0.53
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	21.8 J	0.04 J	9	13	0.0015 R	1.8 J	22.2	0.85
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	10.6 U	0.29	39.7	54	0.089	4	71.6	NA
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	2870 J	0.53	87.5	158 J	0.041 B	86.2 J	253 J	0.08
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	53.6	1.8	145	176	1.2	13.6	260 J	4.40
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	63.4 J	0.19 J	36.7	48.7	0.0018 R	4.6 J	70.8	1.00
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	175	1.3	83.2	139	0.0059 B	6.8	171 J	0.87
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	21.5	0.07 J	6.3	11.5	0.021	2 J	21.1	0.76
Sediment Toxicity Composite Samples:										
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	1190	0.87	76	101	0.084	12.6	165	0.12
XS0D1-RF1-C00005-103	11/10/2003	0.0 - 0.5*	606	0.92	79	105	0.097	13.1	171	0.24
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	1110	1.8	84.1	106	0.29	15.2	207	0.15
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	676	1.8	77.2	92.8	0.39	14.2	163	0.21
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	488	0.59	43.3	50	0.5	10.3	80.4	0.15
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	3470	5.4	499	368	5.9	20.7	608	0.18
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	512	0.51	37.9	47.9	0.69	6.5	67.4	0.12
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	660	0.99	86.6	97.8	0.27	11.6	155	0.21
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	632	0.85	68.8	82.8	0.33	9.8	129	0.18

Notes:

* = The sample is a field duplicate.

[1] = SEM/AVS is the sum of the concentrations of each metal in umole/g reported for a given sample, divided by the acid volatile sulfide concentration in umole/g.

J = The associated value is an estimated quantity.

R = The result is unuseable.

U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.

UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.

B = The parameter was detected in the Blank sample(s).

BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.

NA= The ratio could not be calculated because one or more of the component concentrations was not detected.

Table 7
Semi Volatile Organic Compounds Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	4,4'-DDD (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,3-Dichlorobenzene (mg/kg)	1,4-Dichlorobenzene (mg/kg)	2,4,5-Trichlorophenol (mg/kg)	2,4,6-Trichlorophenol (mg/kg)	2,4-Dichlorophenol (mg/kg)	2,4-Dimethylphenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)	2-Chlorophenol (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichlorobenzidine (mg/kg)	3-Nitroaniline (mg/kg)	4,6-Dinitro-2-methylphenol (mg/kg)	4-Chloro-3-methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenylphenylether (mg/kg)	4-Methylphenol (mg/kg)
Reference Samples:																									
SD001-REF-000005-103	10/16/2003	0.0 - 0.5	0.13 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	5.1 U	0.25 U	0.25 U	1.3 U	1.3 U	2.5 U	1.3 U	2.5 U	2.5 U	5.1 U	1.3 U	1.3 U	1.3 U	0.053 J
SD001-REF-000005-103	10/16/2003	0.0 - 0.5	0.033 J	0.028 J	0.024 J	0.1 J	1.1 U	1.1 U	1.1 U	1.1 U	4.4 U	0.22 U	0.22 U	1.1 U	1.1 U	2.2 U	1.1 U	2.2 U	2.2 U	4.4 U	1.1 U	0.098 J	1.1 U	0.11 J
SD002-REF-000005-103	10/16/2003	0.0 - 0.5	0.046 J	0.019 J	0.019 J	0.072 J	0.67 U	0.67 U	0.67 U	0.67 U	2.7 U	0.13 U	0.13 U	0.67 U	0.67 U	1.3 U	0.67 U	1.3 U	1.3 U	2.7 U	0.67 U	0.057 J	0.67 U	0.056 J
SD002-REF-000005-103	10/16/2003	0.0 - 0.5	0.14 U	1.4 U	1.4 U	0.033 J	1.4 U	1.4 U	1.4 U	1.4 U	5.8 U	0.29 U	0.29 U	1.4 U	1.4 U	2.9 U	1.4 U	2.9 U	2.9 U	5.8 U	1.4 U	1.4 U	1.4 U	0.052 J
SD002-REF-000005-103	10/16/2003	0.0 - 0.5	0.022 J	0.97 U	0.97 U	0.059 J	0.97 U	0.97 U	0.97 U	0.97 U	3.9 U	0.19 U	0.19 U	0.97 U	0.97 U	1.9 U	0.97 U	1.9 U	1.9 U	3.9 U	0.97 U	0.073 J	0.97 U	0.078 J
SD002-REF-000005-103	10/16/2003	0.0 - 0.5	0.05 J	0.046 J	0.035 J	0.1 J	0.76 U	0.76 U	0.76 U	0.76 U	3 U	0.15 U	0.15 U	0.76 U	0.76 U	1.5 U	0.76 U	1.5 U	1.5 U	3 U	0.76 U	0.28 J	0.76 U	0.096 J
Study Area 7 Samples:																									
SD003-200-000005-203	10/22/2003	0.0 - 0.5	0.045 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	0.45 U	1.8 U	0.09 U	0.09 U	0.45 U	0.45 U	0.9 U	0.45 U	0.9 U	0.9 U	1.8 U	0.45 U	0.45 U	0.45 U	0.45 U
SD004-200-000005-203	10/22/2003	0.0 - 0.5	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	1.6 U	0.079 U	0.079 U	0.4 U	0.4 U	0.79 U	0.4 U	0.79 U	0.79 U	1.6 U	0.4 U	0.4 U	0.4 U	0.4 U
SD004-200-015020-203	10/22/2003	1.5 - 2.0	0.42 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	17 U	0.83 U	0.83 U	4.2 U	4.2 U	8.3 U	4.2 U	8.3 U	8.3 U	17 U	4.2 U	4.2 U	4.2 U	4.2 U
SD004-200-035040-203	10/22/2003	3.5 - 4.0	0.14 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	5.6 U	0.28 U	0.28 U	1.4 U	1.4 U	2.8 U	1.4 U	2.8 U	2.8 U	5.6 U	1.4 U	1.4 U	1.4 U	0.066 J
SD005A-005-000005-203	10/21/2003	0.0 - 0.5	0.033 J	0.027 J	0.022 J	0.074 J	0.49 U	0.49 U	0.49 U	0.49 U	2 U	0.098 U	0.098 U	0.49 U	0.49 U	0.98 U	0.49 U	0.98 U	0.98 U	2 U	0.49 U	0.38 J	0.49 U	0.08 J
SD005A-025-000005-203	10/23/2003	0.0 - 0.5	0.054 U	0.54 U	0.54 U	0.062 J	0.54 U	0.54 U	0.54 U	0.54 U	2.2 U	0.11 U	0.11 U	0.54 U	0.54 U	1.1 U	0.54 U	1.1 U	1.1 U	2.2 U	0.54 U	0.23 J	0.54 U	0.067 J
SD005A-025-000005-203	10/23/2003	0.0 - 0.5*	0.055 U	0.55 U	0.55 U	0.095 J	0.55 U	0.55 U	0.55 U	0.55 U	2.2 U	0.11 U	0.11 U	0.55 U	0.55 U	1.1 U	0.55 U	1.1 U	1.1 U	2.2 U	0.55 U	0.34 J	0.55 U	0.061 J
SD005A-050-000005-203	10/23/2003	0.0 - 0.5	0.12 U	1.2 U	1.2 U	0.12 J	1.2 U	1.2 U	1.2 U	1.2 U	4.7 U	0.24 U	0.24 U	1.2 U	1.2 U	2.4 U	1.2 U	2.4 U	2.4 U	4.7 U	1.2 U	0.2 J	1.2 U	0.066 J
SD005A-050-015020-203	10/23/2003	1.5 - 2.0	0.078 U	0.78 U	0.78 U	0.096 J	0.78 U	0.78 U	0.78 U	0.78 U	3.1 U	0.16 U	0.16 U	0.78 U	0.78 U	1.6 U	0.78 U	1.6 U	1.6 U	3.1 U	0.78 U	0.2 J	0.78 U	0.18 J
SD005A-050-035040-203	10/23/2003	3.5 - 4.0	0.065 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	2.6 U	0.13 U	0.13 U	0.65 U	0.65 U	1.3 U	0.65 U	1.3 U	1.3 U	2.6 U	0.65 U	0.65 U	0.65 U	0.07 J
SD006A-100-000005-203	10/24/2003	0.0 - 0.5	0.069 U	0.69 U	0.69 U	0.036 J	0.69 U	0.69 U	0.69 U	0.69 U	2.8 U	0.14 U	0.14 U	0.69 U	0.69 U	1.4 U	0.69 U	1.4 U	1.4 U	2.8 U	0.69 U	0.65 U	0.69 U	0.041 J
SD006A-200-000005-203	10/21/2003	0.0 - 0.5	0.15 U	1.5 U	1.5 U	0.092 J	1.5 U	1.5 U	1.5 U	1.5 U	6.2 U	0.31 U	0.31 U	1.5 U	1.5 U	3.1 U	1.5 U	3.1 U	3.1 U	6.2 U	1.5 U	1.5 U	1.5 U	0.18 J
SD008B-005-000005-203	10/21/2003	0.0 - 0.5	0.013 J	0.4 U	0.4 U	0.02 J	0.4 U	0.4 U	0.4 U	0.4 U	1.6 U	0.08 U	0.08 U	0.4 U	0.4 U	0.8 U	0.4 U	0.8 U	0.8 U	1.6 U	0.4 U	0.4 U	0.4 U	0.01 J
SD008B-025-000005-203	10/21/2003	0.0 - 0.5	0.049 U	0.49 U	0.49 U	0.038 J	0.49 U	0.49 U	0.49 U	0.49 U	1.9 U	0.097 U	0.097 U	0.49 U	0.49 U	0.97 U	0.49 U	0.97 U	0.97 U	1.9 U	0.49 U	0.088 J	0.49 U	0.022 J
SD008B-025-000005-203	10/25/2003	0.0 - 0.5*	0.041 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	1.6 U	0.082 U	0.082 U	0.41 U	0.41 U	0.82 U	0.41 U	0.82 U	0.82 U	1.6 U	0.41 U	0.053 J	0.41 U	0.41 U
SD008B-025-015020-203	10/21/2003	1.5 - 2.0	0.1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	4 U	0.2 U	0.2 U	1 U	1 U	2 U	1 U	2 U	2 U	4 U	1 U	1 U	1 U	1 U
SD008B-025-035040-203	10/21/2003	3.5 - 4.0	0.06 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	2.4 U	0.12 U	0.12 U	0.6 U	0.6 U	1.2 U	0.6 U	1.2 U	1.2 U	2.4 U	0.6 U	0.6 U	0.6 U	0.059 J
SD008B-050-000005-203	10/23/2003	0.0 - 0.5	0.055 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	2.2 U	0.11 U	0.11 U	0.55 U	0.55 U	1.1 U	0.55 U	1.1 U	1.1 U	2.2 U	0.55 U	0.55 U	0.55 U	0.088 J
SD008B-050-000005-203	10/23/2003	0.0 - 0.5*	0.046 U	0.46 U	0.46 U	0.043 J	0.46 U	0.46 U	0.46 U	0.46 U	1.8 U	0.092 U	0.092 U	0.46 U	0.46 U	0.92 U	0.46 U	0.92 U	0.92 U	1.8 U	0.46 U	0.088 J	0.46 U	0.088 J
SD008B-100-000005-203	10/22/2003	0.0 - 0.5	0.039 U	0.39 U	0.39 U	0.015 J	0.39 U	0.39 U	0.39 U	0.39 U	1.6 U	0.078 U	0.078 U	0.39 U	0.39 U	0.78 U	0.39 U	0.78 U	0.78 U	1.6 U	0.39 U	0.029 J	0.39 U	0.066 J
SD008B-100-000005-203	10/22/2003	0.0 - 0.5*	0.043 U	0.43 U	0.43 U	0.036 J	0.43 U	0.43 U	0.43 U	0.43 U	1.7 U	0.086 U	0.086 U	0.43 U	0.43 U	0.86 U	0.43 U	0.86 U	0.86 U	1.7 U	0.43 U	0.43 U	0.43 U	0.045 J
SD008B-200-000005-203	10/22/2003	0.0 - 0.5	0.041 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	1.6 U	0.08 U	0.08 U	0.41 U	0.41 U	0.82 U	0.41 U	0.82 U	0.82 U	1.6 U	0.41 U	0.41 U	0.41 U	0.4 U
SD008C-005-000005-203	11/20/2003	0.0 - 0.5	0.054 U	0.022 J	0.024 J	0.091 J	0.82 U	0.82 U	0.82 U	0.82 U	3.3 U	0.16 U	0.16 U	0.82 U	0.82 U	1.6 U	0.82 U	1.6 U	1.6 U	3.3 U	0.82 U	0.042 J	0.82 U	0.043 J
SD008C-005-015020-203	11/20/2003	1.5 - 2.0	0.087 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	3.5 U	0.17 U	0.17 U	0.87 U	0.87 U	1.7 U	0.87 U	1.7 U	1.7 U	3.5 U	0.87 U	0.87 U	0.87 U	0.87 U
SD008C-005-035040-203	11/20/2003	3.5 - 4.0	0.083 U	0.83 U	0.83 U	0.03 J	0.83 U	0.83 U	0.83 U	0.83 U	3.3 U	0.17 U	0.17 U	0.83 U	0.83 U	1.7 U	0.83 U	1.7 U	1.7 U	3.3 U	0.83 U	0.094 J	0.83 U	0.83 U
SD009C-025-000005-103	10/16/2003	0.0 - 0.5	0.03 J	0.89 U	0.89 U	0.057 J	0.89 U	0.89 U	0.89 U	0.89 U	3.5 U	0.18 U	0.18 U	0.89 U	0.89 U	1.8 U	0.89 U	1.8 U	1.8 U	3.5 U	0.89 U	0.032 J	0.89 U	0.044 J
SD009C-025-000005-203	11/19/2003	0.0 - 0.5	0.14	0.02 J	0.029 J	0.091 J	0.86 U	0.86 U	0.86 U	0.86 U	3.4 U	0.17 U	0.17 U	0.86 U	0.86 U	1.7 U	0.86 U	1.7 U	1.7 U	3.4 U	0.86 U	0.046 J	0.86 U	0.038 J
SD009C-050-000005-203	11/19/2003	0.0 - 0.5	0.053 J	0.023 J	0.03 J	0.11 J	0.79 U	0.79 U	0.79 U	0.79 U	3.2 U	0.16 U	0.16 U	0.79 U	0.79 U	1.6 U	0.79 U	1.6 U	1.6 U	3.2 U	0.79 U	0.054 J	0.79 U	0.045 J
SD009C-100-000005-103	10/16/2003	0.0 - 0.5	0.046 J	0.61 U	0.024 J	0.073 J	0.61 U	0.61 U	0.61 U	0.61 U	2.4 U	0.12 U	0.12 U	0.61 U	0.61 U	1.2 U	0.61 U	1.2 U	1.2 U	2.4 U	0.61 U	0.042 J	0.61 U	0.029 J
SD009C-100-000005-103	10/16/2003	0.0 - 0.5*	0.053 J	0.63 U	0.023 J	0.084 J	0.63 U	0.63 U	0.63 U	0.63 U	2.5 U	0.12 U	0.12 U	0.63 U	0.63 U	1.2 U	0.63 U	1.2 U	1.2 U	2.5 U	0.63 U	0.044 J	0.63 U	0.035 J
SD009C-100-000005-203	11/21/2003	0.0 - 0.5	0.054 U	0.54 U	0.54 U	0.019 J	0.54 U	0.54 U	0.54 U	0.54 U	2.2 U	0.11 U	0.11 U	0.54 U	0.54 U	1.1 U	0.54 U	1.1 U	1.1 U	2.2 U	0.54 U	0.043 J	0.54 U	0.54 U
SD009C-100-000005-203	11/21/2003	0.0 - 0.5*	0.053 U	0.53 U	0.53 U	0.035 J	0.53 U	0.53 U	0.53 U	0.53 U	2.1 U	0.11 U	0.11 U	0.53 U	0.53 U	1.1 U	0.53 U	1.1 U	1.1 U	2.1 U	0.53 U	0.053 J	0.53 U	0.061 J
SD009C-200-000005-203	11/21/2003	0.0 - 0.5	0.042 U	0.42 U	0.42 U	0.022 J	0.42 U	0.42 U	0.42 U	0.42 U	1.7 U	0.085 U	0.085 U	0.42 U	0.42 U	0.85 U	0.42 U	0.85 U	0.85 U	1.7 U	0.42 U	0.012 J	0.42 U	0.42 U
SD009D-050-000005-103	10/16/2003	0.0 - 0.5	0.054 J	0.032 J	0.029 J	0.14 J	0.57 U	0.57 U	0.57 U	0.57 U	2.3 U	0.11 U	0.11 U	0.57 U	0.57 U	1.1 U	0.57 U	1.1 U	1.1 U	2.3 U	0.57 U	0.18 J	0.57 U	0.13 J
SD009D-150-000005-103	10/16/2003	0.0 - 0.5	0.1 U	0.858 J	0.036 J	0.16 J	1 U	1 U	1 U	1 U	4 U	0.2 U	0.2 U	1 U	1 U	2 U	1 U	2 U	2 U	4 U	1 U	1 U	1 U	0.2 J
SD012E-025-000005-203	11/21/2003	0.0 - 0.5	0.038 J	0.78 U	0.78 U	0.079 J	0.78 U	0.78 U	0.78 U	0.78 U	3.1 U	0.16 U	0.16 U	0.78 U	0.78 U	1.6 U	0.78 U	1.6 U	1.6 U	3.1 U	0.78 U	0.18 J	0.78 U	0.021 J
SD012E-025-000005-103	10/16/2003	0.0 - 0.5	0.063 J	0.024 J	0.024 J	0.09 J	0.83 U	0.83 U	0.83 U	0.83 U	3.3 U	0.16 U	0.16 U	0.83 U	0.83 U	1.6 U	0.83 U	1.6 U	1.6 U	3.3 U	0.83 U	0.066 J	0.83 U	0.12 J

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ENVIRON

Table 7
Semi-Volatile Organic Compounds Results in Sediment
Study Area 7, Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	4,4' DDD (mg/kg)	1,2-Dichlorobenzene (mg/kg)	1,3-Dichlorobenzene (mg/kg)	1,4-Dichlorobenzene (mg/kg)	2,4,5-Trichlorophenol (mg/kg)	2,4,6-Trichlorophenol (mg/kg)	2,4-Dichlorophenol (mg/kg)	2,4-Dimethylphenol (mg/kg)	2,4-Dinitrophenol (mg/kg)	2,4-Dinitrotoluene (mg/kg)	2,6-Dinitrotoluene (mg/kg)	2-Chlorophenol (mg/kg)	2-Methylphenol (mg/kg)	2-Nitroaniline (mg/kg)	2-Nitrophenol (mg/kg)	3,3'-Dichlorobenzidine (mg/kg)	3-Nitroaniline (mg/kg)	4,6-Dinitro-2-methylphenol (mg/kg)	4-Chloro-3-methylphenol (mg/kg)	4-Chloroaniline (mg/kg)	4-Chlorophenylphenylether (mg/kg)	4-Methylphenol (mg/kg)
SD02E-025-000005-203	11/20/2003	0.0 - 0.5	0.052 J	0.017 J	0.024 J	0.086 J	0.8 U	0.8 U	0.8 U	0.8 U	3.2 U	0.16 U	0.16 U	0.8 U	0.8 U	1.6 U	0.8 U	1.6 U	1.6 U	3.2 U	0.8 U	0.04 J	0.8 U	0.038 J
SD02E-025-015020-203	11/20/2003	1.5 - 2.0	0.033 J	0.029 J	0.04 J	0.12 J	0.79 U	0.79 U	0.79 U	0.79 U	3.2 U	0.16 U	0.16 U	0.79 U	0.79 U	1.6 U	0.79 U	1.6 U	1.6 U	3.2 U	0.79 U	0.084 J	0.79 U	0.038 J
SD02E-025-035040-203	11/20/2003	3.5 - 4.0	0.038 J	0.02 J	0.029 J	0.11 J	0.71 U	0.71 U	0.71 U	0.71 U	2.8 U	0.14 U	0.14 U	0.71 U	0.71 U	1.4 U	0.71 U	1.4 U	1.4 U	2.8 U	0.71 U	0.1 J	0.71 U	0.042 J
SD03W-000-000005-203	12/2/2003	0.0 - 0.5	0.038 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	1.5 U	0.076 U	0.076 U	0.38 U	0.38 U	0.76 U	0.38 U	0.76 U	0.76 U	1.5 U	0.38 U	0.38 U	0.38 U	0.38 U
SD03W-000-015020-203	12/2/2003	1.5 - 2.0	0.039 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	1.6 U	0.079 U	0.079 U	0.39 U	0.39 U	0.79 U	0.39 U	0.79 U	0.79 U	1.6 U	0.39 U	0.39 U	0.39 U	0.39 U
SD03W-000-035040-203	12/2/2003	3.5 - 4.0	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	1.6 U	0.08 U	0.08 U	0.4 U	0.4 U	0.8 U	0.4 U	0.8 U	0.8 U	1.6 U	0.4 U	0.4 U	0.4 U	0.4 U
SD01E-025-000005-203	11/16/2003	0.0 - 0.5	0.05 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	2 U	0.099 U	0.099 U	0.5 U	0.5 U	0.99 U	0.5 U	0.99 U	0.99 U	2 U	0.5 U	0.5 U	0.5 U	0.054 J
SD01E-025-015020-203	11/16/2003	1.5 - 2.0	0.07 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	0.7 U	2.8 U	0.14 U	0.14 U	0.7 U	0.7 U	1.4 U	0.7 U	1.4 U	1.4 U	2.8 U	0.7 U	0.7 U	0.7 U	0.032 J
SD01E-025-035040-203	11/18/2003	3.5 - 4.0	0.053 UJ	0.23 UJ	0.53 UJ	0.53 UJ	0.53 UJ	0.53 UJ	0.53 UJ	0.53 UJ	2.1 UJ	0.1 UJ	0.1 UJ	0.53 UJ	0.53 UJ	1 UJ	0.53 UJ	1 UJ	1 UJ	2.1 UJ	0.53 UJ	0.53 UJ	0.53 UJ	0.12 J
SD01E-050-000005-103	10/16/2003	0.0 - 0.5	0.053 U	0.027 J	0.02 J	0.024 J	0.55 U	0.55 U	0.55 U	0.55 U	2.2 U	0.11 U	0.11 U	0.55 U	0.55 U	1.1 U	0.55 U	1.1 U	1.1 U	2.2 U	0.55 U	0.55 U	0.55 U	0.076 J
SD01E-025-000005-203	11/17/2003	0.0 - 0.5	0.065 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	0.65 U	2.6 U	0.13 U	0.13 U	0.65 U	0.65 U	1.3 U	0.65 U	1.3 U	1.3 U	2.6 U	0.65 U	0.65 U	0.65 U	0.1 J
SD01E-025-015020-203	11/17/2003	1.5 - 2.0	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	1.6 U	0.081 U	0.081 U	0.4 U	0.4 U	0.81 U	0.4 U	0.81 U	0.81 U	1.6 U	0.4 U	0.4 U	0.4 U	0.041 J
SD01E-025-035040-203	11/17/2003	3.5 - 4.0	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	1.6 U	0.079 U	0.079 U	0.4 U	0.4 U	0.79 U	0.4 U	0.79 U	0.79 U	1.6 U	0.4 U	0.4 U	0.4 U	0.4 U
SD01W-150-000005-103	10/16/2003	0.0 - 0.5	0.041 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	0.41 U	1.6 U	0.083 U	0.083 U	0.41 U	0.41 U	0.83 U	0.41 U	0.83 U	0.83 U	1.6 U	0.41 U	0.41 U	0.41 U	0.0093 J
SD01W-200-000005-203	11/24/2003	0.0 - 0.5	0.038 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	1.5 U	0.076 U	0.076 U	0.38 U	0.38 U	0.76 U	0.38 U	0.76 U	0.76 U	1.5 U	0.38 U	0.38 U	0.38 U	0.38 U
SD01W-200-015020-203	11/24/2003	1.5 - 2.0	0.061 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	2.4 U	0.12 U	0.12 U	0.61 U	0.61 U	1.2 U	0.61 U	1.2 U	1.2 U	2.4 U	0.61 U	0.61 U	0.61 U	0.61 U
SD01W-200-035040-203	11/24/2003	3.5 - 4.0	0.053 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	2.1 U	0.1 U	0.1 U	0.53 U	0.53 U	1 U	0.53 U	1 U	1 U	2.1 U	0.53 U	0.53 U	0.53 U	0.53 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	0.032 J	1.3 U	1.3 U	0.099 J	1.3 U	1.3 U	1.3 U	1.3 U	5.1 U	0.25 U	0.25 U	1.3 U	1.3 U	2.5 U	1.3 U	2.5 U	2.5 U	5.1 U	1.3 U	0.24 J	1.3 U	0.056 J
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	0.12 U	1.2 U	1.2 U	0.067 J	1.2 U	1.2 U	1.2 U	1.2 U	5 U	0.25 U	0.25 U	1.2 U	1.2 U	2.5 U	1.2 U	2.5 U	2.5 U	5 U	1.2 U	1.2 U	1.2 U	0.12 J
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	0.13 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	5.1 U	0.25 U	0.25 U	1.3 U	1.3 U	2.5 U	1.3 U	2.5 U	2.5 U	5.1 U	1.3 U	1.3 U	1.3 U	0.087 J
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	0.11 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	4.6 U	0.23 U	0.23 U	1.1 U	1.1 U	2.3 U	1.1 U	2.3 U	2.3 U	4.6 U	1.1 U	1.1 U	1.1 U	1.1 U
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	0.046 U	0.46 U	0.46 U	0.022 J	0.46 U	0.46 U	0.46 U	0.46 U	1.8 U	0.092 U	0.092 U	0.46 U	0.46 U	0.92 U	0.46 U	0.92 U	0.92 U	1.8 U	0.46 U	0.46 U	0.46 U	0.046 J
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	0.32 UJ	3.2 UJ	3.2 UJ	3.2 UJ	3.2 UJ	3.2 UJ	3.2 UJ	3.2 UJ	13 UJ	0.65 UJ	0.65 UJ	3.2 UJ	3.2 UJ	6.5 UJ	3.2 UJ	6.5 UJ	6.5 UJ	13 UJ	3.2 UJ	3.2 UJ	3.2 UJ	0.12 J
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	0.13 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	1.3 U	5.2 U	0.26 U	0.26 U	1.3 U	1.3 U	2.6 U	1.3 U	2.6 U	2.6 U	5.2 U	1.3 U	1.3 U	1.3 U	1.3 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	0.16 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	1.6 U	6.4 U	0.32 U	0.32 U	1.6 U	1.6 U	3.2 U	1.6 U	3.2 U	3.2 U	6.4 U	1.6 U	1.6 U	1.6 U	0.28 J
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	0.039 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	1.6 U	0.079 U	0.079 U	0.39 U	0.39 U	0.79 U	0.39 U	0.79 U	0.79 U	1.6 U	0.39 U	0.39 U	0.39 U	0.0067 J
Sediment Toxicity Composite Samples:																								
XS001-RF1-C00005-103[1]	11/10/2003	0.0 - 0.5	0.36 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	14 U	0.72 U	0.72 U	3.6 U	3.6 U	7.2 U	3.6 U	7.2 U	7.2 U	14 U	3.6 U	3.6 U	3.6 U	3.6 U
XS0D1-RF1-C00005-103	11/10/2003	0.0 - 0.5*	0.36 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	14 U	0.72 U	0.72 U	3.6 U	3.6 U	7.2 U	3.6 U	7.2 U	7.2 U	14 U	3.6 U	3.6 U	3.6 U	3.6 U
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	0.039 J	0.023 J	0.025 J	0.082 J	0.97 U	0.97 U	0.97 U	0.97 U	3.9 U	0.19 U	0.19 U	0.97 U	0.97 U	1.9 U	0.97 U	1.9 U	1.9 U	3.9 U	0.97 U	0.093 J	0.97 U	0.062 J
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	0.036 J	0.024 J	0.022 J	0.069 J	0.67 U	0.67 U	0.67 U	0.67 U	2.7 U	0.13 U	0.13 U	0.67 U	0.67 U	1.3 U	0.67 U	1.3 U	1.3 U	2.7 U	0.67 U	0.11 J	0.67 U	0.04 J
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	0.057 J	0.02 J	0.026 J	0.091 J	0.68 U	0.68 U	0.68 U	0.68 U	2.7 U	0.14 U	0.14 U	0.68 U	0.68 U	1.4 U	0.68 U	1.4 U	1.4 U	2.7 U	0.68 U	0.68 U	0.68 U	0.044 J
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	0.21 U	2.1 U	2.1 U	0.13 J	2.1 U	2.1 U	2.1 U	2.1 U	8.5 U	0.42 U	0.42 U	2.1 U	2.1 U	4.2 U	2.1 U	4.2 U	4.2 U	8.5 U	2.1 U	2.1 U	2.1 U	0.13 J
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	0.027 J	0.51 U	0.017 J	0.056 J	0.51 U	0.51 U	0.51 U	0.51 U	2 U	0.1 U	0.1 U	0.51 U	0.51 U	1 U	0.51 U	1 U	1 U	2 U	0.51 U	0.024 J	0.51 U	0.022 J
XS01E-050-C00005-103	11/9/2003	0.0 - 0.5	0.33 U	3.3 U	3.3 U	0.11 J	3.3 U	3.3 U	3.3 U	3.3 U	13 U	0.66 U	0.66 U	3.3 U	3.3 U	6.6 U	3.3 U	6.6 U	6.6 U	13 U	3.3 U	3.3 U	3.3 U	3.3 U
XS01E-100-C00005-103	11/8/2003	0.0 - 0.5	0.058 U	0.58 U	0.58 U	0.012 J	0.58 U	0.58 U	0.58 U	0.58 U	2.3 U	0.12 U	0.12 U	0.58 U	0.58 U	1.2 U	0.58 U	1.2 U	1.2 U	2.3 U	0.58 U	0.58 U	0.58 U	0.58 U

Notes:
* = The sample is a field duplicate.
[1] = The results associated with this sample are preliminary and unvalidated.
J = The associated value is an estimated quantity.
R = The result is unusable.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.
B = The parameter was detected in the Blank sample(s).
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.

Persons

Table 7
Semi-Volatile Organic Compounds Results in Sediment
Study Area 7, Jersey City, New Jersey

Field Sample ID	Date sampled	Depth (feet)	4-Nitro aniline (mg/kg)	4-Nitro phenol (mg/kg)	Bis(2-chloro ethoxy) methane (mg/kg)	Bis(2-chloro ethyl) ether (mg/kg)	Bis(2-chloro isopropyl) ether (mg/kg)	Bis(2-ethyl hexyl) phthalate (mg/kg)	Butyl benzyl phthalate (mg/kg)	Carba zole (mg/kg)	Dibenzo furan (mg/kg)	Diethyl phthalate (mg/kg)	Dimethyl phthalate (mg/kg)	Di-n-butyl phthalate (mg/kg)	Di-n-octyl phthalate (mg/kg)	Hexa chloro benzene (mg/kg)	Hexa chloro butadiene (mg/kg)	Hexa chloro cyclo pentadiene (mg/kg)	Hexa chloro ethane (mg/kg)	Iso phorone (mg/kg)	Nitro benzene (mg/kg)	N-nitroso di-n-propyl amine (mg/kg)	N-nitroso diphenyl amine (mg/kg)	Penta chloro phenol (mg/kg)	Phenol (mg/kg)
Reference Samples																									
SD001-REF1-000005-103	10/16/2003	0.0 - 0.5	2.5 U	5.1 U	1.3 U	0.13 U	1.3 U	0.26 J	1.3 U	0.39 J	3.1	1.3 U	1.3 U	1.3 U	1.3 U	0.13 U	0.25 U	1.3 U	0.33 U	1.3 U	0.13 U	0.13 U	1.3 U	5.1 U	1.3 U
SD001-REF2-000005-103	10/16/2003	0.0 - 0.5	2.2 U	4.4 U	1.1 U	0.11 U	1.1 U	2.5 J	1.1 U	0.13 J	0.059 J	1.1 U	1.1 U	1.1 U	1.1 U	0.11 U	0.22 U	1.1 U	0.33 U	1.1 U	0.11 U	0.11 U	1.1 U	4.4 U	1.1 U
SD001-REF3-000005-103	10/16/2003	0.0 - 0.5	2.7 U	5.4 U	0.67 U	0.067 U	0.67 U	1.7 J	0.67 U	0.038 J	0.072 J	0.67 U	0.67 U	0.67 U	0.67 U	0.067 U	0.13 U	0.67 U	0.067 U	0.67 U	0.067 U	0.067 U	0.67 U	2.7 U	0.67 U
SD002-REF1-000005-103	10/16/2003	0.0 - 0.5	2.9 U	5.8 U	1.4 U	0.14 U	1.4 U	0.42 J	1.4 U	0.37 J	1.9	1.4 U	1.4 U	1.4 U	1.4 U	0.14 U	0.29 U	1.4 U	0.14 U	1.4 U	0.14 U	0.14 U	1.4 U	5.8 U	1.4 U
SD002-REF2-000005-103	10/16/2003	0.0 - 0.5	1.9 U	3.9 U	0.97 U	0.097 U	0.97 U	2.1 J	0.97 U	0.064 J	0.042 J	0.97 U	0.97 U	0.97 U	0.97 U	0.097 U	0.19 U	0.97 U	0.097 U	0.97 U	0.097 U	0.097 U	0.97 U	3.9 U	0.97 U
SD002-REF3-000005-103	10/16/2003	0.0 - 0.5	1.5 U	3 U	0.76 U	0.076 U	0.76 U	5.8 J	0.76 U	0.12 J	0.078 J	0.76 U	0.76 U	0.76 U	0.76 U	0.076 U	0.15 U	0.76 U	0.076 U	0.76 U	0.076 U	0.076 U	0.76 U	3 U	0.76 U
Study Area 7 Samples																									
SD001-200-000005-203	11/25/2003	0.0 - 0.5	0.9 U	1.8 U	0.45 U	0.045 U	0.45 U	1.9	0.45 U	0.014 J	0.025 J	0.45 U	0.45 U	0.45 U	0.45 U	0.045 U	0.09 U	0.45 U	0.045 U	0.45 U	0.045 U	0.045 U	0.45 U	1.8 U	0.45 U
SD003-200-000005-203	11/22/2003	0.0 - 0.5	0.79 U	1.6 U	0.4 U	0.04 U	0.4 U	0.4	0.4 U	0.4 U	0.011 J	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.079 U	0.4 U	0.04 U	0.4 U	0.04 U	0.04 U	0.4 U	1.6 U	0.4 U
SD004-200-015020-203	11/22/2003	1.5 - 2.0	0.3 U	1.7 U	4.2 U	0.42 U	4.2 U	33	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	4.2 U	0.42 U	0.83 U	4.2 U	0.42 U	4.2 U	0.42 U	0.42 U	4.2 U	17 U	4.2 U
SD004-200-035040-203	11/22/2003	3.5 - 4.0	2.8 U	5.6 U	1.4 U	0.14 U	1.4 U	1.4 U	1.4 U	0.39 J	2	1.4 U	1.4 U	1.4 U	1.4 U	0.14 U	0.28 U	1.4 U	0.14 U	1.4 U	0.14 U	0.14 U	1.4 U	5.6 U	1.4 U
SD005A-005-000005-203	12/1/2003	0.0 - 0.5	0.88 U	1 U	0.49 U	0.12	0.49 U	8.2	0.49 U	0.037 J	0.039 J	0.49 U	0.49 U	0.14 J	0.49 U	0.049 U	0.098 U	0.49 U	0.049 U	0.49 U	0.15	0.049 U	0.49 U	2 U	0.49 U
SD005A-025-000005-203	11/23/2003	0.0 - 0.5	1.1 U	2.2 U	0.54 U	0.054 U	0.54 U	7.4 J	0.54 U	0.064 J	0.049 J	0.54 U	0.54 U	0.54 U	0.54 U	0.054 U	0.11 U	0.54 U	0.054 U	0.54 U	0.054 U	0.054 U	0.54 U	2.2 U	0.54 U
SD005A-025-000005-203	11/23/2003	0.0 - 0.5*	1.1 U	2.2 U	0.55 U	0.055 U	0.55 U	8.6 J	0.55 U	0.084 J	0.042 J	0.55 U	0.55 U	0.55 U	0.55 U	0.055 U	0.11 U	0.55 U	0.055 U	0.55 U	0.055 U	0.055 U	0.55 U	2.2 U	0.55 U
SD005A-050-015020-203	11/23/2003	1.5 - 2.0	1.6 U	3.1 U	0.78 U	0.078 U	0.78 U	20 J	0.78 U	0.11 J	0.11 J	0.78 U	0.78 U	0.78 U	0.78 U	0.078 U	0.16 U	0.78 U	0.078 U	0.78 U	0.078 U	0.078 U	0.78 U	3.1 U	0.78 U
SD005A-050-035040-203	11/23/2003	3.5 - 4.0	1.3 U	2.6 U	0.65 U	0.065 U	0.65 U	0.33 J	0.65 U	0.055 J	0.23 J	0.65 U	0.65 U	0.65 U	0.65 U	0.065 U	0.13 U	0.65 U	0.065 U	0.65 U	0.065 U	0.065 U	0.65 U	2.6 U	0.65 U
SD005A-100-000005-203	11/24/2003	0.0 - 0.5	1.4 U	2.8 U	0.69 U	0.069 U	0.69 U	6.1	0.69 U	0.093 J	0.12 J	0.69 U	0.69 U	0.69 U	0.69 U	0.069 U	0.14 U	0.69 U	0.069 U	0.69 U	0.069 U	0.069 U	0.69 U	2.8 U	0.69 U
SD005A-200-000005-203	12/1/2003	0.0 - 0.5	3.1 U	6.2 U	1.5 U	0.15 U	1.5 U	2.3 J	1.5 U	0.13 J	0.39 J	1.5 U	1.5 U	1.5 U	1.5 U	0.15 U	0.31 U	1.5 U	0.15 U	1.5 U	0.25	0.15 U	1.5 U	6.2 U	1.5 U
SD005B-005-000005-203	12/1/2003	0.0 - 0.5	0.8 U	1.6 U	0.4 U	0.04 U	0.4 U	0.77	0.4 U	0.011 J	0.02 J	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.08 U	0.4 U	0.04 U	0.4 U	0.04 U	0.04 U	0.4 U	1.6 U	0.4 U
SD005B-025-000005-203	12/1/2003	0.0 - 0.5	0.93 U	1.9 U	0.49 U	0.049 U	0.49 U	3.9	0.49 U	0.023 J	0.034 J	0.49 U	0.49 U	0.49 U	0.49 U	0.049 U	0.097 U	0.49 U	0.049 U	0.49 U	0.049 U	0.049 U	0.49 U	1.9 U	0.49 U
SD005B-025-015020-203	11/25/2003	0.0 - 0.5*	0.82 U	1.6 U	0.41 U	0.041 U	0.41 U	2.7	0.41 U	0.016 J	0.016 J	0.21 J	0.41 U	0.41 U	0.41 U	0.041 U	0.082 U	0.41 U	0.041 U	0.41 U	0.041 U	0.041 U	0.41 U	1.6 U	0.41 U
SD005B-025-035040-203	12/1/2003	1.5 - 2.0	2 U	4 U	1 U	0.1 U	1 U	1 U	1 U	0.11 J	0.39 J	1 U	1 U	1 U	1 U	0.1 U	0.2 U	1 U	0.1 U	1 U	0.1 U	0.1 U	1 U	4 U	1 U
SD005B-050-000005-203	11/23/2003	3.5 - 4.0	1.2 U	2.4 U	0.6 U	0.06 U	0.6 U	0.6 U	0.6 U	0.15 J	0.4 J	0.6 U	0.6 U	0.6 U	0.6 U	0.06 U	0.12 U	0.6 U	0.06 U	0.6 U	0.06 U	0.06 U	0.6 U	2.4 U	0.6 U
SD005B-050-000005-203	11/23/2003	0.0 - 0.5	1.1 U	2.2 U	0.53 U	0.053 U	0.53 U	1.6 J	0.16 J	0.054 J	0.12 J	0.55 U	0.55 U	0.55 U	0.55 U	0.055 U	0.11 U	0.53 U	0.055 U	0.55 U	0.055 U	0.055 U	0.55 U	2.2 U	0.55 U
SD005B-100-000005-203	11/23/2003	0.0 - 0.5	0.78 U	1.6 U	0.39 U	0.039 U	0.39 U	2.9	0.39 U	0.02 J	0.058 J	0.39 U	0.39 U	0.39 U	0.39 U	0.039 U	0.078 U	0.39 U	0.039 U	0.39 U	0.039 U	0.039 U	0.39 U	1.6 U	0.39 U
SD005B-100-015020-203	11/23/2003	0.0 - 0.5*	0.86 U	1.7 U	0.43 U	0.043 U	0.43 U	1.3	0.43 U	0.021 J	0.032 J	0.43 U	0.43 U	0.43 U	0.43 U	0.043 U	0.086 U	0.43 U	0.043 U	0.43 U	0.043 U	0.043 U	0.43 U	1.7 U	0.43 U
SD005B-200-000005-203	11/23/2003	1.5 - 2.0	0.8 U	1.6 U	0.4 U	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.08 U	0.4 U	0.04 U	0.4 U	0.04 U	0.04 U	0.4 U	1.6 U	0.4 U
SD005B-200-000005-203	11/23/2003	0.0 - 0.5	0.82 U	1.6 U	0.41 U	0.041 U	0.41 U	0.26 J	0.41 U	0.0087 J	0.037 J	0.41 U	0.41 U	0.41 U	0.41 U	0.041 U	0.082 U	0.41 U	0.041 U	0.41 U	0.041 U	0.041 U	0.41 U	1.6 U	0.41 U
SD005C-005-000005-203	11/20/2003	0.0 - 0.5	1.6 U	3.3 U	0.82 U	0.082 U	0.82 U	3.6	0.82 U	0.043 J	0.047 J	0.82 U	0.82 U	0.82 U	0.82 U	0.082 U	0.16 U	0.82 U	0.082 U	0.82 U	0.082 U	0.082 U	0.82 U	3.3 U	0.82 U
SD005C-005-015020-203	11/20/2003	1.5 - 2.0	1.7 U	3.5 U	0.87 U	0.087 U	0.87 U	1.3	0.87 U	0.021 J	0.87 U	0.87 U	0.87 U	0.87 U	0.87 U	0.087 U	0.17 U	0.87 U	0.087 U	0.87 U	0.087 U	0.087 U	0.87 U	3.5 U	0.87 U
SD005C-005-035040-203	11/20/2003	3.5 - 4.0	1.7 U	3.3 U	0.83 U	0.083 U	0.83 U	4	0.83 U	0.033 J	0.83 J	0.83 U	0.83 U	0.83 U	0.83 U	0.083 U	0.17 U	0.83 U	0.083 U	0.83 U	0.083 U	0.083 U	0.83 U	3.3 U	0.83 U
SD005C-025-000005-103	10/16/2003	0.0 - 0.5	1.8 U	3.5 U	0.89 U	0.089 U	0.89 U	0.89 U	0.89 U	0.026 J	0.035 J	0.89 U	0.89 U	0.89 U	0.89 U	0.089 U	0.18 U	0.89 U	0.089 U	0.89 U	0.089 U	0.089 U	0.89 U	3.5 U	0.89 U
SD005C-025-000005-203	11/19/2003	0.0 - 0.5	1.7 U	3.4 U	0.86 U	0.086 U	0.86 U	3.1	0.86 U	0.04 J	0.042 J	0.86 U	0.86 U	0.86 U	0.86 U	0.086 U	0.17 U	0.86 U	0.086 U	0.86 U	0.086 U	0.086 U	0.86 U	3.4 U	0.86 U
SD005C-050-000005-203	11/19/2003	0.0 - 0.5	1.6 U	3.2 U	0.79 U	0.079 U	0.79 U	3.2	0.79 U	0.074 J	0.08 J	0.79 U	0.79 U	0.79 U	0.79 U	0.079 U	0.16 U	0.79 U	0.079 U	0.79 U	0.079 U	0.079 U	0.79 U	3.2 U	0.79 U
SD005C-100-000005-103	10/16/2003	0.0 - 0.5	1.2 U	2.4 U	0.61 U	0.061 U	0.61 U	0.53 J	0.61 U	0.074 J	0.072 J	0.61 U	0.61 U	0.61 U	0.61 U	0.061 U	0.12 U	0.61 U	0.061 U	0.61 U	0.061 U	0.061 U	0.61 U	2.4 U	0.61 U
SD005C-100-000005-103	10/16/2003	0.0 - 0.5*	1.2 U	2.5 U	0.63 U	0.063 U	0.63 U	0.63 J	0.63 U	0.082 J	0.079 J	0.63 U	0.63 U	0.63 U	0.63 U	0.063 U	0.12 U	0.63 U	0.063 U	0.63 U	0.063 U	0.063 U	0.63 U	2.5 U	0.63 U
SD005C-100-000005-203	11/21/2003	0.0 - 0.5	1.1 U	2.2 U	0.54 U	0.054 U	0.54 U	1	0.54 U	0.021 J	0.019 J	0.54 U	0.54 U	0.54 U	0.54 U	0.054 U	0.11 U	0.54 U	0.054 U	0.54 U	0.054 U	0.054 U	0.54 U	2.2 U	0.54 U
SD005C-100-000005-203	11/21/2003	0.0 - 0.5*	1.1 U	2.1 U	0.53 U	0.053 U	0.53 U	1.6	0.53 U	0.036 J	0.046 J	0.53 U	0.53 U	0.53 U	0.53 U	0.053 U	0.11 U	0.53 U	0.053 U	0.53 U	0.053 U	0.053 U	0.53 U	2.1 U	0.53 U
SD005C-200-000005-203	11/21/2003	0.0 - 0.5	0.85 U	1.7 U	0.42 U	0.042 U	0.42 U	0.37	0.42 U	0.021 J	0.021 J	0.42 U	0.42 U	0.42 U	0.42 U	0.042 U	0.085 U	0.42 U	0.042 U	0.42 U	0.042 U	0.042 U	0.42 U	1.7 U	0.42 U
SD005D-050-000005-103	10/16/2003	0.0 - 0.5	1.1 U	2.3 U	0.57 U	0.057 U	0.57 U	2.6 J	0.18 J	0.26 J	0.14 J	0.57 U	0.57 U	0.57 U	0.57 U	0.057 U	0.11 U	0.57 U	0.057 U	0.57 U	0.057 U	0.057 U	0.57 U	2.3 U	0.57 U
SD005D-150-000005-103	10/16/2003	0.0 - 0.5	2 U	4 U	1 U	0.1 U	1 U	3.1	1 U	0.35 J	1 U	1 U	1 U	1 U	1 U	0.1 U	0.2 U	1 U	0.1 U	1 U	0.1 U	0.1 U	1 U	4 U	1 U
SD005E-025-000005-203	11/21/2003	0.0 - 0.5	1.6 U	3.1 U	0.78 U	0.078 U	0.78 U	4.5	0.78 U	0.035 J	0.046 J	0.78 U	0.78 U	0.78 U	0.78 U	0.078 U	0.16 U	0.78 U	0.078 U	0.78 U	0.078 U	0.078 U	0.78 U	3.1 U	0.78 U
SD005E-075-000005-103	10/16/2003	0.0 - 0.5	1.6 U	3.3 U	0.83 U	0.083 U	0.83 U	1.3 J	0.74 J	0.19 J	0.11 J	0.83 U	0.83 U	0.83 U	0.83 U	0.083 U	0.16 U	0.83 U	0.083 U	0.83 U	0.083 U	0.083 U	0.83 U	3.3 U	0.83 U

Parsons

ENVIRON

Table 7
Semi-Volatile Organic Compounds Results In Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date sampled	Depth (feet)	4-Nitroaniline (mg/kg)	4-Nitrophenol (mg/kg)	Bis(2-chloroethoxy) methane (mg/kg)	Bis(2-chloroethyl) ether (mg/kg)	Bis(2-chloroisopropyl) ether (mg/kg)	Bis(2-ethylhexyl) phthalate (mg/kg)	Butyl benzyl phthalate (mg/kg)	Carbazole (mg/kg)	Dibenzofuran (mg/kg)	Diethyl phthalate (mg/kg)	Dimethyl phthalate (mg/kg)	Di-n-butyl phthalate (mg/kg)	Di-n-octyl phthalate (mg/kg)	Hexachlorobenzene (mg/kg)	Hexachlorobutadiene (mg/kg)	Hexachlorocyclopentadiene (mg/kg)	Hexachloroethane (mg/kg)	Isophorone (mg/kg)	Nitrobenzene (mg/kg)	N-nitroso-di-n-propylamine (mg/kg)	N-nitrosodiphenylamine (mg/kg)	Pentachlorophenol (mg/kg)	Phenol (mg/kg)
SD02E-015-000003-203	11/20/2003	0.0 - 0.5	1.6 U	3.2 U	0.8 U	0.08 U	0.8 U	2.7	0.8 U	0.038 J	0.044 J	0.8 U	0.8 U	0.8 U	0.8 U	0.08 U	0.16 U	0.8 U	0.08 U	0.8 U	0.08 U	0.8 U	3.2 U	0.8 U
SD02E-015-015020-203	11/20/2003	1.5 - 2.0	1.6 U	3.2 U	0.79 U	0.079 U	0.79 U	3.6	0.79 U	0.037 J	0.048 J	0.79 U	0.79 U	0.79 U	0.79 U	0.079 U	0.16 U	0.79 U	0.079 U	0.79 U	0.079 U	0.79 U	3.2 U	0.79 U
SD02E-015-035040-203	11/20/2003	3.5 - 4.0	1.4 U	2.8 U	0.71 U	0.071 U	0.71 U	7	0.71 U	0.048 J	0.068 J	0.71 U	0.71 U	0.71 U	0.71 U	0.071 U	0.14 U	0.71 U	0.071 U	0.71 U	0.081	0.071 U	2.8 U	0.71 U
SD02W-200-000003-203	12/2/2003	0.0 - 0.5	0.76 U	1.5 U	0.38 U	0.038 U	0.38 U	0.081 J	0.38 U	0.014 J	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.038 U	0.076 U	0.38 U	0.038 U	0.38 U	0.038 U	0.38 U	1.5 U	0.38 U
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	0.79 U	1.6 U	0.39 U	0.039 U	0.39 U	0.11 J	0.39 U	0.0082 J	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.039 U	0.079 U	0.39 U	0.039 U	0.39 U	0.039 U	0.39 U	1.6 U	0.39 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	0.8 U	1.6 U	0.4 U	0.04 U	0.4 U	0.13 J	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.08 U	0.4 U	0.04 U	0.4 U	0.04 U	0.4 U	1.6 U	0.4 U
SD03E-025-000003-203	11/16/2003	0.0 - 0.5	0.99 U	2 U	0.5 U	0.05 U	0.5 U	0.19 J	0.5 U	0.028 J	0.098 J	0.3 U	0.5 U	0.5 U	0.5 U	0.05 U	0.099 U	0.5 U	0.05 U	0.5 U	0.05 U	0.5 U	0.073 J	2 U	0.5 U
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	1.4 U	2.8 U	0.7 U	0.07 U	0.7 U	0.7 U	0.7 U	0.065 J	0.32 J	0.7 U	0.7 U	0.7 U	0.7 U	0.07 U	0.14 U	0.7 U	0.07 U	0.7 U	0.07 U	0.7 U	2.8 U	0.7 U
SD03E-025-035040-203	11/16/2003	3.5 - 4.0	1 UJ	2.1 UJ	0.53 UJ	0.053 UJ	0.53 UJ	0.13 J	0.53 UJ	0.062 J	0.18 J	0.53 UJ	0.53 UJ	0.53 UJ	0.53 UJ	0.053 UJ	0.1 UJ	0.53 UJ	0.053 UJ	0.53 UJ	0.053 U	0.053 UJ	0.16 J	2.1 UJ	0.53 UJ
SD03E-050-000003-103	10/16/2003	0.0 - 0.5	1.1 U	2.2 U	0.55 U	0.055 U	0.55 U	1.5 J	0.23 J	0.12 J	0.12 J	0.55 U	0.55 U	0.55 U	0.55 U	0.055 U	0.11 U	0.55 U	0.055 U	0.55 U	0.055 U	0.055 U	0.55 U	2.2 U	0.55 U
SD03E-075-000003-203	11/17/2003	0.0 - 0.5	1.3 U	2.6 U	0.65 U	0.065 U	0.65 U	0.65 U	0.65 U	0.093 J	0.26 J	0.65 U	0.65 U	0.65 U	0.65 U	0.065 U	0.13 U	0.65 U	0.065 U	0.65 U	0.065 U	0.065 U	0.11 J	2.6 U	0.65 U
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	0.81 U	1.6 U	0.4 U	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.029 J	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.081 U	0.4 U	0.04 U	0.4 U	0.04 U	0.04 U	1.6 U	0.4 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	0.79 U	1.6 U	0.4 U	0.04 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.079 U	0.4 U	0.04 U	0.4 U	0.04 U	0.04 U	1.6 U	0.4 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	0.83 U	1.6 U	0.41 U	0.041 U	0.43 U	0.097 J	0.41 U	0.41 U	0.016 J	0.41 U	0.41 U	0.41 U	0.41 U	0.041 U	0.083 U	0.41 U	0.041 U	0.41 U	0.041 U	0.041 U	0.41 U	1.6 U	0.41 U
SD03W-200-000003-203	11/24/2003	0.0 - 0.5	0.76 U	1.5 U	0.38 U	0.038 U	0.38 U	0.085 J	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.38 U	0.038 U	0.076 U	0.38 U	0.038 U	0.38 U	0.038 U	0.038 U	0.38 U	1.5 U	0.38 U
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	1.2 U	2.4 U	0.61 U	0.061 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.061 U	0.12 U	0.61 U	0.061 U	0.61 U	0.061 U	0.061 U	0.61 U	2.4 U	0.61 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	1 U	2.1 U	0.53 U	0.053 U	0.53 U	0.53 U	0.53 U	0.51 U	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.053 U	0.1 U	0.53 U	0.053 U	0.53 U	0.053 U	0.053 U	0.53 U	2.1 U	0.53 U
SD13E-005-000003-203	11/17/2003	0.0 - 0.5	2.5 U	5.1 U	1.3 U	0.13 U	1.3 U	20	1.3 U	0.036 J	0.078 J	1.3 U	1.3 U	1.3 U	1.3 U	0.13 U	0.25 U	1.3 U	0.13 U	1.3 U	0.13 U	1.3 U	5.1 U	1.3 U
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	2.5 U	5 U	1.2 U	0.12 U	1.2 U	9.6	1.2 U	0.075 J	0.15 J	1.2 U	1.2 U	1.2 U	1.2 U	0.12 U	0.25 U	1.2 U	0.12 U	1.2 U	0.11 J	0.12 U	1.2 U	5 U	1.2 U
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	2.5 U	5.1 U	1.3 U	0.13 U	1.3 U	1.3 U	1.3 U	0.12 J	0.91 J	1.3 U	1.3 U	1.3 U	1.3 U	0.13 U	0.25 U	1.3 U	0.13 U	0.42 J	0.13 U	0.13 U	1.3 U	5.1 U	1.3 U
SD13E-050-000003-203	11/17/2003	0.0 - 0.5	2.3 U	4.6 U	1.1 U	0.11 U	1.1 U	3.5	1.1 U	0.25 J	1.4	1.1 U	1.1 U	1.1 U	1.1 U	0.11 U	0.23 U	1.1 U	0.11 U	1.1 U	0.11 U	0.11 U	1.1 U	4.6 U	1.1 U
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	0.92 U	1.8 U	0.46 U	0.046 U	0.46 U	0.15 J	0.46 U	0.053 J	0.13 J	0.46 U	0.46 U	0.46 U	0.46 U	0.046 U	0.092 U	0.46 U	0.046 U	0.46 U	0.046 U	0.046 U	1.8 U	0.46 U	0.46 U
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	6.5 UJ	13 UJ	3.2 UJ	0.32 UJ	3.2 UJ	3.2 UJ	3.2 UJ	0.23 J	0.87 J	3.2 UJ	3.2 UJ	3.2 UJ	3.2 UJ	0.32 UJ	0.65 UJ	3.2 UJ	0.32 UJ	3.2 UJ	0.32 UJ	0.32 UJ	0.44 J	13 UJ	3.2 UJ
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	2.6 U	5.2 U	1.3 U	0.13 U	1.3 U	1.3 U	1.3 U	0.28 J	0.96 J	1.3 U	1.3 U	1.3 U	1.3 U	0.13 U	0.26 U	1.3 U	0.13 U	1.3 U	0.13 U	0.13 U	1.3 U	5.2 U	1.3 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	3.2 U	6.4 U	1.6 U	0.16 U	1.6 U	1.6 U	1.6 U	0.13 J	0.4 J	1.6 U	1.6 U	1.6 U	1.6 U	0.16 U	0.32 U	1.6 U	0.16 U	1.6 U	0.16 U	0.16 U	1.6 U	6.4 U	1.6 U
SD13W-200-000003-203	12/3/2003	0.0 - 0.5	0.79 U	1.6 U	0.39 U	0.039 U	0.39 U	0.17 J	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.039 U	0.079 U	0.39 U	0.039 U	0.39 U	0.039 U	0.039 U	1.6 U	0.39 U
Sediment Toxicity Composite Samples:																									
XS001-RF1-C00003-103[1]	11/10/2003	0.0 - 0.5	7.2 U	14 U	3.6 U	0.36 U	3.6 U	3.6 U	3.6 U	0.99 J	4.7	3.6 U	3.6 U	3.6 U	3.6 U	0.36 U	0.72 U	3.6 U	0.36 U	3.6 U	0.36 U	0.36 U	3.6 U	14 U	3.6 U
XS003-RF1-C00003-103	11/10/2003	0.0 - 0.5*	7.2 U	14 U	3.6 U	0.36 U	3.6 U	3.6 U	3.6 U	0.99 J	4.7	3.6 U	3.6 U	3.6 U	3.6 U	0.36 U	0.72 U	3.6 U	0.36 U	3.6 U	0.36 U	0.36 U	3.6 U	14 U	3.6 U
XS001-RF2-C00003-103	11/9/2003	0.0 - 0.5	1.9 U	3.9 U	0.97 U	0.097 U	0.97 U	6	0.97 U	0.1 J	0.058 J	0.97 U	0.97 U	0.97 U	0.97 U	0.097 U	0.19 U	0.97 U	0.097 U	0.97 U	0.097 U	0.097 U	0.97 U	3.9 U	0.97 U
XS001-RF3-C00003-103	11/9/2003	0.0 - 0.5	1.3 U	2.7 U	0.67 U	0.067 U	0.67 U	9.5	0.67 U	0.051 J	0.058 J	0.67 U	0.67 U	0.67 U	0.67 U	0.067 U	0.13 U	0.67 U	0.067 U	0.67 U	0.067 U	0.067 U	2.7 U	0.67 U	0.67 U
XS00C-100-C00003-103	11/9/2003	0.0 - 0.5	1.4 U	2.7 U	0.68 U	0.068 U	0.68 U	1.6	0.68 U	0.052 J	0.099 J	0.68 U	0.68 U	0.68 U	0.68 U	0.068 U	0.14 U	0.68 U	0.068 U	0.68 U	0.068 U	0.068 U	2.7 U	0.68 U	0.68 U
XS00D-150-C00003-103	11/8/2003	0.0 - 0.5	4.2 U	8.5 U	2.1 U	0.21	2.1 U	3.2	2.1 U	0.23 J	1.1 J	2.1 U	2.1 U	2.1 U	2.1 U	0.21 U	0.42 U	2.1 U	0.21 U	2.1 U	0.36	0.21 U	2.1 U	8.5 U	2.1 U
XS01W-115-C00003-103	11/8/2003	0.0 - 0.5	1 U	2 U	0.51 U	0.051 U	0.51 U	1	0.51 U	0.081 J	0.066 J	0.51 U	0.51 U	0.51 U	0.51 U	0.051 U	0.1 U	0.51 U	0.053 U	0.51 U	0.051 U	0.051 U	0.51 U	2 U	0.51 U
XS01E-000-C00003-103	11/9/2003	0.0 - 0.5	6.6 U	13 U	3.3 U	0.33 U	3.3 U	3.4 J	3.3 U	0.19 J	0.26 J	3.3 U	3.3 U	3.3 U	3.3 U	0.33 U	0.66 U	3.3 U	0.33 U	3.3 U	0.33 U	0.33 U	3.3 U	13 U	3.3 U
XS11E-100-C00003-103	11/9/2003	0.0 - 0.5	1.3 U	2.3 U	0.58 U	0.058 U	0.58 U	0.24 J	0.58 U	0.059 J	0.23 J	0.58 U	0.58 U	0.58 U	0.58 U	0.058 U	0.12 U	0.58 U	0.058 U	0.58 U	0.058 U	0.058 U	2.3 U	0.58 U	0.58 U

Notes:
* = The sample is a field duplicate
[1] = The results associated with this sample are preliminary and unvalidated
J = The associated value is an estimated quantity
R = The result is unusable
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate
B = The parameter was detected in the Blank sample(s)
BJ = The parameter is detected in the Blank sample(s). The associated value is an estimated quantity.

Persons

Table 8
Polycyclic Aromatic Hydrocarbons Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	4,4'-DDD (mg/kg)	2-Methyl naphthalene (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a) anthracene (mg/kg)	Benzo(a) pyrene (mg/kg)	Benzo(b) fluoranthene (mg/kg)	Benzo (g,h,i) perylene (mg/kg)	Benzo(k) fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo (a,h) anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno (1,2,3-cd) pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
Reference Samples:																				
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	1.3 U	3.1	12	1.9	6.8	10	8.1	6.1	3.9 J	6.8	11	1.4	23	1.6	3.7	14	5	19
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	1.1 U	0.073 J	0.11 J	0.2 J	0.34 J	0.86	0.96	0.98	0.57 J	1.1	1.3	0.18	2.6	0.11 J	0.5	0.13 J	0.94 J	2
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	0.67 U	0.09 J	0.17 J	0.56 J	1.1	1.8	1.9	1.6	0.74 J	1.8	2	0.3	3.7	0.13 J	0.76	0.3 J	0.92	2.9
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	1.4 U	1.4 J	5.7	2.4	7.9	12	11	7.9	5.3 J	9.3	13	1.9	25	2	4.9	8.4	9.1	20
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	0.97 U	0.052 J	0.088 J	0.15 J	0.26 J	0.59	0.66	0.66	0.4 J	0.76	0.87 J	0.13	1.8	0.075 J	0.36	0.095 J	0.69 J	1.4
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	0.76 U	0.2 J	0.15 J	0.49 J	0.9	1.5	1.9	1.5	1.1 J	1.8	2	0.37	3.4	0.13 J	0.98	0.32 J	0.86	2.7
Study Area 7 Samples:																				
SD001-200-000005-203	11/25/2003	0.0 - 0.5	0.45 U	0.032 J	0.031 J	0.14 J	0.28 J	0.67	0.56	0.49	0.36 J	0.51	0.7	0.14	1.1	0.45 U	0.32	0.2 J	0.28 J	1.8
SD004-200-000005-203	11/22/2003	0.0 - 0.5	0.4 U	0.4 U	0.039 J	0.035 J	0.083 J	0.23	0.21	0.14	0.13 J	0.22	0.26 J	0.04 U	0.3 J	0.4 U	0.12	0.096 J	0.14 J	0.58
SD004-200-015020-203	11/22/2003	1.5 - 2.0	4.2 U	4.2 U	4.2 U	4.2 U	0.22 J	0.97	0.57	0.45	0.34 J	0.5	0.97 J	0.42 U	1.5 J	4.2 U	0.26 J	4.2 U	0.18 J	2.1
SD004-200-035040-203	11/22/2003	3.5 - 4.0	1.4 U	1.3 J	4.8	0.96 J	8.5	8.7	4.5	4.1	2.6	4.1	10	0.78	18	4.3	2.3	7	18	22
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	0.49 U	0.068 J	0.063 J	0.17 J	0.28 J	0.83	0.71	0.65	0.23 J	0.79	0.97	0.049 U	1.1	0.088 J	0.24	0.16 J	0.72	2.1
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	0.54 U	0.054 J	0.073 J	0.13 J	0.27 J	0.79 J	0.7	0.58	0.65	0.6	1.1	0.18	1	0.082 J	0.53	0.13 J	0.69	2.3 J
SD00A-025-000005-203	11/23/2003	0.0 - 0.5*	0.55 U	0.05 J	0.06 J	0.22 J	0.21 J	0.82 J	0.8	0.64	0.74	0.75	0.94 J	0.25	0.9	0.55 U	0.62	0.15 J	0.46 J	2.3 J
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	1.2 U	0.094 J	0.067 J	0.27 J	0.36 J	1.2	1.1	0.94	0.68 J	0.95	1.4	0.33	1.9	0.085 J	0.56	0.31 J	0.4 J	2.8
SD00A-050-015040-203	11/23/2003	1.5 - 2.0	0.78 U	0.14 J	0.47 J	0.42 J	1.2	2	2.2	2	1.6	1.8	2.6	0.47	3.5	0.18 J	1.3	0.49 J	0.6 J	4.8
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	0.65 U	0.37 J	0.78	0.4 J	1.3	1.7 J	1.1	0.74	0.91	1	2 J	0.27	2.9	0.2	0.76	1.1	2.9	5.3 J
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	0.69 U	0.1 J	0.58 J	0.51 J	1.4	3.8	2.3	2	0.55 J	2.8	4.2	0.29	6.4	0.15 J	0.62	0.42 J	0.91	8.8
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	1.5 U	0.24 J	1.6	0.87 J	3	4.9	3.5	2.8	1.2 J	4.4	5.8	0.15 U	9	0.54 J	1.2	1.6	2	9 J
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	0.4 U	0.021 J	0.033 J	0.083 J	0.1 J	0.25	0.2	0.18	0.066 J	0.27	0.41	0.027 J	0.24 J	0.036 J	0.071	0.04 J	0.14 J	0.93
SD00B-025-000005-203	11/25/2003	0.0 - 0.5*	0.42 U	0.024 J	0.018 J	0.066 J	0.094 J	0.31	0.31	0.25	0.21 J	0.3	0.39 J	0.073	0.31 J	0.41 U	0.19	0.088 J	0.13 J	0.95
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	1 U	0.38 J	1.3	1.3	3.9	6	4.5	3.1	2.2	4.1	6.6	0.68	8.6	1.2	2.1	3.1	6.8	11
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	0.6 U	0.86	1.2	0.95	2.5	3.6	2.6	1.5	1.6	2.2	4	0.5	5.3	1.2	1.3	10	5.7	9.4
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	0.55 U	0.21 J	0.43 J	0.4 J	0.78	3.8 J	1.8 J	1.8 J	1 J	1.6 J	4.5 J	0.35 J	4.4	0.13 J	0.94 J	2.1	0.42 J	8.5 J
SD00B-050-000005-203	11/23/2003	0.0 - 0.5*	0.46 U	0.15 J	0.079 J	0.28 J	0.38 J	1.3 J	0.96 J	0.64 J	0.77 J	0.88 J	1.4 J	0.28 J	1.7	0.11 J	0.63 J	1.2	0.36 J	4.6 J
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	0.39 U	0.067 J	0.04 J	0.16 J	0.17 J	0.65	0.6	0.41	0.44	0.58	0.79	0.13	0.58	0.05 J	0.38	0.63	0.16 J	2.1
SD00DB-100-000005-203	11/22/2003	0.0 - 0.5*	0.43 U	0.065 J	0.044 J	0.14 J	0.16 J	0.59	0.54	0.4	0.38 J	0.49	0.69	0.14	0.66	0.048 J	0.33	0.39 J	0.16 J	1.8
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.14	0.04 U	0.04 U	0.4 U	0.04 U	0.16 J	0.04 U	0.17 J	0.4 U	0.04 U	0.4 U	0.4 U	0.28 J
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	0.41 U	0.045 J	0.076 J	0.16 J	0.19 J	0.72	0.58	0.39	0.27 J	0.55	0.82	0.041 U	0.81	0.037 J	0.25	0.31 J	0.2 J	1.5
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	0.82 U	0.061 J	0.072 J	0.3 J	0.37 J	1.3	0.79	0.7	0.25 J	0.87	1.8	0.083	1.5	0.06 J	0.25	0.19 J	0.32 J	2.9
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	0.87 U	0.87 U	0.025 J	0.08 J	0.11 J	0.3	0.32	0.31	0.093 J	0.37	0.38 J	0.087 U	0.44 J	0.87 U	0.1	0.87 U	0.12 J	0.65 J
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	0.83 U	0.033 J	0.062 J	0.14 J	0.24 J	0.65	0.63	0.65	0.2 J	0.82	0.89	0.083 U	0.99	0.069 J	0.21	0.075 J	0.32 J	1.3
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	0.89 U	0.04 J	0.066 J	0.2 J	0.33 J	0.62	0.7	0.52	0.45 J	0.61	0.76 J	0.14	1.4	0.05 J	0.39	0.15 J	0.35 J	1
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	0.86 U	0.06 J	0.088 J	0.28 J	0.3 J	1.2	0.74	0.58	0.31 J	0.71	1.5	0.098	1.1	0.068 J	0.28	0.21 J	0.45 J	2.5
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	0.79 U	0.087 J	0.19 J	0.47 J	0.8	3.4	1.4	1.2	0.48 J	1.5	5.2	0.17	2.1	0.12 J	0.48	0.34 J	0.72 J	5.2
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	0.61 U	0.075 J	0.15 J	0.32 J	0.66	0.95	1	0.83	0.41 J	0.99	1.1	0.15	2.4	0.11 J	0.4	0.33 J	0.64	1.7
SD00DC-100-000005-103	10/16/2003	0.0 - 0.5*	0.63 U	0.1 J	0.17 J	0.41 J	0.74	1.2	1.4	1.1	0.54 J	1.2	1.4	0.19	2.8	0.11 J	0.53	0.38 J	0.77	2
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	0.54 U	0.022 J	0.038 J	0.19 J	0.24 J	0.73	0.63	0.49	0.21 J	0.62	0.88	0.092	0.78	0.033 J	0.23	0.12 J	0.24 J	1.6
SD00DC-200-000005-203	11/21/2003	0.0 - 0.5	0.53 U	0.046 J	0.082 J	0.35 J	0.58	3.3	1.4	1.4	0.41 J	1.8	3.9	0.2	6.9	0.077 J	0.43	0.18 J	0.48 J	9.8
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	0.42 U	0.025 J	0.05 J	0.19 J	0.47	0.83	0.62	0.48	0.25 J	0.63	1.1	0.11	0.82	0.035 J	0.25	0.11 J	0.24 J	1.4
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	0.57 U	0.11 J	0.24 J	0.24 J	0.79	1.6	1.7	1.5	0.53 J	1.9	1.9	0.21	4.3	0.24 J	0.55	0.27 J	2.4	3.8
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	1 U	0.9 J	3.8	1.4	6.9	7.1	5.3	5.2	1.8 J	5.5	7.2	0.71	14	2	1.8	6.4	4	12
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	0.78 U	0.054 J	0.054 J	0.24 J	0.26 J	0.72	0.78	0.65	0.24 J	0.92	0.92	0.1	0.71 J	0.056 J	0.23	0.18 J	0.26 J	2.4
SD02E-025-000005-103	10/16/2003	0.0 - 0.5	0.83 U	0.097 J	0.18 J	0.3 J	0.89	1.1	1.1	0.98	0.44 J	1.3	1.3	0.19	3	0.19 J	0.42	0.24 J	1.4	2.2

Field Sample ID	Date Sampled	Depth (feet)	4,4'-DDD (mg/kg)	2-Methyl naphthalene (mg/kg)	Acenaphthene (mg/kg)	Acenaphthylene (mg/kg)	Anthracene (mg/kg)	Benzo(a) anthracene (mg/kg)	Benzo(a) pyrene (mg/kg)	Benzo(b) fluoranthene (mg/kg)	Benzo(g,h,i) perylene (mg/kg)	Benzo(k) fluoranthene (mg/kg)	Chrysene (mg/kg)	Dibenzo(a,h) anthracene (mg/kg)	Fluoranthene (mg/kg)	Fluorene (mg/kg)	Indeno(1,2,3-cd) pyrene (mg/kg)	Naphthalene (mg/kg)	Phenanthrene (mg/kg)	Pyrene (mg/kg)
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	0.8 U	0.062 J	0.059 J	0.27 J	0.36 J	1.1	0.63	0.48	0.28 J	0.66	1.2	0.096	1.1	0.054 J	0.25	0.2 J	0.31 J	2.1
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	0.79 U	0.064 J	0.099 J	0.03 J	0.44 J	1.3	0.73	0.57	0.24 J	0.76	1.6	0.091	1.3	0.079 J	0.23	0.17 J	0.43 J	2.4
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	0.71 U	0.09 J	0.13 J	0.39 J	0.44 J	1.6	1	0.89	0.29 J	1.1	2	0.096	1.6	0.086 J	0.3	0.3 J	0.45 J	4.1
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	0.38 U	0.38 U	0.38 U	0.0086 J	0.38 U	0.034 J	0.03 J	0.019 J	0.016 J	0.027 J	0.04 J	0.038 U	0.034 J	0.38 U	0.013 J	0.38 U	0.38 U	0.065 J
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U	0.039 U	0.039 U	0.039 U	0.39 U	0.039 U	0.39 U	0.039 U	0.39 U	0.39 U	0.039 U	0.39 U	0.39 U	0.39 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.04 U	0.04 U	0.04 U	0.4 U	0.04 U	0.4 U	0.04 U	0.4 U	0.4 U	0.04 U	0.4 U	0.4 U	0.4 U
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	0.5 U	0.1 J	0.14 J	0.57	0.76	2.2	1.7	1.2	0.56	1.6	2.5	0.16	4.2	0.12 J	0.57	0.92	0.57	4.5
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	0.7 U	0.33 J	1.1	0.36 J	2	2	1.3	1.1	0.34 J	1.4	2.2	0.11	4	0.96	0.36	0.88	4.4	5.3
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	0.53 UJ	0.43 J	0.9 J	1.3 J	2.7 J	7.3 J	4.6 J	3 J	1.4 J	3.6 J	9.4 J	0.53 J	0.53 UJ	0.4 J	1.2 J	2.8 J	2.1 J	0.53 UJ
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	0.55 U	0.16 J	0.18 J	0.46 J	0.8	1.5	3.4	2	1.4 J	1.9	1.9	0.87	3.2	0.16 J	1	0.96	0.67	4.2
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	0.65 U	0.65 J	0.9	0.78	2.2	2.8	2	1.4	0.57 J	1.9	3.3	0.21	5.8	0.19	0.52	3.5	4.3	6
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	0.4 U	0.058 J	0.14 J	0.13 J	0.36 J	0.35	0.25	0.13	0.12 J	0.2	0.42	0.057	0.69	0.068 J	0.1	0.31 J	0.38	0.86
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	0.4 U	0.4 U	0.012 J	0.039 J	0.039 J	0.082	0.082	0.042	0.039 J	0.054	0.094 J	0.04 U	0.15 J	0.0086 J	0.033 J	0.4 U	0.021 J	0.23 J
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	0.41 U	0.036 J	0.03 J	0.12 J	0.11 J	0.29	0.35	0.21	0.21 J	0.28	0.33 J	0.064	0.52	0.41 U	0.16	0.38 J	0.093 J	0.51
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	0.38 U	0.012 J	0.0089 J	0.15 J	0.077 J	0.44	0.38	0.2	0.19 J	0.29	0.42	0.039	0.24 J	0.38 U	0.16	0.018 J	0.025 J	1.2
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	0.61 U	0.61 U	0.61 U	0.61 U	0.61 U	0.061 U	0.061 U	0.061 U	0.61 U	0.061 U	0.61 U	0.061 U	0.61 U	0.61 U	0.061 U	0.61 U	0.61 U	0.61 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	0.53 U	0.53 U	0.53 U	0.53 U	0.53 U	0.053 U	0.053 U	0.053 U	0.53 U	0.053 U	0.53 U	0.053 U	0.53 U	0.53 U	0.053 U	0.53 U	0.53 U	0.53 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	1.3 U	0.079 J	0.098 J	0.18 J	0.42 J	2.1	0.87	0.84	0.31 J	1.1	2.3	0.14	3	0.076 J	0.31	0.18 J	0.41 J	7
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	1.2 U	0.18 J	0.31 J	0.61 J	1.9	3.7	2.4	1.9	0.94 J	2.3	4.2	0.36	6.8	0.16 J	0.96	0.78 J	0.83 J	7.5
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	1.3 U	4.9	4.3	0.74 J	8.2	5	2.5	1.9	0.94 J	2.6	5.4	0.3	12	4.6	1	2.4	18	14
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	1.1 U	0.44 J	11	1.1	5	7.5	3.3	2.7	1.2	3.6	9	0.49	18	0.4 J	1.2	1.8	2.7	18
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	0.46 U	0.14 J	0.3 J	0.44 J	0.84	1.6	1.5	1.1	0.47 J	1.4	1.7	0.19	4.5	0.16 J	0.47	1	0.71	3.5
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	3.2 UJ	0.49 J	3.2 J	0.96 J	6.1 J	5.3 J	2.6 J	1.8 J	1.5 J	3.1 J	6 J	0.52 J	13 J	0.89 J	1.2 J	4.2 J	4.9 J	11 J
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	1.3 U	1.9	2.9	1.5	7	8.5	4	3.2	0.77 J	3.9	9.9	0.37	14	3.1	0.88	9.9	16	21
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	1.6 U	1.6 U	5.5	4.7	10	16	8.8	4.8	1.6 J	6.9	20	0.88	15	1.6 U	1.8	11 J	15	28
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	0.39 U	0.39 U	0.39 U	0.036 J	0.028 J	0.12	0.097	0.059	0.044 J	0.092	0.12 J	0.02 J	0.096 J	0.39 U	0.042	0.022 J	0.026 J	0.23 J
Sediment Toxicity Composite Samples:																				
XS001-RF1-C00005-103[1]	11/10/2003	0.0 - 0.5	3.6 U	2.7 J	16	2.4 J	19	19	8.1	5.7	3.4 J	8.4	21	1.2	30	9.5	3.4	9.8	35	42
XS001-RF1-C00005-103*	11/10/2003	0.0 - 0.5*	3.6 U	2.8 J	16	2.4 J	19	19	8.1	5.7	3.4 J	8.4	21	1.2	30	9.6	3.4	9.8	36	42
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	0.97 U	0.076 J	0.088 J	0.27 J	0.38 J	0.96	1.1	1	0.62 J	1.4	1.4	0.097 U	2.1	0.1 J	0.58	0.13 J	0.81 J	2.5
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	0.67 U	0.084 J	0.11 J	0.36 J	0.51 J	1.4	1.5	1.2	0.7	1.7	1.6	0.26	2.2	0.09 J	0.69	0.26 J	0.61 J	2.8
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	0.68 U	0.1 J	0.15 J	0.5 J	0.84	1.6	1.8	1.2	0.81	1.8	1.9	0.28	2.5	0.15 J	0.78	0.51 J	0.87	3.1
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	2.1 U	0.58 J	2.4	0.92 J	4.2	6.6	3.8	3.1	1.8 J	4.4	7.9	0.21 U	12	1.2 J	1.7	3.7	4.4	14
XS01W-125-C00005-103	11/8/2003	0.0 - 0.5	0.51 U	0.062 J	0.19 J	0.38 J	0.56	1.3	1.4	1.1	0.67	1.3	1.5	0.24	2.6	0.098 J	0.64	0.3 J	0.5 J	2.5
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	3.3 U	0.26 J	0.59 J	0.97 J	12	26	5.7	5.3	1.7 J	7.4	29	0.72	42	0.42 J	1.8	11 J	1.3 J	48
XS13E-100-C00005-103	11/6/2003	0.0 - 0.5	0.98 U	0.2 J	0.77	0.41 J	1.4	2	1.6	1.2	0.64	1.6	2.4	0.23	4.3	0.3 J	0.61	1.4	1	4.8

Notes:

* = The sample is a field duplicate

[1] = The results associated with this sample are preliminary and unvalidated

J = The associated value is an estimated quantity

R = The result is unusable

U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit

UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate

B = The parameter was detected in the Blank sample(s)

BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.

Table 9
Pesticides Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	4,4'-DDD (mg/kg)	4,4'-DDE (mg/kg)	4,4'-DDT (mg/kg)	Aldrin (mg/kg)	Alpha-BHC (mg/kg)	Beta-BHC (mg/kg)	Chlordane (mg/kg)	Delta-BHC (mg/kg)	Dieldrin (mg/kg)	Endosulfan I (mg/kg)	Endosulfan II (mg/kg)	Endosulfan sulfate (mg/kg)	Endrin (mg/kg)	Endrin aldehyde (mg/kg)	Endrin ketone (mg/kg)	Gamma-BHC (Lindane) (mg/kg)	Heptachlor (mg/kg)	Heptachlor epoxide (mg/kg)	Methoxychlor (mg/kg)	Toxaphene (mg/kg)
Reference Samples:																						
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	0.022 U	0.022 U	0.022 U	0.022 U	0.04	0.022 U	0.22 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.022 U	0.22 U
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	0.013 U	0.013 U	0.013 U	0.013 U	0.023	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	0.014 U	0.014 U	0.014 U	0.014 U	0.017	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	0.019 U	0.019 U	0.019 U	0.019 U	0.034	0.019 U	0.19 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.19 U
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	0.015 U	0.02	0.015 U	0.015 U	0.019	0.015 U	0.15 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.015 U	0.018 J	0.015 U	0.015 U	0.015 U	0.15 U
Study Area 7 Samples:																						
SD001-200-000005-203	11/25/2003	0.0 - 0.5	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.09 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.009 U	0.09 U
SD004-200-000005-203	11/22/2003	0.0 - 0.5	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U
SD004-200-015020-203	11/22/2003	1.5 - 2.0	0.0084 U	0.014	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.0084 U	0.017	0.0084 U	0.0084 U	0.0084 U	0.084 U
SD004-200-035040-203	11/22/2003	3.5 - 4.0	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	0.0099 U	0.012 J	0.0099 U	0.0099 U	0.0099 U	0.0099 U	0.099 U	0.0099 U	0.0099 U	0.0099 U	0.0099 U	0.0099 U	0.019	0.024	0.027 J	0.0099 U	0.0099 U	0.0099 U	0.013 J	0.099 U
SD00A-025-000000-203	11/23/2003	0.0 - 0.5	0.022	0.065	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.018	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.027 J	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD00A-025-000005-203	11/23/2003	0.0 - 0.5*	0.011 U	0.063	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.02	0.011 U	0.011 U	0.011 U	0.021 U	0.011 U	0.03 J	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	0.012 U	0.082	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.014	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.026 J	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	0.063	0.45	0.016 U	0.016 U	0.016 U	0.021 J	0.16 U	0.016 U	0.078	0.016 U	0.016 U	0.016 U	0.016 U	0.038	0.18	0.016 U	0.058	0.036 J	0.019 J	0.16 U
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.043 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	0.016	0.058 J	0.014 U	0.014 U	0.014 U	0.02	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.021	0.021	0.014 U	0.014 U	0.014 U	0.031	0.14 U
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	0.05 J	0.2 J	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	0.12	0.07 J	0.0098 U	0.0098 U	0.0098 U	0.0098 U	0.098 U	0.0098 U	0.018 J	0.0098 U	0.0098 U	0.0098 U	0.0098 U	0.019	0.064	0.0098 U	0.062	0.14 J	0.032 J	0.098 U
SD00B-025-000005-203	11/25/2003	0.0 - 0.5*	0.0083 U	0.027	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.02 J	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.083 U
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.026 J	0.1 U
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U
SD00B-040-000005-203	11/23/2003	0.0 - 0.5	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.021 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD00B-040-000005-203	11/25/2003	0.0 - 0.5*	0.011 J	0.057	0.0093 U	0.0093 U	0.0093 U	0.0093 U	0.093 U	0.0093 U	0.016	0.0093 U	0.0093 U	0.0093 U	0.0093 U	0.0093 U	0.0093 U	0.047	0.0093 U	0.013	0.015 J	0.093 U
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	0.0078 U	0.069	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.078 U	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.0082	0.0078 U	0.0078 U	0.0078 U	0.0078 U	0.078 U
SD00B-100-000005-203	11/22/2003	0.0 - 0.5*	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.086 U	0.0086 U	0.0086 U	0.0085 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.0086 U	0.086 U
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.0082 U	0.082 U
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	0.018 U	0.018 U	0.018 U	0.018 U	0.029	0.018 U	0.18 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.018 U	0.18 U
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	0.012 U	0.02	0.012 U	0.012 U	0.018	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U
SD00C-100-000005-103	10/16/2003	0.0 - 0.5*	0.013 U	0.017 J	0.013	0.013 U	0.038	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	0.02	0.033	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD00C-100-000005-203	11/21/2003	0.0 - 0.5*	0.024	0.021 J	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	0.0085 U	0.0085 U	0.0085 U	0.0085 U	0.0085 U	0.0085 U	0.085 U	0.0085 U	0.0085 U	0.0085 U	0.0085 U	0.0085 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.021	0.11 U
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	0.04	0.038	0.024 J	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.018	0.11 U
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	0.077	0.26 J	0.061	0.02 U	0.02 U	0.02 U	0.2 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.2 U
SD01E-025-000005-203	11/25/2003	0.0 - 0.5	0.027	0.053	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 J	0.016 U	0.016 U	0.016 U	0.16 U
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	0.022	0.029	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U	0.017 J	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.017 U	0.17 U

Table 9
Pesticides Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	4,4'-DDD (mg/kg)	4,4'-DDE (mg/kg)	4,4'-DDT (mg/kg)	Aldrin (mg/kg)	Alpha-BHC (mg/kg)	Beta-BHC (mg/kg)	Chlordane (mg/kg)	Delta-BHC (mg/kg)	Dieldrin (mg/kg)	Endosulfan I (mg/kg)	Endosulfan II (mg/kg)	Endosulfan sulfate (mg/kg)	Endrin (mg/kg)	Endrin aldehyde (mg/kg)	Endrin ketone (mg/kg)	Gamma-BHC (Lindane) (mg/kg)	Heptachlor (mg/kg)	Heptachlor epoxide (mg/kg)	Methoxychlor (mg/kg)	Toxaphene (mg/kg)
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.076 U
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.079 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.081 U
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.14	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.1 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.01 UJ	0.1 UJ
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	0.011 U	0.011 U	0.011 U	0.011 U	0.018	0.011 U	0.11 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0086 U	0.0081 U	0.081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.0081 U	0.081 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.008 U	0.08 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.012	0.0083 U	0.083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.0083 U	0.083 U
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.0076 U	0.076 U
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.011 U	0.11 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	0.013 U	0.042	0.033	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.029 J	0.013 U	0.013 U	0.013 U	0.13 U
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	0.041 J	0.15 J	0.037	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.019	0.019	0.013 U	0.013 U	0.025	0.13 U
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	0.012 U	0.012 U	0.012 U	0.012 U	0.013 U	0.018	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	0.0092 U	0.0092 U	0.0092 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.023	0.16 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.016 U	0.16 U
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.0079 U	0.079 U
Sediment Toxicity Composite Samples:																						
XS001-RF1-C00005-103[1]	11/10/2003	0.0 - 0.5	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5*	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.19 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.015 J	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	0.014 U	0.021	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.019 U	0.19 U
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	0.014 U	0.015 J	0.014 U	0.014 U	0.014 U	0.014 U	0.14 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.014 U	0.018 J	0.014 U	0.014 U	0.014 U	0.14 U
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	0.1	0.36 J	0.09	0.021 U	0.021 U	0.021 U	0.21 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.021 U	0.21 U
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	0.013 J	0.023 J	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.1 U
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.013 U	0.13 U
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.012 U	0.12 U

Notes:
* = The sample is a field duplicate
[1] = The results associated with this sample are preliminary and unvalidated.
J = The associated value is an estimated quantity
R = The result is unusable
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate
B = The parameter was detected in the Blank sample(s)
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity

Parsons

ENVIRONMENTAL

Table 10
Organotins Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Dibutyltin (µg/kg)	Monobutyltin (µg/kg)	Tetrabutyltin (µg/kg)	Tributyltin (µg/kg)
Reference Samples:						
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	2.4 U	1.9 U	3.2 U	2.8 U
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	12 J	2.9 U	5 U	14 J
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	11 J	1.8 U	3.1 U	8.4 J
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	2.8 U	2.1 U	3.6 U	3.2 U
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	22 J	2.8 U	4.8 U	20 J
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	19	2.2 U	3.8 U	11
Study Area 7 Samples:						
SD001-200-000005-203	11/25/2003	0.0 - 0.5	1.7 U	1.3 U	2.2 U	1.9 U
SD004-200-000005-203	11/22/2003	0.0 - 0.5	1.5 U	1.2 U	2 U	1.8 U
SD004-200-015020-203	11/22/2003	1.5 - 2.0	8.8	1.3 UJ	2.2 UJ	2.8
SD004-200-035040-203	11/22/2003	3.5 - 4.0	2.4 U	1.9 U	3.2 U	2.8 U
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	2.9 J	1.3 U	2.2 U	1.9 U
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	4.6 J	1.5 J	2.6 J	4.8 J
SD0DA-025-000005-203	11/23/2003	0.0 - 0.5*	4.8 J	1.5 J	2.6 J	2.8 J
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	7.1 J	2 J	3.4 J	9.2 J
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	3 J	2.3 J	3.9 J	3.4 J
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	2.3 J	1.8 J	3 J	2.6 J
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	2.7 U	2.1 UJ	3.5 U	3.1 U
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	3.4 U	2.6 U	4.5 U	3.9 U
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	1.5 U	1.1 U	1.9 U	1.7 U
SD00B-025-000005-203	11/25/2003	0.0 - 0.5	2.3	1.3 U	2.2 U	1.9 U
SD0DB-025-000005-203	11/25/2003	0.0 - 0.5*	1.6 U	1.2 U	2.1 U	1.8 U
SD00B-025-015020-203	11/25/2003	1.5 - 2.0	1.9 U	1.5 U	2.5 U	2.2 U
SD00B-025-035040-203	11/25/2003	3.5 - 4.0	2.2 U	1.7 U	2.9 U	2.5 U
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	2.4 J	1.2 J	5.4 J	1.9 J
SD0DB-050-000005-203	11/23/2003	0.0 - 0.5*	2 J	1.6 J	2.6 J	2.3 J
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	1.9 J	1.3 UJ	2.3 UJ	2 UJ
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	1.6 U	1.2 U	2 U	1.8 U
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	1.7 U	1.3 U	2.2 U	1.9 U
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	4 J	2.6 U	4.4 U	5 J
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	3.2 U	2.4 U	4.1 U	3.6 U
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	4 J	2.4 U	4.1 U	3.7 U
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	5.8 J	2.5 U	4.2 U	6.4 J
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	4.9 J	2.9 U	4.9 U	6.6
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	2.5 U	2 U	3.3 U	2.9 U
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	3.9 J	1.8 U	3.1 U	5.7 J
SD0DC-100-000005-103	10/16/2003	0.0 - 0.5*	4.9 J	1.8 U	3.1 U	5 J
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	2 UJ	1.5 UJ	2.6 UJ	2.3 UJ
SD0DC-100-000005-203	11/21/2003	0.0 - 0.5*	2 U	1.5 U	2.6 U	2.3 U
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	1.9 U	1.5 U	2.5 U	2.2 U
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	13 J	1.6 U	2.8 U	19 J
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	3.9 U	3 U	5.1 U	4.5 U
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	3.1 UJ	2.4 UJ	4 UJ	3.8 J
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	14 J	2.4 U	4 U	12 J

Table 10
Organotins Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Dibutyltin (µg/kg)	Monobutyltin (µg/kg)	Tetrabutyltin (µg/kg)	Tributyltin (µg/kg)
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	3.1 U	2.4 U	4 U	5.1 J
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	3.2 U	2.4 U	4.1 U	3.7 U
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	2.7 U	2.1 U	3.5 U	3.1 U
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	1.6 U	1.3 U	2.2 U	1.9 U
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	1.8 U	1.4 U	2.4 U	2.1 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	1.6 U	1.3 U	2.1 U	1.9 U
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	1.8 U	1.4 U	2.4 U	2.1 U
SD03E-025-015020-203	11/20/2003	1.5 - 2.0	2 U	1.6 U	2.6 U	2.3 U
SD03E-025-035040-203	11/20/2003	3.5 - 4.0	2.6 U	2 U	3.5 U	3 U
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	4.7 J	1.6 U	2.6 U	5.2 J
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	2.3 U	1.8 U	3 U	2.7 U
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	1.6 U	1.2 U	2.1 U	1.8 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	1.5 U	1.2 U	2 U	1.7 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	1.6 U	1.2 U	2.1 U	1.8 U
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	1.7 U	1.3 UJ	2.2 U	2 U
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	1.6 U	1.2 UJ	2.1 U	1.8 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	1.7 U	1.3 UJ	2.2 U	1.9 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	5.6 J	1.9 UJ	3.3 UJ	6.4 J
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	2.5 U	1.9 U	3.3 U	2.9 U
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	2.6 U	2 U	3.4 U	3 U
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	2.6 U	2 U	3.5 U	3.1 U
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	1.9 U	1.4 U	2.5 U	2.2 U
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	2.5 U	1.9 U	3.3 U	2.9 U
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	2.4 U	1.8 U	3.1 U	2.7 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	2.9 U	2.2 U	3.8 U	3.3 U
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	1.6 U	1.2 U	2 U	1.8 U
Sediment Toxicity Composite Samples:						
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	2.8 U	2.2 U	3.7 U	3.3 U
XS0D1-RF1-C00005-103	11/10/2003	0.0 - 0.5*	2.8 U	2.1 U	3.6 U	3.2 U
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	3.5 U	2.7 U	4.6 U	5.4
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	4.5	2 U	3.5 U	3.9
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	2.3 U	1.8 U	3 U	2.7 U
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	3.9 U	3 U	5.2 U	4.5 U
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	2 U	1.5 U	2.6 U	2.3 U
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	2.5 U	1.9 U	3.3 U	3.3
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	2.2 U	1.7 U	2.9 U	2.6 U

Notes:
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
R = The result is unuseable.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.
B = The parameter was detected in the Blank sample(s).
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.

Table 11
Polychlorinated Biphenyls Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	PCB-77 (pg/g)	PCB-81 (pg/g)	PCB-105 (pg/g)	PCB-106/118 (pg/g)	PCB-114 (pg/g)	PCB-123 (pg/g)	PCB-126 (pg/g)	PCB-156 (pg/g)	PCB-157 (pg/g)	PCB-167 (pg/g)	PCB-169 (pg/g)	PCB-170 (pg/g)	PCB-180 (pg/g)	PCB-189 (pg/g)	Total monoCB (pg/g)	Total diCB (pg/g)	Total triCB (pg/g)	Total tetraCB (pg/g)	Total pentaCB (pg/g)	Total hexaCB (pg/g)	Total heptaCB (pg/g)	Total octaCB (pg/g)	Total nonaCB (pg/g)	Total decaCB (pg/g)
Reference Samples:																										
SD001-RF1-000003-103	10/16/2003	0.0 - 0.5	78	9.71 J	134	398	9.71 J	9.71 J	9.71 J	38.1	10.6	16.5	9.71 U	95.6	277	97.1	---	---	---	---	---	---	---	---	---	---
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	3450	303	7680	19900	476	422	103	2350	523	1020	20.2	6450	16500	251	---	---	---	---	---	---	---	---	---	---
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	3680	197	5240	13500	309	153	79.1	1340	305	585	8.79	3330	8280	131	---	---	---	---	---	---	---	---	---	---
SD002-RF1-000003-103	10/16/2003	0.0 - 0.5	178	19.2	368	1130	26.6	29.3	10 U	116	23	53.1	10 U	369	1090	100 U	---	---	---	---	---	---	---	---	---	---
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	3530	324	8420	22600	530	329	112	2400	530	1050	27.3	7080	18300	268	---	---	---	---	---	---	---	---	---	---
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	6410	366	20300	51500	1330	792	248	6550	1080	2700	59.6	31900	81900	1720	---	---	---	---	---	---	---	---	---	---
Study Area 7 Samples:																										
SD001-200-000005-203	11/25/2003	0.0 - 0.5	28700	2750	53800	133000	3640	3430	512	9610	2060	3590	238 U	18200	42700	678	5430	187000	1160000	2030000	1050000 J	412000	163000	46700	9960	5440
SD004-200-000005-203	11/22/2003	0.0 - 0.5	202	42.9 U	477	1380	42.9 U	42.9 U	42.9 U	121	42.9 U	53	42.9 U	341	860	42.9 U	164	1810	6370	13500	9360	6160	3210	1010	354	195
SD004-200-015020-203	11/22/2003	1.5 - 2.0	2580	275	6860	18600	443	404	76.9	1630	377	671	46.9 U	3580	8960	141	1450	29100	140000	195000	145000	80600	34400	10800	3670	1670
SD004-200-035040-203	11/22/2003	3.5 - 4.0	180	51.3 J	920	3190	51.3 J	52.6	51.3 U	313	84.1	134	51.3 U	847	4530	77.1	233	939	5720	16000	21900	16700	20100	86700	114000	38800
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	2840	371	8710	30700	482	486	103	2820	606	1080	24.8 U	7230	17200	280	2810	17900	92700	264000	164000	128000	64100	13200	4080	3630
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	7010	746	18700	50700	8090	964	209	4090	863	9310	45.2 U	43100	99300	413	9400	34000	197000	450000	327000	215000	381000	99600	6800	4200
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	4960	403	10600	30100	655	552	128	2530	549	1050	48.1 U	6020	13500	229	2010	33400	204000	318000	228000	129000	59100	16900	5310	3180
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	43200	5280	114000	295000	7570	5640	1050	23700	5170	8950	235 U	43100	103000	1660	11500	208000	1970000	4010000	2120000	1010000	339000	107000	23700	14400
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	251 J	251 U	368	1010	251 U	251 U	251 U	251 J	251 U	251 U	251 U	251	568	251 U	828	1190	5030	11000	7640	3700	1930	1120	816	313
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	720	239 J	2420	7270	239 J	239 J	239 U	846	239 U	369	239 U	3650	13300	239 J	580	3570	16900	41600	50900	52200	47700	46900	53000	42000
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	4220	513	11600	62900	992	734	249	6290	1430	2570	149 U	10600	28000	407	1550	12900	30300	126000	585000	253000	105000	44900	22100	16300
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	341	33	840	2210	48.3	48.4	25.6 J	177	47.9	78.1	25.6 U	418	1150	25.6 J	290	3370	16600	29800	16900	9160	4330	1640	516	183
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	293	41.2 U	675	1850	41.2 U	41.6	41.2 U	167	41.2 U	75.9	41.2 U	412	1090	41.2 U	244	1900	8830	17300	13500	8880	4160	1520	845	243
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	51 U	43.9	66.5	205 B	242	126	51 U	51 U	76.5 U	76.5 U	76.5 U
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	221 U	44	80.7	75.8 B	275	52.6 U	52.6 U	52.6 U	78.9 U	78.9 U	78.9 U
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	1700	168	3500	9290	244	219	46.9 U	687	154	284	46.9 U	1380	3490	56	2700	16100	74200	116000	72200	30500	13300	3910	1080	545
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	231	45.5 U	549	1520	45.5 U	45.5 U	45.5 U	138	45.5 U	56.4	45.5 U	307	816	45.5 U	196	2250	10800	17700	10700	6240	2920	880	305	151
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	50.3 U	25.1 U	50.3 U	25.1 U	50.3 U	50.3 U	50.3 U	50.3 U	75.4 U	75.4 U	75.4 U
SD00B-100-035040-203	11/22/2003	3.5 - 4.0	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	50.5 U	25.3 U	50.5 U	51.9	50.5 U	50.5 U	50.5 U	50.5 U	75.8 U	75.8 U	75.8 U
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	137	51.5 U	338	930	51.5 U	51.5 U	51.5 U	80.9	51.5 U	51.5 U	51.5 U	227	914	51.5 U	89.1	1060	4930	10800	6770	4250	3340	5320	6040	2300
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	3690	291	6560	20000	378	376	96.4	1810	425	804	50.3 U	4810	12500	194	2460	29200	98000	152000	138000	96200	47100	16700	5780	3930
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	4720	356	8530	24700	484	489	248 J	2320	549	1020	248 U	6690	16800	252	3290	40900	143000	254000	177000	122000	66200	21000	6660	3510
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	4980	364	8450	25700	441	486	250 J	2280	541	998	250 U	6130	16100	250 J	3900	45900	171000	267000	184000	120000	62200	21300	8100	3920
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	3410	292	7440	23000	443	188	111	1720	408	788	9.96 J	4400	11500	164	---	---	---	---	---	---	---	---	---	---
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	3810	383	7450	21400	467	431	249 J	2050	477	892	249 U	5190	13100	249 J	5250	29800	109000	214000	148000	105000	50500	16200	5640	3390
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	3470	329	7060	20400	411	401	250 J	1950	450	914	250 U	5490	14400	250 J	2520	28300	102000	203000	146000	114000	57500	18200	5540	3930
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	1910	170	4380	12700	253	129	60.5	1010	224	456	9.06 J	2530	6760	104	---	---	---	---	---	---	---	---	---	---
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	1810	150	3380	10000	194	202	49.8 U	918	215	417	49.8 U	2130	5490	90.6	1330	14600	51200	89200	71500	48300	21600	7300	2610	1500
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	1930	164	4660	12700	302	179	72.4	1020	234	456	9.8 J	2550	6480	109	---	---	---	---	---	---	---	---	---	---
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	539	246 J	1130	3310	246 J	246 J	246 U	280	246 J	246 U	246 U	661	1690	246 U	330	4010	16400	33600	22700	13800	6600	3190	792	474
SD00D-050-000005-103	10/15/2003	0.0 - 0.5	3540	431	13100	28400	776	308	161	7420	496	1010	22.6	6910	17600	264	---	---	---	---	---	---	---	---	---	---
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	5660	706	23100	86100	1290	899	321	8320	1880	3130	97.6 U	12600	32000	500	---	---	---	---	---	---	---	---	---	---
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	4900	392	8640	24800	497	518	250 J	2280	491	1040	250 U	6900	17400	262	2420	31600	128000	268000	183000	124000	66500	21000	6020	3480
SD02E-025-000005-103	10/16/2003	0.0 - 0.5	4360	473	15900	39400	968	788	178	3020	655	1250	28.8	8230	24200	342	---	---	---	---	---	---	---	---	---	---
SD02E-025-000003-203	11/20/2003	0.0 - 0.5	3240	290	6940	19600	401	377	101	1690	397	781	50.3 U	4470	11600	167	1940	24200	97700	149000	139000	91500	44500	14400	5620	3010
SD02E-025-015020-203	11/20/2003	1.5 - 2.0	3980	360	8730	24400	485	459	117	2090	481	950	50 U	5700	14500	220	2660	36600	124000	190000	178000	115000	57200	17900	6040	3520
SD02E-025-035040-203	11/20/2003	3.5 - 4.0	4770	367	8420	25600	431	464	135	2190	506	984	49.5 U	6010	15300	228	2960	37600	142000	226000	198000	128000	59300	19700	6450	3550
SD02W-200-000005-203	12/3/2003	0.0 - 0.5	228	50.4 J	718	2010	50.4 J	50.4 J	50.4 U	221	50.8	85.3	50.4 U	447	1240	50.4 J	165	765	2300	8050	3600	9710	4600	1850	1070	1170
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	5.02 U	5.02 U	5.02 U	5.02 U	5.03 U	5.02 U	5.02 U	5.02 U	5.02 U	5.02 U	5.02 U	5.02 U	5.02 U	5.02 U	2.51 U	8.4	5.46 B	5.02 U	5.02 U	5.02 U	5.02 U	7.53 U	7.53 U	7.53 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	5 U	5 U	5 U	16.2	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	7.85	5 U	2.5 U	5 U	2.5 U	30.4	75.2	33.4	13.1	7.5 U	7.5 U	7.5 U
SD03E-025-000003-203	11/16/2003	0.0 - 0.5	342	233 U	904	2500	233 J	233 J	233 U	233 J	233 J	233 J	233 U	504	1270	233 U	203 JB	1910 JB	10800	26300	18500	10500	4890	1650	601	194
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	249 U	249 U	249 U	249 J	249 U	249 U	249 U	249 U	249 U	249 U	249 U	249 J	249 J	249 U	210	209	393	1280	772	439	315	371 U	371 U	83.9

Parsons

ENVIRON

Table 11
Polychlorinated Biphenyls Results in Sediment
Study Area 7: Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	PCB-77 (pg/g)	PCB-81 (pg/g)	PCB-105 (pg/g)	PCB-106/118 (pg/g)	PCB-114 (pg/g)	PCB-123 (pg/g)	PCB-126 (pg/g)	PCB-156 (pg/g)	PCB-157 (pg/g)	PCB-167 (pg/g)	PCB-169 (pg/g)	PCB-170 (pg/g)	PCB-180 (pg/g)	PCB-189 (pg/g)	Total monoCB (pg/g)	Total diCB (pg/g)	Total triCB (pg/g)	Total tetraCB (pg/g)	Total pentaCB (pg/g)	Total hexaCB (pg/g)	Total heptaCB (pg/g)	Total octaCB (pg/g)	Total nonaCB (pg/g)	Total decaCB (pg/g)
SD03E-025-015020-203	11/20/2003	1.5 - 2.0"	245 U	245 U	245 U	245 J	245 U	245 U	245 U	245 U	245 U	245 U	245 U	245 U	245 J	245 U	318	181	226	946	273	198	54.1	368 U	368 U	368 U
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	49.3 U	40.6	82.2	24.6 U	207	49.3 U	49.3 U	49.3 U	73.9 U	73.9 U	73.9 U
SD03E-025-035040-203	11/20/2003	3.5 - 4.0"	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U	98.9	172	99.9	170	50 U	50 U	50 U	75 U	75 U	75 U
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	49.8 U	49.8 U	49.8 U	63.9	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	49.8 U	97.9	---	---	---	---	---	---	---	---	---
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	105 B	174 B	272	760	321	126	48.8 U	73.2 U	73.2 U	73.2 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	44.8 U	22.4 U	44.8 U	22.4 U	48.3	44.8 U	44.8 U	44.8 U	67.3 U	67.3 U	67.3 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	193	10.3 J	228	814	14.2	15.2	10.3 J	44.1	16.2	32.8	10.2 J	157	402	10.2 J	---	---	---	---	---	---	---	---	---	---
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	83.2	48.1 U	184	519	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	108	283	48.1 U	80.7	889	2950	5070	3570	1980	944	253	97.1	88.6
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	48.1 U	74 U	48.1 U	74 U	48.1 U	48.1 U	48.1 U	48.1 U	72.1 U	72.1 U	72.1 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	23.7 U	47.4 U	23.7 U	47.4 U	47.4 U	47.4 U	47.4 U	47.4 U	71.1 U	71.1 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	4780	503	10400	29400	602	583	250 J	2120	300	968	250 U	5790	15200	250 J	3330	48800	211000	346000	223000	118000	61300	24000	8740	6540
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	2450	360	8940	24500	535	370	250 J	2340	324	875	250 U	6510	20000	250 J	1050	10000	49100	122000	186000	124000	74600	36900	20500	11000
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	51 UJ	51 UJ	53.2 J	145 J	51 UJ	51 UJ	51 UJ	51 UJ	51 UJ	51 UJ	51 UJ	51 UJ	86.8 J	51 UJ	420 JB	417 BJ	987 J	2470 J	1040 J	386 J	156 J	76.5 UJ	76.5 UJ	115 J
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	320	262 J	984	2430	262 J	262 U	262 U	262 J	262 J	262 J	262 U	634	2550	262 U	480 JB	3110 B	12000	26500	18600	11500	9270	14200	14400	4870
SD13E-100-000005-203	10/16/2003	0.0 - 0.5	483	51.6	1240	4710	78.7	33.5	15.8	364	83.8	147	10.2 U	825	2230	34.8	---	---	---	---	---	---	---	---	---	---
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	45.5 UJ	45.5 UJ	251 J	251 J	251 U	251 U	251 U	251 U	251 U	251 U	251 U	251 U	251 J	251 U	282 JB	303 B	513	1550	843	413	263	104	143	107
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	48.3 U	123 JB	69.2 JB	22.7 UJ	407 J	45.5 UJ	45.5 UJ	45.5 UJ	68.2 UJ	68.2 UJ	68.2 UJ
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	63.5	5.22	143	399	6.69	7.75	4.91 U	37.1	9.24	25.8	4.93 U	91.5	241	4.93 U	32.3	391	1270	2990	2840	1959	928	396	164	59.2
Sediment Toxicity Composite Samples																										
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	124 U	124 U	124 J	166	124 U	124 U	124 U	124 J	124 U	124 U	134 U	124 J	134	124 U	89.5	124 U	300	1270	966	921	461	220	73.3	38.8
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5"	121 J	121 U	121 J	156	121 U	121 U	121 U	121 U	121 U	121 U	121 U	121 J	177	121 U	156	121 U	813	2100	1170	932	537	425	137	60.7
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	91J	125 J	2030	5370	137	125 J	125 J	530	125 J	232	125 U	1540	3880	125 J	821	9130	34700	61000	40900	28600	15100	4580	1180	477
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	600	119 U	1370	3660	119 J	119 J	119 U	348	119 J	150	119 U	856	2170	119 J	577	8700	32800	50100	27500	17200	8320	2420	688	426
XS00C-100-C00005-105	11/9/2003	0.0 - 0.5	1780	123 J	4150	11100	263	231	123 J	999	251	448	123 U	2390	6420	123 J	1170	15700	69000	128000	86100	54300	24900	9920	17100	18600
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	5070	347	29900	104000	1770	1420	391	10300	2380	4110	124 U	16400	48200	634	1870	16900	48900	295000	640000	416000	178000	79400	31700	22200
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	1640	177	3370	9740	253	188	123	943	203	374	123 U	1920	5190	123 J	674	11800	61900	112000	71800	43900	20200	7640	2660	2300
XS01E-050-C00005-103	11/9/2003	0.0 - 0.5	767	123 J	1850	4390	123 J	123 J	123 U	310	123 J	126	123 U	614	1460	123 U	310	3430	21400	56700	35800	18100	5830	1460	345	174
XS11E-100-C00005-103	11/8/2003	0.0 - 0.5	295	123 U	804	2390	123 J	123 J	123 U	234	123 J	125 J	123 U	496	1270	123 J	191	1300	5520	15500	16500	10600	4900	2500	2830	1210

Notes:
PCB = Polychlorinated biphenyl
CB = Chlorinated biphenyl
" = The sample is a field duplicate.
J = The associated value is an estimated quantity
R = The result is unusable.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate
B = The parameter was detected in the Blank sample(s)
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.
--- = Not analyzed

Table 12
Polychlorinated Dibenzodioxins and Dibenzofurans Results in Sediment
Study Area 7: Jersey City, New Jersey

FIELD_SAMPLE_ID	Date Sampled	Depth (feet)	2,3,7,8-TCDD (pg/g)	1,2,3,7,8-PECDD (pg/g)	1,2,3,4,7,8-HXCDD (pg/g)	1,2,3,6,7,8-HXCDD (pg/g)	1,2,3,7,8,9-HXCDD (pg/g)	1,2,3,4,6,7,8-HPCDD (pg/g)	OCDD (pg/g)	Total TCDD (pg/g)	Total PECDD (pg/g)	Total HXCDD (pg/g)	Total HPCDD (pg/g)	2,3,7,8-TCDF (pg/g)	1,2,3,7,8-PECDF (pg/g)	2,3,4,7,8-PECDF (pg/g)	1,2,3,4,7,8-HXCDF (pg/g)	1,2,3,7,8,9-HXCDF (pg/g)	1,2,3,6,7,8-HXCDF (pg/g)	2,3,4,6,7,8-HXCDF (pg/g)	1,2,3,4,7,8-HPCDF (pg/g)	1,2,3,4,7,8,9-HPCDF (pg/g)	OCDF (pg/g)	Total TCDF (pg/g)	Total PECDF (pg/g)	Total HXCDF (pg/g)	Total HPCDF (pg/g)
Reference Samples:																											
SD001-RF1-000005-101	10/16/2003	0.0 - 0.5	1.31	0.561 J	0.53 J	0.997	1.01 J	20.3	793	12.3	8.58	24.5	53.9	3.33	2.48 J	2.44 J	5.33	0.748 J	3.39	1.57 J	28.5	8.08 J	32	30.9	39.5	34.8	34.7
SD001-RF2-000005-101	10/16/2003	0.0 - 0.5	179	3.51 J	5.32	11.2	18.7	411	4650	230	92.8	177	893	13.7	10.8	23.7	117	4.79 J	87.1	15.9	895	94.5	871	1025	970	993	1090
SD001-RF3-000005-101	10/16/2003	0.0 - 0.5	34.9	2.58 J	3.76 J	6.08	10.9	189	1980	88.5	26.1	76.7	402	12	10.2	19.9	133	4.08 J	78.9	10.8	724	11.1	707	740	683	764	870
SD002-RF1-000005-101	10/16/2003	0.0 - 0.5	2.33	1.5 U	0.911 J	1.46 J	2.13 J	35.8	1280	12.5	6.77	40.5	106	7.95	5.13	4.13	27.3	1.3 J	18.7	3.17 J	161	3.39 J	135	122	117	149	177
SD002-RF2-000005-101	10/16/2003	0.0 - 0.5	138	4.1 J	5.44	13	20.1	437	4860	190	40.4	138	966	17.3	15	25.3	195	5.06	85.9	17.3	872	17.2	781	1130	1060	995	1040
SD002-RF3-000005-101	10/16/2003	0.0 - 0.5	207	7.04	6.15	24.1	51.9	702	4140	349	166	488	1450	29.2	23	47.9	339	11.2	149	34.6	1370	25.3	1300	1790	1660	1660	1840
Study Area 7 Samples:																											
SD001-200-000003-203	11/21/2003	0.0 - 0.5	1130	13.5 J	9.02 J	29.1	36.8	722	7820	1520	86.3	489	5730	52.6	58	77.2	434	18 J	162	43.1	1700	49.8	7240	4400	2300	1480	3220
SD004-200-000003-203	11/22/2003	0.0 - 0.5	8.68	1.99 U	3.36 U	3.4 U	3.3 U	22.3 J	227	11.3	1.95 U	10.4	33.6	3.37 U	4.5 U	3.85 U	11.9 J	2.2 U	4.58 J	1.4 U	47.9	2.76 U	63.7	76.8	42.7	32.2	43.9
SD004-200-013020-203	11/22/2003	1.5 - 2.0	81.7	5.57 U	6.24 U	6.36 U	13.5 J	231	1040	116	20.3	171	587	12.3	19.9 J	28.5	176	8.17 J	66	14.8 J	532	19.3 J	1190	774	521	508	710
SD004-200-033040-203	11/22/2003	3.5 - 4.0	4.66 J	4.35 U	6.19 U	6.31 U	6.29 U	48.3	1540	13.2	15.1	39.5	184	9.77	12.3 J	10.6 J	21.4 J	5.08 U	18.6	12.9 J	115	9.93 J	96.7	940	428	280	164
SD004A-005-000003-203	12/1/2003	0.0 - 0.5	19.9	6.35 J	7.3 J	14.1 J	28.9	930	9710	15.8	96.4	301	1740	22	20.6 J	36	51.4	6.24 J	39.4	31.7	261	33.4 J	305	877	699	470	414
SD004A-050-013020-203	11/23/2003	1.5 - 2.0	183	7.33 J	6.83 U	14.3 J	27.9	520	4800	196	42.8	275	1130	19.8	29.5	41.7	182	7.83 U	65.6	23.7	672	22.4 J	1110	1188	749	639	879
SD004A-050-033040-203	11/23/2003	3.5 - 4.0	2370	29.2	19.9 J	46.4	105	1360	14400	3060	286	1070	4098	112	71.4	135	720	28.8	329	97.1	3090	83	3930	11800	3930	2960	4170
SD004A-100-000003-203	11/24/2003	0.0 - 0.5	13.4	3.29 U	3.41 U	3.33 U	12.1 J	150	1340	34.9	45	88.3	464	21.6	23.7 J	41	330	10.9 J	86.3	29.5	1760	38.1	3030	1240	766	980	1060
SD004A-200-000005-203	12/1/2003	0.0 - 0.5	735	25.4	19.5 J	37.7	84.2	866	6850	1200	304	1100	2360	57.1	152	242	2210	50.2	401	135	7820	165	13100	7740	4180	5450	9060
SD008-005-000003-203	12/1/2003	0.0 - 0.5	18.4	1.74 U	3.89 U	3.93 U	4.02 U	33.3 J	248	10.4	3.7 U	11.1	34.2	4.63 U	5.67 U	5.18 U	12.7 J	3.45 U	6.43 J	2.72 U	64.2	3.87 U	189	65.5	9.36	47.4	76.3
SD008-023-013020-203	12/1/2003	1.5 - 2.0	8.16 U	4.7 U	5 U	5.07 U	5.21 U	74.3 J	292	16.9 U	4.7 U	5.43	22.7	5.7 U	7.16 U	6.56 U	7.31 U	3.84 U	3.77 U	3.84 U	35.3	1.66 U	34.9	47.4	41.3	16.4	64.3
SD008-023-033040-203	12/1/2003	3.5 - 4.0	2.67 U	3.46 U	3.86 U	3.87 U	3.97 U	10.4 J	456	3.47 U	3.46 U	7.89	28.3	3.61 U	3.83 U	3.6 U	2.64 U	2.07 U	1.46 J	1.63 U	5.41 J	2.15 U	14.3 U	3.66 U	3.63	2.33	5.92
SD008-010-000003-103	11/21/2003	0.0 - 0.5	1.72 U	2.72 U	4.7 U	4.8 U	5.01 U	23.4 J	850	4.66 U	3.83	19.8	62.5	2.76 U	3.91 U	3.49 J	9.09 J	1.83 U	2.37 J	2.37 J	10.7	2.48 U	47.6 J	34.3	15	17.1	10
SD008-100-000003-103	11/22/2003	0.0 - 0.5	8.47 U	2.26 U	2.27 U	2.34 J	3.03 J	67.3	8140	63.3	9.61	38.6	185	6.2	3.03 J	7.89 J	23.8	1.66 U	7.89 J	4.17	76.5	3.96 J	123	267	340	83.4	104
SD008-100-013020-103	11/22/2003	1.5 - 2.0	8.47 U	2.17 U	4.17 U	4.22 U	4.39 U	3.36 U	156	1.47 U	2.17 U	4.26 U	10.9 U	1.94 U	2.88 U	2.6 U	1.32 U	2.39 U	1.41 U	1.56 U	3.11 J	1.91 U	11.3 U	1.94 U	2.74 U	1.66 U	3.14
SD008-100-033040-103	11/21/2003	3.5 - 4.0	4.31 U	1.63 U	3.22 U	3.29 U	3.44 U	2.86 U	3.47 U	1.31 U	1.63 U	3.32 U	2.86 U	1.5 U	2 U	1.87 U	0.997 U	1.9 U	1.32 U	1.27 U	1.39 U	2.08 U	5.9 U	1.5 U	1.94 U	1.28 U	1.69 U
SD008-200-000003-103	11/21/2003	0.0 - 0.5	3.22	1.7 U	4.82 U	5.05 U	5.35 U	13.2 J	243	8.04	1.7 U	5.09	16.8	3.39 U	4.2 U	3.95 U	11.5 J	4.62 U	3.24 U	3.17 U	40.9	3.42 U	44.9 J	34.8	29.8	28.7	48.3
SD008C-005-000003-203	11/20/2003	0.0 - 0.5	19.3	5.12 U	7.91 U	13.9 J	21.5 J	336	3220	138	58.7	203	843	18.2	23.5 J	34.7	168	7.76 J	56.8	17.4 JB	561	19.3 J	1020	1010	630	496	737
SD008C-003-015010-203	11/20/2003	1.5 - 2.0	113	7.09 U	6.86 U	17.1 J	27.7	498	4810	197	56.5	234	976	19.9	26.8	43.5	197	8.13 J	93.6	23.9	729	26.5	1380	1230	869	705	939
SD008C-003-035040-203	11/20/2003	3.5 - 4.0	88.4	7.89 U	7.19 J	13.8 J	23	429	4170	146	28	237	969	26.6	26.4 U	37.8	158	6.47 J	61.6	22.1 U	539	19.9 U	917	1100	694	535	693
SD008C-015-000003-103	11/19/2003	0.0 - 0.5	86.2	2.98 J	3.37 J	7.59	13.2	329	2510	135	24.8	172	545	16.6	14.6	29	97.3	3.59	37.2	14.8	363	15.9	667	995	525	1030	1100
SD008C-015-013020-103	11/19/2003	1.5 - 2.0	197	5.27 J	5.38 J	12.9 J	20.1 J	218	3040	206	33.3	232	744	27.3	26.6	41.4	201	8.31 J	67.6	21.3 BJ	643	21.9 J	1200	981	648	655	843
SD008C-015-033040-103	11/19/2003	3.5 - 4.0	152	4.43 J	6.03 J	11.6 J	20.5 J	338	5470	332	61.3	339	845	32.5	35.2	41	240	4.23 J	77.5	25.4 JB	942	24.6	1830	988	687	680	1160
SD008C-100-000003-103	10/16/2003	0.0 - 0.5	52	2.17 J	2.66 J	5.43	9.69	164	1790	84.9	24.9	135	363	11.8	14.2	14.1	132	4.67	93.6	12.9	929	13.4	809	745	743	940	1040
SD008C-100-000003-1103	10/16/2003	0.0 - 0.5*	32.5	2.38 J	2.89 J	5.23	10.5	163	1670	86.3	31.9	82.7	369	12.7	14.3	33.6	240	7.33	149	16.4	1410	21.1	1290	907	986	1370	1340
SD008C-100-000003-303	11/21/2003	0.0 - 0.5	45.4	7.46 U	6.43 U	6.49 U	10.3 J	147	1440	85.4	20.3	101	363	13.1	21.4 J	11.7	8.46 U	42.5	12.9 JB	357	14.6 J	701	511	340	221	453
SD008C-100-000003-203	11/21/2003	0.0 - 0.5*	53.6	6.29 U	4.05 U	3.47 U	9.53 J	156	1360	112	19.6	73.2	378	12.4	23.2	36.4	231	7.78 J	75.6	22 JB	845	19.3 J	1470	604	598	686	964
SD008C-300-000003-203	11/21/2003	0.0 - 0.5	35.2	3.96 U	5.05 U	5.24 U	5.3 U	50.1 JB	537	21.2	3.94 U	10.9	118 JB	4.05 U	3.88 U	6.81 J	33.3 JB	4.73 U	8.53 J	8.33 U	192	7.39 U	359	80.5	73.7	88 JB	119
SD008C-300-000005-103	10/16/2003	0.0 - 0.5	33.1	6.82	21.7	18.2	48.6	1080	10200 J	88.8	24.1	692	2310	27.1	136	140	2160 J	31	360	97.1	2510 J	135	10400 J	11700	9180	8780 J	8490 J
SD02E-025-000003-203	11/21/2003	0.0 - 0.5	102	2.68 U	6.38 J	12.4 J	22.3 J	434	4320	167	72	238	964	34.4	28.3 J	45.5	187	7.39 J	30.4	23.3 JB	644	22.4 J	1190	741	522	590	836
SD02E-025-000005-103	10/16/2003	0.0 - 0.5	104	5.69	6.12	12.2	21.7	482	4890	173	77.2	282	1070	28	30.4	30.7	264	19.6	180	31	1730	28.4	3588	1830	1723	1790	1790
SD02E-025-013020-203	11/20/2003	0.0 - 0.5	69.2	4.6 J	5.16 U	11.6 J	20.5 J	302	3150	149	46	201	706	22.8	27.8	36.3	211	8.36 J	75.8	21.3 JB	693	25.8	2360	976	714	647	878
SD02E-025-033040-203	11/20/2003	3.5 - 4.0	255	5.53 U	8.03 U	13.5 U	20.8 U	427	4790	290	53.8	193	949	21.1	41.2	57.2	389	7.7 U	93.1	24 JB	840	24.8 J	1760	1310	813	662	844
SD02W-100-000005-303	11/21/2003	0.0 - 0.5	94.7	4.81 U	5.35 U	14.5 J	22.8 J	324	2870	135	87.1 U	227	958	14.6	29.9	29.1	198	4.17 U	67.8	25.8 JB	756	22.2 J	1300	974	706	632	945
SD02W-200-013020-303	11/21/2003	1.5 - 2.0	2.18 U	1.64 U	3.76 U	3.78 U	3.79 U	3.42 U	6.31 J	2.18 U	1.64 U	3.77 U	3.42 U	1.59 U	2.3 U	1.99 U	0.909 U	1.31 U	0.865 U	0.97 U	1.37 U	1.38 U	6.85 U	1.59 U	2.14 U	1.01 U	1.47 U
SD02W-200-033040-303	11/21/2003	3.5 - 4.0	4.16 J	1.9 U	3.96 U	4.01 U	4.09 U	3.44 U	9.64 U	4.16	1.9 U	4.02 U	3.44 U	2.29 U	2.02 U	2.91 U	1.37 U	2.32 U	1.48 U	1.72 U	2.35 U	2.51 U	7.66 U	2.29 U	2.56 U	1.75 U	2.3 U
SD03E-025-000005-303	11/18/2003	0.0 - 0.5	15.8	2 U	3.31 U	3.2 U	3.33 U	36.8 J	578	19.3	10.7	36.8	180	3.81 J	4.73 J	7.33 U	25.8 J	1.55 U	9.16 J	3.86 J	80.4	2.14 U	131	94.8	39.2	82.9	90.4
SD03E-025-013020-203	11/18/2003	1.5 - 2.0	7.44 U	3.6 U	4.16 U	4.31 U	4.5 U	38 JB	2320	7.84	2.77	25.1	107 JB	6.95	4.22 J	4.39 J	8.55 B	2.43 U	4.71 J	3.39 B	24.7 B	3.79 J	36.1 JB	44.4	32.8	30.6 B	31.8 JB
SD03E-025-033040-203	11/18/2003	3.5 - 4.0	2.08 U	1.26 U	2.97 U	4.98 U	5.03 U	5.34 U	31.4 JB	1790	2.83 U	10.2	23.9	84.2 JB	5.08 J	4.35 U	6.73 B	2.34 U	3.42 J	2.36 B	15.8 B	7.51 U	55.5 JB	43.8	19.3	14.9 B	21.6 B
SD03E-025-053040-203	11/18/2003	5.5 - 6.0	2.08 U	3.56 U	3.91 U	4.07 U	4.27 U	17.9 B	631	2.08 U	1.56 U	20.3	43.7 JB	3.21 U	4.23 U	3.92 U	7.41 U	1.95 U	1.13 U	1.53 U	6.97 U	3.22 U	32.8 JB	3.21 U	4.51 U	3.54 B	6.97 U

Percent

Table 12
Polychlorinated Dibenzodioxins and Dibenzofurans Results in Sediment
Study Area 7: Jersey City, New Jersey

FIELD_SAMPLE_ID	Date Sampled	Depth (feet)	2,3,7,8-TCDD (pg/g)	1,2,3,7,8-PECDD (pg/g)	1,2,3,4,7,8-HXCDD (pg/g)	1,2,3,6,7,8-HXCDD (pg/g)	1,2,3,7,8,9-HXCDD (pg/g)	1,2,3,4,6,7,8-HPCDD (pg/g)	OCDD (pg/g)	Total TCDD (pg/g)	Total PECDD (pg/g)	Total HXCDD (pg/g)	Total HPCDD (pg/g)	2,3,7,8-TCDF (pg/g)	1,2,3,7,8-PECDF (pg/g)	2,3,4,7,8-PECDF (pg/g)	1,2,3,4,7,8-HXCDF (pg/g)	1,2,3,6,7,8-HXCDF (pg/g)	1,2,3,7,8,9-HXCDF (pg/g)	2,3,4,6,7,8-HXCDF (pg/g)	1,2,3,4,6,7,8-HPCDF (pg/g)	1,2,3,4,7,8,9-HPCDF (pg/g)	OCDF (pg/g)	Total TCDF (pg/g)	Total PECDF (pg/g)	Total HXCDF (pg/g)	Total HPCDF (pg/g)
SD03E-023-033040-203	11/20/2003	2.5 - 4.0*	2.96 U	2.58 U	4.16 U	4.48 U	4.23 U	47.9 JB	1530	2.96 U	5.12	44	122 JB	8.24	4.39 J	6.64 J	5.74 B	3.94 U	3.67 J	2.5 U	13.7 B	2.45 U	18.6 JB	30.2	34.4	13.9 B	18.8 B
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	33.6	5.64	2.84 J	3.81 J	8.08	132	1530	52	17.5	60.1	331	7.66	11.4	13.2	136	3.62 J	70.9	8.65	988	42.9	3120	554	506	696	1070
SD03E-073-000005-103	11/17/2003	0.0 - 0.5	1.82 U	2.47 U	4.73 U	4.88 U	5.08 U	32.8	1220	6.41	10.1	31.7	88.7	3.78 J	3.83 J	4.27 J	5.99 J	1.83 U	2.87 J	3.62 J	13.3 J	2.56 U	40.1 J	37.6	31.2	23.8	29.3
SD03E-073-013020-203	11/17/2003	1.5 - 2.0	1.64 U	1.4 U	2.17 U	2.27 U	2.4 U	7.04 J	95.6	1.64 U	1.1 U	2.38 U	7.24	1.69 U	2.27 U	2.2 U	0.842 U	1.23 U	0.874 U	0.997 U	1.57 J	1.12 U	4.85 U	1.69 U	2.24 U	0.969 U	1.57 U
SD03E-073-033040-203	11/17/2003	3.5 - 4.0	1.3 U	1.39 U	2.59 U	2.64 U	2.22 U	3.37 U	4.16 U	3.2 U	1.39 U	2.66 U	2.37 U	3.48 U	2.27 U	2.18 U	1.79 U	2.56 U	2.82 U	2.07 U	2.38 U	1.25 U	4.82 U	3.48 U	2.22 U	2.04 U	2.36 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	3.4	0.73 U	0.365 U	0.453 J	0.773 J	10.3	135	3.47 JB	3.54 U	8.89	24.4	0.936 J	0.993 J	1.59 J	7.21	0.319 J	5.69	0.862 J	54.5	0.727 J	45.2	23.4	48.7	35	61
SD03W-200-000005-203	10/24/2003	0.0 - 0.5	3.96 J	2.53 U	5.09 U	3.09 U	3.16 U	20.9 J	528	5.58	2.53 U	18.6	52.4	2.4 J	2.31 U	2.28 U	6.6 J	1.89 U	3.16 J	1.53 U	27.6	2.08 U	63.4	29.4	34.9	28.2	35.3
SD03W-200-013020-203	10/24/2003	1.5 - 2.0	0.933 U	1.59 U	2.88 U	2.86 U	2.96 U	2.3 U	46.1 J	0.933 U	1.59 U	5.91 U	4.19	0.829 U	1.61 U	1.6 U	0.809 U	1.3 U	0.815 U	0.986 U	1.35 U	1.01 U	8.35 U	0.829 U	1.6 U	0.964 U	1.57 U
SD03W-200-033040-203	10/24/2003	3.5 - 4.0	0.824 U	1.43 U	1.59 U	1.62 U	2.03 U	3.69 U	0.824 U	1.43 U	1.6 U	2.03 U	1.04 U	1.29 U	1.25 U	0.644 U	1.03 U	0.639 U	0.713 U	0.816 U	1.19 U	4.18 U	1.04 U	1.29 U	0.748 U	1.03 U
SD13E-003-000005-203	11/13/2003	0.0 - 0.5	88.7	8.53 J	6.92 J	14.7	28.6	588	3220	324	162	442	1340	32.3	20.9 J	45.9	327	6.34 J	41.1	30.7	683	19.7 J	1180	839	381	321	864
SD13E-003-013020-203	11/13/2003	1.5 - 2.0	372	7.53 J	5.12 J	20.7 J	24.3 J	393	4910	777	110	265	1170	34.1	32.3	58.6	369	5.53 U	93.5	44.2	1550	40.4	2740	1340	998	1160	3980
SD13E-003-033040-203	11/13/2003	3.5 - 4.0	2.09 UJ	3.03 UJ	5.93 UJ	6.15 UJ	6.44 UJ	78.1 J	1300 J	7.36 J	8.88 J	26.8 J	94.7 J	9.36 J	6.36 J	6.18 J	6.98 J	3.31 UJ	3.85 J	3.83 J	83 UJ	2.51 UJ	51.6 J	39 J	40.1 J	37.1 J	5.86 J
SD13E-050-000005-203	11/13/2003	0.0 - 0.5	0.63 J	3.42 U	6.72 U	6.86 U	7.07 U	59.9	1010	17	18.9	49.7	148	8.34	7.29 J	9.93 J	17.3 J	2.65 U	9.49 J	7.21 J	55.1	3.47 U	72.2	141	104	74.3	35.7
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	15.3	0.953 J	0.965 J	1.5 J	3.1 J	40.8	484	25.6	10	23.4	92	4.21	5.36	14.8	68.2	2.26 J	30	6.41	426	5.46	334	1200	726	487	466
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	2.39 U	2.35 U	5.28 U	5.5 U	5.27 U	33.9	6300	4.95	3.51	34.2	91.4	8.27	4.58 J	5.16 J	8.83 J	2.63 U	3.43 U	3.36 U	20.4 J	3.13 J	70.6	71.9	39.9	27.9	33.6
SD13E-100-013020-203	11/18/2003	1.5 - 2.0	2.4 UJ	3.55 UJ	4.21 UJ	4.27 UJ	4.38 UJ	13.2 J	739 J	2.4 UJ	3.78 UJ	23.4 J	63.4 J	3.31 J	4.81 J	4.7 J	6.24 J	1.99 UJ	3.9 J	2.58 J	87.3 J	1.38 UJ	34.2 J	29.1 J	15.8 J	26.2 J	13.7 J
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	2.17	1.14 U	4.71 U	4.79 U	4.93 U	5.08 U	90.1	3.47	3.01 U	4.88 U	17.3 U	2.76 U	7.91 U	2.91 U	5.46 U	3.03 U	1.83 U	1.26 U	22.5 J	2.83 U	38.1 J	4.1	2.36	3.96	12.3
Sediment Toxicity Composite Samples:																											
XS001-RF1-C00003-103	11/10/2003	0.0 - 0.5	2.19 U	1.42 U	2.08 U	2.16 U	2.19 U	37.9 J	1240	7.46	9.08	27	75.9	6.19	2.97 J	3.74 J	5.37 JB	0.983 U	2.76 J	2.74 J	83.2 J	3.45 U	33.5 J	68.1	27.3	23.4	17.4
XS001-RF1-C00003-103	11/10/2003	0.0 - 0.5*	1.07 U	1.31 U	1.47 U	1.57 U	1.63 U	13.5	1230	8.96	10.3	20.8	72.5	6.3	3.14 J	3.85 J	7.01 J	2.3 U	3.41 J	1.88 U	19.4	1.34 U	44.2	67.4	40	19.7	25.6
XS001-RF2-C00003-103	11/9/2003	0.0 - 0.5	182	5.71 J	7.36 J	15.8 J	23.9 J	526	5780	281	34.1	253	1320	17.3	16.4 J	38.3	167	8.82 J	47.9	26.2	796	23.4 J	2320	905	383	603	1040
XS001-RF3-C00003-103	11/9/2003	0.0 - 0.5	29990 J	5.7 J	4.32 U	11.7 J	21.5 J	172	3240	4036 J	40.7	191	761	20.8	14.5 J	32.1	121	8.2 J	32.9	16.5 J	477	13 J	979	689	474	316	646
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	71.3	3.32 U	3.95 U	9.36 U	13.1 J	165	1810	131	31.9	114	416	18	12.3 J	22.7	169	6.46 J	34.9	14.3	550	19.1 J	1040	332	321	396	671
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	707	22.2	17.4 J	68.5	107	1870	17100	1560	286	2490	7300	61.8	142	286	1060	33.1	603	169	12600	213	21700	5330	4080	7410	14300
XS01W-173-C00005-103	11/8/2003	0.0 - 0.5	83.6	2.13 U	2.45	3.94 J	7.65 J	120	1280	139	25.8	110	316	9.71	16.3 J	28.9	185	6.22 J	39	15.7	436	14.7 J	1070	368	353	501	748
XS02E-030-C00003-103	11/9/2003	0.0 - 0.5	33.5	2.17 J	2.33 J	4.66 J	6.31 J	130	1920	66.3	24	99.4	341	7.34	6.87 J	15.3 J	38.8	2.84 U	11.3	7.41 J	101	5.18 J	194	321	176	132	176
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	9.12	2.12 U	2.17 U	2.27 U	3.04 J	40.9	889	45.6	9.99	46.8	125	6.84 J	4.71 J	7.52 J	40.6	1.64 U	8.53 J	5.34 U	191	6.75 J	326	316	88.7	106	251

Notes:
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
R = The result is unusable.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.
B = The parameter was detected in the Blank sample(s).
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity.

TCDD = Tetrachlorodibenzo-p-dioxin
PECDD = Pentachlorodibenzo-p-dioxin
HXCDD = Hexachlorodibenzo-p-dioxin
HPCDD = Heptachlorodibenzo-p-dioxin
OCDD = Octachlorodibenzo-p-dioxin

TCDF = Tetrachlorodibenzofuran
PECDF = Pentachlorodibenzofuran
HXCDF = Hexachlorodibenzofuran
HPCDF = Heptachlorodibenzofuran
OCDF = Octachlorodibenzofuran

Table 13
Polybrominated Diphenyl Ethers Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	BDE-1 (pg/g)	BDE-2 (pg/g)	BDE-3 (pg/g)	BDE-7 (pg/g)	BDE-10 (pg/g)	BDE-13 (pg/g)	BDE-15 (pg/g)	BDE-17 (pg/g)	BDE-25 (pg/g)	BDE-28 (pg/g)	BDE-35 (pg/g)	BDE-47 (pg/g)	BDE 49 (pg/g)	BDE-66 (pg/g)	BDE 75 (pg/g)	BDE-77 (pg/g)	BDE-85 (pg/g)	BDE 99 (pg/g)	BDE-100 (pg/g)	BDE 116 (pg/g)	BDE 126 (pg/g)
Reference Samples:																							
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	29.7 U	20.2 U	17.7 U	7.45 U	6.61 U	4.4 U	8.4 J	26.4 J	18.6 U	9.44 U	7.54 U	201 B	42.3 J	12.3 U	8.1 U	7.08 U	8.89 U	230 B	59.7 B	18.5 U	7.09 U
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	126	73.6 J	287	249	1.67 U	73.2 J	404	604	9.43 U	355	93 J	4400 J	2120	191	6.62 U	5.61 U	138 J	4710	1240	38.3 U	12.9 U
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	99.1 J	45.2 J	196	432	3.1 J	45.8 J	319	387	9.76 U	137	43.1 J	1510 BJ	832	71.9 J	3.21 J	3.17 U	46.6 J	1480 BJ	362 BJ	10.9 U	10.3 U
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	43 U	29.2 U	25.6 U	35.5 J	2.66 U	1.97 U	19.3 J	51.1 J	17.4 U	22.5 J	7.03 U	382 B	117	17.9 U	19.1 J	10.3 U	12.1 U	329 B	85.7 B	25.1 U	9.55 U
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	208	156	414	552	3.27 U	159	628	1250	18.2 U	553	153	7090 J	3800 J	300	383	11.3 U	709 J	7240	1880	41.8 U	14.4 U
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	134	450	420	321	2.87 U	80.2 J	1050	314	13.8 U	142	108	894 BJ	849	211 U	13.9 U	12.1 U	29.8 J	704 BJ	190 B	26.8 J	10 U
Study Area 7 Samples:																							
SD001-200-000005-203	11/25/2003	0.0 - 0.5	29.3 U	19.1 U	812	16.1 J	1.24 U	0.843 U	2580 J	21.1 J	7.22 U	75.7 J	48.5 U	90.1 B	30.4 J	7.04 U	4.36 U	3.95 U	4.65 U	94.8 B	23.3 J	9.24 U	3.47 U
SD004-200-000005-203	11/22/2003	0.0 - 0.5	80.6 U	52.5 U	45.3 U	46.3 J	2.95 U	2.01 U	37.6 J	33.2 J	5 U	14.6 J	3.93 U	220 B	73.9 J	19 U	53.3 J	10.6 U	9.39 J	249 B	61 B	11.2 U	3.87 U
SD004-200-015020-203	11/22/2003	1.5 - 2.0	73.3 U	47.7 U	157	2.53 J	1.96 U	1.73 J	587	3.06 U	6.13 U	17.7 J	29.1 U	69.9 B	13.3 J	3.65 U	2.26 U	2.05 U	9.92 U	101 B	25.2 B	20.8 U	7.4 U
SD004-200-035040-203	11/22/2003	3.5 - 4.0	28.7 U	18.3 U	16.1 U	1.34 U	1.24 U	0.777 U	4.36 J	2.7 U	6.5 U	3.18 U	2.48 U	110 B	9.48 U	11.8 U	7.86 U	6.23 U	9.95 U	143 B	32.5 B	22.4 U	7.24 U
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	49.3 U	31.5 U	70.2 J	19.6 J	1.47 U	31.6 J	114	62.9 J	6.93 U	32.1 J	37.8 U	275 B	131	14.1 J	27.6 J	0.635 U	11.9 J	318 B	78 B	13 U	4.18 U
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	82.3 U	53.6 U	271	224	3.9 U	29.6 J	512	117	12 U	50.5 J	55.6 U	408 BJ	386	22.3 U	57.3 J	12.5 U	37.4 J	663 BJ	144 BJ	39.2 U	13.9 U
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	95.3 U	62.1 U	237	124	3.34 U	20.1 J	500	93.1 J	11.4 U	53.9 J	37.7 U	1040	225	42.4 J	39.1 J	8.28 U	52.9 J	1400 BJ	248 BJ	47.8 U	16.4 U
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	41.4 U	26.5 U	1380	4.59 U	4.22 U	2.66 U	4000 J	6.79 U	16.3 U	87.7 J	66.3 U	68.2 B	5.42 U	6.73 U	4.49 U	3.56 U	6.65 U	85.4 B	20 B	14.9 U	5.01 U
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	63.6 U	40.2 U	35.7 U	2.59 U	2.38 U	1.5 U	9.74 J	5.35 U	8.05 U	3.93 U	3.07 U	88.3	4.69 U	5.83 U	3.89 U	3.08 U	6.52 U	118 B	26.9 B	14.7 U	4.81 U
SD00A-100-000005-203	12/1/2003	0.0 - 0.5	60.7 U	39.5 U	34.1 U	5.58 J	2.33 U	1.58 U	68.5 J	25.3 J	3.88 U	9.1 J	4.87 U	148 B	42.5 J	1.89 U	7.61 J	1.06 U	5.35 U	164 B	40.8 B	11.3 U	3.96 U
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	72 U	46 U	96.3 J	239	1.11 U	7.45 J	230	61.7	4.88 U	23.7 J	7.91 U	237 B	76.9 J	8.73 J	1.01 U	0.798 U	9.95 J	282 B	63.3 B	7.11 U	2.36 U
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	23.9 U	15.6 U	13.5 U	40.6 J	2.9 U	2.97 U	18.9 J	21.2 J	7.2 U	7.38 J	3.24 U	112 B	45.5 J	9.35 U	12.3 J	5.25 U	7.37 U	98.7 B	23.1 J	15.3 U	5.43 U
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	21.6 U	14.1 U	12.1 U	1.47 U	1.28 U	0.873 U	0.753 U	1.78 U	3.57 U	2.03 U	1.61 U	42.6 B	2.9 U	3.83 U	2.38 U	2.15 U	5.04 U	63 B	11.8 J	10.5 U	3.47 U
SD00B-025-035040-203	11/23/2003	1.5 - 2.0**	17.6 U	11.5 U	9.92 U	1.23 U	1.07 U	0.728 U	0.678 U	2.1 U	4.22 U	2.39 U	1.9 U	34.3 B	2.41 U	3.18 U	1.97 U	1.79 U	5.2 U	51.5 B	9.04 U	10.9 U	3.59 U
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	179 U	115 U	101 U	1.41 U	1.3 U	0.818 U	1.31 J	2.66 U	6.39 U	3.12 U	2.44 U	91.4 B	3.53 U	4.39 U	2.93 U	2.32 U	3.36 J	115 B	25 B	6.75 U	2.71 U
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	83.1 U	54.1 U	73.7 U	65.1 J	1.96 U	1.33 U	165	37.6 J	7.77 U	13.5 J	10.2 U	126 B	62.7 J	7.64 U	9.61 U	4.29 U	7.28 U	127 B	34 B	15.2 U	5.81 U
SD00B-100-000005-203	11/23/2003	0.0 - 0.5	38 U	24.7 U	21.3 U	45.5 J	0.833 U	1.77 J	31.4 J	27 J	2.63 U	9.5 J	3.43 U	153 B	42.1 J	2.22 U	1.38 U	1.25 U	9.05 J	205 B	46.6 B	9.63 U	3.4 U
SD00B-100-015020-203	11/23/2003	1.5 - 2.0	26.9 U	17.5 U	15.1 U	2.03 U	1.77 U	1.2 U	1.04 U	2.29 U	4.59 U	5.03 J	2.07 U	152 B	7.83 J	7.02 J	3.04 U	2.75 U	15.5 J	343 B	46.3 B	16.8 U	5.33 U
SD00B-100-035040-203	11/23/2003	3.5 - 4.0	24.4 U	15.9 U	13.7 U	1.26 U	1.1 U	0.748 U	0.665 U	2.45 U	4.91 U	2.78 U	2.21 U	65.7 B	4.76 U	6.28 U	3.89 U	3.53 U	4.61 U	118 B	26.8 B	9.63 U	3.57 U
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	21.8 U	14.2 U	12.3 U	29.3 J	1.64 U	1.12 U	10.6 J	13.1 J	6.68 U	5.7 J	3 U	106 B	25.8 J	1.98 U	1.32 U	1.11 U	6.44 J	136 B	33.7 B	12 U	3.95 U
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	336	74.8 U	347	1160	63	74.6	437	1070	14.6 U	262	55.7 U	2240	1910	159	389	12.2 U	65.1	1610	465	58.8 U	21.5 U
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	253	439	830	727	3.61 U	315	717	783	25.1 U	280	98.1 U	1820	2350	167	501	5.53 U	54.2	1140	369	87 U	29 U
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	141	304	784	370	1.84 U	283	868	791	23 U	316	94.3 U	2060	3070 J	136	8.47 U	9.51 U	65.6	1390	515	42.8 U	19.2 U
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	239	46.9 J	291	949	6.44 J	71.3 J	403	1070	16.7 U	271	60.1 J	3040 J	2170	148	364	7.59 U	69.9 J	7350 BJ	657	33.2 U	12.1 U
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	296	355	716	197	3.1 U	160	579	503	13.1 U	156	50.2 U	1280	1150	88.3	9.14 U	8.28 U	37.3	864	244	58 U	18.8 U
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	331	127	428	1110	5.66	87.7	425	617	13.2 U	164	51.4 U	1180	1180	82.9	9.31 U	8.44 U	32.6	812 BJ	238	49.4 U	18.8 U
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	144	27.3 U	257	496	3.2 J	31.9 J	333	565	8.81 U	145	33.6 J	1810 BJ	1100	85.6 J	5.16 U	4.51 U	45.9 J	1570 BJ	411 BJ	36.6 U	13.2 U
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	124	30.3 U	146	538	3.41 J	31.8 J	223	537	5.85 U	138	34.2 J	1660 BJ	994	82.5 J	170	4.3 U	44.7 J	1550 BJ	383 BJ	37.3 U	13.2 U
SD00C-100-000003-203	11/21/2003	0.0 - 0.5*	194	68.1 U	289	504	6.05 U	32.6 J	252	288	33 U	81.1 J	25.1 U	620 BJ	531	54.5 J	117	19 U	28.3 U	598 BJ	147 BJ	36.7 U	13.2 U
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	45 U	29.3 U	73.1	148	1.74 U	11.8 J	61.7 J	80.6 J	15.4 U	76.2 J	6.91 U	193 B	133	17.1 U	30.1	9.58 U	18 U	217 B	54.1 B	37.7 U	14.7 U
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	229	48.7 J	215	1100	14.8 J	54.8 J	295	1040	6.51 U	194	100	3800 J	2060	150	324	9.08 U	142 J	4640	979	46.8 U	17.2 U
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	65.7 U	44.6 U	39.1 U	6.19 U	5.5 U	3.66 U	190	162 U	37.6 U	19 U	15.2 U	203 B	23.8 U	29.5 U	19.4 U	15.9 U	11.7 U	193 B	54.4 B	24.4 U	9.17 U
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	693	249	710	173	9.23 U	120	500	749	27.7 U	198	54.4 U	1170	1380	103	308	10.4 U	77.1 U	1070 BJ	292	161 U	59.2 U
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	115	49.7 U	268	40.4 J	6.73 J	39.5 J	436	1190	13.7 U	301	107	6460 J	2540 J	234	370	7.02 U	189 J	6350 J	1480	39.1 U	13.8 U
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	383	69.4 U	319	137	5.87 U	67	389	913	36.5 U	232	36.1 U	1770	1660	160	346	16.1 U	68.8 U	1930 B	385	144 U	50.4 U
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	312	361	764	822	7.13 U	165	728	782	28.9 U	224	59.1 U	1410	1760	121	366	13.7 U	44.5	951	308	55.7 U	19 U
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	61.3 U	414	610	320	4.15 U	132	507	218	15.6 U	97	61.1 U	571 BJ	709	48.2	174	7.73 U	38.1 U	358 BJ	108	79.7 U	32.6 U
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	66.9 U	42.8 U	37.5 U	14.9 J	1.03 U	0.646 U	34.7 J	9.83 J	3.34 U	6.88 J	1.77 U	116 B	23.4 J	5.35 J	1.77 U	1.4 U	6.57 J	201 B	46.2 B	7.41 U	2.26 U
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	17.5 U	11.2 U	9.82 U	1.36 U	1.25 U	0.785 U	0.685 U	2.73 U	6.56 U	3.2 U	2.5 U	79.8 B	5.05 U	6.28 U	4.19 U	3.32 U	6.19 U	164 B	34.9 B	6.82 U	2.13 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	55.4 U	35.4 U	31.1 U	1.89 U	1.74 U	1.09 U	0.953 U	1.47 U	8.34 U	4.07 U	3.18 U	89.5 B	7.9 U	3.61 U	2.41 U	1.91 U	7.77 U	168 B	38.2 B	17.5 U	5.55 U

Table 13
Polybrominated Diphenyl Ethers Results in Sediment
Study Area 7, Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	BDE-1 (pg/g)	BDE-2 (pg/g)	BDE-3 (pg/g)	BDE-7 (pg/g)	BDE-10 (pg/g)	BDE-13 (pg/g)	BDE-15 (pg/g)	BDE-17 (pg/g)	BDE-25 (pg/g)	BDE-28 (pg/g)	BDE-35 (pg/g)	BDE-47 (pg/g)	BDE-49 (pg/g)	BDE-66 (pg/g)	BDE-75 (pg/g)	BDE-77 (pg/g)	BDE-85 (pg/g)	BDE-99 (pg/g)	BDE-100 (pg/g)	BDE-116 (pg/g)	BDE-126 (pg/g)
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	41.2 U	26.8 U	63.4 U	10.6 J	1.35 U	4.72 J	48.1 J	32.1 J	6.21 U	11.4 J	3.55 U	149 B	94.9	11.3 J	19.3 J	2.5 U	10.3 B	204 B	50 B	70.6 U	6.9 U
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	18.4 U	11.8 U	10.3 U	8.37 J	2.3 U	1.46 U	6.08 J	6.97 J	7.82 U	3.82 U	2.98 U	91.8 B	12.4 J	7.64 U	5.09 U	4.04 U	5.86 U	128 B	30.3 B	13.2 U	4.22 U
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	43 U	28 U	24.2 U	4.87 U	4.25 U	2.89 U	2.49 U	5.38 U	10.8 U	6.11 U	4.85 U	58.6 B	8.03 U	10.6 U	6.57 U	5.93 U	15.2 U	80.4 B	16.7	31.9 U	11.2 U
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	47.6 U	32.3 U	147	289	2.49 U	16.4 J	158	201	4.46 U	46.4 J	22.4 J	648 BJ	388	29 J	71.2 J	1.94 U	13.7 J	557 B	145 B	70.8 U	7.16 U
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	28.2 U	18 U	15.8 U	3.35 U	3.08 U	1.94 U	3.43 J	4.72 U	11.3 U	5.34 U	4.33 U	100 B	10.2 U	12.7 U	8.47 U	6.72 U	8.01 U	109 B	35.6 B	18 U	6.13 U
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	63.6 U	41.4 U	35.8 U	1.85 U	1.61 U	1.1 U	2.6 J	4.44 U	8.91 U	5.03 U	4.01 U	315 B	4.34 U	5.75 U	3.55 U	3.22 U	9.99 U	158 B	38.2 B	20.9 U	7.53 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	40.3 U	26.2 U	22.7 U	2.1 U	1.83 U	1.24 U	2.22 J	5.25 U	10.5 U	5.97 U	4.74 U	319 B	8.96 U	11.8 U	7.33 U	6.64 U	13.6 U	182 B	45.5 B	78.4 U	10.9 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	27.1 U	18.4 U	16.1 U	15.8 J	0.876 U	0.583 U	9.48 J	20.1 J	2.62 U	9.02 J	1.06 U	216 B	47.2 J	7.78 J	7.24 J	1.53 U	10.7 J	299	69.7 B	8.7 U	3.18 U
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	14.2 U	9.22 U	7.98 U	38 J	3.46 U	0.993 U	6.63 J	13.5 J	4.51 U	3.72 J	2.03 U	200 BJ	5.8 J	16.4 U	10.1 U	9.18 U	7.82 U	298 BJ	70.9 J	16.4 U	5.68 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	15.4 U	10 U	8.67 U	0.892 U	0.778 U	0.529 U	0.436 U	1.38 U	2.76 U	1.57 U	1.24 U	34.4 B	4.58 U	6.05 U	3.75 U	3.4 U	1.69 U	31.5 B	7.27 B	3.53 U	1.47 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	37.6 U	57.9 J	331	23.3 J	1.03 U	15.7 J	1000	59.3 J	13.8 U	31.5 J	70.2	217 B	124	22.1 J	2.29 U	1.87 U	15.1 J	245 B	46.8 B	13.7 U	3.87 U
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	95.4 U	63.2 U	55.7 U	6.03 U	5.35 U	3.38 U	126	4.62 U	13.8 U	8.23 B	9.6 U	185 B	8.02 U	9.85 U	6.64 U	5.03 U	12.2 U	193 B	42 B	28.6 U	8.61 U
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	32.1 U	20.5 U	18 U	1.39 U	1.28 U	0.805 U	2.57 J	2.83 U	6.82 U	3.33 U	2.6 U	92.4 B	4.95 U	6.15 U	4.1 U	3.26 U	9.91 U	132 B	27.6 U	22.3 U	7.4 U
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	35.5 U	22.7 U	19.9 U	58.9 J	4.12 U	3.55 U	58.8 J	30.1 U	9.72 U	20 BJ	6.89 U	829 BJ	77.4 J	22 J	4.11 U	3.26 U	25 J	687 BJ	138 BJ	20.9 U	6.59 U
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	38.8 U	25.9 U	22.7 U	30.3 J	2.02 U	2.89 J	35.5 J	52.2 J	5.92 U	18.8 J	7.51 J	391 B	121	17.2 J	6.19 J	1.63 U	14.1 J	437 B	103 B	9.4 U	3.25 U
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	26.1 U	17.3 U	15.2 U	1.9 U	1.68 U	1.06 U	0.938 U	1.95 U	5.82 U	2.32 U	1.78 U	138 B	4.77 U	5.86 U	3.95 U	2.99 U	14.5 U	174 B	40.3 B	33.8 U	9.15 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	36.1 U	23.1 U	20.3 U	2.05 U	1.88 U	1.18 U	1.03 U	3.53 U	8.48 U	4.24 U	3.24 U	268 B	9.52 U	11.8 U	7.91 U	6.26 U	11.2 U	295 B	62.4 B	25.2 U	8.39 U
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	27.8 U	17.8 U	15.6 U	3.77 J	2.16 U	1.36 U	4.27 J	4.42 J	6.94 U	3.39 U	2.65 U	119 B	16.7 U	4.11 U	2.74 U	2.18 U	8.86 J	224 B	48.8 B	7.37 U	2.43 U
Sediment Toxicity Composite Samples:																							
XS001-RF1-C00003-103	11/10/2003	0.0 - 0.5	52.7 U	35.8 U	31.3 U	5.83 J	2.27 U	1.51 U	4.65 J	6.55 J	8.56 U	4.51 J	3.46 U	143 B	19.1 J	16.6 U	10.9 U	9.55 U	6.3 U	137 B	79.5 B	13.1 U	4.22 U
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5*	76.1 U	51.7 U	45.3 U	3.06 J	2.13 U	1.42 U	4.77 J	13.6 J	6.79 U	10.2 J	2.75 U	277 BJ	40.2 J	16.5 U	10.8 U	9.45 U	14.2 J	388 BJ	56	25.3 U	8.71 U
XS001-RF2-C00003-103	11/9/2003	0.0 - 0.5	295	287	608	993	8.91 J	211	783	1470	28.1 U	674	166 U	13600 J	4600 J	524	17.1 U	15 U	662	18700 J	4080	110 U	36.4 U
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	142	178	310	447	4.74 J	80.6 J	570	260	14.2 U	92.5 J	55.9 U	618	630	35.1 J	111	5.32 U	26.3 U	496 BJ	136 BJ	54.7 U	20.1 U
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	181	46.7 U	194	554	3.78 U	32.5 J	238	397	6.11 U	108	25.6 U	977	203	52.8 J	156	4.43 U	33.2 J	839 BJ	233	37.4 U	13.1 U
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	26.8 U	18.2 U	86.8 J	3.32 U	2.95 U	1.96 U	315	7.34 J	17 J	16.7 J	39.4 U	112 B	13.4 J	3.62 U	2.38 U	7.08 U	5.5 U	170 B	37.2 B	5.17 U	1.78 U
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	56.7 U	38.5 U	81.4 J	205	1.64 U	15.1 J	130	209	8.32 U	57.8 J	3.37 U	629 BJ	366	37.1 J	1.69 U	1.48 U	23.1 J	598 BJ	165 BJ	18 U	6.35 U
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	63.6 UJ	43.1 UJ	125 J	238 J	2.86 UJ	14.6 J	203 J	226 J	7.22 UJ	53.1 J	17.8 UJ	713 J	403 J	34.1 J	3.7 UJ	3.23 UJ	20.5 J	565 BJ	146 BJ	21.5 UJ	8.23 UJ
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	24.9 U	16.9 U	14.8 U	23.1 J	1.32 U	1.14 U	25.1 J	29.5 J	4.13 U	9.8 J	1.67 U	151 B	57.8 J	8.7	1.29 U	1.13 U	7.53 U	191 B	47 B	15.6 U	5.58 U

Notes:
BDE = Brominated diphenyl ether.
* = The sample is a field duplicate
J = The associated value is an estimated quantity
R = The result is unusable
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate
B = The parameter was detected in the Blank sample(s)
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity
--- = Not analyzed

Table 13
Polybrominated Diphenyl Ethers Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	BDE-138 (pg/g)	BDE-153 (pg/g)	BDE-154 (pg/g)	BDE-155 (pg/g)	BDE-156 (pg/g)	BDE-181 (pg/g)	BDE-183 (pg/g)	BDE-197 (pg/g)	BDE-203 (pg/g)	BDE-207 (pg/g)	BDE-209 (pg/g)	Total Mono-BDE (pg/g)	Total Di-BDE (pg/g)	Total Tri-BDE (pg/g)	Total Tetra-BDE (pg/g)	Total Penta-BDE (pg/g)	Total Hexa-BDE (pg/g)	Total Hepta-BDE (pg/g)	Total Octa-BDE (pg/g)	Total Nona-BDE (pg/g)
Reference Samples:																						
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	51 U	46.9 U	32 U	25.2 U	39.5 U	62.9 U	26.4 U	51.6 U	97.9 U	203 U	3580 J	21.4 U	8.4	33.9	243 B	290 B	36 U	37.2 U	67.5 U	203 U
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	104 J	924	244	66 J	14.2 U	66.4 U	1870	2640	2090	13500	322000 J	486	973	1600	7760	6330	2330	2850	9050	20900
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	56.6 U	378	318	51.4 J	40.7 U	33.8 U	932	763 J	755 J	3760	179000 J	346	1140	1450	4470	2000 BJ	1160	1600	2840	7360
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	59.3 U	54.5 U	54.4 BJ	29.5 U	45.7 U	64.6 U	59.1 BJ	56.1 U	106 U	304 U	6770 J	31.1 U	64.5	108	551 B	475 B	54.4 B	59.1 B	71.5 U	304 U
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	100 J	1260	1120	122 J	47.6 U	65.1 U	1800	1730	1650	8470	470000 J	778	1830	3220	13600	9750	3410	3140	6410	18400
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	80.2 J	645	488	40.6 J	25.4 U	129 U	4930	4890	4170	23600 J	376000 J	1000	2460	2690	12600	2370 BJ	3550	8230	18800	41300
Study Area 7 Samples:																						
SD001-200-000005-203	11/25/2003	0.0 - 0.5	35.5 U	27.9 U	37.2 U	15.7 U	21.8 U	58.2 U	25.3 U	24.6 U	46.7 U	179 UJ	3030 J	812	2830	104	138 BJ	118 B	21.6 U	35.3 U	32.2 U	179 U
SD004-200-000005-203	11/22/2003	0.0 - 0.5	17.8 U	43.3 BJ	31.2 BJ	8.13 U	10.6 U	14.8 U	51.6 J	31.4 J	130 J	315 J	16600	56 U	107	310	432 BJ	320 B	94.5 BJ	51.6	320	657
SD004-200-015020-203	11/22/2003	1.5 - 2.0	12.6 U	18.6 B	18.6 B	6.17 U	8.65 U	30.5 U	135 J	188 J	184 J	1100	21100	157	604	343	308 BJ	128 B	53.4 B	184	717	2410
SD004-200-035040-203	11/22/2003	3.5 - 4.0	190 U	181 U	126 U	112 U	155 U	40.6 U	20.3 U	15.5 U	27.6 U	115 U	950 J	19.8 U	6.36	3.22 U	110 B	175 B	141 U	27.1 U	19.9 U	115 U
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	8.68 U	46.6 B	51.1 B	5.31 U	6.14 U	20.7 U	112	105	158	515	14300 J	70.2	284	300	1040	475 B	194 BJ	164	503	1320
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	47.4 U	224	174	19.7 U	29.4 U	72.6 U	869	311	771	2650	60000 J	271	1010	1000	4480	891 BJ	902	1600	2960	5040
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	83.2 U	195	179	35.3 U	49.7 U	153 U	467	600	681	2100	42300	237	820	680	3840	1730 BJ	675	718	2420	3870
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	36.7 U	35 U	24.3 U	21.4 U	25.1 U	34 U	17 U	21.4 U	38 U	128 U	941 UJ	1380	4190	87.7	68.2 B	105 BJ	27.1 U	22.7 U	27.4 U	128 U
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	64.2 U	61.3 U	42.6 U	36.8 U	43.5 U	59.9 U	29.9 U	18.5 U	32.9 U	100 U	587 BJ	43.9 U	9.74	3.99 U	88.3 B	144 BJ	46.9 U	39.9 U	23.7 U	100 U
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	85.7 U	67.1 U	41.6 U	39.7 U	60.9 U	78.9 U	34.3 U	20 U	38.1 U	254 UJ	2070 J	41.2 U	117	86.8	293 BJ	204 BJ	53.8 U	47.8 U	26.3 U	254 U
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	62.3 U	59.4 U	41.3 U	35 U	42.9 U	51 U	25.5 U	60.9 U	108 U	90.6 U	2160 J	734	706	22.4 U	187 B	350 B	45.4 U	34 U	28 U	90.6 U
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	3.49 U	51.6 B	30.7 B	3.81 J	3.74 U	13.2 U	40.1 J	42.9 J	40.6 J	178 J	4230 J	96.3	516	249	548 BJ	372 B	88.7 BJ	40.1	83.5	252
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	6.87 U	17.7 J	11.3 J	3.36 U	4.2 U	155 U	67.3 U	33 J	54.9 J	175 J	6300	16.8 U	77.8	81	331 BJ	122 B	49.2	93.8 U	87.9	291
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	12.2 U	9.6 U	5.94 U	5.75 U	8.31 U	14.9 U	6.48 U	12.5 U	23.7 U	55.1 U	307 UJ	13 U	1.02 U	2.04 U	42.6 B	74.9 B	7.66 U	9.03 U	16.3 U	55.1 U
SD00B-025-015020-703	11/25/2003	1.5 - 2.0*	24 U	18.8 U	11.7 U	9.76 U	13.7 U	32.1 U	14 U	17.1 U	32.5 U	116 U	272 UJ	12.3 U	0.849 U	2.41 U	34.3 B	51.5 B	14.1 U	19.5 U	22.4 U	116 U
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	45.2 U	43.1 U	29.9 U	26.3 U	33.4 U	30.9 U	15.4 U	13.8 U	24.6 U	130 U	350 B	44 U	1.31	3.17 U	93.4 B	144 B	33.6 U	20.6 U	17.7 U	130 U
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	36.4 U	28.5 U	17.7 U	15.8 U	21.6 U	38 U	42.5 J	51.4 U	97.6 U	232 U	6130 J	196 U	257	139	311 BJ	161 BJ	21.8 U	42.5	67.3 U	213 U
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	17 U	21.6 B	24.4 B	4.84 U	7.14 U	22.4 U	31.9 J	17.5 U	52.1 U	203 J	4010	26.4 U	94.1	92.8	241 B	260 B	46 B	31.9	51 J	380
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	52.5 U	41.1 U	25.5 U	25 U	28.7 U	11.4 U	11.6 J	8.8 U	16.7 U	43.6 U	317	18.7 U	5.43	5.03	167 B	404 B	32.1 U	31.6	11.5 U	43.6 U
SD00B-100-035040-203	11/22/2003	3.5 - 4.0	9.76 U	32.1 B	7.52 B	4.8 U	5.54 U	17.8 U	7.76 U	7.18 U	13.6 U	33.5 U	193 U	17 U	0.872 U	2.91 U	65.7 B	143 B	19.6 B	10.8 U	9.4 U	33.5 U
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	6.69 U	17.3 B	15.3 B	3.11 U	4.1 U	20.1 U	41.1 J	28.5 U	54.1 U	109 J	3130	15.2 U	48.5	49.3	188 B	196 B	40 B	41.1	37.4 U	203
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	78.2 U	503	509	99.5	52.9 U	115 U	1220	1110	1200	4120	267000 J	683	2380	3320	6970	2360	1740	2060	4210	8930
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	135 U	468	477	71.8	97.6 U	121 U	1380	1450	1290	4880	248000 J	1520	2740	3780	8460	1740	1920	2310	5080	10300
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	120	990	629	71.6 U	44.5 U	153 U	4390	2930	1910	6980	238000 J	1230	2530	3480	9640	2470	2950	6580	8930	13600
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	78.9 J	1120	317	80.4 J	3.85 U	53.5 U	4940	2780	1350	5740	213000 BJ	576	1960	2920	7560	3260 BJ	2370	6450	7050	10600
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	55.5 U	245	290	54.6	34.2 U	50.7 U	815	821	769	3760	226000 J	1270	2280	2740	6300	1290	1190	1440	2520	7110
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	88.7 U	302	292	63.1	68.1 U	69.6 U	1140	916	750	3370	192000 J	885	2520	2700	5350	1240	1160	1810	2900	6920
SD00C-100-000005-101	10/16/2003	0.0 - 0.5	37.4 U	260	292	37.7 J	26 U	32.1 U	600	649 J	448 J	2200	112000 J	401	1150	1530	4190	2140 BJ	749	1060	1760	4860
SD00C-100-000005-103	10/16/2003	0.0 - 0.5*	29.3 U	310	287	46.6 J	20.5 U	31.3 U	804	559	443 J	2190	122000 J	360	1020	1440	3810	2090 BJ	871	1260	1750	4660
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	6.83 U	151 J	130 J	21.6 J	4.15 U	36.5 U	437	344 J	329 J	1180	47000 J	270	226	945	1920	577 BJ	468	651	1110	2070
SD00C-100-000005-103	11/21/2003	0.0 - 0.5*	74.6 U	233	148 J	34.8 U	47 U	217 U	707	528	502	1850	72600 J	483	1100	1470	2410	745 BJ	539	707	1620	3880
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	126 U	98.8 U	61.1 U	51.5 U	77.8 U	68.3 U	92 J	122 J	143 J	461	19300	73	325	323	598 BJ	271 B	75.7 U	92	411	1050
SD00D-050-000005-101	10/16/2003	0.0 - 0.5	67.8 J	744	598	47.1 J	34.1 U	52.1 U	910	685	676	2680	96000 J	493	1800	2630	8050	5800	1840	1570	2430	5700
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	80.5 U	74.1 U	50.6 U	42.5 U	58 U	94.8 U	39.7 U	43.2 U	81.9 U	294 U	2210 J	47.4 U	190	19.4 U	203 BJ	247 B	57.3 U	56 U	56.5 U	294 U
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	85.8 U	414	313	33.6 U	47.2 U	223 U	1240	1180	873	3230	144000 J	1650	2690	3360	5770	1450	1400	1240	2910	6500
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	87.9 U	1020	936	107 J	59.1 U	121 U	1420	1030	1040	4600	291000 J	363	1190	2600	11500	8520	2520	2510	3930	11200
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	229 U	532	492	97.6 U	146 U	217 U	1430	1470	1550	4530	195000 J	705	1960	3050	6060	1840	1350	1690	5390	8090
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	79.9 U	821	442	67.8	53.9 U	76.7 U	4500	1770	1640	3620	156000 J	1440	2620	3200	6080	1490	2040	6570	3050	7870
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	92.5 U	168	208	42.3	63.1 U	134 U	881	1040	1040	3950	119000 J	1020	1460	1490	5540	518 BJ	1130	1430	3400	7950
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	7.66 U	17.9 B	17.6 B	4.98 U	5.36 U	7.16 U	18.3 J	12.5 U	22.2 U	70.4 J	3220	46.2	56.9	32.3	161 B	254 B	35.4 BJ	18.3	16 U	70.4
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	6.62 U	11.5 B	10.7 B	4.56 U	3.95 U	6.34 U	10.4 J	7.28 U	12.9 U	28 U	178 J	12.1	0.936 U	3.25 U	79.8 B	199 B	32.3 BJ	10.4	9.31 U	28 U
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	5.57 U	14.6 B	10.7 B	3.38 U	4.1 U	4.57 U	11.1 J	8.37 U	14.9 U	42.9 U	967 UJ	38.2	1.3 U	4.13 U	89.5 B	206 B	25.4 BJ	11.1	10.7 U	62.9 U

Table 13
Polybrominated Diphenyl Ethers Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	BDE-138 (pg/g)	BDE-153 (pg/g)	BDE-154 (pg/g)	BDE-155 (pg/g)	BDE-156 (pg/g)	BDE-181 (pg/g)	BDE-183 (pg/g)	BDE-197 (pg/g)	BDE-203 (pg/g)	BDE-207 (pg/g)	BDE-209 (pg/g)	Total Mono-BDE (pg/g)	Total Di-BDE (pg/g)	Total Tri-BDE (pg/g)	Total Tetra-BDE (pg/g)	Total Penta-BDE (pg/g)	Total Hexa-BDE (pg/g)	Total Hepta-BDE (pg/g)	Total Octa-BDE (pg/g)	Total Nona-BDE (pg/g)
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	9.86 U	26.3 J	25.6 J	3.67 U	5.81 U	25.4 U	33.8 BJ	39.5 U	75.1 U	156 UJ	6350 J	63.4	132	146	412 BJ	265 B	69.1	33.8 BJ	51.8 U	136 U
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	53 U	50.6 U	35.1 U	27.8 U	35.1 U	38.1 U	19.1 U	19.2 U	34.2 U	283 UJ	1730 UJ	12.7 U	14.4	15.1	111 B	158 B	37.5 U	25.4 U	24.6 U	283 U
SD03E-025-015020-203	11/20/2003	1.5 - 2.0*	72.3 U	69 U	48 U	38.7 U	47.5 U	33 U	16.5 U	18.9 U	33.6 U	138 U	719 BJ	16.3 U	2.02 U	4.52 U	181 B	324 B	51.8 U	22 U	24.2 U	138 U
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	152 U	119 U	73.7 U	64.9 U	100 U	25.4 U	11.1 U	33.1 U	62.9 U	268 U	7100	29.9 U	3.37 U	6.17 U	58.6 B	95.2 B	91.6 U	15.4 U	43.4 U	268 U
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	46.9 U	109 J	103 J	26.2 U	35.4 U	57.1 U	202 J	194 J	200 J	1080	61300	147	606	674	1800 BJ	751 B	267	202	734	2390
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	34.6 U	33.1 U	23 U	19.4 U	22.4 U	30.5 U	15.3 U	22.2 U	39.5 U	190 UJ	587 UJ	19.5 U	3.43	5.62 U	100 B	135 B	24.9 U	20.3 U	28.4 U	190 U
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	26.8 U	26.3 U	16.3 U	13.9 U	20.7 U	31.7 U	13.8 U	34.6 U	65.7 U	71.4 U	1550	44.3 U	2.6	5.1 U	115 BJ	197 B	20 U	19.2 U	45.3 U	71.4 U
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	14.5 U	26.3 J	32 J	7.9 U	9.76 U	27.6 U	24.2 J	20.2 J	18.1 U	128 J	5560 BJ	19.6 U	31.1	55.4	319 B	361 B	58.3	24.2	44.3	285
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	66.3 U	52 U	32.2 U	28.3 U	41 U	48.1 U	20.9 U	23.1 U	43.8 U	98 U	2480	9.84 U	53.4	38.4	274 BJ	369 BJ	39.9 U	29.2 U	30.2 U	98 U
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	39 U	30.6 U	18.9 U	19.2 U	21.3 U	24.2 U	10.5 U	7.63 U	14.5 U	60.5 U	296 U	15.2 U	1.35 U	2.41 U	44.3 B	43.9 B	24 U	14.7 U	9.99 U	60.5 U
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	9.41 U	7.37 U	4.57 U	4.42 U	5.56 U	13.3 U	5.77 U	4.68 U	8.89 U	40.8 U	254 J	10.7 U	0.617 U	1.58 U	34.4 B	18.7 B	5.8 U	8.04 U	8.03 U	40.8 U
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	66.7 U	601 J	145 J	42.8 U	46.1 U	36.9 U	1380	1020	1120	3940	28000	389	1220	307	1080	425 BJ	365	1990	4580	5890
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	29.1 U	29.5 U	19.5 U	17.6 U	27.6 U	35.6 U	14.9 U	28 U	57.4 U	106 U	580 U	67.8 U	126	8.23 B	185 B	235 B	23.2 U	21 U	37.7 U	106 U
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	22.5 U	21.5 U	15 U	13.6 U	16.2 U	22.5 U	13.4 U	23 U	40.8 U	85.6 U	225 U	22.1 U	2.57	3.38 U	92.4 B	132 B	16.9 U	15 U	29.4 U	85.6 U
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	164 U	156 U	109 U	95.8 U	105 U	93.9 U	43.5 B	32.1 U	57.1 U	121 B	2330	24.5 U	141	94.4	1040 BJ	850 BJ	120 U	43.5 B	41.1 U	121 B
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	35.9 U	53.4 J	54.7 J	8.54 U	10.9 U	21.4 U	54.8 J	55.1 J	54.5 J	310 J	14700	27.5 U	82.8	131	646 BJ	563 BJ	108	54.8	196	690
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	169 U	171 U	113 U	98.9 U	134 U	156 U	65.3 U	27.4 U	56.3 U	916 U	466 U	61.5 U	1.97 U	10.7 U	102 B	165 B	131 U	92.1 U	36.9 U	916 U
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	125 U	127 U	83.6 U	71.4 U	99.4 U	136 U	56.8 U	14.5 U	29.7 U	744 U	643 U	18.5 U	1.27 U	2.39 U	138 B	214 B	93.9 U	80 U	19.5 U	744 U
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	165 U	158 U	110 U	110 U	128 U	63.1 U	31.6 U	21.7 U	38.6 U	275 U	1080 J	24.9 U	1.41 U	4.2 U	268 B	358 B	129 U	42.1 U	27.8 U	275 U
SD13W-200-000005-203	11/2/2003	0.0 - 0.5	6.94 U	19.7 U	19.5 B	4.01 U	4.45 U	12 U	21.3 J	24.5 J	11.1 U	88.5 J	3050 J	19.2	8.04	4.42	137 B	287 B	196 BJ	21.5	14.5	123
Sediment Toxicity Composite Samples:																						
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	41.1 U	37.8 U	25.8 U	23.3 U	28.8 U	49.8 U	20.9 U	30.6 U	58.1 U	174 U	1850 B	38 U	10.5	11.1	162 B	166 B	29.9 U	29.4 U	40.1 U	174 U
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5*	106 U	97.3 U	66.5 U	59 U	89.1 U	81.1 U	34 U	30.9 U	58.6 U	367 U	3130 BJ	55 U	9.83	30.4	317 BJ	458 BJ	79.2 U	47.9 U	40.5 U	367 U
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	423	3330	2110	195 J	287 U	281 U	12400 J	5960	6300	19200 J	695000 J	1190	2740	4580	24300	23900	7420	17000	24400	37500
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	358 U	343	297	47.2 U	65.2 U	130 U	1630	1960	2080	8670 BJ	1390000 BJ	630	1600	1650	5750	241 BJ	1510	3080	7940	16000
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	19 J	430	246	34.7 U	15 U	76.8 U	1430	1070	1020	4530	135000 BJ	375	1080	1330	2790	1160 BJ	951	2080	3390	7970
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	7.8 U	23.1 J	16 J	4.24 U	6.04 U	20.3 U	14.8 J	18 U	34.2 U	202 U	4370 BJ	86	327	33.7	131 B	207 B	39	14.8	23.6 U	202 U
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	128 U	118 U	110 J	71.1 U	95.4 U	80.6 U	162 J	132 J	151 J	364 B	35300 B	81.4	444	601	1470	816 BJ	110	162	460	1290 B
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	29.5 UJ	119 J	111 J	17.1 UJ	23.9 UJ	98 UJ	240 J	148 J	180 J	809 BJ	33300 BJ	125 J	546 J	646 J	1760 J	760 BJ	231 J	240 J	567 J	1650 BJ
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	45.9 U	42.3 U	28.9 U	24.7 U	30.1 U	76.8 U	32.2 U	36.4 U	69 U	129 U	6040 B	18 U	55.8	77.4	271 BJ	238 B	32.4 U	45.4 U	47.6 U	129 U

Notes:
BDE = Brominated diphenyl ether
* = The sample is a field duplicate
J = The associated value is an estimated quantity
R = The result is unusable
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate
B = The parameter was detected in the Blank sample(s)
BJ = The parameter was detected in the Blank sample(s). The associated value is an estimated quantity
-- = Not analyzed.

Table 14
Other Parameters Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Ammonia (mg/kg)	Bulk Density (g/cm^3)	Percent Solids (%)	pH (pH Units)	Total Organic Carbon (mg/kg)
Reference Samples:							
SD001-RF1-000005-103	10/16/2003	0.0 - 0.5	8 U	---	52.7	7.03 J	---
SD001-RF2-000005-103	10/16/2003	0.0 - 0.5	138	---	34	8 J	---
SD001-RF3-000005-103	10/16/2003	0.0 - 0.5	28.5	---	53.7	7.63 J	---
SD002-RF1-000005-103	10/16/2003	0.0 - 0.5	11.5	---	46.7	7.04 J	---
SD002-RF2-000005-103	10/16/2003	0.0 - 0.5	87.2	---	34.6	8.1 J	---
SD002-RF3-000005-103	10/16/2003	0.0 - 0.5	48.2	---	44.7	8.24 J	---
Study Area 7 Samples:							
SD001-200-000005-203	11/25/2003	0.0 - 0.5	24.5	1.68	78	8.26 J	15,400
SD001-200-005010-203	11/25/2003	0.5 - 1.0	---	1.17	---	8.39 J	15,300
SD001-200-015020-203	11/25/2003	1.5 - 2.0	---	1.23	---	7.93 J	59,400
SD001-200-025030-203	11/25/2003	2.5 - 3.0	---	0.83	---	7.42 J	53,100
SD001-200-035040-203	11/25/2003	3.5 - 4.0	---	---	---	7.56 J	23,600
SD004-200-000005-203	11/22/2003	0.0 - 0.5	8 U	1.79	85.3	7.93	2,410
SD004-200-005010-203	11/22/2003	0.5 - 1.0	---	1.73	---	8.55	4,060
SD004-200-015020-203	11/22/2003	1.5 - 2.0	---	1.48	76	8.51	11,900
SD004-200-025030-203	11/22/2003	2.5 - 3.0	---	0.8	---	7.51	51,200
SD004-200-035040-203	11/22/2003	3.5 - 4.0	---	0.68	53.1	7.8	49,600
SD00A-005-000005-203	12/1/2003	0.0 - 0.5	52.4	1.38	78.2	8.56 J	17,500
SD00A-005-005010-203	12/1/2003	0.5 - 1.0	---	0.96	---	8.87 J	38,600
SD00A-005-015020-203	12/1/2003	1.5 - 2.0	---	1.38	---	8.96 J	107,000
SD00A-005-025030-203	12/1/2003	2.5 - 3.0	---	0.67	---	8.89 J	64,800
SD00A-005-035040-203	12/1/2003	3.5 - 4.0	---	---	---	9.14 J	65,800
SD00A-025-000005-203	11/23/2003	0.0 - 0.5	45	1.15	64.9	8.02 J	17,700
SD0DA-025-000005-203	11/23/2003	0.0 - 0.5*	31.4	---	65	8.27 J	21,800
SD00A-025-005010-203	11/23/2003	0.5 - 1.0	---	0.96	---	8.52 J	46,200
SD00A-025-015020-203	11/23/2003	1.5 - 2.0	---	0.5	---	8.15 J	160,000
SD00A-025-025030-203	11/23/2003	2.5 - 3.0	---	0.73	---	7.51 J	43,100
SD00A-025-035040-203	11/23/2003	3.5 - 4.0	---	0.75	---	7.65 J	38,700
SD00A-050-000005-203	11/23/2003	0.0 - 0.5	39.5	0.9	50.2	8.13 J	24,400
SD00A-050-005010-203	11/23/2003	0.5 - 1.0	---	0.61	---	8.22 J	33,900
SD00A-050-015020-203	11/23/2003	1.5 - 2.0	---	0.6	43.6	7.97 J	62,700
SD00A-050-025030-203	11/23/2003	2.5 - 3.0	---	0.84	---	7.53 J	46,500
SD00A-050-035040-203	11/23/2003	3.5 - 4.0	---	0.86	57	7.78 J	33,100
SD00A-100-000005-203	11/24/2003	0.0 - 0.5	69	0.78	47.7	7.97 J	75,100
SD00A-100-005010-203	11/24/2003	0.5 - 1.0	---	0.74	---	8.05 J	77,400
SD00A-100-015020-203	11/24/2003	1.5 - 2.0	---	0.76	---	7.3 J	42,700
SD00A-100-025030-203	11/24/2003	2.5 - 3.0	---	0.81	---	7.72 J	25,700
SD00A-100-035040-203	11/24/2003	3.5 - 4.0	---	0.73	---	7.36 J	49,300
SD00A-200-000005-203	12/1/2003	0.0 - 0.5	80.4	0.63	37.7	7.14 J	74,900
SD00A-200-005010-203	12/1/2003	0.5 - 1.0	---	0.87	---	8.16 J	54,500
SD00A-200-015020-203	12/1/2003	1.5 - 2.0	---	0.73	---	7.7 J	30,300
SD00A-200-025030-203	12/1/2003	2.5 - 3.0	---	0.89	---	8.04 J	26,200
SD00A-200-035040-203	12/1/2003	3.5 - 4.0	---	0.93	---	7.85 J	33,000
SD00B-005-000005-203	12/1/2003	0.0 - 0.5	83.1	1.88	88.7	8.53 J	8,270
SD00B-005-005010-203	12/1/2003	0.5 - 1.0	---	1.72	---	8.85 J	9,670
SD00B-005-015020-203	12/1/2003	1.5 - 2.0	---	1.55	---	8.9 J	11,900

Table 14
Other Parameters Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Ammonia (mg/kg)	Bulk Density (g/cm^3)	Percent Solids (%)	pH (pH Units)	Total Organic Carbon (mg/kg)
SD00B-005-025030-203	12/1/2003	2.5 - 3.0	---	1.36	---	8.03 J	28,600
SD00B-005-035040-203	12/1/2003	3.5 - 4.0	---	0.83	---	7.99 J	33,900
SD00B-025-000005-203	12/1/2003	0.0 - 0.5	11.1	1.65	77.7	8.5 J	13,100
SD0DB-025-000005-203	11/25/2003	0.0 - 0.5*	20.7	---	81.1	8.62 J	10,300
SD00B-025-005010-203	12/1/2003	0.5 - 1.0	---	1.4	---	8.3 J	19,000
SD00B-025-015020-203	12/1/2003	1.5 - 2.0	---	0.9	68.4	7.72 J	29,200
SD00B-025-025030-203	12/1/2003	2.5 - 3.0	---	1.53	---	7.38 J	61,800
SD00B-025-035040-203	12/1/2003	3.5 - 4.0	---	1.52	58.8	7.43 J	30,600
SD00B-050-000005-203	11/23/2003	0.0 - 0.5	45.5	1.49	80.3	8.34 J	22,400
SD0DB-050-000005-203	11/23/2003	0.0 - 0.5*	25.3	---	64.3	8.12 J	27,000
SD00B-050-005010-203	11/23/2003	0.5 - 1.0	---	0.98	---	8.61 J	25,700
SD00B-050-015020-203	11/23/2003	1.5 - 2.0	---	0.83	---	7.67 J	36,000
SD00B-050-025030-203	11/23/2003	2.5 - 3.0	---	1.69	---	8.43 J	7,320
SD00B-050-035040-203	11/23/2003	3.5 - 4.0	---	1.71	---	8.17 J	7,630
SD00B-100-000005-203	11/22/2003	0.0 - 0.5	10.7	1.28	74.9	7.92	10,400
SD0DB-100-000005-203	11/22/2003	0.0 - 0.5*	12.9	---	---	7.56	8,530
SD00B-100-005010-203	11/22/2003	0.5 - 1.0	---	1.31	---	7.93	34,200
SD00B-100-015020-203	11/22/2003	1.5 - 2.0	---	1.71	83	8.05	3,260
SD00B-100-025030-203	11/22/2003	2.5 - 3.0	---	1.76	---	8.41	637
SD00B-100-035040-203	11/22/2003	3.5 - 4.0	---	1.66	---	8.63	593
SD00B-200-000005-203	11/22/2003	0.0 - 0.5	7.2	1.35	78.5	---	3,770
SD00B-200-005010-203	11/22/2003	0.5 - 1.0	---	0.98	---	---	30,800
SD00B-200-015020-203	11/22/2003	1.5 - 2.0	---	1.29	---	---	30,900
SD00B-200-025030-203	11/22/2003	2.5 - 3.0	---	1.13	---	---	41,000
SD00B-200-035040-203	11/22/2003	3.5 - 4.0	---	1.11	---	---	26,000
SD00C-005-000005-203	11/20/2003	0.0 - 0.5	134	0.52	39.1	7.99 J	34,500
SD00C-005-005010-203	11/20/2003	0.5 - 1.0	---	0.48	---	8.3 J	38,000
SD00C-005-015020-203	11/20/2003	1.5 - 2.0	---	0.52	40.7	8.12 J	37,900
SD00C-005-025030-203	11/20/2003	2.5 - 3.0	---	0.5	---	7.92 J	45,300
SD00C-005-035040-203	11/20/2003	3.5 - 4.0	---	0.59	41.4	7.98 J	37,700
SD00C-025-000005-103	10/16/2003	0.0 - 0.5	31.3	---	39.5	7.98 J	---
SD00C-025-000005-203	11/19/2003	0.0 - 0.5	113	0.5	35.6	7.65	39,400
SD00C-025-005010-203	11/19/2003	0.5 - 1.0	---	0.53	---	8.34 J	39,500
SD00C-025-015020-203	11/19/2003	1.5 - 2.0	---	0.54	---	7.9 J	38,800
SD00C-025-025030-203	11/19/2003	2.5 - 3.0	---	0.59	---	7.92 J	35,300
SD00C-025-035040-203	11/19/2003	3.5 - 4.0	---	0.79	---	7.67 J	38,800
SD00C-050-000005-203	11/19/2003	0.0 - 0.5	63.8	0.55	50.6	8.15 J	40,300
SD00C-050-005010-203	11/19/2003	0.5 - 1.0	---	0.55	---	8.12 J	33,200
SD00C-050-015020-203	11/19/2003	1.5 - 2.0	---	0.63	---	8.44 J	29,300
SD00C-050-025030-203	11/19/2003	2.5 - 3.0	---	0.81	---	8.42 J	24,200
SD00C-050-035040-203	11/19/2003	3.5 - 4.0	---	0.95	---	8.17 J	63,100
SD00C-100-000005-103	10/16/2003	0.0 - 0.5	16.4	---	54.9	7.99 J	---
SD0DC-100-000005-103	10/16/2003	0.0 - 0.5*	16.9	---	53.7	7.77 J	---
SD00C-100-000005-203	11/21/2003	0.0 - 0.5	40.7	1.03	65.6	8.33 J	25,300
SD0DC-100-000005-203	11/21/2003	0.0 - 0.5*	53.3	---	65.3	8.21 J	26,600
SD00C-100-005010-203	11/21/2003	0.5 - 1.0	---	1.16	---	8.01 J	41,400
SD00C-100-015020-203	11/21/2003	1.5 - 2.0	---	1.06	---	8.31 J	31,700

Table 14
Other Parameters Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Ammonia (mg/kg)	Bulk Density (g/cm^3)	Percent Solids (%)	pH (pH Units)	Total Organic Carbon (mg/kg)
SD00C-100-025030-203	11/21/2003	2.5 - 3.0	---	0.74	---	7.97 J	32,100
SD00C-100-035040-203	11/21/2003	3.5 - 4.0	---	0.72	---	7.77 J	68,800
SD00C-200-000005-203	11/21/2003	0.0 - 0.5	22.7	1.24	67.8	8.62 J	6,100
SD00C-200-005010-203	11/21/2003	0.5 - 1.0	---	1.68	---	8.71 J	13,600
SD00C-200-015020-203	11/21/2003	1.5 - 2.0	---	0.61	---	8.2 J	10,500
SD00C-200-025030-203	11/21/2003	2.5 - 3.0	---	0.61	---	7.75 J	71,900
SD00C-200-035040-203	11/21/2003	3.5 - 4.0	---	0.65	---	7.91 J	54,700
SD00D-050-000005-103	10/16/2003	0.0 - 0.5	10.1	---	61.3	7.83 J	---
SD00D-150-000005-103	10/16/2003	0.0 - 0.5	40.1	---	33	7.32 J	---
SD02E-025-000005-203	11/21/2003	0.0 - 0.5	64.7	0.54	42.4	8.5 J	35,100
SD02E-025-005010-203	11/21/2003	0.5 - 1.0	---	0.61	---	8.58 J	33,300
SD02E-025-015020-203	11/21/2003	1.5 - 2.0	---	0.9	---	8.51 J	25,400
SD02E-025-025030-203	11/21/2003	2.5 - 3.0	---	0.86	---	7.93 J	28,100
SD02E-025-035040-203	11/21/2003	3.5 - 4.0	---	0.76	---	7.88 J	26,900
SD02E-075-000005-103	10/16/2003	0.0 - 0.5	29	---	41.6	7.78 J	---
SD02E-075-000005-203	11/20/2003	0.0 - 0.5	173	0.56	41.8	8.07 J	32,900
SD02E-075-005010-203	11/20/2003	0.5 - 1.0	---	0.53	---	8.31 J	34,300
SD02E-075-015020-203	11/20/2003	1.5 - 2.0	---	0.52	41.4	8.24 J	34,900
SD02E-075-025030-203	11/20/2003	2.5 - 3.0	---	0.53	---	8 J	35,200
SD02E-075-035040-203	11/20/2003	3.5 - 4.0	---	0.68	47.9	8.31 J	39,800
SD02W-200-000005-203	12/2/2003	0.0 - 0.5	8 U	1.15	78.6	7.96 J	766
SD02W-200-005010-203	12/2/2003	0.5 - 1.0	---	1.53	---	7.73 J	335
SD02W-200-015020-203	12/2/2003	1.5 - 2.0	---	1.92	71	7.93 J	641
SD02W-200-025030-203	12/2/2003	2.5 - 3.0	---	---	---	8.31 J	4,000
SD02W-200-035040-203	12/2/2003	3.5 - 4.0	---	---	79.4	8.45 J	4,410
SD03E-025-000005-203	11/16/2003	0.0 - 0.5	35.3	1.23	70.9	8.83 J	19,300
SD03E-025-005010-203	11/16/2003	0.5 - 1.0	---	0.94	---	8.68 J	27,300
SD03E-025-015020-203	11/16/2003	1.5 - 2.0	---	0.66	64.2	7.93 J	31,400
SD03E-025-025030-203	11/16/2003	2.5 - 3.0	---	0.69	---	8.19 J	31,100
SD03E-025-035040-203	11/18/2003	3.5 - 4.0	---	0.87	49.3	---	---
SD03E-025-038043-203	11/16/2003	3.8 - 4.3	---	---	---	8.56 J	2,950
SD03E-050-000005-103	10/16/2003	0.0 - 0.5	8 U	---	64.5	7.76 J	---
SD03E-075-000005-203	11/17/2003	0.0 - 0.5	---	0.77	55.8	8.07 J	30,800
SD03E-075-005010-203	11/17/2003	0.5 - 1.0	---	0.73	---	8.12 J	29,800
SD03E-075-015020-203	11/17/2003	1.5 - 2.0	---	0.81	81.9	8.55 J	4,010
SD03E-075-025030-203	11/17/2003	2.5 - 3.0	---	1.5	---	8.64 J	20,600
SD03E-075-035040-203	11/17/2003	3.5 - 4.0	---	1.2	86	8.57 J	1,290
SD03W-150-000005-103	10/16/2003	0.0 - 0.5	8 U	---	82	7.84 J	---
SD03W-200-000005-203	11/24/2003	0.0 - 0.5	8.5	1.8	75.5	8.09 J	9,670
SD03W-200-005010-203	11/24/2003	0.5 - 1.0	---	1.99	---	8.47 J	10,600
SD03W-200-015020-203	11/24/2003	1.5 - 2.0	---	1.8	82.1	8.52 J	711
SD03W-200-020025-203	11/24/2003	2.0 - 2.5	---	1.74	---	---	---
SD03W-200-025030-203	11/24/2003	2.5 - 3.0	---	---	---	7.96 J	1,140
SD03W-200-035040-203	11/24/2003	3.5 - 4.0	---	1.74	77.8	8.02 J	222
SD13E-005-000005-203	11/17/2003	0.0 - 0.5	53.2	0.87	52.5	8.52 J	69,900
SD13E-005-005010-203	11/17/2003	0.5 - 1.0	---	0.59	---	8.77 J	74,900
SD13E-005-015020-203	11/17/2003	1.5 - 2.0	---	0.71	51.6	8.31 J	82,600

Table 14
Other Parameters Results in Sediment
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Ammonia (mg/kg)	Bulk Density (g/cm^3)	Percent Solids (%)	pH (pH Units)	Total Organic Carbon (mg/kg)
SD13E-005-025030-203	11/17/2003	2.5 - 3.0	---	0.61	---	7.88 J	29,200
SD13E-005-035040-203	11/17/2003	3.5 - 4.0	---	0.79	50.4	7.93 J	45,000
SD13E-050-000005-203	11/17/2003	0.0 - 0.5	108	0.72	48.7	8.22 J	27,600
SD13E-050-005010-203	11/17/2003	0.5 - 1.0	---	0.93	---	8.57 J	21,300
SD13E-050-015020-203	11/17/2003	1.5 - 2.0	---	0.66	---	7.49 J	44,800
SD13E-050-025030-203	11/17/2003	2.5 - 3.0	---	0.79	---	7.85 J	23,300
SD13E-050-035040-203	11/17/2003	3.5 - 4.0	---	0.75	---	7.76 J	35,600
SD13E-100-000005-103	10/16/2003	0.0 - 0.5	7.3	---	69	7.79 J	---
SD13E-100-000005-203	11/18/2003	0.0 - 0.5	151	0.71	51.5	8.49 J	38,800
SD13E-100-005010-203	11/18/2003	0.5 - 1.0	---	0.66	---	7.98 J	28,800
SD13E-100-015020-203	11/18/2003	1.5 - 2.0	---	0.94	55.3	8.82 J	36,900
SD13E-100-025030-203	11/18/2003	2.5 - 3.0	---	1.51	---	7.72 J	35,200
SD13E-100-035040-203	11/18/2003	3.5 - 4.0	---	0.62	44.8	7.93 J	42,600
SD13W-200-000005-203	12/2/2003	0.0 - 0.5	8 U	1.8	82.6	8.04 J	1,770
SD13W-200-005010-203	12/2/2003	0.5 - 1.0	---	1.9	---	8.19 J	3,180
SD13W-200-015020-203	12/2/2003	1.5 - 2.0	---	1.87	---	7.59 J	415
SD13W-200-025030-203	12/2/2003	2.5 - 3.0	---	1.87	---	7.68 J	411
SD13W-200-035040-203	12/2/2003	3.5 - 4.0	---	---	---	7.31 J	396
Sediment Toxicity Composite Samples:							
XS001-RF1-C00005-103	11/10/2003	0.0 - 0.5	---	---	46.1	---	---
XS0D1-RF1-C00005-103	11/10/2003	0.0 - 0.5*	42.9	---	46.6	7.99 J	---
XS001-RF2-C00005-103	11/9/2003	0.0 - 0.5	142	---	36.6	7.24 J	---
XS001-RF3-C00005-103	11/9/2003	0.0 - 0.5	58.3	---	49	7.99 J	---
XS00C-100-C00005-103	11/9/2003	0.0 - 0.5	25.9	---	56.5	8.12 J	---
XS00D-150-C00005-103	11/8/2003	0.0 - 0.5	119	---	32.8	6.67 J	---
XS01W-175-C00005-103	11/8/2003	0.0 - 0.5	14.8	---	66	6.99 J	---
XS03E-050-C00005-103	11/9/2003	0.0 - 0.5	24.4	---	52.5	8.11 J	---
XS13E-100-C00005-103	11/8/2003	0.0 - 0.5	25.9	---	57.5	8.13 J	---

Notes:
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.
--- = Not analyzed.

Table 15
Total Chromium Results in Pore Water
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Chromium (Filtered) (ug/L)	Chromium (Unfiltered) (ug/L)
Reference Samples:				
PW001-RF1-C00005-103	11/10/2003	0.0 - 0.5	10.7 J	1300 J
PW001-RF2-C00005-103	11/9/2003	0.0 - 0.5	11.1 J	69.8 J
PW0D1-RF2-C00005-103	11/10/2003	0.0 - 0.5*	10.3 J	100 J
PW001-RF3-C00005-103	11/9/2003	0.0 - 0.5	10 U	133 J
Study Area 7 Samples:				
PW00C-100-C00005-103	11/9/2003	0.0 - 0.5	10 U	111 J
PW00D-150-C00005-103	11/8/2003	0.0 - 0.5	17.1 J	1710 J
PW01W-175-C00005-103	11/8/2003	0.0 - 0.5	10 U	1020 J
PW02E-075-C00005-103	11/11/2003	0.0 - 0.5	10 U	928 J
PW03E-050-C00005-103	11/9/2003	0.0 - 0.5	10 U	449 J
PW13E-100-C00005-103	11/8/2003	0.0 - 0.5	11.2 J	438 J

Notes:

Total chromium in pore water analyzed by Columbia Analytical Services, Inc. (Rochester, New York) using EPA Method 6010B.

* = The sample is a field duplicate.

J = The associated value is an estimated quantity.

U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.

Table 16
TAL Metals Results in Pore Water
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Aluminum (ug/L)	Antimony (ug/L)	Arsenic (ug/L)	Barium (ug/L)	Beryllium (ug/L)	Cadmium (ug/L)	Calcium (ug/L)	Chromium (ug/L)	Cobalt (ug/L)	Copper (ug/L)	Iron (ug/L)	Lead (ug/L)	Magnesium (ug/L)	Manganese (ug/L)	Mercury (ug/L)	Nickel (ug/L)	Potassium (ug/L)	Selenium (ug/L)	Silver (ug/L)	Sodium (ug/L)	Thallium (ug/L)	Vanadium (ug/L)	Zinc (ug/L)
Reference Samples (Filtered):																									
PW001-RF1-C00005-103	11/10/2003	0.0 - 0.5	155 U	3.9 U	6.8 U	25.5	0.2 U	0.8 U	221,000	5.6 U	7 U	4.2 U	1210	4.4 U	475,000	3110	0.1 U	7.8 U	124,000	7.8 U	1.4 U	3,660,000	8.8 U	1.5 U	23.7
PW001-RF2-C00005-103	11/9/2003	0.0 - 0.5	103	3.9 U	7.9	53.7	0.1 U	0.4 U	194,000	6.6	3.5 U	2.8	66.6	6.6 U	553,000	2140	0.1 U	3.9 U	156,000	3.9 U	0.7 U	4,400,000	4.4 U	3.6	11.7
PW001-RF2-C00005-103	11/10/2003	0.0 - 0.5*	77.4 U	3.9 U	8	50.7	0.1 U	0.4 U	197,000	5.9	3.5 U	2.1 U	39.7 U	6.6 U	563,000	2130	0.1 U	3.9 U	160,000	3.9 U	0.7 U	4,470,000	4.4 U	4.6	8.8
PW001-RF3-C00005-103	11/9/2003	0.0 - 0.5	82.3	3.9 U	12.3	17.4	0.1 U	0.4 U	207,000	3.1	3.5 U	2.1 U	39.7 U	6.6 U	620,000	597	0.1 U	3.9 U	162,000	3.9 U	0.7 U	4,730,000	4.4 U	5.6	11.5
Study Area 7 Samples (Filtered):																									
PW00C-100-C00005-103	11/9/2003	0.0 - 0.5	155 U	3.9 U	9.4	26.2	0.2 U	0.8 U	186,000	5.6 U	7 U	4.2 U	79.4 U	4.4 U	581,000	629	0.1 U	7.8 U	156,000	7.8 U	1.4 U	4,560,000	8.8 U	4.4	14.9
PW00D-150-C00005-103	11/8/2003	0.0 - 0.5	125 U	11.6 U	43.1	8.5	0.6 U	0.8 U	189,000	5.2	3.4 U	7.4 U	78.4 U	4.6 U	500,000	645	0.1 U	3.2 UJ	138,000	8.4 U	2.8 U	3,510,000	9.4 U	7.1	24
PW01W-175-C00005-103	11/8/2003	0.0 - 0.5	125 U	11.6 U	18.2	13.6	0.6 U	0.8 U	156,000	3.2 U	3.4 U	7.4 U	78.4 U	4.6 U	468,000	745	0.1 U	3.2 UJ	138,000	8.4 U	2.8 U	3,440,000	9.4 U	8.6	14.6
PW02E-075-C00005-103	11/11/2003	0.0 - 0.5	125 U	11.6 U	15	20.3	0.6 U	0.8 U	175,000	4	3.4 U	7.4 U	78.4 U	4.6 U	514,000	924	0.1 U	3.2 UJ	155,000	8.4 U	2.8 U	3,760,000	9.4 U	14.6	12.3
PW03E-050-C00005-103	11/9/2003	0.0 - 0.5	77.4 U	3.9 U	36.2	31.9	0.1 U	0.4 U	174,000	3.7	3.5 U	3.1	43.2	2.2 U	501,000	591	0.1 U	3.9 U	134,000	3.9 U	0.7 U	4,000,000	4.4 U	7.4	23.7
PW13E-100-C00005-103	11/8/2003	0.0 - 0.5	74.0 J	11.6 U	52.5	55.7	0.6 U	0.8 U	170,000	34.7	3.4 U	21.2	3450	20.9	472,000	482	0.34	3.2 UJ	133,000	8.4 U	2.8 U	35,000	9.4 U	8.1	73
Reference Samples (Unfiltered):																									
PW001-RF1-C00005-103	11/10/2003	0.0 - 0.5	88,100	3.9 U	264	1070	5.2	9.8 J	203,000	1490	52.3	1330	137,000	1490	456,000	4630	27.9	174	124,000	7.8 U	11	3,230,000	8.8 U	177	2,550
PW001-RF2-C00005-103	11/9/2003	0.0 - 0.5	4,980	3.9 U	9	156	0.1 U	0.4 U	187,000	55.3	3.5 U	45.5	9,060	40.4	534,000	2240	0.61	9.3	151,000	3.9 U	0.7 U	4,210,000	4.4 U	9.6	61.7
PW001-RF2-C00005-103	11/10/2003	0.0 - 0.5*	8,500	3.9 U	9.6	176	0.12 J	0.4 U	185,000	88.2	3.5 U	84.8	13,300	72.3	527,000	2280	1.1	14.7	149,000	3.9 U	1.6	4,150,000	4.4 U	16	125
PW001-RF3-C00005-103	11/9/2003	0.0 - 0.5	7,000	3.9 U	17.1	66.1	0.1 U	0.86 J	183,000	108	3.5 U	98.1	8,830	83.9	562,000	647	2.3	14	146,000	3.9 U	2.4	4,250,000	4.4 U	16.1	122
Study Area 7 Samples (Unfiltered):																									
PW00C-100-C00005-103	11/9/2003	0.0 - 0.5	5,770	3.9 U	10.3	61	0.2 U	0.8 U	176,000	86.3	7 U	54.5	7,630	46.9	540,000	753	1.2	9.9	145,000	7.8 U	1.4 U	4,250,000	8.8 U	12.8	71.6
PW00D-150-C00005-103	11/8/2003	0.0 - 0.5	12,500 J	11.6 U	139	213	0.86	7.1	198,000	1560	5.3	690	26,100	473	513,000	890	105	28.2	143,000	8.4 U	2.9	3,600,000	9.4 U	54.2	840
PW01W-175-C00005-103	11/8/2003	0.0 - 0.5	30,500 J	11.6 U	47.6	233	1.8	3	157,000	939	15.2	448	48,200	449	459,000	1440	30.6	57	137,000	8.4 U	6.1	3,430,000	9.4 U	80.6	685
PW02E-075-C00005-103	11/11/2003	0.0 - 0.5	14,700 J	11.6 U	18	124	0.87	0.8 U	161,000	212	6.9	136	24,900	133	486,000	1270	4.8	23.6	143,000	8.4 U	3.4	3,490,000	9.4 U	34.9	214
PW03E-050-C00005-103	11/9/2003	0.0 - 0.5	15,600	3.9 U	52.8	243	0.73 J	1.8 J	155,000	390	6.4	283	19,300	352	462,000	813	5.7	28.8	124,000	3.9 U	2.9	3,630,000	4.4 U	36.7	445
PW13E-100-C00005-103	11/8/2003	0.0 - 0.5	13,200 J	11.6 U	81.4	264	0.75	1.6	188,000	387	7.6	234	20,000	267	493,000	773	9.5	24.9	147,000	8.4 U	2.8 U	3,760,000	9.4 U	35.1	437

Notes:
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
U = The sample was analyzed for, but was not detected above the sample quantitation or detection limit.

Table 17
Total Chromium and Hexavalent Chromium Results in Surface Water
Study Area 7; Jersey City, New Jersey

Field Sample ID	Date Sampled	Depth (feet)	Chromium (ug/L)	Hexavalent Chromium (ug/L)
Reference Samples (Filtered):				
SW001-RF1-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW001-RF2-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW001-RF3-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF1-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF2-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF3-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
Study Area 7 Samples (Filtered):				
SW02W-050-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW03W-025-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SWD3W-025-000SUR-103	10/16/2003	0.0 - 0.5*	10 U	10 UJ
SW13W-100-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
Reference Samples (Unfiltered):				
SW001-RF1-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW001-RF2-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW001-RF3-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF1-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF2-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW002-RF3-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
Study Area 7 Samples (Unfiltered):				
SW02W-050-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SW03W-025-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ
SWD3W-025-000SUR-103	10/16/2003	0.0 - 0.5*	10 U	10 UJ
SW13W-100-000SUR-103	10/16/2003	0.0 - 0.5	10 U	10 UJ

Notes:
Total chromium in surface water analyzed by Columbia Analytical Services, Inc. (Rochester, New York) using EPA Method 6010B.
Hexavalent chromium in surface water analyzed by Columbia Analytical Services, Inc. (Rochester, New York) using EPA Method 7199.
* = The sample is a field duplicate.
J = The associated value is an estimated quantity.
UJ = The sample was analyzed for, but was not detected. The associated quantitation or detection limit is an estimate.

Table 18
Summary of Sediment Geotechnical Data
Study Area 7; Jersey City, New Jersey

Boring Number	Depth Below Mudline (feet)	USCS Group Symbol	Average Natural Water Content (%)	Natural Water Content (%)	ATTERBERG LIMITS			GRADATION						Organic Content (%)	Specific Gravity of Solids
					Liquid Limit (%)	Plasticity Index (%)	Natural Water Content of Limit Sample (%)	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Natural Water Content of Gradation Sample (%)		
SD001-200	0.0-0.5	SC	32	29	37	19	31	7.7	4.3	17.9	43.4	26.7	33	1.6	2.71
SD001-200	0.5-1.0	SC	41	41	39	18	41	0.1	1.6	14.3	53.8	30.2	41	2.5	2.72
SD001-200	1.5-2.0	SC	47	51	44	23	47	0.0	0.6	14.6	45.1	39.7	44	3.4	2.72
SD001-200	2.5-3.0	SC	48	49	37	13	45	0.0	0.9	16.0	55.0	28.1	49	2.8	2.64
SD001-200	3.5-4.0	CH	78	81	68	40	78	0.0	0.0	0.5	1.7	97.8	76	4.1	2.74
SD004-200	0.0-0.5	SP-SM	20	20	*	*	*	0.1	0.5	29.6	62.7	7.1	19	0.7	2.75
SD004-200	0.5-1.0	SP-SM	20	21	*	*	*	0.0	0.8	24.5	64.7	10.1	20	0.8	2.46
SD004-200	1.5-2.0	SM	33	34	*	*	*	0.3	1.1	9.3	65.6	23.8	33	1.3	2.70
SD004-200	2.5-3.0	CH	91	92	77	48	91	3.6	1.1	12.1	14.3	68.9	91	6.3	2.69
SD004-200	3.5-4.0	CH	114	115	90	56	114	0.0	0.2	1.2	9.6	89.0	114	7.2	2.65
SD00A-005	0.0-0.5	SM	29	30	*	*	*	9.6	8.5	23.5	42.8	15.7	29	3.3	2.78
SD00A-005	0.5-1.0	SM	46	46	*	*	*	7.8	6.6	18.1	38.4	29.0	46	4.0	2.66
SD00A-005	1.5-2.0	SM	63	64	*	*	*	4.6	9.8	21.9	39.1	24.6	62	8.0	2.56
SD00A-005	2.5-3.0	SM	52	54	*	*	*	9.6	14.7	24.3	32.0	19.4	50	7.9	2.72
SD00A-005	3.5-4.0	SM	84	86	*	*	*	7.5	12.9	19.1	29.9	30.7	83	10.2	2.65
SD00A-025	0.5-1.0	SM	65	69	47	17	66	0.7	4.9	6.0	41.1	47.4	63	6.2	2.64
SD00A-025	1.5-2.0	SC	152	154	84	34	147	1.3	6.4	13.1	38.6	40.5	154	21.3	2.43
SD00A-025	2.5-3.0	CH	84	82	55	27	89	0.0	0.1	0.4	22.1	77.4	82	5.4	2.71
SD00A-025	3.5-4.0	CH	90	93	67	37	82	1.7	1.7	1.3	12.0	83.4	93	6.8	---
SD00A-050	0.0-0.5	CL	76	79	49	27	77	0.0	0.5	1.0	27.7	70.8	75	2.9	2.74
SD00A-050	0.5-1.0	CH	82	92	55	30	84	0.0	0.3	1.2	24.0	74.5	77	5.1	2.74
SD00A-050	1.5-2.0	CH	152	152	92	57	151	0.0	0.1	0.3	8.9	90.7	152	8.1	2.63
SD00A-050	2.5-3.0	CH	111	117	75	44	112	0.0	0.0	0.2	5.0	94.8	108	7.3	2.64
SD00A-050	3.5-4.0	CH	77	30	67	39	96	0.0	0.0	0.1	1.6	98.2	91	4.8	2.75
SD00A-100	0.0-0.5	CH	102	104	59	33	102	0.0	0.3	1.5	25.6	72.6	102	5.5	2.64
SD00A-100	0.5-1.0	CH	94	95	60	31	94	0.0	0.1	0.6	17.4	81.9	95	5.8	2.68
SD00A-100	1.5-2.0	CH	105	106	71	44	105	0.0	0.0	0.0	3.1	96.9	105	4.8	2.79
SD00A-100	2.5-3.0	CH	95	96	65	37	95	0.0	0.0	0.2	1.1	98.8	95	4.4	2.80
SD00A-100	3.5-4.0	CH	104	105	98	59	104	0.0	0.0	0.1	1.4	98.5	104	7.2	2.76
SD00A-200	0.0-0.5	CH	164	170	104	65	162	0.0	0.0	0.1	6.1	93.8	162	10.1	2.64
SD00A-200	0.5-1.0	CH	118	130	79	48	114	0.0	0.0	0.4	8.9	90.7	114	7.1	2.67

Table 18
Summary of Sediment Geotechnical Data
Study Area 7; Jersey City, New Jersey

Boring Number	Depth Below Mudline (feet)	USCS Group Symbol	Average Natural Water Content (%)	Natural Water Content (%)	ATTERBERG LIMITS			GRADATION						Organic Content (%)	Specific Gravity of Solids
					Liquid Limit (%)	Plasticity Index (%)	Natural Water Content of Limit Sample (%)	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Natural Water Content of Gradation Sample (%)		
SD00A-200	1.5-2.0	CH	75	78	57	32	74	0.0	0.0	0.3	8.9	90.8	74	4.6	---
SD00A-200	2.5-3.0	CH	93	93	69	40	92	0.0	0.0	0.1	1.4	98.4	92	4.9	2.80
SD00A-200	3.5-4.0	CH	87	94	62	34	84	0.0	0.0	0.2	2.5	97.3	85	4.2	2.77
SD00B-005	0.0-0.5	SW	19	19	*	*	*	28.5	7.7	32.1	27.6	4.1	19	0.6	2.71
SD00B-005	0.5-1.0	SW-SM	24	24	*	*	*	19.4	10.3	32.4	31.0	6.9	24	1.4	2.79
SD00B-005	1.5-2.0	SM	23	23	18	2	23	16.1	1.4	12.2	36.9	33.3	23	1.2	2.70
SD00B-005	2.5-3.0	ML	35	36	28	5	35	0.0	0.4	0.3	19.8	79.4	34	2.5	2.70
SD00B-005	3.5-4.0	CH	83	83	74	43	83	0.0	0.1	1.0	5.0	93.8	83	4.9	2.67
SD00B-025	0.0-0.5	SP-SM	19	18	*	*	18	19.6	8.8	25.3	37.6	8.7	19	0.9	---
SD00B-025	0.5-1.0	SM	20	21	25	6	21	3.5	5.3	14.9	31.5	44.9	19	1.6	2.75
SD00B-025	1.5-2.0	CL	30	31	29	8	31	0.0	0.1	0.9	15.2	83.8	29	1.7	2.72
SD00B-025	2.5-3.0	CH	103	101	81	49	101	0.0	0.1	0.5	2.0	97.4	104	5.3	2.71
SD00B-025	3.5-4.0	CH	85	86	73	44	86	0.0	0.0	0.4	1.7	98.0	84	4.5	2.70
SD00B-050	0.0-0.5	SP-SC	68	69	54	28	69	25.3	2.3	18.5	43.3	10.6	66	3.4	2.70
SD00B-050	0.5-1.0	CH	70	71	60	34	71	0.5	0.6	3.3	6.5	89.2	68	4.0	2.80
SD00B-050	1.5-2.0	CL	34	38	49	26	38	0.0	0.0	0.7	7.7	91.7	31	2.1	2.78
SD00B-050	2.5-3.0	ML	30	29	24	3	29	0.1	0.1	1.8	21.3	76.7	32	1.3	2.77
SD00B-050	3.5-4.0	SM	28	29	*	*	29	0.0	0.1	17.6	57.8	24.5	28	1.8	2.68
SD00B-100	0.0-0.5	SC	40	40	47	27	40	2.1	2.9	20.1	44.6	30.3	40	1.9	2.70
SD00B-100	0.5-1.0	CL	45	48	43	21	44	0.0	0.4	3.0	33.7	63.0	44	2.4	2.73
SD00B-100	1.5-2.0	SC	20	20	*	*	*	0.0	0.2	20.3	58.6	20.9	+	---	---
SD00B-100	2.5-3.0	SP	22	22	*	*	*	0.0	0.1	16.8	79.2	3.8	+	---	2.66
SD00B-100	3.5-4.0	SP	11	11	*	*	*	0.5	1.3	21.2	75.2	1.8	+	---	---
SD00B-200	0.0-0.5	SM	26	27	23	4	26	11.9	2.0	16.8	42.6	26.7	26	1.3	2.71
SD00B-200	0.5-1.0	SC	52	55	40	20	49	0.1	0.8	6.7	52.4	40.1	+	3.0	2.72
SD00B-200	1.5-2.0	SM	34	35	*	*	*	0.0	0.1	9.4	71.3	19.3	34	2.0	2.71
SD00B-200	2.5-3.0	SC	51	52	40	18	50	0.0	0.0	2.0	54.0	43.9	50	3.1	2.70
SD00B-200	3.5-4.0	SC	48	49	35	11	47	0.0	0.1	1.1	52.2	46.6	47	3.6	2.72
SD00C-005	0.0-0.5	OH	141	141	100	59	141	0.0	0.0	0.0	1.8	98.2	+	---	2.28
SD00C-005	0.5-1.0	OH	171	160	129	73	183	0.0	0.0	0.0	0.4	99.6	+	1.6	2.65
SD00C-005	1.5-2.0	OH	148	144	119	64	152	0.0	0.0	0.0	1.8	98.2	+	7.2	2.61

Table 18
Summary of Sediment Geotechnical Data
Study Area 7; Jersey City, New Jersey

Boring Number	Depth Below Mudline (feet)	USCS Group Symbol	Average Natural Water Content (%)	Natural Water Content (%)	ATTERBERG LIMITS			GRADATION						Organic Content (%)	Specific Gravity of Solids
					Liquid Limit (%)	Plasticity Index (%)	Natural Water Content of Limit Sample (%)	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Natural Water Content of Gradation Sample (%)		
SD00C-005	2.5-3.0	OH	132	121	117	66	144	0.0	0.0	0.0	1.0	99.0	+	7.2	2.61
SD00C-005	3.5-4.0	OH	116	121	97	52	111	0.0	0.0	0.0	0.5	99.5	+	2.1	2.68
SD00C-025	0.0-0.5	CH	126	78	57	34	78	0.0	0.0	0.2	2.9	96.8	173	2.7	2.64
SD00C-025	0.5-1.0	OH	157	160	121	61	153	0.0	0.0	0.0	3.1	96.9	+	6.6	2.61
SD00C-025	1.5-2.0	OH	141	138	113	61	143	0.0	0.0	0.0	1.1	98.9	+	6.6	2.62
SD00C-025	2.5-3.0	OH	142	142	112	62	142	0.0	0.0	0.0	1.4	98.6	+	7.5	2.65
SD00C-025	3.5-4.0	OH	131	125	109	57	136	0.0	0.0	0.0	1.0	99.0	+	5.2	2.72
SD00C-050	0.0-0.5	OH	137	137	87	46	137	0.0	0.0	0.7	12.6	86.7	138	2.2	2.60
SD00C-050	0.5-1.0	OH	124	127	94	50	121	0.6	1.8	6.9	9.7	80.9	+	6.5	2.70
SD00C-050	1.5-2.0	OH	137	131	102	56	142	0.0	0.0	0.0	3.2	96.8	+	6.3	2.61
SD00C-050	2.5-3.0	OH	105	100	84	39	110	0.7	0.4	1.8	13.7	83.3	+	5.0	2.76
SD00C-050	3.5-4.0	OH	74	75	63	27	74	0.0	0.5	0.6	12.1	86.8	+	4.4	2.66
SD00C-100	0.0-2.0	CH	84	84	74	41	84	0.0	0.0	0.8	27.2	72.1	+	---	2.65
SD00C-100	0.0-0.5	CL	64	64	42	17	64	0.1	0.2	1.3	47.8	50.5	64	1.4	2.72
SD00C-100	0.5-1.0	SC	47	46	33	10	48	0.0	0.2	5.4	63.0	31.4	+	2.5	2.60
SD00C-100	1.5-2.0	CH	59	66	56	29	52	0.0	0.1	1.1	42.6	56.2	+	---	2.65
SD00C-100	2.5-3.0	CH	81	80	68	35	82	0.0	0.0	0.0	2.3	97.7	+	4.9	2.66
SD00C-100	3.5-4.0	OH	83	84	68	34	82	0.5	0.8	4.1	17.7	77.0	+	---	2.64
SD00C-200	0.0-0.5	SC	35	35	*	*	*	0.5	0.6	22.4	52.5	24.1	+	1.6	2.67
SD00C-200	0.5-1.0	SM	25	25	---	---	---	0.0	0.1	19.9	61.2	18.8	+	1.1	2.68
SD00C-200	1.5-2.0	SC	63	68	59	32	57	0.0	0.8	12.2	38.1	48.9	+	1.4	2.67
SD00C-200	2.5-3.0	OH	129	129	111	57	129	0.0	0.0	0.0	6.9	93.1	+	4.2	2.55
SD00C-200	3.5-4.0	OH	112	112	110	59	112	0.0	0.0	0.3	5.7	94.1	+	3.5	2.58
SD02E-025	0.0-0.5	OH	139	139	102	53	139	0.0	0.0	0.0	0.9	99.1	+	6.4	2.63
SD02E-025	0.5-1.0	OH	123	123	94	43	123	3.3	1.7	4.9	10.7	79.4	+	8.1	2.63
SD02E-025	1.5-2.0	OH	83	80	78	39	86	0.0	0.4	1.1	4.0	94.5	+	5.4	2.70
SD02E-025	2.5-3.0	OH	76	78	74	39	73	0.0	0.0	0.0	7.7	92.3	+	6.4	2.63
SD02E-025	3.5-4.0	CH	56	57	61	36	56	0.0	0.0	0.0	0.2	99.8	+	4.1	2.70
SD02E-075	0.0-2.0	OH	120	120	91	38	120	0.0	0.0	0.2	10.2	89.7	+	---	2.65
SD02E-075	0.0-0.5	CH	141	141	95	59	141	0.3	0.1	0.4	4.7	94.5	141	1.8	2.65
SD02E-075	0.5-1.0	OH	129	127	111	63	130	0.0	0.0	0.3	4.4	95.3	+	1.3	2.60

Table 18
Summary of Sediment Geotechnical Data
Study Area 7; Jersey City, New Jersey

Boring Number	Depth Below Mudline (feet)	USCS Group Symbol	Average Natural Water Content (%)	Natural Water Content (%)	ATTERBERG LIMITS			GRADATION						Organic Content (%)	Specific Gravity of Solids
					Liquid Limit (%)	Plasticity Index (%)	Natural Water Content of Limit Sample (%)	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Natural Water Content of Gradation Sample (%)		
SD02E-075	1.5-2.0	CH	126	121	108	66	131	0.0	0.0	0.0	3.4	96.6	+	1.8	2.67
SD02E-075	2.5-3.0	OH	115	113	108	58	118	0.0	0.0	0.0	7.6	92.4	+	1.6	2.61
SD02E-075	3.5-4.0	OH	118	117	103	51	118	0.0	0.0	0.1	7.7	92.1	+	2.8	2.63
SD02W-200	0.0-0.5	SW-SM	18	---	---	---	---	1.2	3.5	43.4	40.8	11.1	18	0.3	2.78
SD02W-200	0.5-1.0	SP	11	11	---	---	---	1.9	3.9	57.6	31.9	4.8	+	---	---
SD03E-025	0.0-0.5	CH	44	---	---	---	---	0.1	0.7	2.2	9.1	87.9	44	0.9	2.73
SD03E-025	0.5-1.0	OH	77	79	67	24	74	0.0	0.0	0.0	0.4	99.6	+	4.5	2.69
SD03E-025	1.5-2.0	OH	97	97	79	35	97	0.0	0.0	0.0	1.0	99.0	+	5.1	2.70
SD03E-025	2.5-3.0	CH	67	67	64	33	67	0.9	0.5	0.9	19.9	77.8	+	4.1	2.72
SD03E-025	3.8-4.3	SM	26	26	*	*	*	0.0	0.1	10.8	74.5	14.6	+	1.0	2.64
SD03E-050	4.0-4.5	CH	107	---	77	44	---	0.0	0.2	1.3	29.3	69.3	107	---	---
SD03E-075	0.0-0.5	OH	---	---	---	---	---	0.0	0.0	1.0	10.5	88.5	+	4.7	2.67
SD03E-075	0.5-1.0	OH	86	86	---	---	---	0.0	0.0	0.5	1.8	97.7	+	4.6	2.73
SD03E-075	1.5-2.0	OH	81	81	---	---	---	0.0	0.0	0.6	2.0	97.4	+	5.3	2.67
SD03E-075	2.5-3.0	SP-SM	20	20	*	*	*	0.0	0.1	9.8	80.9	9.2	+	0.5	2.68
SD03E-075	3.5-4.0	SP	20	20	*	*	*	2.2	1.0	9.8	85.6	1.3	+	0.3	---
SD03W-200	0.0-0.5	SM	34	34	*	*	*	11.0	0.9	20.1	52.3	15.6	+	---	2.66
SD03W-200	0.5-1.0	SP-SM	38	38	*	*	*	2.2	1.6	28.8	54.6	12.8	+	---	2.69
SD03W-200	1.5-2.0	SP-SM	16	16	*	*	*	3.8	6.5	51.0	33.4	5.4	+	---	2.64
SD03W-200	2.5-3.0	SP-SM	15	15	*	*	*	2.7	4.2	29.6	54.7	8.9	+	---	2.66
SD03W-200	3.5-4.0	SP	16	16	*	*	*	8.3	1.4	46.7	42.6	0.9	+	---	---
SD13E-005	0.0-0.5	SM	69	---	*	*	*	23.5	16.2	9.6	8.1	42.5	69	3.2	2.51
SD13E-005	0.5-1.0	CH	131	134	89	51	134	9.8	2.2	2.4	15.1	70.6	127	2.0	2.48
SD13E-005	1.5-2.0	OH	99	99	66	33	99	1.5	1.8	6.1	19.6	71.0	99	1.3	2.62
SD13E-005	2.5-3.0	CH	85	81	72	39	89	0.0	0.0	0.3	0.3	99.4	+	---	2.70
SD13E-005	3.5-4.0	CH	100	102	88	52	98	0.0	0.0	1.0	1.7	97.4	+	---	2.72
SD13E-010	10.5-11.0	SP-SM	14	---	*	*	*	12.4	8.4	35.0	36.9	7.3	14	---	---
SD13E-010	14.0-15.0	OL	19	+	*	*	*	0.0	0.1	0.4	14.0	85.4	19	---	---
SD13E-010	8.0-9.0	SP	21	+	*	*	*	0.4	0.6	9.9	89.1	0.0	21	---	---
SD13E-050	0.0-2.0	CH	67	75	55	30	59	0.0	0.0	0.0	1.0	99.0	+	---	2.74
SD13E-050	0.0-0.5	SC	53	53	32	10	53	0.3	0.6	5.7	52.8	40.6	52	1.6	2.64

Table 18
Summary of Sediment Geotechnical Data
Study Area 7; Jersey City, New Jersey

Boring Number	Depth Below Mudline (feet)	USCS Group Symbol	Average Natural Water Content (%)	Natural Water Content (%)	ATTERBERG LIMITS			GRADATION						Organic Content (%)	Specific Gravity of Solids
					Liquid Limit (%)	Plasticity Index (%)	Natural Water Content of Limit Sample (%)	% Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines	Natural Water Content of Gradation Sample (%)		
SD13E-050	0.5-1.0	CH	59	59	57	29	59	0.0	1.5	0.0	1.8	96.7	+	3.1	2.77
SD13E-050	1.5-2.0	OH	85	83	81	42	88	0.0	0.0	0.0	1.3	98.7	+	5.5	2.74
SD13E-050	2.5-3.0	OH	92	91	85	46	92	0.0	0.0	0.0	2.5	97.5	+	5.5	2.63
SD13E-050	3.5-4.0	OH	78	82	76	40	74	0.0	0.0	0.0	0.8	99.2	+	4.5	2.75
SD13E-100	0.0-0.5	CH	102	79	107	68	174	0.0	0.6	8.8	37.9	52.7	79	2.1	2.61
SD13E-100	0.5-1.0	CH	82	74	58	31	89	1.3	0.3	3.2	17.6	77.5	+	4.1	2.63
SD13E-100	1.5-2.0	CH	93	92	81	47	94	0.0	0.0	0.0	2.1	97.9	+	4.6	2.93
SD13E-100	2.5-3.0	OH	96	100	95	53	91	0.0	0.0	0.0	1.1	98.9	+	4.9	2.68
SD13E-100	3.5-4.0	CH	118	106	107	70	130	0.0	0.1	1.1	9.0	89.8	+	6.5	2.58
SD13W-200	0.0-0.5	SM	21	21	*	*	*	0.3	0.9	23.9	59.6	15.3	+	---	2.68
SD13W-200	0.5-1.0	SM	17	17	*	*	*	1.5	2.8	25.1	52.9	17.7	+	---	2.70
SD13W-200	1.5-2.0	SC	14	14	*	*	*	10.1	0.7	18.3	54.5	16.4	+	---	2.68
SD13W-200	2.5-3.0	SP-SC	13	13	*	*	*	0.0	0.3	19.0	71.7	9.0	+	0.3	2.65
SD13W-200	3.5-4.0	SP-SC	15	15	*	*	*	4.1	1.3	26.7	58.9	9.0	+	---	2.72

Notes:
All tests summarized were performed in a Mueser Rutledge Consulting Engineers laboratory.
"Average natural water content" is a weighted average of all material tested.
* = Soil non plastic.
+ = Natural water content not taken.
--- = Not enough soil in jar to run test.

Table 19
Standard Oedometer and Permeability Testing Results
Study Area 7: Jersey City, New Jersey

Boring Number	Sample Number	Elevation (feet)	USCS Group Symbol	Liquid Limit (%)	Plasticity Limit (%)	Plasticity Index (%)	Natural Water Content (%)	Liquidity Index (%)	Specific Gravity	Initial Water Content (%)	Final Water Content (%)	Initial Degree of Saturation (%)	Final Degree of Saturation (%)	Initial Void Ratio	Final Void Ratio	Estimated Preconsolidation Stress (TSF)	Existing Overburden Stress (TSF)	Compression Index	Swelling Index	Permeability (cm/sec)
GEO-2	1U	-6.5	OH	70	34	36	79.9	1.26	2.70	100.4	66.9	98.4	100.2	2.751	1.901	0.110	0.01	0.980	0.170	---
GEO-2	2U	-8.5	OH	81	41	40	82.1	1.03	2.70	84.9	48.7	99.2	100.7	2.315	1.308	0.190	0.02	0.650	0.135	---
GEO-4	1U	-8.6	OH	78	37	41	96.1	1.44	2.74	123.7	73.5	98.3	98.9	3.445	2.035	0.095	0.01	1.560	0.175	---
GEO-5	1U	-11.6	OH	65	34	31	82.5	1.58	2.79	97.4	74.0	98.2	96.5	2.765	2.139	0.180	0.01	1.348	0.152	3.42E-07
GEO-7	1U	-7.7	OH	72	34	38	76.1	1.11	2.68	94.4	65.8	96.6	96.9	2.618	1.820	0.190	0.01	1.090	0.142	2.38E-06
GEO-8	1U	-10.4	OH	78	62	16	167	6.50	2.47	153.2	93.5	97.5	96.2	3.886	2.404	0.190	0.01	1.550	0.195	4.39E-06
GEO-8	2U	-10.4	OH	87	37	50	92.0	1.11	2.60	64.3	47.0	100.5	102.1	1.663	1.197	0.395	0.02	0.570	0.026	2.01E-07

Notes:
Elevation relative to NGVD29
USCS = Unified Soils Classification System
TSF = Tons per square foot

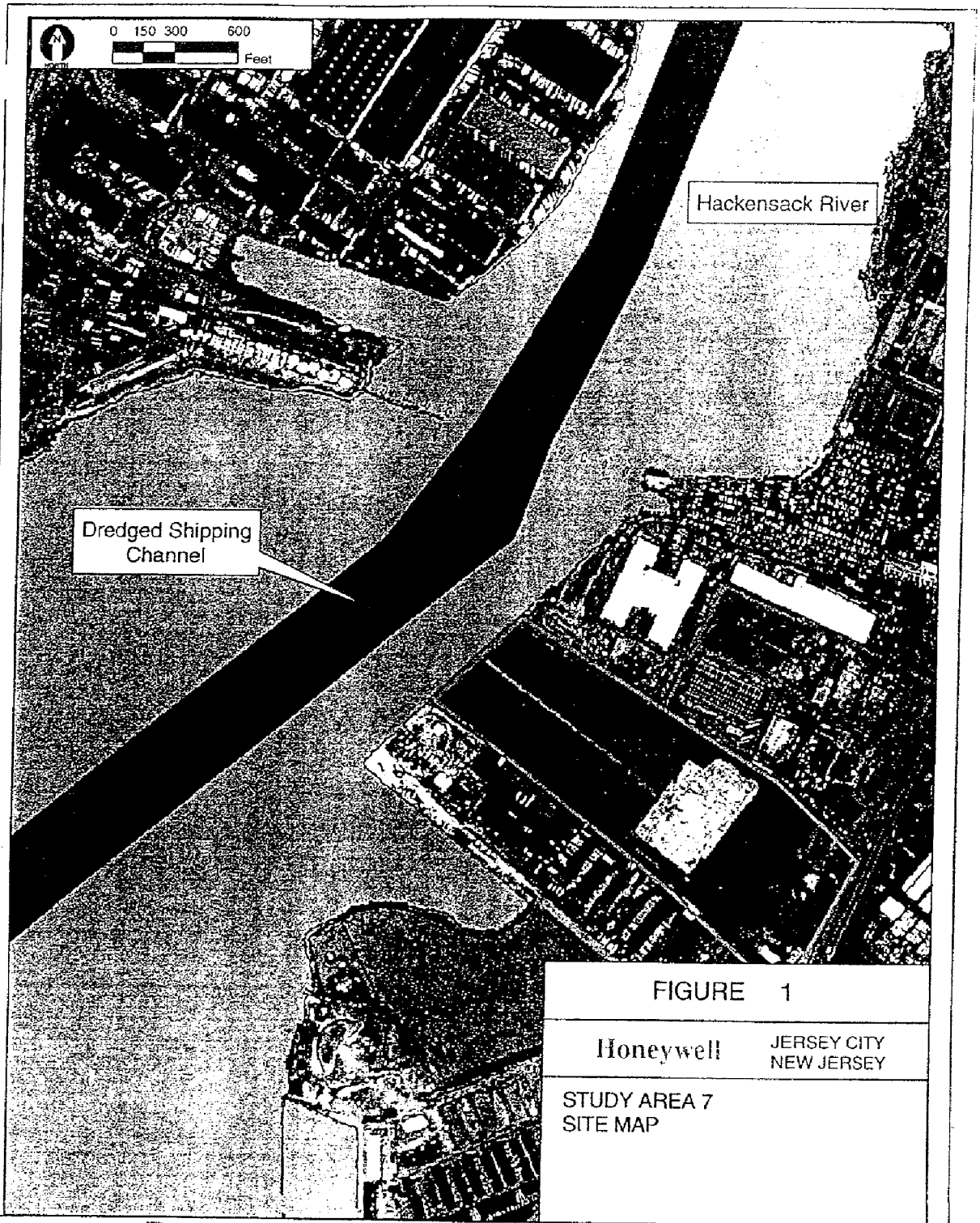

FIGURE 1

Honeywell

JERSEY CITY
NEW JERSEY

STUDY AREA 7
SITE MAP

PARSONS | Mueser Rutledge Consulting Engineers | ENVIRON | OCEAN SURVEYS, INC. | MEC | Limno-Tech, Inc.

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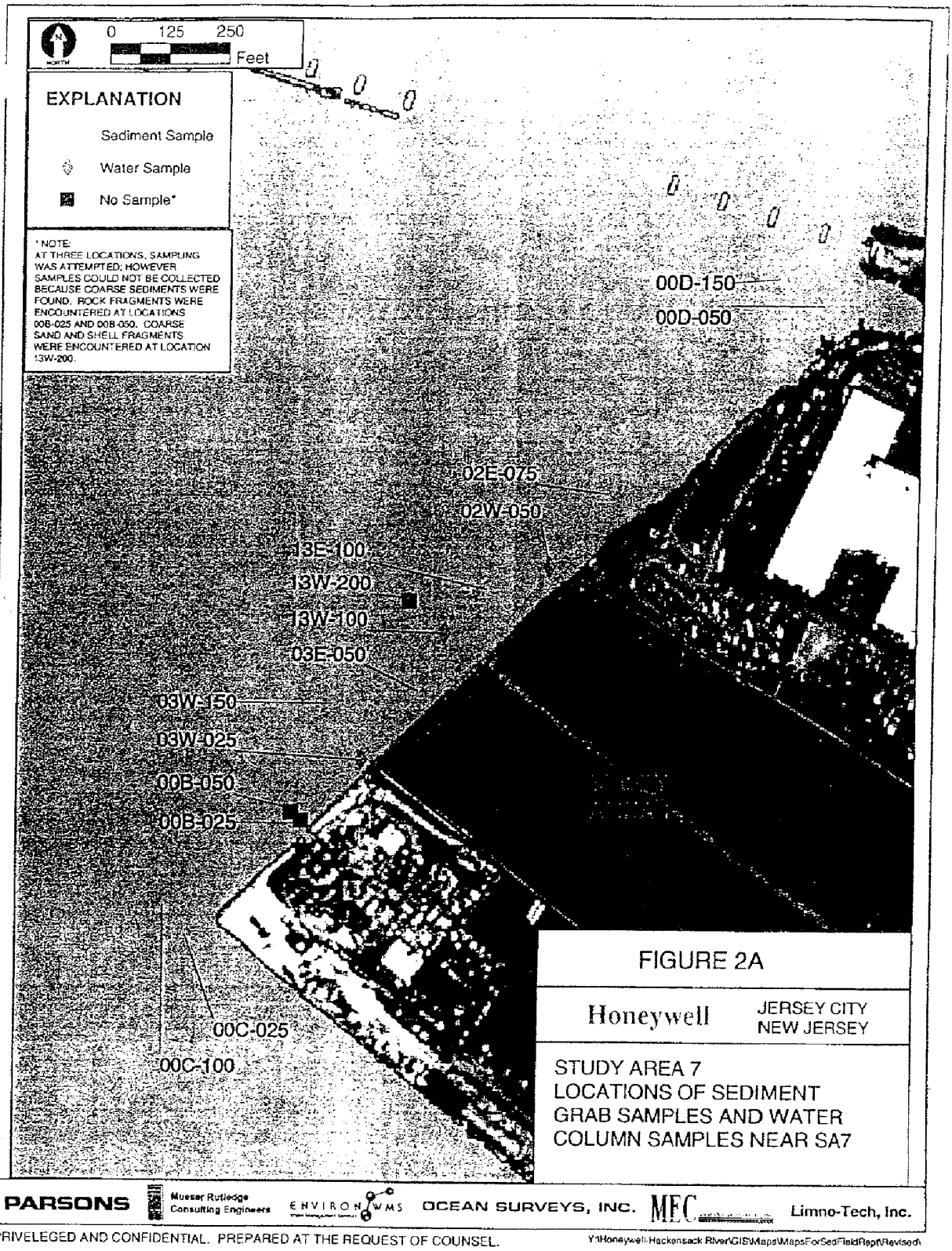

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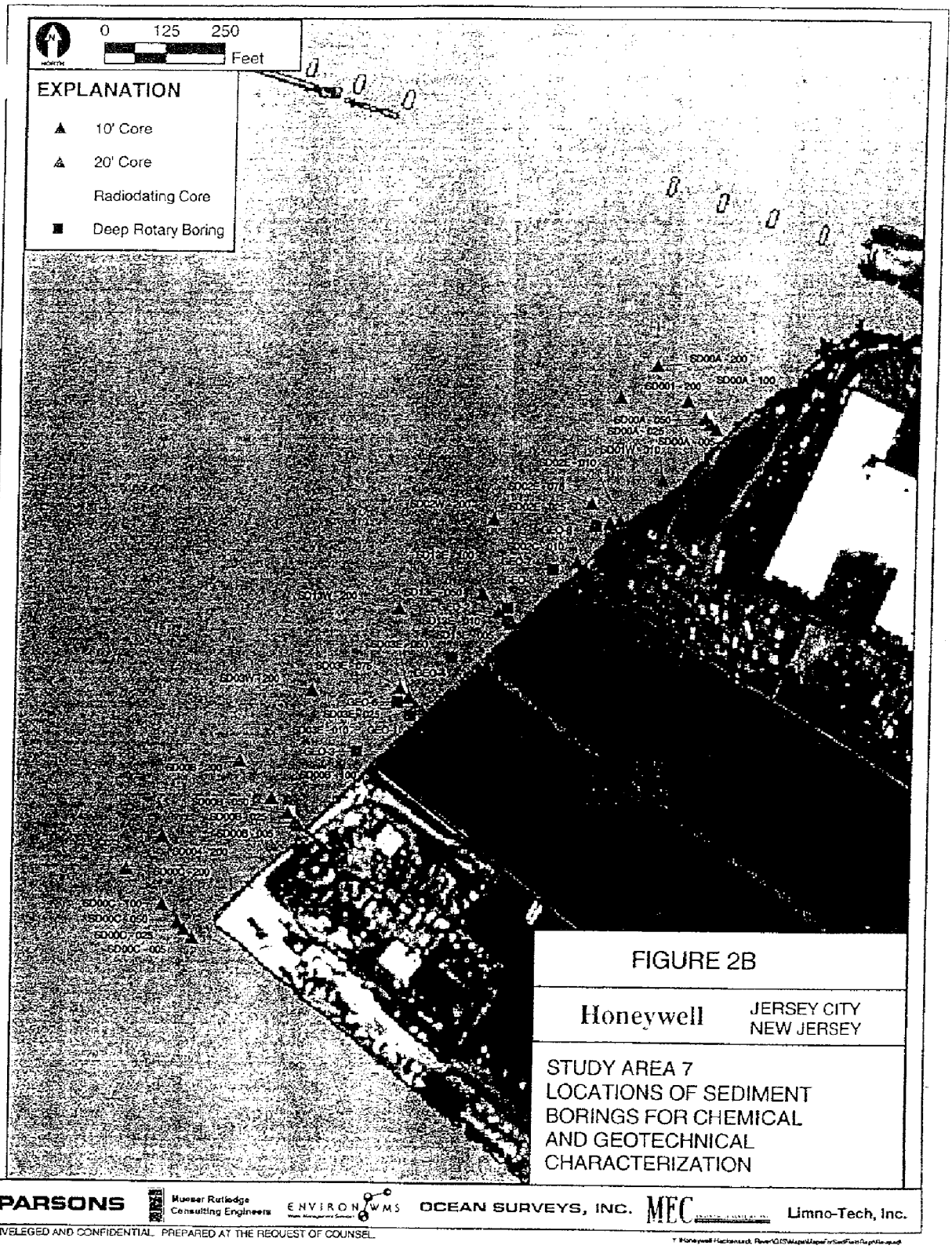

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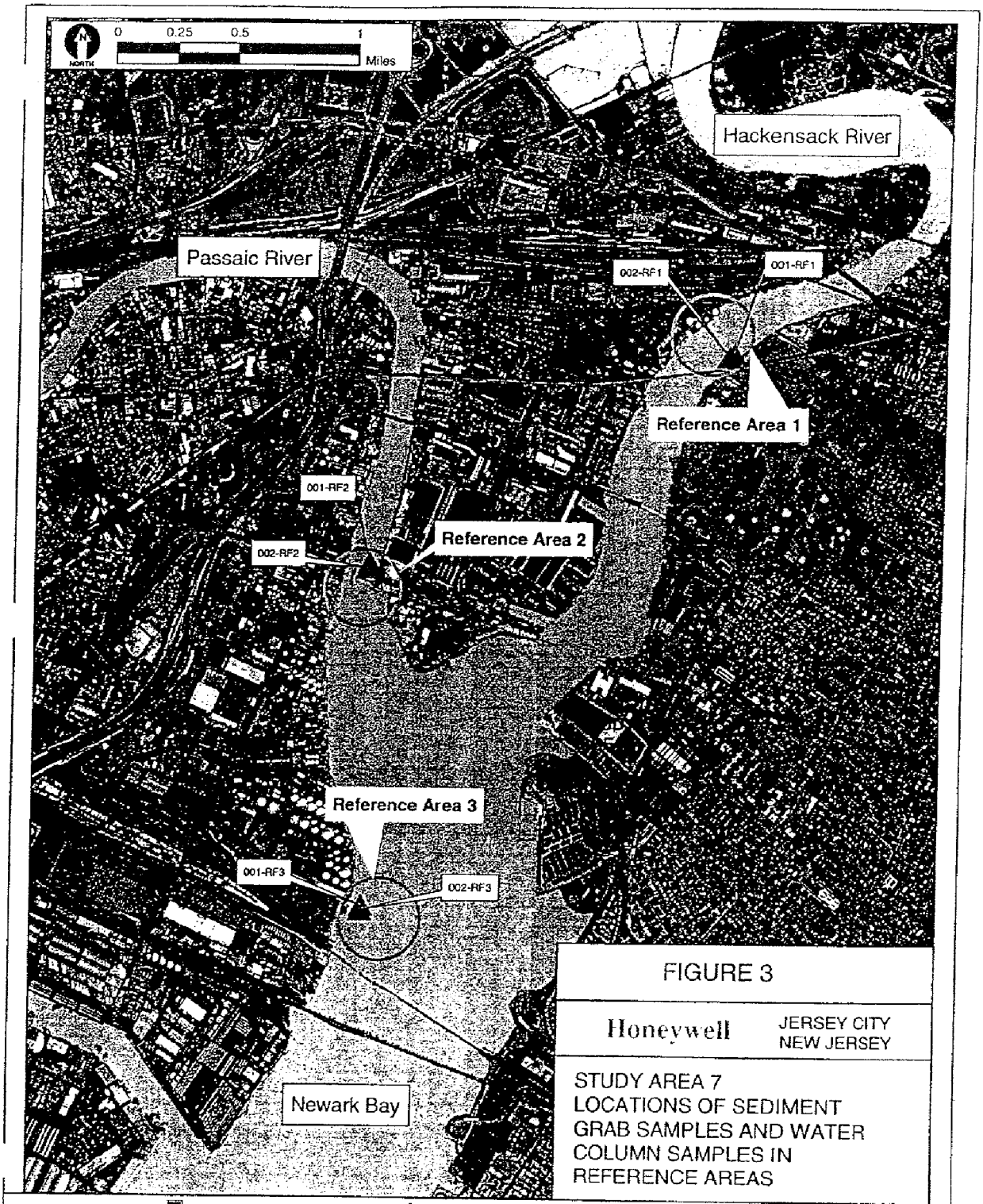


FIGURE 3

Honeywell JERSEY CITY NEW JERSEY

STUDY AREA 7
LOCATIONS OF SEDIMENT GRAB SAMPLES AND WATER COLUMN SAMPLES IN REFERENCE AREAS

PARSONS | Maser Rutledge Consulting Engineers | ENVIRON | WMS | OCEAN SURVEYS, INC. | MEC | Limno-Tech, Inc.

PRIVELEGED AND CONFIDENTIAL PREPARED AT THE REQUEST OF COUNSEL

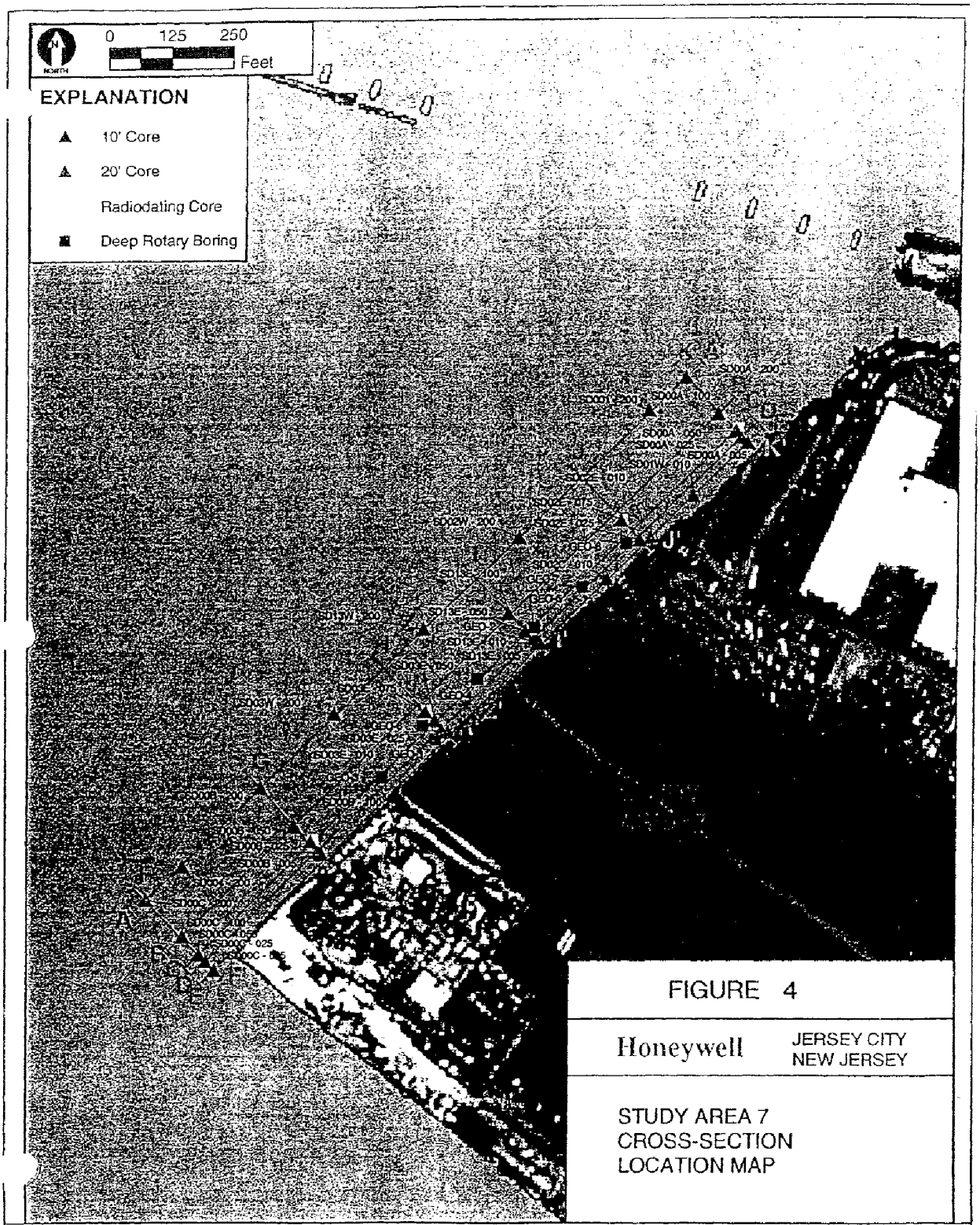


FIGURE 4

Honeywell

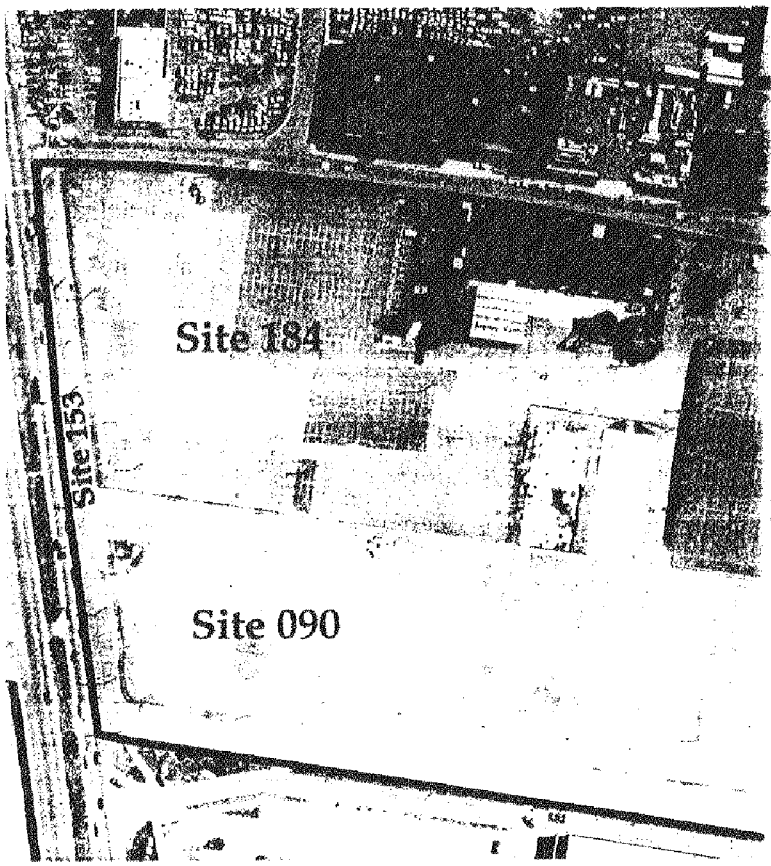
JERSEY CITY
NEW JERSEY

STUDY AREA 7
CROSS-SECTION
LOCATION MAP

PARSONS | Maser Rutledge Consulting Engineers | ENVIRON | OCEAN SURVEYS, INC. | MEC | Limno-Tech, Inc.

PRIVILEGED AND CONFIDENTIAL. PREPARED AT THE REQUEST OF COUNSEL.

SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT
REMEDIAL ACTION SELECTION REPORT
REMEDIAL ACTION WORK PLAN



STUDY AREA 5

NEW JERSEY CITY UNIVERSITY PROPERTIES

JERSEY CITY, NEW JERSEY

Volume 1: Text, Tables, Figures

JUNE 2007

Honeywell

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SUPPLEMENTAL REMEDIAL INVESTIGATION REPORT/ REMEDIAL ACTION SELECTION REPORT/ REMEDIAL ACTION WORK PLAN

STUDY AREA 5
NEW JERSEY CITY UNIVERSITY PROPERTIES

JERSEY CITY, NJ

Prepared for:

Honeywell

Honeywell
101 Columbia Road
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Prepared by:

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MACTEC Engineering and Consulting, Inc.
200 American Metro Boulevard, Suite 113
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JUNE 2007

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EXECUTIVE SUMMARY

Honeywell International Inc. (Honeywell) has completed an evaluation of remedial action alternatives to address chromium contamination for the portion of Study Area 5 proposed for redevelopment by New Jersey City University (NJCU or University). This portion of Study Area 5 is comprised of the following sites:

Site Name	NJDEP Site No.
Former Baldwin Steel	90
Former M.I. Holdings	184
Portion of the Former Morris Canal Site	153

These sites are collectively referred to herein as the "Site", and encompass a total of approximately 14 acres located in Jersey City, Hudson County, New Jersey (see Illustration 1).

This combined Supplemental Remedial Investigation Report (SRIR), Remedial Action Selection Report (RASR), and Remedial Action Work Plan (RAWP) reflects Honeywell's concerted efforts to produce an integrated remedial approach to the New Jersey City University site (a portion of Study Area 5), developed in close cooperation with and supported by the University. The approach selects a remedial technology based on the specific uses anticipated for the chromium impacted portions of the Site, consistent with the guidance in the Department's recently issued Chromium Directive (Policy). These uses fall into both the Residential and Commercial categories that are discussed in the Policy. Honeywell and NJCU have met numerous times to coordinate the remediation with the redevelopment, and have recently formed a joint team to continue this coordination through the life of the project.

This cooperative effort has resulted in a comprehensive approach to chromium remediation. This RAWP applies a combination of remedial technologies that will fully protect human health and the environment and effectively integrate the remediation with the redevelopment. This proactive approach 1) is encouraged by New Jersey's Brownfields Legislation, 2) fully meets both the spirit and intent of the Policy, and 3) complies with the Technical Requirements for Site Remediation. We strongly believe that this approach is a model that demonstrates what can be achieved under the new Policy.

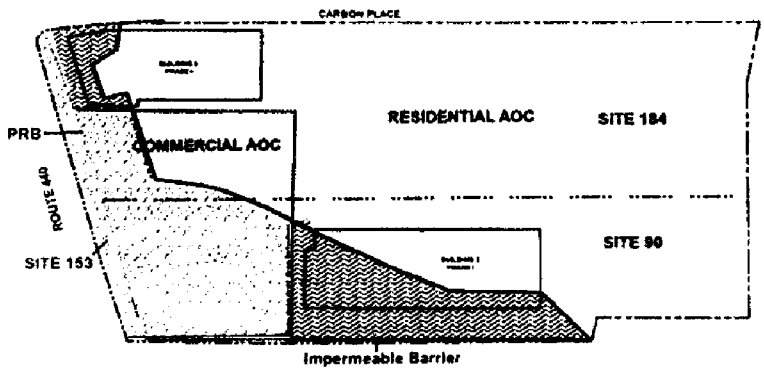

Illustration 1. NJCU Property Layout

Working with the property owner, Honeywell has developed a viable and protective remedy for contamination associated with both chromite ore processing residue (COPR) and sodium chromate. The COPR was likely used as fill on the Site and the sodium chromate likely resulted from housekeeping practices associated with the adjacent, former Mutual Chemical site. The remedy supports the aggressive Site redevelopment plan and schedule envisioned by NJCU.

The remedial approach presented herein was developed to align remediation solutions with NJCU's plans for the property and is fully protective of human health and the environment. NJCU's redevelopment of the Site will result in both residential and commercial uses. Honeywell, following the guidance of the Policy and Technical Requirements for Site Remediation, has selected remedies that support the site uses. For residential uses, defined by the Residential Area of Concern (RAOC), excavation will be applied. For commercial uses, similarly defined by the Commercial Area of Concern (CAOC), both state of the art engineering controls and an innovative reactive wall (or permeable reactive barrier) will be applied (see Illustration 1). The combination of remedial approaches described in this document will ensure that:

- Chromium-impacted soil will be excavated in the RAOC;
- Chromium-impacted soil will be effectively isolated to prevent direct contact in the CAOC;
- Impacted groundwater will be addressed by focused source soil removal/treatment and in-situ permeable reactive barrier (PRB) treatment remedy;
- Prevention of re-contamination of excavation areas; and,
- The Site will be restored quickly to productive use as part of a major redevelopment project benefiting the surrounding community.

Honeywell supports the planned Site redevelopment because:

- It protects human health and the environment;
- Quickly returns the Site to productive use;
- Is consistent with the NJDEP's Policy; and,
- Meets the objectives of the New Jersey Brownfields Legislation that encourages cleanup and reuse of sites impacted by historical contamination.

NJCU fully supports Honeywell's approach and is ready to proceed with the Site development pending review and approval of this RAWP by the NJDEP. NJCU intends to request funding for their redevelopment through the Environmental Infrastructure Trust Fund. Their goal is to submit an application to the Trust Fund in August, 2007 and that funding application requires an approved RAWP.

The components of the proposed remedial actions include:

- Excavation of soils containing hexavalent chromium above 20 mg/kg to a depth of 20 feet (20/20) in the Residential AOC. The Residential AOC extends to the nearest physical feature of the adjoining Commercial AOC.

- Additional focused soil excavation in the Commercial AOC to provide clean utility corridors and to coordinate the proposed capping system with proposed Site development features along Route 440.

- Engineering controls (cap) for the Commercial AOC where soils exceed 20 mg/kg hexavalent chromium.

- Installation of an in-situ permeable reactive barrier (PRB) using a biological medium for the treatment of residual impacted groundwater across the western portion of the Site.

- In-situ groundwater treatment system to reduce source concentrations on the adjacent Home Depot site, which is contributing to the deep aquifer contamination.

- Impermeable barrier and backfill liner systems to prevent recontamination of excavated areas from potential upgradient sources.

- Institutional Controls (Deed Notice) for soils remaining with hexavalent chromium above 20 mg/kg.

- Institutional Controls for groundwater (Classification Exception Area [CEA]), if necessary.

The remedial approach described herein goes beyond what is required in the Policy for the RAOC by providing for full excavation to 20/20. Treatment of the chromium impacted soils is allowed under the Policy, but Honeywell has chosen to excavate all of the RAOC to 20/20, primarily to meet NJCU's schedule requirements. The remedial approach also provides an added measure of protection for the CAOC by including a redundant groundwater protection system as a "belt and suspenders" approach. In addition to the PRB, Honeywell will be installing piping that will enable a pump and treat system to be activated, if necessary.

The NJCU West Side Campus Expansion will serve to broaden the physical resources of the University and enable them to provide expanded learning opportunities for New Jersey residents, primarily from Hudson County. It will also provide attractive retail outlets and market rate housing that will help to continue the revitalization of Jersey City's west side. Honeywell's remediation plan will enable this redevelopment to move forward quickly and with a fully protective remedy.

1.0 INTRODUCTION

1.1 PURPOSE AND SCOPE

This combined Supplemental Remedial Investigation Report (SRIR), Remedial Action Selection Report (RASR) and Remedial Action Work Plan (RAWP) was prepared by MACTEC Engineering and Consulting, Inc. (MACTEC) on behalf of Honeywell International Inc. (Honeywell) to address chromium contamination on the portion of Study Area 5 (SA-5) proposed for redevelopment by New Jersey City University (NJCU). This portion of SA-5 is comprised of sites designated as Baldwin Steel (NJDEP Site 090), M.I. Holdings (NJDEP Site 184), and a portion of the Former Morris Canal Site (NJDEP Site 153) abutting Sites 090 and 184 (collectively referred to herein as the "Site"). This document addresses remedial investigation (RI) requirements and proposes remedial actions for the Site in accordance with the requirements of the Administrative Consent Order (ACO) and the New Jersey Technical Requirements for Site Remediation (Technical Requirements) (NJDEP, 2003).

Honeywell (formerly Allied Signal, Inc.) entered into an ACO with the New Jersey Department of Environmental Protection (NJDEP) on June 17, 1993, to investigate and, if necessary, remediate chromium contamination at twenty-one (21) Sites referred to by the NJDEP as the Hudson County Chromium Sites. The Sites are located in Jersey City, New Jersey, and are grouped into seven (7) Study Areas. SA- 5 is comprised of five (5) contiguous Sites identified as follows:

- Ryerson Steel (Site 117)
- Baldwin Steel (Site 090)
- MI Holdings (Site 184)
- Route 440 Vehicle Corporation (Site 079)
- Former Morris Canal Site (Site 153)

A Remedial Action (RA) for soils has already been completed at the former Ryerson Steel site (Site 117 but now commonly referred to as the Home Depot site). This action was part of the redevelopment of the property as a retail shopping center. Previous investigations and remedial actions have also been conducted on portions of Site 184 (MI Holdings). Previous investigation and remedial action activities on the eastern portion of Site 184 were reported to NJDEP on December 1, 1992, and additional Site characterization and remediation was completed in the western portion of Site 184, including excavation and off-site disposal of contaminated soils. These activities were documented in a report prepared by Woodward-Clyde Consultants dated August 30, 1993.

RI activities have been substantially completed on the remaining Sites comprising SA-5. A report entitled Draft Remedial Investigation Report (RIR) - Study Area 5, dated November 1999, prepared by TetraTech, Inc., documented the results of previous RI field activities on the five (5) sites comprising SA-5 (TetraTech, 1999). The NJDEP provided comments on the RIR in a letter dated October 9, 2001, and Honeywell provided responses to the NJDEP review comments in a letter dated December 19, 2001. An RIR Addendum with results of additional soil sampling performed on Site 090 (Baldwin Steel) and Site 184 (MI Holdings) was submitted to the NJDEP in October 2004 (TetraTech, 2004).

A Remedial Investigation Work Plan (RIWP) Addendum for Shallow Groundwater was prepared by MACTEC and submitted to the NJDEP in March 2005. The results of the additional RI field activities are presented in this report. The additional RI activities were conducted to address NJDEP requirements for shallow groundwater in response to the NJDEP comment letter dated December 21, 2004 on the RIR

Addendum, and subsequent discussions including a meeting held on February 3, 2005 between representatives of Honeywell and the NJDEP. Honeywell provided responses to the NJDEP comments on the RIR Addendum in a letter dated February 15, 2005. Prior to field mobilization for the additional RI activities in April 2005, a conference call was held between representatives of Honeywell and the NJDEP to discuss the proposed supplemental field activities. NJDEP provided preliminary verbal comments on the RIWP during the conference call on April 8, 2005, and subsequently provided written comments in a letter dated June 3, 2005. Honeywell transmitted a letter dated July 1, 2005, with responses to the NJDEP review comments.

The RI has included a total of over 80 soil borings and analysis of over 700 samples for total and hexavalent chromium on the Site. Based on the RI soil data, the horizontal and vertical extent of hexavalent chromium above the most stringent NJDEP Soil Cleanup Criteria of 20 mg/kg has been characterized and delineated.

This RASR/RAWP presents an evaluation of remedial alternatives and selected remedial actions to address chromium contamination, to be implemented as part of the Site redevelopment activities. Working with NJCU, Honeywell has developed a viable and protective remedy to address contamination associated with the historical placement of chromium-containing fill at the Site. Currently, an interim remedial measure (IRM) consisting of pavement and existing floor slabs serve as a cap to prevent direct contact with contaminated soils. NJCU plans to redevelop the land into a mixed-use facility, referred to as the NJCU West Campus Development, consisting of student housing, retail, and other educational facilities. Under the current redevelopment plan, it is anticipated the existing pavement and building foundations will be removed, and a remedy to address chromium contamination will be implemented.

The remedial approach takes into consideration the recently issued Chromium Policy (NJDEP Memorandum dated 2/8/07) and NJCU's redevelopment plan, which includes residential and commercial uses. Honeywell, following the guidance of the Chromium Policy, has selected remedies that address the site uses. The components of the proposed remedial actions for chromium include:

- Pre-remediation activities including obtaining property access agreements; remedial design; and regulatory approvals including soil reuse plan approval (if necessary), soil erosion sediment control plan (SESCP) certification, and local construction permit approvals.

- Excavation of chromium-impacted soils in the Residential AOC (RAOC). Soils containing hexavalent chromium above 20 mg/kg in the RAOC will be excavated to a maximum depth of 20 feet. As a conservative measure, Honeywell has extended the RAOC out from the footprint of residential use buildings to the nearest physical feature of the adjoining commercial area (CAOC).

- Engineering controls for soils exceeding 20 mg/kg in the CAOC. The engineering controls include a capping barrier with impervious geo-membrane liner, geo-composite drainage layer, and minimum two feet clean soil cover, or minimum 1-foot clean soil and pavement cover.

- Additional focused soil excavation may be performed to provide clean utility corridors in connection with the proposed Site development and to coordinate the proposed capping system with proposed Site development features along Route 440. Soils excavated for utility corridors and grading for cap installation will be re-used by consolidation and capping on-site.

- Installation of an in-situ permeable reactive barrier (PRB) that will use biologically mediated reduction for treatment of hexavalent chromium. The PRB will run primarily along the western border of the Site.

- Implementation of an in-situ groundwater treatment system to address residual source material on the Home Depot property (Site 117), which is contributing to the deep groundwater chromium plume. An impermeable hydraulic barrier will be installed along the southern property line of the Site to hydraulically isolate remediated areas on the Site from "source area" groundwater on Home Depot.

- Installation of impermeable barrier and backfill liner systems to prevent recontamination of excavated areas from potential upgradient sources.

- Institutional Controls (Deed Notice) for soils above 20 mg/kg hexavalent chromium, including maintenance of existing engineering controls (e.g., concrete, pavement) and newly installed controls during the remedial action and Site redevelopment (e.g., engineered barrier, clean fill, paving).

- Post-remediation groundwater monitoring to evaluate chromium concentrations with respect to the NJDEP Groundwater Quality Standard (GWQS) of 70 micrograms per liter (ug/L), and Institutional Controls for groundwater (Classification Exception Area [CEA]), if necessary.

This RASR/RAWP addresses soils and shallow groundwater impacted by chromium contamination above applicable remediation criteria, and satisfies the Technical Requirements for Site Remediation while incorporating the objectives of New Jersey's Brownfields Program. While the NJCU final design and development work progresses, Honeywell will proceed with final engineering design activities. The remedy for soils takes into consideration the current NJDEP chromium policy and current redevelopment plans by NJCU. NJCU is in agreement with deed notice restrictions for the remedial approach in this RAWP.

The proposed remedial actions for the portion of Site 153 (Former Morris Canal) abutting Sites 090/184 (NJCU Property) include limited soil excavation as may be required for cap installation and for providing clean utility corridors to support the proposed Site development by NJCU. Honeywell has proposed to buy this portion of the former Morris Canal from the Bayonne Municipal Utilities Authority (BMUA), and anticipates successful completion of this purchase in the next several months. At that point, as the property owner, Honeywell would agree to deed notice and institutional controls for this property.

The RI data for the Site and data from the regional groundwater investigation being conducted under the oversight of a court-appointed Special Master for Study Area 7, demonstrate that shallow groundwater conditions at the Site are not a source of the groundwater impacts in the deep groundwater zone. Further investigations and remedial actions for the deep groundwater zone are being addressed under separate work plan(s) subject to review/approval by the Special Master for Study Area 7. The Final Groundwater Investigation Report (GIR), for the regional investigation, was submitted to the Special Master and NJDEP on February 2, 2007 (HydroQual, Inc., 2007).

Based on the Final GIR and additional data collected at Site 117 (adjacent to Site 090), an in-situ groundwater treatment system is proposed by Honeywell to address the residual source on Site 117 contributing to the regional groundwater contamination. The proposed groundwater treatment system is included with this RAWP for NJDEP review and approval.

1.2 REPORT ORGANIZATION

This RASR/RAWP has been prepared to meet the provisions specified in the New Jersey Technical Requirements for Site Remediation, N.J.A.C. 7:26E-5.2 and 6.2, and contains the following sections:

1. *Introduction.* This section contains background information and describes the report organization.

2. *Site Description.* This section contains information on Site location, history, soils, geology, hydrogeology, topography and surface water bodies, previous remedial investigations, and remedial actions.

3. *Summary of Remedial Investigation Activities.* This section contains a summary of RI soil and groundwater investigation results, including a summary of previous investigations and the supplemental RI activities completed during 2005.

4. *Remedial Action Selection Report.* This section identifies remediation objectives and includes information pertaining to remedial action selection pursuant to N.J.A.C 7:25E-5.2.

5. *Remedial Action Work Plan.* This section describes the work elements of the proposed remedial action pursuant to N.J.A.C 7:26E-6.2.

6. *Remedial Action Report.* This section describes the items to be included in a report documenting the completion of the remedial action activities.

7. *References.* This section presents a list of selected references used in preparing this document.

8. *List of Acronyms/Abbreviations.* This section includes a list of acronyms used in this document.

2.0 SITE DESCRIPTION

This section presents a Site description and background information for the portion of SA-5 that is the subject of this document: Baldwin Steel (Site 090), M.I. Holdings (Site 184), and the northern portion of the Former Morris Canal (Site 153) next to the Baldwin Steel and M.I. Holdings Sites. The property comprising Sites 090 and 184 is owned by NJCU. The portion of Site 153 abutting Sites 090 and 184 is owned by the City of Bayonne Municipal Utilities Authority (BMUA) and is in the process of being acquired by Honeywell.

2.1 SITE LOCATION

The Baldwin Steel (Site 090) and M.I. Holdings (Site 184) properties are located next to each other in the area between Route 440 and West Side Avenue (**Figures 1 and 2**). Surrounding land use is primarily industrial and commercial and includes the former Ryerson Steel Site (Site 117 or Home Depot site; currently occupied by a retail shopping center) located immediately south of Site 090 (Baldwin Steel); Route 440 Vehicle Corporation (Site 079; currently occupied by a car dealership) located north of Site 184 (M.I. Holdings) on the opposite side of Carbon Place; the Former Morris Canal (Site 153) located along the western boundary of Sites 090 and 184 along Route 440; and commercial areas on the opposite side of West Side Avenue to the east. Further details regarding the subject properties follow.

Baldwin Steel (Site 090)

The Baldwin Steel property is located at 500 Route 440, designated as Block 1286, Lots 5 and 6D on the Jersey City tax maps. The property encompasses approximately 6.8 acres, currently owned by NJCU, and contains the concrete floor slab of one large building previously used for steel fabrication and distribution.

The property consists of a rectangular parcel (approximately 1,000 feet long and about 300 feet wide) bordered on the north by M.I. Holdings (Site 184), on the east by an inactive rail spur line and property occupied by NJCU, on the south by a retail shopping center (Site 117; Former Ryerson Steel or Home Depot site), and on the west by the Former Morris Canal (Site 153) and Route 440. With the exception of paved parking areas bordering Route 440 and a paved corridor along the south side of the property (between the former Baldwin Steel building and aforementioned retail shopping center), the property is covered by the former building slab (estimated 650 feet long by 250 feet wide or 162,000 square feet).

The Baldwin Steel Site was previously used for storage, cutting and rolling of various types of steel (e.g., aluminized, galvanized, cold-rolled, etc.), typically used for fabrication into ductwork. Tractor trailers delivered raw materials via access from West Side Avenue and exited the facility at the western end onto Route 440. A rectangular office space was located at the rear of the plant and connected the plant to an irregularly-shaped storage building. The building was a large structure constructed of a concrete foundation, steel columns, steel and wooden trusses, and corrugated steel siding. The office and storage buildings were constructed of concrete foundations and brick. The office building was a one-story structure, while the storage building was two stories. No sub-grade floors or basements existed in the building structures, with the exception of press pits located beneath some of the heavy equipment used for cutting and rolling. It is believed that the buildings were constructed prior to 1930.

Site utilities include electrical service, water, sanitary sewer, storm sewer, and fuel oil lines. All utilities are located underground with the exception of the electrical lines, which include both overhead and underground lines. An underground water line which provides water to three hydrants on-Site is also

located along the roadway on the south side of the former Baldwin Steel building. Potable and non-potable water entered the former office/storage building and the plant via lines from West Side Avenue in the northeast corner of the property. The sanitary sewer line ran along the interior of the plant building and tied into a sanitary sewer line along Route 440.

The Baldwin Steel Site is surrounded by a chain-link fence ranging from four to eight feet in height. Access to the property is from three gates, one located at the rear of the facility which allows access from West Side Avenue and two located at the front of the property for access from Route 440. The entire property is either occupied by building floor slabs or is covered with paving. All areas on the site were paved as a result of remedial action upgrades during an Interim Remedial Measure (IRM) completed in 1990 by a contractor for Honeywell (formerly Allied Signal). The pavement on the east and south side (along the Former Ryerson Steel property boundary) of the building is uneven, possibly due to placement of underlying fill material in this area.

M.I. Holdings (Site 184)

The M.I. Holdings property is located southeast of the intersection of Carbon Place and Route 440, designated as Block 1286.5, Lots 1 & 2 on the Jersey City tax maps. The property encompasses approximately seven (7) acres and was formerly an active chemical manufacturing facility. The property is currently owned by NJCU and occupied by several buildings, paved parking lots and landscaped areas.

The M.I. Holdings Site is bordered by Carbon Place to the north, Route 440 to the west, Baldwin Steel (Site 090) to the south, and property occupied by NJCU to the east. The majority of the property is paved, with several small lawn areas and a chain-link fence around the perimeter of the property. The Site contains three (3) buildings and paved parking lot areas. In 1993, Woodward-Clyde Associates completed a remedial action at the Site, which included excavation of mercury/chromium-impacted soils, building demolition, and asphalt capping. The paved areas are in good condition, with no evidence of cracks or potholes leading to exposure to underlying fill soils. The property is surrounded by a chain link fence approximately 10-feet in height, with access to the property from several entrance gates along Carbon Place and from the eastern side of the property along West Side Avenue. Site physical features also include overhead utilities (electrical lines) and underground utilities (gas, water, and sewer lines).

Former Morris Canal Site (Site 153)

The Former Morris Canal site consists of a narrow strip of land located along the northbound lane of Route 440 between Carbon Place and Danforth Avenue, adjacent to former Ryerson Steel (Site 117), Baldwin Steel (Site 090), and M.I. Holdings (Site 184). The property comprising the Former Morris Canal is designated as Block 1289.5, Lot E, currently owned by the BMUA, is approximately 1,500 feet long by 20 feet wide, including about 700 feet adjacent to Sites 090 and 184. Utilities along the Former Morris Canal site include storm and sanitary sewer lines, electric, gas and water lines that provide service to the adjacent commercial and industrial sites. The portion of the Former Morris Canal abutting Sites 090 and 184 is paved and contains a 36-inch diameter sewer pipeline (force main) owned and operated by the BMUA; the pipeline is constructed of steel with concrete casing support, with the top of the pipeline situated just below the surface pavement. Honeywell has reached agreement with the BMUA regarding the purchase of the property comprising Site 153, and anticipates completion of the property transaction in the next several months.

2.2 SITE HISTORY

The operating history for the properties comprising the Site was documented in the Remedial Investigation Report (RIR) dated November 1999 (TetraTech, 1999). Site history for the Baldwin Steel and M.I. Holdings Sites are summarized below.

Baldwin Steel (Site 90)

The properties comprising the Baldwin Steel Site have been used for industrial purposes for approximately 100 years. The parcel designated as Block 1286, Lot 6D was deeded to the Mutual Chemical Company in April of 1895. This property was transferred to AlliedSignal (formerly Allied Chemical and Dye Company) in August 1955, to Ryerson Steel in 1966, and then to Baldwin Steel in 1970. During its industrial history, this parcel was used to support the production of sodium dichromate (Mutual Chemical), steel production (Ryerson Steel), or steel cutting and rolling (Ryerson and Baldwin Steel). During the period of AlliedSignal's ownership from 1955 to 1966, this parcel was a vacant lot. The adjacent lot, Block 1286, Lot 5, was transferred from John and Mary Winner to Ryerson Steel in August 1914, and then to Baldwin Steel in 1970. This parcel was used for either steel production, fabrication, or rolling and cutting of steel throughout its industrial history.

No detailed historical information regarding the placement of Chromium Ore Processing Residue (COPR) on this property is available. It is believed that chromite ore was stored on a portion of Lot 6D by the Mutual Chemical Company during approximately 60 years of operation.

M.I. Holdings (Site 184)

The M.I. Holdings Site was used by industrial or commercial enterprises for over 90 years. A portion of the property was deeded to the Chicago Railroad Equipment Company in 1899, and another portion was leased to Kewanee Manufacturing through 1909. A portion of the property was subsequently deeded to Rudolph Chillington (1912), Chillington Manufacturing Company (1914), and Mallinckrodt Chemical Works (1939). Another portion of the property was deeded to the Mallinckrodt Chemical Works in 1918.

Prior to 1940, Mallinckrodt produced inorganic chemicals such as salts or oxides of iron and mercury. During the 1940s, Mallinckrodt participated in the Manhattan Project under contract with the U.S. Government for the testing of uranium trioxide. After World War II, the plant continued to produce mercury compounds and other inorganic chemicals such as zinc acetate, potassium sulfate, potassium chloride, ferrous sulfate, ferric chloride, and sodium nitrate. Production of mercury compounds ended around 1974, when general facility improvements were made including demolition of the mercury production equipment and various buildings. The majority of the open areas on the property were paved at that time.

From the 1940s to approximately 1980, Mallinckrodt also conducted packaging operations (both wet and dry operations) at the facility for a variety of both organic and inorganic chemicals. Some of the liquid packaging operations included preparation of bottles of alcohols, acetone, xylenes, benzene and toluene. Organic liquids were received by railroad or truck in drums and carboys before packaging in bottles. The bottled liquids were stored in various warehouses at the facility. Mineral acids and ethers were also received by railroad for packaging operations. In the late 1970s, most of Mallinckrodt's operations decreased to the production or packaging of the chemicals noted above as a result of the transfer of material handling and sub-division (packaging) operations to a new plant in Kentucky. In the early 1980s, Mallinckrodt's production of chemicals was primarily limited to calcium and zinc stearate dispersions. All other production operations (packaging of organic and inorganic chemicals) ceased by 1982. Zinc stearate dispersion production ceased in the late 1980s. More recent operations by M.I. Holdings were limited to the production of calcium stearate dispersions. As previously noted, a remedial

action was conducted on behalf of M.I. Holdings by Woodward-Clyde Associates during 1993. The remedial action consisted of excavation of mercury/chromium-impacted soil, building demolition and asphalt paving as a cap. A deed notice and classification exception area (CEA) was also established for the western portion of the site.

Former Morris Canal (Site 153)
Historical information and maps indicate that the former Morris Canal was located along the area now occupied by Route 440 (formerly Route 9W) during the 1800s and early 1900s, and that the canal was closed during the 1920s and subsequently filled in. Historical maps indicate that a railroad line (Lehigh Valley Railroad) was also located along the area of the former canal during the early to mid-1900s. Chromite ore production residue (COPR) was allegedly used as fill for a portion of the former canal. During 1990, the City of Bayonne excavated a section of the former Morris Canal, installed a sewage pipeline, and backfilled the excavation with clean fill. Pursuant to a "Release and Agreement" reached between the City of Bayonne and Allied-Signal, Inc., the City of Bayonne was responsible for the excavation and disposal of soils containing hazardous substances and/or wastes as part of the sewer line installation project. The property was paved with asphalt following installation of the sewer line.

2.3 ENVIRONMENTAL SETTING

2.3.1 Regional and Site Geology

Information on regional and Site geology is presented below based on information from the RIR (TetraTech, 1999) and the ongoing regional groundwater investigation associated with Study Area 7 (HydroQual, 2005; 2007). Relevant reference information and figures are included in **Appendix A**.

Regional Geology
Jersey City is located within the upper portion of the drainage basin for Newark Bay, and lies within the glaciated section of the Piedmont Province. The bedrock in most of the region is comprised of Lower Jurassic to Upper Triassic age sedimentary rock units known as the Newark Supergroup, and was formed from sediments deposited within a northeast-southwest trending structural basin known as the Newark Basin. The sedimentary rocks of the Newark Supergroup in New Jersey are composed of reddish-brown arkosic sandstone, mudstone, siltstone, conglomerate, and dark gray argillite. These sedimentary rock units have been intruded by igneous rock units (primarily diabase) in the form of sills and dikes, which now generally form ridges such as the Palisades and the Heights in Jersey City.

The Newark Supergroup has been divided into three formations on the basis of distinctive lithology: (1) a lower unit identified as the Stockton Formation; (2) a middle unit identified as the Lockatong Formation; and (3) an upper unit identified as the Brunswick Group. Based on geologic mapping performed across northern New Jersey, including Study Area 5 (Drake, Jr., et al., 1996), it is anticipated that SA-5 overlies a contact between the predominantly mudstone units of the Lockatong Formation and the north-northeast trending diabase dike to the east. Regional mapping also indicates a north-northeast trending, southeast dipping normal fault lies approximately one-half mile east of the Site. Additional geologic information is currently being collected as part of the SA-7 investigation.

The beds of the Newark Supergroup generally strike to the northeast in the Hackensack River basin and dip at approximately 16 degrees to the west-northwest. A prominent set of vertical joints strike N 45° E, approximately parallel to the strike of the beds. A less prominent set of nearly vertical joints strike north 75 degrees west, sub-parallel to the dip of the bedding (Anderson, 1968). Faults, where present, typically strike northeastward and are parallel to or intersect the strike of the beds at low angles. The bedrock surface is irregular, shaped by pre-glacial and interglacial streams and further modified by glacial scour.

The bedrock surface is overlain by glacial till/stratified lacustrine deposits, and alluvial/lacustrine deposits laid down by several glacial advances across the area, principally during the Wisconsin glacial period. The glacial till is generally described as an unsorted mix of sand, gravel, silt and clay in a continuous layer overlying bedrock, as well as in discontinuous lenses within the stratified lacustrine deposits. The lacustrine deposits generally consist of very fine sand, silt and clay with noticeable layering and varves characteristic of alluvial deposition. The alluvial/lacustrine deposits are typically characterized as a fine to medium sand with some silt that appear to coarsen to the east.

The various glacial deposits are typically overlain by Holocene age alluvium deposited within the floodplains of present day streams. Meadow mat, consisting of decaying marsh deposits, is also found in many low lying areas and much of the region has been artificially filled with material of varying composition in an effort to raise the ground surface above the surrounding surface water features.

Site Geology

Fill Material

The majority of the ground surface at the Site is covered with asphalt pavement (parking lots, roads) or buildings, which overlie a continuous layer of man-emplaced fill material. The fill ranges in thickness from approximately 5 to 17 feet, with an average thickness of 10 to 12 feet, and generally consists of silty sand with miscellaneous construction debris such as gravel, brick, glass, wood, and concrete. Slug test results for the fill zone indicate generally low permeability on the order of approximately 0.5 feet/day.

Meadow Mat

Meadow mat consists of a highly organic deposit of peat and fine-grained sediments that occurs in a thin layer in the western portion of the Site. Meadow mat is generally not present beneath the majority of the Site further east from the former Morris Canal.

Lacustrine Sand

The Lacustrine Sand has generally been described as a fine to medium sand with some silt that directly underlies the fill material and meadow mat (where present). Occasional discontinuous layers of brown-gray sand are present near the top of the unit as are fine-grained silt lenses throughout. This unit correlates to the S-2 Sand identified beneath SA-7. The thickness of this unit generally increases from east to west and from north to south and is bifurcated beneath SA-7 by a red clay unit. Three (3) slug tests conducted in the Lacustrine Sand during the RI suggest hydraulic conductivity values on the order of 0.5 feet/day, whereas eleven slug tests constructed in wells screened within this stratum beneath SA-7 suggest hydraulic conductivity values on the order of 5.0 feet/day.

Glacial Till Lacustrine Deposits

This unit consists of ice contact stratified drift including fine sands with inter-layered seams of silt and clay. Occasional lenses of coarse sand and gravel have also been observed in this unit. The limited data available on these deposits suggest hydraulic conductivities on the order of 0.1 ft/day.

Bedrock

The bedrock consists of the Triassic age Lockatong formation of the Newark Supergroup and may be underlain in the eastern most area by Diabase. The bedding planes dip generally to the northwest at approximately 15 degrees while the bedrock surface generally slopes to the southwest. The bedrock is approximately 110 ft below ground surface in the vicinity of the SA-5 (HydroQual, February, 2007).

2.3.2 Regional and Site Hydrogeology

Regional Hydrogeology

The Site is located in a broad area of low relief near Newark Bay, with expected low groundwater gradients. Close to the bay, shallow groundwater is influenced by tidal fluctuations, with low-lying and marshy areas being only slightly above high tide. Regionally, groundwater flow is generally toward the major water bodies in the area, including the Hackensack River, Passaic River, and Newark Bay. These major water bodies serve as regional groundwater discharge points and hydrogeologic boundaries. The size and influence of these water bodies is such that groundwater will not migrate across them, but will discharge to the rivers and the bay.

The groundwater underlying the Hudson County Chromium Sites can be characterized as a multi-aquifer system. In general, there are two water-bearing zones/systems underlying the study area: (1) a surficial water-bearing zone within unconsolidated materials consisting of man-deposited fill, glacial drift (composed of clay, silt, sand, gravel, and boulders), fluvial fine- to medium-grained sand, and (2) the underlying water-bearing zone within fractured bedrock.

Groundwater in the shallow, unconfined to semi-confined water-bearing zone is recharged through direct infiltration of precipitation. Groundwater movement within this zone is through pore spaces between sediment grains. Depths to groundwater vary from less than one foot to 10 feet bgs or more. The direction of shallow groundwater flow is toward local surface waters that serve as groundwater discharge points, including small, unnamed drainages, the nearby rivers, and Newark Bay. Close to the rivers and the bay, shallow groundwater is tidally influenced.

Site Hydrogeology

Groundwater beneath the Site occurs within the fill material and underlying lacustrine sand deposits under unconfined conditions, and within the underlying bedrock under confined or semi-confined conditions. A layer of meadow mat in the western portion of the Site, separates the fill material from the underlying natural formations. Where the meadow mat is absent, the two units may be in contact.

Existing data shows that the upper (fill) and deeper (natural) groundwater bearing zones are distinct, where separated by the meadow mat. Groundwater flow pattern and direction are different in the two units. Contaminant distribution profiles in the two units are also distinct. Chromium is the only contaminant detected in the deeper zone, while a suite of contaminants has been detected in the shallow zone. The SA-7 investigation has shown that, where the meadow mat is present, chromium has not migrated vertically from the shallow to the deeper zones. Based on these data, it has been concluded that contamination in the shallow zone above the meadow mat is associated with chromium-impacted fill, while contamination in the deeper units is related to historical discharges at the former Mutual Chemical facility located south of the Site.

Groundwater flow in the area of the Site has been mapped as part of the comprehensive SA-7 investigation, which has identified four hydrostratigraphic zones as follows:

- Shallow Zone – above the meadow mat and generally in fill material
- Intermediate Zone – just below the meadow mat (generally not present beneath SA-5)
- Deep Zone – within the lacustrine deposits just above the glacial till/ice contact deposits
- Upper Bedrock Zone – Just below the top of bedrock

Regional groundwater contour maps for the Shallow and Deep Zones are presented on figures in Appendix A. The groundwater contour maps indicate that groundwater flow in the fill material (Shallow Zone) is generally to the west or northwest and is strongly influenced by near surface features such as the storm sewer along Route 440. Groundwater flow in the lacustrine deposits (Deep Zone) is similarly to the west-northwest, with little or no influence from near surface features, thus groundwater flow continues west and northwest to the Hackensack River. Groundwater flow within the Upper Bedrock Zone beneath SA-7 is to the northwest, and similar conditions are expected beneath the Site.

As previously indicated, slug test data for the Shallow Zone (Fill) indicate a relatively low permeability for the fill material of approximately 0.5 feet/day, with an estimated flow velocity of 3 feet/year based on average gradient of 0.005 and porosity of 30% (TetraTech, 1999). Slug test data for the Deep Zone (Lacustrine Sand) indicate hydraulic conductivity values on the order of 5.0 feet/day, with an estimated flow velocity on the order of 18 feet/year based on an average hydraulic gradient of 0.003 and porosity of 30%. Limited data available for the glacial till/ice contact deposits suggest hydraulic conductivities on the order of 0.1 feet/day.

Based on information from the RIR, there are no public water supply wells located in Hudson County. A previous file search was conducted during 1999 at the NJDEP Department of Water Allocation Division office in Trenton, NJ. Coordinates of the study area were supplied, and microfilm records of wells within one mile of the study area were obtained. A review of the information indicates that there are no industrial or public water supply wells down-gradient from the Site.

2.3.3 Site Topography and Surface Water

The ground surface at the Site is relatively flat, bordered by Route 440 to the west and West Side Avenue to the east. Ground surface elevations range from approximately 8 to 20 feet above mean sea level (MSL), with the highest elevations on the eastern portion of Site 090 (Baldwin Steel). Historically, ground surface elevations were approximately 5 to 10 feet lower prior to placement of fill across the area. The ground surface at Site 090 (Baldwin Steel) is approximately 5 to 10 feet higher than the ground surface at the Site 184 (M.I. Holdings), indicating a greater amount of fill on Site 090 (Baldwin Steel). Surface water runoff in the area of the Site is controlled by surface pavement and storm water catch basins located within the Site property and along surrounding streets.

The Former Morris Canal runs north-south along the western boundary of the Site along Route 440. The portion of the canal through Jersey City opened in 1836 and was filled with salt water, and this section of the canal was equipped with tide locks at both ends that prevented the water from flowing out at low tide (http://www.jerseycity online.com/morris_canal.htm). The canal was closed and drained in 1924. The canal was subsequently filled in and no visual evidence of the former canal exists. The majority of the former canal area is now covered with pavement, and the portion of the former canal next to the Site contains a sewer line.

No surface waters are present at or adjacent to the Site. The principal water bodies in the vicinity of the subject Site include the Hackensack River, Passaic River, and Newark Bay. The nearest surface water body is the Newark Bay, located approximately 4,000 feet to the west. The Site is located within the Hackensack River basin, which extends northward from Newark Bay into southeastern New York State. The Hackensack River is used for water supply in the upper reaches of the basin; however, in the vicinity of the Site, the river is classified as SE-3 (saline estuarine waters) with the following designated uses:

1. Secondary contact recreation;
2. Maintenance and migration of fish populations;

3. Migration of diadromous fish;
4. Maintenance of wildlife; and
5. Any other reasonable uses

Several municipalities draw water from the river during the summer months, resulting in very little net flow in the lower reaches of the river during the time periods of water diversion from the river. This results in poor flushing of the lower reaches (tidal portion) of the river during these time periods.

The Hackensack River is tidally influenced along the reach adjacent to Jersey City. According to National Oceanic and Atmospheric Administration (NOAA) records, the mean tide level of the Hackensack River in the area of Jersey City is approximately 2.84 feet above MSL and the mean tide range is approximately 5 feet. Water quality in the Hackensack River is affected by industrial discharges (over 100 permitted discharges into the river) and by the tides. Low dissolved oxygen levels are common in the river during the summer, and total dissolved solids levels are slightly to moderately saline.

2.4 CURRENT AND FUTURE LAND USE

Currently, Site 090 (Baldwin Steel) is inactive and consists of a vacant fenced lot with the majority of the ground surface covered with building structures and pavement. Site 184 (M.I. Holdings) consists of a fenced paved lot with several buildings and small landscaped areas. As previously indicated, these properties are proposed to be redeveloped by NJCU into a mixed use facility consisting of student housing, retail, and other residential and educational functions. Preliminary Site plans for the NJCU development project are included as **Figure 2**. Demolition activities (including the former Baldwin Steel building) were performed during 2006. The current estimated Site redevelopment schedule includes construction beginning during the latter part of 2008.

2.5 PREVIOUS INVESTIGATIONS/REMEDIAL ACTIONS

Previous investigations and remedial actions conducted at Site 090 (Baldwin Steel) and Site 184 (M.I. Holdings) prior to the RI are summarized in this section, along with information on Site 153 (Former Morris Canal) located along the western boundary of Sites 090 and 184. RI results based on the findings from the RIR and RIR Addendum are presented in Section 3.0.

Baldwin Steel (Site 90)

Sampling of surface and subsurface fill material was conducted in March 1989 by Langan Environmental Services, Inc. (Langan, 1989). In addition to total chromium analysis, qualitative colorimetric analysis for hexavalent chromium was conducted. A total of nineteen (19) samples were collected over a grid system around the perimeter of the Baldwin Steel building. Total chromium concentrations ranged from 125 mg/kg to 15,810 mg/kg. Colorimetric responses indicating the potential presence of hexavalent chromium were noted in all but two of the samples collected. NJDEP conducted a building inspection on January 12, 1994. As a result of this inspection, the NJDEP concluded that there was no visual evidence of chromate contamination at the facility.

A contractor for Allied Signal, Inc. completed an Interim Remedial Measure (asphalt cap) at the Baldwin Steel Site in 1990. Capping of areas of exposed soil was completed during the Interim Remedial Measure. This remedial measure was completed to prevent direct contact exposures, control potential fugitive dust emissions, reduce percolation of precipitation, and prevent overland runoff of chromium containing materials. A contractor for Allied Signal, Inc. also upgraded the asphalt cap by placement and rolling of additional asphalt along the southern fence line in October 1994.

M.I. Holdings (Site 184)

Sampling and analysis of soil and groundwater were conducted by AWD Technologies and Woodward-Clyde Consultants. AWD Technologies installed six (6) monitoring wells at the Site in 1987 (three shallow and deep clusters) and sampled these wells on three occasions in 1987 and once in 1988. In addition, three (3) soil samples were collected during the installation of these wells. In 1993, Woodward-Clyde collected surface and subsurface soil samples at 17 locations in the southwestern corner of the property and subsequently collected eight (8) post-excavation sidewall samples. Woodward-Clyde also completed one round of monitoring well sampling and analysis in 1993. Total chromium concentrations were detected in soil samples up to 36,000 mg/kg. Total chromium concentrations were detected in unfiltered and filtered groundwater samples up to 2.24 mg/l and 2.0 mg/l, respectively.

A remedial action was conducted at the M.I. Holdings Site by Woodward-Clyde in 1993. The remedial action was conducted to remediate (remove) soil containing mercury. Based on a summary report prepared by Woodward-Clyde, approximately 900 cubic yards of soil/fill were excavated from three areas located in the southwestern corner of the property. Excavation depths ranged from two to three feet. A narrow strip of land along the western boundary of the Site was not remediated. This portion of the Site was investigated during the RI for soils.

TetraTech, Inc. on behalf of New Jersey City University (NJCU) performed additional RI activities on the Site during 2004-2006 to address non-chromium contaminants under a Memorandum of Agreement with the NJDEP. The additional RI activities included geophysical survey, test pit investigation, soil and groundwater sampling, and baseline ecological evaluation (BEE). The results of these activities were documented in a Remedial Investigation Report/Remedial Action Work Plan (RIR/RAWP) (TetraTech, February 2006), which is currently under review by the NJDEP. The recommendations proposed in the RIR/RAWP include pre-design investigations, investigation of catch basins and sewer lines, investigation of sub-slab areas following removal of building slabs, and further delineation of chlorinated VOCs (e.g., carbon tetrachloride) in groundwater. The recommended remedy includes extension of the existing cap and deed notice area to cover the entire Site, and maintaining the existing CEA for residual groundwater contamination. A figure illustrating the proposed remedial actions is included in Appendix A-5.

Former Morris Canal (Site 153)

The property comprising the Former Morris Canal Site consists of a narrow strip of land along the shoulder of Route 440 North. The portion of the Former Morris Canal Site located adjacent to Sites 090 (Baldwin Steel) and 184 (MI Holdings) is approximately 700 feet long and 40 feet wide. In 1990, the City of Bayonne excavated a section of the former Morris Canal, installed a sewage pipeline, and backfilled the excavation with clean fill. Pursuant to a "Release and Agreement" reached between the City of Bayonne and Allied-Signal, Inc., the City of Bayonne was responsible for excavation and disposal of soils containing hazardous substances and/or wastes as part of the sewer line installation project. The property was paved with asphalt following installation of the sewer line. Previous investigations on the portion of the Former Morris Canal Site adjacent to Sites 090/184 were conducted during 1997-1999 and documented in the RIR dated November 1999. The RI results are discussed in Section 3.

3.0 SUMMARY OF REMEDIAL INVESTIGATION RESULTS

3.1 GENERAL OVERVIEW

This section presents a summary of the RI results for Baldwin Steel, M.I. Holdings, and the northern portion of the Former Morris Canal based on information presented in the RIR and RIR Addendum (TetraTech, 1999; 2004). A more detailed discussion of the RI data including results for other sites comprising SA-5 is presented in the RIR dated November 1999. Additional soil delineation data for Baldwin Steel and M.I. Holdings is presented in the RIR Addendum dated September 2004. Relevant data summary tables and figures from the RIR Addendum are included for reference in **Appendix A**. Comprehensive soil analytical data for hexavalent chromium (including the extent of soils containing hexavalent chromium above 20 mg/kg) is presented on **Figure 3**.

This section also presents results of additional RI activities completed during 2005, as specified in the March 2005 RIWP Addendum for Shallow Groundwater submitted to the NJDEP. The additional RI activities were conducted to collect additional data for evaluation of remedial actions for chromium contaminated fill that may be acting as a potential source of shallow groundwater impacts at the Site, and included additional soil borings and monitoring wells. Copies of well permits are provided in **Appendix B**.

3.2 RIWP ADDENDUM FOR SHALLOW GROUNDWATER (2005)

3.2.1 Soil Borings/Soil Sampling

A total of nine (9) soil borings were advanced using hollow-stem auger (HSA) drilling methods and/or direct-push sampling equipment. The borings included seven (7) locations in the western portion of Site 90 (Baldwin Steel) and two (2) locations on Site 184 (M.I. Holdings), designated as follows:

- 090-SB-001: within area of chromium-impacted soils beneath existing building
- 090-SB-002: within area of chromium-impacted soils in western portion of property
- 090-SB-003: refine horizontal delineation in south-central portion of property
- 090-SB-004: refine horizontal delineation in south-central portion of property
- 090-SB-005: refine horizontal delineation in south-central portion of property
- 090-MW-010: within area of chromium-impacted soils in southwest portion of property
- 090-MW-011: upgradient of existing monitoring well MW-090-E01
- 184-MW-001: upgradient of chromium-impacted fill soils
- 184-MW-002: within area of chromium-impacted soils in northwestern portion of property

Soil borings were advanced to a maximum depth of approximately 20 feet bgs, and soil samples were collected using split-spoon samplers. Soil samples were visually inspected for the presence of COPR (e.g., yellow-green or colored staining or nodules), and field screened for the presence of organic vapors using a photo-ionization detector (PID). Soil boring logs are included in **Appendix C**.

Soil samples were collected from three (3) locations (090-SB-003, 004, 005) and submitted for laboratory analysis for total chromium and hexavalent chromium to provide additional data for delineation beneath the existing building. Selected soil samples were also submitted for laboratory analysis for Synthetic Precipitation Leaching Procedure (SPLP), total and hexavalent chromium. Selected samples were also collected and submitted for grain size analysis. Sample depth intervals for SPLP analysis corresponded

to depths with elevated hexavalent chromium based on previous soil data. A summary of the soil and SPLP sample results is presented in **Table 1A** and grain size analysis results are included in **Table 1B**.

Laboratory analytical parameters and methods for the soil sampling program included:

- SPLP by USEPA Method 1312 with total/hexavalent chromium analysis on the leachate
- Total Chromium by USEPA Method 3050B/6010B
- Hexavalent Chromium by USEPA Method 3060A/7196A
- Grain Size by ASTM Method D422

Data validation was performed by Validata, LLC of Seattle, WA. Data validation procedures included validation of all samples analyzed for chromium and hexavalent chromium. Based on the data validation results, the laboratory analytical data were determined to be acceptable, with minor qualifications. Soil sample laboratory reports and data validation summary reports are included in **Appendix F**. Electronic data deliverables are provided in **Appendix M**.

All soil sampling locations were surveyed for horizontal coordinates and surface elevations by Keller & Kirkpatrick of Parsippany, NJ. The horizontal datum was established to within 0.10 foot using the New Jersey System of Plane Coordinates (NAD 83). Vertical elevations were established to within 0.01 foot using the North American Vertical Datum (NAVD 88).

3.2.2 Groundwater Investigation

Four (4) shallow monitoring wells were installed during April 2005 to depths ranging from 12 to 16 feet bgs. The monitoring wells are identified as follows:

- 090-MW-010: within area of chromium-impacted soils in southwest portion of property
- 090-MW-011: perimeter of chromium-impacted area, upgradient of existing well MW-090-E01
- 184-MW-001: upgradient of chromium-impacted soils
- 184-MW-002: within the area of chromium-impacted soils in the northwest portion of the property

Monitoring wells were installed using HSA drilling methods and constructed of 2-inch diameter schedule 40 PVC well materials, with flush mount protective casing. Following installation, each monitoring well was developed in accordance with NJDEP requirements to remove drill cuttings and/or formation fines from the well screen. Monitoring wells were screened across the water table to provide groundwater quality data for the shallow water-bearing zone (fill). Monitoring well records and construction diagrams are provided in **Appendix D**. A summary of the construction details is provided below.

Monitoring Well Sampling Summary/Construction Details

Monitoring Well ID	Well Depth	Screen Interval	Well Diameter	Site Location
090-MW-010	16.0'	6.0-16.0'	2-inch	Baldwin Steel (Site 090)
090-MW-011	16.0'	6.0-16.0'	2-inch	Baldwin Steel (Site 090)
090-MW-E01	14'	10-14'	2-inch	Baldwin Steel (Site 090)
184-MW-001	12'	2-12'	2-inch	MI holdings (Site 184)
184-MW-002	12'	2-12'	2-inch	MI holdings (Site 184)
90-MW-8A*	18'	3-18'	2-inch	Baldwin Steel (Site 090)

* 90-MW-8A was installed during recent RI activities by NJCU; sampled during second round only (May 31, 2005)

Two (2) rounds of groundwater sampling were completed during 2005 including one round on April 28, 2005 and a second round on May 31, 2005. Three (3) rounds of groundwater sampling were completed during 2006 as follows: May 10, 2006, August 10, 2006, and December 13, 2006. Groundwater monitoring well sampling procedures included low flow purge/sample methods. Field sampling included water level measurements and the collection of field parameters including pH, temperature, conductivity, dissolved oxygen (DO), and reduction-oxidation potential (Redox). Groundwater sampling field data sheets and groundwater contour map reporting forms are included in **Appendix E**.

HydroPunch groundwater samples were also collected during soil boring activities from two soil borings (SB-003 and SB-005) and analyzed for total and hexavalent chromium (unfiltered and filtered) to provide additional data on shallow groundwater for the southern portion of the Site beneath the existing building. Groundwater grab sample 090-PZ-001 was collected from 090-SB-003 borehole, and sample 090-PZ-002 was collected from 090-SB-005 borehole. The screened interval at both locations was from 3 to 13 ft bgs.

Groundwater samples were submitted for laboratory analysis for total and hexavalent chromium (unfiltered and filtered). The first round of sampling also included the following additional water quality parameters to provide additional data for evaluation of natural attenuation and groundwater treatment options: pH, alkalinity, calcium, iron, magnesium, ferrous iron, sulfate, and total organic carbon (TOC). Groundwater sampling results for samples collected during 2005 and 2006 are summarized on **Tables 3 and 4**, respectively.

Laboratory analytical parameters and methods for groundwater samples included:

- Total Chromium using USEPA Method 6010B
- Hexavalent Chromium USEPA Method 7196A
- Other Water Quality Parameters: pH (Method 150.1); Alkalinity (Method 310.1); Calcium, Iron and Magnesium (Method 6010B); Ferrous Iron (Method 3500-Fe), Sulfate (Method 375.4), Sulfide (Method 376.1), Total Organic Carbon (Method 415.1)

The groundwater sampling completed during May 2006 included analysis of additional parameters including Target Analyte List (TAL) metals, chlorides, hardness, nitrates, salinity, specific conductance, sulfides and total dissolved solids (TDS). Data validation was performed by Validata, LLC of Seattle, WA. Data validation procedures included validation of all samples analyzed for chromium and hexavalent chromium, and approximately ten (10) percent of samples analyzed for other parameters following NJDEP standard operating procedures for validation of analytical data. Based on the data validation results, the laboratory analytical data were determined to be acceptable, with some qualifications. Two (2) groundwater grab samples (filtered samples) (90-PZ-001F and 90-PZ-002F) submitted for hexavalent chromium analysis were rejected because the samples exceeded the required holding time; however total chromium results were acceptable for these locations. Groundwater sample laboratory reports and data validation summary reports are included in Appendix G. Electronic data deliverables are provided in Appendix M. Groundwater elevation data are presented in **Table 5**. Groundwater contour mapss are included as **Figures 4A through 4E**. Groundwater contour reporting forms are contained in **Appendix E-2**.

3.3 SOIL INVESTIGATION RESULTS

The RI soil investigation activities were conducted in several phases, with results summarized below.

3.3.1 Remedial Investigation Report (1999)

The RI soil investigation was conducted in several phases during 1997 to 1999 and reported in the Draft RIR (Tetra Tech NUS, Nov. 1999). A total of 47 soil borings (up to 8 feet bgs) were completed on the subject Sites, including 15 borings at Baldwin Steel, 12 borings at M.I. Holdings, and 20 borings within the Former Morris Canal. Samples were collected from selected depth intervals for submittal for laboratory analysis for total and hexavalent chromium. Approximately ten percent of the soil samples were also analyzed for Target Compound List (TCL) volatile organic compounds (VOCs), semi volatile organic compounds (SVOCs), and pesticide/polychlorinated biphenyls (PCBs); TAL metals; and total petroleum hydrocarbons (TPH).

Baldwin Steel (Site 090)

Surface Soil: Chromium (total) was detected in all of the 15 surface soil samples at concentrations ranging from 26.6 mg/kg to 10,100 mg/kg, with the maximum concentration detected in sample 090-SB-B02 (0-2 ft) collected in the southeast portion of the Site. Hexavalent chromium was detected in 14 of 15 surface soil samples at concentrations ranging from 7.6 mg/kg to 739 mg/kg, with the maximum detection in the sample 0-2 ft sample from 090-SB-B08, collected near the southern boundary of the property. Other constituents detected in surface soil samples included several VOCs (methylene chloride, toluene, xylenes) at trace concentrations (less than 1 mg/kg), below the NJDEP Soil Cleanup Criteria (SCC). PAHs and metals were also detected at concentrations below the SCC.

Subsurface Soil: Chromium (total) was detected in all of the 82 subsurface soil samples, with the maximum concentration (36,800 mg/kg) detected at sample location 090-SB-B08 collected from a depth interval of 12 to 14 feet bgs near the southern boundary. Hexavalent chromium was detected in 61 of 82 subsurface soil samples at concentrations ranging from 2.6 mg/kg to 8,210 mg/kg, with maximum concentration (8,210 mg/kg) in sample 090-SB-E01, collected from a depth interval of 8 to 10 feet bgs in the western portion of the Site. No other analytes were detected above the NJDEP SCC, with the exception of arsenic in two samples (samples 090-SB-B02, 2-4 ft bgs: 42 mg/kg and 090-SB-C03 10-12 ft bgs: 39 mg/kg) above the SCC of 20 mg/kg.

M.I. Holdings (Site 184)

Surface Soil: Chromium (total) was detected in all of the 12 surface soil samples at concentrations ranging from 13.6 mg/kg to 19,800 mg/kg. Hexavalent chromium was detected in 10 of 12 surface soil samples at concentrations ranging from 2.7 mg/kg to 368 mg/kg. The maximum detection of total and hexavalent chromium was in the 0-2 ft sample from 184-SB-A09, located in western part of SA-5.

Subsurface Soil: Chromium (total) was detected in all of the 56 subsurface soil samples at concentrations ranging from 3.5 mg/kg to 35,000 mg/kg. Hexavalent chromium was detected in 26 of 56 subsurface soil samples at concentrations ranging from 2.6 mg/kg to 8,080 mg/kg. The maximum concentration of total and hexavalent chromium was detected at 184-SB-A03, collected from a depth interval of 4 to 6 feet bgs along the northwest corner of the Site.

Other constituents detected in subsurface soil samples included several VOCs (benzene, chloroform, methylene chloride, dichlorobenzene, ethylbenzene) at low concentrations (less than 1-2 mg/kg) below

the SCC. PAHs and metals were also detected at concentrations below the SCC, with the exception of copper (Sample 184-SB-A02-0406: 659 mg/kg) detected slightly above the SCC of 600 mg/kg.

Former Morris Canal (Site 153)

A total of 26 borings were installed to characterize the former Morris Canal (Site 153), including five (5) borings (153-SB-A01 through A05) within the portion of Site 153 next to Baldwin Steel (Site 090) and M.I. Holdings (Site 184).

Surface Soils: Chromium (total) was detected in all five surface soil samples at concentrations ranging from 59.3 mg/kg to 11,200 mg/kg (153-SB-05). Hexavalent chromium was detected in all five surface soil samples at concentrations ranging from 5.4 mg/kg to 624 mg/kg. The maximum detection of total and hexavalent chromium (total) was at sample location 153-SB-A05 (0-2 ft bgs), collected near the southwest corner of Site 090. Surface soil samples were not analyzed for any other parameters.

Subsurface Soil: Chromium (total) was detected in all of the subsurface soil samples at concentrations ranging from 9.8 mg/kg to 39,800 mg/kg. Hexavalent chromium was also detected in all of the subsurface soil samples at concentrations ranging from 2.5 mg/kg to 9,150 mg/kg. The maximum concentrations of both total and hexavalent chromium were detected in sample 153-SB-A05, collected from a depth interval of 6-8 ft bgs near the southwest corner of Site 090.

Benzene was detected in sample 153-SB-A03 (1.3 mg/kg; 8-10 ft bgs) slightly above the NJDEP Impact to Groundwater Soil Cleanup Criteria of 1 mg/kg near the western boundary of Sites 090 and 184.

3.3.2 Remedial Investigation Report Addendum (October 2004)

The RIR Addendum (Tetra Tech NUS, Oct. 2004) presents results of additional soil borings and sampling conducted during 2003 on the properties subject to redevelopment by NJCU, including 34 borings at Site 090 (Baldwin Steel) and 12 borings at Site 184 (M.I. Holdings). Approximately 440 samples were analyzed for total and hexavalent chromium. The report also includes sampling results for the portion of the Former Morris Canal adjacent to the Baldwin Steel and M.I. Holdings Sites.

Total chromium concentration ranged from 1.9 to 69,600 mg/kg, with the highest concentration detected at 090-SB-20 (8-10 ft bgs) in the southwestern portion of Site 090 (Baldwin Steel). Hexavalent chromium concentration ranged from less than 2 mg/kg to 28,400 mg/kg in sample 090-SB-114, which was collected at a depth of 6 to 8 feet bgs in the southwestern portion of Site 090 (Baldwin Steel).

Three (3) additional borings (184-SB-13, 184-SB-14, and 090-SB-37) were completed by Tetratech in February 2005 to provide additional data in the eastern portion of the Site. A total of 30 soil samples were collected and analyzed for total and hexavalent chromium from various depth intevals, and results indicated that hexavalent chromium was detected above 20 mg/kg in one sample (090-SB-13; 88.4 mg/kg at 0-2 ft bgs). All other samples contained less than 20 mg/kg of hexavalent chromium.

The RI soil data indicate that the horizontal and vertical extent of hexavalent chromium above the NJDEP soil cleanup criteria of 20 mg/kg was delineated (**Figure 3**). The portion of the proposed redevelopment area impacted by hexavalent chromium concentrations is along the western and southwestern boundaries (estimated at approximately 4.5 acres). The impacted area is bounded by the Baldwin Steel (Site 090) boundary to the south (adjacent Site 117 has already been capped by Honeywell), the Morris Canal Site to the west (where RI efforts are ongoing), and clean borings (no exceedances of 20 mg/kg) to the north and east within the Baldwin Steel and M.I. Holdings property

boundaries. Hexavalent chromium concentrations slightly above 20 mg/kg were detected in shallow soils beneath existing pavement at a few isolated locations outside the main chromium-impacted fill area.

Hexavalent chromium results exceeding the NJDEP soil cleanup criteria are indicated on **Figure 3**. The RIR and RIR Addendum text and tables with soil sample results for total and hexavalent chromium are included in **Appendix A** for reference.

3.3.3 RIWP Addendum for Shallow Groundwater (April/May 2005)

Soil samples were collected from three (3) locations (090-SB-003, 090-SB-004, 090-SB-005) to provide additional data for horizontal delineation in the southern portion of Site 090 beneath the existing building (as indicated on **Table 1 and Figure 3**). Total chromium concentrations ranged from 4.1 mg/kg to 555 mg/kg, with the maximum concentration of total chromium detected in sample 090-SB-003 (12-14 feet bgs). Total chromium did not exceed the NJDEP SCC of 120,000 mg/kg for trivalent chromium. Hexavalent chromium concentrations were less than 20 mg/kg, with the exception of one sample: 090-SB-003 (91.3 mg/kg at 12-14 ft bgs). Grain size analysis was performed on samples obtained from locations 090-SB-001, 090-SB-002, 090-SB-003, 090-MW-010, 090-MW-011 and 184-MW-002. A majority of the samples were described as a fine to medium sand (**Table 1B**).

3.3.4 Additional Soil Delineation (November 2006)

Additional soil sampling was performed during November 2006 to provide further soil delineation under proposed building footprints (Buildings 5 and 7) in the southwest portion of the Site, and to evaluate soil pH data with respect to sources of chromium impacts (i.e. COPR fill versus dichromate sources). Soil samples were collected at 2-foot intervals from 14 sampling locations (090-SB-006 through 090-SB-019) to the top of the peat stratum (maximum 16 feet bgs). Results are summarized on **Table 2 and Figure 3**. Analytical data packages and electronic data deliverables are contained in **Appendices F and M**, respectively. Boring logs are contained in **Appendix C**.

Analytical results were used to confirm chromium-impacted soils beneath proposed Buildings 5 and 7. Field observations of COPR-impacted fill and elevated hexavalent chromium results (>1,000 mg/kg) were noted at seven locations (090-SB-007, 090-SB-008, 090-SB-015 through 090-SB-019). Hexavalent chromium concentrations were slightly above 20 mg/kg at four locations (090-SB-009, 090-SB-010, 090-SB-012, 090-SB-014). The remaining samples did not contain hexavalent concentrations in excess of 20 mg/kg (090-SB-006, 090-SB-011, 090-SB-013).

Soil samples were also analyzed for pH to evaluate the source of hexavalent chromium. High pH values (>11) were detected in samples with hexavalent chromium levels above 1,000 mg/kg and field observations of COPR-impacted fill. Samples containing low levels of hexavalent chromium above 20 mg/kg showed relatively neutral pH results.

3.4 GROUNDWATER INVESTIGATION RESULTS

Groundwater investigations at the Site were conducted in several phases during the previous RI for SA-5, the supplemental RI activities conducted during 2005-2006, and as part of the regional groundwater investigation under the oversight of a court-appointed Special Master for Study Area 7.

3.4.1 Remedial Investigation Results (November 1999)

Previous groundwater investigations included sampling of monitoring wells installed within SA-5 as part of the RI, the SA-7 investigation, and other investigations completed on behalf of the property owner (NJCU). The RI activities for SA-5 included installation of 16 monitoring wells, including two (2) wells at Baldwin Steel (Site 090) and three (3) wells at M.I. Holdings (Site 184). Groundwater investigation results are summarized in this section, with reference information provided in **Appendix A**. A summary overview of previous groundwater investigation results by COC is provided below:

<u>VOCs/SVOCs</u>
Five (5) monitoring wells were sampled for VOCs and SVOCs as part of an investigation on Site 184 (MI Holdings) during September 1992 and March 1993. The following VOCs were detected above the GWQS in MW-3B: benzene (88-230 ug/L), xylene (200-220 ug/L), trichloroethylene (640-5,200 ug/L), 1,2-dichloroethenes (total) (330-560 ug/L), and vinyl chloride (13-24 ug/L). The lower concentrations were detected during the March 1993 sampling round, indicating declining concentrations. No SVOCs were detected above the GWQS. MW-3B, formerly located near the western boundary of M.I. Holdings (Site 184), was screened from approximately 35 ft to 45 ft bgs, at the base of the Lacustrine Sand.

<u>Inorganics</u>
The majority of groundwater sampling completed within SA-5 has been for inorganics. Sampling completed as part of the SA-5 and SA-7 regional groundwater investigations primarily focused on chromium and major cation/anions with some additional analyses for several anions/cations and miscellaneous parameters. Work completed on the Site 184 (M.I. Holdings) focused on mercury but also included chromium and other Priority Pollutant List metals.

Chromium (total and hexavalent) was the most frequently detected metal with reported concentrations above the GWQS in both filtered and unfiltered samples. Other metals reported above the GWQS in filtered samples collected from Site 184 (MI Holdings) included cadmium (well MW-2B), mercury (well MW-2A) and thallium (well MW-3B). Arsenic, lead, mercury, and thallium were also reported above the GWQS in groundwater samples collected from HydroPunch borings on Site 90 (Baldwin Steel). Additionally, the following inorganics were occasionally detected in groundwater above the GWQS during the RI: aluminum, iron, sodium, ammonia, sulfate, chloride and total dissolved solids (TDS). Groundwater samples collected using low-flow sampling techniques typically have lower metals concentrations than either HydroPunch samples or samples collected using conventional sampling techniques, which were likely used during the 1992 and 1993 sampling rounds.

Groundwater data collected during previous investigations associated with SA-5 indicate that groundwater impacts at Site 090 (Baldwin Steel) and Site 184 (M.I. Holdings) include total and hexavalent chromium above the GWQS. Chromium concentrations above the GWQS are present within the Shallow Zone (contained within the fill material) beneath most of Site 117 (Ryerson Steel/Home Depot) and Site 153 (Morris Canal) adjacent to Route 440. As previously indicated, a thin layer of meadow mat is present in the western portion of SA-5, and a downward hydraulic gradient was identified

between the fill material and the underlying lacustrine deposits. Where the meadow mat is not present, the shallow and deep zones are in hydraulic communication.

3.4.2 Report on Groundwater for Study Area 5 (October 2004)

HydroQual, Inc. prepared a draft report during October 2004 focusing on groundwater conditions at SA-5 to support the development of a RASR/RAWP for Baldwin Steel (Site 090) and M.I. Holdings (Site 184). The report indicated that groundwater flow direction in the Shallow Zone at SA-5 is generally toward the west and north, and is influenced by near surface features including storm sewers along Route 440.

Hexavalent chromium concentrations detected in the shallow groundwater zone were generally below the GWQS (70 ug/L) in the majority of monitoring wells at Sites 90 and 184 within SA-5. Groundwater sample results for monitoring well 090-MW-E01 (located in the western portion of the Site near Route 440) indicated total and filtered hexavalent chromium concentrations of 770 ug/L and 583 ug/L, respectively. The report also contains results of groundwater grab (HydroPunch) samples collected by others, indicating elevated chromium concentrations in the southwest portion of the property.

Vertical aquifer screening sample results obtained during installation of deep monitoring wells (090-MW-090, 90-MW-7BR) located in the southwestern portion of the Site indicate that hexavalent chromium was detected in 090-MW-090 above the GWQS (70 ug/L) near the bottom of the fill unit (12-14 feet bgs) and at various depths greater than 25 feet bgs, with the highest concentrations detected at depths below 60 feet bgs. There were no detections in the interval between the bottom of the fill and the deeper natural deposits. Vertical screening results for 090-MW-7BR indicate that hexavalent chromium concentrations above the GWQS were limited to samples collected from depths below 25 feet bgs. The vertical aquifer screening results indicate that the chromium levels detected in the deep groundwater zone are several orders of magnitude greater than the Shallow Zone. The groundwater data indicate that the highest hexavalent chromium concentrations in the shallow groundwater zone have been detected at SA-7 (Sites 87 and 115) on the opposite (west) side of Route 440, and other nearby Sites associated with SA-5 (Sites 117 and 153) south of the subject Site.

3.4.3 Deep Overburden Groundwater Report for Study Area 7 (February 2007)

As part of the Regional Groundwater study for SA-7, HydroQual, Inc. on behalf of Honeywell prepared a Final Groundwater Investigation Report dated February 2, 2007 to describe the hydrogeology of the deep overburden deposits in the vicinity of Study Areas 5, 6, and 7, and to characterize the deep overburden groundwater chromium plume (HydroQual, 2007). This study included both the landward portion of the plume and the portion that extends beneath the Hackensack River. The term "deep overburden" refers to the deposits between the meadow mat and the bedrock surface. Groundwater occurs within the fill material above the meadow mat under unconfined conditions, and within the lacustrine sand and bedrock under semi-confined and confined conditions, respectively. The report indicates that groundwater flow in the intermediate zone below the meadow mat is toward the Hackensack River. Groundwater flow in the deep zone is to the west-northwest beneath SA-5, but then turns to the north-northwest beneath SA-7 and SA-6 North. A coarse-grained sand deposit (beneath the eastern portion of SA-7) and the low permeability red clay (beneath the western portion of SA-7) control groundwater flow in the deep zone.

Two independent chromium plumes have been identified; one in the fill and shallow overburden above the meadow mat, and one in the deep overburden. Chromium in the shallow overburden plume is a result of groundwater in direct contact with COPR, and COPR-impacted soil, and is unrelated to the deep plume, which has its origin at the former Mutual Chemical Company production facility east of Route

440 (Site 117; current location of the Home Depot facility). The report indicates that the source of the deep plume is from the historic vertical migration of chromium through the lacustrine sands into the deep overburden. The deep plume then travels through the deep, highly permeable, coarse-grained sand layer where it travels horizontally to the north-northwest where it moves back up through the lacustrine sands ultimately discharging to the Hackensack River.

In contrast to the COPR-related sources of the shallow plume, the deep overburden plume was likely caused by historic releases of chromate solutions from the various processes at the former Mutual Chemical Company production plant. Based on the historical information provided in the Final Groundwater Investigation Report, the most likely location of process-related discharges is in the vicinity of Building F, in the northwest corner of the former plant, where the "wet" operations took place. The vertical profile of hexavalent chromium concentrations in pore water adjacent to the wet operations area supports the conceptual model of process-related discharges. Pore water quality data collected from borings 090-MW-07, 117-MW-I4, and 090-MW-07BR located within close proximity to the wet operations indicate that hexavalent chromium is present throughout the entire vertical column from the Shallow Zone to the top of bedrock. Concentrations range from a low of 1.5 mg/L to a high of 6,920 mg/L. This was the only location within the project area in which such a vertical continuum was identified. The highest concentrations noted in these borings are at a depth of approximately 65 feet and in contact with the S-3 Sand. The fact that the Shallow and Intermediate Zones in this source area continue to exhibit hexavalent chromium in concentrations in excess of 10 ppm, indicates that residue from past housekeeping practices may still be present in the subsurface. Although a relatively thin layer of COPR-like material was identified in boring 117-MW-I4, it is unlikely that this small volume could be solely responsible for the persistence of these elevated concentrations decades after plant operations have ceased. It is more likely that some form of solid-phase residual of the historical sodium chromate discharges is present within the fill and/or underlying lacustrine deposits.

Hexavalent chromium was detected in the deep overburden at concentrations greater than 1,000 mg/L in three wells: 090-MW-09 had 2,460 mg/L in the unfiltered sample collected in April 2004; 117-MW-14 had 6,920 mg/L in the unfiltered sample collected in December 2006; and 115-MW-19 had 2,250 mg/L in filtered sample collected in September 2004. These wells are located within the Site property, adjacent to the Site property, and approximately 400 feet west of the Site, respectively. Vertical aquifer sampling results indicate that the chromium levels detected in the deep groundwater zone are several orders of magnitude greater than the Shallow Zone. Vertical aquifer sampling results and relevant figures from the regional investigation illustrating the regional extent of chromium impacts and vertical gradients are included in **Appendix A**.

Hexavalent chromium was also detected beneath the riverbed sediments at concentrations ranging from 0.732 mg/L to 218 mg/L. The report indicates that the plume is believed to have attained a largely steady-state position beneath the river with ongoing discharge upward through the relatively thin sediments in a topographic depression area beneath the river, with little or no further lateral migration of the plume. Hexavalent chromium was not detected above the detection limit of 5 ug/l in any of the 26 pore water sample locations beneath the river. (HydroQual, Inc., 2007).

HydroQual conducted an evaluation of deep overburden groundwater remedial alternatives to address chromium contamination, as presented in the Deep Overburden Groundwater Remedial Alternatives (DORAA) Report (HydroQual, Inc., 2006). The evaluation included a recommendation that Alternative No. 3, consisting of a groundwater pump/treat system that captures the entire deep overburden groundwater plume, be implemented. Alternative No. 3 includes pumping of an extraction well, located

adjacent to the Hackensack River, with piping to and treatment at the existing SA-7 wastewater treatment plant. A Court Order dated 10/6/06 approved the DORAA Report and the selection of Alternative No. 3.

3.4.4 RIWP Addendum for Shallow Groundwater (April/May 2005)

Groundwater sample results for two rounds of sampling performed during 2005 (April and May) are indicated on **Table 3 and Figure 5**. Monitoring wells sampled include 090-MW-E01, MW-090-010, 090-MW-011, 184-MW-001, 184-MW-002 and 090-MW-8A. Groundwater field parameter measurements are indicated on the groundwater sampling field data sheets in **Appendix E**. Groundwater elevation data are presented in **Table 5**. Groundwater contours are included as **Figures 4A and 4B**.

Total chromium was detected in the following monitoring wells above the GWQS (70 ug/L) with maximum concentrations shown in parenthesis: 090-MW-E01 (117 ug/L); 090-MW-010 (5,280 ug/L); 184-MW-002 (245 ug/L) and 090-MW-8A (514 ug/L). Elevated total chromium concentrations were also detected in groundwater grab samples 090-PZ-001 (7,220 ug/L) and 090-PZ-002 (2,640 ug/L). Groundwater grab sample 090-PZ-001 was collected from 090-SB-003 borehole, and sample 090-PZ-002 was collected from 090-SB-005 borehole. The screened interval at both locations was from 3 to 13 ft bgs. These results are likely biased high due to the groundwater grab sampling method. Hexavalent chromium was detected above the GWQS in two wells as follows: 090-MW-010 (5,220 ug/L) and 90-MW-8A (497 ug/L). Both of these wells are located within the area of chromium-impacted soils in the southwest portion of the Site. Field measurements indicate that elevated pH levels were detected at 090-MW-010 (pH > 12), whereas neutral pH conditions were detected at other wells including 090-MW-8A (pH of 6.44). Groundwater field data indicate relatively neutral pH values (ranging between pH 6 to 9), with the exception of 090-MW-010 in the southwest portion of the Site.

Groundwater sampling included other water quality parameters (selected metals, alkalinity, ferrous iron, sulfate, TOC) and field measurements (DO, oxidation-reduction potential [ORP]) to provide additional data for evaluation of natural attenuation and potential groundwater treatment options. Alkalinity values ranged from 46 mg/l to 789 mg/l, with the highest alkalinity values detected in184-MW-002 and 090-MW-010. Ferrous iron, sulfate, and TOC values ranged from 0.15 to 0.24 mg/l; 9.8 to 45.5 mg/l; and 2.5 to 20 mg/l, respectively. DO results ranging between 1 to 10 mg/l were detected in the majority of monitoring wells, with the exception of 090-MW-010 and 090-MW-011 which had DO values below 1 mg/kg or non-detect. ORP results indicated negative values in the majority of wells, with the lowest values detected in 090-MW-010. Data for 090-MW-010 include a lack of DO along with negative ORP values, indicating anaerobic reducing conditions where the highest chromium concentrations were detected in the southwest portion of the Site. The results indicate subsurface conditions favorable for chromium reduction (Cr^{+6} to Cr^{+3}) in groundwater beneath the Site.

3.4.5 Additional Shallow Groundwater Sampling (May/August/December 2006)

Groundwater sample results for sampling performed during May, August and December 2006 are indicated on **Table 4 and Figure 5**. Monitoring wells sampled include 090-MW-010, 090-MW-11, 090-MW-8A, 090-MW-E01, 184-MW-001, 184-MW-002. Monitoring well 090-MW-8A was not sampled in August 2006 as it could not be located following building demolition activities. Groundwater field parameter measurements are indicated on the groundwater sampling field data sheets in **Appendix E**. Groundwater contour maps are included as **Figures 4C through 4E**.

Total chromium was detected in the following monitoring wells above the GWQS (70 ug/L) with maximum concentrations shown in parenthesis: 090-MW-010 (3,500 ug/L), 090-MW-8A (380 ug/L), and 184-MW-002 (222 ug/L). Hexavalent chromium was detected above the chromium GWQS (70 ug/l) in

90-MW-8A (345 ug/L), and below the GWQS in 090-MW-010 (64 ug/L). These wells are located within the area of chromium-impacted soils in the southwest portion of the Site. The most recent round of sampling (December 2006) indicates hexavalent chromium detected in only one well: 90-MW-8A (332 ug/L). Laboratory analysis shows elevated pH levels at 090-MW-010 (pH 12.08), whereas near neutral pH conditions were detected at the remaining wells. Groundwater field data also indicate relatively neutral pH values (ranging between pH 6 to 9), with the exception of 090-MW-010 in the southwest portion of the Site.

Groundwater sampling included other water quality parameters (TAL metals, natural attenuation parameters) to provide additional data for evaluation of natural attenuation and potential groundwater treatment options. Alkalinity values ranged from 23 mg/l to 784 mg/l, with the highest alkalinity values detected in 184-MW-002. Ferrous iron, sulfate, and TOC values ranged from <0.1 to 4.9 mg/l; <5 to 328 mg/l; and 1.6 to 47.2 mg/l, respectively. Sulfide results ranged from <1 to 32.4 mg/L. DO results ranged between 0 and 6 mg/l, with DO not detected in 090-MW-010, 090-MW-011, 184-MW-001, and 184-MW-002. ORP results indicated negative values in the majority of wells, with the lowest values detected in 090-MW-010. Monitoring wells 090-MW-8A and 090-MW-011 (located outside the zone of highest hexavalent soil impact) show positive ORP values. Data for 090-MW-010 include a lack of DO along with negative ORP values, indicating anaerobic reducing conditions where the highest chromium concentrations were detected in the southwest portion of the Site. The results indicate subsurface conditions favorable for chromium reduction (Cr^{+6} to Cr^{+3}) in groundwater beneath the Site.

Other metals detected above the GWQS included aluminum, arsenic, iron, lead, manganese, mercury, and sodium. The greatest number of metals above the GWQS were detected in 090-MW-010, including aluminum (2,920 ug/L), arsenic (58.7 ug/L), iron (12,000 ug/L), lead (80.7 ug/L), mercury (28.8 ug/L), and sodium (292,000 ug/L). Elevated mercury (22.6 ug/L) was also detected above the GWQS in 184-MW-001. TDS and chloride concentrations ranged from 220 to 1,140 mg/l and 18 to 109 mg/l, respectively.

3.5 STUDY AREA 7 - SOURCE AREA TREATABILITY STUDIES

Honeywell has conducted a treatability assessment of source area material on the Home Depot site (see **Appendix N**). Laboratory tests were conducted on soil obtained within the footprint of the former Mutual Chemical Company facility (source of Study Area 7 deep overburden groundwater contamination) to provide a direct measure of the leachability of soil-associated hexavalent chromium (Cr(VI)) and to assess the performance of an abiotic reductant for Cr (VI). The major objectives of this study were to (i) use kinetic leaching tests to determine the leaching characteristics of Cr(VI) from representative soil samples from within the source area defined by the prior wet operations on SA-5, (ii) evaluate possible Cr(VI) mineral and/or chemical mechanisms that may be responsible for Cr(VI) retention in the soil, and (iii) evaluate the reductant dosing requirements for reduction of Cr(VI).

A full description of the studies, including the field collection, laboratory methodology and analyses, and results is presented in **Appendix N** (Treatability Study - Source Area Study Area 7, HydroQual Inc.) The results of the studies are briefly summarized as follows:

- At hydraulic gradients ranging from approximately 14 to over 70, multiple pore volume exchanges (up to 40 or more) were required to sufficiently leach Cr(VI) so that effluent concentrations were below the New Jersey groundwater quality criterion of 70 ppb.
- The large number of pore volume exchanges, both within fine sand samples as well as silty clay samples, indicates that Cr(VI) is not leached within the typical 3-5 pore volume exchanges expected if only dissolved phase chromium were present and readily leachable from the pore spaces.

- The leaching curve response (i.e., a slow, relatively steady decline) could be indicative of diffusion of Cr(VI) from within the sample, which could be accounted for by the presence of Cr(VI) in micropores, or a combination of diffusion, sorbed material, and solid phase material.
- The fill sample that appeared to exhibit visual evidence of solid phase chromium at the time it was collected, did not contain COPR, but did contain a chromite phase (trivalent chromium) indicating that the formation of solid phase material did indeed occur. Apart from this conclusion, chromium was detected in three of the five samples tested.
- The addition of calcium polysulfide at two times the stoichiometric ratio based on total extractable Cr(VI) by alkaline digestion resulted in concentrations of Cr(VI) in effluent samples below the GWQS without indication of a return to higher levels for the sample tested with more than one dose (i.e., fine sand sample). Calcium polysulfide dose ratios for treatment should range from two to three times the stoichiometric ratio, based on the overall results of the testing.

3.6 CONCLUSIONS AND RECOMMENDATIONS

Soil Investigation

- The RI included over 80 borings and analysis of over 700 samples for total and hexavalent chromium on Site 090 (Baldwin Steel), Site 184 (M.I. Holdings), and the northern portion of Site 153 (Former Morris Canal) next to Sites 090 and 184 during the RI. The horizontal and vertical extent of hexavalent chromium above the NJDEP Soil Cleanup Criteria has been characterized and delineated.

- The portion of the Site and proposed redevelopment area impacted by hexavalent chromium concentrations greater than the NJDEP soil criteria (20 mg/kg per the NJDEP chromium policy) is along the western and southern boundaries of the Site (estimated at approximately 4.5 acres). The impacted area is bounded by the Site 090 (Baldwin Steel) boundary to the south (adjacent Site 117 to the south has already been capped by Honeywell), Site 153 (Former Morris Canal) boundary to the west (where additional RI efforts are ongoing), and clean borings (no exceedances of 20 mg/kg) to the north and east within Site 090 (Baldwin Steel) and Site 184 (M.I. Holdings). Hexavalent chromium concentrations slightly above 20 mg/kg were detected in shallow soils beneath existing pavement at a few isolated locations outside the main chromium-impacted fill area.

- A one to two foot thick layer of meadow mat (peat) is present in the western portion of the Site. The highest hexavalent chromium concentrations occur in saturated fill material above the meadow mat, at depths between approximately 6 to 14 feet bgs. RI results indicate good correlation between field observations of possible COPR impacted soils and laboratory data indicating elevated hexavalent chromium concentrations. Field observations of possible COPR and/or COPR contaminated fill were noted in some of the borings as relatively thin layers (e.g., yellow-green colored streaks or nodules) mainly at the bottom of the fill. Typically, the hexavalent chromium concentrations are one to two orders of magnitude less in the underlying samples collected from (and below) the meadow mat, which appears to be acting as a confining layer that prevents downward migration of hexavalent chromium into the deeper groundwater zone.

- SPLP data for soil samples collected at SA-5 is limited and indicates high variability and uncertainty with respect to correlation of hexavalent chromium concentrations in soils with SPLP leachate results. The high variability of the SPLP results indicates that the SPLP test cannot be used to predict groundwater impacts at this Site. Groundwater data provides more conclusive evidence regarding actual source impact to groundwater.

Groundwater Investigation

- Two independent chromium contamination plumes have been identified in groundwater; one in the shallow fill and overburden zone above the meadow mat (where present) and one in the deep overburden zone. Vertical aquifer sampling data indicate that the chromium levels in the deep overburden groundwater zone (below the meadow mat) are several orders of magnitude greater than the Shallow Zone, indicating that shallow groundwater conditions at the Site are not a source of the groundwater contamination present in the deep overburden zone.

- Total and hexavalent chromium concentrations in groundwater within the Shallow Zone beneath the majority of the Site are below the GWQS or not detected. Elevated chromium concentrations above the GWQS of 70 ug/L were detected in the southwest portion of the Site (090-MW-010, 090-MW-8A) and the northwest corner of the Site (184-MW-002). The presence of elevated hexavalent chromium in the Shallow Zone groundwater is associated with chromium-impacted fill soils, particularly in areas with high pH levels (e.g., 090-MW-010; pH >10).

- Total and hexavalent chromium concentrations detected in the Shallow Zone were lower during 2006 as compared to data collected during 2005. Groundwater sample results for 090-MW-010 indicate that total chromium levels decreased from 5,200 ug/L (May 2005) to 3,500 ug/L (December 2006), and hexavalent chromium levels decreased from 5,170 ug/L (May 2005) to 64 ug/L (May 2006) to non-detect (December 2006). In 090-MW-8A, total and hexavalent chromium concentrations decreased from 514 ug/l and 496 ug/l (May 2005), respectively, to 356 ug/l and 332 ug/l (December 2006), respectively. In 184-MW-002, total chromium levels decreased from 180 ug/l (May 2005) to 83 ug/L (December 2006). Hexavalent chromium results during 2006 were non-detect or below the GWQS in all monitoring wells, with the exception of 090-MW-8A. The presence of elevated hexavalent chromium in 90-MW-8A with neutral pH conditions indicates that hexavalent chromium at this location may be associated with dichromate rather than COPR-impacted fill.

- Groundwater results indicating initial elevated total and hexavalent chromium concentrations may be associated, at least in part, with suspension/dissolution of contaminants from physical disturbance of chromium-impacted fill during well installation. This pattern of initial elevated concentrations near the time of well installation followed by substantially lower concentrations has been observed at other chromium-impacted fill sites.

- The regional groundwater investigation for SA-7 indicates that elevated chromium is present in the Deep Overburden Zone near the boundaries of Site 117 (Ryerson Steel), Site 153(Former Morris Canal) and Site 90 (Baldwin Steel), and extends west of Route 440 in the area of SA-6 and SA-7. The source of the deep groundwater plume is believed to be from past operations at the former production plant (Site 117; Ryerson Steel; currently occupied by Home Depot), likely associated with historical discharges or spills of materials used at the plant (e.g., sodium dichromate) and vertical migration of chromium through the lacustrine sands into the deep overburden where it mixes with groundwater moving through the deep, more permeable, coarse-grained sand layer.

- Other constituents detected in groundwater above the GWQS during the most recent sampling completed during 2006 included aluminum, arsenic, iron, lead, manganese, mercury, and sodium.

- Other constituents detected in groundwater above the GWQS in connection with investigations by others include VOCs (benzene, xylene, TCE, DCE, vinyl chloride) and metals (cadmium, mercury, thallium) at Site 184 (MI Holdings).

- Groundwater measurements indicate strong reducing conditions, as evidenced by lack of dissolved oxygen and negative ORP values. These conditions favor the natural reduction of Cr^{+6} to Cr^{+3}.

- RI data for the Site and nearby sites within Study Areas 5, 6 and 7 include groundwater results for chloride and TDS. Over 300 chloride and TDS sample analyses have been completed over a nine-year period, with results indicating that groundwater exceeds the GWQS for these compounds on a regional basis. In some cases, the concentrations exceed the criteria for Class IIIB groundwater designation, suggesting impacts from saline surface water (Newark Bay). The exceedances of the GWQS (or Class IIIB threshold values) are not bounded by property lines or location of historical operations, thus they are ubiquitous and regional. The level and extent of the impact varies by stratigraphic unit and is likely a function of the history and properties of each unit. In the Shallow Zone (above the meadow mat), impacts are likely related to the filling of the estuarine marshes and subsequent interconnection of the bay with the fill zone. The intermediate and deep glacial zones and the bedrock are likely impacted from historic pumping operations. The level and extent are governed by geologic properties of these units (e.g. permeable zones in the glacial sediments and fracture zones in the bedrock).

Recommendations

Soil and groundwater impacts have been adequately characterized and delineated, and sufficient data exist to proceed with remedial action selection to address chromium contamination detected in soils and groundwater at the Site. A Remedial Action Selection Report and Remedial Action Work Plan are presented in Sections 4 and 5, respectively.

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Permit No.: NJ0027022

Name of Permittee:

Jersey City Sewerage Authority

Effective Date: February 28, 1975

Expiration Date: June 30, 1977

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

PERMIT TO DISCHARGE

In reference to the application received from the above-mentioned permittee for a permit authorizing the discharge of pollutants in compliance with the provisions of the Federal Water Pollution Control Act, as amended by the Federal Water Pollution Control Act Amendments of 1972, P. L. 92-500, October 18, 1972 (33 U.S.C. §§1251-1376) (hereinafter referred to as "the Act"),

Jersey City Sewerage Authority
575 State Highway No. 440
Jersey City, New Jersey 07306

(hereinafter referred to as "the Permittee")

is authorized by the Regional Administrator, Region II, U.S. Environmental Protection Agency, to discharge from:

Jersey City West Side Sewage Treatment Plant

and thirteen overflow discharges

to receiving waters named Newark Bay and Hackensack River

in accordance with the following conditions.

BCJ000008

A. GENERAL CONDITIONS

1. All discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any pollutant more frequently than, or at a level in excess of, that identified and authorized by this permit shall constitute a violation of the terms and conditions of this permit. Such a violation may result in the imposition of civil and/or criminal penalties as provided for in Section 309 of the Act. Facility modifications, additions, and/or expansions that increase the plant capacity must be reported to the permitting authority and this permit then modified or re-issued to reflect such changes. Any anticipated change in the facility discharge, including any new significant industrial discharge or significant changes in the quantity or quality of existing industrial discharges to the treatment system that will result in new or increased discharges of pollutants must be reported to the Regional Administrator. Modifications to the permit may then be made to reflect any necessary changes in permit conditions, including any necessary effluent limitations for any pollutants not identified and limited herein. In no case are any new connections, increased flows, or significant changes in influent quality permitted that will cause violation of the effluent limitations specified herein.

2. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

   a. violation of any terms or conditions of this permit;

   b. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or,

   c. a change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge.

3. Notwithstanding 2 above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge authorized herein and such standard or prohibition is more stringent than any limitation upon such pollutant in this permit, this permit shall be revised or modified in accordance with the toxic effluent standard or prohibition and the permittee shall be so notified.

4. The permittee shall allow the head of the State water pollution control agency, the Regional Administrator, and/or their authorized representatives, upon the presentation of credentials:

a. to enter upon the permittee's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this permit;

b. to have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit;

c. to inspect at reasonable times any monitoring equipment or monitoring method required in this permit; or,

d. to sample at reasonable times any discharge of pollutants,

e. to inspect the operation of the treatment facilities.

5. The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, state, or local laws or regulations; nor does it obviate the necessity of obtaining State or local assent required by law for the discharge authorized.

6. This permit does not authorize or approve the construction of any onshore or offshore physical structures of facilities or the undertaking of any work in any navigable waters.

7. Except for data determined to be confidential under Section 308 of the Act, all monitoring reports required by this permit shall be available for public inspection at the offices of the head of the State water pollution control agency and the Regional Administrator. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act.

8. The diversion or bypass of any discharge from the treatment works by the permittee is prohibited, except: (1) where unavoidable to prevent loss of life or severe property damage; or (2) where excessive storm drainage or runoff would damage any facilities necessary for compliance with the terms and conditions of this permit. The permittee shall notify the Regional Administrator in writing within 72 hours of each diversion or bypass in accordance with the procedure specified above for reporting non-compliance. Within 30 days after such incident the permittee shall submit to EPA for approval a plan to prevent recurrence of such incidents. Normal operation of overflows and bypasses (listed in Section C-1) should not be reported under the requirements of this condition. The notification and plan herein required apply only to discharges resulting from unusual situations such as breakdowns, power failures, and bypasses occurring during dry weather periods. A summary description of discharges from bypass points should be submitted with the permittee's quarterly self-monitoring reports.

9. If for any reason the permittee does not comply with or will be unable to comply with any effluent limitation specified in this permit, or should any unusual or extrordinary discharge of wastes occur from the facilities herein permitted, the permittee shall immediately notify the Regional Administrator and appropriate State agency by telephone and provide the same authorities with the following information in writing within five days of such notification:

   a. A description of the non-complying discharge including its impact upon the receiving waters.

   b. Cause of non-compliance.

   c. Anticipated time the condition of non-compliance is expected to continue, or if such condition has been corrected, the duration of the period of non-compliance.

   d. Steps taken by the permittee reduce and eliminate the non-complying discharge.

   e. Steps to be taken by the permittee to prevent recurrence of the condition of non-compliance.

10. Permittee shall take all reasonable steps to minimize any adverse impact to navigable waters resulting from non-compliance with any effluent limitation specified in this permit. The permittee will also provide accelerted or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

11. Except as provided in permit condition 8 on bypassing, nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for non-complying discharge.

12. Nothing in this permit shall be construed to preclude the institution of any legal action nor relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the Act.

13. In the event of any change in control or ownership of facilities from which the authorized discharges emanate, the permittee shall notify the succeeding owner or controller of the existence of this permit by letter, a copy of which shall be forwarded to the Regional Administrator and the State water pollution control agency.

14. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be effected thereby.

15. The permittee shall provide notice to the Regional Administrator of the following:

    a. Any new introduction of pollutants into such treatment works from a source which would be a new source as defined in section 306 of the Act if such source were discharging pollutants;

    b. Any new introduction of pollutants which exceeds 10,000 gallons on any 1 day into such treatment works from a source which would be subject to section 301 of the Act if such source were discharging pollutants; and,

    c. Any substantial change in volume or character of pollutants being introduced into such treatment works by a source introducing pollutants into such works at the time of issuance of the permit.

    Such notice shall include information on the quality and quantity of effluent to be introduced into such treatment works; and an anticipated impact of such change in the quantity or quality of effluent to be discharged from such publicly owned treatment works.

16. The permittee shall require any industrial user of such treatment works to comply with the requirements of section 204(b), 307, and 308 of the Act. Any industrial user subject to the requirements of section 307 of the Act shall be required by the permittee to prepare and transmit to the Regional Administrator periodic notice (over intervals not to exceed 9 months) of progress toward full compliance with section 307 requirements.

17. The permittee shall require any industrial user of storm sewers to comply with the requirement of section 308 of the Act.

B. REQUIRED EFFLUENT LIMITATIONS AND MONITORING AND OPERATIONAL REQUIREMENTS

1. Required Effluent Limitations

During the period beginning on the effective date of this permit and lasting until the expiration date of this permit, discharges shall be limited and monitored by the permittee as specified below:

a. A substantially complete removal of settleable solids shall be achieved.

b. The chlorination facilities shall be operated continuously, year round. A chlorine residual of not less than 0.5 mg/l shall be maintained in the effluent at all times.

c. See Table I.

d. Except as specifically authorized in this permit, the permittee shall not discharge floating solids or visible foam.

e. The effluent values for pH shall remain within the limits of 6.0 to 9.0.

f. The 30-day average quantity of effluent discharged from the wastewater treatment facility shall not exceed 36.0 million gallons per day (mgd).

2. Facility Operation and Quality Control

All waste collection, control, treatment and disposal facilities shall be operated in a manner consistent with the following:

a. At all times, all facilities shall be operated as efficiently as possible and in a manner which will minimize upsets and discharges of excessive pollutants.

b. The permittee shall provide an adequate operating staff which is duly qualified to carry out the operation, maintenance and testing functions required to insure compliance with the conditions of this permit.

c. Maintenance of treatment facilities that results in degradation of effluent quality shall be scheduled during non-critical water quality periods and shall be carried out in a manner approved by the permitting authority.

d. Under no circumstances shall the permittee allow introduction of the following wastes into the waste treatment system:

aa. Wastes which create a fire or explosion hazard in the treatment works.

bb. Wastes which will cause corrosive structural damage to treatment works.

cc. Solid or viscous substances in amounts which cause obstructions to the flow in sewers or interference with the proper operation of the treatment works.

dd. Wastewaters at a flow rate and/or pollutant discharge rate which is excessive over relatively short time periods so as to cause a loss of treatment efficiency.

3. Self-Monitoring and Reporting Requirements

a. The permittee shall effectively monitor the operation and efficiency of all treatment and control facilities and the quantity and quality of the treated discharge. Monitoring data required by this permit shall be summarized on an average calendar month basis. Individual reports are to be submitted on a quarterly basis. Duplicate original copies of the discharge monitoring report form (EPA Form 3320-1), properly completed and signed by the permittee

must be submitted within 28 days after the end of each report period to the Regional Administrator and the State Agency at the following addresses:

U.S. Environmental Protection Agency
Region II
Status of Compliance Branch
26 Federal Plaza
New York, New York 10007

Director
Division of Water Resources
New Jersey Department of
Environmental Protection
Labor & Industry Building
P. O. Box 1390
Trenton, New Jersey 08625

Quarterly reports will be required for periods beginning on March 1, 1975. The data collected and submitted shall include the following parameters and testing frequencies:

See Table I

Samples and measurements of the effluent taken to achieve compliance with the monitoring requirements specified above shall be taken at the point of combined flow into the outfall sewer.

Samples and measurement of the influent wastewater taken to meet the monitoring requirements specified above shall be taken at the point of plant inflow.

b. Sampling and Analysis Methods

Other measurements of oxygen demand can be substituted for Biochemical Oxygen Demand (BOD) where the permittee can demonstrate long-term correlation of the method with BOD values. Substitution of such measurements must receive prior approval of the permitting authority.

The analytical and sampling methods used shall conform to the latest edition of the reference methods listed below. (These are interim references to be replaced by Sec. 304(g) guidelines when available). However, different but equivalent methods are allowable if they receive the prior written approval of the permitting authority.

1. Standard Methods for the Examination of Water and Wastewaters, 13th edition, 1971, American Public Health Association, New York, New York 10019.

2. A.S.T.M. Standards, Part 23, Water; Atmospheric Analysis, 1972, American Society for Testing and Materials, Philadelphia, Pa. 19103.

3. Methods for Chemical Analysis of Water and Wastes, April 1971, Environmental Protection Agency, Water Quality Office, Analytical Quality Control Laboratory, 1014 Broadway, Cincinnati, Ohio 45202.

The permittee shall periodically calibrate and perform maintenance procedures on all monitoring and analytical instrumentation at intervals to insure accuracy of measurements.

4. Recording

The permittee shall record for all samples the date and time of sampling, the sampling method used, the date analyses were performed, the identity of the analysts, and the results of all required analyses and measurements.

All sampling and analytical records mentioned in the preceding paragraph shall be retained for a minimum of three years. The permittee shall also retain all original recordings from any continuous monitoring instrumentation, and any calibration and maintenance records, for a minimum of three years. These periods will be extended during the course of any unresolved litigation, or when so requested by the Regional Administrator.

5. Solids Disposal

Collected screenings, slurries, sludges, and other solids shall be disposed of in such a manner as to prevent entry of those wastes (or runoff from the wastes) into navigable waters or their tributaries.

6. Discharge Location Description

Treated effluent is discharged through a single outfall (Discharge No. 002) into Newark Bay, 240 feet from shore and 11 feet below the water surface. The point of discharge is located at latitude 40°43'00" and longitude 74°06'18".

In addition, there are thirteen overflow points in the collection system that discharge untreated wastewater during periods of wet weather. A descriptive listing of these points can be found in Section C-II of this permit.

Table II - Self-Monitoring Requirements 1/

Parameter	Minimum Monitoring Requirements Measurement Frequency	Sample Type
Total Flow, mgd	continuous	N/A
BOD_5, mg/l	daily	24-hour composite
BOD_5, lbs/day	----	----
Settleable Solids, ml/l	6 per day	grab
Suspended Solids, mg/l	daily	24-hour composite
Suspended Solids, lbs/day	----	----
Residual Chlorine, mg/l 2/	6 per day	grab
Fecal Coliform, N per 100 ml 2/	daily	grab
pH	6 per day	grab
Temperature, °C 2/	6 per day	grab

1/ Except where [illegible]ted, influent and effluent measurement and testing are required.

2/ Only effluent testing required.

* To be calculated based on actual flow and actual testing results for parameters noted.

Section C -

"Special Conditions"

Section C-I

Schedule of Compliance 1/

The permittee has indicated that the level of treatment currently being afforded the discharge is not meeting the level of treatment as provided for in Section 301. (b)(1) (B) and (C) of the Act. Therefore, the permittee shall comply with the following schedule and shall report to the Regional Administrator and the New Jersey Department of Environmental Protection within 14 days following each date on the schedule detailing its compliance or non-compliance. 2/

The Hudson County Sewerage Authority is currently preparing an Engineering and Facility Plan for the Hudson County area. NJSDEP has indicated that this study must be completed by December 1, 1975. Therefore, the permittee will comply with the following requirements:

a. Interim Plan. No later than August 31, 1975, the permittee shall submit to both the Regional Administrator and the New Jersey Department of Environmental Protection, an Engineering Report which discusses the permittee's proposal to maximize the level of treatment to be provided at its existing facilities at a minimal capital expenditure. Upon approval of the Regional Administrator and the New Jersey Department of Environmental Protection, the permittee will implement the program aimed at maximizing the treatment level as provided for in this Engineering Report.

b. Final Plan. Within 60 days of New Jersey Department of Environmental Protection approval of the Engineering and Facility Plan prepared by the Hudson County Sewerage Authority, the permittee shall submit to the New Jersey Department of Environmental Protection and the Regional Administrator a "plan of action" which outlines the major steps the permittee must initiate to be in compliance with the recommendations of the Hudson County Sewerage Authority report.

If the County plan, as approved by New Jersey Department of Environmental Protection provides for the abandonment of the permittee's discharge facility and the discharge of all wastewater to a regional facility, the permittee's "plan of action" shall include at least the following:

i. a statement as to the nature of modifications to the permittee's facilities that will be required to connect to the regional facilities.
ii. an estimated date the permittee's facilities will be abandoned.

If the County Plan, as approved by the New Jersey Department of Environmental Protection, provides for the expansion and/or upgrading of the permittee's existing wastewater treatment facilities, the permittee's "plan of action" shall include at least the following:

i) a statement as to the permittee's intent to file for a Federal Construction Grant or to construct the necessary facilities without Federal aid.

ii) if the permittee elects to apply for Federal funds, the permittee will include the estimated date by which a Federal Construction Grant application will be filed with the State Agency.

iii) if the permittee elects to finance the construction of the necessary facilities without Federal Aid, the permittee's submission will include a complete schedule for the financing, construction and completion of the upgraded facility.

1/ If the time period allotted for the completion of an interim requirement specified above is greater than 9 months, then the permittee shall submit a report detailing its progress toward completion of the interim requirement at the end of the first 9-month period and at the end of each succeeding 9-month period (including, of course, the report, specified above, required within 14 days following the specified completion date).

2/ Each notice of non-compliance shall include the following information:

A. A short description of the non-compliance;

B. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirement without further delay;

C. A description of any factors which tend to explain or mitigate the non-compliance; and

D. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that permittee will meet the next schedule requirement on time.

SPECIAL PERMIT CONDITIONS FOR PUBLICLY-OWNED TREATMENT WORKS COMBINED SEWER OVERFLOWS AND/OR BYPASSES

I. Operation of Systems with Combined Sewers

A. General Requirements

1. The permittee shall operate the treatment works, including the treatment plant and total sewer system, to minimize discharge of the pollutants listed in the permit from combined sewer overflows or bypasses.

2. No new sources of stormwater inflow shall be connected to any separate sanitary sewers in the sewer system.

B. Preliminary Requirements

1. Report on Maximum Treatable Flow Rates

The permittee must report to the Regional Administrator and the State agency by August 31, 1975 the maximum treatable flow rates for the treatment plant or any complete unit process. The maximum treatable flow rates must, at least, be equal to one of the following:

a. The maximum hydraulic flow rate for which the treatment plant was designed, or the maximum hydraulic flow rate for which the treatment plant can provide partial treatment.

b. The maximum flow rate that, based on historic records or theoretical determinations, would cause a treatment plant upset such that other permit conditions could not be achieved.

c. The maximum flow rate that can be delivered to the plant without causing seriously adverse conditions in the interceptor and lateral sewer system such as substantial property damage.

The permittee shall operate the system so as to achieve the maximum treatable flow rate prior to a discharge from a combined sewer overflow or bypass.

2. The permittee may submit, in lieu of the above, a detailed operational plan designed to minimize pollutant discharges from the treatment and sewer system. The permittee must demonstrate that, if implemented, the plan would provide for a lower discharge of pollutants from the system during wet weather than that occurring if the hydraulic flow was treated during wet weather at the limiting flow rate in B. 1. above. The treatment plant and sewer system shall be operated in accordance with this plan.

3. The permittee shall also report by August 31, 1975 to the permit issuance authority a proposed method for estimating the number and location of new sewer connections which will be served by combined sewers for the duration of the permit, and a proposed method for estimating the impact of the additional flows generated by these new sewer connections on the volume of discharges from the combined sewer system. This method shall be used in the development of the operational plan required in Section C. below.

C. Operational Plan

An interim operational plan designed to minimize the discharge of pollutants from combined sewer overflows and bypasses must be submitted by the permittee to the Regional Administrator and the State agency by February 28, 1977 The plan will provide for optimal coordinated operation of the sewage treatment plant and contributing sewer systems. The plan will specifically:

1. Refine the estimate of maximum treatable flow.

2. Report, if applicable, the number, location, types, and kinds of regulators and their respective operating history, maintenance program, and performance efficiency.

3. Report the calculated or estimated storage capacities of the sewer system upstream from all control devices such as pump stations and regulators, or combined sewer discharges.

4. Provide operational procedures for utilizing at least 80% of the available capacity of interceptors and trunk lines upstream of any control devices such as pump stations,

or regulators prior to any discharge from a combined sewer overflow or bypass; or provide, if such storage capacity utilization cannot be achieved with existing control devices, the operational procedures for maximizing the use of storage prior to any combined sewer discharge.

5. Provide a method to determine if the upstream storage capacity was utilized prior to any discharge from the combined sewer system.

6. Analyze the effect on the total volume of combined sewer discharges of new sewer connections anticipated for the duration of the permit. If these additional connections are expected to increase the total volume of discharges for like meteorological conditions, the plan must provide a method for prevention of this increase by regulation or control of new connections and/or an offsetting of any added flows by such means as sewage and inflow reduction, in-system flow routing, and treatment and enlargement of sewer and treatment capacity.

II. Monitoring of Systems with Combined Sewers

A. General Requirements

Point sources 003 through 015 are overflows resulting when the hydraulic flow capacity of the system has been exceeded (see page 20 & 21 for a listing of these point sources). These discharge points may be utilized for wet weather overflows or bypasses to the extent specified by the approved preliminary report and interim operational plan. For all overflows the permittee is required to take the following actions:

1. Submit to the Regional Administrator and the State agency an approvable plan for implementing a monitoring program, as specified herein, by August 31, 1975.

2. Within six months of approval of the plan required in paragraph II. A. 1., the permittee will implement the monitoring program to determine the location, cause, frequency, duration, quality, the quantity of wastes discharged (average and maximum pounds per day) and the method of discharge from these point sources. Effluent quantities determined should include at least the five day BOD, suspended solids, and fecal coliform.

B. Sampling

1. Sampling requirements for combined sewer discharge events are based on the frequency, duration or amount of discharge. The permittee shall monitor the location, cause, duration, and frequency of combined sewer discharge events to the extent necessary to determine which sampling requirements, if any, are applicable to each discharge location. This monitoring shall be conducted during a 12-consecutive-month period.

2. Adequate rainfall records in the major combined sewer catchment areas must be kept during all sampling and monitoring required in paragraphs 3 and 4 of this section.

3. Type 1 Discharges:

a. Description

Combined sewer discharge events occurring at least 20 times a year, or for a yearly total of at least 90 hours, or with an estimated total volume of any discharge event in excess of 2.0% of the annual average of daily flow during the most recent year of record.

b. Sampling and Monitoring Requirements

i. A record shall be maintained of the frequency of discharge events from all Type 1 discharge locations. The permittee must also establish a profile of at least four separate discharge events during the sampling year for a minimum of 25% of the Type 1 discharge locations. These locations shall be chosen so that they are, to the extent possible, representative of all the Type 1 discharge locations.

ii. The profile shall be established as follows:

Discrete samples shall be collected and corresponding rates of flow shall be recorded within the first five minutes after the start of the discharge event, and during each 15 minute interval up to 90 minutes or the end of the discharge, whichever comes first. The sampling sequence shall be 0-5, 15, 30, 45, 60, 75, 90 minutes. The rate of flow shall be recorded each hour thereafter for the remainder of the discharge event.

iii. The above samples must be analyzed for each pollutant limited in the permit. (See paragraph II(A.2), above.)

4. Type 2 Discharges:

a. Description

Combined sewer discharge events occurring at least 10 times a year, or for a yearly total of at least 25 hours, or with an estimated total volume during any given discharge event in excess of 0.5% of the annual average of daily flow during the most recent year of record.

b. Sampling and Monitoring Requirements

i. The permittee shall maintain a record of the frequency of discharge events from at least 15% of the Type 2 discharge locations. These discharge locations shall be chosen so that they are, to the extent possible, representative of all Type 2 discharge locations.

ii. The permittee shall also establish a profile by sampling and analysis of one discharge event during the sampling year for each of the Type 2 discharge locations chosen for monitoring. This profile shall be obtained in accordance with the procedures in paragraphs 3.b.ii. and iii. of this Section.

III. Reporting Results

A. Interim Reports

An interim status report on the monitoring program and the abatement study (required by Section B, below), must be submitted to the Regional Administrator and the State agency at each six month interval starting on August 31, 1975.

B. Final Report

Within twenty-four months of approval of the plan required in Section II, paragraph A.1., the permittee must submit a final plan describing an abatement program to eliminate or significantly reduce pollution from these sources so as to maximize the achievement of water quality standards. The plan shall include:

1. The results of the monitoring and sampling required in Section II shall be summarized as follows:

   a. A table shall be prepared showing the frequency of discharge from each Type 1 and Type 2 discharge monitored during the 12-month period.

   b. A table shall be prepared to display the data obtained on each discharge event subject to sampling and analysis. The table shall include:

      i. Time of day and duration of discharge event.

      ii. Total volume discharged during event.

      iii. Associated rainfall data for the catchment area.

      iv. Flow weighted average concentration of sampled pollutants during the sampling period.

2. An infiltration/inflow analysis in accordance with the procedures for "Grants for Construction of Treatment Works" (40 CFR 35).

3. A plan to remove major sources of inflow from the sanitary portions of the sewer system.

4. Evaluation of, as a minimum, the following strategies:

   a. dual use treatment facilities;

   b. storing and/or treating initial or final sewer system flushes;

   c. storage and subsequent treatment of discharges;

   d. improvements in the sewer system.

5. Estimates of the cost, quantities of discharges and pollutants controlled, and the benefits of the various plans or strategies for a wide range of design storms.

Descriptive Listing of Discharge Points Within the Combined Sewer System

Discharge Number	Discharge Name	Discharge Point Latitude	Discharge Point Longitude	Receiving Waterway
	Regulator			
004	Danforth Ave. South-Regulator	40°42'23"	74°06'01"	Newark Bay
005				
005	Danforth Ave. North-Regulator	40°42'23"	74°06'01"	Newark Bay
006	Duncan Ave. Regulator	40°43'19"	74°05'08"	Hackensack River
007	Sip Avenue Regulator	40°44'03"	74°04'52"	Hackensack River
008	Manhattan Ave. Regulator	40°44'51"	74°03'48"	Hackensack River
009	Secaucus Road Regulator	40°45'37"	74°02'50"	Pennhorn Creek
010	St. Pauls Ave. Regulator	40°44'22"	74°04'21"	Hackensack River
011	Van Winkle Ave. Regulator	40°44'20"	74°04'31"	Hackensack River
012	Broadway Regulator	40°44'16"	74°04'43"	Hackensack River
013	Clendenny Ave. Regulator	40°43'22"	74°05'30"	Hackensack River

Discharge Number	Discharge Name	Discharge Point Latitude	Discharge Point Longitude	Receiving Waterway
014	Claremont Ave. Regulator	40°43'05"	74°05'41"	Hackensack River
015	Fisk Street Regulator	40°42'55"	74°05'47"	Hackersack River

Discharge No. 001 is obtained in the Jersey City S.A. Eastside Treatment Plant NPDES permit (No. NJ0027014).

Discharge No. 002 is the Westside Treatment Plant's outfall line.

SCHEDULE OF COMPLIANCE FOR INDUSTRIAL DISCHARGE INFORMATION

It is apparent that other pollutants attributable to inputs from major contributing industries using the municipal system are also present in the facility's discharge. At such time as sufficient information becomes available to establish limitations for such pollutants, this permit may be revised to specify effluent limitations for any or all of such other pollutants in accordance with industrial best practicable technology requirements or water quality standards.

Not later than 180 days following issuance of this permit, the permittee shall have promulgated an enforceable industrial waste ordinance. This ordinance should allow the permittee to enforce all pre-treatment requirements necessary to ensure compliance with the terms and conditions of this permit, as well as to ensure compliance by all major contributing industries* with the pre-treatment standards and any other applicable requirements promulgated pursuant to Section 307 of the Act. A copy of this ordinance is to be submitted for approval by the permit issuing authority, such approval being an enforceable provision of this NPDES permit. This ordinance shall require each major contributing industry to submit to the permittee periodic notice (at intervals not to exceed 9 months) regarding specific actions taken to achieve full compliance with the requirements of Section 307. On the last day of the months of September and March, the permittee shall submit to the permit issuing authority a report summarizing the progress of all known major contributing industries subject to the requirements of Section 307 towards full compliance with such requirements. Such reports shall include at least the following information:

(1) A narrative summary of actions taken by the permittee to develop, promulgate and enforce the local industrial waste ordinance and thereby ensure that all major contributing industries comply with the requirements of Section 307.

(2) The number of major contributing industries using the treatment works, divided into SIC group categories.

(3) The number of major contributing industries in full compliance with the requirements of Section 307, or not subject to these requirements (e.g., discharge only compatible pollutants).

(4) A list identifying by name those major contributing industries presently in violation of the requirements of Section 307.

These semi-annual reports must be filed with the permitting authority by September 30 and March 31 of each year until compliance is achieved. Submission would be required again only if a major contributing industry reverts to violating the requirements of Section 307.

Immediately upon issuance of this permit, the permittee shall establish and implement a procedure to obtain from all major contributing industries specific information on the quality and quantity of effluents introduced by such industrial users. The following information shall be reported to the permitting agency on a quarterly basis beginning September 30, 1975; quarterly reports reflecting no change from the previous quarter may simply relate this fact, without submitting repetitive data. These reports should follow the format outlined in Appendix I to this permit.

Based on the information regarding industrial inputs reported by the permittee pursuant to the preceding paragraph, this permit may be amended to reflect the municipal facility's effluent requirements for incompatible pollutants.

Pursuant to Section 307 (b) (1) of the Federal Water Pollution Control Act Amendments of 1972, the Administrator published "Pretreatment Standards" for pollutants introduced into a publicly owned treatment works in the Federal Register, Volume 38, 215 on Thursday, November 8, 1973. Nothing in this permit shall be construed to relieve any major industrial contributor from their obligations to comply with these standards.

* A major contributing industry is one that: (a) has a flow of 50,000 gallons or more per average workday; (b) has a flow greater than five percent of the flow carried by the municipal system receiving the waste; (c) has in its waste a toxic pollutant in toxic amounts as defined in standards issued under Section 307 (a) of the Act; or (d) has significant impact, either singly or in combination with other contributing industries, on the treatment works or the quality of its effluent.

APPENDIX I

To comply with the reporting requirements of Condition C-III, the following procedure should be utilized for each major contributing industry:

> Using the following format, a description of each major contributing industry discharging to the municipal system should be prepared. A separate set of six questions should be completed for each major industrial user.
>
> "See Section IV of Standard Form "A" attached."

It is the responsibility of the permittee to obtain the required information for all major industrial contributors to his facility, including those contributing via another system. Actual data should be provided if available; otherwise, the best estimate should be provided and the response marked, "interim". If certain of the requested information does not apply, it should be marked "N.A."

Specific instructions follow:

Question 1: Major contributing facility - Give the name and address that designates the location of the industrial facility.

Question 2: Primary standard industrial classification code- Using four-digit standard industrial classification (SIC) codes, indicate the type of industrial facility that is discharging into the municipal system. Standard industrial classification (SIC) code numbers and descriptions may be found in the 1972 edition of the "Standard Industrial Classification Manual" prepared by the Executive Office of the President, Office of Management and Budget, which is available from the Government Printing Office, Washington, D.C. Do not use previous editions of the manual. Copies are also available for examination at state water pollution control offices, Regional Offices of the Environmental Protection Agency, and at most public libraries.

Question 3: Principal product or raw material - Specify either the principal product or the principal raw material and the maximum quantity per day produced or consumed. Quantities are to be reported in the units of measurement given in Table B for particular SIC categories. Enter the letter-number code from the "Code" column in Table B for the units selected under "Units." For SIC categories not listed, use the units of measurements normally used by that industry.

Question 6: Indicate the characteristics of the wastewater from the contributing industry in terms of parameters that will adequately identify the waste, such as BOD, COD, Cr, Zn, pH units, degrees Fahrenheit, etc. The characteristics should be indicative of the waste stream after any pre-treatment is provided by the industrial facility but prior to entering the municipal system.

In addition to parameter names, report values in units specified in Table A. The first column, "Parameter & Units, indicates the preferred units for reporting data for a given parameter. The second column, "Method", lists the preferred analytical method (if any) for determining the required parameter values. The next three columns, "References," give the page numbers in standard reference works where a detailed description of the recommended analytical technique given under "Method" can be found. These standard references are:

(1) Standard Methods for the Examination of Water and Wastewaters 13th Edition, 1971, American Public Health Association, New York, New York 10019.

(2) A.S.T.M. Standards, Part 23, Water; Atmospheric Analysis, 1972 American Society for Testing and Materials, Philadelphia, Pa. 19103

(3) EPA Methods for Chemical Analysis of Water and Wastes, April 1971, Environmental Protection Agency, Water Quality Office, Analytical Quality Control Laboratory, NERC, Cincinnati, Ohio 45208.

Copies of these publications are available from the above sources, or for review in the Regional Offices of the Environmental Protection Agency or the State Water Control Board.

The last column, "Data Reporting Level," indicates that nearest significant figure (digit) to which the data must be reported. For example, the figure X for chloride indicates that chloride data must be reported to the nearest whole milligram per liter. This level should not be confused with "detectable limits"; applicable detection limit information can be obtained from the appropriate reference source.

FORM APPROVED
OMB No. 158-R01[illegible]

FOR AGENCY USE

STANDARD FORM A—MUNICIPAL

SECTION IV. INDUSTRIAL WASTE CONTRIBUTION TO MUNICIPAL SYSTEM

Submit a description of each major industrial facility discharging to the municipal system, using a separate Section IV for each facility description. Indicate the 4 digit Standard Industrial Classification (SIC) Code for the industry, the major product or raw material, the flow (in thousand gallons per day), and the characteristics of the wastewater discharged from the industrial facility into the municipal system. Consult Table III for standard measures of products or raw materials. (see instructions)

1. **Major Contributing Facility** (see instructions)

Name	401a	
Number& Street	401b	
City	401c	
County	401d	
State	401e	
Zip Code	401f	

2. Primary Standard Industrial Classification Code (see instructions) — 402 ____

3. Principal Product or Raw Material (see instructions)

			Quantity		Units (See Table III)
Product	403a	403c		403e	
Raw Material	403b	403d		403f	

4. Flow Indicate the volume of water discharged into the municipal system in thousand gallons per day and whether this discharge is intermittent or continuous.
   - 404a ____ thousand gallons per day
   - 404b ☐ Intermittent (int) ☐ Continuous (con)

5. Pretreatment Provided Indicate if pretreatment is provided prior to entering the municipal system — 405 ☐ Yes ☐ No

6. **Characteristics of Wastewater** (see instructions)

406a	Parameter Name							
406a	Parameter Number							
406b	Value							

Sampling Schedule I

The permittee shall take daily 24-hour composite samples** of intake water (surface water body only) and of each discharge over a typical production period of at least 7 consecutive operating days. One or two grab samples per day shall also be taken during maximum anticipated waste loadings (i.e. maximum production period, batch dumping, washing operations). This sampling program shall be carried out to insure complete, reliable results which will typify the plant's discharge.

In lieu of this sampling program the permittee may submit documentation indicating the results of previous sampling programs for all or part of the required parameters. The data utilized in obtaining the average and maximum values which appear in the permit application can be substituted for this report if the reported values can be shown to be representative of the permittee's current discharge(s).

**Grab samples only shall be taken for analysis of dissolved oxygen, oil and grease, pH and any bacteriological analysis. Care shall be exercised when collecting a composite sample such that the proper preservative is present in the sample container during sample collection. Depending on the analysis to be conducted, several different containers and preservation techniques may be required. Samples shall be analyzed as quickly as possible after collection and in no case shall the maximum holding time exceed that contained in the references cited in Table A of standard forms application.

This permit shall become effective on February 28, 1975.

This permit and the authorization to discharge shall be binding upon the permittee and any successors in interest of the permittee and shall expire at midnight on June 30, 1977. The permittee shall not discharge after the above date of expiration. In order to receive authorization to discharge beyond the above date of expiration, the permittee shall submit such information, forms, and fees as are required by the agency authorized to issue NPDES permits no later than January 2, 1977

By authority of Gerald M. Hansler, P.E.
(Regional Administrator)

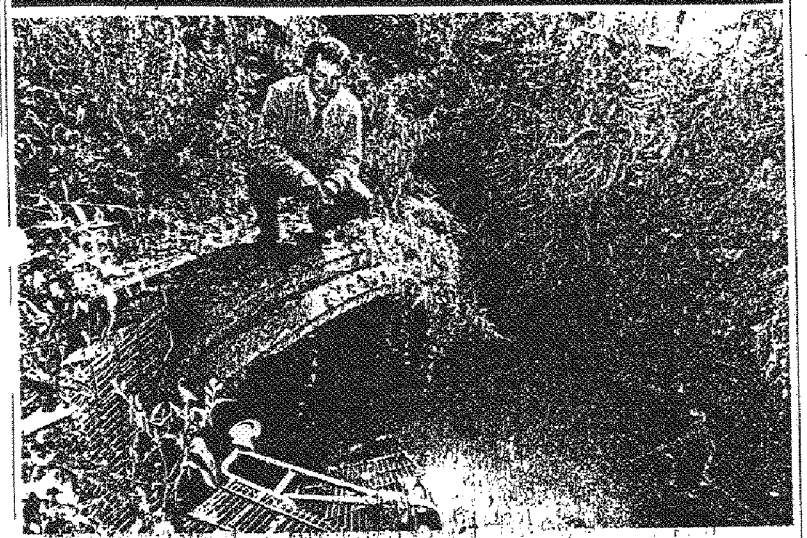
JAN 20 1975
(Date)

(Signature)

Meyer Scolnick, Director
Enforcement and Regional
Counsel Division

Dispatch FRIDAY, SEPTEMBER 30, 1988

SYSTEM BREAKDOWN



Louis M. Manzo, chief inspector of the Jersey City Health Department, examines the Clendenny Avenue sewer outfall pipe yesterday. A study being undertaken by his department says malfunctioning outfalls are releasing raw sewage into the Hackensack and Hudson rivers.

LISA SAUSO / THE HUDSON DISPATCH

Waste fouls rivers

Study: Outfalls releasing untreated sewage

By JONATHAN BRINCKMAN
The Hudson Dispatch

JERSEY CITY—Large amounts of untreated sewage are flowing directly into the Hudson and Hackensack rivers because of malfunctions in the city sewage system, according to study being conducted by the Health Department here.

Chief Health Inspector Louis M. Manzo, heading the investigation, said the uncompleted study is finding that most of the city's "outfall pipes" are releasing raw sewage into the rivers during dry weather. The city's 26 outfall pipes are designed to discharge diluted waste into the rivers only when heavy rain overloads the sewerage system.

Please see SEWAGE Page 8

SEWAGE

CONTINUED FROM PAGE 1

"These results show that the city has a serious problem with maintenance of its sewerage infrastructure," Manzo said. "They (city officials) are going to be very embarrassed by what we turn out."

Manzo, an outspoken health code enforcer, has publicly clashed with city officials and major developers. Manzo's department undertook the study in July, and plans to release it in late October.

City officials reacted more with anger than embarrassment to Manzo's charges. Mayor Anthony R. Cucci, acknowledging deficiences in the municipal sewer system, said the city was spending $102 million over five years to bring the 100-year-old pipe complex into good condition.

"We are not turning our backs on the problem," he said. "But it's not something you can put a bandage on and make it go away."

***

REPRESENTATIVES OF state and regional pollution control agencies said while they were unaware of Manzo's findings, if they found them to be substantiated, the city could be heavily fined.

"If you have 24 hours of dry weather and there's still raw sewage coming out of the outfalls, that's a violation," said Alan Mytelka, director of the Interstate Sanitation Commission, an autonomous agency charged with monitoring water quality in the tristate area.

Mytelka said he would do "whatever it takes" to stop confirmed violations, including taking the city to court.

A spokesman for the state Department of Environmental Protection said that if the city Health Department had found any violations, the state department would like to know about them. Last month, he said, Hackensack had been fined more than $400,000 for discharging raw sewage during dry weather.

Like many other Hudson County municipalities, this city's system combines its stormwater and sanitary sewage system. On rainy days, storm water overloads the city's two sewage treatment plants and the excess, a mixture of sewage and fresh water, is permitted to be released through the outfalls.

The city department launched its investigation of the city's outfalls on July 19, according to Manzo, and has since found that water leaving and surrounding most of the 20 outfall pipes being studied is highly polluted with sewage, even during dry weather.

MOST OF the pipes have been sampled on two occasions since the study began, said Manzo, adding that the study will be complete when each pipe has been sampled three times.

At each of the outfall pipes, Manzo said, investigators have found fecal coliform levels far exceeding allowed standards. Fecal coliform, a bacteria found in human feces, was found at 2,400 parts per 100 milliliters at each of the outfall sites. Water discharged from sewage treatment plant must have fecal coliform levels below 200 parts per 100 milliliters, a state department spokesman said.

Manzo said that because it rained so little in July and August, the "vast majority" of the samples were taken during dry weather.

The findings show the regulators are malfunctioning, Manzo said. Regulators are devices fitted into the main sewerage pipes that are designed to allow rain-diluted waste to flow out into the rivers only when the sewerage system backs up.

Michael Barnes, the city's chief engineer, responsible for maintaining the sewage outflow system, accused Manzo of acting irresponsibly by not informing the city of his preliminary findings.

"If he's found a malfunctioning regulator, he should have told us immediately," said Barnes.