

TABLE 2-1

Chronology of Remedial Investigation Activities and Dates Performed
Gowanus Canal Remedial Investigation
Brooklyn, New York

Investigation	Date	Summary of Remedial Investigation Activity
Bathymetric Survey	January 5, 2010	Survey to measure sediment surface elevations within the canal.
Sediment Coring	January 27 - 29, 2010 March 3 - April 15, 2010	USEPA collected sediment cores in the canal.
Surface Sediment Sampling	June 17 - July 1, 2010	USEPA collected surface sediment samples from the canal and from reference locations.
Surface Water - Dry Weather Sampling	June 19, 2010 July 26, 2010	USEPA collected surface water samples in dry weather conditions from the canal, reference locations, and one location from the Buttermilk Channel. One additional surface water sample was collected in July 2010 in an area with a sheen.
Surface Water - Wet Weather Sampling	July 13, 2010	USEPA collected surface water samples in wet weather conditions from the canal, reference locations, and one location from the Buttermilk Channel.
Fish and Shellfish Tissue Sampling	June 21 - July 9, 2010	USEPA collected tissue samples from species of fish and crab in the canal and from reference locations.
Air Sampling (Round 1)	July 7 - 9, 2010	USEPA collected air samples from locations along the canal and at predominately upwind background locations away from the canal. Samples were collected before the start of the canal aeration system.
Air Sampling (Round 2)	July 28 - 29, 2010	Same as above but after the start of the canal aeration system.
Combined Sewer Outfalls - Dry Weather Sampling	June 30 - July 1, 2010	USEPA collected sediment and water samples from manholes upland of CSO outfalls to the canal.
Combined Sewer Outfalls - Wet Weather Sampling 1	July 13, 2010	USEPA collected water samples from manholes upland of CSO outfalls to the canal. Not all outfalls were sampled because rainfall stopped before sampling was completed.
Combined Sewer Outfalls - Wet Weather Sampling 2	September 28, 2010	USEPA collected water samples from manholes upland of CSO outfalls to the canal. Not all outfalls were sampled because rainfall stopped.
Combined Sewer Outfalls - Wet Weather Sampling 3	September 30 - October 1, 2010	USEPA collected water samples from manholes upland of CSO outfalls to the canal. All outfalls were sampled.
Pipe Outfalls - Dry Weather Sampling	September 1 - 7, 2010	USEPA collected samples from actively discharging pipes.
Pipe Outfalls - Tracing and Video survey	October - December 2010	USEPA ERT performed a video survey of identified pipes to determine how far they extend from the canal and collect a variety of other information about the pipes.
Soil Sampling and Monitoring Well Installation	May 17 - June 30, 2010	USEPA ERT, National Grid, and New York City installed monitoring wells and collected soil samples during well installation activities. Each entity also completed a survey of the horizontal and vertical information for the respective wells.
Groundwater Sampling	June 24- July 26, 2010	USEPA, National Grid, and New York City collected groundwater samples from the monitoring wells.
Groundwater / Surface Water Interaction	June 24- July 26, 2010	USEPA, National Grid, and New York City collected surface water and groundwater samples to evaluate groundwater surface water interactions.
Synoptic Water Level Survey	July 26 - December 20, 2010	USEPA, National Grid, and New York City collected synoptic water level measurements at monitoring wells and staff gauges along the entire canal to quantify hydraulic gradients and establish groundwater flow directions. Last survey scheduled for December 20, 2010 and those results will be included in final RI.
Tidal Survey	August 2, 2010 August 5, 2010	USEPA performed a survey to evaluate the influence of tidal fluctuations on groundwater levels.
Side Scan Sonar	November 12, 2010	USEPA performed survey to identify debris of potential historical significance at the bottom of the canal.

Notes:

CSO = Combined Sewer Overflow

ERT = Emergency Response Team

USEPA = United States Environmental Protection Agency

Page Intentionally Left Blank

TABLE 2-2
 Summary of Phase 1, 2, and 3 Sampling Programs
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Type	Sampling Entity	Sampling comments	Number of Samples (1) and Analyses Performed (2)																			
			TAL Metals (including mercury)	Filtered TAL Metals (including mercury)	Cyanide	TCL VOCs	TCL SVOCs	TCL PCBs	TCL Pesticides	PCB Congeners	TOC (Non-Geochemistry Samples)	Sulfide	Grain size	AVS/SEM	TSS	Geochemistry (3)	Air VOCs	Air PCBs	Air PAHs	Bioassay / toxicity	TCLP	RIC
Phase 1																						
Pipe Outfalls	USEPA	Dry weather	10	10	10	12	11	10	10													
Phase 2																						
Sediment Coring	USEPA		509		509	518	518	518	518		494	500	503							22	22	
	USEPA-ERT		100		100	99	100	100	100													
	National Grid	From 2005 investigation (soft sediment only)	144		144	144	144	144	144													
Phase 3																						
Surface Water	USEPA	Dry weather	38	38	38	38	38	38	38						38							
		Wet weather	37	37	37	37	37	37	37						37							
		General Canal Condition Sample	1	1	1	1	1	1	1													
	USEPA	Groundwater surface water interaction sampling														4						
	National Grid	Groundwater surface water interaction sampling														2						
	NYC	Groundwater surface water interaction sampling													3							
Surface Sediment	USEPA		37		37	37	37	37	37	22	37		37	37							17	
Sediment Toxicity Testing	USEPA																					
Fish and Shellfish Tissue	USEPA	Mummichug	5							5	5											4
		Blue crab	20				20			20	20											20
		Striped Bass	5							5	5											5
		White Perch	2							2	2											2
		American Eel	7							7	7											7
		Atlantic Tomcod	6							6	6											4
		Hake	1							1	1											1
		Scup	3							3	3											3
		Weakfish	1							1	1											1
Subsurface Soil	USEPA ERT		233		233	233	233	233	233													
	NYC		67		67	67	67	67	67													
	National Grid		56		56	56	56	56	56													
Groundwater	USEPA		65	65	65	65	65	65	65						16							
	NYC		14		14	14	14	14	14						6							
	National Grid		11	11	11	11	11	11	11						3							
CSO - Sediment	USEPA			7	7	7	7	7		7		7										
CSO - Water	USEPA	Dry weather	7		7	7	7	7	7													
		Dry weather event	10	10	10	10	10	10	10						10	2						
		Wet weather event 1	6	6	6	5	6	5	5						6							
		Wet weather event 2	3	3	3	3	3	3	3						3	1						
		Wet weather event 3	10	10	10	10	10	10	10						9	1						
Air	USEPA	Dry weather before start of aeration														23	1	23				
		Dry weather after start of aeration														20		20				
Oversight - split samples	USEPA	Soil	26		26	27	27	26	26													
		Groundwater	22	22	22	23	22	22	22													

(1) Numbers do not include QA/QC samples.

(2) Analyses of samples collected by USEPA were performed and validated through the CLP (contract laboratory program) for TCL (target compound list), TAL (target analyte list), cyanide, PCB congeners, and lipids. Remaining analyses were through a subcontracted laboratory and validated by a contractor outside of the CLP. Analyses of samples collected by other entities were analyzed through subcontracted laboratories and independently validated.

(3) Geochemistry parameters include: alkalinity, ammonia, calcium, chlorides, iron - total, iron - dissolved, magnesium, manganese - total, manganese - dissolved, aluminum, nitrates, total Kjeldahl Nitrogen (TKN), organic carbon - total, organic carbon - dissolved, potassium, phosphate, total hardness, silica, sodium, sulfates, total dissolved solids (TDS), total suspended solids (TSS), and field test for ferrous (+II) iron.

TOC - Total Organic Carbon

AVS/SEM - acid volatile sulfide/simultaneously extracted metals

VOCs - volatile organic compounds

SVOCs - semi-volatile organic compounds

CSO - combined sewer overflow

NYC - New York City

USEPA - United States Environmental Protection Agency

ERT - Emergency Response Team

PCB - polychlorinated biphenyl

PAH - polycyclic aromatic hydrocarbons

TCLP - toxicity characteristic leaching procedure

RIC - reactivity, ignitibility, and corrosivity

Page Intentionally Left Blank

TABLE 2-3

Rationale for Selection of Sediment Coring Locations

Gowanus Canal Remedial Investigation

Brooklyn, New York

Location ID	Description	Rationale
Individual Locations		
ERT 4-3	East side of canal, south of Union Street bridge	National Grid Location SED-15A; sampled in January 2010 because location may not have been accessible once NYCDEP started Flushing Tunnel repair activities.
107	CSO (RH-034)	Head of canal; thick sediment mound from CSO discharges
108	Fulton former MGP site	Potential source
109	CSO (RH-036)	CSO; spatial coverage
110	National Grid location SED-24B	Potential source; NAPL observed at sediment surface by National Grid at location SED-24B
111	4 th Street turning basin; National Grid location SED-86A	Verify previous results for National Grid SED-86A
112	CSO (OH-007)	CSO
113	CSO (RH-035)	CSO; upstream of CG/PP former MGP site
114	CG/PP former MGP site	NAPL adjacent to CG/PP former MGP site
115	CG/PP former MGP site	NAPL adjacent to CG/PP former MGP site
116	6 th St. turning basin	Potential source
117	7 th St. turning basin; National Grid location SED-92A	Verify National Grid SED-92A; potential source
118	Potential active source; storm water outfalls RH-601 and OH-607; former National Grid location GC-SED-58C	NAPL observed at sediment surface by National Grid at SED-58 and SED-59
119	11 th St. turning basin, Metropolitan former MGP site	Potential source
120	Metropolitan former MGP site	Potential source
121	Metropolitan former MGP site	Potential source
122	Asphalt plant; National Grid location GC-SED-71C	Potential source
123	Gowanus Creek Channel	Spatial coverage of Gowanus Creek Channel
145	Center of channel, south of Carrol Street bridge	Potential source
149	Mouth of 11th Street turning basin	Potential source; added in field because core at location 119 did not penetrate into native sediment due to thick layer of accumulated sediment
150	West side of canal, near end of Halleck Street	Potential source
151	Near entrance to New York City incinerator facility	Potential source
152	East side of canal at end of DeGraw Street	CSO in upper reach of canal
153	Center of channel, north of Carrol Street bridge	Potential source
Transects		
ERT 1-1		
ERT 1-2	Transect at head of canal	
ERT 1-3		
ERT 2-1		
ERT 2-2	Between National Grid transects A and B	CSO near head of canal; sampled in January 2010 since location may not have been accessible once NYCDEP started Flushing Tunnel repair activities.
ERT 2-3		
ERT 3-1		
ERT 3-2	Between National Grid transects C and D	
ERT 3-3		
124		
125	Between National Grid transects A and B	CSO near head of canal
126		
127		
128	North of 3rd St. bridge	Potential source
129		
130		
131	Under train bridge crossing (9th St.)	Potential source
132		
133		
134	Under Hamilton Ave./Gowanus Expressway	Potential source
135		
136		
137	Between National Grid transects X and Y	Channel deepens south of this point
138		
139		
140	South end Gowanus Creek Channel	Transect away from CSO
141		
142		
143	Hess oil tank	South end of study area
144		
146		
147	South of former 1st Street turning basin	Potential source
148		

Notes:

CSO = combined sewer overflow

NAPL = non-aqueous phase liquid

NYCDEP = New York City Department of Environmental Protection

CG/PP = Carroll Gardens/Public Place

MGP = manufactured gas plant

Page Intentionally Left Blank

TABLE 2-4
Rationale for Selection of Surface Water and Sediment Sampling Locations
Gowanus Canal Remedial Investigation
Brooklyn, New York

Location	Description	Rationale
<u>301</u> *	CSO (RH-034)	Active source, shallow water and / or exposed sediment during low tide, potential human health exposure point; note that area targeted for dredging by NYCDEP for CSO abatement
302 *	CSO (RH-038)	Active source, shallow water and / or exposed sediment during low tide, potential human health exposure point
<u>303</u> *#	Fulton former MGP site	Active source, shallow water and / or exposed sediment during low tide, potential human health exposure point; high surface sediment PAH concentrations for evaluation in BERA
304	CSO (RH-037)	Active source
<u>305</u> *	Union St. bridge	Potential human health exposure considered at bridge crossings
306	CSO (RH-036)	Active source, spatial coverage
<u>307A</u> *# <u>307B</u> *#	CSO (OH-005) and Carroll St. bridge	Active source, potential human health exposure considered at bridge crossings
<u>308A</u> * <u>308B</u> *	Canoe launch	Shallow water and / or exposed sediment during low tide, potential human health exposure point
<u>309</u> *#	3 rd St. bridge	Shallow water and / or exposed sediment during low tide, potential human health exposure point
<u>310</u> *#	4 th Street turning basin	Shallow water and / or exposed sediment during low tide, potential human health exposure point
311	CSO (OH-007)	Active source
<u>312</u>	CSO (RH-035)	Active source Upstream of CG/PP former MGP site
<u>313</u> #	CG/PP former MGP site	Potential active source
<u>314</u> *#	6 th St. turning basin	Shallow water and / or exposed sediment during low tide, potential human health exposure point
<u>315</u> #	CG/PP former MGP site	Potential active source
316 *	7 th St. turning basin	Shallow water and / or exposed sediment during low tide, potential human health exposure point
317	Storm sewer outfalls (RH-601 and OH-607) ¹	Active source
<u>318</u> *#	11 th St. Basin, Metro. former MGP site	Metropolitan former MGP site Shallow water and / or exposed sediment during low tide, potential human health exposure point
<u>319</u> *#	Metro. former MGP site	Metropolitan former MGP site Shallow water and / or exposed sediment during low tide, potential human health exposure point High surface sediment PAH concentrations for evaluation in BERA
<u>320</u>	CSO (RH-031) and Hamilton Avenue crossing	Active source
<u>321</u> #	New York City incinerator location	Potential active source
322	Gowanus Creek Channel	Spatial coverage of Gowanus Creek Channel

TABLE 2-4
 Rationale for Selection of Surface Water and Sediment Sampling Locations
Gowanus Canal Remedial Investigation
Brooklyn, New York

Location	Description	Rationale
323	CSO (OH-006)	Active source
<u>324</u> #	Former Navy facility	Spatial coverage of Gowanus Creek Channel
<u>325</u>	Former Navy facility	Spatial coverage of Gowanus Creek Channel
<u>326</u> #	Reference location	
327	Reference location	
328 #	Reference location	
329 #	Reference location	
<u>330</u> #	Reference location	Ten locations in Gowanus Bay and Upper New York Bay were selected as reference sampling locations. These locations were positioned on an approximate grid with increased spacing with increasing distance from the mouth of the canal to characterize gradients in contaminant concentrations and biological effects, if present. Only surface water was collected from location 336, which near the Flushing Tunnel intake in the Buttermilk Channel.
331	Reference location	
332	Reference location	
<u>333</u> #	Reference location	
334	Reference location	
335	Reference location	
336	Reference location – Surface water only	

* Denotes sample that will be used to support the human health risk assessment.

Denotes sample collected for toxicity testing.

† Denotes sample collected for PCB congener analysis.

‡ – NYC has previously identified RH-601 as RH-032 and OH-607 as OH-008.

BERA – baseline ecological risk assessment

CG/PP – Carroll Gardens/Public Place former MGP site

CSO – combined sewer overflow

MGP – manufactured gas plant

NYCDEP – New York City Department of Environmental Protection

PAH- polycyclic aromatic hydrocarbon

TABLE 2-5
Tissue Sample Groupings for Chemical Analysis
Gowanus Canal Remedial Investigation
Brooklyn, New York

	Canal							Reference					
	Number of Samples Per Area ¹						Additional Samples (Multiple Area Groupings)	Total Canal Samples	Number of Samples Per Area ¹			Additional Samples (Multiple Area Groupings)	Total Reference Samples
	401	402	403	404	405	406			Reference (Inner)	Reference (Middle)	Reference (Outer)		
Small Prey Fish (Whole Body)													
Atlantic Tomcod ²	1	0	1	0	1	1	0	4	1	0	0	0	1
Hake	0	0	0	0	0	0	0	0	0	0	1	0	1
Mummichog ³	0	1	1	1	1	0	0	4	0	0	0	0	0
Crab													
Edible Tissue													
Blue Crab	2	2	2	2	2	2	0	12	2	3	3	0	8
Hepatopancreas													
Blue Crab	0	0	0	0	0	0	2	2	0	0	0	1	1
Larger Fish Species (Fillet and Carcass)													
Fillet													
American Eel	0	2	3	0	0	1	0	6	1	0	0	0	1
Scup	0	0	0	0	0	0	0	0	0	0	3	0	3
Striped Bass	2	0	1	0	0	2	0	5	0	0	0	0	0
Weakfish	0	0	0	0	0	0	0	0	0	0	1	0	1
White Perch	2	0	0	0	0	0	0	2	0	0	0	0	0
Carcass													
American Eel	0	2	3	0	0	1	0	6	1	0	0	0	1
Scup	0	0	0	0	0	0	0	0	0	0	3	0	3
Striped Bass	2	0	1	0	0	2	0	5	0	0	0	0	0
Weakfish	0	0	0	0	0	0	0	0	0	0	1	0	1
White Perch	2	0	0	0	0	0	0	2	0	0	0	0	0

1) Matrix spike / matrix spike duplicate samples included at a frequency of 5 percent.

2) Percent moisture and lipids were not analyzed on sample from reach 401 and reference (inner) due to limited Atlantic tomcod tissue mass collected from these sample reaches. Reduced weight tissue analysis was additionally conducted on the sample collected from the reference (inner) sample reach.

3) Percent moisture and lipids were not analyzed on sample from reach 402 due to limited mummichog tissue mass collected from this sample reach.

Page Intentionally Left Blank

TABLE 2-6
 Locations of Combined Sewer Overflow Regulators
Gowanus Canal Remedial Investigation
Brooklyn, New York

CSO	Description
RH-031	Bond-Lorraine Sewer relief at Lorraine and Smith Streets
RH-034	Gowanus Pump Station
RH-033	Regulator R-25 at Nevins and Douglass Streets
RH-035	Bond-Lorraine Sewer relief at Bond and 4 th Streets
RH-037	Regulator R-23 at Nevins and Sackett Streets
RH-036	Regulator R-22 at Nevins and President Streets
RH-038	Regulator R-24 at Nevins and Degraw Streets
OH-005	3 rd Avenue sewer relief at 3 rd Ave. and Carroll St.
OH-006	3 rd Avenue sewer relief at 3 rd Ave. and 19 th St.
OH-007	2 nd Avenue Pump Station at 3 rd Ave. and 7 th St.

Note:

CSOs designated with RH are part of the Red Hook Water Pollution Control Plant (WPCP) service area and CSOs designated as OH are part of the Owl's Head WPCP service area.

Page Intentionally Left Blank

TABLE 2-7
 Locations of Selected Monitoring Locations at Combined Sewer Overflows
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

CSO	Monitoring Location Description
RH-031	Manhole located in the traffic intersection of Lorraine St., Smith St., and Hamilton Blvd.
RH-034	Gowanus Pump Station influent screening chamber
RH-033	Manhole located approximately 75 ft southeast of the Nevins St. and Douglass St. intersection
RH-035	Manhole located approximately 25 ft northeast of the intersection of 4 th St. and Bond St.
RH-037	Manhole located within the intersection of Nevins St. and Sackett St.
RH-036	Manhole located within the sidewalk southwest of the Nevins St. and President St. intersection
RH-038	Manhole located approximately 40 ft east of the Nevins St. and Degraw St. intersection
OH-005	Manhole located approximately 160 ft east of the intersection of 3 rd Ave. and Carrroll St.
OH-006	Manhole located approximately 220 ft north of the 3 rd Ave. and 19 th St. intersection
OH-007	Dry weather sampling event: wet well located within the 2 nd Avenue pump station Wet weather events: manhole located approximately 35 ft northeast of the 2 nd Ave. and 5 th St. intersection

Notes:

CSOs designated with RH are part of the Red Hook Water Pollution Control Plant (WPCP) service area and CSOs designated as OH are part of the Owls Head WPCP service area. Water and sediment samples were collected from the wet well located within the 2nd Avenue pump station during the dry weather sampling event due to a lack of water in the upstream manhole. Samples collected during the wet weather sampling events were collected from the upstream manhole located on 2nd Avenue.

Page Intentionally Left Blank

TABLE 2-8

Groundwater Monitoring Well & Staff Gauge Summary

Gowanus Canal Remedial Investigation

Brooklyn, NY

Monitoring Well Location ID	Installed by	Eastings	Northing	Ground Surface or Staff Gauge Elevation (ft NAVD88)	Elevation of Well Protective Casing Cover (ft NAVD88)	Elevation of Well Riser Pipe (ft NAVD88)	Finished Well Elevation (ft NAVD88)	Finished Well Depth (ft bgs)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)	Depth of Top of Screen (ft bgs)	Depth of Bottom of Screen (ft bgs)	Screen Length (ft)	Screen Diameter (inches)	Screen Material	Screen Slot Size (inches)
Monitoring Well Construction Details																
MW-1S	NYC	634481.92	673670.09	9.57	9.57	8.89	-7.43	17.0	2.57	-7.43	7.00	17.00	10	2	PVC	0.1
MW-11	NYC	634484.71	673668.50	9.59	9.59	9.42	-30.21	39.8	-25.21	-30.21	34.80	39.80	5	2	PVC	0.1
MW-2S	NYC	634299.81	673623.69	5.49	5.49	5.02	-7.51	13.0	2.64	-7.36	2.85	12.85	10	2	PVC	0.1
MW-21	NYC	634302.04	673620.93	5.57	5.57	5.28	-29.03	34.6	-24.03	-29.03	29.60	34.60	5	2	PVC	0.1
MW-3S	USEPA	634061.45	673042.91	7.06	7.03	6.62	-8.44	15.5	2.06	-7.94	5.00	15.00	10	2	PVC	0.1
MW-31	USEPA	634061.45	673042.91	7.06	7.03	6.62	-35.94	43.0	-30.94	-35.94	38.00	43.00	5	2	PVC	0.1
MW-4S	USEPA	633870.41	673236.28	9.05	8.90	8.62	-4.45	13.5	6.05	-3.95	3.00	13.00	10	2	PVC	0.1
MW-41	USEPA	633870.41	673236.28	9.05	8.90	8.56	-29.95	39.0	-24.95	-29.95	34.00	39.00	5	2	PVC	0.1
MW-5S	USEPA	633628.17	672012.73	6.30	6.30	5.84	-7.20	13.5	3.30	-6.70	3.00	13.00	10	2	PVC	0.1
MW-51	USEPA	633628.17	672012.73	6.30	6.30	5.86	-28.70	35.0	-23.70	-28.70	30.00	35.00	5	2	PVC	0.1
MW-6S	USEPA	633498.35	672097.47	7.42	7.43	7.18	-6.08	13.5	4.42	-5.58	3.00	13.00	10	2	PVC	0.1
MW-61	USEPA	633498.35	672097.47	7.42	7.43	7.21	-27.58	35.0	-22.58	-27.58	30.00	35.00	5	2	PVC	0.1
MW-7S	USEPA	633225.36	671538.18	7.15	7.09	6.44	-6.35	13.5	4.15	-5.85	3.00	13.00	10	2	PVC	0.1
MW-71	USEPA	633225.36	671538.18	7.15	7.09	6.39	-25.85	33.0	-20.85	-27.85	28.00	35.00	5	2	Stainless Steel	0.1
MW-8S	USEPA	633285.11	671659.10	7.50	7.51	7.13	-6.00	13.5	4.50	-5.50	3.00	13.00	10	2	PVC	0.1
MW-81	USEPA	633285.11	671659.10	7.50	7.51	7.17	-31.50	39.0	-26.50	-31.50	34.00	39.00	5	2	PVC	0.1
MW-9S	NYC	631759.29	670962.61	10.47	10.47	10.21	-4.53	15.0	5.55	-4.45	4.92	14.92	10	2	PVC	0.1
MW-91	NYC	631763.30	670958.60	10.32	10.32	9.76	-28.90	39.2	-23.90	-28.90	34.22	39.22	5	2	PVC	0.1
MW-10S	NYC	631580.16	671266.66	13.63	13.63	13.31	-1.37	15.0	8.63	-1.37	5.00	15.00	10	2	PVC	0.1
MW-101	NYC	631573.23	671266.33	13.74	13.74	13.46	-31.26	45.0	-26.26	-31.26	40.00	45.00	5	2	PVC	0.1
MW-11S	USEPA	631568.40	670748.41	10.07	9.99	9.75	-4.43	14.5	6.07	-3.93	4.00	14.00	10	2	PVC	0.1
MW-111	USEPA	631568.40	670748.41	10.07	9.99	9.75	-34.93	45.0	-29.93	-34.93	40.00	45.00	5	2	PVC	0.1
MW-12S	USEPA	631490.03	670880.07	12.25	12.29	11.84	-2.25	14.5	8.25	-1.75	4.00	14.00	10	2	PVC	0.1
MW-121	USEPA	631490.03	670880.07	12.25	12.29	11.75	-32.75	45.0	-27.75	-32.75	40.00	45.00	5	2	PVC	0.1
MW-13S	USEPA	630819.62	669229.21	6.36	6.43	5.85	-7.14	13.5	3.36	-6.64	3.00	13.00	10	2	PVC	0.02
MW-131	USEPA	630819.62	669229.21	6.36	6.43	5.82	-49.64	56.0	-44.64	-49.64	51.00	56.00	5	2	Stainless Steel	0.1
MW-14S	USEPA	630796.36	669471.94	7.26	7.19	7.04	-6.24	13.5	4.26	-5.74	3.00	13.00	10	2	PVC	0.02
MW-141	USEPA	630796.36	669471.94	7.26	7.19	7.05	-48.74	56.0	-43.74	-48.74	51.00	56.00	5	2	PVC	0.02
MW-15S	USEPA	630054.60	668535.01	7.94	7.85	7.46	-5.56	13.5	4.94	-5.06	3.00	13.00	10	2	PVC	0.1
MW-151	USEPA	630054.60	668535.01	7.94	7.85	7.49	-52.06	60.0	-47.06	-52.06	55.00	60.00	5	2	PVC	0.1
MW-16S	USEPA	629985.28	668982.48	7.09	7.31	6.72	-6.41	13.5	4.09	-5.91	3.00	13.00	10	2	PVC	0.1
MW-161	USEPA	629985.28	668982.48	7.09	7.31	6.77	-51.91	59.0	-46.91	-51.91	54.00	59.00	5	2	PVC	0.1
MW-17S	NYC	631227.12	669633.17	10.41	10.41	9.89	-4.59	15.0	5.40	-4.60	5.01	15.01	10	2	PVC	0.1
MW-171	NYC	631226.02	669638.15	10.32	10.32	9.94	-34.03	44.4	-29.03	-34.03	39.35	44.35	5	2	PVC	0.1
MW-18S	NYC	631155.34	669306.43	11.35	11.35	10.89	-3.65	15.0	6.79	-3.21	4.56	14.56	10	2	PVC	0.1
MW-181	NYC	631152.60	669307.63	11.08	11.08	10.52	-45.62	56.7	-40.62	-45.62	51.70	56.70	5	2	PVC	0.1
MW-19S	NYC	631440.90	669316.23	12.08	12.08	11.44	-2.92	15.0	7.08	-2.92	5.00	15.00	10	2	PVC	0.1
MW-191	NYC	631437.41	669332.11	12.14	12.14	11.69	-46.97	59.1	-41.97	-46.97	54.11	59.11	5	2	PVC	0.1
MW-20S	USEPA	631976.32	671004.55	6.27	6.40	6.00	-7.23	13.5	3.27	-6.73	3.00	13.00	10	2	PVC	0.1
MW-201	USEPA	631976.32	671004.55	6.27	6.40	6.06	-32.73	39.0	-27.73	-32.73	34.00	39.00	5	2	PVC	0.1
MW-21S	USEPA	632233.70	670896.65	6.49	6.54	6.22	-7.01	13.5	3.49	-6.51	3.00	13.00	10	2	PVC	0.1
MW-211	USEPA	632233.70	670896.65	6.49	6.54	6.31	-31.51	38.0	-26.51	-31.51	33.00	38.00	5	2	PVC	0.1
MW-23S	NG	632494.23	671280.82	12.08	12.08	11.83	-0.92	13.0	9.08	-0.92	3.00	13.00	10	2	Stainless Steel	0.01
MW-231	NG	632487.09	671276.44	12.03	12.03	11.57	-26.97	39.0	-21.97	-26.97	34.00	39.00	5	2	Stainless Steel	0.01
MW-24S	USEPA	632863.47	671082.33	9.05	8.99	8.71	-6.45	15.5	3.55	-6.45	5.50	15.50	10	2	PVC	0.1
MW-241	USEPA	632863.47	671082.33	9.05	8.99	8.71	-30.95	40.0	-25.95	-30.95	35.00	40.00	5	2	PVC	0.1
MW-25S	USEPA	633802.55	671879.63	19.92	22.74	22.25	-4.08	24.0	5.92	-4.08	14.00	24.00	10	2	PVC	0.1
MW-251	USEPA	633802.55	671879.63	19.92	22.74	22.25	-23.08	43.0	-18.08	-23.08	38.00	43.00	5	2	PVC	0.1
MW-26S	USEPA	633980.46	671880.97	18.77	21.71	21.44	-5.23	24.0	4.77	-5.23	14.00	24.00	10	2	PVC	0.1
MW-261	USEPA	633980.46	671880.97	18.77	21.71	21.44	-20.23	39.0	-15.23	-20.23	34.00	39.00	5	2	PVC	0.1

TABLE 2-8

Groundwater Monitoring Well & Staff Gauge Summary

Gowanus Canal Remedial Investigation

Brooklyn, NY

Monitoring Well Location ID	Installed by	Easting	Northing	Ground Surface or Staff Gauge Elevation (ft NAVD88)	Elevation of Well Protective Casing Cover (ft NAVD88)	Elevation of Well Riser Pipe (ft NAVD88)	Finished Well Elevation (ft NAVD88)	Finished Well Depth (ft bgs)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)	Depth of Top of Screen (ft bgs)	Depth of Bottom of Screen (ft bgs)	Screen Length (ft)	Screen Diameter (inches)	Screen Material	Screen Slot Size (inches)
MW-27S	USEPA	633954.17	671949.49	14.99	17.80	17.41	-8.01	23.0	1.99	-8.01	13.00	23.00	10	2	Stainless Steel	0.1
MW-27I	USEPA	633954.17	671949.49	14.99	17.80	17.41	-32.01	47.0	-20.01	-25.01	35.00	40.00	5	2	Stainless Steel	0.1
MW-28S	USEPA	633901.78	672417.01	8.22	8.26	7.80	-5.28	13.5	5.22	-4.78	3.00	13.00	10	2	PVC	0.1
MW-28I	USEPA	633901.78	672417.01	8.22	8.26	7.75	-28.78	37.0	-23.78	-28.78	32.00	37.00	5	2	PVC	0.1
MW-29S	USEPA	633997.24	672324.87	9.18	9.14	8.82	-4.32	13.5	6.18	-3.82	3.00	13.00	10	2	PVC	0.1
MW-29I	USEPA	633997.24	672324.87	9.18	9.14	8.86	-27.82	37.0	-22.82	-27.82	32.00	37.00	5	2	PVC	0.1
MW-30S (Existing Well FW-MW-01)	NG	634212.53	673042.18	11.56	11.56	11.37	-7.44	19.0	4.56	-5.44	7.00	17.00	10	2	PVC	0.01
MW-30I	NG	634214.93	673046.58	11.67	11.67	11.43	-25.33	37.0	-20.33	-25.33	32.00	37.00	5	2	Stainless Steel	0.01
MW-31S (Existing Well FW-MW-10)	NG	634418.00	673443.02	10.71	10.71	10.31	-4.29	15.0	5.71	-4.29	5.00	15.00	10	2	PVC	0.01
MW-31I	NG	634422.17	673448.30	10.44	10.44	10.20	-24.56	35.0	-19.56	-24.56	30.00	35.00	5	2	Stainless Steel	0.01
MW-32S (Existing Well FW-MW-16)	NG	634954.64	673200.22	21.42	21.42	21.04	-0.58	22.0	11.42	1.42	10.00	20.00	10	2	PVC	0.01
MW-32I	NG	634940.76	673207.40	21.50	21.50	21.25	-24.50	46.0	-19.50	-24.50	41.00	46.00	5	2	Stainless Steel	0.01
MW-33S	USEPA	634668.43	673483.54	7.78	7.82	7.31	-5.72	13.5	4.78	-5.22	3.00	13.00	10	2	PVC	0.1
MW-33I	USEPA	634668.43	673483.54	7.78	7.82	7.24	-31.22	39.0	-26.22	-31.22	34.00	39.00	5	2	PVC	0.1
MW-34S	USEPA	634106.67	673163.06	5.47	5.46	4.99	-8.03	13.5	2.47	-7.53	3.00	13.00	10	2	PVC	0.1
MW-34I	USEPA	634106.67	673163.06	5.47	5.46	5.00	-28.53	34.0	-23.53	-28.53	29.00	34.00	5	2	PVC	0.1
MW-35S	USEPA	633995.07	672616.02	8.08	8.11	7.68	-5.42	13.5	5.08	-4.92	3.00	13.00	10	2	PVC	0.1
MW-35I	USEPA	633995.07	672616.02	8.08	8.11	7.54	-24.92	33.0	-19.92	-24.92	28.00	33.00	5	2	Stainless Steel	0.1
MW-36S	USEPA	633718.04	672275.77	5.59	5.64	5.31	-7.91	13.5	2.59	-7.41	3.00	13.00	10	2	PVC	0.1
MW-36I	USEPA	633718.04	672275.77	5.59	5.64	5.24	-32.41	38.0	-27.41	-32.41	33.00	38.00	5	2	PVC	0.1
MW-37S	USEPA	633517.53	671258.65	9.29	12.43	12.05	-10.71	20.0	-0.71	-10.71	10.00	20.00	10	2	PVC	0.1
MW-37I	USEPA	633517.53	671258.65	9.29	12.43	11.99	-32.71	42.0	-27.71	-32.71	37.00	42.00	5	2	PVC	0.1
MW-38S	USEPA	633787.62	671082.23	8.15	11.68	11.33	-5.35	13.5	5.15	-4.85	3.00	13.00	10	2	PVC	0.1
MW-38I	USEPA	633787.62	671082.23	8.15	11.68	11.32	-30.85	39.0	-25.85	-30.85	34.00	39.00	5	2	PVC	0.1
MW-39S	USEPA	633983.28	670858.74	18.42	18.38	18.14	-2.58	21.0	7.42	-2.58	11.00	21.00	10	2	PVC	0.1
MW-39I	USEPA	633983.28	670858.74	18.42	18.38	18.16	-21.58	40.0	-16.58	-21.58	35.00	40.00	5	2	PVC	0.1
MW-40S	NG	630555.34	669202.65	12.30	12.30	11.74	-1.20	13.5	8.80	-1.20	3.50	13.50	10	2	Stainless Steel	0.01
MW-40I	NG	630552.51	669193.87	12.42	12.42	11.50	-45.58	58.0	-40.58	-45.58	53.00	58.00	5	2	Stainless Steel	0.01
MW-41S	NG	630336.49	669305.63	11.94	11.94	11.26	-1.56	13.5	8.44	-1.56	3.50	13.50	10	2	Stainless Steel	0.01
MW-41I	NG	630342.77	669304.82	11.92	11.92	11.46	-46.08	58.0	-41.08	-46.08	53.00	58.00	5	2	Stainless Steel	0.01
MW-42S	USEPA	632315.30	671007.55	7.02	7.03	6.81	-6.48	13.5	4.02	-5.98	3.00	13.00	10	2	PVC	0.1
MW-42I	USEPA	632315.30	671007.55	7.02	7.03	6.82	-30.98	38.0	-25.98	-30.98	33.00	38.00	5	2	PVC	0.1
MW-43S	USEPA	633691.37	672247.15	5.66	5.61	5.39	-7.84	13.5	2.66	-7.34	3.00	13.00	10	2	PVC	0.1
MW-43I	USEPA	633691.37	672247.15	5.66	5.61	5.40	-31.84	37.5	-26.84	-31.84	32.50	37.50	5	2	PVC	0.1
MW-44S	USEPA	631635.67	670458.60	5.21	5.23	4.72	-8.29	13.5	2.21	-7.79	3.00	13.00	10	2	PVC	0.1
MW-44I	USEPA	631635.67	670458.60	5.21	5.23	4.73	-39.79	45.0	-34.79	-39.79	40.00	45.00	5	2	PVC	0.1
MW-45S	USEPA	631757.01	670649.53	4.94	4.94	4.49	-9.56	14.5	0.94	-9.06	4.00	14.00	10	2	PVC	0.1
MW-45I	USEPA	631757.01	670649.53	4.94	4.94	4.50	-36.06	41.0	-31.06	-36.06	36.00	41.00	5	2	PVC	0.1
MW-46I ¹	USEPA	631724.44	670594.47	5.11	5.15	4.76	-51.89	57.0	-41.89	-51.89	47.00	57.00	10	2	PVC	0.1

TABLE 2-8

Groundwater Monitoring Well & Staff Gauge Summary

Gowanus Canal Remedial Investigation

Brooklyn, NY

Monitoring Well Location ID	Installed by	Eastings	Northing	Ground Surface or Staff Gauge Elevation (ft NAVD88)	Elevation of Well Protective Casing Cover (ft NAVD88)	Elevation of Well Riser Pipe (ft NAVD88)	Finished Well Elevation (ft NAVD88)	Finished Well Depth (ft bgs)	Elevation of Top of Screen (ft NAVD88)	Elevation of Bottom of Screen (ft NAVD88)	Depth of Top of Screen (ft bgs)	Depth of Bottom of Screen (ft bgs)	Screen Length (ft)	Screen Diameter (inches)	Screen Material	Screen Slot Size (inches)
MW-47S	USEPA	631765.70	670691.72	5.37	5.46	4.53	-22.63	28.0	-17.63	-22.63	23.00	28.00	5	2	Stainless Steel	0.1
MW-47I	USEPA	631765.70	670691.72	5.37	5.46	4.62	-38.63	44.0	-28.63	-38.63	34.00	44.00	10	2	Stainless Steel	0.1
Staff Gauge Construction Details																
SGMW-2 ²	NYC	634354.55	673608.24	9.78	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-3	USEPA	634095.72	673079.21	5.16	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-8	USEPA	633350.32	671503.54	5.22	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-9 ³	NYC	631797.76	670973.43	10.20	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-13	USEPA	630851.19	669177.08	4.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-15	USEPA	630183.97	668807.08	6.97	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-18 ⁴	NYC	631117.71	669292.88	8.83	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-23 ⁵	NG	632512.69	671344.85	11.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-24	USEPA	632675.72	671243.65	7.35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-27	USEPA	633775.12	671949.12	6.38	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-28	USEPA	633824.73	672376.27	9.03	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-31 ⁶	NG	634396.41	673470.04	9.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-37	USEPA	633472.44	671300.07	8.89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-42	USEPA	632317.98	671028.05	5.74	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-45	USEPA	631697.53	670645.54	5.76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SG-Union ⁷	NG	634074.33	672854.45	17.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SGMW-32 ⁸	NG	634262.76	673255.98	10.64	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

¹ - Monitoring well MW-46I was originally labeled in the field as MW-46D. This well is screened in the intermediate zone and is discussed in the report as MW-46I.

² - Original Staff Gauge ID was "Stream Gauge - Gowanus Pump Station"

³ - Original Staff Gauge ID was "Stream Gauge - Former Power Station"

⁴ - Original Staff Gauge ID was "Stream Gauge - DOT"

⁵ - Original Staff Gauge ID was "Canal-Gate Station"

⁶ - Original Staff Gauge ID was "Canal-Degraw St"

⁷ - Original Staff Gauge ID was "Canal-Union St"

⁸ - Original Staff Gauge ID was "Canal-Mazzei"

All measurements are in US Survey Feet

Vertical Datum is NAVD 1988

bgs = below ground surface

ft = feet

NA = Not Applicable

NG = National Grid

NYSP = Horizontal Datum is the New York State Plane Coordinate System (East Zone) = NAD 1983 DATUM

NYC = New York City

USEPA = United States Environmental Protection Agency

Page Intentionally Left Blank

TABLE 3-1
 Summary of Sediment Physical Characteristics
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Surface Sediment Data	Canal Surface Sediment			Reference Area Surface Sediment		
	Minimum	Maxium	Average	Minimum	Maxium	Average
Total Organic Carbon (mg/kg)	25,100	137,000	64,385	2,980	43,400	28,358
Percent Sand	10.2	58.5	39.0	9.7	43.6	28.1
Percent Silt	35.0	74.5	52.1	44.4	71.7	56.8
Percent Clay	4.9	15.4	8.9	12.1	20.7	15.2
Total Percent Fines	41.5	89.9	61.0	56.4	90.3	71.9
Percent Solids	25.7	77.9	35.5	27.3	69.5	40.9
Sulfide (mg/kg)	50.6	8,790.0	3,448.2	383.0	2,160.0	1,167.2
Sediment Core Data	Soft Sediment			Native Sediment		
	Minimum	Maxium	Average	Minimum	Maxium	Average
Total Organic Carbon (mg/kg)	730	490,000	119,650	550	168,000	18,677
Percent Sand	10.2	79.6	34.7	0.0	100.0	51.2
Percent Silt	18.4	69.6	54.4	0.0	81.2	38.4
Percent Clay	1.2	24.0	10.9	0.0	74.4	10.4
Total Percent Fines	20.4	89.8	65.3	0.5	100.0	49.3
Percent Solids	25.2	98.9	53.8	48.1	91.1	81.2
Sulfide (mg/kg)	184.0	8,330.0	3,908.6	7.6	7,300.0	144.7
Bulk Density (g/cm³)	0.31	1.98	0.83	0.59	2.1	1.5

Notes:

Statistics were generated using 1/2 the detection limit for non-detected results

Statistics for surface sediment were generated using only USEPA 2010 data.

Total percent fines is the sum of percent silt and percent clay.

Total Organic Carbon and Percent Solids summary statistics for soft sediment from sediment cores were calculated using the USEPA 2010 and National Grid 2005 data sets. The summaries for native sediment were determined using only the USEPA 2010 data set.

Sulfide and Total Percent Fines summary statistics for soft and native sediment for sediment cores were determined using only the USEPA 2010 data set.

Bulk density for soft sediment was determined using only the National Grid 2005 data set. This parameter was not measured in the 2010 investigation. Bulk density values for native sediment were obtained from GEI (2007).

mg/kg = milligram per kilogram

g/cm³ = grams per cubic centimeter

Page Intentionally Left Blank

TABLE 3-2
Storm Water and Combined Sewer Overflows to Gowanus Canal
Gowanus Canal Remedial Investigation
Brooklyn, New York

CSO / Storm water Outfall ¹	Outfall Location	Outfall Size (diameter)	Discharging From	Regulator/ relief Location	Combined Sewer Area (acres)	Annual Discharge Volume ² (million gallons)	Annual Discharge Frequency ²
RH-031	Creamer St.	72"	Bond-Lorraine Sewer Relief	Lorraine St. & Smith St.	70	35	33
RH-033	Douglass St.	38"W x 44"H	Regulator R-25	Nevins St. & Douglass St.	5	0.2	14
RH-034	Butler St.	4 barrels, each 163"	Gowanus Pump Station	Douglass St.	657	121	56
RH-035	Bond St.	48"	Bond-Lorraine Sewer Relief	Bond St. & 4 th St.	88	111	75
RH-036	President St.	18"	Regulator RH-22	Nevins St. & President St.	10	1.6	21
RH-037	Sackett St.	18"	Regulator RH-23	Nevins St. & Sackett St.	7	0.5	16
RH-038	Degraw St.	144" W x 62"H	Regulator RH-24	Nevins St. & Degraw St.	10	0.9	18
RH-039	Douglass St.	38" x 44"H	Bond-Lorraine Sewer Relief	NA (closed)	0	0	0
OH-005	south of Carroll St.	42"	3 rd Ave. Sewer Relief	3 rd Ave. & Carroll St.	34	0.7	5
OH-006	19 th St. (north side)	36"	3 rd Ave. Sewer Relief	3 rd Ave. & 19 th St.	306	13	33
OH-007	East of 2 nd Ave.	78"	2 nd Ave. Pump Station	3 rd Ave. & 7 th St.	339	69	47
OH-009	5 th St.	78"	3 rd Ave. Sewer Relief	NA (closed)	0	0	0
RH-601 ³	9 th St (West)	12"	NA	NA	2	1.5	38
OH-602	South of Gowanus Expressway	18"	NA	NA	10	0.1	3
OH-607 ³	9 th St. (East)	12"	NA	NA	8	0.1	10
Total					1,546	354.6	

Notes:

1) Outfalls RH-601, OH-602, and OH-607 are storm water outfalls. In addition to the above CSO and storm water outfalls, 14 highway drain outfalls discharge to the canal.

2) Baseline condition reflects collection system model calculations for a design precipitation record (annual rainfall recorded at JFK International Airport in 1988) and sanitary flows projected for year 2045 (Red Hook WPCP: 40 MGD; Owls Head WPCP: 117 MGD). An existing condition calculation is not available.

Source: NYCDEP 2008a

3) NYC has previously identified OH-601 as RH-032, OH-607 as OH-008, and OH-602 as OH-538.

Page Intentionally Left Blank

TABLE 3-3
 NYCDEP Shoreline Survey Outfalls Not Observed During Canal Reconnaissance
Gowanus Canal Remedial Investigation
Brooklyn, New York

Shoreline Survey Pipe Identification	Pipe Diameter (Inches)	Comments on Approximate Location⁽¹⁾
OH-114	10	Lowe's Home Improvement store
OH-186	10	Northeast corner of 11 th Street turning basin
OH-192	10	Alongside New York City asphalt plant
OH-514	6	End of 5th St.
OH-517	8	Corner of 4 th Street Turning Basin
OH-522	8	Lowe's Home Improvement store
OH-602	18	South of Gowanus Expressway
OH-888	6	Lowe's Home Improvement store
RH-033	38W x 44H	End of Douglass St
RH-037	18	End of Sackett St.
RH-836	6	Approximately 50 feet south of Sackett St.
RH-837	3	Verizon property
RH-134	10	End of Bay St.
RH-154	12	3rd St. concrete facility
RH-575	4	End of Huntington St.
RH-587	4	3rd St. concrete facility
RH-588	4	3 rd St. concrete facility
RH-601 ²	12	9 th St., west side of canal

(1) Approximate location is based on the maps in the NYCDEP Shoreline Survey Reports and physical features / streets noted during the field survey in the general areas where these outfalls were expected to be situated.

(2) NYC has previously identified RH-601-as RH-032.

Page Intentionally Left Blank

TABLE 4-1
 Summary of Validation Qualifiers Applied to Remedial Investigation Data
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Validation Qualifier	Count	Percentage	Available for Use as Reported	Available for Use as Qualified	Not Available for Use	Definition	Effect on Data Quality
U	180,849	66.17%	X	X		Not detected. May also indicate "not detected at significantly greater concentration than that in an associated blank"	If applied by the laboratory, this indicates "nondetect" and does not affect the availability of results. It does not indicate a QA/QC problem. If applied by the validator, this indicates "not detected at significantly greater concentration than that in an associated blank". If detected at less than the CRQL, the data validation elevated the (U-qualified) result to the CRQL. In this instance, the data validator changed the detect status from detect to nondetect. This may indicate a QA/QC issue but not one severe enough to warrant rejection of data. These results are usable as nondetects as long as the data user understands that the compound was detected in the sample and was subsequently attributed to blank contamination. Therefore, this does not affect the availability of results. The data user should take caution when a U-qualified result is greater than a screening level.
[null]	35,173	12.87%	X			Detected	No effect on data quality. Detected. Available as reported. Note that "[null]" indicates that a data point is not accompanied by a qualifier.
J	31,068	11.37%	X	X		Concentration estimated	If applied by the laboratory, this indicates "below reporting limit" and does not affect the availability of results. It does not indicate a QA/QC problem. If applied by the validator, this indicates "estimated". This may indicate a QA/QC issue but not one severe enough to warrant rejection of data. These results are usable as detects at their reported concentration as long as the data user understands that the concentration is estimated.
UJ	18,531	6.78%		X		Not detected, quantitation limit is estimated	This indicates "nondetect, estimated quantitation limit". This may indicate a QA/QC issue but not one severe enough to warrant rejection of data. If the laboratory qualifier did not contain "U" then the data validator changed the detect status and this is usually due to blank contamination. These results are usable as nondetects at their reported quantitation limit as long as the data user understands that the quantitation limit is estimated and may be higher. This does not affect the usability of results but the data user should take caution when a UJ-qualified result is greater than an action limit.
R	6,297	2.30%			X	Rejected	Significant negative effect. Not available for use. Note that any reported rejected data are accompanied by the R-qualifier.
NJ	1,395	0.51%		X		Qualitative identification questionable due to poor resolution. Presumptively present at approximate quantity.	This indicates "presumptively present at approximate quantity". This may indicate a QA/QC issue (most often precision exceedance between results from dual-columns) but not one severe enough to warrant rejection of data. These results are usable as detects at their reported concentration as long as the data user conservatively considers the analyte "present" and understands that the concentration is estimated.

Notes:
 QA/QC = quality assurance/quality control
 CRQL = contract-required quantitation limit

Page Intentionally Left Blank

TABLE 4-2

List of Evaluation Criteria Used to Evaluate the Nature and Extent of Contamination
Gowanus Canal Remedial Investigation
Brooklyn, New York

Surface Sediment, Subsurface Sediment, CSO Sediment

The standards / criteria below are used to evaluate the degree of contamination found in the surface sediments in the Gowanus Canal. These standards / criteria are also used to provide a perspective on the concentrations in subsurface sediments and CSO sediments. The results for the surface sediment reference locations are also compared to the results for the surface sediment locations within the canal.

A. U.S. Environmental Protection Agency (USEPA). 2010. Residential soil RSL from EPA Regional Screening Table, May 2010. RSLs based on noncancer risk divided by 10 to account for exposure to more than one constituent that effects the same target organ.

http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

The standards / criteria listed below are used in the following order to create criteria R: 1) use criteria B1 first; 2) if no criteria available for a constituent under B1, go to C; 3) if no criteria available for a constituent under B1 and C, go to D; and 4) if no criteria available for a constituent under B1, C, and D, go to E and use in this order – E1, E2, E3.

B. New York State Department of Environmental Conservation (NYSDEC). 1999. Technical Guidance for Screening Contaminated Sediments. New York State Department of Environmental Conservation. (Benthic aquatic life chronic toxicity values for saltwater (designated SW)

B1 - NYSDEC 1999 Benthic Aquatic Life Chronic Toxicity (2% TOC)

B2 - NYSDEC 1999 Benthic Aquatic Life Chronic Toxicity (6.5% TOC) – included for informational purposes only

C. Jones, D.S., G.W. Suter II, and R.N. Hull. 1997. Toxicological benchmarks for screening contaminants of potential concern for effects on sediment-associated biota: 1997 revision. Environmental Restoration Division, ORNL Environmental Restoration Program. ES/ER/TM-95/R4. (Marine and estuarine benchmarks, lower of ERL or TEL values)

D. Washington Department of Ecology (WDOE). 1995. Chapter 173-204 WAC, Sediment Management Standards. <http://www.ecy.wa.gov/biblio/wac173204.html> (Marine Sediment Quality Standards; presented in Table 1, under WAC 173-204-320)

E. Buchman, M.F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages. (Marine surface water, chronic values)

E1 - SQuiRTs 2008 Mar SD TEL

E2 - SQuiRTs 2008 Mar SD ERL

E3 - SQuiRTs 2008 Mar SD PEL

Surface Water, CSO Water, Pipe Outfall Water

The standards / criteria below are used to evaluate the degree of contamination found in the surface water in the Gowanus Canal. These standards / criteria are also used to provide a perspective on the concentrations in CSO water, and pipe outfall discharges. The results for the surface water reference locations are also compared to the results for the surface water locations within the canal.

The standards / criteria listed below are used in the following order to create criteria T and S:

Criteria T: Use the lesser of F or G2; use H if no F or G2 criteria available for a constituent.

Criteria S: 1) use criteria L1 first; 2) if no criteria available for a constituent under L1, go to I; and 3) if no criteria available for a constituent under L1 and I, go to K.

F. U.S. Environmental Protection Agency (USEPA). 2009. National Recommended Water Quality Criteria. Office of Water, Office of Science and Technology. Human Health for Consumption of Organism only.

G. New York State DEC, Chapter X, Division of Water, Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. Values correspond to classification of canal (SD) and classification of Bay (I) and are the standards for Health-fish consumption and recreation.

G1 - NYSDEC Chapter X for surface water (fish consumption) I H(FC) – included for informational purposes only, applies to Gowanus Bay

G2 - NYSDEC Chapter X for SW (fish consumption) SD H(FC)

TABLE 4-2

List of Evaluation Criteria Used to Evaluate the Nature and Extent of Contamination
Gowanus Canal Remedial Investigation
Brooklyn, New York

H. U.S. Environmental Protection Agency (USEPA). 2010. Tap Water RSL from EPA Regional Screening Table, May 2010.

RSLs based on noncancer divided by 10 to account for exposure to more than one constituent that effects the same target organ.

I. U.S. Environmental Protection Agency (USEPA). 2009. National Recommended Water Quality Criteria. Office of Water, Office of Science and Technology. 4303T. Saltwater chronic value (CCC) for the protection of aquatic life.

J. New York State Department of Environmental Conservation (NYSDEC). 1998. Water Quality Standards and Analytical Support. <http://www.dec.ny.gov/chemical/23842.html>. Chronic marine values for protection of aquatic life. (Note that these values have been incorporated into reference L and this reference is included here only to indicate that it was also reviewed).

K. Buchman, M.F., 2008. NOAA Screening Quick Reference Tables, NOAA OR&R Report 08-1, Seattle WA, Office of Response and Restoration Division, National Oceanic and Atmospheric Administration, 34 pages. Marine surface water, chronic values.

L. New York State DEC, Chapter X, Division of Water, Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. Values correspond to classification of canal (SD) and classification of Bay (I) and are the standards for Aquatic-Chronic toxicity.

L1 - NYSDEC Chapter X for surface water (aquatic chronic toxicity) I A(C) – included for informational purposes only, applies to Gowanus Bay

Groundwater

Groundwater was evaluated to assess groundwater interactions with the surface water in the canal. For completeness and to provide a perspective on the significance of detected concentrations at the locations where the monitoring wells were installed, the detected concentrations in groundwater are compared to the standards / criteria listed below.

The standards / criteria listed below are used in the following order to create criteria 1) use criteria N1 first; 2) if no criteria available for a constituent under N1, go to O1; and 3) if no criteria available for a constituent under N1 and O1, go to O2.

N. U.S. Environmental Protection Agency (USEPA). Maximum Contaminant Levels and MCLGs. <http://www.epa.gov/safewater/contaminants/index.html> (N1 is MCLs, N2 is MCLGs).

O. New York State DEC, Chapter X, Division of Water, Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. Values correspond to classification of groundwater along the canal (GA) and are the standards for Health-Water Source and Aesthetic -Water Source (includes O1 and O2).

Air

P. U.S. Environmental Protection Agency (USEPA). 2010. Residential air RSLs from EPA Regional Screening Table, May 2010. RSLs based on noncancer risk divided by 10 to account for exposure to more than one constituent that effects the same target organ.

http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/index.htm

Soil

Soils were evaluated at the locations where monitoring wells were installed. For completeness and to provide a perspective on the significance of detected concentrations at the locations where the monitoring wells were installed, detected concentrations in soils are compared to the standards / criteria listed below.

Q. New York State DEC. 2009. Subpart 375-6: Remedial Program Soil Cleanup Objectives. December 14, 2006 and NYSDEC Draft CP/Soil Cleanup Guidance, November 4, 2009. Values used correspond to restricted use soil cleanup objectives; Protection of Groundwater.

TABLE 4-3
 Summary of Evaluation Criteria Used to Evaluate Nature and Extent of Contamination
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Medium	Evaluation Criteria		
	Human Health Risk	Ecological Risk	General
Sediment - surface in canal	A	R (developed using this order: B1, C, D, E1, E2, and E3)	
Sediment – CSOs	A	R (developed using this order: B1, C, D, E1, E2, and E3)	
Sediment – subsurface soft	A	R (developed using this order: B1, C, D, E1, E2, and E3)	
Sediment – subsurface native	A	R (developed using this order: B1, C, D, E1, E2, and E3)	
Surface water in canal - dry and wet events	T (lesser of F or G2, H if no F or G2)	S (lesser of I or K)	
Surface water – CSOs	T (lesser of F or G2, H if no F or G2)	S (lesser of I or K)	
Surface water - pipe outfalls	T (lesser of F or G2, H if no F or G2)	S (lesser of I or K)	
Groundwater			N1, O1, O2
Soil			Q
Air	P		

Evaluation criteria for each letter are defined in Table 4-2.

Page Intentionally Left Blank

Notes for Statistical Summary Tables

Gowanus Canal Remedial Investigation

Brooklyn, New York

Columns included in all statistical summary tables are listed and defined below:

Parameter – This column lists detected constituents and is organized by parameter class (e.g., VOCs, SVOCs, etc). Constituents that were not detected within any sample for that matrix or data set are not included in the statistical summary tables.

Frequency of Detection - The frequency of detection represents the (total number of detections, excluding rejected and duplicate results) / (total number of samples analyzed, excluding rejected and duplicate results); value in parenthesis is the detection frequency presented as a percentage.

Number of Results - Total number of results includes all results (includes rejected results and excludes duplicate results). For field duplicate results, only best result is used (i.e., the highest detected value, or the detected value if one result is a detect and the other a non-detect).

Range of Non-Detect Values – This column presents the range of analytical detection levels observed for non-detected results. An entry of “-” for the range of non-detect values indicates that the parameter was detected in all samples.

Range of Detected Values – This column presents the range of detected analytical results.

Location of Maximum Detect- This column presents the location where the maximum detected concentration was found.

Parameters are listed twice when the maximum concentration is observed at two locations

Mean (1/2 RL for Non-Detects) – This column presents the mean concentrations calculated using a value of ½ the reporting limit (RL) for non-detected results.

Ecological Screening Value “designation letter” (# of Exceedances) – This column shows the ecological screening value followed in parenthesis by the number of results that exceeded the value. Note that multiple sources of screening values were available for each medium. Table 4-2 lists the sources of the screening values for each medium and assigns a letter to each as a reference. Because multiple sources of values were available for each medium, a prioritization order was developed to determine how the values were applied to each medium. Section 4-2 describes this prioritization order and Table 4-3 provides a summary of the prioritization scheme. The complete list of values is in Appendix C. Surface sediment and surface water samples collected from reference areas were not compared to screening values.

When a screening value was not available, the following designation was used: NA - Not available

Human Health Screening Value “designation letter” (# of Exceedances) - This column provides the same information as described above for the ecological screening values, but are related to human health.

Units:

mg/kg – milligrams/kilogram

µg/kg – micrograms/kilogram

ng/kg – nanograms/kilogram

mg/l – milligrams/liter

µg/l – micrograms/liter

µg/m³ – micrograms/cubic meter

Calculation of total concentrations: Total PAH was calculated by summing the detected concentrations of the 16 priority pollutant PAHs. Total DDT was calculated by summing the detected concentrations of p,p'-DDD, p,p'-DDE, and p,p'-DDT. Total PCB was calculated by summing either detected concentrations of PCB Aroclors, or detected concentrations of PCB congeners. If any constituent had a rejected, or “R”-flagged, result, a total value was not calculated for the sample.

The following notes are specific to the table listed:

Table 4-6 – Soft Sediment:

The number of results varies for some parameters due to different target analyte lists used by GEI (2007) and USEPA.

Table 4-8a Surface Water – Canal – Dry Weather:

The number of results does not include an additional sample collected at the end of Sackett Street that was not part of the planned wet and dry weather sampling events.

Table 4-8b Surface Water – Reference – Dry Weather:

The total number of samples includes the location in Buttermilk Channel.

Table 4-9a Surface Water – Canal – Wet Weather:

The number of results does not include an additional sample collected at the end of Sackett Street that was not part of the planned wet and dry weather sampling events.

Location (325) could not be sampled during the wet event sampling.

Table 4-9b Surface Water – Reference – Wet Weather:

The total number of samples includes the location in Buttermilk Channel.

Table 4-19 Soil Samples:

Split samples from oversight sampling are not included in the statistical summary.

Tables 4-20a – Shallow Groundwater and 4-20b – Intermediate Groundwater:

Split samples from oversight sampling are not included in the statistical summary.

Filtered metals were not analyzed at New York City well locations.

Analytical results were not available for some constituents at some locations. “Number of Results” column indicates the number of samples included in statistical summary.

Tables 4-21a – Tissue – Summary of Results Used in Ecological Risk Assessment and 4-21b – Tissue – Summary of Results Used in Human Health Risk Assessment:

All tissue concentrations are reported in wet weight.

“PCB Dioxin” refer to “PCB Dioxin-like PCBs” and “PCB Nondioxin” refer to “PCB Nondioxin-like”. Dioxin-like PCB congeners are listed below; all other congeners are non-dioxin like.

3,3',4,4'-Tetrachlorobiphenyl (77)
3,4,4',5-Tetrachlorobiphenyl (81)
2,3,3',4,4'-Pentachlorobiphenyl (105)
2,3,4,4',5-Pentachlorobiphenyl (114)
2,3',4,4',5-Pentachlorobiphenyl (118)
2,3',4,4',5'-Pentachlorobiphenyl (123)
3,3',4,4',5-Pentachlorobiphenyl (126)
Congeners (156/157)
2,3',4,4',5,5'-Hexachlorobiphenyl (167)
3,3',4,4',5,5'-Hexachlorobiphenyl (169)
2,3,3',4,4',5,5'-Heptachlorobiphenyl (189)

TABLE 4-4a

Surface Sediment - Canal - Statistical Summary

Gowanus Canal Remedial Investigation

Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Volatile Organic Compounds (ug/kg)								
1,2-dichloroethane	6 / 27 (22.2%)	27	5.00 - 23.0	3.90 - 45.0	323	9.10	NA	430 (0)
1,4-dichlorobenzene	3 / 26 (11.5%)	27	5.00 - 23.0	7.60 - 240	301	16.8	240 (0)	2400 (0)
Acetone	11 / 27 (40.7%)	27	9.90 - 46.0	21.0 - 90.0	314	25.0	NA	610000 (0)
Benzene	4 / 27 (14.8%)	27	5.00 - 23.0	6.80 - 110	304	13.7	520 (0)	1100 (0)
Carbon disulfide	9 / 27 (33.3%)	27	5.00 - 23.0	4.70 - 89.0	314	10.2	NA	82000 (0)
Chlorobenzene	1 / 27 (3.7%)	27	5.00 - 23.0	53.0 - 53.0	301	9.44	70 (0)	29000 (0)
Cyclohexane	3 / 27 (11.1%)	27	5.00 - 23.0	8.00 - 14.0	304	7.86	NA	120000 (0)
Ethylbenzene	8 / 27 (29.6%)	27	5.00 - 23.0	5.30 - 3600	315	233	128 (4)	5400 (0)
Isopropylbenzene (cumene)	7 / 27 (25.9%)	27	5.00 - 23.0	4.60 - 760	315	81.0	NA	210000 (0)
m, p xylenes	5 / 27 (18.5%)	27	5.00 - 23.0	5.40 - 810	315	55.7	540 (1)	340000 (0)
Methylcyclohexane	3 / 27 (11.1%)	27	5.00 - 23.0	15.0 - 170	314	14.6	NA	NA
Methylene chloride	6 / 27 (22.2%)	27	5.00 - 23.0	2.20 - 7.70	306	6.95	NA	11000 (0)
o-xylene (1,2-dimethylbenzene)	5 / 27 (18.5%)	27	5.00 - 23.0	19.0 - 1200	315	82.8	540 (1)	380000 (0)
Tert-butyl methyl ether	1 / 27 (3.7%)	27	5.00 - 23.0	34.0 - 34.0	304	8.45	NA	43000 (0)
Tetrachloroethylene(PCE)	2 / 27 (7.4%)	27	5.00 - 23.0	5.80 - 11.0	302	7.50	NA	550 (0)
Toluene	4 / 27 (14.8%)	27	5.00 - 23.0	5.80 - 36.0	314	9.17	900 (0)	500000 (0)
Trichloroethylene (TCE)	1 / 27 (3.7%)	27	5.00 - 23.0	4.20 - 4.20	301	7.64	NA	2800 (0)
Trichlorofluoromethane	3 / 27 (11.1%)	27	5.00 - 23.0	4.60 - 8.90	302	7.33	NA	79000 (0)
Semi-Volatile Organic Compounds (ug/kg)								
2-methylnaphthalene	16 / 27 (59.3%)	27	120 - 3100	190 - 870000	315	33700	70 (16)	31000 (1)
Acenaphthene	21 / 27 (77.8%)	27	160 - 3100	160 - 580000	315	41200	16 (21)	340000 (2)
Acenaphthylene	14 / 27 (51.9%)	27	160 - 3100	270 - 150000	314	12400	44 (14)	340000 (0)
Anthracene	24 / 27 (88.9%)	27	250 - 3100	330 - 610000	315	38800	85.3 (24)	1700000 (0)
Benzo(a)anthracene	27 / 27 (100%)	27	---	1100 - 490000	315	36500	261 (27)	150 (27)
Benzo(a)pyrene	26 / 27 (96.3%)	27	250 - 250	1200 - 200000	314	18700	430 (26)	15 (26)
Benzo(b)fluoranthene	26 / 27 (96.3%)	27	250 - 250	1000 - 210000	314	19400	4600 (13)	150 (26)
Benzo(g,h,i)perylene	26 / 27 (96.3%)	27	260 - 260	610 - 74000	314	7620	620 (25)	170000 (0)
Benzo(k)fluoranthene	26 / 27 (96.3%)	27	250 - 250	820 - 120000	314	10600	4600 (9)	1500 (20)
Biphenyl (diphenyl)	2 / 27 (7.4%)	27	6200 - 230000	650 - 71000	315	19200	NA	210000 (0)
Bis(2-ethylhexyl) phthalate	21 / 27 (77.8%)	27	8100 - 160000	2600 - 57000	314	15600	182 (21)	35000 (2)

TABLE 4-4a

Surface Sediment - Canal - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
Carbazole	1 / 27 (3.7%)	27	6200 - 230000	1400 - 1400	308A	19100	NA	NA
Chrysene	27 / 27 (100%)	27	---	730 - 490000	315	35600	384 (27)	15000 (5)
Dibenz(a,h)anthracene	23 / 27 (85.2%)	27	320 - 3100	200 - 14000	314	1780	63.4 (23)	15 (23)
Dibenzofuran	1 / 27 (3.7%)	27	6200 - 230000	1100 - 1100	319	19500	300 (1)	7800 (0)
Di-n-butyl phthalate	2 / 27 (7.4%)	27	6200 - 230000	510 - 550	318	19200	4400 (0)	610000 (0)
Di-n-octylphthalate	1 / 27 (3.7%)	27	6200 - 230000	9300 - 9300	307A	19800	1160 (1)	35000 (0)
Fluoranthene	27 / 27 (100%)	27	---	1200 - 630000	314	51200	600 (27)	230000 (2)
Fluorene	17 / 27 (63.0%)	27	160 - 3100	130 - 540000	315	26400	19 (17)	230000 (1)
Indeno(1,2,3-c,d)pyrene	27 / 27 (100%)	27	---	1000 - 120000	314	10600	680 (27)	150 (27)
Naphthalene	19 / 27 (70.4%)	27	160 - 3100	120 - 1600000	315	61600	160 (18)	3600 (7)
Phenanthrene	26 / 27 (96.3%)	27	3100 - 3100	510 - 1100000	315	64800	240 (26)	1700000 (0)
Pyrene	26 / 27 (96.3%)	27	230 - 230	1400 - 670000	314	60200	665 (26)	170000 (2)
Total PAHs	27 / 27 (100%)	27	---	10900 - 8000000	315	527000	4022 (27)	NA
Pesticides (ug/kg)								
Alpha-chlordane	2 / 27 (7.4%)	27	2.70 - 530	6.70 - 14.0	308A	79.7	0.04 (2)	1600 (0)
Beta endosulfan	1 / 27 (3.7%)	27	5.30 - 1000	13.0 - 13.0	308A	154	0.08 (1)	37000 (0)
Endosulfan sulfate	1 / 27 (3.7%)	27	5.30 - 1000	21.0 - 21.0	308A	154	NA	37000 (0)
Gamma-chlordane	3 / 27 (11.1%)	27	2.70 - 530	5.90 - 29.0	308A	80.6	0.04 (3)	1600 (0)
Methoxychlor	1 / 27 (3.7%)	27	27.0 - 5300	33.0 - 33.0	308A	792	NA	31000 (0)
P,P'-DDD	5 / 5 (100%)	27	---	7.90 - 1100	315	232	1.22 (5)	2000 (0)
P,P'-DDE	1 / 26 (3.8%)	27	5.30 - 1000	16.0 - 16.0	308A	160	2.2 (1)	1400 (0)
Total DDTs	5 / 5 (100%)	27	---	7.90 - 1100	315	235	1.58 (5)	NA
Polychlorinated Biphenyls (ug/kg)								
Aroclor 1016	4 / 27 (14.8%)	27	41.0 - 120	140 - 290	318	68.5	22.7 (4)	390 (0)
Aroclor 1248	2 / 27 (7.4%)	27	41.0 - 120	230 - 2200	316	128	22.7 (2)	220 (2)
Aroclor 1254	1 / 27 (3.7%)	27	48.0 - 120	590 - 590	308A	61.9	22.7 (1)	110 (1)
Aroclor 1260	7 / 27 (25.9%)	27	41.0 - 120	150 - 3400	314	318	22.7 (7)	220 (6)
Total PCBs	10 / 27 (37.0%)	27	---	230 - 3400	314	432	22.7 (10)	220 (10)
Metals (mg/kg)								
Aluminum	27 / 27 (100%)	27	---	4870 - 18900	310	13200	NA	7700 (23)

TABLE 4-4a

Surface Sediment - Canal - Statistical Summary

Gowanus Canal Remedial Investigation

Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Metals (mg/kg)								
Arsenic	27 / 27 (100%)	27	---	3.40 - 44.7	308A	12.1	8.2 (19)	0.39 (27)
Barium	27 / 27 (100%)	27	---	83.1 - 631	317	175	130.1 (15)	1500 (0)
Beryllium	12 / 27 (44.4%)	27	0.60 - 1.60	0.11 - 0.46	309	0.474	NA	16 (0)
Cadmium	27 / 27 (100%)	27	---	1.50 - 20.2	308A	6.30	1.2 (27)	7 (11)
Calcium	27 / 27 (100%)	27	---	4890 - 11300	313	7640	NA	NA
Chromium	27 / 27 (100%)	27	---	22.7 - 139	314	76.0	81 (8)	0.29 (27)
Cobalt	14 / 27 (51.9%)	27	7.30 - 17.1	6.50 - 14.8	318	9.13	NA	2.3 (14)
Copper	27 / 27 (100%)	27	---	85.8 - 790	308A	226	34 (27)	310 (5)
Iron	27 / 27 (100%)	27	---	12400 - 87000	308A	29200	NA	5500 (27)
Lead	27 / 27 (100%)	27	---	146 - 4220	308A	533	46.7 (27)	400 (9)
Magnesium	27 / 27 (100%)	27	---	4210 - 11400	318	8740	NA	NA
Manganese	27 / 27 (100%)	27	---	89.1 - 480	308A	276	460 (1)	180 (23)
Mercury	27 / 27 (100%)	27	---	0.59 - 2.30	313	1.27	0.15 (27)	2.3 (0)
Nickel	27 / 27 (100%)	27	---	18.1 - 84.5	314	43.8	20.9 (26)	150 (0)
Potassium	27 / 27 (100%)	27	---	730 - 4410	310	3200	NA	NA
Selenium	15 / 27 (55.6%)	27	4.20 - 12.0	0.74 - 4.90	310	3.04	NA	39 (0)
Silver	22 / 27 (81.5%)	27	1.20 - 3.20	1.80 - 6.80	310	3.40	1 (22)	39 (0)
Sodium	27 / 27 (100%)	27	---	2610 - 18700	322	11100	NA	NA
Vanadium	27 / 27 (100%)	27	---	19.4 - 61.2	316	42.6	NA	39 (18)
Zinc	17 / 17 (100%)	27	---	240 - 1520	308A	744	150 (17)	2300 (0)
Cyanide, Total	14 / 27 (51.9%)	27	3.60 - 8.30	0.54 - 18.0	302	3.65	NA	160 (0)

Page Intentionally Left Blank

TABLE 4-4b

Surface Sediment - Reference - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Volatile Organic Compounds (ug/kg)						
Acetone	4 / 10 (40.0%)	10	17.0 - 38.0	9.60 - 41.0	327	18.3
Carbon disulfide	1 / 10 (10.0%)	10	5.90 - 20.0	3.20 - 3.20	328	6.47
Methylene chloride	1 / 10 (10.0%)	10	5.90 - 19.0	11.0 - 11.0	327	6.68
Semi-Volatile Organic Compounds (ug/kg)						
2-methylnaphthalene	2 / 10 (20.0%)	10	110 - 290	900 - 1100	335	289
Acenaphthene	2 / 10 (20.0%)	10	110 - 290	420 - 870	335	218
Acenaphthylene	1 / 10 (10.0%)	10	110 - 290	180 - 180	332	122
Anthracene	6 / 10 (60.0%)	10	110 - 290	140 - 1200	335	343
Benzo(a)anthracene	9 / 10 (90.0%)	10	110 - 110	350 - 1200	332	511
Benzo(a)pyrene	8 / 10 (80.0%)	10	190 - 280	210 - 920	332	458
Benzo(b)fluoranthene	10 / 10 (100%)	10	---	150 - 1400	335	633
Benzo(g,h,i)perylene	9 / 10 (90.0%)	10	280 - 280	130 - 660	335	369
Benzo(k)fluoranthene	9 / 10 (90.0%)	10	280 - 280	120 - 750	332	358
Bis(2-ethylhexyl) phthalate	1 / 10 (10.0%)	10	8000 - 15000	1700 - 1700	334	5510
Chrysene	10 / 10 (100%)	10	---	130 - 800	332	452
Fluoranthene	10 / 10 (100%)	10	---	130 - 2400	332	655
Fluorene	2 / 10 (20.0%)	10	110 - 290	320 - 780	335	199
Indeno(1,2,3-c,d)pyrene	8 / 10 (80.0%)	10	270 - 290	160 - 960	332	342
Naphthalene	3 / 10 (30.0%)	10	110 - 290	340 - 1600	328	389
Phenanthrene	8 / 10 (80.0%)	10	110 - 280	250 - 2700	335	634
Pyrene	3 / 10 (30.0%)	10	110 - 290	640 - 2000	332	493
Total PAHs	10 / 10 (100%)	10	---	1030 - 14400	335	5790
Metals (mg/kg)						
Aluminum	10 / 10 (100%)	10	---	4750 - 19400	327	13900
Arsenic	10 / 10 (100%)	10	---	5.40 - 19.0	326	11.7
Barium	9 / 10 (90.0%)	10	25.7 - 25.7	45.8 - 133	326	67.1
Beryllium	7 / 10 (70.0%)	10	0.64 - 1.30	0.23 - 0.46	327, 333	0.426
Cadmium	9 / 10 (90.0%)	10	1.50 - 1.50	0.24 - 6.30	329	2.31
Calcium	10 / 10 (100%)	10	---	8130 - 51400	328	22800

TABLE 4-4b

Surface Sediment - Reference - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Metals (mg/kg)						
Chromium	10 / 10 (100%)	10	---	16.9 - 181	326	61.9
Cobalt	8 / 10 (80.0%)	10	13.2 - 15.5	4.70 - 12.8	330	9.39
Copper	10 / 10 (100%)	10	---	15.1 - 242	326	80.7
Iron	10 / 10 (100%)	10	---	10700 - 35500	327	26200
Lead	10 / 10 (100%)	10	---	25.5 - 244	326	93.1
Magnesium	10 / 10 (100%)	10	---	3040 - 10200	327	7760
Manganese	10 / 10 (100%)	10	---	172 - 866	330	509
Mercury	10 / 10 (100%)	10	---	0.16 - 3.70	326	1.12
Nickel	10 / 10 (100%)	10	---	13.0 - 50.0	331	32.3
Potassium	10 / 10 (100%)	10	---	1130 - 5020	327	3470
Selenium	3 / 10 (30.0%)	10	6.00 - 10.8	0.53 - 2.00	329	3.43
Silver	3 / 10 (30.0%)	10	1.30 - 3.10	2.10 - 9.50	326	2.15
Sodium	10 / 10 (100%)	10	---	2780 - 18100	327	11600
Vanadium	10 / 10 (100%)	10	---	11.4 - 53.6	326	35.6
Zinc	5 / 5 (100%)	10	---	63.1 - 254	331	156

See notes in Table 4-21

TABLE 4-5

Comparison of Surface Sediment Concentrations in Gowanus Canal and Gowanus Bay Reference Area
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Test	Central Tendency Comparison	
		Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Volatile Organic Compounds (ug/kg)			
1,2-dichloroethane	Gehan	0.223	nsd
1,4-dichlorobenzene	Gehan	0.166	nsd
Acetone	Gehan	0.176	nsd
Benzene	Gehan	0.132	nsd
Carbon disulfide	Gehan	0.096	nsd
Chlorobenzene	-	-	Only a Single Detect in Canal
Cyclohexane	Gehan	0.212	nsd
Ethylbenzene	Gehan	0.068	nsd
Isopropylbenzene (cumene)	Gehan	0.055	nsd
Methylcyclohexane	Gehan	0.141	nsd
Methylene chloride	Gehan	0.850	nsd
Tert-butyl methyl ether	-	-	Only a Single Detect in Canal
Tetrachloroethylene(PCE)	Gehan	0.201	nsd
Toluene	Gehan	0.181	nsd
Trichloroethylene (TCE)	-	-	Only a Single Detect in Canal
Trichlorofluoromethane	Gehan	0.261	nsd
m, p xylenes	Gehan	0.102	nsd
o-xylene (1,2-dimethylbenzene)	Gehan	0.072	nsd
Semi-Volatile Organic Compounds (ug/kg)			
2-methylnaphthalene	Gehan	0.029	Canal > Reference
Acenaphthene	Gehan	0.001	Canal > Reference
Acenaphthylene	Gehan	0.003	Canal > Reference
Anthracene	WRS	0.025	Canal > Reference
Benzo(a)anthracene	WRS	0.000	Canal > Reference
Benzo(a)pyrene	WRS	0.000	Canal > Reference
Benzo(b)fluoranthene	WRS	0.000	Canal > Reference
Benzo(g,h,i)perylene	WRS	0.000	Canal > Reference
Benzo(k)fluoranthene	WRS	0.000	Canal > Reference
Biphenyl (diphenyl)	Gehan	0.247	nsd
Bis(2-ethylhexyl) phthalate	Gehan	0.037	Canal > Reference
Carbazole	-	-	Only a Single Detect in Canal
Chrysene	WRS	0.000	Canal > Reference
Di-n-butyl phthalate	Gehan	0.500	nsd
Di-n-octylphthalate	-	-	Only a Single Detect in Canal
Dibenz(a,h)anthracene	Gehan	0.000	Canal > Reference
Dibenzofuran	-	-	Only a Single Detect in Canal
Fluoranthene	WRS	0.000	Canal > Reference
Fluorene	Gehan	0.007	Canal > Reference
Indeno(1,2,3-c,d)pyrene	WRS	0.000	Canal > Reference
Naphthalene	Gehan	0.015	Canal > Reference
Phenanthrene	WRS	0.010	Canal > Reference
Pyrene	Gehan	0.000	Canal > Reference
Total PAHs	WRS	0.000	Canal > Reference
Pesticides (ug/kg)			
Alpha-chlordane	Gehan	0.104	nsd
Beta endosulfan	-	-	Only a Single Detect in Canal
Endosulfan sulfate	-	-	Only a Single Detect in Canal
Gamma-chlordane	Gehan	0.056	nsd
Methoxychlor	-	-	Only a Single Detect in Canal
P,P'-DDE	-	-	Only a Single Detect in Canal
Polychlorinated biphenyls (ug/kg)			
Aroclor 1016	Gehan	0.102	nsd
Aroclor 1248	Gehan	0.191	nsd

TABLE 4-5

Comparison of Surface Sediment Concentrations in Gowanus Canal and Gowanus Bay Reference Area
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Central Tendency Comparison			
Parameter	Test	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Aroclor 1254	-	-	Only a Single Detect in Canal
Aroclor 1260	Gehan	0.040	Canal > Reference
Total PCBs	Gehan	0.014	Canal > Reference
Metals (mg/kg)			
Aluminum	WRS	0.664	nsd
Arsenic	WRS	0.646	nsd
Barium	WRS	0.000	Canal > Reference
Beryllium	Gehan	0.824	nsd
Cadmium	WRS	0.003	Canal > Reference
Calcium	WRS	1.000	nsd
Chromium	WRS	0.007	Canal > Reference
Cobalt	Gehan	0.356	nsd
Copper	WRS	0.000	Canal > Reference
Cyanide, Total	Gehan	0.153	nsd
Iron	WRS	0.574	nsd
Lead	WRS	0.000	Canal > Reference
Magnesium	WRS	0.101	nsd
Manganese	WRS	0.997	nsd
Mercury	WRS	0.014	Canal > Reference
Nickel	WRS	0.005	Canal > Reference
Potassium	WRS	0.796	nsd
Selenium	Gehan	0.171	nsd
Silver	Gehan	0.005	Canal > Reference
Sodium	WRS	0.718	nsd
Vanadium	WRS	0.107	nsd
Zinc	-	-	< 10 reference results

Notes:

Test was performed for detected constituents only, and only if a minimum of ten canal and ten reference sample results were available.

WRS = Wilcoxon Rank Sum

- = test not performed

nsd = no significant difference

TABLE 4-6

Soft Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Volatile Organic Compounds (ug/kg)								
1,2,3-trichlorobenzene	2 / 205 (1.0%)	222	4.40 - 19000	3.10 - 4.70	ERT3-2	791	1820 (0)	4900 (0)
1,2,3-trichloropropane	1 / 144 (.7%)	144	5.10 - 44000	1400 - 1400	GC-SED-82	2790	NA	5 (1)
1,2-dichlorobenzene	29 / 353 (8.2%)	366	4.40 - 1300000	3.50 - 340	GC-SD119	34000	240 (4)	190000 (0)
1,3-dichlorobenzene	37 / 357 (10.4%)	366	3.80 - 1300000	0.70 - 340	ERT2-1	33600	240 (1)	NA
1,4-dichlorobenzene	135 / 363 (37.2%)	366	3.80 - 1300000	2.30 - 52000	GC-SD113	33200	240 (66)	2400 (7)
Acetone	164 / 365 (44.9%)	366	12.0 - 110000	20.0 - 4100	GC-SED-01	3750	NA	610000 (0)
Benzene	271 / 366 (74.0%)	366	4.90 - 3700	0.68 - 410000	GC-SED-51	13600	520 (129)	1100 (102)
Bromoform	3 / 348 (.9%)	366	3.80 - 44000	480 - 2000	GC-SD119	1630	NA	61000 (0)
Bromomethane	1 / 365 (.3%)	366	3.80 - 44000	450 - 450	GC-SD119	1500	NA	730 (0)
Carbon disulfide	212 / 365 (58.1%)	366	5.00 - 44000	0.85 - 8800	GC-SED-52	1490	NA	82000 (0)
Chlorobenzene	96 / 365 (26.3%)	366	3.80 - 44000	0.47 - 21000	GC-SED-02	1680	70 (47)	29000 (0)
Chloromethane	6 / 365 (1.6%)	366	3.80 - 44000	80.0 - 810	GC-SD117	1500	NA	12000 (0)
cis-1,2-dichloroethylene	21 / 365 (5.8%)	366	3.80 - 44000	0.54 - 400	GC-SED-87	1500	NA	78000 (0)
Cyclohexane	38 / 220 (17.3%)	222	3.80 - 19000	0.98 - 980	ERT3-3	696	NA	120000 (0)
Ethylbenzene	312 / 365 (85.5%)	366	5.00 - 1400	0.40 - 1200000	GC-SED-51	63400	128 (211)	5400 (114)
Isopropylbenzene (cumene)	199 / 222 (89.6%)	222	5.00 - 2900	0.94 - 100000	GC-SD139	4490	NA	210000 (0)
m, p xylenes	183 / 222 (82.4%)	222	5.00 - 1900	0.45 - 440000	GC-SD139	18100	540 (88)	340000 (1)
Methyl acetate	44 / 221 (19.9%)	222	3.80 - 19000	1.90 - 2300	GC-SD117	719	NA	780000 (0)
Methyl ethyl ketone (2-butanone)	147 / 365 (40.3%)	366	7.60 - 44000	8.20 - 6400	GC-SD124	1950	NA	280000 (0)
Methylcyclohexane	64 / 221 (29.0%)	222	4.80 - 19000	2.40 - 6100	ERT2-2	760	NA	NA
Methylene chloride	4 / 365 (1.1%)	366	3.80 - 44000	0.63 - 1500	GC-SED-10	1520	NA	11000 (0)
o-xylene (1,2-dimethylbenzene)	190 / 222 (85.6%)	222	5.00 - 1200	0.91 - 250000	GC-SD139	10300	540 (91)	380000 (0)
Styrene	6 / 364 (1.6%)	366	3.80 - 44000	170 - 38000	GC-SD130	1660	NA	630000 (0)
Tert-butyl methyl ether	40 / 366 (10.9%)	366	0.85 - 44000	0.68 - 190	ERT3-3	1500	NA	43000 (0)
Tetrachloroethylene(PCE)	8 / 364 (2.2%)	366	3.80 - 44000	1.40 - 290	ERT1-2	1520	NA	550 (0)
Toluene	224 / 365 (61.4%)	366	5.00 - 13000	0.69 - 1000000	GC-SED-51	28000	900 (77)	500000 (7)
Trichloroethylene (TCE)	6 / 364 (1.6%)	366	3.80 - 44000	1.70 - 360	GC-SED-87	1520	NA	2800 (0)
Trichlorofluoromethane	1 / 365 (.3%)	366	3.80 - 44000	10.0 - 10.0	ERT1-2	1500	NA	79000 (0)
Vinyl chloride	1 / 364 (.3%)	366	3.80 - 44000	2.90 - 2.90	ERT3-2	1500	NA	60 (0)
Xylene, total	125 / 144 (86.8%)	144	5.10 - 730	4.60 - 1200000	GC-SED-47, GC-SED-51	139000	540 (83)	63000 (40)

TABLE 4-6

Soft Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
2,4-dimethylphenol	1 / 365 (.3%)	367	230 - 1300000	400 - 400	GC-SD117	43800	29 (1)	120000 (0)
2,4-dinitrotoluene	1 / 365 (.3%)	367	230 - 1300000	26000 - 26000	GC-SD130	43300	NA	1600 (1)
2,6-dinitrotoluene	1 / 365 (.3%)	367	230 - 1300000	2300 - 2300	ERT4-3	43800	NA	6100 (0)
2-methylnaphthalene	338 / 366 (92.3%)	367	230 - 460000	16.0 - 9100000	GC-SED-51	574000	70 (331)	31000 (168)
4-chloroaniline	16 / 365 (4.4%)	367	230 - 1300000	600 - 9100	GC-SED-89B	43800	NA	2400 (10)
4-chlorophenyl phenyl ether	1 / 365 (.3%)	367	230 - 1300000	110 - 110	GC-SD117	43800	NA	31000 (0)
4-methylphenol (p-cresol)	23 / 365 (6.3%)	367	230 - 1300000	13.0 - 1800	GC-SD145	43600	670 (7)	31000 (0)
Acenaphthene	359 / 367 (97.8%)	367	360 - 460000	6.90 - 3900000	GC-SED-31	275000	16 (358)	340000 (71)
Acenaphthylene	353 / 367 (96.2%)	367	370 - 540000	40.0 - 1200000	GC-SED-51	52700	44 (352)	340000 (15)
Acetophenone	37 / 221 (16.7%)	223	230 - 530000	59.0 - 9200	GC-SD115	17900	NA	780000 (0)
Anthracene	364 / 367 (99.2%)	367	370 - 460000	33.0 - 2200000	GC-SD127	168000	85.3 (362)	1700000 (4)
Benzaldehyde	3 / 221 (1.4%)	223	230 - 530000	100 - 480	GC-SD117	18700	NA	780000 (0)
Benzidine	2 / 144 (1.4%)	144	3300 - 13000000	2400 - 4700	GC-SED-10	822000	NA	0.5 (2)
Benzo(a)anthracene	365 / 367 (99.5%)	367	370 - 13000	170 - 880000	GC-SED-51	96000	261 (362)	150 (365)
Benzo(a)pyrene	342 / 367 (93.2%)	367	230 - 460000	250 - 630000	GC-SED-51	67500	430 (340)	15 (342)
Benzo(b)fluoranthene	318 / 367 (86.6%)	367	230 - 1300000	180 - 320000	GC-SED-45C	51700	4600 (263)	150 (318)
Benzo(g,h,i)perylene	351 / 367 (95.6%)	367	370 - 1300000	72.0 - 340000	GC-SED-102	34400	620 (334)	170000 (7)
Benzo(k)fluoranthene	304 / 367 (82.8%)	367	230 - 1300000	100 - 380000	GC-SED-51	42900	4600 (229)	1500 (283)
Benzyl butyl phthalate	80 / 367 (21.8%)	367	230 - 1300000	160 - 120000	GC-SED-38	43300	4900 (6)	260000 (0)
Biphenyl (diphenyl)	153 / 222 (68.9%)	223	230 - 26000	16.0 - 380000	GC-SD127	29600	NA	210000 (6)
Bis(2-chloroethoxy) methane	1 / 365 (.3%)	367	230 - 1300000	58.0 - 58.0	GC-SD116	43800	NA	18000 (0)
Bis(2-ethylhexyl) phthalate	223 / 367 (60.8%)	367	230 - 1300000	110 - 2800000	GC-SED-93	80500	182 (221)	35000 (121)
Carbazole	115 / 366 (31.4%)	367	230 - 1300000	26.0 - 93000	GC-SED-37B	37700	NA	NA
Chrysene	365 / 367 (99.5%)	367	370 - 13000	160 - 1100000	GC-SED-51	102000	384 (360)	15000 (254)
Dibenz(a,h)anthracene	262 / 367 (71.4%)	367	230 - 1300000	38.0 - 110000	GC-SED-37B	38200	63.4 (258)	15 (262)
Dibenzofuran	223 / 365 (61.1%)	367	230 - 1300000	31.0 - 430000	GC-SD133	33200	300 (216)	7800 (97)
Diethyl phthalate	2 / 365 (.5%)	367	230 - 1300000	9600 - 170000	GC-SED-93	43600	61000 (1)	4900000 (0)
Dimethyl phthalate	1 / 365 (.3%)	367	230 - 1300000	9200 - 9200	GC-SD134	43800	53000 (0)	NA
Di-n-butyl phthalate	6 / 365 (1.6%)	367	230 - 1300000	21.0 - 1700	ERT1-2	43800	4400 (0)	610000 (0)
Di-n-octylphthalate	130 / 367 (35.4%)	367	230 - 1300000	110 - 130000	ERT2-2	44500	1160 (106)	35000 (4)
Fluoranthene	366 / 367 (99.7%)	367	370 - 370	290 - 6500000	ERT1-2	181000	600 (360)	230000 (78)

TABLE 4-6

Soft Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
Fluorene	345 / 367 (94.0%)	367	230 - 460000	34.0 - 2000000	GC-SED-51	156000	19 (345)	230000 (68)
Indeno(1,2,3-c,d)pyrene	356 / 367 (97.0%)	367	370 - 1300000	61.0 - 280000	GC-SED-37B	31000	680 (336)	150 (347)
Naphthalene	337 / 367 (91.8%)	367	230 - 460000	56.0 - 16000000	GC-SED-51	961000	160 (333)	3600 (272)
N-nitrosodiphenylamine	11 / 365 (3.0%)	367	230 - 1300000	1200 - 35000	GC-SD135	44000	11000 (3)	99000 (0)
Phenanthrene	367 / 367 (100%)	367	---	28.0 - 5200000	GC-SED-51	488000	240 (360)	1700000 (36)
Phenol	11 / 365 (3.0%)	367	230 - 1300000	18.0 - 1000	GC-SD133	43700	420 (3)	1800000 (0)
Pyrene	367 / 367 (100%)	367	---	60.0 - 2500000	GC-SED-51	251000	665 (362)	170000 (110)
Total PAHs	366 / 366 (100%)	367	---	120 - 45000000	GC-SED-51	3490000	4022 (359)	NA
Pesticides (ug/kg)								
Aldrin	71 / 343 (20.7%)	367	1.90 - 1800	1.30 - 640	GC-SED-74	55.2	NA	29 (33)
Alpha BHC	69 / 348 (19.8%)	367	1.80 - 1500	1.40 - 1800	GC-SED-52	53.3	NA	77 (18)
Alpha endosulfan	29 / 338 (8.6%)	367	1.70 - 1500	1.70 - 440	GC-SED-87	42.0	0.08 (29)	37000 (0)
Alpha-chlordane	184 / 337 (54.6%)	367	1.70 - 6300	1.50 - 1200	GC-SD112	76.6	0.04 (184)	1600 (0)
Beta BHC	59 / 308 (19.2%)	367	1.70 - 1500	1.90 - 750	ERT3-3	48.9	NA	270 (2)
Beta endosulfan	40 / 333 (12.0%)	367	3.30 - 2900	6.40 - 950	GC-SED-52	80.9	0.08 (40)	37000 (0)
Delta BHC	82 / 353 (23.2%)	367	1.70 - 1500	1.20 - 2900	GC-SED-74	53.6	NA	270 (5)
Dieldrin	152 / 339 (44.8%)	367	3.30 - 2900	4.40 - 830	GC-SED-32	108	340 (9)	30 (111)
Endosulfan sulfate	92 / 290 (31.7%)	367	3.30 - 2900	2.30 - 730	GC-SED-101	121	NA	37000 (0)
Endrin	31 / 334 (9.3%)	367	3.70 - 4500	4.80 - 570	GC-SED-51	119	14.6 (26)	1800 (0)
Endrin aldehyde	98 / 324 (30.2%)	367	3.50 - 2900	5.40 - 710	GC-SED-38	99.2	NA	1800 (0)
Endrin ketone	88 / 309 (28.5%)	367	3.30 - 2900	3.20 - 990	GC-SED-14	96.0	NA	1800 (0)
Gamma BHC	19 / 347 (5.5%)	367	1.70 - 1500	2.70 - 190	GC-SED-52	38.6	0.32 (19)	520 (0)
Gamma-chlordane	126 / 251 (50.2%)	367	1.70 - 6300	3.60 - 920	GC-SD112	125	0.04 (126)	1600 (0)
Heptachlor	55 / 340 (16.2%)	367	1.70 - 1500	2.10 - 980	GC-SED-74	43.8	1.8 (55)	110 (4)
Heptachlor epoxide	107 / 310 (34.5%)	367	1.70 - 1500	1.00 - 420	GC-SED-52	52.9	1.8 (103)	53 (38)
Methoxychlor	88 / 322 (27.3%)	367	10.0 - 15000	20.0 - 8600	GC-SED-14	518	NA	31000 (0)
P,P'-DDD	259 / 346 (74.9%)	367	3.50 - 2900	1.80 - 1900	GC-SED-32, GC-SED-85B	213	1.22 (259)	2000 (0)
P,P'-DDE	222 / 305 (72.8%)	367	3.50 - 2900	1.10 - 1700	GC-SED-85B	174	2.2 (221)	1400 (2)
P,P'-DDT	179 / 321 (55.8%)	367	3.30 - 2800	6.80 - 2400	GC-SED-34B	192	20 (155)	1700 (2)
Total DDTs	235 / 265 (88.7%)	361	---	2.90 - 3600	GC-SED-85B	441	1.58 (235)	NA

TABLE 4-6

Soft Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Polychlorinated Biphenyls (ug/kg)								
Aroclor 1016	58 / 367 (15.8%)	367	10.0 - 5000	84.0 - 3700	ERT1-3	319	22.7 (58)	390 (50)
Aroclor 1242	157 / 366 (42.9%)	367	20.0 - 5000	10.0 - 33000	GC-SD117	797	22.7 (155)	220 (120)
Aroclor 1248	56 / 367 (15.3%)	367	10.0 - 3300	30.0 - 16000	GC-SD135	427	22.7 (56)	220 (47)
Aroclor 1254	225 / 343 (65.6%)	367	10.0 - 2400	5.90 - 9200	GC-SED-80	1020	22.7 (223)	110 (211)
Aroclor 1260	282 / 365 (77.3%)	367	37.0 - 2400	10.0 - 28000	GC-SED-34B	1210	22.7 (280)	220 (225)
Total PCBs	290 / 342 (84.8%)	366	---	38.0 - 50700	GC-SD117	3470	22.7 (290)	220 (261)
Metals (mg/kg)								
Aluminum	361 / 361 (100%)	361	---	206 - 25000	GC-SED-13B	7620	NA	7700 (149)
Antimony	152 / 360 (42.2%)	361	6.10 - 46.7	0.75 - 20200	GC-SED-71C	65.1	2 (131)	3.1 (102)
Arsenic	359 / 361 (99.4%)	361	8.10 - 10.9	1.20 - 105	GC-SD149	13.9	8.2 (260)	0.39 (359)
Barium	361 / 361 (100%)	361	---	3.00 - 2030	GC-SD127	441	130.1 (284)	1500 (9)
Beryllium	61 / 361 (16.9%)	361	0.20 - 8.00	0.15 - 2.60	GC-SED-80	1.11	NA	16 (0)
Cadmium	319 / 361 (88.4%)	361	0.29 - 10.7	0.41 - 97.6	GC-SED-93	9.70	1.2 (312)	7 (159)
Calcium	357 / 361 (98.9%)	361	364 - 7400	355 - 180000	GC-SED-41	12300	NA	NA
Chromium	361 / 361 (100%)	361	---	3.60 - 874	GC-SED-93	135	81 (215)	0.29 (361)
Cobalt	257 / 361 (71.2%)	361	2.00 - 16.0	1.60 - 23.9	GC-SED-16	7.46	NA	2.3 (254)
Copper	361 / 361 (100%)	361	---	6.00 - 1610	GC-SD112	388	34 (348)	310 (192)
Iron	361 / 361 (100%)	361	---	1310 - 110000	GC-SED-51	25500	NA	5500 (358)
Lead	360 / 361 (99.7%)	361	9.20 - 9.20	5.20 - 2880	ERT1-2	770	46.7 (347)	400 (248)
Magnesium	361 / 361 (100%)	361	---	793 - 129000	GC-SED-41	7460	NA	NA
Manganese	361 / 361 (100%)	361	---	13.0 - 920	GC-SED-57	206	460 (14)	180 (173)
Mercury	354 / 361 (98.1%)	361	0.03 - 0.27	0.02 - 61.6	ERT1-3	2.63	0.15 (340)	2.3 (134)
Nickel	361 / 361 (100%)	361	---	3.10 - 484	GC-SD111	77.9	20.9 (335)	150 (34)
Potassium	354 / 361 (98.1%)	361	281 - 1060	84.9 - 5870	GC-SED-13B	1630	NA	NA
Selenium	154 / 361 (42.7%)	361	3.40 - 63.8	0.49 - 9.60	GC-SD149	8.01	NA	39 (0)
Silver	315 / 361 (87.3%)	361	1.00 - 1280	0.20 - 42.1	ERT1-1	10.9	1 (301)	39 (1)
Sodium	324 / 361 (89.8%)	361	95.0 - 3440	245 - 22200	GC-SED-13B	5180	NA	NA
Thallium	60 / 361 (16.6%)	361	2.40 - 79.7	0.70 - 9.00	GC-SD116	9.60	NA	NA
Vanadium	361 / 361 (100%)	361	---	2.60 - 277	GC-SED-46C	45.9	NA	39 (186)
Zinc	361 / 361 (100%)	361	---	5.50 - 4350	GC-SED-27	872	150 (343)	2300 (6)

TABLE 4-6

Soft Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Metals (mg/kg)								
Cyanide, Total	166 / 361 (46.0%)	361	0.51 - 8.00	0.06 - 48.2	GC-SED-52	2.29	NA	160 (0)
Herbicides (ug/kg)								
2,4,5-t (trichlorophenoxyacetic acid)	5 / 143 (3.5%)	143	10.0 - 220	40.0 - 110	GC-SED-102	16.6	NA	61000 (0)
Silvex (2,4,5-tp)	16 / 143 (11.2%)	143	10.0 - 220	4.40 - 480	GC-SED-102	21.7	NA	49000 (0)
General Chemistry (mg/kg)								
Nitrogen, nitrate (as N)	24 / 144 (16.7%)	144	1.00 - 12.5	0.48 - 28.3	GC-SED-46C	2.86	NA	13000 (0)
Nitrogen, nitrite	1 / 144 (.7%)	144	1.00 - 62.5	1.10 - 1.10	GC-SED-01	5.56	NA	780 (0)
Sulfate (as SO4)	123 / 144 (85.4%)	144	11.8 - 25.3	5.60 - 2360	GC-SED-75C	168	NA	NA
Sulfide	6 / 6 (100%)	6	---	2610 - 4740	GC-SD109	3470	NA	NA
Total Organic Carbon	6 / 6 (100%)	6	---	55400 - 151000	GC-SD126	91500	NA	NA
General Chemistry (%)								
Silt	6 / 6 (100%)	6	---	19.2 - 52.9	GC-SD109	42.7	NA	NA
Substrate - clay	6 / 6 (100%)	6	---	1.17 - 12.4	GC-SD126	7.24	NA	NA
Substrate - fines	6 / 6 (100%)	6	---	35.9 - 79.6	GC-SD126	50.0	NA	NA
Solid (%)								
Solids, percent	6 / 6 (100%)	6	---	28.7 - 63.9	GC-SD126	46.1	NA	NA

Page Intentionally Left Blank

TABLE 4-7a

Native Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Volatile Organic Compounds (ug/kg)								
1,2-dibromo-3-chloropropane	1 / 392 (.3%)	395	4.00 - 31000	4500 - 4500	GC-SD49A	2130	NA	5.4 (1)
1,2-dichlorobenzene	4 / 392 (1.0%)	395	4.00 - 31000	0.47 - 270	GC-SD107	2130	240 (1)	190000 (0)
1,2-dichloroethane	3 / 395 (.8%)	395	4.00 - 31000	0.45 - 0.67	GC-SD153	2100	NA	430 (0)
1,2-dichloropropane	3 / 395 (.8%)	395	4.00 - 31000	3.30 - 22.0	GC-SD153	2100	NA	890 (0)
1,3-dichlorobenzene	2 / 392 (.5%)	395	4.00 - 31000	0.31 - 0.60	GC-SD153	2130	240 (0)	NA
1,4-dichlorobenzene	15 / 393 (3.8%)	395	4.40 - 31000	1.40 - 2100	GC-SD107	2120	240 (2)	2400 (0)
1,4-dioxane (p-dioxane)	3 / 3 (100%)	395	---	23.0 - 35.0	GC-SD81A	27.3	NA	44000 (0)
Acetone	41 / 395 (10.4%)	395	8.80 - 63000	10.0 - 3100	GC-SD50B	4170	NA	6100000 (0)
Benzene	254 / 395 (64.3%)	395	4.40 - 12000	0.62 - 340000	GC-SD114	18200	520 (197)	1100 (180)
Bromochloromethane	1 / 395 (.3%)	395	4.00 - 31000	1.30 - 1.30	GC-SD153	2100	NA	NA
Carbon disulfide	81 / 395 (20.5%)	395	4.40 - 31000	0.42 - 170	GC-SD70B	2100	NA	82000 (0)
Chlorobenzene	9 / 395 (2.3%)	395	4.20 - 31000	0.54 - 1200	GC-SD107	2100	70 (1)	29000 (0)
cis-1,2-dichloroethylene	7 / 395 (1.8%)	395	4.00 - 31000	0.44 - 19.0	GC-SD151	2100	NA	78000 (0)
cis-1,3-dichloropropene	4 / 395 (1.0%)	395	4.00 - 31000	2.90 - 4500	GC-SD31A	2110	NA	1700 (1)
Cyclohexane	5 / 395 (1.3%)	395	4.10 - 31000	4.00 - 650	ERT3-3	2100	NA	120000 (0)
Dichlorodifluoromethane	3 / 395 (.8%)	395	4.00 - 31000	0.39 - 0.72	GC-SD148	2100	NA	18000 (0)
Ethylbenzene	337 / 395 (85.3%)	395	4.40 - 580	0.42 - 610000	GC-SD114	74100	128 (294)	5400 (249)
Isopropylbenzene (cumene)	291 / 395 (73.7%)	395	4.40 - 31000	0.39 - 57000	GC-SD35A	6660	NA	210000 (0)
m, p xylenes	322 / 395 (81.5%)	395	4.40 - 2800	0.30 - 790000	GC-SD114	70400	540 (265)	340000 (14)
Methyl acetate	3 / 395 (.8%)	395	4.00 - 31000	1.50 - 400	GC-SD72B	2100	NA	7800000 (0)
Methyl ethyl ketone (2-butanone)	34 / 395 (8.6%)	395	8.10 - 63000	2.00 - 4100	GC-SD47A	4190	NA	2800000 (0)
Methylcyclohexane	15 / 395 (3.8%)	395	4.00 - 31000	1.30 - 25000	GC-SD33A	2160	NA	NA
Methylene chloride	4 / 395 (1.0%)	395	4.00 - 31000	0.81 - 850	GC-SD152	2100	NA	11000 (0)
o-xylene (1,2-dimethylbenzene)	331 / 395 (83.8%)	395	4.40 - 320	0.48 - 340000	GC-SD114, GC-SD115	35300	540 (263)	380000 (0)
Styrene	43 / 395 (10.9%)	395	4.00 - 29000	22.0 - 530000	GC-SD114	16500	NA	630000 (0)
Tert-butyl methyl ether	16 / 395 (4.1%)	395	4.40 - 31000	0.34 - 98.0	ERT1-3	2100	NA	43000 (0)
Toluene	187 / 395 (47.3%)	395	4.10 - 12000	0.33 - 720000	GC-SD114	41100	900 (152)	500000 (4)
trans-1,3-dichloropropene	3 / 395 (.8%)	395	4.00 - 31000	1.50 - 1.90	GC-SD153	2100	NA	1700 (0)
Trichloroethylene (TCE)	2 / 395 (.5%)	395	4.00 - 31000	0.60 - 1.80	GC-SD10A	2100	NA	2800 (0)

TABLE 4-7a

Native Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
2,4-dinitrophenol	1 / 393 (.3%)	395	320 - 4700000	3700 - 3700	GC-SD59A	75500	NA	12000 (0)
2,4-dinitrotoluene	3 / 393 (.8%)	395	160 - 2400000	940 - 44000	GC-SD43A	37600	NA	1600 (2)
2-chloronaphthalene	2 / 393 (.5%)	395	160 - 2400000	1800 - 6100	GC-SD28B	38100	NA	180000 (0)
2-methylnaphthalene	330 / 395 (83.5%)	395	190 - 28000	47.0 - 6300000	GC-SD114	487000	70 (326)	31000 (260)
4-methylphenol (p-cresol)	1 / 393 (.3%)	395	160 - 2400000	320 - 320	GC-SD131	38100	670 (0)	31000 (0)
4-nitrophenol	1 / 393 (.3%)	395	320 - 4700000	8.30 - 8.30	GC-SD117	75800	NA	4800 (0)
Acenaphthene	350 / 395 (88.6%)	395	190 - 9300	7.70 - 2300000	GC-SD129	145000	16 (346)	340000 (44)
Acenaphthylene	319 / 395 (80.8%)	395	190 - 150000	6.90 - 4100000	GC-SD115	139000	44 (311)	340000 (37)
Acetophenone	56 / 393 (14.2%)	395	190 - 2400000	20.0 - 4900	GC-SD35A	37200	NA	780000 (0)
Anthracene	348 / 395 (88.1%)	395	190 - 9300	6.20 - 2000000	GC-SD115	126000	85.3 (329)	1700000 (1)
Benzaldehyde	25 / 393 (6.4%)	395	190 - 2400000	26.0 - 5600	GC-SD30A	38000	NA	780000 (0)
Benzo(a)anthracene	346 / 395 (87.6%)	395	190 - 11000	6.50 - 1200000	GC-SD115	68200	261 (319)	150 (323)
Benzo(a)pyrene	313 / 395 (79.2%)	395	190 - 170000	9.50 - 830000	GC-SD115	46600	430 (300)	15 (312)
Benzo(b)fluoranthene	301 / 394 (76.4%)	395	190 - 170000	9.10 - 650000	GC-SD115	29600	4600 (250)	150 (293)
Benzo(g,h,i)perylene	255 / 394 (64.7%)	395	160 - 2400000	24.0 - 450000	GC-SD44A	30600	620 (246)	170000 (5)
Benzo(k)fluoranthene	294 / 395 (74.4%)	395	160 - 170000	7.60 - 290000	GC-SD115	23400	4600 (241)	1500 (266)
Benzyl butyl phthalate	1 / 393 (.3%)	395	160 - 2400000	6.70 - 6.70	GC-SD117	38100	4900 (0)	260000 (0)
Biphenyl (diphenyl)	308 / 395 (78.0%)	395	180 - 28000	14.0 - 700000	GC-SD115	44300	NA	210000 (12)
Bis(2-chloroethyl) ether	1 / 393 (.3%)	395	160 - 2400000	11.0 - 11.0	GC-SD117	38100	NA	210 (0)
Bis(2-ethylhexyl) phthalate	45 / 393 (11.5%)	395	190 - 2400000	31.0 - 27000	GC-SD114	37500	182 (30)	35000 (0)
Carbazole	188 / 393 (47.8%)	395	180 - 2400000	11.0 - 46000	GC-SD118	22300	NA	NA
Chrysene	343 / 395 (86.8%)	395	190 - 11000	5.90 - 980000	GC-SD115	65200	384 (312)	15000 (256)
Dibenz(a,h)anthracene	147 / 393 (37.4%)	395	160 - 2400000	8.10 - 180000	GC-SD44A	32900	63.4 (144)	15 (146)
Dibenzofuran	276 / 395 (69.9%)	395	180 - 480000	13.0 - 240000	GC-SD115	18100	300 (265)	7800 (175)
Di-n-butyl phthalate	3 / 392 (.8%)	395	190 - 2400000	5.00 - 6.20	GC-SD143	38200	4400 (0)	610000 (0)
Di-n-octylphthalate	3 / 391 (.8%)	395	160 - 2400000	53.0 - 1800	GC-SD122	38000	1160 (1)	35000 (0)
Fluoranthene	356 / 395 (90.1%)	395	190 - 11000	7.40 - 1700000	GC-SD115, GC-SD44A	130000	600 (315)	230000 (49)
Fluorene	332 / 395 (84.1%)	395	190 - 120000	11.0 - 2900000	GC-SD115	145000	19 (329)	230000 (57)
Indeno(1,2,3-c,d)pyrene	256 / 394 (65.0%)	395	160 - 2400000	19.0 - 420000	GC-SD44A	31700	680 (245)	150 (252)
Naphthalene	315 / 395 (79.7%)	395	180 - 29000	7.00 - 21000000	GC-SD115	845000	160 (312)	3600 (285)
Phenanthrene	359 / 395 (90.9%)	395	190 - 28000	6.30 - 6800000	GC-SD115	448000	240 (329)	1700000 (18)

TABLE 4-7a

Native Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
Phenol	9 / 393 (2.3%)	395	190 - 2400000	6.50 - 560	GC-SD131	38100	420 (1)	1800000 (0)
Pyrene	357 / 395 (90.4%)	395	190 - 11000	8.40 - 3200000	GC-SD115	190000	665 (318)	170000 (133)
Total PAHs	375 / 393 (95.4%)	395	---	8.40 - 47500000	GC-SD115	2920000	4022 (321)	NA
Pesticides (ug/kg)								
Aldrin	27 / 360 (7.5%)	395	1.80 - 40.0	1.90 - 30.0	GC-SD131	2.24	NA	29 (1)
Alpha BHC	44 / 380 (11.6%)	395	1.80 - 40.0	1.10 - 140	ERT2-1	2.24	NA	77 (2)
Alpha endosulfan	25 / 363 (6.9%)	395	1.80 - 40.0	1.00 - 100	GC-SD29A	1.89	0.08 (25)	37000 (0)
Alpha-chlordane	56 / 355 (15.8%)	395	0.95 - 22.0	1.10 - 29.0	ERT3-3	1.82	0.04 (56)	1600 (0)
Beta BHC	30 / 334 (9.0%)	395	1.10 - 40.0	1.10 - 31.0	ERT4-3	1.76	NA	270 (0)
Beta endosulfan	78 / 356 (21.9%)	395	3.60 - 78.0	3.30 - 150	GC-SD29A	9.51	0.08 (78)	37000 (0)
Delta BHC	38 / 379 (10.0%)	395	1.80 - 40.0	1.10 - 65.0	GC-SD29A	2.07	NA	270 (0)
Dieldrin	29 / 379 (7.7%)	395	3.60 - 78.0	1.30 - 24.0	GC-SD47A	3.13	340 (0)	30 (0)
Endosulfan sulfate	25 / 221 (11.3%)	395	3.60 - 78.0	3.60 - 1700	GC-SD29A	27.0	NA	37000 (0)
Endrin	29 / 380 (7.6%)	395	3.60 - 63.0	1.20 - 110	ERT3-2	3.56	14.6 (8)	1800 (0)
Endrin aldehyde	54 / 256 (21.1%)	395	3.60 - 78.0	2.10 - 190	GC-SD131	6.82	NA	1800 (0)
Endrin ketone	139 / 351 (39.6%)	395	3.60 - 63.0	2.50 - 130	GC-SD115	10.5	NA	1800 (0)
Gamma BHC	9 / 391 (2.3%)	395	1.80 - 40.0	0.57 - 9.30	GC-SD47A	1.42	0.32 (9)	520 (0)
Gamma-chlordane	96 / 295 (32.5%)	395	1.30 - 20.0	0.98 - 70.0	GC-SD29A	4.71	0.04 (96)	1600 (0)
Heptachlor	39 / 376 (10.4%)	395	1.80 - 40.0	0.93 - 21.0	GC-SD44A	1.82	1.8 (34)	110 (0)
Heptachlor epoxide	102 / 332 (30.7%)	395	1.80 - 40.0	0.99 - 250	ERT2-1	6.12	1.8 (94)	53 (8)
Methoxychlor	92 / 342 (26.9%)	395	18.0 - 330	4.40 - 1100	ERT3-2	44.6	NA	31000 (0)
P,P'-DDD	146 / 304 (48.0%)	395	3.60 - 39.0	2.00 - 470	GC-SD29A	22.7	1.22 (146)	2000 (0)
P,P'-DDE	92 / 259 (35.5%)	395	3.00 - 78.0	2.30 - 140	GC-SD29A	8.23	2.2 (92)	1400 (0)
P,P'-DDT	165 / 346 (47.7%)	395	2.30 - 78.0	2.80 - 340	GC-SD131	22.5	20 (109)	1700 (0)
Total DDTs	109 / 174 (62.6%)	390	---	2.00 - 840	GC-SD29A	46.6	1.58 (109)	NA
Polychlorinated Biphenyls (ug/kg)								
Aroclor 1016	3 / 394 (.8%)	395	36.0 - 220	200 - 1500	ERT2-1	28.5	22.7 (3)	390 (1)
Aroclor 1242	14 / 394 (3.6%)	395	36.0 - 320	39.0 - 870	GC-SD13B	30.2	22.7 (14)	220 (4)
Aroclor 1248	1 / 393 (.3%)	395	36.0 - 320	110 - 110	GC-SD28B	24.5	22.7 (1)	220 (0)
Aroclor 1254	6 / 388 (1.5%)	395	36.0 - 220	70.0 - 540	ERT2-1	27.7	22.7 (6)	110 (5)

TABLE 4-7a

Native Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Polychlorinated Biphenyls (ug/kg)								
Aroclor 1260	15 / 394 (3.8%)	395	36.0 - 210	48.0 - 1200	GC-SD13B	36.8	22.7 (15)	220 (11)
Total PCBs	19 / 387 (4.9%)	395	---	39.0 - 2610	ERT2-1	26.1	22.7 (19)	220 (11)
Metals (mg/kg)								
Aluminum	392 / 392 (100%)	392	---	1320 - 18500	GC-SD131	4700	NA	7700 (43)
Antimony	69 / 392 (17.6%)	392	4.90 - 766	0.32 - 12.5	ERT2-1	8.46	2 (3)	3.1 (2)
Arsenic	381 / 392 (97.2%)	392	0.81 - 1.20	0.32 - 34.6	GC-SD26A	4.45	8.2 (56)	0.39 (379)
Barium	300 / 392 (76.5%)	392	17.1 - 30.1	4.20 - 799	ERT2-1	31.5	130.1 (5)	1500 (0)
Beryllium	200 / 392 (51.0%)	392	0.15 - 1.00	0.054 - 0.95	GC-SD131	0.30	NA	16 (0)
Cadmium	118 / 392 (30.1%)	392	0.11 - 1.00	0.017 - 8.90	ERT2-1	0.319	1.2 (4)	7 (2)
Calcium	238 / 392 (60.7%)	392	262 - 865	248 - 24000	GC-SD143	1680	NA	NA
Chromium	392 / 392 (100%)	392	---	4.10 - 75.2	GC-SD77A	12.3	81 (0)	0.29 (392)
Cobalt	322 / 392 (82.1%)	392	4.00 - 7.70	1.30 - 15.6	GC-SD143, GC-SD89B	4.80	NA	2.3 (291)
Copper	390 / 392 (99.5%)	392	2.80 - 3.60	2.40 - 483	ERT2-1	12.4	34 (6)	310 (1)
Iron	392 / 392 (100%)	392	---	2840 - 44900	GC-SD70B	10700	NA	5500 (359)
Lead	380 / 380 (100%)	392	---	2.00 - 1360	ERT2-1	14.4	46.7 (8)	400 (3)
Magnesium	392 / 392 (100%)	392	---	631 - 22700	GC-SD143	2530	NA	NA
Manganese	392 / 392 (100%)	392	---	21.4 - 1370	GC-SD152	131	460 (8)	180 (79)
Mercury	33 / 392 (8.4%)	392	0.05 - 0.21	0.00 - 4.80	ERT2-1	0.0947	0.15 (12)	2.3 (1)
Nickel	392 / 392 (100%)	392	---	4.30 - 154	GC-SD143	15.1	20.9 (58)	150 (1)
Potassium	354 / 392 (90.3%)	392	524 - 723	161 - 4600	GC-SD143	980	NA	NA
Selenium	112 / 392 (28.6%)	392	2.80 - 7.10	0.42 - 4.20	ERT2-1	1.77	NA	39 (0)
Silver	22 / 392 (5.6%)	392	0.06 - 2.00	0.055 - 5.90	ERT2-1	0.612	1 (4)	39 (0)
Sodium	163 / 392 (41.6%)	392	127 - 865	569 - 7550	GC-SD72B	847	NA	NA
Thallium	76 / 392 (19.4%)	392	2.00 - 5.10	0.41 - 6.80	GC-SD30A	1.58	NA	NA
Vanadium	392 / 392 (100%)	392	---	3.50 - 62.6	GC-SD130	15.0	NA	39 (5)
Zinc	392 / 392 (100%)	392	---	11.5 - 1580	ERT2-1	37.2	150 (5)	2300 (0)
Cyanide, Total	21 / 392 (5.4%)	392	2.50 - 5.20	0.19 - 9.60	ERT2-1	1.50	NA	160 (0)
General Chemistry (deg f)								
Flashpoint	1 / 1 (100%)	1	---	200 - 200	GC-SD107	200	NA	NA

TABLE 4-7a

Native Sediment - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
General Chemistry (mg/kg)								
Sulfide	287 / 371 (77.4%)	371	15.2 - 53.1	14.7 - 7300	GC-SD120	148	NA	NA
Sulfide	8 / 17 (47.1%)	17	34.9 - 36.0	17.6 - 7390	ERT2-1	482	NA	NA
Total Organic Carbon	321 / 371 (86.5%)	371	1100 - 1340	1130 - 168000	GC-SD108	18700	NA	NA
General Chemistry (ph units)								
pH Dissolved	1 / 1 (100%)	1	---	7.97 - 7.97	GC-SD107	7.97	NA	NA
General Chemistry (%)								
Silt	371 / 371 (100%)	371	---	0.00 - 81.2	GC-SD11A	38.3	NA	NA
Substrate - clay	371 / 371 (100%)	371	---	0.00 - 74.4	GC-SD128	10.4	NA	NA
Substrate - fines	371 / 371 (100%)	371	---	0.00 - 100	GC-SD123, GC-SD18A	51.3	NA	NA
Solid (%)								
Solids, percent	371 / 371 (100%)	371	---	48.1 - 91.1	GC-SD79A	81.4	NA	NA

Page Intentionally Left Blank

TABLE 4-7b

Summary of Average Total PAH Concentrations in Soft and Native Sediment by Sampling Transect
Gowanus Canal Remedial Investigation
Brooklyn, New York

Transect ID	Stations Included	Distance from Head of Canal (ft)	Depth	Average Total PAH Concentration (ug/kg)
			(feet below native sediment surface)	
ERT-1	ERT1-1, 1-2, 1-3	23	Soft	1,334,748
			0-2'	102,160
			2-4'	47,840
			4-6'	617
A	01A, 02A, 03B	67	Soft	315,545
			0-2'	3,268,900
			2-4'	138,890
			4-6'	NR
T1	124, 125, 126	114	Soft	3,223,792
			0-2'	2,490,900
			2-4'	2,362,400
			4-6'	NR
ERT-2	ERT2-1, 2-2, 2-3	179	Soft	1,293,692
			0-2'	2,199,050
			2-4'	4,221,000
			4-6'	NR
B	04A, 05A, 06A	252	Soft	1,468,233
			0-2'	2,172,487
			2-4'	1,940,067
			4-6'	1,988,600
C	07A, 08A, 09B	412	Soft	5,368,050
			0-2'	2,997,650
			2-4'	2,520,450
			4-6'	2,920,500
ERT-3	ERT3-1, 3-2, 3-3	554	Soft	572,987
			0-2'	3,108,500
			2-4'	2,520,100
			4-6'	718,200
D	10A, 11A, 12A	760	Soft	702,940
			0-2'	725,800
			2-4'	373,220
			4-6'	36,820
E	14A, 13B, 15A ERT4-3	978	Soft	2,087,286
			0-2'	3,011,975
			2-4'	4,265,137
			4-6'	3,174,050

TABLE 4-7b

Summary of Average Total PAH Concentrations in Soft and Native Sediment by Sampling Transect
Gowanus Canal Remedial Investigation
Brooklyn, New York

Transect ID	Stations Included	Distance from Head of Canal (ft)	Depth	Average Total PAH Concentration (ug/kg)
			(feet below native sediment surface)	
F	16A, 17A, 18A	1,259	Soft	198,627
			0-2'	2,213,000
			2-4'	4,356,167
			4-6'	966,610
G	19C, 20A, 21B	1,603	Soft	347,818
			0-2'	2,608,000
			2-4'	2,984,000
			4-6'	3,714,000
T8	146, 147, 148	1,773	Soft	1,406,680
			0-2'	1,086,367
			2-4'	864,767
			4-6'	179,830
H	22B, 110, 24B	1,921	Soft	397,704
			0-2'	1,691,000
			2-4'	2,187,867
			4-6'	1,545,212
T2	127, 128, 129	2,116	Soft	6,196,644
			0-2'	7,873,800
			2-4'	3,351,733
			4-6'	1,778,150
I	25B, 26A, 27A	2,348	Soft	831,885
			0-2'	2,547,567
			2-4'	3,269,567
			4-6'	2,822,500
J	28B, 29A, 30A	2,608	Soft	127,700
			0-2'	164,403
			2-4'	1,305,733
			4-6'	1,790,833
K	31A, 32A, 33A	2,799	Soft	7,530,298
			0-2'	1,406,267
			2-4'	5,067,450
			4-6'	4,031,633
L	34B, 35A, 36A	3,054	Soft	7,429,800
			0-2'	5,771,400
			2-4'	4,325,000
			4-6'	954,800

TABLE 4-7b

Summary of Average Total PAH Concentrations in Soft and Native Sediment by Sampling Transect
Gowanus Canal Remedial Investigation
Brooklyn, New York

Transect ID	Stations Included	Distance from Head of Canal (ft)	Depth	Average Total PAH Concentration (ug/kg)
			(feet below native sediment surface)	
M	37B, 38A, 39A	3,278	Soft	8,271,233
			0-2'	NR
			2-4'	NR
			4-6'	NR
N	40A, 41A, 42B	3,444	Soft	91,475
			0-2'	3,890,000
			2-4'	4,316,000
			4-6'	6,478,000
O	43A, 44A, 45C	3,540	Soft	20,296,400
			0-2'	1,979,200
			2-4'	5,388,633
			4-6'	12,207,500
P	46C, 47A, 48A	3,740	Soft	13,532,400
			0-2'	1,505,600
			2-4'	3,035,800
			4-6'	1,759,600
Q	49A, 50B, 51A	3,875	Soft	22,626,200
			0-2'	2,950,300
			2-4'	3,289,833
			4-6'	1,111,333
R	52A, 53A, 54B	4,038	Soft	12,401,525
			0-2'	3,469,100
			2-4'	1,661,650
			4-6'	1,711,940
S	55A, 56A, 57A	4,264	Soft	997,767
			0-2'	4,844,000
			2-4'	5,663,500
			4-6'	2,207,000
T3	130, 131, 132	4,383	Soft	7,032,700
			0-2'	2,807,867
			2-4'	3,054,777
			4-6'	5,132,500
T	118, 59A, 60B	4,604	Soft	8,048,500
			0-2'	5,548,000
			2-4'	3,647,833
			4-6'	7,369,350

TABLE 4-7b

Summary of Average Total PAH Concentrations in Soft and Native Sediment by Sampling Transect
Gowanus Canal Remedial Investigation
Brooklyn, New York

Transect ID	Stations Included	Distance from Head of Canal (ft)	Depth	Average Total PAH Concentration (ug/kg)
			(feet below native sediment surface)	
U	61C, 62C, 63A	4,819	Soft	5,183,667
			0-2'	1,871,533
			2-4'	2,189,567
			4-6'	1,726,250
V	64D, 65A, 66C	5,161	Soft	8,253,500
			0-2'	1,641,157
			2-4'	2,075,433
			4-6'	1,314,333
BB	104A, 105A, 106D	5,304	Soft	8,384,000
			0-2'	431,700
			2-4'	237,690
			4-6'	2,468,000
T4	133, 134, 135	5,542	Soft	2,337,450
			0-2'	3,173,000
			2-4'	2,809,000
			4-6'	NR
W	67B, 68A, 69C	5,730	Soft	4,021,055
			0-2'	5,100
			2-4'	1,260
			4-6'	7,050
X	70B, 122, 72B	5,908	Soft	795,496
			0-2'	593,267
			2-4'	1,047,670
			4-6'	1,278,737
T5	136, 137, 138	6,075	Soft	104,070
			0-2'	271,900
			2-4'	263,000
			4-6'	816,200
Y	73E, 74E, 75C	6,256	Soft	378,480
			0-2'	3,425
			2-4'	100
			4-6'	0
Z	76C, 77A, 78B	6,649	Soft	610,108
			0-2'	1,627,500
			2-4'	15,465
			4-6'	4,400

TABLE 4-7b

Summary of Average Total PAH Concentrations in Soft and Native Sediment by Sampling Transect
Gowanus Canal Remedial Investigation
Brooklyn, New York

Transect ID	Stations Included	Distance from Head of Canal (ft)	Depth	Average Total PAH Concentration (ug/kg)
			(feet below native sediment surface)	
T6	139, 140, 141	7,079	Soft	1,952,032
			0-2'	56
			2-4'	0
			4-6'	51
T7	142, 143, 144	7,519	Soft	902,542
			0-2'	118,926
			2-4'	16
			4-6'	99,600
AA	79A, 81A, 83A	7,596	Soft	374,900
			0-2'	119,136
			2-4'	38
			4-6'	20
4th St. Basin	85B, 111, 87A, 85B	2,469	Soft	994,388
			0-2'	676,750
			2-4'	79,105
			4-6'	24,520
6th St. Basin	88A, 89B, 90B	3,573	Soft	1,485,467
			0-2'	2,739,200
			2-4'	2,134,733
			4-6'	1,966,200
7th St. Basin	91A, 117, 93A	3,961	Soft	1,828,557
			0-2'	1,146,232
			2-4'	816,435
			4-6'	915

Notes:

1. The average of all soft sediment samples from the transect is listed first. The depth ranges below (0-2', 2-4', and 4-6') are average total PAH concentrations in native sediment for a given transect.
 2. Transects T1 through T8 were sampled in 2010 by USEPA.
 3. Transects A through BB, and those within the three turning basins were originally sampled by National Grid in 2005. These locations were resampled in 2010 and the averages presented utilize soft sediment data from both data sets. Native sediment data from only the 2010 USEPA sampling is included in this summary.
 4. Field duplicates are not included (duplicates were omitted).
- NR - Not Recovered
ug/kg - micrograms/kilogram

Page Intentionally Left Blank

TABLE 4-8a
 Surface Water - Canal - Dry Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,4-dichlorobenzene	1 / 27 (3.7%)	27	0.50 - 0.50	0.11 - 0.11	320	0.245	129 (0)	190 (0)
Acetone	26 / 27 (96.3%)	27	5.00 - 5.00	1.10 - 6.70	317	2.24	NA	2200 (0)
Benzene	18 / 27 (66.7%)	27	0.50 - 0.50	0.50 - 11.0	304	1.20	110 (0)	10 (1)
Ethylbenzene	16 / 27 (59.3%)	27	0.50 - 0.50	0.19 - 1.30	320	0.37	25 (0)	1.5 (0)
m, p xylenes	17 / 27 (63.0%)	27	0.50 - 0.50	0.16 - 1.30	320	0.364	NA	120 (0)
Methylene chloride	3 / 27 (11.1%)	27	0.50 - 0.50	0.76 - 1.00	310	0.319	6400 (0)	200 (0)
o-xylene (1,2-dimethylbenzene)	5 / 27 (18.5%)	27	0.50 - 0.50	0.24 - 0.53	320	0.271	NA	120 (0)
Tert-butyl methyl ether	1 / 27 (3.7%)	27	0.50 - 0.50	0.18 - 0.18	304	0.247	5000 (0)	12 (0)
Toluene	16 / 27 (59.3%)	27	0.50 - 0.50	0.17 - 0.95	308B	0.327	215 (0)	6000 (0)
Semi-Volatile Organic Compounds (ug/l)								
2-methylnaphthalene	1 / 27 (3.7%)	27	0.10 - 0.10	0.017 - 0.017	315	0.0488	NA	15 (0)
Acenaphthene	21 / 27 (77.8%)	27	0.10 - 0.10	0.26 - 0.94	319	0.417	40 (0)	990 (0)
Anthracene	3 / 27 (11.1%)	27	0.10 - 0.10	1.20 - 5.20	325	0.352	NA	40000 (0)
Benzo(a)anthracene	7 / 27 (25.9%)	27	0.10 - 0.10	0.12 - 0.83	325	0.131	NA	0.018 (7)
Benzo(a)pyrene	3 / 27 (11.1%)	27	0.10 - 0.10	0.19 - 0.66	319	0.0863	NA	0.018 (3)
Benzo(b)fluoranthene	21 / 27 (77.8%)	27	0.10 - 0.10	0.11 - 0.88	319	0.216	NA	0.018 (21)
Benzo(g,h,i)perylene	5 / 27 (18.5%)	27	0.10 - 0.10	0.099 - 0.15	302, 307A	0.0651	NA	110 (0)
Benzo(k)fluoranthene	11 / 27 (40.7%)	27	0.10 - 0.10	0.10 - 0.29	319, 325	0.103	NA	0.018 (11)
Bis(2-ethylhexyl) phthalate	13 / 27 (48.1%)	27	5.00 - 5.00	0.71 - 5.60	321	2.51	360 (0)	2.2 (5)
Caprolactam	1 / 27 (3.7%)	27	5.00 - 5.00	1.00 - 1.00	312	2.44	NA	1800 (0)
Carbazole	2 / 27 (7.4%)	27	5.00 - 5.00	1.10 - 2.10	325	2.43	NA	NA
Chrysene	15 / 27 (55.6%)	27	0.10 - 0.10	0.11 - 1.10	325	0.195	NA	0.018 (15)
Dimethyl phthalate	8 / 27 (29.6%)	27	5.00 - 5.00	1.50 - 3.40	324	2.47	3.4 (0)	1100000 (0)
Di-n-butyl phthalate	3 / 27 (11.1%)	27	5.00 - 5.00	1.00 - 1.40	301	2.35	3.4 (0)	4500 (0)
Fluoranthene	23 / 27 (85.2%)	27	0.10 - 0.10	0.095 - 2.30	325	0.443	11 (0)	140 (0)
Fluorene	15 / 27 (55.6%)	27	0.10 - 0.10	0.11 - 0.19	325	0.0926	NA	5300 (0)
Indeno(1,2,3-c,d)pyrene	10 / 27 (37.0%)	27	0.10 - 0.10	0.097 - 0.22	319	0.0847	NA	0.018 (10)
Phenanthrene	11 / 27 (40.7%)	27	0.10 - 0.10	0.10 - 0.58	325	0.114	4.6 (0)	1100 (0)
Phenol	1 / 27 (3.7%)	27	5.00 - 5.00	1.30 - 1.30	314	2.46	400 (0)	860000 (0)
Pyrene	6 / 27 (22.2%)	27	0.10 - 0.10	0.15 - 1.50	325	0.19	NA	4000 (0)

TABLE 4-8a
 Surface Water - Canal - Dry Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Total PAHs	24 / 27 (88.9%)	27	---	0.11 - 13.3	325	2.12	NA	NA
Metals (ug/l)								
Aluminum Dissolved	1 / 27 (3.7%)	27	2000 - 3000	1480 - 1480	324	1300	NA	3700 (0)
Arsenic Dissolved	25 / 25 (100%)	27	---	15.1 - 21.6	323	19.1	36 (0)	0.14 (25)
Arsenic	25 / 25 (100%)	27	---	9.10 - 23.4	309	18.5	36 (0)	0.14 (25)
Barium Dissolved	18 / 27 (66.7%)	27	100 - 100	18.0 - 32.5	304	30.9	200 (0)	730 (0)
Barium	9 / 27 (33.3%)	27	10.0 - 100	18.4 - 23.0	312	38.4	200 (0)	730 (0)
Calcium Dissolved	27 / 27 (100%)	27	---	257000 - 298000	306, 308A	274000	NA	NA
Calcium	27 / 27 (100%)	27	---	259000 - 315000	312	280000	NA	NA
Chromium Dissolved	23 / 27 (85.2%)	27	20.0 - 20.0	3.60 - 10.5	310	5.84	NA	0.043 (23)
Chromium	21 / 27 (77.8%)	27	2.00 - 20.0	4.00 - 99.7	323	12.4	NA	0.043 (21)
Cobalt Dissolved	1 / 27 (3.7%)	27	10.0 - 10.0	2.80 - 2.80	304	4.92	1 (1)	1.1 (1)
Copper Dissolved	11 / 27 (40.7%)	27	25.0 - 375	181 - 282	303	107	3.1 (11)	150 (11)
Copper	11 / 27 (40.7%)	27	25.0 - 375	123 - 232	308B	88.1	3.1 (11)	150 (10)
Lead	7 / 27 (25.9%)	27	10.0 - 10.0	1.90 - 7.30	304	4.68	8.1 (0)	15 (0)
Magnesium Dissolved	27 / 27 (100%)	27	---	803000 - 942000	306, 308A	858000	NA	NA
Magnesium	27 / 27 (100%)	27	---	809000 - 998000	312	880000	NA	NA
Manganese Dissolved	27 / 27 (100%)	27	---	40.0 - 71.5	323	51.1	100 (0)	100 (0)
Manganese	27 / 27 (100%)	27	---	45.0 - 72.9	310	56.9	100 (0)	100 (0)
Mercury Dissolved	13 / 27 (48.1%)	27	0.20 - 0.20	0.047 - 0.091	323	0.0798	0.94 (0)	0.0007 (13)
Mercury	14 / 27 (51.9%)	27	0.20 - 0.20	0.047 - 0.06	324	0.0751	0.94 (0)	0.0007 (14)
Nickel Dissolved	17 / 27 (63.0%)	27	10.0 - 10.0	2.20 - 13.4	310	4.68	8.2 (2)	4600 (0)
Nickel	22 / 27 (81.5%)	27	10.0 - 10.0	2.00 - 52.3	323	6.35	8.2 (4)	4600 (0)
Potassium Dissolved	27 / 27 (100%)	27	---	274000 - 316000	322	289000	NA	NA
Potassium	27 / 27 (100%)	27	---	277000 - 328000	312	297000	NA	NA
Selenium Dissolved	16 / 16 (100%)	27	---	38.6 - 53.5	323	45.8	71 (0)	4200 (0)
Selenium	26 / 26 (100%)	27	---	18.7 - 50.9	322	39.0	71 (0)	4200 (0)
Sodium Dissolved	27 / 27 (100%)	27	---	5330000 - 6790000	322	5950000	NA	NA
Sodium	27 / 27 (100%)	27	---	5550000 - 6620000	307B	6100000	NA	NA
Thallium	1 / 27 (3.7%)	27	10.0 - 10.0	2.10 - 2.10	318	4.89	17 (0)	0.47 (1)
Zinc Dissolved	12 / 24 (50.0%)	27	20.0 - 20.0	9.90 - 37.9	321	13.1	81 (0)	26000 (0)

TABLE 4-8a
 Surface Water - Canal - Dry Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Zinc	13 / 23 (56.5%)	27	20.0 - 20.0	11.0 - 25.7	321	13.4	81 (0)	26000 (0)
General Chemistry (mg/l)								
Total suspended solids	27 / 27 (100%)	27	---	52.0 - 106	309	80.1	NA	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-8b
 Surface Water - Reference - Dry Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Volatile Organic Compounds (ug/l)						
Acetone	9 / 11 (81.8%)	11	5.00 - 5.00	0.92 - 2.10	326	1.63
Methylene chloride	8 / 11 (72.7%)	11	0.50 - 0.50	0.53 - 1.10	331	0.58
Semi-Volatile Organic Compounds (ug/l)						
2,4-dinitrophenol	1 / 11 (9.1%)	11	10.0 - 10.0	9.00 - 9.00	336	5.36
4-methylphenol (p-cresol)	1 / 11 (9.1%)	11	5.00 - 5.00	9.00 - 9.00	336	3.09
Acenaphthylene	1 / 11 (9.1%)	11	0.10 - 0.10	0.55 - 0.55	336	0.0955
Benzo(a)anthracene	1 / 11 (9.1%)	11	0.10 - 0.10	0.94 - 0.94	333	0.131
Benzo(a)pyrene	1 / 11 (9.1%)	11	0.10 - 0.10	0.46 - 0.46	333	0.0873
Benzo(b)fluoranthene	3 / 11 (27.3%)	11	0.10 - 0.10	0.15 - 0.55	333	0.115
Benzo(g,h,i)perylene	1 / 11 (9.1%)	11	0.10 - 0.22	0.051 - 0.051	332	0.0555
Benzo(k)fluoranthene	1 / 11 (9.1%)	11	0.10 - 0.10	0.36 - 0.36	333	0.0782
Bis(2-ethylhexyl) phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	1.10 - 1.10	327	2.37
Chrysene	1 / 11 (9.1%)	11	0.10 - 0.10	0.79 - 0.79	333	0.117
Dibenz(a,h)anthracene	1 / 11 (9.1%)	11	0.10 - 0.10	0.12 - 0.12	328	0.0564
Diethyl phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	2.20 - 2.20	336	2.47
Dimethyl phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	2.20 - 2.20	329	2.47
Di-n-butyl phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	0.47 - 0.47	331	2.32
Fluoranthene	1 / 11 (9.1%)	11	0.10 - 0.10	0.61 - 0.61	333	0.101
Fluorene	1 / 11 (9.1%)	11	0.10 - 0.10	0.11 - 0.11	335	0.0555
Indeno(1,2,3-c,d)pyrene	3 / 11 (27.3%)	11	0.10 - 0.10	0.14 - 0.76	336	0.135
Pyrene	1 / 11 (9.1%)	11	0.10 - 0.10	0.62 - 0.62	333	0.102
Total PAHs	5 / 11 (45.5%)	11	---	0.051 - 4.52	333	0.596
Metals (ug/l)						
Arsenic	11 / 11 (100%)	11	---	16.3 - 25.8	336	21.3
Arsenic Dissolved	11 / 11 (100%)	11	---	17.7 - 23.3	326	21.3
Barium	1 / 11 (9.1%)	11	21.2 - 100	30.1 - 30.1	335	44.6
Barium Dissolved	2 / 11 (18.2%)	11	100 - 100	21.3 - 23.4	332	45.0
Calcium	11 / 11 (100%)	11	---	256000 - 321000	331	272000
Calcium Dissolved	11 / 11 (100%)	11	---	244000 - 286000	335	275000

TABLE 4-8b
 Surface Water - Reference - Dry Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Metals (ug/l)						
Chromium	10 / 11 (90.9%)	11	20.0 - 20.0	4.70 - 30.6	329	11.7
Chromium Dissolved	11 / 11 (100%)	11	---	3.90 - 9.10	332	4.84
Copper	5 / 11 (45.5%)	11	375 - 375	49.0 - 146	332	155
Copper Dissolved	4 / 11 (36.4%)	11	25.0 - 375	169 - 177	332	166
Lead	5 / 9 (55.6%)	11	10.0 - 10.0	2.00 - 17.9	333	7.47
Lead Dissolved	1 / 10 (10.0%)	11	10.0 - 10.0	2.00 - 2.00	333	4.70
Magnesium	11 / 11 (100%)	11	---	795000 - 1020000	331	852000
Magnesium Dissolved	11 / 11 (100%)	11	---	763000 - 897000	335	853000
Manganese	11 / 11 (100%)	11	---	36.9 - 60.4	329	47.8
Manganese Dissolved	11 / 11 (100%)	11	---	29.0 - 47.9	334	36.2
Mercury	1 / 11 (9.1%)	11	0.20 - 0.20	0.053 - 0.053	329	0.0957
Mercury Dissolved	1 / 11 (9.1%)	11	0.20 - 0.20	0.053 - 0.053	329	0.0957
Nickel	8 / 10 (80.0%)	11	10.0 - 10.0	2.00 - 18.8	330	7.16
Nickel Dissolved	5 / 10 (50.0%)	11	10.0 - 10.0	2.10 - 5.80	332	4.26
Potassium	11 / 11 (100%)	11	---	274000 - 337000	331	294000
Potassium Dissolved	11 / 11 (100%)	11	---	251000 - 322000	336	300000
Selenium	11 / 11 (100%)	11	---	36.6 - 52.2	328	46.2
Selenium Dissolved	7 / 7 (100%)	11	---	37.5 - 51.1	329	43.9
Sodium	11 / 11 (100%)	11	---	5830000 - 6600000	331	6170000
Sodium Dissolved	11 / 11 (100%)	11	---	4790000 - 6910000	326	6360000
Zinc	7 / 8 (87.5%)	11	20.0 - 20.0	10.5 - 24.7	330	17.3
Zinc Dissolved	7 / 8 (87.5%)	11	20.0 - 20.0	10.3 - 14.0	332	11.7
General Chemistry (mg/l)						
Total suspended solids	11 / 11 (100%)	11	---	42.0 - 106	331	78.4

See notes in Table 4-21

TABLE 4-9a
 Surface Water - Canal - Wet Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,2,4-trichlorobenzene	1 / 26 (3.8%)	26	0.50 - 0.50	0.12 - 0.12	305	0.245	5.4 (0)	70 (0)
1,3-dichlorobenzene	2 / 26 (7.7%)	26	0.50 - 0.50	0.13 - 0.13	303	0.241	NA	960 (0)
1,3-dichlorobenzene	2 / 26 (7.7%)	26	0.50 - 0.50	0.13 - 0.13	305	0.241	NA	960 (0)
1,4-dichlorobenzene	14 / 26 (53.8%)	26	0.50 - 0.50	0.12 - 0.87	306	0.431	129 (0)	190 (0)
Acetone	1 / 26 (3.8%)	26	5.00 - 15.0	12.0 - 12.0	307B	4.53	NA	2200 (0)
Benzene	16 / 26 (61.5%)	26	0.50 - 0.50	0.36 - 2.90	316	0.563	110 (0)	10 (0)
Carbon disulfide	5 / 26 (19.2%)	26	0.50 - 0.50	0.14 - 0.17	308B	0.232	NA	100 (0)
Carbon disulfide	5 / 26 (19.2%)	26	0.50 - 0.50	0.14 - 0.17	313	0.232	NA	100 (0)
Chlorobenzene	17 / 26 (65.4%)	26	0.50 - 0.50	0.12 - 0.33	306	0.253	25 (0)	400 (0)
Chloroform	14 / 26 (53.8%)	26	0.50 - 0.50	0.50 - 0.69	321	0.423	NA	470 (0)
cis-1,2-dichloroethylene	17 / 26 (65.4%)	26	0.50 - 0.50	0.21 - 0.51	319	0.296	NA	37 (0)
Ethylbenzene	21 / 26 (80.8%)	26	0.50 - 0.50	0.18 - 2.60	316	0.451	25 (0)	1.5 (1)
Isopropylbenzene (cumene)	4 / 26 (15.4%)	26	0.50 - 0.50	0.096 - 0.20	316	0.233	NA	68 (0)
m, p xylenes	22 / 26 (84.6%)	26	0.50 - 0.50	0.18 - 2.60	316	0.451	NA	120 (0)
Methyl acetate	1 / 26 (3.8%)	26	0.50 - 0.50	0.44 - 0.44	317	0.257	NA	3700 (0)
Methylene chloride	9 / 26 (34.6%)	26	0.50 - 2.90	0.99 - 3.40	321	0.961	6400 (0)	200 (0)
o-xylene (1,2-dimethylbenzene)	20 / 26 (76.9%)	26	0.50 - 0.50	0.13 - 5.10	316	0.521	NA	120 (0)
Tetrachloroethylene(PCE)	24 / 26 (92.3%)	26	0.50 - 0.50	0.70 - 40.0	319	16.5	450 (0)	3.3 (23)
Toluene	24 / 26 (92.3%)	26	0.50 - 0.50	0.85 - 16.0	316	5.11	215 (0)	6000 (0)
trans-1,3-dichloropropene	1 / 26 (3.8%)	26	0.50 - 0.50	0.16 - 0.16	306	0.247	NA	0.43 (0)
Trichloroethylene (TCE)	2 / 26 (7.7%)	26	0.50 - 0.50	0.10 - 0.12	320	0.239	200 (0)	30 (0)
Semi-Volatile Organic Compounds (ug/l)								
2-methylnaphthalene	3 / 26 (11.5%)	26	0.10 - 0.10	0.17 - 3.00	316	0.174	NA	15 (0)
Acenaphthene	20 / 26 (76.9%)	26	0.10 - 1.00	0.095 - 0.40	313	0.169	40 (0)	990 (0)
Anthracene	1 / 26 (3.8%)	26	0.10 - 1.00	0.095 - 0.095	302	0.069	NA	40000 (0)
Benzo(a)anthracene	4 / 26 (15.4%)	26	0.10 - 1.00	0.074 - 0.15	302	0.0758	NA	0.018 (4)
Benzo(a)pyrene	6 / 26 (23.1%)	26	0.10 - 1.00	0.14 - 0.30	309	0.103	NA	0.018 (6)
Benzo(b)fluoranthene	16 / 26 (61.5%)	26	0.10 - 1.00	0.12 - 0.33	319	0.154	NA	0.018 (16)
Benzo(g,h,i)perylene	23 / 26 (88.5%)	26	0.10 - 1.00	0.13 - 1.50	308A	0.466	NA	110 (0)
Benzo(k)fluoranthene	7 / 26 (26.9%)	26	0.10 - 1.00	0.037 - 0.12	319	0.07	NA	0.018 (7)

TABLE 4-9a
 Surface Water - Canal - Wet Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Benzyl butyl phthalate	3 / 26 (11.5%)	26	5.00 - 50.0	0.73 - 1.10	307A	3.18	3.4 (0)	1900 (0)
Caprolactam	11 / 26 (42.3%)	26	5.00 - 50.0	0.33 - 1.50	320	2.78	NA	1800 (0)
Chrysene	3 / 26 (11.5%)	26	0.10 - 1.00	0.057 - 0.11	302	0.0709	NA	0.018 (3)
Dibenz(a,h)anthracene	4 / 26 (15.4%)	26	0.10 - 1.00	0.071 - 0.11	303	0.0742	NA	0.018 (4)
Di-n-butyl phthalate	12 / 26 (46.2%)	26	5.00 - 50.0	0.28 - 0.62	320	2.42	3.4 (0)	4500 (0)
Di-n-octylphthalate	3 / 26 (11.5%)	26	5.00 - 50.0	0.23 - 0.28	318	3.11	3.4 (0)	4.8 (0)
Fluoranthene	22 / 26 (84.6%)	26	0.10 - 1.00	0.089 - 0.32	313	0.17	11 (0)	140 (0)
Fluorene	3 / 26 (11.5%)	26	0.10 - 1.00	0.079 - 0.32	313	0.0804	NA	5300 (0)
Indeno(1,2,3-c,d)pyrene	23 / 26 (88.5%)	26	0.10 - 0.15	0.16 - 1.10	316	0.309	NA	0.018 (23)
Naphthalene	5 / 26 (19.2%)	26	0.10 - 0.10	0.13 - 1.40	316	0.136	1.4 (0)	0.14 (4)
Pentachlorophenol	1 / 26 (3.8%)	26	0.20 - 2.00	0.13 - 0.13	311	0.136	7.9 (0)	3 (0)
Phenanthrene	14 / 26 (53.8%)	26	0.10 - 0.10	0.13 - 1.40	316	0.202	4.6 (0)	1100 (0)
Pyrene	22 / 26 (84.6%)	26	0.10 - 1.00	0.10 - 0.34	313	0.197	NA	4000 (0)
Total PAHs	25 / 26 (96.2%)	26	---	0.49 - 6.90	316	1.81	NA	NA
Metals (ug/l)								
Arsenic Dissolved	26 / 26 (100%)	26	---	9.10 - 21.0	322	13.2	36 (0)	0.14 (26)
Arsenic	26 / 26 (100%)	26	---	6.90 - 26.2	302	14.9	36 (0)	0.14 (26)
Barium Dissolved	25 / 26 (96.2%)	26	100 - 100	18.4 - 31.1	322	23.4	200 (0)	730 (0)
Barium	26 / 26 (100%)	26	---	18.4 - 42.8	307A	25.9	200 (0)	730 (0)
Calcium Dissolved	24 / 24 (100%)	26	---	100000 - 304000	303	164000	NA	NA
Calcium	24 / 24 (100%)	26	---	97200 - 296000	324	164000	NA	NA
Chromium Dissolved	7 / 26 (26.9%)	26	20.0 - 20.0	3.60 - 5.80	314	8.50	NA	0.043 (7)
Chromium	26 / 26 (100%)	26	---	3.90 - 29.3	308B	6.72	NA	0.043 (26)
Cobalt Dissolved	1 / 26 (3.8%)	26	10.0 - 10.0	2.50 - 2.50	315	4.90	1 (1)	1.1 (1)
Cobalt	1 / 26 (3.8%)	26	10.0 - 10.0	3.90 - 3.90	307A	4.96	1 (1)	1.1 (1)
Iron Dissolved	1 / 26 (3.8%)	26	1500 - 7500	1020 - 1020	310	991	50 (1)	2600 (0)
Iron	3 / 26 (11.5%)	26	1500 - 1500	651 - 1040	317	754	50 (3)	2600 (0)
Lead Dissolved	6 / 26 (23.1%)	26	10.0 - 10.0	1.90 - 17.7	314	4.93	8.1 (1)	15 (1)
Lead	26 / 26 (100%)	26	---	2.90 - 26.8	317	13.0	8.1 (21)	15 (8)
Magnesium Dissolved	25 / 25 (100%)	26	---	286000 - 4880000	301	805000	NA	NA

TABLE 4-9a
 Surface Water - Canal - Wet Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Magnesium	25 / 25 (100%)	26	---	276000 - 972000	303	505000	NA	NA
Manganese Dissolved	26 / 26 (100%)	26	---	35.6 - 63.0	322	43.9	100 (0)	100 (0)
Manganese	26 / 26 (100%)	26	---	48.4 - 65.6	307A	54.7	100 (0)	100 (0)
Mercury	19 / 26 (73.1%)	26	0.20 - 0.20	0.065 - 0.089	302	0.0855	0.94 (0)	0.0007 (19)
Nickel Dissolved	25 / 25 (100%)	26	---	2.20 - 8.00	315	3.74	8.2 (0)	4600 (0)
Nickel	25 / 25 (100%)	26	---	2.10 - 29.8	308B	5.76	8.2 (5)	4600 (0)
Potassium Dissolved	24 / 24 (100%)	26	---	92300 - 292000	303	154000	NA	NA
Potassium	24 / 24 (100%)	26	---	88700 - 290000	324	155000	NA	NA
Selenium Dissolved	16 / 16 (100%)	26	---	14.7 - 41.9	303	24.5	71 (0)	4200 (0)
Selenium	26 / 26 (100%)	26	---	13.9 - 64.6	301	29.3	71 (0)	4200 (0)
Sodium Dissolved	25 / 25 (100%)	26	---	2480000 - 9180000	301	4050000	NA	NA
Sodium	25 / 25 (100%)	26	---	2340000 - 7090000	301	3940000	NA	NA
Zinc Dissolved	25 / 26 (96.2%)	26	20.0 - 20.0	11.0 - 40.2	314	22.6	81 (0)	26000 (0)
Zinc	24 / 26 (92.3%)	26	20.0 - 20.0	17.7 - 75.7	318	39.9	81 (0)	26000 (0)
General Chemistry (mg/l)								
Total suspended solids	26 / 26 (100%)	26	---	33.0 - 93.0	302	52.8	NA	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-9b
 Surface Water - Reference -Wet Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Volatile Organic Compounds (ug/l)						
Ethylbenzene	1 / 11 (9.1%)	11	0.50 - 0.50	0.15 - 0.15	326	0.241
m, p xylenes	1 / 11 (9.1%)	11	0.50 - 0.50	0.14 - 0.14	326	0.24
Methylene chloride	7 / 11 (63.6%)	11	0.50 - 0.50	0.40 - 0.85	326	0.44
o-xylene (1,2-dimethylbenzene)	1 / 11 (9.1%)	11	0.50 - 0.50	0.13 - 0.13	326	0.239
Tetrachloroethylene(PCE)	3 / 11 (27.3%)	11	0.50 - 0.50	0.17 - 5.10	326	0.676
Toluene	1 / 11 (9.1%)	11	0.50 - 0.50	1.40 - 1.40	326	0.355
Semi-Volatile Organic Compounds (ug/l)						
Benzo(a)pyrene	3 / 11 (27.3%)	11	0.10 - 0.10	0.17 - 1.40	328	0.195
Benzo(b)fluoranthene	4 / 11 (36.4%)	11	0.10 - 0.10	0.12 - 1.30	328	0.191
Benzo(g,h,i)perylene	10 / 11 (90.9%)	11	0.10 - 0.10	0.13 - 0.96	328	0.425
Benzo(k)fluoranthene	1 / 11 (9.1%)	11	0.10 - 0.10	1.40 - 1.40	328	0.173
Caprolactam	3 / 11 (27.3%)	11	5.00 - 5.00	0.57 - 0.64	329	1.98
Dibenz(a,h)anthracene	1 / 11 (9.1%)	11	0.10 - 0.10	0.19 - 0.19	326	0.0627
Dimethyl phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	5.40 - 5.40	330	2.76
Di-n-butyl phthalate	2 / 11 (18.2%)	11	5.00 - 5.00	0.22 - 0.28	326	2.09
Fluoranthene	2 / 11 (18.2%)	11	0.10 - 0.10	0.12 - 0.17	335	0.0673
Indeno(1,2,3-c,d)pyrene	10 / 11 (90.9%)	11	0.10 - 0.10	0.13 - 0.94	328	0.271
Isophorone	1 / 11 (9.1%)	11	5.00 - 5.00	0.80 - 0.80	331	2.35
Naphthalene	2 / 11 (18.2%)	11	0.10 - 0.10	0.13 - 0.13	326	0.0645
Naphthalene	2 / 11 (18.2%)	11	0.10 - 0.10	0.13 - 0.13	331	0.0645
Pyrene	1 / 11 (9.1%)	11	0.10 - 0.10	0.13 - 0.13	326	0.0573
Total PAHs	11 / 11 (100%)	11	---	0.13 - 6.00	328	1.21
Metals (ug/l)						
Arsenic	11 / 11 (100%)	11	---	17.7 - 23.2	332	20.0
Arsenic Dissolved	11 / 11 (100%)	11	---	17.2 - 23.5	328	20.6
Barium	1 / 11 (9.1%)	11	100 - 100	23.6 - 23.6	328	47.6
Barium Dissolved	1 / 11 (9.1%)	11	100 - 100	21.9 - 21.9	327	47.4
Calcium	11 / 11 (100%)	11	---	271000 - 336000	333	308000
Calcium Dissolved	11 / 11 (100%)	11	---	265000 - 333000	329	305000

TABLE 4-9b
 Surface Water - Reference -Wet Weather Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Metals (ug/l)						
Chromium	11 / 11 (100%)	11	---	4.50 - 7.60	331	6.04
Chromium Dissolved	9 / 11 (81.8%)	11	20.0 - 20.0	3.90 - 9.20	335	5.90
Lead	4 / 11 (36.4%)	11	10.0 - 10.0	2.50 - 5.90	336	4.53
Magnesium	11 / 11 (100%)	11	---	828000 - 1030000	333	939000
Magnesium Dissolved	11 / 11 (100%)	11	---	792000 - 1010000	329	928000
Manganese	11 / 11 (100%)	11	---	42.1 - 59.0	336	45.3
Manganese Dissolved	11 / 11 (100%)	11	---	29.2 - 41.5	336	34.6
Mercury	2 / 11 (18.2%)	11	0.20 - 0.20	0.053 - 0.055	326	0.0916
Nickel	11 / 11 (100%)	11	---	2.50 - 4.60	332	3.46
Nickel	11 / 11 (100%)	11	---	2.50 - 4.60	334	3.46
Nickel Dissolved	9 / 11 (81.8%)	11	10.0 - 10.0	2.40 - 8.50	327	4.45
Potassium	11 / 11 (100%)	11	---	271000 - 333000	333	305000
Potassium Dissolved	11 / 11 (100%)	11	---	255000 - 322000	329	300000
Selenium	11 / 11 (100%)	11	---	27.2 - 40.0	329	32.8
Selenium Dissolved	7 / 7 (100%)	11	---	29.2 - 34.5	330	31.0
Sodium	11 / 11 (100%)	11	---	6320000 - 8250000	333	7210000
Sodium Dissolved	11 / 11 (100%)	11	---	5960000 - 7240000	330	6880000
Zinc	4 / 11 (36.4%)	11	20.0 - 20.0	10.5 - 23.9	336	12.6
Zinc Dissolved	2 / 11 (18.2%)	11	20.0 - 20.0	10.2 - 10.5	335	10.1
General Chemistry (mg/l)						
Total suspended solids	11 / 11 (100%)	11	---	62.0 - 116	336	82.3

See notes in Table 4-21

TABLE 4-10

Comparison of Surface Water Concentrations in Gowanus Canal in Dry and Wet Weather Conditions
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Central Tendency Comparison			
Parameter	Test	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Volatle Organic Compounds (ug/L)			
1,2,4-trichlorobenzene	-	-	Only a Single Detect
1,3-dichlorobenzene	Gehan	0.500	nsd
1,4-dichlorobenzene	Gehan	0.000	Wet > Dry
Acetone	Gehan	0.468	nsd
Benzene	WRS	0.013	Dry > Wet
Carbon disulfide	Gehan	0.500	nsd
Chlorobenzene	Gehan	0.500	nsd
Chloroform	Gehan	0.000	Wet > Dry
Ethylbenzene	Gehan	0.159	nsd
Isopropylbenzene (cumene)	Gehan	0.500	nsd
Methyl acetate	-	-	Only a Single Detect
Methylene chloride	Gehan	0.001	Wet > Dry
Tert-butyl methyl ether	-	-	Only a Single Detect
Tetrachloroethylene(PCE)	Gehan	0.000	Wet > Dry
Toluene	Gehan	0.000	Wet > Dry
Trichloroethylene (TCE)	Gehan	0.500	nsd
cis-1,2-dichloroethylene	Gehan	0.202	nsd
m, p xylenes	WRS	0.977	nsd
o-xylene (1,2-dimethylbenzene)	Gehan	0.212	nsd
trans-1,3-dichloropropene	-	-	Only a Single Detect
Semi-Volatile Organic Compounds (ug/L)			
2-methylnaphthalene	Gehan	0.036	Wet > Dry
Acenaphthene	WRS	1.000	nsd
Anthracene	Gehan	0.042	Dry > Wet
Benzo(a)anthracene	Gehan	0.034	Dry > Wet
Benzo(a)pyrene	Gehan	0.136	nsd
Benzo(b)fluoranthene	WRS	1.000	nsd
Benzo(g,h,i)perylene	Gehan	0.000	Wet > Dry
Benzo(k)fluoranthene	Gehan	0.001	Dry > Wet
Benzyl butyl phthalate	Gehan	0.500	nsd
Caprolactam	Gehan	0.228	nsd
Carbazole	Gehan	0.500	nsd
Chrysene	Gehan	0.000	Dry > Wet
Di-n-butyl phthalate	Gehan	0.017	Dry > Wet
Di-n-octylphthalate	Gehan	0.500	nsd
Dibenz(a,h)anthracene	Gehan	0.069	nsd
Dimethyl phthalate	Gehan	0.500	nsd
Fluoranthene	WRS	0.169	nsd
Fluorene	Gehan	0.000	Dry > Wet
Indeno(1,2,3-c,d)pyrene	Gehan	0.000	Wet > Dry
Naphthalene	Gehan	0.009	Wet > Dry
Pentachlorophenol	-	-	Only a Single Detect
Phenanthrene	Gehan	0.051	nsd
Phenol	-	-	Only a Single Detect
Pyrene	Gehan	0.000	Wet > Dry
Total PAHs	WRS	0.413	nsd

TABLE 4-10

Comparison of Surface Water Concentrations in Gowanus Canal in Dry and Wet Weather Conditions
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Central Tendency Comparison			
Parameter	Test	Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Metals (ug/L)			
Aluminum Dissolved	-	-	Only a Single Detect
Arsenic	WRS	0.008	Dry > Wet
Arsenic Dissolved	WRS	0.000	Dry > Wet
Barium	Gehan	0.002	Wet > Dry
Barium Dissolved	WRS	1.000	nsd
Calcium	WRS	0.000	Dry > Wet
Calcium Dissolved	WRS	0.000	Dry > Wet
Chromium	WRS	0.564	nsd
Chromium Dissolved	Gehan	0.184	nsd
Cobalt	-	-	Only a Single Detect
Cobalt Dissolved	Gehan	0.081	nsd
Copper	Gehan	0.500	nsd
Copper Dissolved	Gehan	0.500	nsd
Iron	Gehan	0.040	Wet > Dry
Iron Dissolved	Gehan	0.019	Wet > Dry
Lead	Gehan	0.000	Wet > Dry
Lead Dissolved	Gehan	0.156	nsd
Magnesium	WRS	0.000	Dry > Wet
Magnesium Dissolved	WRS	0.000	Dry > Wet
Manganese	WRS	0.194	nsd
Manganese Dissolved	WRS	0.000	Dry > Wet
Mercury	Gehan	0.000	Wet > Dry
Mercury Dissolved	Gehan	0.500	nsd
Nickel	WRS	0.694	nsd
Nickel Dissolved	WRS	0.356	nsd
Potassium	WRS	0.000	Dry > Wet
Potassium Dissolved	WRS	0.000	Dry > Wet
Selenium	WRS	0.000	Dry > Wet
Selenium Dissolved	WRS	0.000	Dry > Wet
Sodium	WRS	0.000	Dry > Wet
Sodium Dissolved	WRS	0.000	Dry > Wet
Zinc	Gehan	0.000	Wet > Dry
Zinc Dissolved	Gehan	0.000	Wet > Dry

Notes:

Test was performed for detected constituents only, and only if a minimum of ten canal and ten reference sample results were available.
 WRS = Wilcoxon Rank Sum
 - = test not performed
 nsd = no significant difference

TABLE 4-11

Comparison of Surface Water Concentrations in Gowanus Canal and Gowanus Bay Reference Area
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Test	Central Tendency Comparison	
		Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Dry Weather - Volatile Organic Compounds (ug/L)			
1,4-dichlorobenzene	-	-	Only a Single Detect in Canal
Acetone	WRS	0.194	nsd
Benzene	Gehan	0.000	Canal > Reference
Ethylbenzene	Gehan	0.104	nsd
Methylene chloride	Gehan	1.000	nsd
Tert-butyl methyl ether	-	-	Only a Single Detect in Canal
Toluene	Gehan	0.104	nsd
m, p xylenes	Gehan	0.107	nsd
o-xylene (1,2-dimethylbenzene)	Gehan	0.263	nsd
Dry Weather - Semi-Volatile Organic Compounds (ug/L)			
2-methylnaphthalene	-	-	Only a Single Detect in Canal
Acenaphthene	Gehan	0.000	Canal > Reference
Anthracene	Gehan	0.128	nsd
Benzo(a)anthracene	Gehan	0.166	nsd
Benzo(a)pyrene	Gehan	0.440	nsd
Benzo(b)fluoranthene	Gehan	0.009	Canal > Reference
Benzo(g,h,i)perylene	Gehan	0.101	nsd
Benzo(k)fluoranthene	Gehan	0.053	nsd
Bis(2-ethylhexyl) phthalate	Gehan	0.113	nsd
Caprolactam	-	-	Only a Single Detect in Canal
Carbazole	Gehan	0.500	nsd
Chrysene	Gehan	0.013	Canal > Reference
Di-n-butyl phthalate	Gehan	0.072	nsd
Dimethyl phthalate	Gehan	0.389	nsd
Fluoranthene	Gehan	0.000	Canal > Reference
Fluorene	Gehan	0.003	Canal > Reference
Indeno(1,2,3-c,d)pyrene	Gehan	0.477	nsd
Phenanthrene	Gehan	0.008	Canal > Reference
Phenol	-	-	Only a Single Detect in Canal
Pyrene	Gehan	0.177	nsd
Total PAHs	Gehan	0.002	Canal > Reference
Dry Weather - Metals (ug/L)			
Aluminum Dissolved	-	-	Only a Single Detect in Canal
Arsenic	WRS	0.951	nsd
Arsenic Dissolved	WRS	0.997	nsd
Barium	Gehan	0.749	nsd
Barium Dissolved	Gehan	0.801	nsd
Calcium	WRS	0.015	Canal > Reference
Calcium Dissolved	WRS	0.728	nsd
Chromium	WRS	0.527	nsd
Chromium Dissolved	WRS	0.500	nsd
Cobalt Dissolved	-	-	Only a Single Detect in Canal
Copper	Gehan	0.727	nsd
Copper Dissolved	Gehan	0.653	nsd
Lead	-	-	< 10 reference results
Lead Dissolved	-	-	Only a Single Detect in Canal
Magnesium	WRS	0.013	Canal > Reference
Magnesium Dissolved	WRS	0.481	nsd
Manganese	WRS	0.007	Canal > Reference
Manganese Dissolved	WRS	0.000	Canal > Reference
Mercury	Gehan	0.699	nsd
Mercury Dissolved	Gehan	0.307	nsd

TABLE 4-11

Comparison of Surface Water Concentrations in Gowanus Canal and Gowanus Bay Reference Area
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Test	Central Tendency Comparison	
		Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Nickel	WRS	0.762	nsd
Nickel Dissolved	Gehan	0.204	nsd
Potassium	WRS	0.162	nsd
Potassium Dissolved	WRS	0.986	nsd
Selenium	WRS	0.999	nsd
Selenium Dissolved	-	-	< 10 reference results
Sodium	WRS	1.000	nsd
Sodium Dissolved	WRS	1.000	nsd
Zinc	-	-	< 10 reference results
Zinc Dissolved	-	-	< 10 reference results
Wet Weather - Volatile Organic Compounds (ug/L)			
1,2,4-trichlorobenzene	-	-	Only a Single Detect in Canal
1,3-dichlorobenzene	Gehan	0.500	nsd
1,4-dichlorobenzene	Gehan	0.004	Canal > Reference
Acetone	-	-	Only a Single Detect in Canal
Benzene	Gehan	0.007	Canal > Reference
Carbon disulfide	Gehan	0.500	nsd
Chlorobenzene	Gehan	0.500	nsd
Chloroform	Gehan	0.002	Canal > Reference
Ethylbenzene	Gehan	0.039	Canal > Reference
Isopropylbenzene (cumene)	Gehan	0.500	nsd
Methyl acetate	-	-	Only a Single Detect in Canal
Methylene chloride	Gehan	0.030	Canal > Reference
Tetrachloroethylene(PCE)	Gehan	0.000	Canal > Reference
Toluene	Gehan	0.000	Canal > Reference
Trichloroethylene (TCE)	Gehan	0.500	nsd
cis-1,2-dichloroethylene	Gehan	0.324	nsd
m, p xylenes	Gehan	0.057	nsd
o-xylene (1,2-dimethylbenzene)	Gehan	0.055	nsd
trans-1,3-dichloropropene	-	-	Only a Single Detect in Canal
Wet Weather - Semi-Volatile Organic Compounds (ug/L)			
2-methylnaphthalene	Gehan	0.123	nsd
Acenaphthene	Gehan	0.000	Canal > Reference
Anthracene	-	-	Only a Single Detect in Canal
Benzo(a)anthracene	Gehan	0.169	nsd
Benzo(a)pyrene	Gehan	0.572	nsd
Benzo(b)fluoranthene	Gehan	0.067	nsd
Benzo(g,h,i)perylene	WRS	0.279	nsd
Benzo(k)fluoranthene	Gehan	0.751	nsd
Benzyl butyl phthalate	Gehan	0.500	nsd
Caprolactam	Gehan	0.027	Canal > Reference
Chrysene	Gehan	0.252	nsd
Di-n-butyl phthalate	Gehan	0.043	Canal > Reference
Di-n-octylphthalate	Gehan	0.500	nsd
Dibenz(a,h)anthracene	Gehan	0.572	nsd
Fluoranthene	Gehan	0.000	Canal > Reference
Fluorene	Gehan	0.252	nsd
Indeno(1,2,3-c,d)pyrene	WRS	0.187	nsd
Naphthalene	Gehan	0.376	nsd
Pentachlorophenol	-	-	Only a Single Detect in Canal
Phenanthrene	Gehan	0.002	Canal > Reference
Pyrene	Gehan	0.000	Canal > Reference
Total PAHs	WRS	0.007	Canal > Reference

TABLE 4-11

Comparison of Surface Water Concentrations in Gowanus Canal and Gowanus Bay Reference Area
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Test	Central Tendency Comparison	
		Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Wet Weather - Metals (ug/L)			
Arsenic	WRS	0.999	nsd
Arsenic Dissolved	WRS	1.000	nsd
Barium	Gehan	0.395	nsd
Barium Dissolved	Gehan	0.534	nsd
Calcium	WRS	1.000	nsd
Calcium Dissolved	WRS	1.000	nsd
Chromium	WRS	0.857	nsd
Chromium Dissolved	Gehan	0.867	nsd
Cobalt	-	-	Only a Single Detect in Canal
Cobalt Dissolved	-	-	Only a Single Detect in Canal
Iron	Gehan	0.500	nsd
Iron Dissolved	-	-	Only a Single Detect in Canal
Lead	Gehan	0.000	Canal > Reference
Lead Dissolved	Gehan	0.261	nsd
Magnesium	WRS	1.000	nsd
Magnesium Dissolved	WRS	1.000	nsd
Manganese	WRS	0.000	Canal > Reference
Manganese Dissolved	WRS	0.000	Canal > Reference
Mercury	Gehan	0.070	nsd
Nickel	WRS	0.065	nsd
Nickel Dissolved	WRS	0.500	nsd
Potassium	WRS	1.000	nsd
Potassium Dissolved	WRS	1.000	nsd
Selenium	WRS	0.973	nsd
Selenium Dissolved	-	-	< 10 reference results
Sodium	WRS	1.000	nsd
Sodium Dissolved	WRS	1.000	nsd
Zinc	Gehan	0.000	Canal > Reference
Zinc Dissolved	Gehan	0.000	Canal > Reference

Notes:

Test was performed for detected constituents only, and only if a minimum of ten canal and ten reference sample results were available.

WRS = Wilcoxon Rank Sum

- = test not performed

nsd = no significant difference

ug/L = micrograms per Liter

Page Intentionally Left Blank

TABLE 4-12
 CSO Outfalls - Sediments - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Volatile Organic Compounds (ug/kg)								
1,4-dichlorobenzene	3 / 6 (50.0%)	7	6.10 - 6.40	4.60 - 870	OH-007	150	240 (1)	2400 (0)
Acetone	5 / 7 (71.4%)	7	12.0 - 13.0	17.0 - 1100	OH-007	176	NA	6100000 (0)
Carbon disulfide	3 / 7 (42.9%)	7	6.10 - 6.60	2.20 - 24.0	OH-007	6.01	NA	82000 (0)
cis-1,2-dichloroethylene	2 / 7 (28.6%)	7	6.10 - 7.90	6.60 - 19.0	OH-007	6.02	NA	78000 (0)
Cyclohexane	1 / 7 (14.3%)	7	6.10 - 490	26.0 - 26.0	RH-033	41.1	NA	120000 (0)
Ethylbenzene	2 / 7 (28.6%)	7	6.10 - 7.90	9.60 - 120	OH-007	20.9	128 (0)	5400 (0)
Isopropylbenzene (cumene)	1 / 7 (14.3%)	7	6.10 - 490	7.20 - 7.20	RH-033	38.4	NA	210000 (0)
m, p xylenes	2 / 7 (28.6%)	7	6.10 - 7.90	2.10 - 460	OH-007	68.4	540 (0)	340000 (0)
Methyl ethyl ketone (2-butanone)	2 / 7 (28.6%)	7	12.0 - 16.0	9.70 - 230	OH-007	39.0	NA	2800000 (0)
Methylcyclohexane	3 / 7 (42.9%)	7	6.10 - 7.90	1.50 - 150	OH-007	27.6	NA	NA
Methylene chloride	1 / 7 (14.3%)	7	6.10 - 7.90	8.20 - 8.20	OH-007	3.99	NA	11000 (0)
o-xylene (1,2-dimethylbenzene)	2 / 7 (28.6%)	7	6.10 - 7.90	2.00 - 150	OH-007	24.1	540 (0)	380000 (0)
Tetrachloroethylene(PCE)	2 / 7 (28.6%)	7	6.10 - 490	4.20 - 14.0	RH-037	39.5	NA	550 (0)
Toluene	5 / 7 (71.4%)	7	6.10 - 6.60	2.80 - 380	OH-007	62.6	900 (0)	500000 (0)
Trichloroethylene (TCE)	2 / 7 (28.6%)	7	6.10 - 490	2.50 - 5.30	RH-036	38.0	NA	2800 (0)
Semi-Volatile Organic Compounds (ug/kg)								
2-methylnaphthalene	4 / 7 (57.1%)	7	110 - 120	430 - 2600	OH-007	764	70 (4)	31000 (0)
4-methylphenol (p-cresol)	1 / 7 (14.3%)	7	5500 - 7500	3200 - 3200	OH-007	3010	670 (1)	31000 (0)
Acenaphthene	3 / 7 (42.9%)	7	110 - 120	310 - 1700	RH-033	396	16 (3)	340000 (0)
Anthracene	2 / 7 (28.6%)	7	110 - 150	310 - 580	RH-033	170	85.3 (2)	1700000 (0)
Benzo(a)anthracene	7 / 7 (100%)	7	---	110 - 1300	RH-031	419	261 (4)	150 (5)
Benzo(a)pyrene	4 / 7 (57.1%)	7	110 - 110	490 - 1300	RH-031	509	430 (4)	15 (4)
Benzo(b)fluoranthene	7 / 7 (100%)	7	---	230 - 4500	OH-007	1120	4600 (0)	150 (7)
Benzo(g,h,i)perylene	7 / 7 (100%)	7	---	130 - 960	RH-031	429	620 (2)	170000 (0)
Benzo(k)fluoranthene	5 / 7 (71.4%)	7	110 - 110	170 - 1500	OH-007	566	4600 (0)	1500 (0)
Bis(2-ethylhexyl) phthalate	5 / 7 (71.4%)	7	5500 - 6100	1200 - 22000	OH-007	6190	182 (5)	35000 (0)
Chrysene	6 / 7 (85.7%)	7	110 - 110	140 - 1300	RH-031	388	384 (3)	15000 (0)
Dibenz(a,h)anthracene	6 / 7 (85.7%)	7	110 - 110	110 - 530	RH-031	251	63.4 (6)	15 (6)
Fluoranthene	6 / 7 (85.7%)	7	150 - 150	170 - 2500	RH-031	754	600 (3)	230000 (0)
Fluorene	4 / 7 (57.1%)	7	110 - 120	140 - 910	RH-033	320	19 (4)	230000 (0)

TABLE 4-12
 CSO Outfalls - Sediments - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)								
Indeno(1,2,3-c,d)pyrene	7 / 7 (100%)	7	---	190 - 1800	RH-031	673	680 (3)	150 (7)
Naphthalene	5 / 7 (71.4%)	7	110 - 110	110 - 2400	RH-033	584	160 (3)	3600 (0)
Phenanthrene	6 / 7 (85.7%)	7	110 - 110	370 - 1700	RH-031, RH-033	871	240 (6)	1700000 (0)
Pyrene	7 / 7 (100%)	7	---	160 - 2200	RH-031	893	665 (4)	170000 (0)
Total PAHs	7 / 7 (100%)	7	---	1110 - 18300	RH-031	8890	4022 (5)	NA
Pesticides (ug/kg)								
Dieldrin	1 / 7 (14.3%)	7	4.10 - 55.0	85.0 - 85.0	RH-033	26.7	340 (0)	30 (1)
Endosulfan sulfate	1 / 7 (14.3%)	7	4.10 - 55.0	180 - 180	RH-033	40.3	NA	37000 (0)
Endrin aldehyde	1 / 7 (14.3%)	7	4.10 - 55.0	150 - 150	RH-033	36.0	NA	1800 (0)
Gamma-chlordane	1 / 7 (14.3%)	7	2.10 - 28.0	48.0 - 48.0	RH-033	14.4	0.04 (1)	1600 (0)
P,P'-DDT	1 / 7 (14.3%)	7	4.10 - 55.0	210 - 210	RH-033	44.6	20 (1)	1700 (0)
Polychlorinated Biphenyls (ug/kg)								
Aroclor 1260	2 / 7 (28.6%)	7	40.0 - 55.0	170 - 1200	RH-033	212	22.7 (2)	220 (1)
Total PCBs	2 / 7 (28.6%)	7	---	170 - 1200	RH-033	196	22.7 (2)	220 (1)
Metals (mg/kg)								
Aluminum	7 / 7 (100%)	7	---	1960 - 6750	RH-031	4020	NA	7700 (0)
Arsenic	3 / 3 (100%)	7	---	5.60 - 7.90	RH-037	6.47	8.2 (0)	0.39 (3)
Barium	7 / 7 (100%)	7	---	39.7 - 367	RH-037	150	130.1 (2)	1500 (0)
Beryllium	2 / 7 (28.6%)	7	0.60 - 0.87	0.24 - 0.32	RH-031	0.326	NA	16 (0)
Cadmium	7 / 7 (100%)	7	---	0.25 - 6.80	RH-031	1.99	1.2 (2)	7 (0)
Calcium	7 / 7 (100%)	7	---	3380 - 26600	RH-031	14600	NA	NA
Chromium	7 / 7 (100%)	7	---	10.7 - 147	RH-031	43.7	81 (1)	0.29 (7)
Cobalt	7 / 7 (100%)	7	---	3.00 - 10.1	RH-031	6.13	NA	2.3 (7)
Copper	7 / 7 (100%)	7	---	113 - 4540	OH-007	921	34 (7)	310 (4)
Iron	3 / 3 (100%)	7	---	11300 - 30500	RH-031	22000	NA	5500 (3)
Lead	7 / 7 (100%)	7	---	78.6 - 3320	RH-035	718	46.7 (7)	400 (2)
Magnesium	7 / 7 (100%)	7	---	1900 - 12200	RH-031	6880	NA	NA
Manganese	7 / 7 (100%)	7	---	40.6 - 462	RH-033	174	460 (1)	180 (3)
Mercury	7 / 7 (100%)	7	---	0.16 - 1.00	RH-037	0.421	0.15 (7)	2.3 (0)
Nickel	7 / 7 (100%)	7	---	12.0 - 42.9	RH-031, RH-037	28.7	20.9 (5)	150 (0)

TABLE 4-12
 CSO Outfalls - Sediments - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value R (# of Exceedances)	Human Health Screening Value A (# of Exceedances)
Metals (mg/kg)								
Potassium	7 / 7 (100%)	7	---	298 - 1090	RH-031	662	NA	NA
Selenium	5 / 7 (71.4%)	7	4.20 - 5.10	0.49 - 1.10	RH-031	1.17	NA	39 (0)
Silver	6 / 7 (85.7%)	7	1.20 - 1.20	1.10 - 2.80	OH-007	1.50	1 (6)	39 (0)
Sodium	7 / 7 (100%)	7	---	167 - 3170	RH-031	658	NA	NA
Vanadium	7 / 7 (100%)	7	---	9.30 - 82.2	OH-007	29.9	NA	39 (1)
Zinc	7 / 7 (100%)	7	---	184 - 1770	RH-031	744	150 (7)	2300 (0)
Cyanide, Total	5 / 7 (71.4%)	7	2.90 - 4.40	0.31 - 1.60	OH-007	0.979	NA	160 (0)

Page Intentionally Left Blank

TABLE 4-13
 CSO Outfalls - Water - Dry Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,2-dibromo-3-chloropropane	5 / 10 (50.0%)	10	0.05 - 0.05	0.19 - 2.00	RH-038	0.441	NA	0.00032 (5)
1,2-dichloroethane	1 / 10 (10.0%)	10	0.50 - 0.50	1.30 - 1.30	RH-033	0.355	11300 (0)	37 (0)
1,3-dichlorobenzene	2 / 10 (20.0%)	10	0.50 - 0.50	0.36 - 0.58	OH-007	0.294	NA	960 (0)
1,4-dichlorobenzene	4 / 10 (40.0%)	10	0.50 - 0.50	0.35 - 0.64	RH-035	0.367	129 (0)	190 (0)
2-hexanone	1 / 10 (10.0%)	10	5.00 - 5.00	0.75 - 0.75	OH-005	2.33	NA	4.7 (0)
Acetone	10 / 10 (100%)	10	---	9.30 - 1600	RH-033	214	NA	2200 (0)
Benzene	6 / 10 (60.0%)	10	0.50 - 0.50	1.50 - 110	RH-038	21.8	110 (0)	10 (2)
Bromodichloromethane	9 / 10 (90.0%)	10	0.50 - 0.50	0.24 - 0.69	OH-006	0.417	6400 (0)	17 (0)
Carbon disulfide	2 / 10 (20.0%)	10	0.50 - 0.50	0.37 - 0.59	OH-007	0.296	NA	100 (0)
Chlorobenzene	3 / 10 (30.0%)	10	0.50 - 0.50	0.16 - 0.73	RH-033	0.285	25 (0)	400 (0)
Chloroform	10 / 10 (100%)	10	---	1.80 - 82.0	RH-038	14.3	NA	470 (0)
cis-1,2-dichloroethylene	7 / 10 (70.0%)	10	0.50 - 0.50	1.20 - 11.0	RH-037	2.80	NA	37 (0)
Cyclohexane	1 / 10 (10.0%)	10	0.50 - 0.50	1.60 - 1.60	RH-033	0.385	NA	1300 (0)
Ethylbenzene	8 / 10 (80.0%)	10	0.50 - 0.50	0.25 - 11.0	RH-033	2.82	25 (0)	1.5 (3)
Ethylbenzene	8 / 10 (80.0%)	10	0.50 - 0.50	0.25 - 11.0	RH-038	2.82	25 (0)	1.5 (3)
Isopropylbenzene (cumene)	5 / 10 (50.0%)	10	0.50 - 0.50	0.11 - 2.40	RH-033	0.608	NA	68 (0)
m, p xylenes	9 / 10 (90.0%)	10	0.50 - 0.50	0.14 - 11.0	RH-033	2.79	NA	120 (0)
m, p xylenes	9 / 10 (90.0%)	10	0.50 - 0.50	0.14 - 11.0	RH-038	2.79	NA	120 (0)
Methyl acetate	6 / 10 (60.0%)	10	0.50 - 0.50	0.53 - 8.50	OH-007	2.42	NA	3700 (0)
Methyl ethyl ketone (2-butanone)	8 / 10 (80.0%)	10	5.00 - 5.00	1.00 - 3.60	OH-007	2.46	NA	710 (0)
Methylcyclohexane	1 / 10 (10.0%)	10	0.50 - 0.50	1.40 - 1.40	RH-033	0.365	NA	NA
Methylene chloride	6 / 10 (60.0%)	10	0.50 - 0.50	0.49 - 6.70	OH-006	1.82	6400 (0)	200 (0)
o-xylene (1,2-dimethylbenzene)	9 / 10 (90.0%)	10	0.50 - 0.50	0.18 - 3.00	RH-038	0.86	NA	120 (0)
Styrene	4 / 10 (40.0%)	10	0.50 - 0.50	0.14 - 1.70	OH-005	0.408	NA	160 (0)
Tert-butyl methyl ether	4 / 10 (40.0%)	10	0.50 - 0.50	0.59 - 3.80	RH-037	0.951	5000 (0)	12 (0)
Tetrachloroethylene(PCE)	7 / 10 (70.0%)	10	0.50 - 0.50	0.35 - 34.0	RH-036	12.5	450 (0)	3.3 (6)
Toluene	10 / 10 (100%)	10	---	0.55 - 13.0	OH-005	3.68	215 (0)	6000 (0)
Trichloroethylene (TCE)	6 / 10 (60.0%)	10	0.50 - 0.50	1.40 - 5.80	RH-037	1.85	200 (0)	30 (0)
Vinyl chloride	3 / 10 (30.0%)	10	0.50 - 0.50	0.44 - 12.0	RH-037	1.48	NA	2.4 (1)

TABLE 4-13
 CSO Outfalls - Water - Dry Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
2-methylnaphthalene	5 / 10 (50.0%)	10	0.10 - 1.00	0.25 - 10.0	RH-033	2.21	NA	15 (0)
2-methylphenol (o-cresol)	1 / 10 (10.0%)	10	5.00 - 50.0	60.0 - 60.0	RH-033	15.0	NA	180 (0)
4-methylphenol (p-cresol)	7 / 10 (70.0%)	10	5.00 - 50.0	15.0 - 78.0	RH-031	33.4	NA	18 (6)
4-nitroaniline	1 / 10 (10.0%)	10	10.0 - 100	5.60 - 5.60	RH-038	23.1	NA	3.4 (1)
Acenaphthene	6 / 10 (60.0%)	10	0.10 - 1.00	0.10 - 6.60	RH-033	1.45	40 (0)	990 (0)
Acenaphthylene	2 / 10 (20.0%)	10	0.10 - 1.00	1.20 - 1.60	RH-034	0.50	NA	220 (0)
Acetophenone	1 / 10 (10.0%)	10	5.00 - 50.0	0.55 - 0.55	OH-007	11.3	NA	370 (0)
Benzo(a)anthracene	1 / 10 (10.0%)	10	0.10 - 1.00	0.18 - 0.18	OH-006	0.198	NA	0.018 (1)
Benzo(b)fluoranthene	7 / 10 (70.0%)	10	0.10 - 1.00	0.13 - 0.62	OH-006	0.316	NA	0.018 (7)
Benzo(g,h,i)perylene	5 / 10 (50.0%)	10	0.10 - 1.00	0.10 - 0.51	RH-037	0.308	NA	110 (0)
Benzo(k)fluoranthene	1 / 10 (10.0%)	10	0.10 - 1.00	0.11 - 0.11	RH-034	0.236	NA	0.018 (1)
Benzyl butyl phthalate	1 / 10 (10.0%)	10	5.00 - 50.0	2.60 - 2.60	OH-006	9.26	3.4 (0)	1900 (0)
Biphenyl (diphenyl)	1 / 10 (10.0%)	10	5.00 - 50.0	0.38 - 0.38	OH-007	11.3	NA	180 (0)
Bis(2-ethylhexyl) phthalate	6 / 10 (60.0%)	10	5.00 - 50.0	4.70 - 45.0	RH-034	13.0	360 (0)	2.2 (6)
Chrysene	1 / 10 (10.0%)	10	0.10 - 1.00	0.17 - 0.17	OH-006	0.197	NA	0.018 (1)
Dibenz(a,h)anthracene	4 / 10 (40.0%)	10	0.10 - 1.00	0.10 - 0.20	RH-034	0.265	NA	0.018 (4)
Diethyl phthalate	4 / 10 (40.0%)	10	5.00 - 50.0	1.30 - 5.50	RH-031	9.47	3.4 (2)	44000 (0)
Dimethyl phthalate	5 / 10 (50.0%)	10	5.00 - 50.0	1.80 - 4.10	RH-031	9.32	3.4 (1)	1100000 (0)
Di-n-butyl phthalate	1 / 10 (10.0%)	10	5.00 - 50.0	1.60 - 1.60	OH-005	11.4	3.4 (0)	4500 (0)
Fluoranthene	2 / 10 (20.0%)	10	0.10 - 1.00	0.12 - 0.14	RH-037	0.246	11 (0)	140 (0)
Fluorene	5 / 10 (50.0%)	10	0.10 - 1.00	0.18 - 1.70	RH-033	0.499	NA	5300 (0)
Indeno(1,2,3-c,d)pyrene	5 / 10 (50.0%)	10	0.10 - 1.00	0.13 - 0.99	RH-034	0.416	NA	0.018 (5)
Naphthalene	7 / 10 (70.0%)	10	0.10 - 1.00	0.16 - 63.0	RH-033	9.27	1.4 (3)	0.14 (7)
Phenanthrene	5 / 10 (50.0%)	10	0.10 - 1.00	0.31 - 1.60	RH-033	0.498	4.6 (0)	1100 (0)
Phenol	7 / 10 (70.0%)	10	5.00 - 50.0	6.50 - 110	RH-031	24.7	400 (0)	860000 (0)
Pyrene	1 / 10 (10.0%)	10	0.10 - 1.00	0.25 - 0.25	RH-038	0.25	NA	4000 (0)
Total PAHs	9 / 10 (90.0%)	10	---	0.10 - 82.9	RH-033	14.3	NA	NA
Pesticides (ug/l)								
Alpha-chlordane	1 / 10 (10.0%)	10	0.05 - 0.50	0.069 - 0.069	RH-034	0.0519	0.004 (1)	0.19 (0)

TABLE 4-13
 CSO Outfalls - Water - Dry Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Aluminum Dissolved	1 / 10 (10.0%)	10	200 - 200	127 - 127	RH-038	103	NA	3700 (0)
Aluminum	9 / 10 (90.0%)	10	200 - 200	116 - 1940	OH-006	498	NA	3700 (0)
Antimony	2 / 10 (20.0%)	10	2.00 - 2.00	2.00 - 3.00	OH-006	1.30	500 (0)	640 (0)
Arsenic Dissolved	10 / 10 (100%)	10	---	0.57 - 4.40	RH-038	1.53	36 (0)	0.14 (10)
Arsenic	10 / 10 (100%)	10	---	1.00 - 5.20	RH-038	2.21	36 (0)	0.14 (10)
Barium Dissolved	10 / 10 (100%)	10	---	18.1 - 101	RH-033	44.3	200 (0)	730 (0)
Barium	10 / 10 (100%)	10	---	27.7 - 214	RH-033	87.6	200 (1)	730 (0)
Cadmium	4 / 10 (40.0%)	10	1.00 - 1.00	0.20 - 3.00	OH-006	0.715	8.8 (0)	1.8 (1)
Calcium Dissolved	9 / 9 (100%)	10	---	11800 - 134000	RH-033	54600	NA	NA
Calcium	9 / 9 (100%)	10	---	21700 - 137000	RH-033	61100	NA	NA
Chromium Dissolved	8 / 10 (80.0%)	10	2.00 - 2.00	0.36 - 1.50	RH-038	0.852	NA	0.043 (8)
Chromium	10 / 10 (100%)	10	---	1.10 - 16.0	OH-006	4.30	NA	0.043 (10)
Cobalt Dissolved	9 / 10 (90.0%)	10	1.00 - 1.00	0.33 - 2.70	RH-031	0.897	1 (2)	1.1 (2)
Cobalt	10 / 10 (100%)	10	---	0.70 - 3.40	RH-031	1.63	1 (5)	1.1 (5)
Copper Dissolved	7 / 10 (70.0%)	10	25.0 - 25.0	10.7 - 35.4	RH-034	19.4	3.1 (7)	150 (0)
Copper	10 / 10 (100%)	10	---	33.5 - 140	OH-006	67.8	3.1 (10)	150 (0)
Iron Dissolved	5 / 6 (83.3%)	10	100 - 100	300 - 577	OH-005	342	50 (5)	2600 (0)
Iron	6 / 6 (100%)	10	---	787 - 14200	OH-006	4140	50 (6)	2600 (2)
Lead Dissolved	8 / 10 (80.0%)	10	1.00 - 1.00	0.24 - 2.10	RH-031	0.953	8.1 (0)	15 (0)
Lead	10 / 10 (100%)	10	---	4.20 - 88.6	OH-006	31.5	8.1 (8)	15 (5)
Magnesium Dissolved	10 / 10 (100%)	10	---	5110 - 176000	RH-038	40600	NA	NA
Magnesium	10 / 10 (100%)	10	---	8260 - 202000	RH-038	44800	NA	NA
Manganese Dissolved	10 / 10 (100%)	10	---	30.3 - 693	RH-033	220	100 (5)	100 (5)
Manganese	10 / 10 (100%)	10	---	46.8 - 785	RH-033	268	100 (6)	100 (6)
Nickel Dissolved	10 / 10 (100%)	10	---	1.30 - 6.30	OH-007	2.91	8.2 (0)	4600 (0)
Nickel	10 / 10 (100%)	10	---	2.10 - 11.8	OH-005	5.45	8.2 (2)	4600 (0)
Potassium Dissolved	10 / 10 (100%)	10	---	9220 - 80100	RH-038	22700	NA	NA
Potassium	10 / 10 (100%)	10	---	8170 - 88000	RH-038	25000	NA	NA
Selenium Dissolved	7 / 10 (70.0%)	10	5.00 - 5.00	0.92 - 7.00	RH-038	2.49	71 (0)	4200 (0)
Selenium	5 / 10 (50.0%)	10	5.00 - 5.00	1.10 - 6.80	RH-038	2.83	71 (0)	4200 (0)

TABLE 4-13
 CSO Outfalls - Water - Dry Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Silver Dissolved	3 / 10 (30.0%)	10	1.00 - 1.00	0.23 - 0.52	RH-034	0.453	NA	18 (0)
Silver	6 / 10 (60.0%)	10	1.00 - 1.00	0.17 - 1.60	RH-037	0.569	NA	18 (0)
Sodium Dissolved	10 / 10 (100%)	10	---	50900 - 1320000	RH-038	309000	NA	NA
Sodium	10 / 10 (100%)	10	---	59100 - 1440000	RH-038	338000	NA	NA
Thallium Dissolved	1 / 10 (10.0%)	10	1.00 - 1.00	0.36 - 0.36	RH-031	0.486	17 (0)	0.47 (0)
Vanadium	4 / 10 (40.0%)	10	5.00 - 5.00	1.40 - 8.90	OH-006	3.12	50 (0)	18 (0)
Zinc Dissolved	10 / 10 (100%)	10	---	5.40 - 80.2	RH-035	20.6	81 (0)	26000 (0)
Zinc	10 / 10 (100%)	10	---	41.1 - 430	OH-006	131	81 (5)	26000 (0)
Cyanide, Total	5 / 10 (50.0%)	10	10.0 - 10.0	4.20 - 9.80	OH-005	5.79	1 (5)	140 (0)
General Chemistry (mg/l)								
Total suspended solids	10 / 10 (100%)	10	---	56.0 - 467	RH-038	151	NA	NA

See notes in Table 4-21

TABLE 4-14
 CSO Outfalls - Water - Wet Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,1,1-trichloroethane	1 / 18 (5.6%)	18	0.50 - 0.50	0.19 - 0.19	RH-036	0.247	3120 (0)	910 (0)
1,3-dichlorobenzene	1 / 18 (5.6%)	18	0.50 - 0.50	0.56 - 0.56	RH-035	0.267	NA	960 (0)
1,4-dichlorobenzene	4 / 18 (22.2%)	18	0.50 - 0.50	0.41 - 0.73	RH-031	0.317	129 (0)	190 (0)
2-hexanone	4 / 18 (22.2%)	18	5.00 - 5.00	0.75 - 6.70	RH-031	2.91	NA	4.7 (3)
Acetone	16 / 18 (88.9%)	18	12.0 - 12.0	4.90 - 75.0	RH-034	24.7	NA	2200 (0)
Benzene	9 / 18 (50.0%)	18	0.50 - 0.50	0.56 - 30.0	RH-038	3.20	110 (0)	10 (1)
Bromodichloromethane	2 / 18 (11.1%)	18	0.50 - 0.50	0.35 - 0.36	OH-005	0.262	6400 (0)	17 (0)
Chlorobenzene	5 / 18 (27.8%)	18	0.50 - 0.50	0.14 - 1.40	RH-033, RH-038	0.386	25 (0)	400 (0)
Chloroform	14 / 18 (77.8%)	18	0.50 - 0.50	0.47 - 11.0	RH-038	2.23	NA	470 (0)
cis-1,2-dichloroethylene	5 / 18 (27.8%)	18	0.50 - 0.50	1.70 - 12.0	RH-037	1.65	NA	37 (0)
Cyclohexane	1 / 18 (5.6%)	18	0.50 - 0.50	0.27 - 0.27	RH-033	0.251	NA	1300 (0)
Ethylbenzene	12 / 18 (66.7%)	18	0.50 - 0.50	0.24 - 8.70	RH-037	1.21	25 (0)	1.5 (4)
Isopropylbenzene (cumene)	7 / 18 (38.9%)	18	0.50 - 0.50	0.27 - 5.10	RH-031	0.662	NA	68 (0)
m, p xylenes	12 / 18 (66.7%)	18	0.50 - 0.50	0.24 - 8.70	RH-037	1.22	NA	120 (0)
Methyl acetate	1 / 18 (5.6%)	18	0.50 - 0.50	2.30 - 2.30	RH-034	0.364	NA	3700 (0)
Methyl ethyl ketone (2-butanone)	3 / 18 (16.7%)	18	0.50 - 5.00	3.80 - 7.70	RH-034	2.86	NA	710 (0)
Methyl isobutyl ketone	2 / 18 (11.1%)	18	5.00 - 5.00	1.70 - 3.00	RH-034	2.48	NA	200 (0)
Methylcyclohexane	1 / 18 (5.6%)	18	0.50 - 0.50	0.16 - 0.16	RH-037	0.245	NA	NA
Methylene chloride	8 / 18 (44.4%)	18	0.50 - 0.50	0.50 - 2.10	RH-035	0.632	6400 (0)	200 (0)
o-xylene (1,2-dimethylbenzene)	12 / 18 (66.7%)	18	0.50 - 0.50	0.12 - 2.20	RH-037	0.528	NA	120 (0)
Tert-butyl methyl ether	2 / 18 (11.1%)	18	0.50 - 0.50	0.38 - 3.60	RH-038	0.443	5000 (0)	12 (0)
Tetrachloroethylene(PCE)	14 / 18 (77.8%)	18	0.50 - 0.50	0.30 - 20.0	RH-036	3.22	450 (0)	3.3 (5)
Toluene	17 / 18 (94.4%)	18	0.50 - 0.50	0.17 - 23.0	RH-037	3.63	215 (0)	6000 (0)
Trichloroethylene (TCE)	6 / 18 (33.3%)	18	0.50 - 0.50	0.25 - 19.0	RH-038	1.91	200 (0)	30 (0)
Vinyl chloride	2 / 18 (11.1%)	18	0.50 - 0.50	1.90 - 26.0	RH-037	1.77	NA	2.4 (1)
Semi-Volatile Organic Compounds (ug/l)								
2-methylnaphthalene	10 / 19 (52.6%)	19	0.10 - 1.00	0.14 - 3.40	RH-038	0.766	NA	15 (0)
2-methylphenol (o-cresol)	3 / 19 (15.8%)	19	5.00 - 50.0	6.00 - 11.0	RH-035	8.24	NA	180 (0)
4-methylphenol (p-cresol)	7 / 19 (36.8%)	19	5.00 - 50.0	1.70 - 76.0	RH-034	11.8	NA	18 (2)
Acenaphthene	13 / 19 (68.4%)	19	0.10 - 1.00	0.12 - 2.70	RH-038	0.691	40 (0)	990 (0)

TABLE 4-14
 CSO Outfalls - Water - Wet Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Acenaphthylene	2 / 19 (10.5%)	19	0.10 - 1.00	0.20 - 0.25	RH-031	0.187	NA	220 (0)
Anthracene	4 / 19 (21.1%)	19	0.10 - 1.00	0.15 - 0.26	RH-031	0.197	NA	40000 (0)
Benzaldehyde	1 / 19 (5.3%)	19	5.00 - 50.0	1.10 - 1.10	RH-035	8.35	NA	370 (0)
Benzo(a)anthracene	11 / 19 (57.9%)	19	0.10 - 1.00	0.11 - 0.35	RH-031	0.239	NA	0.018 (11)
Benzo(a)pyrene	6 / 19 (31.6%)	19	0.10 - 1.00	0.15 - 0.59	RH-031	0.238	NA	0.018 (6)
Benzo(b)fluoranthene	14 / 19 (73.7%)	19	0.10 - 1.00	0.11 - 0.85	RH-034	0.341	NA	0.018 (14)
Benzo(g,h,i)perylene	3 / 19 (15.8%)	19	0.19 - 1.00	0.24 - 1.50	RH-037	0.378	NA	110 (0)
Benzo(k)fluoranthene	12 / 19 (63.2%)	19	0.10 - 1.00	0.066 - 0.31	RH-031	0.221	NA	0.018 (12)
Benzyl butyl phthalate	1 / 19 (5.3%)	19	5.00 - 50.0	3.40 - 3.40	RH-034	7.28	3.4 (0)	1900 (0)
Bis(2-ethylhexyl) phthalate	4 / 19 (21.1%)	19	5.00 - 50.0	17.0 - 76.0	RH-034	15.6	360 (0)	2.2 (4)
Chrysene	12 / 19 (63.2%)	19	0.10 - 1.00	0.11 - 0.32	RH-031	0.245	NA	0.018 (12)
Dibenz(a,h)anthracene	8 / 19 (42.1%)	19	0.10 - 1.00	0.095 - 0.45	RH-031	0.23	NA	0.018 (8)
Diethyl phthalate	1 / 19 (5.3%)	19	5.00 - 50.0	5.70 - 5.70	RH-034	8.59	3.4 (1)	44000 (0)
Dimethyl phthalate	1 / 19 (5.3%)	19	5.00 - 50.0	5.40 - 5.40	RH-038	8.57	3.4 (1)	1100000 (0)
Di-n-octylphthalate	1 / 19 (5.3%)	19	5.00 - 50.0	0.28 - 0.28	RH-034	8.30	3.4 (0)	4.8 (0)
Fluoranthene	9 / 19 (47.4%)	19	0.10 - 1.00	0.16 - 1.10	RH-034	0.328	11 (0)	140 (0)
Fluorene	10 / 19 (52.6%)	19	0.10 - 1.00	0.12 - 0.54	RH-038	0.278	NA	5300 (0)
Indeno(1,2,3-c,d)pyrene	4 / 19 (21.1%)	19	0.21 - 1.00	0.27 - 1.30	OH-006	0.343	NA	0.018 (4)
Naphthalene	14 / 19 (73.7%)	19	0.10 - 1.00	0.098 - 29.0	RH-037	4.18	1.4 (7)	0.14 (12)
Pentachlorophenol	11 / 19 (57.9%)	19	0.20 - 2.00	0.12 - 0.84	OH-005, OH-007	0.463	7.9 (0)	3 (0)
Phenanthrene	13 / 19 (68.4%)	19	0.10 - 1.00	0.11 - 1.10	RH-038	0.484	4.6 (0)	1100 (0)
Phenol	2 / 19 (10.5%)	19	5.00 - 50.0	4.30 - 24.0	RH-031	9.65	400 (0)	860000 (0)
Pyrene	14 / 19 (73.7%)	19	0.10 - 1.00	0.22 - 0.83	RH-031	0.396	NA	4000 (0)
Total PAHs	17 / 19 (89.5%)	19	---	0.69 - 33.6	RH-037	7.33	NA	NA
Polychlorinated Biphenyls (ug/l)								
Aroclor 1260	1 / 18 (5.6%)	18	1.00 - 1.00	0.57 - 0.57	OH-006	0.504	0.03 (1)	0.000001 (1)
Total PCBs	1 / 18 (5.6%)	18	---	0.57 - 0.57	OH-006	0.0317	0.03 (1)	0.000001 (1)
Metals (ug/l)								
Aluminum Dissolved	1 / 19 (5.3%)	19	200 - 3000	226 - 226	RH-033	180	NA	3700 (0)
Aluminum	19 / 19 (100%)	19	---	117 - 2150	RH-036	692	NA	3700 (0)

TABLE 4-14
 CSO Outfalls - Water - Wet Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Arsenic Dissolved	19 / 19 (100%)	19	---	0.77 - 6.20	OH-005	2.66	36 (0)	0.14 (19)
Arsenic	19 / 19 (100%)	19	---	1.80 - 7.50	OH-005	3.28	36 (0)	0.14 (19)
Barium Dissolved	19 / 19 (100%)	19	---	5.40 - 170	OH-005	28.6	200 (0)	730 (0)
Barium	19 / 19 (100%)	19	---	7.30 - 116	RH-033	58.1	200 (0)	730 (0)
Cadmium Dissolved	1 / 19 (5.3%)	19	1.00 - 1.00	0.57 - 0.57	RH-033	0.504	8.8 (0)	1.8 (0)
Cadmium	10 / 19 (52.6%)	19	1.00 - 1.00	0.33 - 2.70	RH-033	0.892	8.8 (0)	1.8 (2)
Calcium Dissolved	18 / 18 (100%)	19	---	3730 - 51400	RH-036	18500	NA	NA
Calcium	18 / 18 (100%)	19	---	3250 - 69700	RH-036	24000	NA	NA
Chromium Dissolved	19 / 19 (100%)	19	---	0.61 - 3.80	RH-033	1.35	NA	0.043 (19)
Chromium	19 / 19 (100%)	19	---	1.20 - 14.6	RH-036	4.26	NA	0.043 (19)
Cobalt Dissolved	10 / 19 (52.6%)	19	1.00 - 1.00	0.44 - 1.90	RH-035	0.656	1 (2)	1.1 (2)
Cobalt	18 / 19 (94.7%)	19	1.00 - 1.00	0.55 - 3.70	RH-033	1.37	1 (7)	1.1 (7)
Copper Dissolved	18 / 19 (94.7%)	19	25.0 - 25.0	2.50 - 217	RH-037	25.0	3.1 (16)	150 (1)
Copper	19 / 19 (100%)	19	---	12.1 - 160	RH-034	50.4	3.1 (19)	150 (1)
Iron Dissolved	18 / 18 (100%)	19	---	47.0 - 625	RH-033	247	50 (17)	2600 (0)
Iron	18 / 18 (100%)	19	---	227 - 13600	RH-036	2990	50 (18)	2600 (6)
Lead Dissolved	19 / 19 (100%)	19	---	0.72 - 6.80	OH-007	2.57	8.1 (0)	15 (0)
Lead	19 / 19 (100%)	19	---	6.80 - 420	RH-036	76.3	8.1 (18)	15 (16)
Magnesium Dissolved	15 / 19 (78.9%)	19	5000 - 5000	2240 - 107000	RH-037	12800	NA	NA
Magnesium	16 / 19 (84.2%)	19	5000 - 5000	2350 - 25000	RH-031	7460	NA	NA
Manganese Dissolved	19 / 19 (100%)	19	---	4.20 - 348	RH-037	60.0	100 (2)	100 (2)
Manganese	19 / 19 (100%)	19	---	10.0 - 367	RH-037	109	100 (8)	100 (8)
Mercury Dissolved	1 / 19 (5.3%)	19	0.20 - 0.20	0.067 - 0.067	RH-033	0.0983	0.94 (0)	0.0007 (1)
Mercury	2 / 19 (10.5%)	19	0.20 - 0.20	0.16 - 0.19	OH-007	0.108	0.94 (0)	0.0007 (2)
Nickel Dissolved	17 / 19 (89.5%)	19	1.00 - 1.00	1.30 - 5.30	RH-037	2.59	8.2 (0)	4600 (0)
Nickel	18 / 19 (94.7%)	19	1.00 - 1.00	1.30 - 17.6	RH-034	5.85	8.2 (4)	4600 (0)
Potassium Dissolved	15 / 18 (83.3%)	19	5000 - 5000	2050 - 13400	RH-031	5700	NA	NA
Potassium	12 / 18 (66.7%)	19	5000 - 5000	3100 - 14000	RH-031	5730	NA	NA
Selenium Dissolved	2 / 19 (10.5%)	19	5.00 - 5.00	0.93 - 1.50	RH-036	2.36	71 (0)	4200 (0)
Selenium	4 / 19 (21.1%)	19	5.00 - 5.00	1.10 - 2.10	RH-036	2.28	71 (0)	4200 (0)
Sodium Dissolved	18 / 18 (100%)	19	---	5080 - 267000	RH-033	70700	NA	NA

TABLE 4-14
 CSO Outfalls - Water - Wet Weather - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Sodium	18 / 18 (100%)	19	---	4940 - 187000	RH-031	48400	NA	NA
Vanadium Dissolved	6 / 19 (31.6%)	19	5.00 - 5.00	1.10 - 1.90	RH-038	2.18	50 (0)	18 (0)
Vanadium	13 / 19 (68.4%)	19	5.00 - 5.00	1.70 - 19.3	RH-036	4.16	50 (0)	18 (1)
Zinc Dissolved	19 / 19 (100%)	19	---	13.0 - 110	RH-038	39.6	81 (1)	26000 (0)
Zinc	19 / 19 (100%)	19	---	40.1 - 705	RH-034	196	81 (15)	26000 (0)
General Chemistry (mg/l)								
Total suspended solids	18 / 18 (100%)	18	---	18.0 - 989	RH-035	137	NA	NA

See notes in Table 4-21

TABLE 4-15
 Pipe Outfalls - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Volatile Organic Compounds (ug/l)								
Acetone	1 / 12 (8.3%)	12	5.00 - 5.00	33.0 - 33.0	E-27	5.04	NA	2200 (0)
Benzene	2 / 12 (16.7%)	12	0.50 - 0.50	0.35 - 0.37	E-33	0.268	110 (0)	10 (0)
Carbon disulfide	1 / 12 (8.3%)	12	0.50 - 0.50	0.36 - 0.36	E-35	0.259	NA	100 (0)
Chloroform	3 / 12 (25.0%)	12	0.50 - 0.50	0.37 - 1.30	W-77	0.399	NA	470 (0)
cis-1,2-dichloroethylene	1 / 12 (8.3%)	12	0.50 - 0.50	1.10 - 1.10	E-35	0.321	NA	37 (0)
Cyclohexane	1 / 12 (8.3%)	12	0.50 - 0.50	0.87 - 0.87	W-44	0.302	NA	1300 (0)
Ethylbenzene	2 / 12 (16.7%)	12	0.50 - 0.50	0.22 - 0.32	W-44	0.253	25 (0)	1.5 (0)
Isopropylbenzene (cumene)	2 / 12 (16.7%)	12	0.50 - 0.50	0.37 - 2.00	W-44	0.406	NA	68 (0)
m, p xylenes	1 / 12 (8.3%)	12	0.50 - 0.50	0.85 - 0.85	W-44	0.30	NA	120 (0)
Methyl ethyl ketone (2-butanone)	1 / 12 (8.3%)	12	5.00 - 5.00	33.0 - 33.0	T1-03	5.04	NA	710 (0)
Methylcyclohexane	1 / 12 (8.3%)	12	0.50 - 0.50	2.30 - 2.30	W-44	0.421	NA	NA
Methylene chloride	1 / 12 (8.3%)	12	0.50 - 0.50	0.51 - 0.51	W-037	0.272	6400 (0)	200 (0)
o-xylene (1,2-dimethylbenzene)	1 / 12 (8.3%)	12	0.50 - 0.50	0.36 - 0.36	W-44	0.259	NA	120 (0)
Tert-butyl methyl ether	2 / 12 (16.7%)	12	0.50 - 0.50	1.40 - 1.70	E-35	0.467	5000 (0)	12 (0)
Tetrachloroethylene(PCE)	1 / 12 (8.3%)	12	0.50 - 0.50	0.48 - 0.48	W-01	0.269	450 (0)	3.3 (0)
Toluene	3 / 12 (25.0%)	12	0.50 - 0.50	0.31 - 1.90	W-44	0.424	215 (0)	6000 (0)
Trichloroethylene (TCE)	1 / 12 (8.3%)	12	0.50 - 0.50	0.63 - 0.63	W-01	0.282	200 (0)	30 (0)
Vinyl chloride	1 / 12 (8.3%)	12	0.50 - 0.50	0.66 - 0.66	W-44	0.284	NA	2.4 (0)
Semi-Volatile Organic Compounds (ug/l)								
Acenaphthene	5 / 11 (45.5%)	11	0.10 - 0.10	0.14 - 39.0	E-33	3.68	40 (0)	990 (0)
Acenaphthylene	3 / 11 (27.3%)	11	0.10 - 0.10	0.13 - 0.36	E-33	0.0936	NA	220 (0)
Anthracene	1 / 11 (9.1%)	11	0.10 - 0.10	0.35 - 0.35	E-33	0.0773	NA	40000 (0)
Benzo(a)anthracene	1 / 11 (9.1%)	11	0.10 - 0.10	0.23 - 0.23	W-01	0.0664	NA	0.018 (1)
Benzo(a)pyrene	2 / 11 (18.2%)	11	0.10 - 0.10	0.20 - 0.72	W-01	0.125	NA	0.018 (2)
Benzo(b)fluoranthene	3 / 11 (27.3%)	11	0.10 - 0.10	0.16 - 0.54	W-01	0.12	NA	0.018 (3)
Benzo(g,h,i)perylene	4 / 11 (36.4%)	11	0.10 - 0.10	0.12 - 0.93	W-77	0.246	NA	110 (0)
Benzo(k)fluoranthene	3 / 11 (27.3%)	11	0.10 - 0.10	0.069 - 0.14	W-01	0.0625	NA	0.018 (3)
Bis(2-ethylhexyl) phthalate	5 / 11 (45.5%)	11	5.00 - 5.00	0.99 - 7.00	W-01	2.82	360 (0)	2.2 (3)
Chrysene	1 / 11 (9.1%)	11	0.10 - 0.10	0.41 - 0.41	W-01	0.0827	NA	0.018 (1)
Dibenz(a,h)anthracene	3 / 11 (27.3%)	11	0.10 - 0.10	0.14 - 0.25	E-63	0.0918	NA	0.018 (3)

TABLE 4-15
 Pipe Outfalls - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Diethyl phthalate	1 / 11 (9.1%)	11	5.00 - 5.00	6.30 - 6.30	T1-03	2.85	3.4 (1)	44000 (0)
Dimethyl phthalate	10 / 11 (90.9%)	11	5.00 - 5.00	1.30 - 2.50	W-01	1.97	3.4 (0)	1100000 (0)
Di-n-butyl phthalate	2 / 11 (18.2%)	11	5.00 - 5.00	0.30 - 5.40	T1-03	2.56	3.4 (1)	4500 (0)
Fluoranthene	4 / 11 (36.4%)	11	0.10 - 0.10	0.10 - 1.00	E-33	0.188	11 (0)	140 (0)
Fluorene	2 / 11 (18.2%)	11	0.10 - 0.10	0.13 - 2.30	E-33	0.262	NA	5300 (0)
Indeno(1,2,3-c,d)pyrene	10 / 11 (90.9%)	11	0.10 - 0.10	0.11 - 0.54	W-01	0.234	NA	0.018 (10)
Naphthalene	1 / 11 (9.1%)	11	0.10 - 0.10	0.17 - 0.17	E-33	0.0609	1.4 (0)	0.14 (1)
Pentachlorophenol	4 / 11 (36.4%)	11	0.20 - 0.20	0.11 - 0.79	W-77	0.185	7.9 (0)	3 (0)
Phenanthrene	2 / 11 (18.2%)	11	0.10 - 0.10	0.28 - 0.83	E-33	0.142	4.6 (0)	1100 (0)
Pyrene	5 / 11 (45.5%)	11	0.10 - 0.10	0.17 - 1.60	E-33	0.325	NA	4000 (0)
Total PAHs	11 / 11 (100%)	11	---	0.11 - 45.8	E-33	5.29	NA	NA
Metals (ug/l)								
Aluminum Dissolved	2 / 10 (20.0%)	10	20.0 - 20.0	20.2 - 341	T1-03	44.1	NA	3700 (0)
Aluminum	8 / 10 (80.0%)	10	20.0 - 20.0	5.60 - 390	T1-03	63.5	NA	3700 (0)
Arsenic Dissolved	10 / 10 (100%)	10	---	2.40 - 8.20	E-63	4.74	36 (0)	0.14 (10)
Arsenic	10 / 10 (100%)	10	---	2.50 - 7.80	E-63	4.56	36 (0)	0.14 (10)
Barium Dissolved	10 / 10 (100%)	10	---	16.8 - 285	E-33	115	200 (1)	730 (0)
Barium	10 / 10 (100%)	10	---	20.3 - 295	E-33	131	200 (2)	730 (0)
Cadmium Dissolved	1 / 10 (10.0%)	10	1.00 - 1.00	0.38 - 0.38	T1-03	0.488	8.8 (0)	1.8 (0)
Cadmium	1 / 10 (10.0%)	10	1.00 - 1.00	0.31 - 0.31	T1-03	0.481	8.8 (0)	1.8 (0)
Calcium Dissolved	10 / 10 (100%)	10	---	3190 - 474000	E-35	133000	NA	NA
Calcium	10 / 10 (100%)	10	---	2780 - 561000	E-35	189000	NA	NA
Chromium Dissolved	8 / 10 (80.0%)	10	2.00 - 2.00	0.70 - 1.80	W-01	1.01	NA	0.043 (8)
Chromium	8 / 10 (80.0%)	10	2.00 - 2.00	0.66 - 1.50	W-01	0.955	NA	0.043 (8)
Cobalt Dissolved	6 / 10 (60.0%)	10	1.00 - 1.00	0.41 - 1.50	T1-03	0.656	1 (1)	1.1 (1)
Cobalt	5 / 10 (50.0%)	10	1.00 - 1.00	0.40 - 1.50	T1-03	0.708	1 (2)	1.1 (2)
Copper Dissolved	10 / 10 (100%)	10	---	2.60 - 15.0	E-63	5.65	3.1 (8)	150 (0)
Copper	10 / 10 (100%)	10	---	2.50 - 16.0	E-63	6.72	3.1 (9)	150 (0)
Iron Dissolved	5 / 9 (55.6%)	10	200 - 200	88.5 - 696	W-77	234	50 (5)	2600 (0)
Iron	9 / 9 (100%)	10	---	132 - 4910	W-037	1990	50 (9)	2600 (3)

TABLE 4-15
 Pipe Outfalls - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Ecological Screening Value S (# of Exceedances)	Human Health Screening Value T (# of Exceedances)
Metals (ug/l)								
Lead Dissolved	3 / 10 (30.0%)	10	1.00 - 1.00	0.71 - 1.20	T1-03	0.651	8.1 (0)	15 (0)
Lead	7 / 10 (70.0%)	10	1.00 - 1.00	0.39 - 6.50	W-46	1.66	8.1 (0)	15 (0)
Magnesium Dissolved	10 / 10 (100%)	10	---	806 - 132000	E-63	46600	NA	NA
Magnesium	10 / 10 (100%)	10	---	688 - 173000	E-63	55300	NA	NA
Manganese Dissolved	10 / 10 (100%)	10	---	6.00 - 893	E-33	316	100 (7)	100 (7)
Manganese	10 / 10 (100%)	10	---	10.0 - 857	E-33	322	100 (7)	100 (7)
Nickel Dissolved	10 / 10 (100%)	10	---	0.81 - 7.70	T1-03	2.88	8.2 (0)	4600 (0)
Nickel	10 / 10 (100%)	10	---	0.63 - 11.5	E-35	3.23	8.2 (1)	4600 (0)
Potassium Dissolved	10 / 10 (100%)	10	---	267 - 65000	E-35	28300	NA	NA
Potassium	10 / 10 (100%)	10	---	217 - 112000	E-63	37600	NA	NA
Selenium Dissolved	5 / 10 (50.0%)	10	5.00 - 5.00	2.90 - 9.40	E-63	4.07	71 (0)	4200 (0)
Selenium	5 / 10 (50.0%)	10	5.00 - 5.00	2.90 - 8.80	E-63	3.85	71 (0)	4200 (0)
Sodium Dissolved	9 / 9 (100%)	10	---	22200 - 1350000	E-63	488000	NA	NA
Sodium	9 / 9 (100%)	10	---	24900 - 1490000	E-63	546000	NA	NA
Vanadium	1 / 10 (10.0%)	10	5.00 - 5.00	2.00 - 2.00	W-46	2.45	50 (0)	18 (0)
Zinc Dissolved	10 / 10 (100%)	10	---	2.70 - 209	T1-03	26.7	81 (1)	26000 (0)
Zinc	10 / 10 (100%)	10	---	3.20 - 205	T1-03	32.5	81 (1)	26000 (0)
Cyanide, Total	3 / 10 (30.0%)	10	10.0 - 10.0	4.40 - 20.4	E-63	6.84	1 (3)	140 (0)

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-16a
 Air - Canoe Level - Round 1 Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Volatile Organic Compounds (ug/m3)							
Acetone	10 / 10 (100%)	10	---	22.0 - 60.0	506	36.6	3200 (0)
Benzene	10 / 10 (100%)	10	---	0.69 - 1.10	501	0.841	0.31 (10)
Bromoform	1 / 10 (10.0%)	10	0.10 - 0.52	0.12 - 0.12	505	0.12	2.2 (0)
Carbon disulfide	1 / 10 (10.0%)	10	1.60 - 1.60	2.70 - 2.70	508	0.99	73 (0)
Chloroform	7 / 10 (70.0%)	10	0.20 - 0.24	0.16 - 0.28	501	0.181	0.11 (7)
Chloromethane	10 / 10 (100%)	10	---	1.70 - 3.10	504	2.12	9.4 (0)
Ethylbenzene	10 / 10 (100%)	10	---	0.48 - 5.10	508	1.34	0.97 (3)
Methyl ethyl ketone (2-butanone)	10 / 10 (100%)	10	---	1.70 - 4.30	504	2.46	520 (0)
Methylene chloride	6 / 10 (60.0%)	10	1.70 - 1.70	1.80 - 4.50	501	2.00	5.2 (0)
Toluene	10 / 10 (100%)	10	---	2.70 - 8.50	507	4.45	520 (0)
Trichloroethylene (TCE)	7 / 10 (70.0%)	10	0.21 - 0.27	0.069 - 0.90	507	0.201	1.2 (0)
Xylene, total	10 / 10 (100%)	10	---	1.80 - 16.0	508	4.30	10 (1)
Semi-Volatile Organic Compounds (ug/m3)							
Acenaphthene	10 / 10 (100%)	10	---	0.057 - 5.70	502	0.91	NA
Acenaphthylene	10 / 10 (100%)	10	---	0.0014 - 0.049	502	0.0138	NA
Anthracene	10 / 10 (100%)	10	---	0.0042 - 0.37	502	0.0745	NA
Benzo(a)anthracene	2 / 10 (20.0%)	10	0.068 - 0.094	0.002 - 0.0023	501	0.0292	0.0087 (0)
Benzo(b)fluoranthene	1 / 10 (10.0%)	10	0.068 - 0.094	0.0025 - 0.0025	501	0.0325	0.0087 (0)
Chrysene	1 / 10 (10.0%)	10	0.068 - 0.094	0.0088 - 0.0088	502	0.033	0.087 (0)
Fluoranthene	10 / 10 (100%)	10	---	0.019 - 1.00	502	0.168	NA
Fluorene	10 / 10 (100%)	10	---	0.034 - 4.70	502	0.712	NA
Naphthalene	10 / 10 (100%)	10	---	0.19 - 3.40	503	1.10	0.072 (10)
Phenanthrene	10 / 10 (100%)	10	---	0.084 - 6.50	502	1.11	NA
Pyrene	10 / 10 (100%)	10	---	0.014 - 0.55	502	0.103	NA
Total PAHs	10 / 10 (100%)	10	---	0.404 - 21.0	502	4.21	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-16b
 Air - Canoe Level - Round 2 Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Volatile Organic Compounds (ug/m3)							
Acetone	10 / 10 (100%)	10	---	24.0 - 300	509	83.0	3200 (0)
Benzene	10 / 10 (100%)	10	---	0.64 - 3.80	510	1.38	0.31 (10)
Carbon disulfide	1 / 10 (10.0%)	10	1.60 - 7.80	3.30 - 3.30	503	1.51	73 (0)
Chloroform	8 / 10 (80.0%)	10	0.098 - 0.24	0.16 - 0.24	503	0.174	0.11 (8)
Chloromethane	8 / 10 (80.0%)	10	2.10 - 5.20	1.60 - 2.20	510	1.91	9.4 (0)
Chloromethane	8 / 10 (80.0%)	10	2.10 - 5.20	1.60 - 2.20	506	1.91	9.4 (0)
Ethylbenzene	10 / 10 (100%)	10	---	0.41 - 4.40	510	1.40	0.97 (5)
Methyl ethyl ketone (2-butanone)	10 / 10 (100%)	10	---	2.70 - 18.0	509	5.70	520 (0)
Methylene chloride	2 / 10 (20.0%)	10	1.70 - 8.70	1.90 - 2.00	506	1.60	5.2 (0)
Toluene	9 / 10 (90.0%)	10	3.80 - 3.80	5.00 - 25.0	510	8.10	520 (0)
Trichloroethylene (TCE)	8 / 10 (80.0%)	10	0.11 - 0.27	0.096 - 0.20	505	0.131	1.2 (0)
Xylene, total	9 / 10 (90.0%)	10	4.30 - 4.30	2.90 - 28.0	510	6.76	10 (1)
Semi-Volatile Organic Compounds (ug)							
Acenaphthene	2 / 2 (100%)	2	---	0.92 - 4.00	507	2.46	NA
Acenaphthylene	2 / 2 (100%)	2	---	0.032 - 0.26	507	0.146	NA
Anthracene	2 / 2 (100%)	2	---	0.041 - 0.49	507	0.266	NA
Fluoranthene	2 / 2 (100%)	2	---	0.094 - 0.42	507	0.257	NA
Fluorene	2 / 2 (100%)	2	---	0.53 - 2.00	507	1.27	NA
Naphthalene	2 / 2 (100%)	2	---	1.00 - 11.0	507	6.00	NA
Phenanthrene	2 / 2 (100%)	2	---	0.71 - 3.60	507	2.16	NA
Pyrene	2 / 2 (100%)	2	---	0.068 - 0.39	507	0.229	NA
Total PAHs	2 / 2 (100%)	2	---	3.40 - 22.2	507	12.8	NA
Semi-Volatile Organic Compounds (ug/m3)							
Acenaphthene	8 / 8 (100%)	8	---	0.084 - 3.30	502	0.844	NA
Acenaphthylene	8 / 8 (100%)	8	---	0.0043 - 0.04	502	0.0167	NA
Anthracene	8 / 8 (100%)	8	---	0.0054 - 0.15	502	0.0517	NA
Benzo(a)anthracene	3 / 8 (37.5%)	8	0.071 - 0.071	0.0024 - 0.0033	509	0.0233	0.0087 (0)
Chrysene	1 / 8 (12.5%)	8	0.07 - 0.071	0.0043 - 0.0043	505	0.0315	0.087 (0)
Fluoranthene	8 / 8 (100%)	8	---	0.021 - 0.45	502	0.145	NA

TABLE 4-16b
 Air - Canoe Level - Round 2 Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Semi-Volatile Organic Compounds (ug/m3)							
Fluorene	8 / 8 (100%)	8	---	0.056 - 2.30	502	0.537	NA
Naphthalene	8 / 8 (100%)	8	---	0.47 - 2.60	503	1.30	0.072 (8)
Phenanthrene	8 / 8 (100%)	8	---	0.098 - 3.00	502	0.80	NA
Pyrene	8 / 8 (100%)	8	---	0.014 - 0.23	502	0.0846	NA
Total PAHs	8 / 8 (100%)	8	---	0.903 - 11.8	502	3.77	NA

See notes in Table 4-21

TABLE 4-17a
 Air - Street Level - Round 1 Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Volatile Organic Compounds (ug/m3)							
Acetone	10 / 10 (100%)	10	---	25.0 - 53.0	510	36.2	3200 (0)
Benzene	10 / 10 (100%)	10	---	0.61 - 2.30	501	0.948	0.31 (10)
Bromoform	1 / 10 (10.0%)	10	0.10 - 0.52	0.37 - 0.37	503	0.176	2.2 (0)
Carbon disulfide	2 / 10 (20.0%)	10	1.60 - 1.60	2.60 - 3.80	504	1.28	73 (0)
Chloroform	6 / 10 (60.0%)	10	0.20 - 0.24	0.17 - 0.39	501	0.18	0.11 (6)
Chloromethane	10 / 10 (100%)	10	---	1.80 - 3.00	502	2.41	9.4 (0)
Ethylbenzene	10 / 10 (100%)	10	---	0.56 - 1.70	501	0.894	0.97 (3)
Methyl ethyl ketone (2-butanone)	10 / 10 (100%)	10	---	1.90 - 11.0	510	3.56	520 (0)
Methylene chloride	5 / 10 (50.0%)	10	1.70 - 1.70	1.70 - 5.10	501	2.06	5.2 (0)
Toluene	10 / 10 (100%)	10	---	3.00 - 6.20	501	4.18	520 (0)
Trichloroethylene (TCE)	5 / 10 (50.0%)	10	0.054 - 0.27	0.06 - 0.74	507	0.191	1.2 (0)
Xylene, total	10 / 10 (100%)	10	---	2.00 - 6.80	501	3.10	10 (0)
Semi-Volatile Organic Compounds (ug/m3)							
Acenaphthene	10 / 10 (100%)	10	---	0.037 - 0.61	505	0.204	NA
Acenaphthylene	10 / 10 (100%)	10	---	0.0016 - 0.018	507	0.00483	NA
Anthracene	10 / 10 (100%)	10	---	0.0029 - 0.043	507	0.0166	NA
Fluoranthene	10 / 10 (100%)	10	---	0.012 - 0.094	505	0.0435	NA
Fluorene	10 / 10 (100%)	10	---	0.03 - 0.31	505	0.143	NA
Naphthalene	10 / 10 (100%)	10	---	0.10 - 1.30	505	0.533	0.072 (10)
Naphthalene	10 / 10 (100%)	10	---	0.10 - 1.30	503	0.533	0.072 (10)
Phenanthrene	10 / 10 (100%)	10	---	0.059 - 0.55	509	0.272	NA
Pyrene	10 / 10 (100%)	10	---	0.0088 - 0.06	505	0.0271	NA
Total PAHs	10 / 10 (100%)	10	---	0.347 - 2.93	505	1.24	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-17b
 Air - Street Level - Round 2 Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Volatile Organic Compounds (ug/m3)							
Acetone	10 / 10 (100%)	10	---	23.0 - 460	507	101	3200 (0)
Benzene	10 / 10 (100%)	10	---	0.67 - 1.40	510	0.982	0.31 (10)
Chloroform	9 / 10 (90.0%)	10	0.24 - 0.24	0.16 - 0.45	505	0.206	0.11 (9)
Chloromethane	8 / 10 (80.0%)	10	3.10 - 5.20	1.40 - 2.50	502	1.91	9.4 (0)
Ethylbenzene	10 / 10 (100%)	10	---	0.56 - 1.80	510	0.956	0.97 (3)
Methyl ethyl ketone (2-butanone)	10 / 10 (100%)	10	---	2.30 - 30.0	507	7.00	520 (0)
Methylene chloride	1 / 10 (10.0%)	10	1.70 - 8.70	2.00 - 2.00	506	1.50	5.2 (0)
Toluene	6 / 10 (60.0%)	10	3.70 - 4.80	5.00 - 7.50	505	4.81	520 (0)
Toluene	6 / 10 (60.0%)	10	3.70 - 4.80	5.00 - 7.50	504	4.81	520 (0)
Trichloroethylene (TCE)	8 / 10 (80.0%)	10	0.16 - 0.27	0.06 - 0.60	502	0.185	1.2 (0)
Xylene, total	10 / 10 (100%)	10	---	2.40 - 7.60	510	3.97	10 (0)
Semi-Volatile Organic Compounds (ug/m3)							
Acenaphthene	10 / 10 (100%)	10	---	0.079 - 1.30	507	0.444	NA
Acenaphthylene	10 / 10 (100%)	10	---	0.0019 - 0.14	507	0.0234	NA
Anthracene	10 / 10 (100%)	10	---	0.004 - 0.11	507	0.0309	NA
Fluoranthene	10 / 10 (100%)	10	---	0.018 - 0.20	509	0.0693	NA
Fluorene	10 / 10 (100%)	10	---	0.057 - 0.63	507	0.259	NA
Naphthalene	10 / 10 (100%)	10	---	0.26 - 4.40	507	1.19	0.072 (10)
Phenanthrene	10 / 10 (100%)	10	---	0.099 - 0.87	509	0.401	NA
Pyrene	10 / 10 (100%)	10	---	0.0093 - 0.11	509	0.043	NA
Total PAHs	10 / 10 (100%)	10	---	0.614 - 7.54	507	2.46	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-17c
 Air - Background - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Human Health Screening Value P (# of Exceedances)
Volatile Organic Compounds (ug/m3)							
Acetone	3 / 3 (100%)	3	---	21.0 - 31.0	513	24.3	3200 (0)
Benzene	3 / 3 (100%)	3	---	0.67 - 0.91	512	0.753	0.31 (3)
Chloroform	2 / 3 (66.7%)	3	0.20 - 0.20	0.16 - 0.29	512	0.183	0.11 (2)
Chloromethane	3 / 3 (100%)	3	---	1.50 - 2.20	512	1.80	9.4 (0)
Ethylbenzene	3 / 3 (100%)	3	---	0.71 - 1.20	513	0.913	0.97 (1)
Methyl ethyl ketone (2-butanone)	2 / 3 (66.7%)	3	1.50 - 1.50	1.90 - 2.40	511	1.68	520 (0)
Methylene chloride	2 / 3 (66.7%)	3	1.70 - 1.70	3.10 - 5.40	512	3.12	5.2 (1)
Toluene	3 / 3 (100%)	3	---	3.30 - 16.0	513	8.03	520 (0)
Xylene, total	3 / 3 (100%)	3	---	3.50 - 4.60	513	3.87	10 (0)
Semi-Volatile Organic Compounds (ug/m3)							
Acenaphthene	3 / 3 (100%)	3	---	0.0071 - 0.023	513	0.0131	NA
Acenaphthylene	1 / 3 (33.3%)	3	0.066 - 0.081	0.0015 - 0.0015	512	0.025	NA
Anthracene	1 / 3 (33.3%)	3	0.066 - 0.07	0.0021 - 0.0021	513	0.0234	NA
Fluoranthene	2 / 3 (66.7%)	3	0.07 - 0.07	0.0046 - 0.0064	513	0.0153	NA
Fluorene	3 / 3 (100%)	3	---	0.0051 - 0.019	513	0.0113	NA
Naphthalene	3 / 3 (100%)	3	---	0.11 - 0.17	512	0.133	0.072 (3)
Phenanthrene	3 / 3 (100%)	3	---	0.0037 - 0.045	513	0.0259	NA
Pyrene	2 / 3 (66.7%)	3	0.07 - 0.07	0.0023 - 0.0046	513	0.014	NA
Total PAHs	3 / 3 (100%)	3	---	0.165 - 0.22	513	0.191	NA

See notes in Table 4-21

Page Intentionally Left Blank

TABLE 4-18

Comparison of Air Concentrations at Canoe Level and Street Level
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Test	Central Tendency Comparison	
		Probability that the Observed Differences Would Occur Purely by Chance	Statistical Decision with 0.05 Significance Level
Round 1 - Volatile Organic Compounds (ug/m³)			
Acetone	WRS	0.762	nsd
Benzene	WRS	0.791	nsd
Bromoform	Gehan	0.347	nsd
Carbon disulfide	Gehan	0.272	nsd
Chloroform	WRS	0.670	nsd
Chloromethane	WRS	0.111	nsd
Ethylbenzene	WRS	0.791	nsd
Methyl ethyl ketone (2-butanone)	WRS	0.287	nsd
Methylene chloride	Gehan	0.452	nsd
Toluene	WRS	0.762	nsd
Trichloroethylene (TCE)	Gehan	0.459	nsd
Xylene, total	WRS	0.256	nsd
Round 1 - Polynuclear Aromatic Hydrocarbons (PAHs) (ug/m³)			
Acenaphthene	WRS	0.070	nsd
Acenaphthylene	WRS	0.104	nsd
Anthracene	WRS	0.026	Canoe > Street
Fluoranthene	WRS	0.140	nsd
Fluorene	WRS	0.140	nsd
Naphthalene	WRS	0.149	nsd
Phenanthrene	WRS	0.049	Canoe > Street
Pyrene	WRS	0.031	Canoe > Street
Round 2 - Volatile Organic Compounds (ug/m³)			
Acetone	WRS	0.910	nsd
Benzene	WRS	0.272	nsd
Chloroform	WRS	0.368	nsd
Chloromethane	WRS	1.000	nsd
Ethylbenzene	WRS	0.364	nsd
Methyl ethyl ketone (2-butanone)	WRS	0.520	nsd
Methylene chloride	Gehan	0.500	nsd
Toluene	WRS	0.340	nsd
Trichloroethylene (TCE)	WRS	0.168	nsd
Xylene, total	WRS	0.264	nsd
Round 2 - Polynuclear Aromatic Hydrocarbons (PAHs) (ug/m³)			
Acenaphthene	WRS	0.399	nsd
Acenaphthylene	WRS	0.374	nsd
Anthracene	WRS	0.142	nsd
Fluoranthene	WRS	0.230	nsd
Fluorene	WRS	0.450	nsd
Naphthalene	WRS	0.267	nsd
Phenanthrene	WRS	0.399	nsd
Pyrene	WRS	0.248	nsd

Notes:

Test was performed for detected constituents only.

WRS = Wilcoxon Rank Sum

- = test not performed

nsd = no significant difference

ug/m³ = micrograms per cubic meter

Page Intentionally Left Blank

TABLE 4-19a
Soil - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value Q (# of Exceedances)
Volatile Organic Compounds (ug/kg)							
1,1,1-trichloroethane	1 / 349 (.3%)	357	0.12 - 50000	0.47 - 0.47	GCMW-17	786	680 (0)
1,1-dichloroethane	3 / 349 (.9%)	357	0.13 - 50000	0.29 - 1.90	GCMW-40	786	270 (0)
1,2,3-trichlorobenzene	5 / 346 (1.4%)	357	0.55 - 50000	6.00 - 7300	GCMW-03	766	NA
1,2,4-trichlorobenzene	4 / 346 (1.2%)	357	0.32 - 50000	0.57 - 7000	GCMW-03	771	NA
1,2-dichlorobenzene	4 / 346 (1.2%)	357	0.25 - 50000	0.071 - 2700	GCMW-03	759	1100 (1)
1,2-dichloroethane	3 / 350 (.9%)	357	0.32 - 50000	0.79 - 19.0	GCMW-12	784	20 (0)
1,3-dichlorobenzene	4 / 346 (1.2%)	357	0.26 - 50000	0.99 - 3100	GCMW-03	760	2400 (1)
1,4-dichlorobenzene	11 / 346 (3.2%)	357	0.32 - 50000	0.27 - 2100	GCMW-03	757	1800 (1)
Acetone	183 / 347 (52.7%)	357	2.30 - 100000	4.20 - 420000	GCMW-35	3930	50 (82)
Benzene	145 / 349 (41.5%)	357	0.34 - 37000	0.41 - 1100000	GCMW-40	5650	60 (55)
Carbon disulfide	187 / 350 (53.4%)	357	0.31 - 50000	0.42 - 3100	GCMW-31	768	NA
Chlorobenzene	3 / 349 (.9%)	357	0.32 - 50000	0.51 - 2.70	GCMW-26	786	1100 (0)
Chloroethane	1 / 350 (.3%)	357	0.94 - 50000	1.50 - 1.50	GCMW-17	813	NA
Chloroform	12 / 350 (3.4%)	357	0.30 - 50000	0.43 - 53.0	GCMW-15	784	370 (0)
Chloromethane	1 / 350 (.3%)	357	0.15 - 50000	2.20 - 2.20	GCMW-42	784	NA
cis-1,2-dichloroethylene	35 / 350 (10.0%)	357	0.22 - 50000	0.28 - 1900	GCMW-30	736	250 (5)
Cyclohexane	22 / 349 (6.3%)	357	0.14 - 50000	2.00 - 45000	GCMW-12	902	NA
Ethylbenzene	182 / 349 (52.1%)	357	0.35 - 7200	0.14 - 790000	GCMW-32	11100	1000 (47)
Isopropylbenzene (cumene)	113 / 347 (32.6%)	357	0.49 - 7200	0.16 - 36000	GCMW-07	1070	NA
m, p xylenes	196 / 349 (56.2%)	357	0.45 - 7200	0.12 - 570000	GCMW-40	11000	1600 (39)
Methyl acetate	6 / 306 (2.0%)	357	0.77 - 50000	2.00 - 4400	GCMW-31	782	NA
Methyl ethyl ketone (2-butanone)	70 / 307 (22.8%)	357	1.80 - 100000	5.80 - 410	GCMW-35	1510	120 (3)
Methyl isobutyl ketone	7 / 348 (2.0%)	357	0.76 - 100000	1.40 - 4.70	GCMW-40	1450	NA
Methylcyclohexane	35 / 349 (10.0%)	357	0.61 - 50000	1.50 - 23000	GCMW-40	941	NA
Methylene chloride	8 / 350 (2.3%)	357	0.21 - 50000	27.0 - 7400	GCMW-35	699	50 (5)
o-xylene (1,2-dimethylbenzene)	160 / 349 (45.8%)	357	0.45 - 7200	0.074 - 260000	GCMW-32	5010	1600 (37)
Styrene	38 / 349 (10.9%)	357	0.10 - 37000	0.37 - 230000	GCMW-40	1720	NA
Tert-butyl methyl ether	43 / 350 (12.3%)	357	0.26 - 50000	0.48 - 400	GCMW-12	784	930 (0)
Tetrachloroethylene(PCE)	11 / 350 (3.1%)	357	0.14 - 50000	0.15 - 320	GCMW-30	783	1300 (0)
Toluene	77 / 350 (22.0%)	357	0.28 - 23000	0.33 - 810000	GCMW-40	6160	700 (32)
trans-1,2-dichloroethene	7 / 350 (2.0%)	357	0.42 - 50000	0.65 - 1300	GCMW-31	776	190 (2)

TABLE 4-19a
Soil - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value Q (# of Exceedances)
Volatile Organic Compounds (ug/kg)							
Trichloroethylene (TCE)	24 / 350 (6.9%)	357	0.49 - 50000	0.24 - 13000	GCMW-30	819	470 (4)
Trichlorofluoromethane	27 / 350 (7.7%)	357	0.21 - 50000	0.42 - 12000	GCMW-31	824	NA
Vinyl chloride	1 / 350 (.3%)	357	0.17 - 50000	0.72 - 0.72	GCMW-17	784	20 (0)
Semi-Volatile Organic Compounds (ug/kg)							
2,4-dimethylphenol	20 / 357 (5.6%)	357	51.0 - 840000	17.0 - 260000	GCMW-40	4420	NA
2-methylnaphthalene	215 / 357 (60.2%)	357	17.0 - 8700	5.80 - 1700000	GCMW-11	41200	NA
2-methylphenol (o-cresol)	8 / 357 (2.2%)	357	34.0 - 840000	15.0 - 240000	GCMW-40	4400	330 (3)
4-methylphenol (p-cresol)	31 / 290 (10.7%)	290	180 - 840000	9.00 - 570000	GCMW-40	7130	330 (8)
Acenaphthene	226 / 357 (63.3%)	357	9.00 - 990	5.80 - 670000	GCMW-41	15700	98000 (19)
Acenaphthylene	133 / 357 (37.3%)	357	9.70 - 840000	6.10 - 810000	GCMW-11, GCMW-40	13400	107000 (9)
Acetophenone	206 / 357 (57.7%)	357	5.30 - 1900000	12.0 - 3400	GCMW-43	6900	NA
Anthracene	205 / 357 (57.4%)	357	11.0 - 1100	6.30 - 1100000	GCMW-41	18200	1000000 (1)
Benzaldehyde	160 / 357 (44.8%)	357	6.90 - 1900000	19.0 - 1400	GCMW-45	7110	NA
Benzo(a)anthracene	208 / 357 (58.3%)	357	11.0 - 1100	5.80 - 1100000	GCMW-41	13000	1000 (83)
Benzo(a)pyrene	200 / 357 (56.0%)	357	9.20 - 1100	6.20 - 980000	GCMW-41	10500	22000 (28)
Benzo(b)fluoranthene	194 / 357 (54.3%)	357	10.0 - 1100	6.30 - 720000	GCMW-41	8140	1700 (67)
Benzo(g,h,i)perylene	178 / 357 (49.9%)	357	11.0 - 60000	10.0 - 590000	GCMW-41	5300	1000000 (0)
Benzo(k)fluoranthene	183 / 357 (51.3%)	357	11.0 - 1100	6.30 - 810000	GCMW-41	6300	1700 (58)
Benzyl butyl phthalate	19 / 357 (5.3%)	357	17.0 - 1900000	6.20 - 250	GCMW-23	7150	NA
Biphenyl (diphenyl)	133 / 357 (37.3%)	357	3.50 - 8700	6.10 - 340000	GCMW-40	5500	NA
Bis(2-ethylhexyl) phthalate	247 / 357 (69.2%)	357	27.0 - 1900000	11.0 - 29000	GCMW-27	7150	NA
Caprolactam	7 / 357 (2.0%)	357	9.50 - 1900000	9.10 - 110	GCMW-30, GCMW-41	7150	NA
Carbazole	126 / 357 (35.3%)	357	14.0 - 300000	6.60 - 470000	GCMW-41	4580	NA
Chrysene	202 / 357 (56.6%)	357	11.0 - 1100	5.70 - 1100000	GCMW-41	12600	1000 (81)
Dibenz(a,h)anthracene	135 / 357 (37.8%)	357	10.0 - 1900000	7.60 - 130000	GCMW-41	5850	1000000 (0)
Dibenzofuran	158 / 357 (44.3%)	357	9.00 - 180000	5.60 - 780000	GCMW-40	6760	210000 (3)
Diethyl phthalate	16 / 357 (4.5%)	357	10.0 - 1900000	6.60 - 180	GCMW-32	7150	NA
Dimethyl phthalate	7 / 357 (2.0%)	357	11.0 - 1900000	31.8 - 141	GCMW-01	7160	NA
Di-n-butyl phthalate	39 / 357 (10.9%)	357	6.70 - 1900000	5.80 - 240	GCMW-25	7140	NA
Di-n-octylphthalate	2 / 357 (.6%)	357	15.0 - 1900000	28.0 - 95.0	GCMW-23	7160	NA

TABLE 4-19a
Soil - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value Q (# of Exceedances)
Semi-Volatile Organic Compounds (ug/kg)							
Fluoranthene	219 / 357 (61.3%)	357	14.0 - 1100	7.00 - 2800000	GCMW-41	30400	1000000 (3)
Fluorene	194 / 357 (54.3%)	357	10.0 - 8700	6.60 - 700000	GCMW-40	16300	386000 (4)
Indeno(1,2,3-c,d)pyrene	174 / 357 (48.7%)	357	10.0 - 110000	12.0 - 570000	GCMW-41	4950	8200 (28)
Naphthalene	277 / 357 (77.6%)	357	8.40 - 4200	6.10 - 11000000	GCMW-40	102000	12000 (43)
Phenanthrene	257 / 357 (72.0%)	357	15.0 - 1100	5.70 - 4300000	GCMW-41	66300	1000000 (5)
Phenol	158 / 357 (44.3%)	357	32.0 - 840000	6.20 - 340000	GCMW-40	4830	330 (8)
Pyrene	238 / 357 (66.7%)	357	12.0 - 1100	6.10 - 2600000	GCMW-41	34300	1000000 (2)
Total PAHs	321 / 357 (89.9%)	357	---	6.70 - 24900000	GCMW-40	397000	NA
Pesticides (ug/kg)							
Aldrin	6 / 355 (1.7%)	357	0.56 - 260	0.063 - 27.0	GCMW-20	2.40	190 (0)
Alpha BHC	13 / 349 (3.7%)	357	0.38 - 260	0.15 - 130	GCMW-27	2.84	20 (3)
Alpha endosulfan	4 / 353 (1.1%)	357	0.42 - 260	0.29 - 15.0	GCMW-23	2.24	102000 (0)
Alpha-chlordane	11 / 352 (3.1%)	357	0.42 - 260	0.52 - 120	GCMW-41	2.90	2900 (0)
Beta BHC	20 / 353 (5.7%)	357	0.60 - 260	0.096 - 49.0	GCMW-23	2.58	90 (0)
Beta endosulfan	20 / 357 (5.6%)	357	0.47 - 520	0.60 - 88.0	GCMW-11	5.81	102000 (0)
Delta BHC	15 / 353 (4.2%)	357	0.34 - 260	0.78 - 24.0	GCMW-27	2.37	250 (0)
Dieldrin	8 / 354 (2.3%)	357	0.42 - 520	0.76 - 18.0	GCMW-27	4.51	100 (0)
Endosulfan sulfate	17 / 343 (5.0%)	357	0.47 - 510	0.12 - 880	GCMW-27	8.42	1000000 (0)
Endrin	27 / 335 (8.1%)	357	0.43 - 510	0.11 - 110	GCMW-27	4.62	60 (2)
Endrin aldehyde	17 / 349 (4.9%)	357	0.58 - 510	3.70 - 120	GCMW-11	5.22	NA
Endrin ketone	33 / 351 (9.4%)	357	0.28 - 510	0.20 - 190	GCMW-27	5.14	NA
Gamma BHC	8 / 353 (2.3%)	357	0.38 - 260	0.18 - 9.10	GCMW-23	2.22	100 (0)
Gamma-chlordane	41 / 351 (11.7%)	357	0.49 - 270	0.15 - 390	GCMW-27	7.98	NA
Heptachlor	6 / 355 (1.7%)	357	0.56 - 260	0.11 - 11.0	GCMW-23	2.24	380 (0)
Heptachlor epoxide	18 / 351 (5.1%)	357	0.48 - 270	0.051 - 49.0	GCMW-27	2.92	NA
Methoxychlor	21 / 355 (5.9%)	357	0.55 - 2600	0.24 - 350	GCMW-27	22.8	NA
P,P'-DDD	29 / 352 (8.2%)	357	0.53 - 370	0.30 - 4900	GCMW-27	22.1	14000 (0)
P,P'-DDE	31 / 354 (8.8%)	357	0.43 - 370	0.077 - 19000	GCMW-27	78.9	17000 (1)
P,P'-DDT	55 / 338 (16.3%)	357	0.48 - 5100	0.12 - 180	GCMW-47	15.7	136000 (0)
Total DDTs	66 / 332 (19.9%)	357	---	0.077 - 23900	GCMW-27	106	NA

TABLE 4-19a
Soil - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value Q (# of Exceedances)
Polychlorinated Biphenyls (ug/kg)							
Aroclor 1242	1 / 352 (.3%)	357	11.0 - 3700	97.0 - 97.0	GCMW-31	30.1	NA
Aroclor 1248	1 / 352 (.3%)	357	6.20 - 3700	69.0 - 69.0	GCMW-42	29.4	NA
Aroclor 1254	3 / 352 (.9%)	357	7.80 - 3700	36.0 - 232	GCMW-01	30.2	NA
Aroclor 1260	1 / 350 (.3%)	357	12.0 - 520	2300 - 2300	GCMW-25	31.3	NA
Total PCBs	6 / 350 (1.7%)	357	---	36.0 - 2300	GCMW-25	7.91	3200 (0)
Metals (mg/kg)							
Aluminum	357 / 357 (100%)	357	---	1750 - 28300	GCMW-42	6810	NA
Antimony	78 / 357 (21.8%)	357	0.063 - 11.0	0.30 - 2860	GCMW-25	9.92	NA
Arsenic	317 / 357 (88.8%)	357	0.24 - 1.40	0.50 - 116	GCMW-37	6.57	16 (24)
Barium	316 / 357 (88.5%)	357	0.042 - 36.6	4.70 - 2290	GCMW-25	65.6	820 (4)
Beryllium	199 / 357 (55.7%)	357	0.0074 - 0.93	0.13 - 1.40	GCMW-23	0.391	47 (0)
Cadmium	148 / 357 (41.5%)	357	0.014 - 0.94	0.015 - 29.6	GCMW-25	0.435	7.5 (4)
Calcium	309 / 357 (86.6%)	357	0.83 - 769	87.1 - 193000	GCMW-15	6500	NA
Chromium	357 / 357 (100%)	357	---	2.50 - 132	GCMW-25	16.3	NA
Cobalt	255 / 357 (71.4%)	357	0.037 - 9.10	0.91 - 25.0	GCMW-11	4.92	NA
Copper	357 / 357 (100%)	357	---	2.30 - 1660	GCMW-25	35.5	1720 (0)
Iron	357 / 357 (100%)	357	---	3790 - 135000	GCMW-25	16500	NA
Lead	348 / 357 (97.5%)	357	0.13 - 6.20	2.20 - 34700	GCMW-25	172	450 (19)
Magnesium	357 / 357 (100%)	357	---	610 - 61300	GCMW-19	4300	NA
Manganese	357 / 357 (100%)	357	---	32.5 - 3830	GCMW-24	198	2000 (1)
Mercury	115 / 357 (32.2%)	357	0.012 - 0.20	0.022 - 45.2	GCMW-39	0.562	0.73 (38)
Nickel	356 / 357 (99.7%)	357	0.10 - 0.10	4.70 - 139	GCMW-03	18.3	130 (1)
Potassium	317 / 357 (88.8%)	357	2.10 - 19.0	238 - 7540	GCMW-23	1250	NA
Selenium	18 / 357 (5.0%)	357	0.099 - 6.90	0.66 - 15.7	GCMW-37	1.58	4 (2)
Silver	27 / 357 (7.6%)	357	0.03 - 2.00	0.061 - 25.3	GCMW-25	0.589	8.3 (3)
Sodium	133 / 357 (37.3%)	357	1.50 - 879	53.8 - 6120	GCMW-42	736	NA
Thallium	17 / 357 (4.8%)	357	0.034 - 4.90	0.47 - 10.4	GCMW-25	1.13	NA
Vanadium	355 / 357 (99.4%)	357	6.20 - 6.30	5.00 - 56.7	GCMW-24	19.1	NA
Zinc	357 / 357 (100%)	357	---	10.0 - 4860	GCMW-25	87.3	2480 (1)
Cyanide, Total	28 / 357 (7.8%)	357	0.023 - 4.90	0.22 - 13.3	GCMW-40	1.20	40 (0)

See notes in Table 4-21

TABLE 4-19b
Compounds Detected / Exceeding Screening Values in Monitoring Well Soil Borings
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	No. of Composite Soil Samples Collected	Approximate Range of Sample Collection Depths (feet below ground surface)	Number of Detections		VOCs	SVOCs	PCBs	Pesticides	Metals and Cyanide
				Number of Detections Above Screening Values						
GC-MW-1	37	8	0-40	Number of detection	53	95	1	4	119	
				Number of detections above screening values	7	1	0	0	3	
GC-MW-2	59	8	2-36	Number of detection	27	42	0	2	115	
				Number of detections above screening values	6	0	0	0	0	
GC-MW-3	14	7	10-40	Number of detection	39	136	0	16	113	
				Number of detections above screening values	9	18	0	0	1	
GC-MW-4	271	6	5-35	Number of detection	23	57	0	4	93	
				Number of detections above screening values	0	1	0	0	0	
GC-MW-5	61	5	5-35	Number of detection	15	53	0	3	86	
				Number of detections above screening values	1	0	0	0	1	
GC-MW-6	216	6	5-35	Number of detection	29	91	0	1	103	
				Number of detections above screening values	2	0	0	0	1	
GC-MW-7	9	3	0-30	Number of detection	13	68	0	7	55	
				Number of detections above screening values	5	5	0	0	0	
GC-MW-8	140	6	5-35	Number of detection	17	24	0	5	104	
				Number of detections above screening values	2	0	0	0	1	
GC-MW-9	28	8	0-40	Number of detection	16	108	0	5	124	
				Number of detections above screening values	4	7	0	0	2	
GC-MW-10	329	9	0-45	Number of detection	16	168	0	7	124	
				Number of detections above screening values	7	16	0	0	3	
GC-MW-11	67	9	5-45	Number of detection	77	171	0	29	142	
				Number of detections above screening values	14	29	0	0	0	
GC-MW-12	205	9	5-45	Number of detection	65	74	0	2	137	
				Number of detections above screening values	10	0	0	0	0	
GC-MW-13	32	9	10-55	Number of detection	7	82	0	1	136	
				Number of detections above screening values	5	0	0	0	1	
GC-MW-14	139	11	5-55	Number of detection	27	103	0	4	170	
				Number of detections above screening values	0	0	0	0	0	
GC-MW-15	32	10	5-55	Number of detection	47	122	0	15	167	
				Number of detections above screening values	0	14	0	0	5	
GC-MW-16	254	9	5-55	Number of detection	42	75	0	5	144	
				Number of detections above screening values	0	2	0	0	1	
GC-MW-17	51	9	2-45	Number of detection	30	107	0	0	134	
				Number of detections above screening values	7	9	0	0	2	
GC-MW-18	33	12	2-58	Number of detection	42	199	0	1	174	
				Number of detections above screening values	11	15	0	0	0	
GC-MW-19	280	13	2-61.5	Number of detection	44	105	0	0	162	
				Number of detections above screening values	6	0	0	0	0	
GC-MW-20	48	5	5-40	Number of detection	33	103	0	18	90	
				Number of detections above screening values	11	19	0	0	3	
GC-MW-21	149	6	5-35	Number of detection	25	60	0	1	98	
				Number of detections above screening values	1	0	0	0	0	
GC-MW-23	73	8	0-39	Number of detection	49	114	0	37	145	
				Number of detections above screening values	17	21	0	0	1	
GC-MW-24	35	8	5-40	Number of detection	47	150	0	13	137	
				Number of detections above screening values	6	11	0	0	4	
GC-MW-25	60	7	5-40	Number of detection	11	84	1	7	130	
				Number of detections above screening values	2	3	0	0	12	
GC-MW-26	210	4	15-35	Number of detection	13	25	0	6	68	
				Number of detections above screening values	0	0	0	0	1	
GC-MW-27	151	6	20-45	Number of detection	38	116	0	24	119	
				Number of detections above screening values	21	37	0	3	16	
GC-MW-28	36	7	0-35	Number of detection	36	109	0	1	122	
				Number of detections above screening values	3	7	0	0	1	
GC-MW-29	152	6	5-35	Number of detection	19	23	0	1	104	
				Number of detections above screening values	2	0	0	0	0	
GC-MW-30	37	8	0-36	Number of detection	49	141	0	3	146	
				Number of detections above screening values	11	4	0	0	2	
GC-MW-31	31	7	0-36	Number of detection	27	88	1	18	122	
				Number of detections above screening values	8	9	0	0	0	
GC-MW-32	605	9	0.5-46	Number of detection	26	164	1	15	164	
				Number of detections above screening values	6	18	0	0	7	
GC-MW-33	236	7	5-40	Number of detection	49	70	0	0	105	
				Number of detections above screening values	6	1	0	0	0	
GC-MW-34	27	6	5-35	Number of detection	21	116	0	18	95	
				Number of detections above screening values	6	20	0	0	0	
GC-MW-35	29	6	5-35	Number of detection	42	108	0	9	102	
				Number of detections above screening values	21	21	0	0	0	
GC-MW-36	33	6	5-35	Number of detection	30	87	0	8	96	
				Number of detections above screening values	1	4	0	0	0	
GC-MW-37	31	8	0-40	Number of detection	43	135	0	6	146	
				Number of detections above screening values	2	4	0	0	4	
GC-MW-38	33	7	5-40	Number of detection	6	96	0	1	112	
				Number of detections above screening values	2	0	0	0	1	

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	No. of Composite Soil Samples Collected	Approximate Range of Sample Collection Depths (feet below ground surface)	Number of Detections					Metals and Cyanide	
				Number of Detection	Number of Detections Above Screening Values	VOCs	SVOCs	PCBs		Pesticides
GC-MW-39	106	8	5-40	Number of detection		47	181	0	22	137
				Number of detections above screening values		13	17	0	0	7
GC-MW-40	191	12	0-58	Number of detection		66	145	1	5	193
				Number of detections above screening values		15	44	0	0	2
GC-MW-41	345	12	0-58	Number of detection		34	125	0	15	208
				Number of detections above screening values		11	28	0	0	0
GC-MW-42	12	5	5-35	Number of detection		27	52	1	6	83
				Number of detections above screening values		0	0	0	0	0
GC-MW-43	58	9	0-40	Number of detection		60	111	0	16	157
				Number of detections above screening values		1	14	0	1	1
GC-MW-44	45	8	5-45	Number of detection		58	105	0	2	136
				Number of detections above screening values		5	3	0	0	5
GC-MW-45	50	7	5-40	Number of detection		45	128	0	11	122
				Number of detections above screening values		17	16	0	0	4
GC-MW-46	52	10	5-55	Number of detection		38	82	0	0	169
				Number of detections above screening values		1	0	0	0	3
GC-MW-47	35	7	10-45	Number of detection		40	145	0	17	102
				Number of detections above screening values		19	25	0	2	1

Notes:

This summary table does not include duplicate or split sample results.
Well GC-MW-22 was not installed.

TABLE 4-20a
Groundwater Shallow - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,1-dichloroethane	2 / 44 (4.5%)	44	0.29 - 55.0	0.29 - 0.38	MW-17	1.48	NA	5 (0)
1,2,3-trichlorobenzene	1 / 44 (2.3%)	44	0.47 - 55.0	0.17 - 0.17	MW-33	1.48	NA	5 (0)
1,2,4-trichlorobenzene	1 / 44 (2.3%)	44	0.50 - 55.0	0.11 - 0.11	MW-33	1.49	70 (0)	5 (0)
1,2-dichlorobenzene	1 / 44 (2.3%)	44	0.26 - 55.0	0.58 - 0.58	MW-27	1.48	600 (0)	3 (0)
1,2-dichloroethane	2 / 44 (4.5%)	44	0.33 - 55.0	16.0 - 220	MW-12	6.54	5 (2)	0.6 (2)
1,3-dichlorobenzene	5 / 44 (11.4%)	44	0.25 - 55.0	0.21 - 29.0	MW-26	2.15	NA	3 (1)
1,4-dichlorobenzene	5 / 44 (11.4%)	44	0.28 - 55.0	0.21 - 15.0	MW-26	1.87	75 (0)	3 (1)
Acetone	5 / 40 (12.5%)	44	2.90 - 130	1.10 - 53.0	MW-16	11.5	NA	NA
Benzene	19 / 44 (43.2%)	44	0.23 - 1.00	0.29 - 7600	MW-12	265	5 (9)	1 (13)
Carbon disulfide	11 / 44 (25.0%)	44	0.50 - 55.0	0.17 - 2.60	MW-24	1.63	NA	60 (0)
Chlorobenzene	3 / 44 (6.8%)	44	0.39 - 55.0	5.50 - 7.00	MW-27	1.90	100 (0)	5 (3)
Chloroform	7 / 44 (15.9%)	44	0.23 - 55.0	0.25 - 9.40	MW-24	1.71	80 (0)	7 (1)
cis-1,2-dichloroethylene	9 / 44 (20.5%)	44	0.22 - 55.0	0.25 - 18.0	MW-26	1.90	70 (0)	5 (1)
Cyclohexane	9 / 44 (20.5%)	44	0.50 - 55.0	1.00 - 42.0	MW-12	2.89	NA	NA
Dichlorodifluoromethane	1 / 44 (2.3%)	44	0.50 - 55.0	0.26 - 0.26	MW-31	1.52	NA	5 (0)
Ethylbenzene	23 / 44 (52.3%)	44	0.27 - 1.00	0.21 - 1600	MW-12	88.5	700 (2)	5 (13)
Isopropylbenzene (cumene)	23 / 44 (52.3%)	44	0.50 - 1.00	0.13 - 110	MW-12	8.04	NA	5 (8)
m, p xylenes	25 / 44 (56.8%)	44	0.25 - 1.00	0.22 - 1600	MW-12	78.8	NA	NA
Methyl acetate	1 / 39 (2.6%)	44	0.50 - 13.0	1.70 - 1.70	MW-33	1.02	NA	NA
Methyl ethyl ketone (2-butanone)	1 / 39 (2.6%)	44	1.60 - 130	2.80 - 2.80	MW-05	8.61	NA	NA
Methylcyclohexane	9 / 44 (20.5%)	44	0.35 - 55.0	0.36 - 22.0	MW-12	2.48	NA	NA
Methylene chloride	5 / 44 (11.4%)	44	0.30 - 55.0	0.39 - 1.50	MW-24	1.53	5 (0)	5 (0)
o-xylene (1,2-dimethylbenzene)	23 / 44 (52.3%)	44	0.25 - 1.00	0.23 - 2600	MW-12	91.0	NA	5 (12)
Styrene	6 / 44 (13.6%)	44	0.50 - 55.0	0.45 - 110	MW-47	5.07	100 (1)	5 (2)
Tert-butyl methyl ether	18 / 44 (40.9%)	44	0.23 - 13.0	0.55 - 77.0	MW-26	5.56	NA	NA
Tetrachloroethylene(PCE)	7 / 44 (15.9%)	44	0.27 - 55.0	0.24 - 1.20	MW-39	1.51	5 (0)	5 (0)
Toluene	18 / 44 (40.9%)	44	0.30 - 55.0	0.21 - 13000	MW-12	324	1000 (1)	5 (6)
trans-1,2-dichloroethene	1 / 44 (2.3%)	44	0.25 - 55.0	0.54 - 0.54	MW-26	1.47	100 (0)	5 (0)
Trichloroethylene (TCE)	4 / 44 (9.1%)	44	0.24 - 55.0	0.17 - 0.29	MW-18	1.46	5 (0)	5 (0)
Trichlorofluoromethane	1 / 44 (2.3%)	44	0.50 - 55.0	3.30 - 3.30	MW-31	1.55	NA	5 (0)

TABLE 4-20a
 Groundwater Shallow - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Volatile Organic Compounds (ug/l)								
Vinyl chloride	1 / 44 (2.3%)	44	0.44 - 55.0	3.60 - 3.60	MW-26	1.56	2 (1)	2 (1)
Semi-Volatile Organic Compounds (ug/l)								
2,4-dimethylphenol	5 / 44 (11.4%)	44	1.70 - 240	22.0 - 490	MW-13	28.5	NA	NA
2,4-dinitrotoluene	3 / 44 (6.8%)	44	0.22 - 240	11.0 - 290	MW-13	18.8	NA	5 (3)
2-methylnaphthalene	31 / 44 (70.5%)	44	0.062 - 1.00	0.035 - 630	MW-11	44.9	NA	NA
2-methylphenol (o-cresol)	4 / 44 (9.1%)	44	1.10 - 240	9.20 - 50.0	MW-41	10.7	NA	NA
4-chloroaniline	1 / 44 (2.3%)	44	0.25 - 240	250 - 250	MW-13	16.4	NA	5 (1)
4-methylphenol (p-cresol)	6 / 37 (16.2%)	37	5.00 - 240	1.60 - 81.0	MW-41	13.3	NA	NA
Acenaphthene	38 / 44 (86.4%)	44	0.10 - 0.40	0.09 - 550	MW-30	37.4	NA	NA
Acenaphthylene	20 / 44 (45.5%)	44	0.10 - 9.60	0.045 - 110	MW-47	5.33	NA	NA
Acetophenone	2 / 44 (4.5%)	44	0.40 - 240	10.0 - 56.0	MW-12	12.7	NA	NA
Anthracene	25 / 44 (56.8%)	44	0.10 - 1.00	0.057 - 29.0	MW-45	4.02	NA	NA
Benzaldehyde	5 / 44 (11.4%)	44	0.40 - 240	4.00 - 460	MW-12	21.5	NA	NA
Benzo(a)anthracene	16 / 44 (36.4%)	44	0.10 - 9.60	0.19 - 4.50	MW-47	0.554	NA	NA
Benzo(a)pyrene	6 / 44 (13.6%)	44	0.095 - 9.60	0.19 - 2.10	MW-47	0.39	0.2 (5)	NA
Benzo(b)fluoranthene	12 / 44 (27.3%)	44	0.10 - 9.60	0.11 - 2.30	MW-47	0.424	NA	NA
Benzo(g,h,i)perylene	14 / 44 (31.8%)	44	0.10 - 9.60	0.095 - 1.60	MW-25	0.485	NA	NA
Benzo(k)fluoranthene	6 / 44 (13.6%)	44	0.10 - 9.60	0.066 - 0.61	MW-47	0.343	NA	NA
Benzyl butyl phthalate	1 / 44 (2.3%)	44	0.25 - 240	1.90 - 1.90	MW-23	11.8	NA	NA
Biphenyl (diphenyl)	17 / 44 (38.6%)	44	0.42 - 50.0	0.012 - 64.0	MW-13	7.80	NA	5 (8)
Bis(2-chloroisopropyl) ether	1 / 37 (2.7%)	37	5.00 - 240	3.00 - 3.00	MW-16	14.1	NA	5 (0)
Bis(2-ethylhexyl) phthalate	18 / 44 (40.9%)	44	0.33 - 240	1.00 - 5.80	MW-36	11.8	6 (0)	5 (2)
Caprolactam	1 / 44 (2.3%)	44	0.20 - 240	1.80 - 1.80	MW-14	11.8	NA	NA
Carbazole	8 / 44 (18.2%)	44	0.17 - 240	0.58 - 82.0	MW-13	10.2	NA	NA
Chrysene	16 / 44 (36.4%)	44	0.10 - 9.60	0.14 - 3.00	MW-47	0.46	NA	NA
Dibenz(a,h)anthracene	3 / 44 (6.8%)	44	0.10 - 9.60	0.043 - 0.12	MW-42	0.329	NA	NA
Dibenz(a,h)anthracene	3 / 44 (6.8%)	44	0.10 - 9.60	0.043 - 0.12	MW-21	0.329	NA	NA
Dibenzofuran	14 / 44 (31.8%)	44	0.30 - 240	0.45 - 90.0	MW-41	11.3	NA	NA
Dimethyl phthalate	7 / 44 (15.9%)	44	0.23 - 240	1.00 - 1.80	MW-42	11.7	NA	NA
Di-n-butyl phthalate	1 / 44 (2.3%)	44	0.19 - 240	0.34 - 0.34	MW-37	11.8	NA	50 (0)

TABLE 4-20a
 Groundwater Shallow - Statistical Summary
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Fluoranthene	34 / 44 (77.3%)	44	0.10 - 0.19	0.06 - 23.0	MW-41	2.82	NA	NA
Fluorene	36 / 44 (81.8%)	44	0.10 - 0.29	0.092 - 80.0	MW-45	12.8	NA	NA
Indeno(1,2,3-c,d)pyrene	15 / 44 (34.1%)	44	0.10 - 9.60	0.10 - 0.68	MW-45	0.42	NA	NA
Naphthalene	37 / 44 (84.1%)	44	0.10 - 1.00	0.10 - 3500	MW-11	208	NA	NA
Pentachlorophenol	3 / 39 (7.7%)	39	0.20 - 5.00	0.11 - 0.19	MW-05	0.398	1 (0)	NA
Phenanthrene	32 / 44 (72.7%)	44	0.10 - 1.00	0.12 - 150	MW-41	18.4	NA	NA
Phenol	2 / 44 (4.5%)	44	0.58 - 240	25.0 - 33.0	MW-41	11.5	NA	NA
Pyrene	32 / 44 (72.7%)	44	0.10 - 1.00	0.025 - 26.0	MW-47	3.43	NA	NA
Total PAHs	41 / 44 (93.2%)	44	---	0.18 - 4480	MW-11	337	NA	NA
Pesticides (ug/l)								
Alpha endosulfan	1 / 30 (3.3%)	44	0.0023 - 0.05	0.15 - 0.15	MW-18	0.0243	NA	NA
Metals (ug/l)								
Aluminum Dissolved	1 / 37 (2.7%)	37	5.40 - 3000	204 - 204	MW-41	265	NA	NA
Aluminum	19 / 41 (46.3%)	44	7.80 - 3000	204 - 10400	MW-09	1000	NA	NA
Antimony Dissolved	2 / 37 (5.4%)	37	0.62 - 20.0	2.30 - 3.00	MW-12	2.47	6 (0)	3 (0)
Antimony	2 / 44 (4.5%)	44	0.63 - 20.0	2.10 - 2.70	MW-24	2.09	6 (0)	3 (0)
Arsenic Dissolved	33 / 35 (94.3%)	37	0.019 - 0.019	1.20 - 28.9	MW-12	7.43	10 (8)	25 (3)
Arsenic	39 / 42 (92.9%)	44	0.019 - 1.40	1.30 - 40.0	MW-24	9.13	10 (12)	25 (4)
Barium Dissolved	36 / 36 (100%)	37	---	19.6 - 764	MW-29	263	2000 (0)	1000 (0)
Barium	38 / 43 (88.4%)	44	0.44 - 0.44	7.50 - 806	MW-29	251	2000 (0)	1000 (0)
Beryllium	2 / 44 (4.5%)	44	0.097 - 10.0	0.48 - 0.65	MW-24	0.928	4 (0)	NA
Cadmium	2 / 44 (4.5%)	44	0.013 - 10.0	0.26 - 0.30	MW-24	0.923	5 (0)	5 (0)
Calcium Dissolved	37 / 37 (100%)	37	---	36600 - 471000	MW-25	170000	NA	NA
Calcium	44 / 44 (100%)	44	---	35700 - 447000	MW-25	168000	NA	NA
Chromium Dissolved	32 / 37 (86.5%)	37	2.70 - 4.20	0.42 - 72.4	MW-27	5.70	100 (0)	50 (1)
Chromium	33 / 44 (75.0%)	44	0.56 - 8.90	0.56 - 834	MW-24	36.6	100 (2)	50 (4)
Cobalt Dissolved	26 / 37 (70.3%)	37	0.0055 - 10.0	0.23 - 11.9	MW-29	2.19	NA	NA
Cobalt	28 / 44 (63.6%)	44	0.0055 - 10.0	0.24 - 40.8	MW-24	2.68	NA	NA
Copper Dissolved	1 / 37 (2.7%)	37	1.50 - 375	5.00 - 5.00	MW-39	32.4	1300 (0)	NA

TABLE 4-20a
Groundwater Shallow - Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Metals (ug/l)								
Copper	21 / 44 (47.7%)	44	2.50 - 375	2.50 - 308	MW-12	53.3	1300 (0)	NA
Iron Dissolved	36 / 40 (90.0%)	40	100 - 1500	72.9 - 47000	MW-44	7740	NA	NA
Iron	40 / 44 (90.9%)	44	1500 - 4810	482 - 47700	MW-44	10400	NA	NA
Lead Dissolved	7 / 37 (18.9%)	37	0.12 - 10.0	0.22 - 4.60	MW-39	1.39	15 (0)	25 (0)
Lead	36 / 44 (81.8%)	44	0.66 - 10.0	0.53 - 293	MW-09	17.2	15 (9)	25 (5)
Magnesium Dissolved	37 / 37 (100%)	37	---	2740 - 927000	MW-27	173000	NA	NA
Magnesium	44 / 44 (100%)	44	---	2720 - 886000	MW-27	159000	NA	NA
Manganese Dissolved	38 / 38 (100%)	40	---	111 - 4140	MW-12	1130	NA	NA
Manganese	42 / 42 (100%)	44	---	108 - 3880	MW-12	1110	NA	NA
Mercury Dissolved	18 / 37 (48.6%)	37	0.10 - 0.20	0.05 - 0.13	MW-36	0.085	2 (0)	0.7 (0)
Mercury	29 / 44 (65.9%)	44	0.082 - 0.20	0.052 - 1.60	MW-09	0.136	2 (0)	0.7 (1)
Nickel Dissolved	31 / 35 (88.6%)	37	0.0082 - 0.0082	0.78 - 84.9	MW-47	12.8	NA	100 (0)
Nickel	34 / 42 (81.0%)	44	0.0082 - 0.51	0.74 - 441	MW-24	28.6	NA	100 (3)
Potassium Dissolved	37 / 37 (100%)	37	---	5180 - 310000	MW-27	75100	NA	NA
Potassium	44 / 44 (100%)	44	---	5190 - 304000	MW-27	70500	NA	NA
Selenium Dissolved	11 / 23 (47.8%)	37	1.30 - 50.0	0.97 - 30.2	MW-42	4.31	50 (0)	10 (1)
Selenium	11 / 30 (36.7%)	44	1.30 - 10.0	1.00 - 51.2	MW-03	3.75	50 (1)	10 (1)
Silver Dissolved	1 / 37 (2.7%)	37	0.059 - 10.0	1.60 - 1.60	MW-42	1.08	NA	50 (0)
Silver	3 / 44 (6.8%)	44	0.063 - 10.0	0.22 - 1.70	MW-24	0.968	NA	50 (0)
Sodium Dissolved	37 / 37 (100%)	37	---	7600 - 7130000	MW-03	1320000	NA	20000 (35)
Sodium	44 / 44 (100%)	44	---	7690 - 7080000	MW-27	1200000	NA	20000 (42)
Vanadium Dissolved	9 / 37 (24.3%)	37	0.30 - 50.0	1.20 - 25.5	MW-20	6.57	NA	NA
Vanadium	23 / 44 (52.3%)	44	0.30 - 50.0	1.10 - 68.9	MW-24	7.41	NA	NA
Zinc Dissolved	26 / 36 (72.2%)	37	0.018 - 20.0	1.20 - 77.4	MW-28	10.4	NA	NA
Zinc	35 / 42 (83.3%)	44	0.018 - 20.0	1.80 - 274	MW-09	27.0	NA	NA
Cyanide, Total	16 / 43 (37.2%)	43	2.00 - 10.0	4.80 - 148	MW-23	11.5	200 (0)	200 (0)
General Chemistry (mg/l)								
Total suspended solids	11 / 11 (100%)	11	---	16.0 - 496	MW-09	100	NA	NA

See notes in Table 4-21

TABLE 4-20b
Groundwater Intermediate- Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Volatile Organic Compounds (ug/l)								
1,1,2-trichloroethane	1 / 46 (2.2%)	46	0.23 - 160	0.11 - 0.11	MW-13	4.94	5 (0)	1 (0)
1,1-dichloroethane	2 / 46 (4.3%)	46	0.29 - 160	0.26 - 0.29	MW-26	4.96	NA	5 (0)
1,1-dichloroethene	2 / 46 (4.3%)	46	0.40 - 160	0.97 - 2.70	MW-18	5.05	7 (0)	5 (0)
1,2,3-trichlorobenzene	1 / 46 (2.2%)	46	0.47 - 160	6.30 - 6.30	MW-25	5.12	NA	5 (1)
1,2,4-trichlorobenzene	2 / 46 (4.3%)	46	0.50 - 160	1.70 - 52.0	MW-25	6.16	70 (0)	5 (1)
1,2-dichlorobenzene	1 / 46 (2.2%)	46	0.26 - 160	1.50 - 1.50	MW-25	4.98	600 (0)	3 (0)
1,2-dichloroethane	3 / 46 (6.5%)	46	0.33 - 160	1.10 - 430	MW-33	14.8	5 (2)	0.6 (3)
1,2-dichloropropane	1 / 46 (2.2%)	46	0.27 - 160	0.60 - 0.60	MW-24	4.96	5 (0)	1 (0)
1,3-dichlorobenzene	3 / 46 (6.5%)	46	0.25 - 160	0.17 - 0.95	MW-26	4.97	NA	3 (0)
1,4-dichlorobenzene	3 / 46 (6.5%)	46	0.28 - 160	0.17 - 1.40	MW-25	4.99	75 (0)	3 (0)
2-hexanone	1 / 46 (2.2%)	46	1.40 - 820	40.0 - 40.0	MW-33	28.0	NA	NA
Acetone	5 / 40 (12.5%)	46	2.90 - 130	1.10 - 465	MW-01	21.7	NA	NA
Benzene	25 / 46 (54.3%)	46	0.23 - 160	0.28 - 5200	MW-30	265	5 (18)	1 (20)
Carbon disulfide	10 / 46 (21.7%)	46	0.50 - 160	0.15 - 1.40	MW-08	5.10	NA	60 (0)
Chloroform	14 / 46 (30.4%)	46	0.23 - 160	0.31 - 3.80	MW-40	5.37	80 (0)	7 (0)
Chloromethane	1 / 46 (2.2%)	46	0.29 - 160	1.20 - 1.20	MW-27	4.98	NA	5 (0)
cis-1,2-dichloroethylene	24 / 46 (52.2%)	46	0.22 - 160	0.24 - 500	MW-46	42.2	70 (5)	5 (12)
Cyclohexane	2 / 46 (4.3%)	46	0.50 - 160	8.30 - 110	MW-33	7.65	NA	NA
Ethylbenzene	31 / 46 (67.4%)	46	0.27 - 1.00	0.42 - 6300	MW-32	354	700 (6)	5 (20)
Isopropylbenzene (cumene)	26 / 46 (56.5%)	46	0.50 - 13.0	0.20 - 3000	MW-33	78.3	NA	5 (11)
m, p xylenes	30 / 46 (65.2%)	46	0.25 - 1.00	0.42 - 3900	MW-32	248	NA	NA
Methyl acetate	1 / 40 (2.5%)	46	0.50 - 15.0	3.60 - 3.60	MW-20	1.24	NA	NA
Methyl isobutyl ketone	1 / 46 (2.2%)	46	0.86 - 820	21.0 - 21.0	MW-33	27.5	NA	NA
Methylcyclohexane	6 / 46 (13.0%)	46	0.35 - 160	0.14 - 86.0	MW-33	7.21	NA	NA
Methylene chloride	3 / 46 (6.5%)	46	0.30 - 160	0.34 - 0.38	MW-08	4.97	5 (0)	5 (0)
o-xylene (1,2-dimethylbenzene)	29 / 46 (63.0%)	46	0.25 - 1.00	0.32 - 2000	MW-32	118	NA	5 (19)
Styrene	8 / 46 (17.4%)	46	0.50 - 160	0.79 - 180	MW-11	9.55	100 (1)	5 (3)
Tert-butyl methyl ether	20 / 46 (43.5%)	46	0.23 - 44.0	0.28 - 330	MW-33	17.4	NA	NA
Tetrachloroethylene(PCE)	8 / 46 (17.4%)	46	0.27 - 160	0.26 - 5.50	MW-28	5.21	5 (1)	5 (1)
Toluene	23 / 46 (50.0%)	46	0.30 - 140	0.47 - 880	MW-23	69.3	1000 (0)	5 (16)

TABLE 4-20b
Groundwater Intermediate- Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Volatile Organic Compounds (ug/l)								
trans-1,2-dichloroethene	7 / 46 (15.2%)	46	0.25 - 160	0.22 - 160	MW-46	9.14	100 (1)	5 (2)
Trichloroethylene (TCE)	11 / 46 (23.9%)	46	0.24 - 160	0.27 - 207	MW-18	13.1	5 (6)	5 (6)
Trichlorofluoromethane	3 / 46 (6.5%)	46	0.50 - 160	0.50 - 8.70	MW-31	4.82	NA	5 (1)
Vinyl chloride	8 / 46 (17.4%)	46	0.44 - 160	1.20 - 60.0	MW-33	7.21	2 (6)	2 (6)
Semi-Volatile Organic Compounds (ug/l)								
1,2,4,5-tetrachlorobenzene	1 / 46 (2.2%)	46	0.48 - 2100	0.64 - 0.64	MW-25	52.2	NA	NA
2,4-dimethylphenol	1 / 46 (2.2%)	46	1.70 - 2100	63.0 - 63.0	MW-40	53.4	NA	NA
2,4-dinitrotoluene	1 / 46 (2.2%)	46	0.22 - 2100	100 - 100	MW-47	54.3	NA	5 (1)
2-methylnaphthalene	34 / 46 (73.9%)	46	0.10 - 0.67	0.066 - 1400	MW-32	227	NA	NA
2-methylphenol (o-cresol)	1 / 46 (2.2%)	46	1.10 - 2100	67.0 - 67.0	MW-40	53.4	NA	NA
4-methylphenol (p-cresol)	2 / 39 (5.1%)	39	5.00 - 2100	2.70 - 120	MW-40	64.3	NA	NA
Acenaphthene	37 / 46 (80.4%)	46	0.10 - 0.37	0.11 - 400	MW-07	77.8	NA	NA
Acenaphthylene	28 / 46 (60.9%)	46	0.10 - 13.0	0.011 - 170	MW-47	16.7	NA	NA
Acenaphthylene	28 / 46 (60.9%)	46	0.10 - 13.0	0.011 - 170	MW-32	16.7	NA	NA
Acetophenone	1 / 46 (2.2%)	46	0.40 - 2100	4.00 - 4.00	MW-47	52.2	NA	NA
Anthracene	30 / 46 (65.2%)	46	0.10 - 29.0	0.14 - 88.0	MW-07	7.95	NA	NA
Benzaldehyde	3 / 46 (6.5%)	46	0.40 - 2100	3.90 - 150	MW-45	56.8	NA	NA
Benzo(a)anthracene	15 / 46 (32.6%)	46	0.10 - 29.0	0.088 - 27.0	MW-07	1.48	NA	NA
Benzo(a)pyrene	8 / 46 (17.4%)	46	0.095 - 29.0	0.18 - 11.0	MW-07	0.989	0.2 (6)	NA
Benzo(b)fluoranthene	17 / 46 (37.0%)	46	0.10 - 29.0	0.12 - 13.0	MW-07	1.05	NA	NA
Benzo(g,h,i)perylene	13 / 46 (28.3%)	46	0.10 - 29.0	0.068 - 4.10	MW-07	0.856	NA	NA
Benzo(k)fluoranthene	9 / 46 (19.6%)	46	0.10 - 29.0	0.041 - 3.10	MW-07	0.779	NA	NA
Biphenyl (diphenyl)	23 / 46 (50.0%)	46	0.42 - 5.00	0.21 - 80.0	MW-31	17.4	NA	5 (19)
Bis(2-ethylhexyl) phthalate	19 / 46 (41.3%)	46	0.33 - 2100	0.99 - 77.0	MW-04	53.6	6 (2)	5 (2)
Caprolactam	3 / 46 (6.5%)	46	0.20 - 2100	0.98 - 14.7	MW-01	52.4	NA	NA
Carbazole	17 / 46 (37.0%)	46	0.17 - 2100	0.72 - 28.0	MW-33	51.6	NA	NA
Chrysene	16 / 46 (34.8%)	46	0.10 - 29.0	0.059 - 14.0	MW-07	1.14	NA	NA
Dibenz(a,h)anthracene	5 / 46 (10.9%)	46	0.10 - 29.0	0.099 - 0.16	MW-28	0.733	NA	NA
Dibenzofuran	19 / 46 (41.3%)	46	0.30 - 2100	1.00 - 110	MW-36	52.3	NA	NA
Diethyl phthalate	1 / 46 (2.2%)	46	0.17 - 2100	0.44 - 0.44	MW-25	52.1	NA	NA

TABLE 4-20b
Groundwater Intermediate- Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Semi-Volatile Organic Compounds (ug/l)								
Dimethyl phthalate	12 / 46 (26.1%)	46	0.23 - 2100	0.93 - 2.10	MW-38	51.9	NA	NA
Di-n-butyl phthalate	5 / 46 (10.9%)	46	0.19 - 2100	0.27 - 1.00	MW-10	52.0	NA	50 (0)
Fluoranthene	32 / 46 (69.6%)	46	0.10 - 29.0	0.10 - 72.0	MW-07	4.63	NA	NA
Fluorene	32 / 46 (69.6%)	46	0.10 - 1.00	0.15 - 150	MW-07	21.6	NA	NA
Hexachloroethane	1 / 46 (2.2%)	46	0.21 - 2100	33.0 - 33.0	MW-39	51.8	NA	5 (1)
Indeno(1,2,3-c,d)pyrene	15 / 46 (32.6%)	46	0.10 - 29.0	0.12 - 7.40	MW-07	0.915	NA	NA
Naphthalene	40 / 46 (87.0%)	46	0.10 - 1.40	0.049 - 49000	MW-11	2190	NA	NA
Pentachlorophenol	1 / 40 (2.5%)	40	0.20 - 10.0	0.16 - 0.16	MW-29	0.425	1 (0)	NA
Phenanthrene	38 / 46 (82.6%)	46	0.10 - 0.21	0.10 - 330	MW-07	36.1	NA	NA
Phenol	3 / 46 (6.5%)	46	0.58 - 2100	4.60 - 74.0	MW-40	53.7	NA	NA
Pyrene	35 / 46 (76.1%)	46	0.10 - 29.0	0.12 - 120	MW-07	6.46	NA	NA
Total PAHs	45 / 46 (97.8%)	46	---	0.12 - 50200	MW-11	2590	NA	NA
Pesticides (ug/l)								
Alpha endosulfan	1 / 30 (3.3%)	46	0.0023 - 0.056	0.11 - 0.11	MW-31	0.0224	NA	NA
Beta BHC	1 / 46 (2.2%)	46	0.0037 - 0.056	0.084 - 0.084	MW-31	0.0229	NA	0.04 (1)
Metals (ug/l)								
Aluminum Dissolved	1 / 39 (2.6%)	39	4.10 - 2000	838 - 838	MW-04	127	NA	NA
Aluminum	14 / 45 (31.1%)	46	11.1 - 3000	104 - 9610	MW-01	884	NA	NA
Arsenic Dissolved	33 / 37 (89.2%)	39	0.019 - 0.76	0.28 - 112	MW-21	9.98	10 (8)	25 (3)
Arsenic	39 / 44 (88.6%)	46	0.019 - 1.40	0.25 - 107	MW-21	11.5	10 (13)	25 (3)
Barium Dissolved	38 / 38 (100%)	39	---	5.30 - 2850	MW-39	441	2000 (1)	1000 (3)
Barium	42 / 45 (93.3%)	46	0.44 - 0.44	45.1 - 2900	MW-39	402	2000 (1)	1000 (4)
Beryllium	1 / 46 (2.2%)	46	0.098 - 10.0	2.10 - 2.10	MW-01	0.634	4 (0)	NA
Calcium Dissolved	39 / 39 (100%)	39	---	6230 - 177000	MW-13	84100	NA	NA
Calcium	46 / 46 (100%)	46	---	6610 - 171000	MW-13	82600	NA	NA
Chromium Dissolved	25 / 37 (67.6%)	39	2.00 - 20.0	0.38 - 7.10	MW-07	1.82	100 (0)	50 (0)
Chromium	34 / 44 (77.3%)	46	0.59 - 20.0	0.47 - 41.4	MW-20	5.67	100 (0)	50 (0)
Cobalt Dissolved	24 / 39 (61.5%)	39	0.0055 - 10.0	0.23 - 7.40	MW-39	1.27	NA	NA
Cobalt	28 / 46 (60.9%)	46	0.075 - 10.0	0.21 - 11.4	MW-20	1.33	NA	NA

TABLE 4-20b
Groundwater Intermediate- Statistical Summary
Gowanus Canal Remedial Investigation
Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)	Screening Value N1 (# of Exceedances)	Screening Value O1 (# of Exceedances)
Metals (ug/l)								
Copper Dissolved	1 / 39 (2.6%)	39	1.60 - 250	7.10 - 7.10	MW-41	13.8	1300 (0)	NA
Copper	14 / 46 (30.4%)	46	1.80 - 375	3.90 - 54.8	MW-01	22.9	1300 (0)	NA
Iron Dissolved	36 / 41 (87.8%)	42	18.0 - 100	38.9 - 41100	MW-06	5620	NA	NA
Iron	43 / 45 (95.6%)	46	100 - 100	307 - 42300	MW-06	7660	NA	NA
Lead Dissolved	2 / 38 (5.3%)	39	0.17 - 10.0	0.59 - 2.40	MW-39	0.74	15 (0)	25 (0)
Lead	33 / 44 (75.0%)	46	0.22 - 10.0	0.19 - 277	MW-09	11.4	15 (4)	25 (3)
Magnesium Dissolved	39 / 39 (100%)	39	---	6990 - 538000	MW-39	90800	NA	NA
Magnesium	46 / 46 (100%)	46	---	7360 - 490000	MW-39	85400	NA	NA
Manganese Dissolved	41 / 41 (100%)	42	---	4.20 - 8440	MW-13	1520	NA	NA
Manganese	45 / 45 (100%)	46	---	44.3 - 8860	MW-13	1540	NA	NA
Mercury Dissolved	17 / 39 (43.6%)	39	0.082 - 0.20	0.048 - 0.15	MW-36	0.0837	2 (0)	0.7 (0)
Mercury	27 / 46 (58.7%)	46	0.082 - 0.20	0.059 - 0.61	MW-01	0.0932	2 (0)	0.7 (0)
Nickel Dissolved	34 / 37 (91.9%)	39	0.0082 - 10.0	0.58 - 193	MW-07	8.39	NA	100 (1)
Nickel	37 / 41 (90.2%)	46	0.0082 - 0.51	0.69 - 194	MW-07	9.93	NA	100 (1)
Potassium Dissolved	39 / 39 (100%)	39	---	7280 - 210000	MW-39	38200	NA	NA
Potassium	44 / 46 (95.7%)	46	75000 - 75000	7260 - 197000	MW-39	38300	NA	NA
Selenium Dissolved	9 / 24 (37.5%)	39	1.40 - 6.00	1.20 - 3.80	MW-03	2.18	50 (0)	10 (0)
Selenium	8 / 31 (25.8%)	46	1.80 - 5.00	0.93 - 6.50	MW-23	1.96	50 (0)	10 (0)
Silver	1 / 46 (2.2%)	46	0.063 - 10.0	0.16 - 0.16	MW-20	0.611	NA	50 (0)
Sodium Dissolved	39 / 39 (100%)	39	---	80800 - 4140000	MW-39	682000	NA	20000 (39)
Sodium	46 / 46 (100%)	46	---	55400 - 3760000	MW-39	670000	NA	20000 (46)
Vanadium Dissolved	4 / 39 (10.3%)	39	0.30 - 50.0	1.50 - 6.10	MW-25	3.45	NA	NA
Vanadium	5 / 46 (10.9%)	46	0.30 - 50.0	2.10 - 5.80	MW-25	3.08	NA	NA
Zinc Dissolved	22 / 36 (61.1%)	39	0.018 - 20.0	1.20 - 32.0	MW-07	4.45	NA	NA
Zinc	31 / 42 (73.8%)	46	0.018 - 20.0	1.80 - 109	MW-09	15.4	NA	NA
Cyanide, Total	15 / 46 (32.6%)	46	2.00 - 10.0	7.40 - 52.4	MW-42	9.07	200 (0)	200 (0)
General Chemistry (mg/l)								
Total suspended solids	11 / 11 (100%)	11	---	3.00 - 406	MW-09	97.6	NA	NA

See notes in Table 4-21

TABLE 4-20c

Compounds Detected / Exceeding Screening Values in Shallow Groundwater

Gowanus Canal Remedial Investigation

Brooklyn, New York

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	Depth of Groundwater Sample (feet below ground surface)	Number of Detections					Total Metals and Cyanide	Dissolved Metals	
			Number of Detections	Number of Detections Above Screening Values	VOCs	SVOCs	PCBs			Pesticides
GC-MW-1S	37	12	Number of detection		7	7	0	0	10	NA
			Number of detections above screening values	1	0	0	0	0	4	NA
GC-MW-2S	59	7.75	Number of detection		0	0	0	0	9	2
			Number of detections above screening values	0	0	0	0	0	3	2
GC-MW-3S	14	10	Number of detection		5	17	0	0	10	9
			Number of detections above screening values	0	1	0	0	0	3	1
GC-MW-4S	271	8.3	Number of detection		1	1	0	0	18	16
			Number of detections above screening values	0	0	0	0	0	3	3
GC-MW-5S	61	11.9	Number of detection		12	11	0	0	13	12
			Number of detections above screening values	0	0	0	0	0	2	2
GC-MW-6S	216	11.7	Number of detection		6	12	0	0	15	12
			Number of detections above screening values	0	0	0	0	0	2	2
GC-MW-7S	9	12.2	Number of detection		7	16	0	0	11	10
			Number of detections above screening values	3	0	0	0	0	3	3
GC-MW-8S	140	11.5	Number of detection		3	10	0	0	15	13
			Number of detections above screening values	0	0	0	0	0	3	3
GC-MW-9S	28	11.75	Number of detection		1	10	0	0	14	1
			Number of detections above screening values	0	0	0	0	0	6	1
GC-MW-10S	329	10	Number of detection		0	0	0	0	7	NA
			Number of detections above screening values	0	0	0	0	0	4	NA
GC-MW-11S	67	13.5	Number of detection		9	15	0	0	17	13
			Number of detections above screening values	7	2	0	0	0	3	3
GC-MW-12S	205	13.1	Number of detection		9	12	0	0	18	15
			Number of detections above screening values	6	1	0	0	0	5	4
GC-MW-13S	32	11.4	Number of detection		6	16	0	0	17	13
			Number of detections above screening values	5	4	0	0	0	3	3
GC-MW-14S	139	12.5	Number of detection		6	8	0	0	11	10
			Number of detections above screening values	0	0	0	0	0	3	3
GC-MW-15S	32	12.5	Number of detection		0	2	0	0	19	13
			Number of detections above screening values	0	0	0	0	0	5	2
GC-MW-16S	254	12.3	Number of detection		7	15	0	0	17	13
			Number of detections above screening values	1	0	0	0	0	3	3
GC-MW-17S	51	11.2	Number of detection		2	0	0	0	9	NA
			Number of detections above screening values	0	0	0	0	0	3	NA
GC-MW-18S	33	10.15	Number of detection		9	13	0	1	11	2
			Number of detections above screening values	3	0	0	0	0	3	1
GC-MW-19S	280	10	Number of detection		3	5	0	0	9	NA
			Number of detections above screening values	0	0	0	0	0	3	NA
GC-MW-20S	48	11.9	Number of detection		6	13	0	0	16	14
			Number of detections above screening values	0	0	0	0	0	3	2
GC-MW-21S	149	12	Number of detection		0	8	0	0	14	15
			Number of detections above screening values	0	0	0	0	0	3	3
GC-MW-23S	73	3-13	Number of detection		6	20	0	0	14	9
			Number of detections above screening values	0	2	0	0	0	4	3
GC-MW-24S	35	15.1	Number of detection		10	10	0	0	21	13
			Number of detections above screening values	4	0	0	0	0	7	3
GC-MW-25S	60	25.8	Number of detection		2	3	0	0	11	11
			Number of detections above screening values	0	1	0	0	0	3	4
GC-MW-26S	210	26	Number of detection		10	8	0	0	15	13
			Number of detections above screening values	5	0	0	0	0	4	4
GC-MW-27S	151	24.5	Number of detection		10	16	0	0	13	11
			Number of detections above screening values	1	1	0	0	0	4	4

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	Depth of Groundwater Sample (feet below ground surface)	Number of Detections				VOCs	SVOCs	PCBs	Pesticides	Total Metals and Cyanide	Dissolved Metals
			Number of Detections Above Screening Values									
GC-MW-28S	36	12.2	Number of detection				0	8	0	0	19	14
			Number of detections above screening values				0	0	0	0	4	3
GC-MW-29S	152	12.3	Number of detection				7	11	0	0	19	14
			Number of detections above screening values				0	0	0	0	6	3
GC-MW-30S	37	7-16	Number of detection				6	10	0	0	14	7
			Number of detections above screening values				4	1	0	0	3	2
GC-MW-31S	31	6.75-14.6	Number of detection				4	7	0	0	11	9
			Number of detections above screening values				0	0	0	0	3	3
GC-MW-32S	605	12-19	Number of detection				0	18	0	0	9	7
			Number of detections above screening values				0	0	0	0	2	2
GC-MW-33S	236	12.2	Number of detection				14	7	0	0	16	13
			Number of detections above screening values				3	1	0	0	4	4
GC-MW-34S	27	11.78	Number of detection				8	9	0	0	15	12
			Number of detections above screening values				0	1	0	0	3	3
GC-MW-35S	29	12.3	Number of detection				8	19	0	0	17	13
			Number of detections above screening values				2	1	0	0	3	3
GC-MW-36S	33	11.3	Number of detection				9	14	0	0	16	13
			Number of detections above screening values				0	1	0	0	3	3
GC-MW-37S	31	22.8	Number of detection				3	11	0	0	17	14
			Number of detections above screening values				0	0	0	0	3	3
GC-MW-38S	33	15.6	Number of detection				2	11	0	0	17	14
			Number of detections above screening values				0	1	0	0	3	3
GC-MW-39S	106	19	Number of detection				11	9	0	0	18	15
			Number of detections above screening values				5	0	0	0	4	3
GC-MW-41S	345	8-13	Number of detection				10	16	0	0	11	10
			Number of detections above screening values				5	3	0	0	3	3
GC-MW-42S	12	10.6	Number of detection				2	7	0	0	10	10
			Number of detections above screening values				0	0	0	0	1	2
GC-MW-43S	58	11.6	Number of detection				13	17	0	0	18	13
			Number of detections above screening values				3	0	0	0	3	3
GC-MW-44S	45	12	Number of detection				2	11	0	0	17	13
			Number of detections above screening values				0	0	0	0	4	4
GC-MW-45S	50	12.6	Number of detection				2	18	0	0	15	13
			Number of detections above screening values				0	3	0	0	2	2
GC-MW-47S	35	27	Number of detection				7	17	0	0	15	11
			Number of detections above screening values				6	2	0	0	4	3

Notes:

NA - Not Analyzed

This summary table does not include duplicate or split sample results.

Well GC-MW-22S was not installed.

TABLE 4-20d
Compounds Detected / Exceeding Screening Values in Intermediate Groundwater
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	Depth of Groundwater Sample (feet below ground surface)	Number of Detections				VOCs	SVOCs	PCBs	Pesticides	Total Metals	Dissolved Metals
			Number of Detections Above Screening Values									
GC-MW-1I	37	37.3	Number of detection	13	9	0	0	15	NA			
			Number of detections above screening values	3	0	0	0	5	NA			
GC-MW-2I	59	31.3	Number of detection	2	2	0	0	12	1			
			Number of detections above screening values	1	0	0	0	3	1			
GC-MW-3I	14	39.7	Number of detection	7	16	0	0	13	10			
			Number of detections above screening values	1	0	0	0	3	2			
GC-MW-4I	271	36.8	Number of detection	3	10	0	0	8	11			
			Number of detections above screening values	2	1	0	0	2	2			
GC-MW-5I	61	32	Number of detection	4	11	0	0	9	9			
			Number of detections above screening values	0	0	0	0	3	3			
GC-MW-6I	216	33.2	Number of detection	1	11	0	0	11	8			
			Number of detections above screening values	0	0	0	0	4	5			
GC-MW-7I	9	29.8	Number of detection	6	16	0	0	16	14			
			Number of detections above screening values	5	2	0	0	5	4			
GC-MW-8I	140	37.2	Number of detection	7	4	0	0	15	13			
			Number of detections above screening values	0	0	0	0	3	3			
GC-MW-9I	28	36.42	Number of detection	6	12	0	0	14	1			
			Number of detections above screening values	5	2	0	0	5	1			
GC-MW-10I	329	43	Number of detection	2	17	0	0	10	NA			
			Number of detections above screening values	0	1	0	0	4	NA			
GC-MW-11I	67	42.4	Number of detection	8	12	0	0	14	12			
			Number of detections above screening values	7	1	0	0	5	5			
GC-MW-12I	205	42.5	Number of detection	8	1	0	0	15	13			
			Number of detections above screening values	1	0	0	0	4	4			
GC-MW-13I	32	57.8	Number of detection	7	15	0	0	12	10			
			Number of detections above screening values	1	1	0	0	3	3			
GC-MW-14I	139	53.5	Number of detection	9	7	0	0	15	11			
			Number of detections above screening values	0	0	0	0	3	3			
GC-MW-15I	32	57.8	Number of detection	0	1	0	0	16	13			
			Number of detections above screening values	0	0	0	0	4	4			
GC-MW-16I	254	57.5	Number of detection	0	12	0	0	15	13			
			Number of detections above screening values	0	0	0	0	3	3			
GC-MW-17I	51	41.85	Number of detection	10	3	0	0	13	NA			
			Number of detections above screening values	2	1	0	0	4	NA			
GC-MW-18I	33	54	Number of detection	14	17	0	0	14	1			
			Number of detections above screening values	7	2	0	0	5	1			
GC-MW-19I	280	56.61	Number of detection	3	0	0	0	10	NA			
			Number of detections above screening values	0	0	0	0	3	NA			
GC-MW-20I	48	37	Number of detection	8	12	0	0	19	12			
			Number of detections above screening values	6	1	0	0	3	3			
GC-MW-21I	149	34.9	Number of detection	0	3	0	0	13	13			
			Number of detections above screening values	0	0	0	0	3	3			
GC-MW-23I	73	33.75-38.75	Number of detection	6	16	0	0	11	8			
			Number of detections above screening values	5	2	0	0	2	2			
GC-MW-24I	35	38.4	Number of detection	4	5	0	0	11	10			
			Number of detections above screening values	0	0	0	0	2	1			
GC-MW-25I	60	43.3	Number of detection	10	14	0	0	14	14			
			Number of detections above screening values	2	0	0	0	2	2			
GC-MW-26I	210	36.6	Number of detection	14	9	0	0	14	13			
			Number of detections above screening values	1	0	0	0	3	3			
GC-MW-27I	151	40.8	Number of detection	12	17	0	0	10	8			
			Number of detections above screening values	5	1	0	0	2	2			
GC-MW-28I	36	34.3	Number of detection	5	7	0	0	13	10			
			Number of detections above screening values	3	0	0	0	3	3			
GC-MW-29I	152	34.9	Number of detection	13	10	0	0	14	13			
			Number of detections above screening values	5	0	0	0	3	3			
GC-MW-30I	37	30-35	Number of detection	6	9	0	0	8	7			
			Number of detections above screening values	4	1	0	0	3	3			
GC-MW-31I	31	30-35	Number of detection	7	9	0	2	12	8			
			Number of detections above screening values	5	1	0	1	3	3			
GC-MW-32I	605	40-45	Number of detection	6	7	0	0	12	8			
			Number of detections above screening values	4	1	0	0	3	3			
GC-MW-33I	236	36.4	Number of detection	8	13	0	0	14	12			
			Number of detections above screening values	5	1	0	0	3	3			

Monitoring Well Station Location	Approximate Distance from Monitoring Well to Canal (feet)	Depth of Groundwater Sample (feet below ground surface)	Number of Detections					Total Metals	Dissolved Metals
			Number of Detections Above Screening Values	VOCs	SVOCs	PCBs	Pesticides		
GC-MW-34I	27	32.1	Number of detection	9	10	0	0	12	10
			Number of detections above screening values	1	1	0	0	2	2
GC-MW-35I	29	31.4	Number of detection	11	18	0	0	15	13
			Number of detections above screening values	3	1	0	0	3	3
GC-MW-36I	33	30.4	Number of detection	4	15	0	0	15	14
			Number of detections above screening values	0	1	0	0	3	3
GC-MW-37I	31	41.5	Number of detection	8	16	0	0	13	13
			Number of detections above screening values	3	0	0	0	3	3
GC-MW-38I	33	34.7	Number of detection	5	16	0	0	14	13
			Number of detections above screening values	0	0	0	0	4	4
GC-MW-39I	106	37.7	Number of detection	7	13	0	0	17	15
			Number of detections above screening values	5	2	0	0	4	4
GC-MW-40I	191	53-58	Number of detection	7	17	0	0	11	10
			Number of detections above screening values	2	2	0	0	3	3
GC-MW-41I	345	53-58	Number of detection	0	12	0	0	8	9
			Number of detections above screening values	0	0	0	0	3	3
GC-MW-42I	12	35	Number of detection	1	3	0	0	15	13
			Number of detections above screening values	0	0	0	0	3	3
GC-MW-43I	58	34.7	Number of detection	9	19	0	0	16	12
			Number of detections above screening values	4	1	0	0	4	4
GC-MW-44I	45	41.5	Number of detection	8	10	0	0	14	11
			Number of detections above screening values	3	0	0	0	4	3
GC-MW-45I	50	38.4	Number of detection	10	20	0	0	10	11
			Number of detections above screening values	4	3	0	0	3	3
GC-MW-46I	52	54.9	Number of detection	9	9	0	0	13	10
			Number of detections above screening values	7	0	0	0	3	3
GC-MW-47I	35	42	Number of detection	10	22	0	0	12	12
			Number of detections above screening values	6	3	0	0	3	3

Notes:

This summary tables does not include duplicate or split sample results.

NA - Not Analyzed

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Blue Crab Whole Body - Semi-Volatile Organic Compounds (ug/kg)						
Acenaphthene	12 / 12 (100%)	12	---	23.8 - 73.0	GC-TI401-BC	39.5
Acenaphthylene	6 / 12 (50.0%)	12	3.64 - 5.37	6.07 - 14.3	GC-TI401-BC	6.09
Anthracene	12 / 12 (100%)	12	---	3.85 - 12.4	GC-TI401-BC	6.44
Benzo(a)anthracene	5 / 12 (41.7%)	12	2.87 - 3.98	4.75 - 15.7	GC-TI402-BC	4.27
Benzo(a)pyrene	11 / 12 (91.7%)	12	4.53 - 4.53	5.45 - 17.5	GC-TI402-BC	7.28
Benzo(b)fluoranthene	9 / 12 (75.0%)	12	2.74 - 3.61	4.82 - 9.61	GC-TI402-BC	4.82
Benzo(g,h,i)perylene	12 / 12 (100%)	12	---	13.6 - 28.2	GC-TI401-BC	18.5
Benzo(k)fluoranthene	8 / 12 (66.7%)	12	2.44 - 3.08	3.65 - 8.76	GC-TI402-BC	3.75
Chrysene	8 / 12 (66.7%)	12	2.91 - 3.89	5.03 - 13.6	GC-TI402-BC	5.05
Dibenz(a,h)anthracene	12 / 12 (100%)	12	---	2.59 - 5.13	GC-TI402-BC	3.56
Fluoranthene	12 / 12 (100%)	12	---	8.44 - 21.9	GC-TI402-BC	14.9
Fluorene	12 / 12 (100%)	12	---	6.43 - 26.8	GC-TI404-BC	14.9
Indeno(1,2,3-c,d)pyrene	12 / 12 (100%)	12	---	7.46 - 12.3	GC-TI402-BC	9.22
Phenanthrene	12 / 12 (100%)	12	---	12.2 - 44.1	GC-TI401-BC	26.6
Pyrene	12 / 12 (100%)	12	---	9.88 - 28.6	GC-TI401-BC	18.5
Total PAHs	12 / 12 (100%)	12	---	106 - 300	GC-TI401-BC	184
Canal - Blue Crab Whole Body - Pesticides (ug/kg)						
P,P'-DDE	12 / 12 (100%)	12	---	2.05 - 2.79	GC-TI402-BC	2.41
Total DDTs	4 / 12 (33.3%)	12	0.772 - 1.50	2.08 - 2.79	GC-TI402-BC	1.28
Canal - Blue Crab Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	12 / 12 (100%)	12	---	3.91 - 5.54	GC-TI405-BC	4.76
PCB Nondioxin	12 / 12 (100%)	12	---	115000 - 167000	GC-TI405-BC	135000
Total PCB Congeners	12 / 12 (100%)	12	---	133000 - 194000	GC-TI405-BC	157000
Canal - Blue Crab Whole Body - Metals (mg/kg)						
Arsenic	12 / 12 (100%)	12	---	0.902 - 1.47	GC-TI401-BC	1.21
Calcium	12 / 12 (100%)	12	---	1050 - 1740	GC-TI406-BC	1400
Copper	12 / 12 (100%)	12	---	8.19 - 11.7	GC-TI406-BC	9.65
Iron	6 / 12 (50.0%)	12	7.96 - 8.21	8.43 - 13.3	GC-TI406-BC	7.43

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Blue Crab Whole Body - Metals (mg/kg)						
Magnesium	12 / 12 (100%)	12	---	318 - 395	GC-TI406-BC	351
Manganese	12 / 12 (100%)	12	---	2.20 - 3.24	GC-TI405-BC	2.72
Mercury	12 / 12 (100%)	12	---	0.0792 - 0.142	GC-TI402-BC	0.115
Potassium	12 / 12 (100%)	12	---	1910 - 2390	GC-TI406-BC	2100
Silver	2 / 12 (16.7%)	12	0.488 - 0.497	0.421 - 0.463	GC-TI401-BC	0.279
Sodium	12 / 12 (100%)	12	---	2630 - 3490	GC-TI401-BC, GC-TI402-BC	3070
Zinc	12 / 12 (100%)	12	---	18.9 - 24.0	GC-TI406-BC	20.9
Cyanide, Total	10 / 12 (83.3%)	12	1.22 - 1.25	0.527 - 0.847	GC-TI401-BC	0.693
Percent Lipids	12 / 12 (100%)	12	---	1.14 - 1.86	GC-TI405-BC	1.56
Reference - Blue Crab Whole Body - Semi-Volatile Organic Compounds (ug/kg)						
Acenaphthene	2 / 8 (25.0%)	8	1.63 - 1.69	2.64 - 3.79	GC-TI-INNER-BC	1.43
Benzo(a)pyrene	7 / 8 (87.5%)	8	1.65 - 1.65	2.80 - 4.07	GC-TI-MIDDLE-BC	3.21
Benzo(b)fluoranthene	6 / 8 (75.0%)	8	1.63 - 1.65	3.03 - 4.18	GC-TI-OUTER-BC	2.80
Benzo(g,h,i)perylene	8 / 8 (100%)	8	---	14.0 - 25.3	GC-TI-MIDDLE-BC	18.7
Benzo(k)fluoranthene	4 / 8 (50.0%)	8	1.63 - 1.69	2.78 - 3.41	GC-TI-OUTER-BC	1.93
Dibenz(a,h)anthracene	8 / 8 (100%)	8	---	2.10 - 4.43	GC-TI-OUTER-BC	3.40
Fluoranthene	1 / 8 (12.5%)	8	1.63 - 1.69	3.58 - 3.58	GC-TI-OUTER-BC	1.17
Fluorene	1 / 8 (12.5%)	8	1.63 - 1.69	2.20 - 2.20	GC-TI-INNER-BC	1.00
Indeno(1,2,3-c,d)pyrene	8 / 8 (100%)	8	---	6.77 - 10.8	GC-TI-MIDDLE-BC	8.67
Phenanthrene	8 / 8 (100%)	8	---	2.31 - 5.40	GC-TI-OUTER-BC	3.68
Pyrene	8 / 8 (100%)	8	---	2.28 - 5.13	GC-TI-OUTER-BC	2.69
Total PAHs	8 / 8 (100%)	8	---	29.5 - 58.8	GC-TI-OUTER-BC	43.1
Reference - Blue Crab Whole Body - Pesticides (ug/kg)						
P,P'-DDE	1 / 8 (12.5%)	8	1.61 - 1.66	1.73 - 1.73	GC-TI-INNER-BC	0.933
Total DDTs	1 / 8 (12.5%)	8	---	1.25 - 1.25	GC-TI-INNER-BC	0.156
Reference - Blue Crab Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	8 / 8 (100%)	8	---	0.341 - 4.32	GC-TI-INNER-BC	2.38
PCB Nondioxin	8 / 8 (100%)	8	---	59400 - 106000	GC-TI-INNER-BC	78300

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Blue Crab Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
Total PCB Congeners	8 / 8 (100%)	8	---	67000 - 127000	GC-TI-INNER-BC	90900
Reference - Blue Crab Whole Body - Metals (mg/kg)						
Arsenic	8 / 8 (100%)	8	---	1.08 - 1.82	GC-TI-INNER-BC	1.37
Cadmium	4 / 8 (50.0%)	8	0.243 - 0.25	0.186 - 0.233	GC-TI-OUTER-BC	0.162
Calcium	8 / 8 (100%)	8	---	831 - 1940	GC-TI-INNER-BC	1230
Copper	8 / 8 (100%)	8	---	14.0 - 18.9	GC-TI-OUTER-BC	15.6
Iron	7 / 8 (87.5%)	8	5.00 - 5.00	5.72 - 10.9	GC-TI-OUTER-BC	6.84
Magnesium	8 / 8 (100%)	8	---	301 - 432	GC-TI-OUTER-BC	349
Manganese	8 / 8 (100%)	8	---	2.54 - 4.44	GC-TI-INNER-BC	3.21
Mercury	8 / 8 (100%)	8	---	0.0849 - 0.316	GC-TI-OUTER-BC	0.168
Potassium	8 / 8 (100%)	8	---	2270 - 2840	GC-TI-OUTER-BC	2510
Selenium	8 / 8 (100%)	8	---	1.23 - 1.62	GC-TI-OUTER-BC	1.49
Silver	8 / 8 (100%)	8	---	0.669 - 0.987	GC-TI-MIDDLE-BC	0.817
Sodium	8 / 8 (100%)	8	---	2310 - 2670	GC-TI-INNER-BC	2520
Zinc	8 / 8 (100%)	8	---	22.4 - 29.5	GC-TI-OUTER-BC	25.4
Cyanide, Total	6 / 8 (75.0%)	8	1.25 - 1.25	0.538 - 0.78	GC-TI-INNER-BC	0.611
Percent Lipids	8 / 8 (100%)	8	---	1.23 - 2.33	GC-TI-MIDDLE-BC	1.49
Canal - Large Fish American Eel Whole Body - Pesticides (ug/kg)						
Alpha-chlordane	3 / 4 (75.0%)	6	0.85 - 0.85	5.19 - 27.0	GC-TI403-XAE	12.9
Dieldrin	2 / 3 (66.7%)	6	1.65 - 1.65	7.49 - 13.7	GC-TI403-XAE	7.34
Gamma-chlordane	2 / 3 (66.7%)	6	0.85 - 0.85	4.91 - 5.14	GC-TI402-XAE	3.49
Methoxychlor	3 / 6 (50.0%)	6	8.50 - 8.50	13.5 - 18.7	GC-TI403-XAE	10.1
P,P'-DDD	4 / 4 (100%)	6	---	23.1 - 38.0	GC-TI403-XAE	28.2
P,P'-DDE	1 / 1 (100%)	6	---	13.3 - 13.3	GC-TI406-XAE	13.3
P,P'-DDT	1 / 2 (50.0%)	6	1.65 - 1.65	40.6 - 40.6	GC-TI403-XAE	20.7
Canal - Large Fish American Eel Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	6 / 6 (100%)	6	---	4.54 - 10.4	GC-TI406-XAE	8.18
PCB Nondioxin	6 / 6 (100%)	6	---	467000 - 847000	GC-TI406-XAE	734000

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Large Fish American Eel Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
Total PCB Congeners	6 / 6 (100%)	6	---	505000 - 946000	GC-TI406-XAE	800000
Canal - Large Fish American Eel Whole Body - Metals (mg/kg)						
Aluminum	1 / 6 (16.7%)	6	9.70 - 9.75	17.8 - 17.8	GC-TI406-XAE	7.02
Arsenic	1 / 6 (16.7%)	6	0.485 - 0.488	0.491 - 0.491	GC-TI402-XAE	0.285
Calcium	6 / 6 (100%)	6	---	453 - 6220	GC-TI402-XAE	2270
Chromium	4 / 6 (66.7%)	6	0.485 - 0.485	0.425 - 0.796	GC-TI406-XAE	0.493
Copper	4 / 6 (66.7%)	6	1.20 - 1.20	1.11 - 7.51	GC-TI402-XAE	2.48
Iron	6 / 6 (100%)	6	---	15.9 - 99.9	GC-TI406-XAE	34.5
Lead	1 / 6 (16.7%)	6	0.485 - 0.488	0.602 - 0.602	GC-TI406-XAE	0.303
Magnesium	5 / 6 (83.3%)	6	242 - 242	205 - 307	GC-TI402-XAE	227
Manganese	1 / 6 (16.7%)	6	0.75 - 0.75	1.59 - 1.59	GC-TI406-XAE	0.578
Mercury	6 / 6 (100%)	6	---	0.0647 - 0.28	GC-TI406-XAE	0.138
Potassium	6 / 6 (100%)	6	---	2000 - 2760	GC-TI403-XAE	2380
Selenium	6 / 6 (100%)	6	---	1.20 - 1.59	GC-TI402-XAE	1.39
Sodium	6 / 6 (100%)	6	---	702 - 1000	GC-TI402-XAE	867
Zinc	6 / 6 (100%)	6	---	12.3 - 26.3	GC-TI406-XAE	18.7
Cyanide, Total	6 / 6 (100%)	6	---	0.253 - 1.76	GC-TI403-XAE	1.08
Percent Lipids	9 / 9 (100%)	9	---	11.0 - 20.4	GC-TI403-XAE	15.4
Reference - Large Fish American Eel Whole Body - Pesticides (ug/kg)						
Alpha-chlordane	1 / 1 (100%)	1	---	3.11 - 3.11	GC-TI327-XAE	3.11
Dieldrin	1 / 1 (100%)	1	---	2.57 - 2.57	GC-TI327-XAE	2.57
P,P'-DDD	1 / 1 (100%)	1	---	9.70 - 9.70	GC-TI327-XAE	9.70
Reference - Large Fish American Eel Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	1 / 1 (100%)	1	---	6.88 - 6.88	GC-TI327-XAE	6.88
PCB Nondioxin	1 / 1 (100%)	1	---	399000 - 399000	GC-TI327-XAE	399000
Total PCB Congeners	1 / 1 (100%)	1	---	446000 - 446000	GC-TI327-XAE	446000
Reference - Large Fish American Eel Whole Body - Metals (mg/kg)						
Calcium	1 / 1 (100%)	1	---	2060 - 2060	GC-TI327-XAE	2060

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Large Fish American Eel Whole Body - Metals (mg/kg)						
Iron	1 / 1 (100%)	1	---	16.6 - 16.6	GC-TI327-XAE	16.6
Magnesium	1 / 1 (100%)	1	---	222 - 222	GC-TI327-XAE	222
Mercury	1 / 1 (100%)	1	---	0.131 - 0.131	GC-TI327-XAE	0.131
Potassium	1 / 1 (100%)	1	---	2050 - 2050	GC-TI327-XAE	2050
Sodium	1 / 1 (100%)	1	---	767 - 767	GC-TI327-XAE	767
Zinc	1 / 1 (100%)	1	---	19.3 - 19.3	GC-TI327-XAE	19.3
Percent Lipids	2 / 2 (100%)	2	---	20.3 - 20.3	GC-TI327-XAE	20.3
Canal - Large Fish Striped Bass Whole Body - Pesticides (ug/kg)						
Alpha-chlordane	3 / 4 (75.0%)	5	0.85 - 0.85	2.39 - 7.57	GC-TI401-SB	3.67
Gamma-chlordane	1 / 5 (20.0%)	5	0.85 - 0.85	5.63 - 5.63	GC-TI403-SB	1.47
P,P'-DDD	4 / 4 (100%)	5	---	7.35 - 25.7	GC-TI401-SB	16.2
P,P'-DDE	2 / 2 (100%)	5	---	2.96 - 19.1	GC-TI403-SB	11.0
P,P'-DDT	2 / 5 (40.0%)	5	1.65 - 1.65	11.4 - 13.0	GC-TI403-SB	5.38
Total DDTs	1 / 1 (100%)	5	---	29.3 - 29.3	GC-TI406-SB	29.3
Canal - Large Fish Striped Bass Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	5 / 5 (100%)	5	---	5.85 - 11.1	GC-TI406-SB	8.94
PCB Nondioxin	5 / 5 (100%)	5	---	560000 - 1160000	GC-TI406-SB	860000
Total PCB Congeners	5 / 5 (100%)	5	---	604000 - 1230000	GC-TI406-SB	916000
Canal - Large Fish Striped Bass Whole Body - Metals (mg/kg)						
Arsenic	4 / 5 (80.0%)	5	0.487 - 0.487	0.447 - 0.569	GC-TI406-SB	0.475
Calcium	5 / 5 (100%)	5	---	4650 - 8800	GC-TI401-SB	6010
Chromium	2 / 5 (40.0%)	5	0.485 - 0.49	0.435 - 0.46	GC-TI401-SB	0.325
Copper	4 / 5 (80.0%)	5	1.20 - 1.20	0.922 - 1.28	GC-TI401-SB	1.02
Iron	5 / 5 (100%)	5	---	15.9 - 28.9	GC-TI403-SB	21.7
Magnesium	5 / 5 (100%)	5	---	339 - 417	GC-TI401-SB	367
Manganese	3 / 5 (60.0%)	5	0.75 - 0.75	1.45 - 1.62	GC-TI401-SB	1.07
Mercury	4 / 5 (80.0%)	5	0.246 - 0.246	0.13 - 0.185	GC-TI406-SB	0.146
Potassium	5 / 5 (100%)	5	---	2460 - 3460	GC-TI406-SB	3040

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Large Fish Striped Bass Whole Body - Metals (mg/kg)						
Selenium	5 / 5 (100%)	5	---	1.33 - 1.60	GC-TI406-SB	1.47
Sodium	5 / 5 (100%)	5	---	1020 - 1450	GC-TI406-SB	1240
Zinc	5 / 5 (100%)	5	---	9.51 - 16.7	GC-TI403-SB	12.5
Cyanide, Total	3 / 5 (60.0%)	5	1.20 - 1.21	0.631 - 2.06	GC-TI401-SB	0.95
Percent Lipids	10 / 10 (100%)	10	---	1.58 - 8.29	GC-TI401-SB	4.51
Reference - Large Fish Weakfish Whole Body - Pesticides (ug/kg)						
P,P'-DDE	1 / 1 (100%)	1	---	7.32 - 7.32	GC-TI332-XW	7.32
Reference - Large Fish Weakfish Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	1 / 1 (100%)	1	---	0.743 - 0.743	GC-TI332-XW	0.743
PCB Nondioxin	1 / 1 (100%)	1	---	279000 - 279000	GC-TI332-XW	279000
Total PCB Congeners	1 / 1 (100%)	1	---	303000 - 303000	GC-TI332-XW	303000
Reference - Large Fish Weakfish Whole Body - Metals (mg/kg)						
Calcium	1 / 1 (100%)	1	---	5480 - 5480	GC-TI332-XW	5480
Copper	1 / 1 (100%)	1	---	1.01 - 1.01	GC-TI332-XW	1.01
Iron	1 / 1 (100%)	1	---	16.5 - 16.5	GC-TI332-XW	16.5
Magnesium	1 / 1 (100%)	1	---	370 - 370	GC-TI332-XW	370
Manganese	1 / 1 (100%)	1	---	2.69 - 2.69	GC-TI332-XW	2.69
Mercury	1 / 1 (100%)	1	---	0.156 - 0.156	GC-TI332-XW	0.156
Potassium	1 / 1 (100%)	1	---	2960 - 2960	GC-TI332-XW	2960
Sodium	1 / 1 (100%)	1	---	1280 - 1280	GC-TI332-XW	1280
Zinc	1 / 1 (100%)	1	---	15.5 - 15.5	GC-TI332-XW	15.5
Percent Lipids	2 / 2 (100%)	2	---	2.10 - 2.10	GC-TI332-XW	2.10
Canal - Large Fish White Perch Whole Body - Pesticides (ug/kg)						
Alpha-chlordane	2 / 2 (100%)	2	---	8.46 - 9.02	GC-TI401-WP	8.74
Gamma-chlordane	1 / 1 (100%)	2	---	7.78 - 7.78	GC-TI401-WP	7.78
Methoxychlor	1 / 2 (50.0%)	2	8.50 - 8.50	26.5 - 26.5	GC-TI401-WP	15.4
P,P'-DDT	1 / 1 (100%)	2	---	14.9 - 14.9	GC-TI401-WP	14.9

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Large Fish White Perch Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	2 / 2 (100%)	2	---	11.8 - 14.6	GC-TI401-WP	13.2
PCB Nondioxin	2 / 2 (100%)	2	---	836000 - 1050000	GC-TI401-WP	943000
Total PCB Congeners	2 / 2 (100%)	2	---	901000 - 1110000	GC-TI401-WP	1010000
Canal - Large Fish White Perch Whole Body - Metals (mg/kg)						
Calcium	2 / 2 (100%)	2	---	5800 - 9940	GC-TI401-WP	7870
Copper	2 / 2 (100%)	2	---	6.36 - 18.2	GC-TI401-WP	12.3
Iron	2 / 2 (100%)	2	---	13.5 - 14.3	GC-TI401-WP	13.9
Magnesium	2 / 2 (100%)	2	---	266 - 371	GC-TI401-WP	319
Manganese	2 / 2 (100%)	2	---	0.933 - 4.31	GC-TI401-WP	2.62
Mercury	2 / 2 (100%)	2	---	0.146 - 0.153	GC-TI401-WP	0.15
Potassium	2 / 2 (100%)	2	---	1830 - 2000	GC-TI401-WP	1920
Selenium	2 / 2 (100%)	2	---	1.36 - 1.47	GC-TI401-WP	1.42
Silver	1 / 2 (50.0%)	2	0.492 - 0.492	0.415 - 0.415	GC-TI401-WP	0.331
Sodium	2 / 2 (100%)	2	---	805 - 1090	GC-TI401-WP	948
Zinc	2 / 2 (100%)	2	---	12.0 - 16.8	GC-TI401-WP	14.4
Cyanide, Total	2 / 2 (100%)	2	---	0.455 - 0.951	GC-TI401-WP	0.703
Percent Lipids	4 / 4 (100%)	4	---	3.42 - 4.15	GC-TI401-WP	3.79
Reference - Large Fish Scup Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	3 / 3 (100%)	3	---	1.78 - 1.97	GC-TI332-XSCUP	1.86
PCB Nondioxin	3 / 3 (100%)	3	---	93100 - 103000	GC-TI332-XSCUP	96800
Total PCB Congeners	3 / 3 (100%)	3	---	101000 - 111000	GC-TI332-XSCUP	105000
Reference - Large Fish Scup Whole Body - Metals (mg/kg)						
Arsenic	3 / 3 (100%)	3	---	0.537 - 0.619	GC-TI332-XSCUP	0.587
Calcium	3 / 3 (100%)	3	---	7190 - 13900	GC-TI332-XSCUP	10500
Chromium	2 / 3 (66.7%)	3	0.49 - 0.49	0.393 - 0.471	GC-TI332-XSCUP	0.37
Copper	1 / 3 (33.3%)	3	1.23 - 1.25	1.00 - 1.00	GC-TI332-XSCUP	0.747
Iron	3 / 3 (100%)	3	---	27.0 - 34.5	GC-TI332-XSCUP	30.4
Lead	1 / 3 (33.3%)	3	0.49 - 0.492	0.656 - 0.656	GC-TI332-XSCUP	0.382

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Large Fish Scup Whole Body - Metals (mg/kg)						
Magnesium	3 / 3 (100%)	3	---	319 - 416	GC-TI332-XSCUP	376
Manganese	3 / 3 (100%)	3	---	2.34 - 4.23	GC-TI332-XSCUP	3.25
Mercury	3 / 3 (100%)	3	---	0.0746 - 0.122	GC-TI332-XSCUP	0.0935
Potassium	3 / 3 (100%)	3	---	2500 - 2640	GC-TI332-XSCUP	2580
Selenium	3 / 3 (100%)	3	---	1.34 - 1.64	GC-TI332-XSCUP	1.45
Sodium	3 / 3 (100%)	3	---	896 - 1100	GC-TI332-XSCUP	990
Zinc	3 / 3 (100%)	3	---	7.99 - 11.5	GC-TI332-XSCUP	9.72
Cyanide, Total	2 / 3 (66.7%)	3	1.25 - 1.25	3.36 - 4.42	GC-TI332-XSCUP	2.80
Percent Lipids	6 / 6 (100%)	6	---	1.76 - 2.62	GC-TI332-XSCUP	2.12
Canal - Small Prey Fish - Pesticides (ug/kg)						
Alpha-chlordane	4 / 8 (50.0%)	8	1.70 - 1.70	1.80 - 4.20	GC-TI405-MCG	2.00
Endrin	1 / 8 (12.5%)	8	3.30 - 3.30	2.70 - 2.70	GC-TI401-XATC	1.78
Gamma-chlordane	1 / 7 (14.3%)	8	1.70 - 1.70	5.40 - 5.40	GC-TI405-MCG	1.50
P,P'-DDE	1 / 8 (12.5%)	8	3.30 - 3.30	3.50 - 3.50	GC-TI405-MCG	1.88
P,P'-DDT	1 / 8 (12.5%)	8	3.30 - 3.30	8.50 - 8.50	GC-TI401-XATC	2.51
Canal - Small Prey Fish - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	8 / 8 (100%)	8	---	1.15 - 8.57	GC-TI404-MCG	3.63
PCB Nondioxin	8 / 8 (100%)	8	---	110000 - 606000	GC-TI404-MCG	255000
Total PCB Congeners	8 / 8 (100%)	8	---	117000 - 650000	GC-TI404-MCG	273000
Canal - Small Prey Fish - Metals (mg/kg)						
Aluminum	1 / 8 (12.5%)	8	19.4 - 20.0	30.3 - 30.3	GC-TI405-XATC	12.4
Calcium	8 / 8 (100%)	8	---	2910 - 11600	GC-TI404-MCG	7110
Chromium	2 / 8 (25.0%)	8	0.97 - 1.00	0.33 - 0.40	GC-TI405-XATC	0.459
Copper	6 / 8 (75.0%)	8	2.40 - 2.50	0.84 - 4.50	GC-TI403-MCG	2.20
Iron	8 / 8 (100%)	8	---	16.2 - 77.6	GC-TI405-XATC	31.4
Lead	1 / 8 (12.5%)	8	0.97 - 1.00	0.69 - 0.69	GC-TI405-XATC	0.515
Magnesium	8 / 8 (100%)	8	---	187 - 517	GC-TI404-MCG	361
Manganese	8 / 8 (100%)	8	---	0.92 - 4.30	GC-TI404-MCG	2.30

TABLE 4-21a

Tissue - Summary of Sample Results Used in Ecological Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Small Prey Fish - Metals (mg/kg)						
Mercury	8 / 8 (100%)	8	---	0.072 - 0.10	GC-TI401-XATC, GC-TI403-MCG	0.0866
Potassium	8 / 8 (100%)	8	---	1290 - 2730	GC-TI404-MCG	2220
Selenium	3 / 8 (37.5%)	8	3.40 - 3.50	1.20 - 1.30	GC-TI403-MCG, GC-TI405-MCG	1.54
Sodium	8 / 8 (100%)	8	---	588 - 1910	GC-TI401-XATC	1360
Zinc	8 / 8 (100%)	8	---	7.20 - 42.3	GC-TI403-MCG	21.9
Cyanide, Total	3 / 8 (37.5%)	8	2.40 - 2.50	0.24 - 0.44	GC-TI406-XATC	0.909
Percent Lipids	8 / 8 (100%)	8	---	0.94 - 2.52	GC-TI401-XATC	1.62
Reference - Small Prey Fish - Pesticides (ug/kg)						
P,P'-DDD	1 / 2 (50.0%)	2	3.30 - 3.30	13.0 - 13.0	GC-TI332-XHK	7.33
Reference - Small Prey Fish - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	2 / 2 (100%)	2	---	2.56 - 4.79	GC-TI332-XHK	3.68
PCB Nondioxin	2 / 2 (100%)	2	---	137000 - 181000	GC-TI332-XHK	159000
Total PCB Congeners	2 / 2 (100%)	2	---	150000 - 205000	GC-TI332-XHK	178000
Reference - Small Prey Fish - Metals (mg/kg)						
Arsenic	1 / 2 (50.0%)	2	0.98 - 0.98	1.20 - 1.20	GC-TI332-XHK	0.845
Calcium	2 / 2 (100%)	2	---	2170 - 2490	GC-TI-INNER-XATC	2330
Copper	1 / 2 (50.0%)	2	2.50 - 2.50	1.00 - 1.00	GC-TI332-XHK	1.13
Iron	2 / 2 (100%)	2	---	10.7 - 12.3	GC-TI332-XHK	11.5
Magnesium	2 / 2 (100%)	2	---	180 - 253	GC-TI332-XHK	217
Manganese	2 / 2 (100%)	2	---	0.88 - 1.80	GC-TI332-XHK	1.34
Mercury	2 / 2 (100%)	2	---	0.076 - 0.089	GC-TI-INNER-XATC	0.0825
Potassium	2 / 2 (100%)	2	---	1300 - 3230	GC-TI332-XHK	2270
Sodium	2 / 2 (100%)	2	---	664 - 1200	GC-TI332-XHK	932
Zinc	2 / 2 (100%)	2	---	4.90 - 8.80	GC-TI-INNER-XATC	6.85
Cyanide, Total	1 / 2 (50.0%)	2	2.50 - 2.50	0.87 - 0.87	GC-TI-INNER-XATC	1.06
Percent Lipids	2 / 2 (100%)	2	---	1.14 - 1.40	GC-TI332-XHK	1.27

Page Intentionally Left Blank

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Blue Crab Whole Body - Semi-Volatile Organic Compounds (ug/kg)						
Acenaphthene	12 / 12 (100%)	12	---	23.8 - 73.0	GC-TI401-BC	39.5
Acenaphthylene	6 / 12 (50.0%)	12	3.64 - 5.37	6.07 - 14.3	GC-TI401-BC	6.09
Anthracene	12 / 12 (100%)	12	---	3.85 - 12.4	GC-TI401-BC	6.44
Benzo(a)anthracene	5 / 12 (41.7%)	12	2.87 - 3.98	4.75 - 15.7	GC-TI402-BC	4.27
Benzo(a)pyrene	11 / 12 (91.7%)	12	4.53 - 4.53	5.45 - 17.5	GC-TI402-BC	7.28
Benzo(b)fluoranthene	9 / 12 (75.0%)	12	2.74 - 3.61	4.82 - 9.61	GC-TI402-BC	4.82
Benzo(g,h,i)perylene	12 / 12 (100%)	12	---	13.6 - 28.2	GC-TI401-BC	18.5
Benzo(k)fluoranthene	8 / 12 (66.7%)	12	2.44 - 3.08	3.65 - 8.76	GC-TI402-BC	3.75
Chrysene	8 / 12 (66.7%)	12	2.91 - 3.89	5.03 - 13.6	GC-TI402-BC	5.05
Dibenz(a,h)anthracene	12 / 12 (100%)	12	---	2.59 - 5.13	GC-TI402-BC	3.56
Fluoranthene	12 / 12 (100%)	12	---	8.44 - 21.9	GC-TI402-BC	14.9
Fluorene	12 / 12 (100%)	12	---	6.43 - 26.8	GC-TI404-BC	14.9
Indeno(1,2,3-c,d)pyrene	12 / 12 (100%)	12	---	7.46 - 12.3	GC-TI402-BC	9.22
Phenanthrene	12 / 12 (100%)	12	---	12.2 - 44.1	GC-TI401-BC	26.6
Pyrene	12 / 12 (100%)	12	---	9.88 - 28.6	GC-TI401-BC	18.5
Total PAHs	12 / 12 (100%)	12	---	106 - 300	GC-TI401-BC	184
Canal - Blue Crab Whole Body - Pesticides (ug/kg)						
P,P'-DDE	12 / 12 (100%)	12	---	2.05 - 2.79	GC-TI402-BC	2.41
Total DDTs	4 / 12 (33.3%)	12	0.772 - 1.50	2.08 - 2.79	GC-TI402-BC	1.28
Canal - Blue Crab Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	12 / 12 (100%)	12	---	3.91 - 5.54	GC-TI405-BC	4.76
PCB Nondioxin	12 / 12 (100%)	12	---	115000 - 167000	GC-TI405-BC	135000
Total PCB Congeners	12 / 12 (100%)	12	---	133000 - 194000	GC-TI405-BC	157000
Canal - Blue Crab Whole Body - Metals (mg/kg)						
Arsenic	12 / 12 (100%)	12	---	0.902 - 1.47	GC-TI401-BC	1.21
Calcium	12 / 12 (100%)	12	---	1050 - 1740	GC-TI406-BC	1400
Copper	12 / 12 (100%)	12	---	8.19 - 11.7	GC-TI406-BC	9.65
Iron	6 / 12 (50.0%)	12	7.96 - 8.21	8.43 - 13.3	GC-TI406-BC	7.43
Magnesium	12 / 12 (100%)	12	---	318 - 395	GC-TI406-BC	351

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Blue Crab Whole Body - Metals (mg/kg)						
Manganese	12 / 12 (100%)	12	---	2.20 - 3.24	GC-TI405-BC	2.72
Mercury	12 / 12 (100%)	12	---	0.0792 - 0.142	GC-TI402-BC	0.115
Potassium	12 / 12 (100%)	12	---	1910 - 2390	GC-TI406-BC	2100
Silver	2 / 12 (16.7%)	12	0.488 - 0.497	0.421 - 0.463	GC-TI401-BC	0.279
Sodium	12 / 12 (100%)	12	---	2630 - 3490	GC-TI401-BC, GC-TI402-BC	3070
Zinc	12 / 12 (100%)	12	---	18.9 - 24.0	GC-TI406-BC	20.9
Cyanide, Total	10 / 12 (83.3%)	12	1.22 - 1.25	0.527 - 0.847	GC-TI401-BC	0.693
Percent Lipids	12 / 12 (100%)	12	---	1.14 - 1.86	GC-TI405-BC	1.56
Reference - Blue Crab Whole Body - Semi-Volatile Organic Compounds (ug/kg)						
Acenaphthene	2 / 8 (25.0%)	8	1.63 - 1.69	2.64 - 3.79	GC-TI-INNER-BC	1.43
Benzo(a)pyrene	7 / 8 (87.5%)	8	1.65 - 1.65	2.80 - 4.07	GC-TIMIDDLE-BC	3.21
Benzo(b)fluoranthene	6 / 8 (75.0%)	8	1.63 - 1.65	3.03 - 4.18	GC-TI-OUTER-BC	2.80
Benzo(g,h,i)perylene	8 / 8 (100%)	8	---	14.0 - 25.3	GC-TIMIDDLE-BC	18.7
Benzo(k)fluoranthene	4 / 8 (50.0%)	8	1.63 - 1.69	2.78 - 3.41	GC-TI-OUTER-BC	1.93
Dibenz(a,h)anthracene	8 / 8 (100%)	8	---	2.10 - 4.43	GC-TI-OUTER-BC	3.40
Fluoranthene	1 / 8 (12.5%)	8	1.63 - 1.69	3.58 - 3.58	GC-TI-OUTER-BC	1.17
Fluorene	1 / 8 (12.5%)	8	1.63 - 1.69	2.20 - 2.20	GC-TI-INNER-BC	1.00
Indeno(1,2,3-c,d)pyrene	8 / 8 (100%)	8	---	6.77 - 10.8	GC-TIMIDDLE-BC	8.67
Phenanthrene	8 / 8 (100%)	8	---	2.31 - 5.40	GC-TI-OUTER-BC	3.68
Pyrene	8 / 8 (100%)	8	---	2.28 - 5.13	GC-TI-OUTER-BC	2.69
Total PAHs	8 / 8 (100%)	8	---	29.5 - 58.8	GC-TI-OUTER-BC	43.1
Reference - Blue Crab Whole Body - Pesticides (ug/kg)						
P,P'-DDE	1 / 8 (12.5%)	8	1.61 - 1.66	1.73 - 1.73	GC-TI-INNER-BC	0.933
Total DDTs	1 / 8 (12.5%)	8	---	1.25 - 1.25	GC-TI-INNER-BC	0.156
Reference - Blue Crab Whole Body - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	8 / 8 (100%)	8	---	0.341 - 4.32	GC-TI-INNER-BC	2.38
PCB Nondioxin	8 / 8 (100%)	8	---	59400 - 106000	GC-TI-INNER-BC	78300
Total PCB Congeners	8 / 8 (100%)	8	---	67000 - 127000	GC-TI-INNER-BC	90900

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Blue Crab Whole Body - Metals (mg/kg)						
Arsenic	8 / 8 (100%)	8	---	1.08 - 1.82	GC-TI-INNER-BC	1.37
Cadmium	4 / 8 (50.0%)	8	0.243 - 0.25	0.186 - 0.233	GC-TI-OUTER-BC	0.162
Calcium	8 / 8 (100%)	8	---	831 - 1940	GC-TI-INNER-BC	1230
Copper	8 / 8 (100%)	8	---	14.0 - 18.9	GC-TI-OUTER-BC	15.6
Iron	7 / 8 (87.5%)	8	5.00 - 5.00	5.72 - 10.9	GC-TI-OUTER-BC	6.84
Magnesium	8 / 8 (100%)	8	---	301 - 432	GC-TI-OUTER-BC	349
Manganese	8 / 8 (100%)	8	---	2.54 - 4.44	GC-TI-INNER-BC	3.21
Mercury	8 / 8 (100%)	8	---	0.0849 - 0.316	GC-TI-OUTER-BC	0.168
Potassium	8 / 8 (100%)	8	---	2270 - 2840	GC-TI-OUTER-BC	2510
Selenium	8 / 8 (100%)	8	---	1.23 - 1.62	GC-TI-OUTER-BC	1.49
Silver	8 / 8 (100%)	8	---	0.669 - 0.987	GC-TIMIDDLE-BC	0.817
Sodium	8 / 8 (100%)	8	---	2310 - 2670	GC-TI-INNER-BC	2520
Zinc	8 / 8 (100%)	8	---	22.4 - 29.5	GC-TI-OUTER-BC	25.4
Cyanide, Total	6 / 8 (75.0%)	8	1.25 - 1.25	0.538 - 0.78	GC-TI-INNER-BC	0.611
Percent Lipids	8 / 8 (100%)	8	---	1.23 - 2.33	GC-TIMIDDLE-BC	1.49
Canal - Large Fish American Eel Fillet - Pesticides (ug/kg)						
Alpha-chlordane	3 / 4 (75.0%)	6	1.70 - 1.70	10.0 - 22.0	GC-TI402-XAE	13.5
Dieldrin	5 / 6 (83.3%)	6	3.30 - 3.30	5.00 - 17.0	GC-TI402-XAE	7.59
Gamma-chlordane	2 / 3 (66.7%)	6	1.70 - 1.70	9.90 - 13.0	GC-TI403-XAE	7.92
Methoxychlor	2 / 6 (33.3%)	6	17.0 - 17.0	34.0 - 39.0	GC-TI403-XAE	17.8
P,P'-DDD	4 / 4 (100%)	6	---	13.0 - 38.0	GC-TI403-XAE	27.3
P,P'-DDE	4 / 5 (80.0%)	6	3.30 - 3.30	16.0 - 25.0	GC-TI403-XAE	16.3
P,P'-DDT	2 / 4 (50.0%)	6	3.30 - 3.30	30.0 - 47.0	GC-TI406-XAE	20.1
Total DDTs	2 / 2 (100%)	6	---	46.0 - 93.0	GC-TI403-XAE	69.5
Canal - Large Fish American Eel Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	6 / 6 (100%)	6	---	4.73 - 14.1	GC-TI406-XAE	8.69
PCB Nondioxin	6 / 6 (100%)	6	---	480000 - 1220000	GC-TI406-XAE	792000
Total PCB Congeners	6 / 6 (100%)	6	---	519000 - 1350000	GC-TI406-XAE	862000

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Large Fish American Eel Fillet - Metals (mg/kg)						
Arsenic	1 / 6 (16.7%)	6	0.97 - 0.98	0.50 - 0.50	GC-TI402-XAE	0.488
Calcium	3 / 6 (50.0%)	6	485 - 485	198 - 295	GC-TI402-XAE	238
Chromium	2 / 6 (33.3%)	6	0.97 - 0.97	0.53 - 0.67	GC-TI402-XAE	0.523
Copper	3 / 6 (50.0%)	6	2.40 - 2.40	0.86 - 7.40	GC-TI402-XAE	2.12
Iron	1 / 6 (16.7%)	6	9.70 - 9.80	12.7 - 12.7	GC-TI402-XAE	6.17
Magnesium	4 / 6 (66.7%)	6	485 - 485	169 - 278	GC-TI403-XAE	232
Mercury	6 / 6 (100%)	6	---	0.056 - 0.26	GC-TI406-XAE	0.098
Potassium	6 / 6 (100%)	6	---	1960 - 3570	GC-TI403-XAE	2630
Selenium	2 / 6 (33.3%)	6	3.40 - 3.40	1.20 - 1.40	GC-TI403-XAE	1.57
Sodium	6 / 6 (100%)	6	---	524 - 944	GC-TI403-XAE	720
Zinc	6 / 6 (100%)	6	---	11.5 - 29.7	GC-TI403-XAE	17.6
Cyanide, Total	6 / 6 (100%)	6	---	0.30 - 3.10	GC-TI403-XAE	1.25
Percent Lipids	6 / 6 (100%)	6	---	8.99 - 25.0	GC-TI406-XAE	16.4
Reference - Large Fish American Eel Fillet - Pesticides (ug/kg)						
Dieldrin	1 / 1 (100%)	1	---	4.90 - 4.90	GC-TI327-XAE	4.90
P,P'-DDD	1 / 1 (100%)	1	---	14.0 - 14.0	GC-TI327-XAE	14.0
P,P'-DDT	1 / 1 (100%)	1	---	9.20 - 9.20	GC-TI327-XAE	9.20
Reference - Large Fish American Eel Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	1 / 1 (100%)	1	---	7.20 - 7.20	GC-TI327-XAE	7.20
PCB Nondioxin	1 / 1 (100%)	1	---	424000 - 424000	GC-TI327-XAE	424000
Total PCB Congeners	1 / 1 (100%)	1	---	475000 - 475000	GC-TI327-XAE	475000
Reference - Large Fish American Eel Fillet - Metals (mg/kg)						
Calcium	1 / 1 (100%)	1	---	169 - 169	GC-TI327-XAE	169
Mercury	1 / 1 (100%)	1	---	0.16 - 0.16	GC-TI327-XAE	0.16
Potassium	1 / 1 (100%)	1	---	1870 - 1870	GC-TI327-XAE	1870
Sodium	1 / 1 (100%)	1	---	501 - 501	GC-TI327-XAE	501
Zinc	1 / 1 (100%)	1	---	20.5 - 20.5	GC-TI327-XAE	20.5
Percent Lipids	1 / 1 (100%)	1	---	20.9 - 20.9	GC-TI327-XAE	20.9

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Canal - Large Fish Striped Bass Fillet - Pesticides (ug/kg)						
Alpha-chlordane	2 / 4 (50.0%)	5	1.70 - 1.70	5.10 - 8.20	GC-TI406-SB	3.75
Gamma-chlordane	1 / 5 (20.0%)	5	1.70 - 1.70	3.50 - 3.50	GC-TI403-SB	1.38
P,P'-DDD	3 / 4 (75.0%)	5	3.30 - 3.30	4.80 - 5.60	GC-TI406-SB	4.39
P,P'-DDE	5 / 5 (100%)	5	---	4.80 - 12.0	GC-TI406-SB	8.46
P,P'-DDT	1 / 5 (20.0%)	5	3.30 - 3.30	9.60 - 9.60	GC-TI403-SB	3.24
Total DDTs	4 / 4 (100%)	5	---	7.90 - 17.6	GC-TI406-SB	11.8
Canal - Large Fish Striped Bass Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	5 / 5 (100%)	5	---	2.83 - 4.31	GC-TI406-SB	3.35
PCB Nondioxin	5 / 5 (100%)	5	---	244000 - 409000	GC-TI403-SB	331000
Total PCB Congeners	5 / 5 (100%)	5	---	263000 - 435000	GC-TI403-SB	354000
Canal - Large Fish Striped Bass Fillet - Metals (mg/kg)						
Arsenic	3 / 5 (60.0%)	5	0.98 - 0.98	0.45 - 0.68	GC-TI403-SB	0.53
Calcium	5 / 5 (100%)	5	---	197 - 541	GC-TI403-SB	323
Magnesium	5 / 5 (100%)	5	---	190 - 343	GC-TI401-SB	291
Mercury	4 / 5 (80.0%)	5	0.48 - 0.48	0.15 - 0.20	GC-TI406-SB	0.194
Potassium	5 / 5 (100%)	5	---	2070 - 3970	GC-TI406-SB	3240
Selenium	2 / 5 (40.0%)	5	3.40 - 3.50	1.20 - 1.20	GC-TI403-SB, GC-TI406-SB	1.51
Sodium	5 / 5 (100%)	5	---	468 - 1060	GC-TI403-SB	712
Zinc	5 / 5 (100%)	5	---	3.90 - 16.4	GC-TI403-SB	7.58
Cyanide, Total	3 / 5 (60.0%)	5	2.40 - 2.50	0.28 - 0.63	GC-TI401-SB	0.792
Percent Lipids	5 / 5 (100%)	5	---	0.74 - 3.11	GC-TI401-SB	1.87
Reference - Large Fish Weakfish Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	1 / 1 (100%)	1	---	0.259 - 0.259	GC-TI332-XW	0.259
PCB Nondioxin	1 / 1 (100%)	1	---	98900 - 98900	GC-TI332-XW	98900
Total PCB Congeners	1 / 1 (100%)	1	---	107000 - 107000	GC-TI332-XW	107000
Reference - Large Fish Weakfish Fillet - Metals (mg/kg)						
Calcium	1 / 1 (100%)	1	---	460 - 460	GC-TI332-XW	460
Magnesium	1 / 1 (100%)	1	---	262 - 262	GC-TI332-XW	262

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Large Fish Weakfish Fillet - Metals (mg/kg)						
Mercury	1 / 1 (100%)	1	---	0.19 - 0.19	GC-TI332-XW	0.19
Potassium	1 / 1 (100%)	1	---	3310 - 3310	GC-TI332-XW	3310
Sodium	1 / 1 (100%)	1	---	636 - 636	GC-TI332-XW	636
Zinc	1 / 1 (100%)	1	---	4.20 - 4.20	GC-TI332-XW	4.20
Percent Lipids	1 / 1 (100%)	1	---	0.91 - 0.91	GC-TI332-XW	0.91
Canal - Large Fish White Perch Fillet - Pesticides (ug/kg)						
Gamma-chlordane	1 / 2 (50.0%)	2	1.70 - 1.70	5.00 - 5.00	GC-TI401-WP	2.93
P,P'-DDE	2 / 2 (100%)	2	---	6.00 - 7.00	GC-TI401-WP	6.50
Canal - Large Fish White Perch Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	2 / 2 (100%)	2	---	4.46 - 5.08	GC-TI401-WP	4.77
PCB Nondioxin	2 / 2 (100%)	2	---	302000 - 437000	GC-TI401-WP	370000
Total PCB Congeners	2 / 2 (100%)	2	---	324000 - 462000	GC-TI401-WP	393000
Canal - Large Fish White Perch Fillet - Metals (mg/kg)						
Calcium	2 / 2 (100%)	2	---	318 - 4220	GC-TI401-WP	2270
Copper	2 / 2 (100%)	2	---	0.90 - 1.30	GC-TI401-WP	1.10
Magnesium	2 / 2 (100%)	2	---	245 - 362	GC-TI401-WP	304
Manganese	1 / 2 (50.0%)	2	1.50 - 1.50	5.20 - 5.20	GC-TI401-WP	2.98
Mercury	2 / 2 (100%)	2	---	0.16 - 0.19	GC-TI401-WP	0.175
Potassium	2 / 2 (100%)	2	---	2550 - 2590	GC-TI401-WP	2570
Selenium	1 / 2 (50.0%)	2	3.40 - 3.40	1.40 - 1.40	GC-TI401-WP	1.55
Sodium	2 / 2 (100%)	2	---	628 - 823	GC-TI401-WP	726
Zinc	2 / 2 (100%)	2	---	5.10 - 9.50	GC-TI401-WP	7.30
Cyanide, Total	2 / 2 (100%)	2	---	0.22 - 0.91	GC-TI401-WP	0.565
Percent Lipids	2 / 2 (100%)	2	---	1.49 - 2.26	GC-TI401-WP	1.88
Reference - Large Fish Scup Fillet - Polychlorinated Biphenyl Congeners (ng/kg)						
PCB Dioxin	3 / 3 (100%)	3	---	0.639 - 0.839	GC-TI332-XSCUP	0.709
PCB Nondioxin	3 / 3 (100%)	3	---	38300 - 42800	GC-TI332-XSCUP	40200
Total PCB Congeners	3 / 3 (100%)	3	---	41400 - 46200	GC-TI332-XSCUP	43400

TABLE 4-21b

Tissue - Summary of Sample Results Used in Human Health Risk Assessment
 Gowanus Canal Remedial Investigation
 Brooklyn, New York

Parameter	Frequency of Detection	Number of Results	Range of Non-Detect Values	Range of Detected Values	Location of Max Detect	Mean (1/2 RL for Non Detects)
Reference - Large Fish Scup Fillet - Metals (mg/kg)						
Arsenic	3 / 3 (100%)	3	---	0.45 - 0.55	GC-TI332-XSCUP	0.487
Calcium	3 / 3 (100%)	3	---	1390 - 1800	GC-TI332-XSCUP	1550
Magnesium	3 / 3 (100%)	3	---	255 - 310	GC-TI332-XSCUP	282
Mercury	2 / 3 (66.7%)	3	0.45 - 0.45	0.074 - 0.097	GC-TI332-XSCUP	0.132
Potassium	3 / 3 (100%)	3	---	2660 - 3490	GC-TI332-XSCUP	3040
Selenium	2 / 3 (66.7%)	3	3.40 - 3.40	1.20 - 1.30	GC-TI332-XSCUP	1.40
Sodium	3 / 3 (100%)	3	---	633 - 803	GC-TI332-XSCUP	728
Zinc	3 / 3 (100%)	3	---	4.00 - 4.20	GC-TI332-XSCUP	4.07
Cyanide, Total	2 / 3 (66.7%)	3	2.50 - 2.50	3.50 - 10.0	GC-TI332-XSCUP	4.92
Percent Lipids	3 / 3 (100%)	3	---	0.78 - 1.03	GC-TI332-XSCUP	0.907

Page Intentionally Left Blank

TABLE 6-1

Average Concentrations of Selected Constituents in Surface Sediment, Soft Sediment, and Native Sediment
Gowanus Canal Remedial Investigation
Brooklyn, New York

Average Concentration							
Sediment type	Total BTEX µg/kg	Total PAHs µg/kg	Total PCBs µg/kg	Total DDT µg/kg	Copper mg/kg	Lead mg/kg	Zinc mg/kg
Canal surface sediment	364	527,000	432	235	226	533	744
Canal soft sediment	188,000	3,490,000	3470	441	388	770	872
Canal native sediment	233,000	2,920,000	26.1	46.6	12.4	14.4	37.2
Reference surface sediment	ND	5790	ND	ND	80.7	93.1	156

Notes:

mg/kg - milligrams/kilogram

µg/kg - micrograms/kilogram

ND - not detected

BTEX - benzene, toluene, ethylbenzene, and xylenes

Page Intentionally Left Blank