

Water-Data Report 2011

01408000 MANASQUAN RIVER AT SQUANKUM, NJ

MANASQUAN RIVER BASIN

LOCATION.--Lat 40°09'41", long 74°09'17" referenced to North American Datum of 1983, Howell Township, Monmouth County, NJ, Hydrologic Unit 02040301, on right bank 50 ft upstream from northbound bridge on County Highway 547 (Lakewood Farmingdale Road) in Squankum, and 0.4 mi downstream from Marsh Bog Brook.

DRAINAGE AREA.--44.0 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--July 1931 to current year. Monthly discharge only for July 1931, published in WSP 1302.

REVISED RECORDS.--WDR NJ-83-1: Drainage area. WDR US-2011: 2010(M).

GAGE.--Water-stage recorder and concrete control. Datum of gage is 18.82 ft above NGVD of 1929. Prior to Aug 13, 1940, water-stage recorder at site 80 ft upstream at same datum.

REMARKS.--Records good. Several measurements of water temperature were made during the year. Since 1990, 3.18 mi² controlled by Manasquan Reservoir located on Timber Swamp Brook (see 01407965). Satellite telemetry at station.

REVISIONS.--The annual peak discharge and some peak discharges greater than base discharges for the 2010 water year have been revised as shown in the following table. These values supersede previously published peaks in the water data report for 2010.

Water Year	Date	Discharge (ft ³ /s)	Gage height (ft)
2010	Dec 9, 2009	1,210	7.25
2010	Dec 27, 2009	2,080	8.59
2010	Mar 14, 2010	*2,850	9.36
2010	Mar 31, 2010	2,120	8.63

PEAK DISCHARGES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 600 ft³/s and (or) maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 7	0930	893	6.52
Mar 11	1430	986	6.75
Apr 17	1115	1,040	6.88
Aug 15	0015	1,430	7.67
Aug 22	0800	3,860	10.18
Aug 28	1030	*9,100	*13.06

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DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES

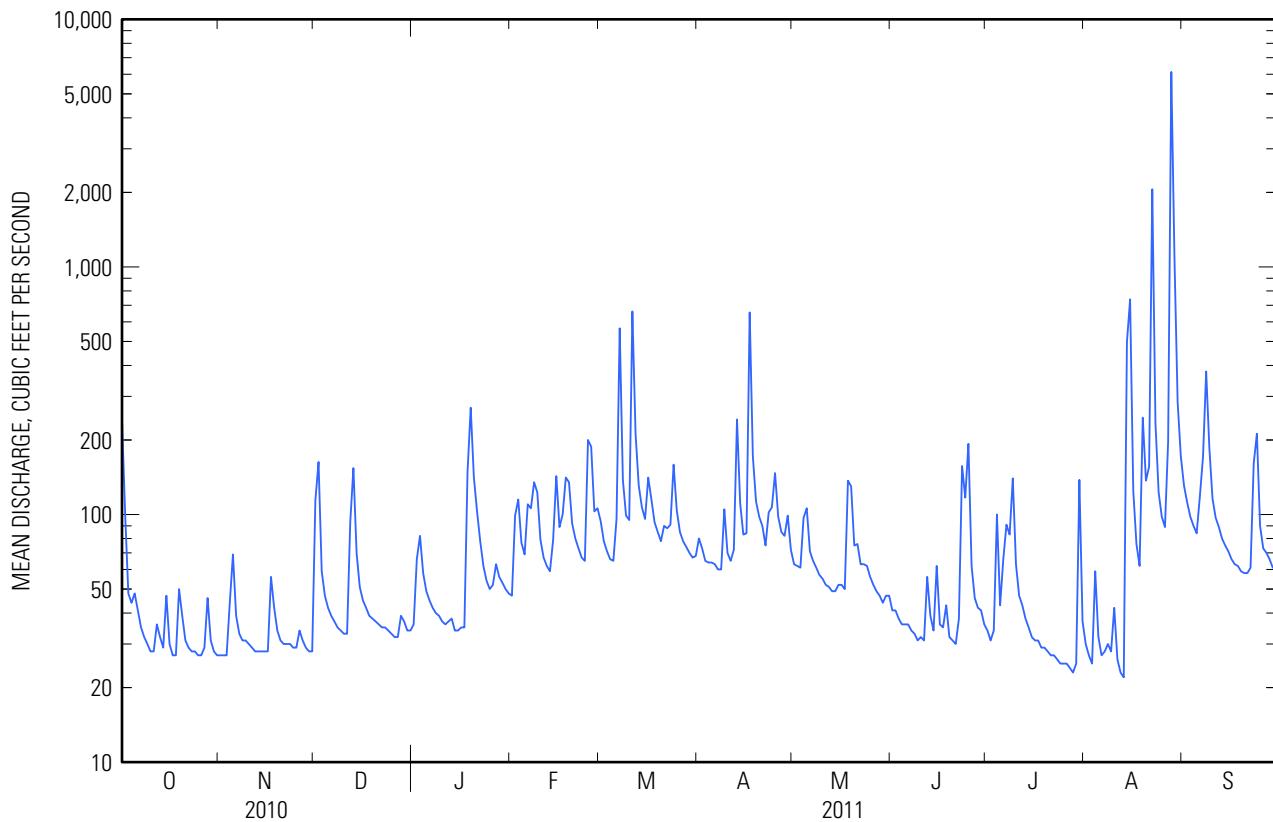
Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	242	27	114	36	47	94	80	63	41	34	30	131
2	100	27	163	66	99	78	73	62	41	31	27	112
3	48	27	59	82	115	71	65	61	38	34	25	98
4	44	44	47	58	77	66	64	97	36	100	59	90
5	48	69	42	49	69	65	64	106	36	43	32	84
6	41	39	39	45	110	96	63	71	36	66	27	118
7	35	33	37	42	106	565	60	65	34	91	28	171
8	32	31	35	40	135	138	60	61	33	83	30	378
9	30	31	34	39	123	99	105	57	31	140	28	186
10	28	30	33	37	79	95	70	55	32	63	42	116
11	28	29	33	36	67	661	65	52	31	47	26	97
12	36	28	93	37	62	212	72	51	56	43	23	89
13	32	28	154	38	59	131	242	49	39	38	22	80
14	29	28	70	34	79	107	111	49	34	35	496	75
15	47	28	51	34	143	96	83	52	62	32	740	71
16	30	28	45	35	89	141	84	52	36	31	125	66
17	27	56	42	35	100	115	655	50	35	31	76	63
18	27	42	39	149	141	93	172	137	43	29	62	62
19	50	34	38	270	135	85	113	130	32	29	246	59
20	39	31	37	141	92	78	98	75	31	28	137	58
21	31	30	36	103	80	90	90	76	30	27	156	58
22	29	30	35	78	73	88	75	63	38	27	2,060	61
23	28	30	35	62	67	91	102	63	157	26	234	161
24	28	29	34	54	65	159	107	62	117	25	123	212
25	27	29	33	50	200	104	147	56	193	25	98	90
26	27	34	32	52	188	85	98	52	62	25	89	73
27	29	31	32	63	103	78	85	49	46	24	197	70
28	46	29	39	56	106	74	82	47	42	23	6,130	66
29	31	28	37	53	---	70	99	44	41	25	1,080	61
30	28	28	34	50	---	67	72	47	36	138	284	61
31	27	---	34	48	---	68	---	47	---	37	172	---
Total	1,324	988	1,586	1,972	2,809	4,060	3,356	2,001	1,519	1,430	12,904	3,117
Mean	42.7	32.9	51.2	63.6	100	131	112	64.5	50.6	46.1	416	104
Max	242	69	163	270	200	661	655	137	193	140	6,130	378
Min	27	27	32	34	47	65	60	44	30	23	22	58
Cfsm	0.97	0.75	1.16	1.45	2.28	2.98	2.54	1.47	1.15	1.05	9.46	2.36
In.	1.12	0.84	1.34	1.67	2.37	3.43	2.84	1.69	1.28	1.21	10.91	2.64

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2011, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	51.9	68.3	82.8	89.0	94.5	113	100	77.5	58.4	51.0	53.5	51.7
Max	183	231	212	218	214	326	218	204	144	200	416	183
(WY)	(2006)	(1978)	(1978)	(1979)	(1979)	(2010)	(1983)	(1998)	(2003)	(1938)	(2011)	(1938)
Min	20.9	19.2	24.3	30.7	27.7	47.2	38.6	38.8	26.6	17.9	16.7	16.7
(WY)	(2002)	(2002)	(2002)	(1981)	(2002)	(1985)	(1995)	(1955)	(1957)	(2002)	(1932)	(1932)

01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued**SUMMARY STATISTICS**

	Calendar Year 2010	Water Year 2011			Water Years 1932 - 2011	
Annual total	31,409		37,066			
Annual mean	86.1		102		74.3	
Highest annual mean					131	1978
Lowest annual mean					31.9	2002
Highest daily mean	1,470	Mar 14	6,130	Aug 28	6,130	Aug 28, 2011
Lowest daily mean	19	Sep 1	22	Aug 13	10	Dec 5, 1998
Annual seven-day minimum	19	Aug 31	25	Jul 23	11	Aug 13, 2002
Maximum peak flow			9,100	Aug 28	9,100	Aug 28, 2011
Maximum peak stage			13.06	Aug 28	13.06	Aug 28, 2011
Instantaneous low flow			20	Dec 27	8.1	Aug 6, 1981
Annual runoff (cfsm)	1.96		2.31		1.69	
Annual runoff (inches)	26.55		31.34		22.93	
10 percent exceeds	150		141		130	
50 percent exceeds	47		58		54	
90 percent exceeds	23		28		26	



01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued**WATER-QUALITY RECORDS**

PERIOD OF RECORD.--Water years 1959-81, 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1969 to September 1974.

pH: July 1969 to September 1974.

WATER TEMPERATURE: July 1969 to September 1974.

DISSOLVED OXYGEN: August 1969 to September 1974.

REMARKS.--Cooperative Network Site Descriptor: Watershed Integrator, New Jersey Department of Environmental Protection Watershed Management Area 12.

COOPERATION.--Physical measurements and samples for laboratory analyses were provided by personnel of the NJ Department of Environmental Protection. Determination of concentrations of ammonia in filtered water was performed by the NJ Department of Health and Senior Services, Environmental and Chemical Laboratory (DHSS-ECL) except during the period May 12 through August 25, 2011 when the determination was performed by the National Water-Quality Laboratory. Determination of concentrations of suspended solids in unfiltered water was performed by the DHSS-ECL except during the period June 17 through August 25, 2011 when samples could not be accepted.

**WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Part 1 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Tempera-ture, filtered, units	Absorbance, UV, 254 nm, 1 cm path length, water, filtered, units per centimeter (50624)	Discharge, filtered, units per centimeter (61726)	Absorbance, UV, organic constituents, 280 nm, 1 cm path length, water, filtered, units per centimeter (00061)		Dissolved oxygen, water, unfiltered, mg/L (00300)	Dissolved oxygen, water, unfiltered, % saturation (00301)	pH, water, unfiltered, field, standard units (00400)
							Instantaneous, ft ³ /s (000061)	Dissolved oxygen, water, unfiltered, mg/L (00300)			
11-09-2010	0800	758	5.0	.050	.041	31	10.9	90	7.5		
03-01-2011	0830	768	2.0	.066	.052	98	10.8	89	7.0		
06-21-2011	0830	761	21.0	.053	.040	30	8.1	86	7.5		
08-03-2011	0900	755	25.0	.056	.043	25	7.6	84	7.3		

01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 2 of 5

[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Turbidity, water, unfiltered, broad band light source				Dissolved				Suspended	
		Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Including 90 +/- 30 degrees, ratiometric correction, NTRU (63676)	Dissolved solids at multiple angles	Dissolved solids dried at 180 °C, water, filtered, mg/L (70300)	Solids, water, filtered, sum of constituents, mg/L (70301)	Hardness, water, mg/L as CaCO ₃ (00900)	Solids, water, unfiltered, mg/L (00530)	Calcium, water, filtered, mg/L (00915)	
11-09-2010	0800	278	7.1	8.3	168	157	89.8	5	30.2		
03-01-2011	0830	356	7.1	14	195	193	61.8	20	18.9		
06-21-2011	0830	297	17.8	18	194	169	91.2	--	30.2		
08-03-2011	0900	302	20.5	9.6	175	166	87.2	--	28.9		

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	ANC, water, unfiltered, fixed endpoint (inorganic)				Carbon				Inorganic carbon, suspended sediment, total, mg/L (00688)	Silica, water, filtered, mg/L as SiO ₂ (00955)
		Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium, water, filtered, mg/L (00930)	Laboratory titration, mg/L as CaCO ₃ (90410)	plus organic, suspended sediment, total, mg/L (00694)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)			
11-09-2010	0800	3.53	3.05	13.0	42.7	.40	32.3	.16	<.03	15.0	
03-01-2011	0830	3.53	2.61	40.9	16.7	1.01	72.6	.11	<.03	11.7	
06-21-2011	0830	3.81	2.96	17.2	45.7	.61	39.7	.18	<.03	15.4	
08-03-2011	0900	3.67	3.48	16.5	44.4	.22	39.7	.16	<.03	15.2	

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WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Ammonia plus organic nitrogen, water, filtered.		Nitrate plus nitrite, water, filtered.		Particulate nitrogen, suspended in water, filtered.	Phosphorus, water, filtered.	Phosphorus, water, unfiltered.	Total nitrogen, water, filtered.	Total nitrogen, water, unfiltered.		
		Sulfate, water, filtered,	mg/L (00945)	Ammonia, water, filtered,	mg/L as N (00623)	Nitrate, water, filtered,	mg/L as N (00608)	mg/L as N (00631)	mg/L (49570)	mg/L as P (00666)	mg/L as P (00665)	mg/L (00602)
11-09-2010	0800	33.3	.10	<.010		.12		.027	<.004	.025	.22	.25
03-01-2011	0830	29.6	.18	.036		.62		.068	<.004	.059	.80	.87
06-21-2011	0830	31.1	.19	.037		.26		.056	<.004	.057	.45	.51
08-03-2011	0900	30.4	.16	.020		.27		.023	.007	.038	.43	.45

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER
2011

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[%, percent; ANC, acid neutralizing capacity; CaCO₃, calcium carbonate; N, nitrogen; NTRU, nephelometric turbidity ratio unit; P, phosphorus; SiO₂, silicon dioxide; cm, centimeter; ft³/s, cubic feet per second; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; <, less than]

Date	Sample start time	Organic carbon, suspended sediment, total, mg/L	
		(00689)	mg/L (00681)
11-09-2010	0800	.36	1.74
03-01-2011	0830	1.00	2.01
06-21-2011	0830	.61	1.73
08-03-2011	0900	.22	1.85

01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued

**WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Part 1 of 6

[<, less than; E, estimated]

Date	Sample start time	Moisture content, bed sediment smaller than 2 millimeter s, wet sieved (native water), field, recoverabl e, dry	Carbon (inorganic plus organic), bed sediment, total, dry weight,	Phosphoru s, bed sediment, total, dry weight, bed sediment, milligrams recoverabl e, dry weight, per kilogram as phosphorus kilograms	Cadmium, bed sediment, recoverabl e, dry weight, per kilogram	Chromium, bed sediment, recoverabl e, dry weight, per kilogram	Cobalt, bed sediment, recoverabl e, dry weight, per kilogram	Copper, bed sediment, recoverabl e, dry weight, per kilogram		
		pH, bed sediment, standard weight, units	grams per kilogram	grams per kilogram	per kilogram	per kilogram	per kilogram	per kilogram		
09-28-2011	1000	19 (4928)	6.15 (70310)	2.2 (00693)	<.2 (00686)	.190 (00668)	.370 (01028)	.50 (01029)	3.7 (01038)	<10 (01043)

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[<, less than; E, estimated]

p-Cresol, bed sediment smaller than 2 millimeter s, wet sieved										
Date	Sample start time	Iron, bed sediment, total	Lead, bed sediment, recoverabl	Manganese, e, bed sediment, recoverabl	Mercury, bed sediment, recoverabl	Nickel, bed sediment, recoverabl	Zinc, bed sediment, recoverabl	Arsenic, bed sediment, recoverabl	Selenium, bed sediment, recoverabl	(native water), field,
		milligrams	milligrams	milligrams	milligrams	milligrams	milligrams	milligrams	microgram	
09-28-2011	1000	38,000	9.5	50	.008	11.3	97	6.7	.2	< 50

01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[<, less than; E, estimated]

		1,2-Dimethylaphthalen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	1,6-Dimethylaphthalen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	1-Methyl-9H-fluorene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	1-Methylphe nanthrene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	1-Methylpyr ene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	2,3,6-Trimethylaphthalen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	2,6-Dimethylaphthalen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	2-Ethynaphthalene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	
Date	Sample start time	s per kilogram (39519)	s per kilogram (49403)	s per kilogram (49404)	s per kilogram (49398)	s per kilogram (49410)	s per kilogram (49388)	s per kilogram (49405)	s per kilogram (49406)	s per kilogram (49948)
09-28-2011	1000	< 5.00	< 50	< 50	< 50	E 2	< 50	< 50	< 50	< 50

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 4 of 6

[<, less than; E, estimated]

		4H-Cyclopent a[def]phen anthrene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	9H-Fluorene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Acenaphth ene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Acenaphth ylene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Anthracen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Benzo[a]a nthracene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Benzo[a]py rene, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	Benzo[b]fl uoranthen e, bed sediment smaller than 2 millimeter PCBs, bed sediment, field, recoverabl e, dry weight, microgram	
Date	Sample start time	s per kilogram (49435)	s per kilogram (49411)	s per kilogram (49399)	s per kilogram (49429)	s per kilogram (49428)	s per kilogram (49434)	s per kilogram (49436)	s per kilogram (49389)	s per kilogram (49458)
09-28-2011	1000	< 50	E 1	< 50	< 50	< 50	< 50	< 50	9	17

01408000 MANASQUAN RIVER AT SQUANKUM, NJ—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[<, less than; E, estimated]

Indeno[1,2,										
Benzo[ghi]perylene, bed sediment smaller than 2 millimeter	Benzo[k]fluranthen, bed sediment smaller than 2 millimeter	Chrysene, bed sediment smaller than 2 millimeter	Dibenzo[a,h]anthracene, bed sediment smaller than 2 millimeter	Fluoranthene, bed sediment smaller than 2 millimeter	3-cd]pyrene, bed sediment smaller than 2 millimeter	Isophorone, bed sediment smaller than 2 millimeter	Naphthalene, bed sediment smaller than 2 millimeter	Phenanthrene, bed sediment smaller than 2 millimeter		
s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram	s, wet sieved (native water), field, recoverabl e, dry weight, microgram		
Date	Sample start time	s per kilogram (49408)	s per kilogram (49397)	s per kilogram (49450)	s per kilogram (49461)	s per kilogram (49466)	s per kilogram (49390)	s per kilogram (49400)	s per kilogram (49402)	s per kilogram (49409)
09-28-2011	1000	3	5	9	< 50	16	E 5	< 50	< 50	4

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

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[<, less than; E, estimated]

Phenanthri dine, bed sediment smaller than 2 millimeter				
Pyrene, bed sediment, wet sieved, (native water), field, diameter, percent smaller than 0.0625				
Date	Sample start time	s per kilogram (49393)	s per kilogram (49387)	millimeter s (69600)
09-28-2011	1000	< 50	14	2