

01407210 HOP BROOK AT WILLOW BROOK ROAD, NEAR HOLMDEL, NJ

LOCATION.--Lat 40°19'47", long 74°10'20", Monmouth County, Hydrologic Unit 02030104, at bridge on Willow Brook Road, 0.3 mi upstream from mouth and Swimming River Reservoir, 1.2 mi southeast of Holmdel, and 2.7 mi west of Lincroft.

DRAINAGE AREA.--6.37 mi².

PERIOD OF RECORD.--November 2002 to August 2003.

REMARKS.--Total nitrogen (00600) equals the sum of dissolved ammonia plus organic nitrogen (00623), dissolved nitrite plus nitrate nitrogen (00631), and total particulate nitrogen (49570).

COOPERATION.--Field data and samples for laboratory analyses were provided by the New Jersey Department of Environmental Protection. Determination of dissolved ammonia, total ammonia, dissolved nitrite, dissolved orthophosphate, biochemical oxygen demand, total suspended solids, total ammonia + organic nitrogen in bed sediment, total phosphorus in bed sediment, fecal coliform, E. coli, and enterococcus bacteria was performed by the New Jersey Department of Health and Senior Services, Public Health and Environmental Laboratories, Environmental and Chemical Laboratory Services. Determination of chlorophyll a was performed by the New Jersey Department of Environmental Protection, Bureau of Freshwater and Biological Monitoring Laboratory.

COOPERATIVE NETWORK SITE DESCRIPTOR.--Statewide Status, New Jersey Department of Environmental Protection Watershed Management Area 12.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Turbidity, water, unfltrd field, NTU (61028)	UV absorbance, 254 nm, wat flt units /cm (50624)	UV absorbance, 280 nm, wat flt units /cm (61726)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Hardness, water, unfltrd mg/L as CaCO3 (00900)	Calcium water, fltrd, mg/L (00915)
NOV 14...	1000	4.9	0.109	0.086	765	10.1	84	7.6	300	10.0	7.5	92	30.2
FEB 05...	1000	10	0.046	0.036	762	13.4	97	7.3	777	3.5	2.0	100	33.5
MAY 06...	1000	3.0	0.050	0.038	763	10.5	94	7.6	352	16.0	10.4	93	29.9
AUG 12...	0800	7.4	0.101	0.080	764	8.0	88	7.2	315	23.2	20.0	100	34.6

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Magnesium, water, fltrd, mg/L (00925)	Potassium, water, fltrd, mg/L (00935)	Sodium, water, fltrd, mg/L (00930)	ANC, wat unfltrd fixed end pt, lab, mg/L as CaCO3 (90410)	Chloride, water, fltrd, mg/L (00940)	Fluoride, water, fltrd, mg/L (00950)	Silica, water, fltrd, mg/L (00955)	Sulfate, water, fltrd, mg/L (00945)	Residue water, fltrd, sum of constituents mg/L (70301)	Residue on evap. at 180degC wat flt mg/L (70300)	Residue total at 105 deg. C, suspended, mg/L (00530)	Ammonia + org-N, water, fltrd, mg/L as N (00623)	Ammonia water, fltrd, mg/L as N (00608)
NOV 14...	3.89	3.55	18.0	41	35.6	0.21	11.9	41.2	171	176	9	0.16	<0.030
FEB 05...	5.02	3.17	101	35	178	0.20	11.3	40.8	400	419	15	0.21	0.074
MAY 06...	4.46	2.57	28.5	40	53.6	0.21	10.3	36.0	193	227	3	0.15	<0.030
AUG 12...	4.38	3.11	22.1	51	43.2	0.24	15.2	30.9	189	211	8	0.20	0.037

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, unfltrd mg/L as N (00610)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Orthophosphate, water, fltrd, mg/L as P (00671)	Particulate nitrogen, susp, water, mg/L (49570)	Phosphorus, water, fltrd, mg/L (00666)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, fltrd, mg/L (00602)	Total nitrogen, water, unfltrd mg/L (00600)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)
NOV 14...	<0.030	0.42	<0.003	0.023	0.09	0.024	0.073	0.59	0.68	0.5	<0.1	0.5	3.0
FEB 05...	0.107	1.26	0.005	<0.020	0.09	0.005	0.067	1.5	1.6	0.7	<0.1	0.7	1.4
MAY 06...	<0.030	0.89	0.004	0.025	0.06	0.010	0.043	1.0	1.1	0.2	<0.1	0.2	1.8
AUG 12...	0.046	0.90	0.007	0.036	0.09	0.025	0.095	1.1	1.2	0.8	<0.1	0.8	3.8

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	BOD, water, unfltrd 5 day, 20 degC mg/L (00310)	Chloro- phyll a fluoro- metric method, corrctd ug/L (32209)	Boron, water, fltrd, ug/L (01020)
NOV 14...	<1.0	--	41
FEB 05...	E1.3	--	31
MAY 06...	2.2	5.10	36
AUG 12...	<1.0	3.00	49

Remark codes used in this table:

< -- Less than

E -- Estimated value

WATER-COLUMN AND BED-MATERIAL TRACE-ELEMENT ANALYSES

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	pH bed sedimnt std units (70310)	Ammonia + org-N, bed sed total, mg/kg as N (00626)	Phos- phorus, bed sedimnt total, mg/kg (00668)	Total carbon, bed sedimnt total, g/kg (00693)	Inor- ganic carbon, bed sedimnt total, g/kg (00686)	Arsenic water unfltrd ug/L (01002)	Barium, water, unfltrd recover -able, ug/L (01007)	Beryll- ium, water, unfltrd recover -able, ug/L (01012)	Boron, water, unfltrd recover -able, ug/L (01022)	Cadmium water, unfltrd ug/L (01027)	Chrom- ium, water, unfltrd recover -able, ug/L (01034)	Copper, water, unfltrd recover -able, ug/L (01042)
AUG 12...	0800	--	--	--	--	--	E1	29.7	<0.06	44	E.02	<0.8	1.4
12...	0800	6.95	170	25,000	1.7	<0.2	--	--	--	--	--	--	--

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, water, unfltrd recover -able, ug/L (01045)	Lead, water, unfltrd recover -able, ug/L (01051)	Mangan- ese, water, unfltrd recover -able, ug/L (01055)	Mercury, water, unfltrd recover -able, ug/L (71900)	Nickel, water, unfltrd recover -able, ug/L (01067)	Selen- ium, water, unfltrd recover -able, ug/L (01147)	Silver, water, unfltrd recover -able, ug/L (01077)	Zinc, water, unfltrd recover -able, ug/L (01092)	Arsenic bed sedimnt total, ug/g (01003)	Cadmium bed sedimnt recover -able, ug/g (01028)	Chrom- ium, bed sedimnt recover -able, ug/g (01029)	Cobalt bed sedimnt recover -able, ug/g (01038)	Copper, bed sedimnt recover -able, ug/g (01043)
AUG 12...	1,450	0.45	36.6	<0.02	4.39	0.5	<0.16	23	--	--	--	--	--
12...	--	--	--	--	--	--	--	--	3	0.120	33	3.9	8

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Iron, bed sedimnt total, ug/g (01170)	Lead, bed sedimnt recover -able, ug/g (01052)	Mangan- ese, bed sedimnt recover -able, ug/g (01053)	Mercury, bed sedimnt recover -able, ug/g (71921)	Nickel, bed sedimnt recover -able, ug/g (01068)	Selen- ium, bed sedimnt total, ug/g (01148)	Zinc, bed sedimnt recover -able, ug/g (01093)	1,2-Di- methyl- naphth- alene, bed sed <2 mm, ug/kg (49403)	1,6-Di- methyl- naphth- alene, bed sed <2 mm, ug/kg (49404)	1Methyl -9H- fluore- ne, bed sed <2 mm, ug/kg (49398)	1- Methyl- phenan- threne, bed sed <2 mm, ug/kg (49410)	1- Methyl- pyrene, bed sed <2 mm, wsv nat ug/kg (49388)	236Tri- methyl- naphth- alene, bed sed <2 mm, ug/kg (49405)
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	29,000	16	200	<0.01	9.6	<1	73	<50	<50	<50	<50	E6	<50

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	2,6-Di- methyl- naphth- alene, bed sed <2 mm, ug/kg (49406)	2-Ethyl naphth- alene bed sed <2 mm wsv nat ug/kg (49948)	2- Methyl- anthra- cene, bed sed <2 mm, ug/kg (49435)	Cyclo- penta- phenan- threne, bed sed <2 mm, ug/kg (49411)	9H- Flour- ene, bed sed <2 mm, wsv nat ug/kg (49399)	Ace- naphth- ene, bed sed <2 mm, wsv nat ug/kg (49429)	Ace- naphth- ylene, bed sed <2 mm, wsv nat ug/kg (49428)	Anthra- cene, bed sed <2 mm, wsv nat field, ug/kg (49434)	Benzo- [a]- anthra- cene, bed sed <2 mm, ug/kg (49436)	Benzo- [a]- pyrene, bed sed <2 mm, wsv nat ug/kg (49389)	Benzo- [b]- fluor- anthene bed sed <2 mm ug/kg (49458)	Benzo- [ghi]- peryl- ene, bed sed <2 mm, ug/kg (49408)	Benzo- [k]- fluor- anthene bed sed <2 mm ug/kg (49397)
AUG 12...	--	--	--	--	--	--	--	--	--	--	--	--	--
12...	<50	<50	E10	<50	<50	<50	E8	E7	E18	E19	E20	E13	E9

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WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Chry-sene, bed sed <2 mm, wsv nat field, ug/kg (49450)	Dibenzo-[a,h]-anthracene, bed sed <2 mm, ug/kg (49461)	Fluor-anthene bed sed <2 mm wsv nat field, ug/kg (49466)	Indeno-[1,2,3-cd]-pyrene, bed sed <2 mm ug/kg (49390)	Iso-phorone bed sed <2 mm, wsv nat field, ug/kg (49400)	Naphth-alene, bed sed <2 mm wsv nat ug/kg (49402)	PCBs, bed sedimnt ug/kg (39519)	p-Cresol, bed sed <2 mm, wsv nat field, ug/kg (49451)	Phenan-threne, bed sed <2 mm, wsv nat field, ug/kg (49409)	Phenan-thri-dine, bed sed <2 mm, wsv nat ug/kg (49393)	Pyrene, bed sed <2 mm, wsv nat field, ug/kg (49387)	Bed sedi-ment, dry svd sve dia percent <.063mm (80164)
AUG 12... 12...	-- E6	-- E11	-- E29	-- E21	-- <50	-- <50	-- <5	-- <50	-- E14	-- <50	-- E24	-- 0.2

Remark codes used in this table:
 < -- Less than
 E -- Estimated value

WATER-COLUMN VOLATILE ORGANIC COMPOUND ANALYSES

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	1,1,1-Tri-chloro-ethane, water, unfltrd ug/L (34506)	CFC-113 water unfltrd ug/L (77652)	1,1-Di-chloro-ethane, water, unfltrd ug/L (34496)	1,1-Di-chloro-ethene, water, unfltrd ug/L (34501)	1,2-Di-chloro-benzene water, unfltrd ug/L (34536)	1,2-Di-chloro-ethane, water, unfltrd ug/L (32103)	1,2-Di-chloro-propane water, unfltrd ug/L (34541)	1,3-Di-chloro-benzene water, unfltrd ug/L (34566)	1,4-Di-chloro-benzene water, unfltrd ug/L (34571)	Benzene water unfltrd ug/L (34030)	Bromo-di-chloro-methane water unfltrd ug/L (32101)	Chloro-benzene water unfltrd ug/L (34301)
FEB 05...	1000	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	cis-1,2-Di-chloro-ethene, water, unfltrd ug/L (77093)	Di-bromo-chloro-methane water unfltrd ug/L (32105)	Di-chloro-di-fluoro-methane water unfltrd ug/L (34668)	Di-chloro-methane water unfltrd ug/L (34423)	Di-ethyl ether, water, unfltrd ug/L (81576)	Diiso-propyl ether, water, unfltrd ug/L (81577)	Ethyl-benzene water, unfltrd ug/L (34371)	Methyl tert-pentyl ether, water, unfltrd ug/L (50005)	meta+ para-Xylene, water, unfltrd ug/L (85795)	o-Xylene, water, unfltrd ug/L (77135)	Styrene water unfltrd ug/L (77128)	t-Butyl ethyl ether, water, unfltrd ug/L (50004)	Methyl t-butyl ether, water, unfltrd ug/L (78032)
FEB 05...	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.1	<0.1	<0.1	E.1

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Tetra-chloro-ethene, water, unfltrd ug/L (34475)	Tetra-chloro-methane water unfltrd ug/L (32102)	Toluene water unfltrd ug/L (34010)	trans-1,2-Di-chloro-ethene, water, unfltrd ug/L (34546)	Tri-bromo-methane water unfltrd ug/L (32104)	Tri-chloro-ethene, water, unfltrd ug/L (39180)	Tri-chloro-fluoro-methane water unfltrd ug/L (34488)	Tri-chloro-methane water unfltrd ug/L (32106)	Vinyl chlor-ide, water, unfltrd ug/L (39175)
FEB 05...	<0.1	<0.2	<0.1	<0.1	<0.2	<0.1	<0.2	<0.1	<0.2

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WATER-COLUMN PESTICIDE ANALYSES

The following were determined using laboratory schedule 2001 (listed in its entirety, with laboratory reporting levels, in "Laboratory Measurements" in the Explanation of Water-Quality Records section of this report). Only pesticides detected in one or more surface-water samples are listed in the following table.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	2,6-Diethyl-aniline water fltrd 0.7u GF (82660)	CIAT, water, fltrd, ug/L (04040)	Aceto-chlor, water, fltrd, ug/L (49260)	Ala-chlor, water, fltrd, ug/L (46342)	alpha-HCH, water, fltrd, ug/L (34253)	Atra-zine, water, fltrd, ug/L (39632)	Azin-phos-methyl, water, fltrd 0.7u GF (82686)	Ben-flur-alin, water, fltrd 0.7u GF (82673)	Butyl-ate, water, fltrd, ug/L (04028)	Car-baryl, water, fltrd 0.7u GF (82680)	Carbo-furan, water, fltrd 0.7u GF (82674)	cis-Per-methrin water fltrd 0.7u GF (82687)
MAY 06...	1000	<0.006	<0.006	<0.006	<0.004	<0.005	<0.007	<0.050	<0.010	<0.002	<0.041	<0.020	<0.006

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	DCPA, water fltrd 0.7u GF (82682)	Desulf-inyl fipronil, water, fltrd, ug/L (62170)	Diazinon, water, fltrd, ug/L (39572)	Diel-drin, water, fltrd, ug/L (39381)	EPTC, water, fltrd 0.7u GF (82668)	Desulf-inyl-fipronil amide, wat flt ug/L (62169)	Fipronil sulfide water, fltrd, ug/L (62167)	Fipronil sulfone water, fltrd, ug/L (62168)	Fipronil, water, fltrd, ug/L (62166)	Mala-thion, water, fltrd, ug/L (39532)	Metola-chlor, water, fltrd, ug/L (39415)	Metri-buzin, water, fltrd, ug/L (82630)	Naprop-amide, water, fltrd 0.7u GF (82684)
MAY 06...		<0.003	<0.004	<0.005	<0.005	<0.002	<0.009	<0.005	<0.005	<0.007	<0.027	0.015	<0.006	<0.007

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Pendi-meth-alin, water, fltrd 0.7u GF (82683)	Prome-ton, water, fltrd, ug/L (04037)	Sima-zine, water, fltrd, ug/L (04035)	Tebu-thiuron water, fltrd 0.7u GF (82670)	Terba-cil, water, fltrd 0.7u GF (82665)	Tri-flur-alin, water, fltrd 0.7u GF (82661)
MAY 06...		<0.022	<0.01	<0.005	<0.02	<0.034	<0.009

Remark codes used in this table:
< -- Less than

WATER-COLUMN BACTERIA ANALYSES

Samples were collected synoptically over a 30-day period during the summer.

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Entero-cocci, m-E MF, water, col/ 100 mL (31649)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli-form, ECbroth MPN/ 100 mL (31615)	Date	Time	Entero-cocci, m-E MF, water, col/ 100 mL (31649)	E coli, m-TEC MF, water, col/ 100 mL (31633)	Fecal coli-form, ECbroth MPN/ 100 mL (31615)
JUL 02...	0930	350	200	500	JUL 17...	0950	500	300	2,200
10...	1012	6,300	7,100	>16000	24...	0945	3,400	1,000	1,300
					31...	1030	460	400	500

Remark codes used in this table: