

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins—the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and re-mobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives: (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites, (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred, and (3) Provide the scientific basis

and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.sws.uiuc.edu>

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet annually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies. New England Coastal Basins (NECB) NAWQA ground-water wells published in this report (fig. 2) are: NH-NAW-308 (424228071290201) and NH-NAW-309 (424730071313401).

Analyses of pesticides in surface-water and ground-water samples (schedule 2001)

Selected surface-water and ground-water samples from the New England Coastal Basins National Water-Quality Assessment Program (NECB NAWQA) were analyzed for pesticides on schedule 2001 during the 1999 water year. This table lists the pesticides on the schedule, the unit of measure (micrograms per liter, µg/L), the U.S. Geological Survey National Water Information System parameter code, and the reporting level. **Only pesticides measured at or above the minimum reporting level for one or more samples are listed in the water-quality tables.**

SCHEDULE DESCRIPTION.--Pesticides in filtered water extracted on C-18 Solid Phase Extraction (SPE) cartridge and analyzed by Gas Chromatography/Mass Spectrometry (GC/MS).

SAMPLE REQUIREMENTS.--1 liter of water filtered through 0.7-micron glass-fiber depth filter, chilled at 4° C (packed in ice).

CONTAINER REQUIREMENTS.--1 liter baked amber glass bottle (GCC) from NWQL.

PCODE.--The USGS/EPA parameter code.

COMPOUND NAME.--IUPAC nomenclature.

COMMON NAME.--Common or trade name(s) for constituent

MRL.--Minimum reporting level.

PCode	Compound name (Common name)	MRL (µg/L)
49260	Acetochlor (Harness Plus, Surpass)	0.002
46342	Alachlor (Lasso, Bullet)	0.002
39632	Atrazine (Atrex, Atred)	0.001
04040	Atrazine, Deethyl- (Metabolite of Atrazine)	0.002
82686	Azinphos, Methyl- (Guthion, Gusathion)	0.001
82673	Benfluralin (Benefin, Balan)	0.002
04028	Butylate (Genate Plus, Suntan+)	0.002
82680	Carbaryl (Sevin, Denapan)	0.003
82674	Carbofuran (Furandan, Curaterr)	0.003
38933	Chlorpyrifos (Brodan, Dursban)	0.004
04041	Cyanazine (Bledex, Fortrol)	0.004
82682	DCPA (Dacthal, Chlorthal-dimethyl)	0.002
34653	DDE,p,p-	0.006
39572	Diazinon (Basudin, Diazatol)	0.002
39381	Dieldrin (Panoram D-31, Octalox)	0.001
82660	Diethylalanine (Metabolite of Alachlor)	0.003
82677	Disulfoton (Disyston, Frumin AL)	0.017
82668	EPTC (Eptam, Farmarox)	0.002
82663	Ethalfuralin (Sonalan, Curbit)	0.004
82672	Ethoprop (Mocap, Ethoprophos)	0.003
04095	Fonofos (Dyfonate, Capfos)	0.008
34253	HCH,alpha- (alpha-BHC, alpha-lindane)	0.002

PCode	Compound name (Common name)	MRL (µg/L)
39341	HCH,gamma- (Lindane, gamma-BHC)	0.004
82666	Linuron (Lorex, Linex)	0.002
39532	Malathion	0.005
39415	Metolachlor (Dual, Pennant)	0.002
82630	Metribuzin (Lexon, Sencor)	0.004
82671	Molinate (Ordran)	0.004
82684	Napropamide (Devrinol)	0.003
39542	Parathion, Ethyl- (Roethyl-P, Alkron)	0.004
82667	Parathion, Methyl- (Pennacp-M)	0.006
82669	Pebulate (Tillam, PEBL)	0.004
82683	Pendimethalin (Prowl, Stomp, Pre-M)	0.004
82687	Permethrin,cis- (Ambush, Astro)	0.005
82664	Phorate (Thimet, Granutox)	0.002
04037	Prometon (Pramitol, Princep)	0.018
82676	Pronamide (Kerb) (Propyzamid)	0.003
04024	Propachlor (Ramrod, Satecid)	0.007
82679	Propanil (Stampede, Stam)	0.004
82685	Propargite (Omite, Alkyl sulfite)	0.013
04035	Simazine (Princep, Caliber 91)	0.005
82670	Tebuthiuron (Spike, Tebusan)	0.010
82665	Terbacil (Sinbar)	0.007
82675	Terbufos (Counter, Contraven)	0.013
82681	Thiobencarb (Bolero, Saturn)	0.002
82678	Triallate (Avadex BW, Far-Go)	0.001
82661	Trifluralin (Treflan, Gowan)	0.002

Analyses of volatile organic compounds in surface-water and ground-water samples (schedule 2020/2021)

Selected surface-water and ground-water samples from the NECB NAWQA study were analyzed for volatile organic compounds (VOCs) in 1999. The National Water Quality Lab (NWQL) created a method for accurate determination of VOCs in water in the nanogram per liter range, schedules 2020/2021. The method described in USGS Open-File Report 97-829 (Connor and others) is similar to USEPA method 524-2 (Mund, 1995) and the method described by Rose and Schroeder (1995). Minor improvements to instrument operating conditions include the following: additional compounds, quantitation ions that are different from those recommended in USEPA Method 524.2 because of interferences from the additional compounds, and a data reporting strategy for measuring detected compounds extrapolated at less than the lowest calibration standard or measured at less than the reporting limit. The non-detection value (NDV) is introduced as a statistically defined reporting limit designed to limit false positives and false negatives to less than 1 percent.

This table lists the volatile organic compounds on the schedule, the unit of measure (micrograms per liter ($\mu\text{g/L}$), the U.S. Geological Survey National Water Information System parameter code, the Union of Pure and Applied Chemistry (IUPAC) compound name, and the National Water Quality Laboratory compound name. Positive detections measured at less than NDV are reported as estimated concentrations (E) to alert the data user to decreased confidence in accurate quantitation. Values for analytes in the 2020/2021 schedules are preceded by an "E" in the following situations:

1. When the calculated concentration is less than the lowest calibration standard. The analyte meets all identification criteria to be positively identified, but the amount detected is below where it can be reliably quantified.

2. If a sample is diluted for any reason. The method reporting level is multiplied by the dilution factor to obtain the adjusted method reporting level. Values below the lowest calibration standard, multiplied by the dilution factor are qualified with an "E". For example, a value of 0.19 in a 1:2 dilution is reported as E0.1.

3. If the set spike has recoveries out of the specified range (60-140 percent).

4. If the analyte is also detected in the set blank. If the value in the sample is less than five times the blank value and greater than the blank value plus the long term method detection limit, the value is preceded by an "E" to indicate that the analyte is positively identified but not positively quantified because the analyte was also detected in the blank.

SCHEDULE DESCRIPTION.--The sample water is actively purged with helium to extract the volatile organic compounds. The volatile compounds are trapped onto a sorbent trap, thermally desorbed, separated by a megabore gas chromatographic capillary column, and finally determined by a full scan quadropole mass spectrometer. Compound identification is confirmed by the gas chromatographic retention time and by the resultant mass spectrum, typically identified by three unique ions.

SAMPLE REQUIREMENTS.--Water collected in vials placed in stainless steel VOC sampler. Hydrochloric acid is used for preservation. Chilled at 4°C (packed in ice).

CONTAINER REQUIREMENTS.--40 milliliter baked amber septum glass vial, from OCALA Quality Water Service Unit.

PCODE.--The EPA/USGS parameter code

COMPOUND NAME.--IUPAC nomenclature

COMMON NAME.--NWQL nomenclature

NDV.--Non-detection value

PCode	Compound name	Common name	NDV ($\mu\text{g/L}$)
77353	(1,1-Dimethylethyl) benzene	<i>tert</i> -butylbenzene	0.05
77223	(1-Methylethyl) benzene	Isopropylbenzene	0.05
77350	(1-Methylpropyl) benzene	<i>sec</i> -butylbenzene	0.05
34396	1,1,1,2,2,2-Hexachloroethane	Hexachloroethane	0.05
77562	1,1,1,2-Tetrachloroethane	1,1,2-tetrachloroethane	0.05
34506	1,1,1-Trichloroethane	1,1,1-trichloroethane	0.05
34516	1,1,2,2-Tetrachloroethane	1,1,2,2-tetrachloroethane	0.10
77652	1,1,2-Trichloro-1,2,2-trifluoroethane	Freon-113	0.05
34511	1,1,2-Trichloroethane	1,1,2-trichloroethane	0.10
34496	1,1-Dichloroethane	1,1-dichloroethane	0.05
34501	1,1-Dichloroethene	1,1-dichloroethene	0.10
77168	1,1-Dichloropropene	1,1-dichloropropene	0.05
49999	1,2,3,4-Tetramethylbenzene	Preh-nitene	0.05
50000	1,2,3,5-Tetramethylbenzene	Isodurance	0.05
77613	1,2,3-Trichlorobenzene	1,2,3-trichlorobenzene	0.20
77443	1,2,3-Trichloropropane	1,2,3-trichloropropane	0.20
77221	1,2,3-Trimethylbenzene	1,2,3-trimethylbenzene	0.05
34551	1,2,4-Trichlorobenzene	1,2,4-trichlorobenzene	0.20
77222	1,2,4-Trimethylbenzene	1,2,4-trimethylbenzene	0.05
82625	1,2-Dibromo-3-chloropropane	1,2-dibromo-3-chloropropane (DBCP)	0.50
77651	1,2-Dibromoethane	1,2-dibromoethane	0.10
34536	1,2-Dichlorobenzene	1,2-dichlorobenzene	0.05
32103	1,2-Dichloroethane	1,2-dichloroethane	0.05
34541	1,2-Dichloropropane	1,2-dichloropropane	0.05
77135	1,2-Dimethylbenzene	<i>o</i> -xylene	0.05
85795	1,3 & 1,4-Dimethylbenzene	<i>m</i> & <i>p</i> -xylene	0.05
77226	1,3,5-Trimethylbenzene	1,3,5-trimethylbenzene	0.05
34566	1,3-Dichlorobenzene	1,3-dichlorobenzene	0.05
77173	1,3-Dichloropropane	1,3-dichloropropane	0.05
34571	1,4-Dichlorobenzene	1,4-dichlorobenzene	0.05
77275	1-Chloro-2-methylbenzene	2-chlorotoluene	0.05
77277	1-Chloro-4-methylbenzene	4-chlorotoluene	0.05
77356	1-Isopropyl-4-methylbenzene	<i>p</i> -Isopropyltoluene	0.05
77170	2,2-Dichloropropane	2,2-dichloropropane	0.05
81595	2-Butanone	Methyl-ethyl ketone	5.00
77220	2-Ethyltoluene	2-ethyl toluene	0.05
77103	2-Hexanone	2-hexanone	5.00
34215	2-Propenenitrile	Acrylonitrile	2.00
78109	3-Chloro-1-propene	3-chloro-1-propene	0.10
78133	4-Methyl-2-pentanone	Methyl isobutyl ketone	5.00

PCode	Compound name	Common name	NDV (µg/L)
81552	Acetone	Acetone	5.00
34030	Benzene	Benzene	0.05
81555	Bromobenzene	Bromobenzene	0.05
77297	Bromochloromethane	Bromochloromethane	0.10
32101	Bromodichloromethane	Bromodichloromethane	0.10
50002	Bromoethene	Vinyl Bromide	0.10
34413	Bromomethane	Methyl bromide	0.10
77041	Carbon disulfide	Carbon Disulfide	0.05
34301	Chlorobenzene	Chlorobenzene	0.05
34311	Chloroethane	Chloroethane	0.10
39175	Chloroethene	Vinyl Chloride	0.10
34418	Chloromethane	Methyl chloride	0.20
77093	<i>cis</i> -1,2-Dichloroethene	<i>cis</i> -1,2-dichloroethene	0.05
34704	<i>cis</i> -1,3-Dichloropropene	<i>cis</i> -1,3-dichloropropene	0.10
32105	Dibromochloromethane	Dibromochloromethane	0.10
30217	Dibromomethane	Dibromomethane	0.10
34668	Dichlorodifluoromethane	Dichlorodifluoromethane	0.20
34423	Dichloromethane	Methylene Chloride	0.10
81576	Diethyl ether	Diethyl ether	0.10
81577	Di isopropyl	Ether	0.98
77128	Ethynylbenzene	Styrene	0.05
73570	Ethyl methacrylate	Ethyl Methacrylate	1.00
50004	Ethyl <i>tert</i> -butyl ether	Ethyl- <i>t</i> -butyl ether (ETBE)	0.10
34371	Ethylbenzene	Ethylbenzene	0.05
39702	Hexachlorobutadiene	Hexachlorobutadiene	0.20
77424	Iodomethane	Methyl iodide	0.05
49991	Methyl acrylate	Methyl Acrylate	2.00
81593	Methyl acrylonitrile	Methyl Acrylonitrile	2.00
81597	Methyl methacrylate	Methyl Methacrylate	1.00
78032	Methyl <i>tert</i> -butyl ether	Methyl- <i>t</i> -butyl ether (MTBE)	0.10
34010	Methylbenzene	Toluene	0.05
77342	<i>n</i> -Butylbenzene	<i>n</i> -butylbenzene	0.05
77224	<i>n</i> -Propylbenzene	<i>n</i> -propylbenzene	0.05
34696	Naphthalene	Naphthalene	0.20
50005	<i>tert</i> -Amyl methyl ether	<i>tert</i> -amyl methyl ether (TAME)	0.10
34475	Tetrachloroethene	Tetrachloroethene	0.05
32102	Tetrachloromethane	Carbon tetrachloride	0.05
81607	Tetrahydrofuran	Tetrahydrofuran	5.00
34546	<i>trans</i> -1,2-Dichloroethene	<i>trans</i> -1,2-dichloroethene	0.05
34699	<i>trans</i> -1,3-Dichloropropene	<i>trans</i> -1,3-dichloropropene	0.10
73547	<i>trans</i> -1,4-Dichloro-2-butene	<i>trans</i> -1,4-dichloro-2-butene	5.00
32104	Tribromomethane	Bromoform	0.20
39180	Trichloroethene	Trichloroethene	0.05
34488	Trichlorofluoromethane	Trichlorofluoromethane	0.10
32106	Trichloromethane	Chloroform	0.05
77057	Vinyl Acetate	Vinyl Acetate	5.00

Additional information about the NAWQA Program is available through the world wide web at:

http://water.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water and groundwater records published in this report are for the 1999 water year that began October 1, 1998, and ended September 30, 1999. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, water-quality data for surface water, and ground-water-level data.

The locations of the stations and wells where the data were collected are shown in figures 1 and 2. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station, whether streamgage or well, in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations and for ground-water well sites differ, but both are based on geographic location. The "downstream-order" system is used for surface-water stations and the "latitude-longitude" system is used for wells.

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in U.S. Geological Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of