

Table A1. Analytical methods used for the determination of organic, inorganic, and microbial constituents by the U.S. Geological Survey (USGS) National Water Quality Laboratory (NWQL) and additional contract laboratories.

[MI agar, supplemented nutrient agar in which coliforms (total and *Escherichia*) produce distinctly different fluorescence under ultraviolet lighting; UV, ultraviolet; VOCs, volatile organic compounds]

Analyte	Analytical Method	Laboratory and analytical schedule	Citation(s)
Water-quality indicators			
Field parameters		USGS field measurement	U.S. Geological Survey, variously dated
Organic constituents			
VOCs	Purge and trap capillary gas chromatography/mass spectrometry	NWQL, schedule 2020	Connor and others, 1998
Gasoline oxygenates	Heated purge and trap/gas chromatography/mass spectrometry	NWQL, schedule 4024	Rose and Sandstrom, 2003
Pesticides	Solid-phase extraction and gas chromatography/mass spectrometry	NWQL, schedule 2003	Zaugg and others, 1995; Lindley and others, 1996; Madsen and others, 2003; Sandstrom and others, 2001
Pharmaceuticals	Solid-phase extraction and HPLC/mass spectrometry	NWQL, schedule 2080	Kolpin and others, 2002
Wastewater-indicators	Solid-phase extraction and gas chromatography/mass spectrometry	NWQL, schedule 1433	Zaugg and others, 2002
Constituents of special interest			
Perchlorate	Chromatography and mass spectrometry	Montgomery Watson-Harza Laboratory	Hautman and others, 1999
<i>N</i> -nitrosodimethylamine (NDMA)	Chromatography and mass spectrometry	Montgomery Watson-Harza Laboratory	U.S. Environmental Protection Agency, 1996; U.S. Environmental Protection Agency, 1999
1,2,3-Trichloropropane	Gas chromatography/electron capture detector	Montgomery Watson-Harza Laboratory	U.S. Environmental Protection Agency, 1995
Inorganic constituents			
Nutrients	Alkaline persulfate digestion, Kjeldahl digestion	NWQL, schedule 2755	Fishman, 1993; Patton and Kryskalla, 2003
Dissolved organic carbon	UV-promoted persulfate oxidation and infrared spectrometry	NWQL, schedule 2613	Brenton and Arnett, 1993
Major and minor ions, trace elements and nutrients	Atomic absorption spectrometry, colorimetry, ion-exchange chromatography, inductively-coupled plasma atomic emission spectrometry and mass spectrometry	NWQL, schedule 1948	Fishman and Friedman, 1989; Fishman, 1993; Faires, 1993; McLain, 1993; Garbarino, 1999; Garbarino and Damrau, 2001; American Public Health Association, 1998; Garbarino and others, 2006
Chromium, arsenic and iron speciation	Various techniques of ultraviolet visible (UV-VIS) spectrophotometry and atomic absorbance spectroscopy	USGS Trace Metal Laboratory, Boulder, Colorado	Stookey, 1970; To and others, 1998; Ball and McCleskey, 2003a and 2003b; McCleskey and others, 2003
Stable isotopes			
Stable isotopes of water	Gaseous hydrogen and carbon dioxide-water equilibration and stable-isotope mass spectrometry	USGS Stable Isotope Laboratory, Reston, Virginia	Epstein and Mayeda, 1953; Coplen and others, 1991; Coplen, 1994
Carbon isotopes	Accelerator mass spectrometry	University of Waterloo, Environmental Isotope Lab; University of Arizona Accelerator Mass Spectrometry Lab	Donahue and others, 1990; Jull and others, 2004

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Analyte	Analytical Method	Laboratory and analytical schedule	Citation(s)
Radioactivity and gases			
Tritium	Electrolytic enrichment-liquid scintillation	USGS Stable Isotope and Tritium Laboratory, Menlo Park, California	Thatcher and others, 1977
Tritium and noble gases	Helium-3 in-growth and mass spectrometry	Lawrence Livermore National Laboratory	Moran and others, 2002; Eaton and others, 2004
Radon-222	Liquid scintillation counting	NWQL, schedule 1369	American Society for Testing and Materials, 1998
Radium 226/228	Alpha activity counting	Eberline Analytical Services, NWQL schedule 1262	Krieger and Whittaker, 1980
Gross alpha and beta radioactivity	Alpha and beta activity counting	Eberline Analytical Services, NWQL schedule 1792	Krieger and Whittaker, 1980
Microbial constituents			
F-specific and somatic coliphage	Single-agar layer (SAL) and two-step enrichment methods	USGS Ohio Water Microbiology Laboratory	U.S. Environmental Protection Agency, 2001
Total and <i>Escherichia</i> coliform	Membrane filter technique with "MI agar"	USGS field measurement	U.S. Environmental Protection Agency, 2002b