POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

1) Heading of the Part: Primary Drinking Water Standards

2) Code citation: 35 Ill. Adm. Code 611

3)

Section numbers:	Proposed action:
611.102	Amend
611.130	Amend
611.611	Amend
611.612	Amend
611.645	Amend
611.680	Repealed
611.720	Amend
611.APPENDIX F	Amend

4) Statutory authority: 415 ILCS 5/7.2, 17, 17.5, and 27

5) A complete description of the subjects and issues involved: The following briefly describes the subjects and issues involved in the docket R12-4 rulemaking, which amends only Part 611. A comprehensive description is contained in the Board's opinion and order of February 2, 2012, proposing amendments in docket R12-4, which opinion and order is available from the address below.

This proceeding updates the Illinois Safe Drinking Water Act (SDWA) rules to correspond with amendments adopted by the United States Environmental Protection Agency (USEPA) that appeared in the Federal Register during a single update period. The docket and time period that is involved in this proceeding is the following:

R12-4	Federal SDWA amendments that occurred during the period January 1, 2011 through June 30, 2011.

The R12-4 docket amends rules in Part 611 only. The following table briefly summarizes the federal action in the update period:

June 24, 2011 (76 Fed. Reg. 37014)	USEPA approved alternative testing methods for use in demonstrating compliance with the drinking water standards. USEPA added 11 alternative methods for analyzing various inorganic and organic chemical parameters and one radionuclide. USEPA included corrections to the listings for two earlier-approved alternative methods.

Tables appear in the Board's opinion and order of February 2, 2012 in docket R12-4 that list numerous corrections and amendments that are not based on current federal amendments. The tables contain deviations from the literal text of the federal amendments underlying these amendments, as well as corrections and clarifications that the Board made in the base text involved. Persons interested in the details of those corrections and amendments should refer to the February 2, 2012 opinion and order in docket R12-4.

Section 17.5 of the Environmental Protection Act [415 ILCS 5/17.5] provides that Section 5-35 of the Administrative Procedure Act [5 ILCS 100/5-35] does not apply to this rulemaking. Because this rulemaking is not subject to Section 5-35 of the IAPA, it is not subject to First Notice or to Second Notice review by the Joint Committee on Administrative Rules (JCAR).

6) Published studies or reports, and sources of underlying data, used to compose this rulemaking: None

7) Will this rulemaking replace any emergency rulemaking currently in effect? No

8) Does this rulemaking contain an automatic repeal date? No

9) Does this rulemaking contain incorporations by reference? Yes. The current amendments revise existing incorporations by reference and add several new incorporations by reference to correspond with USEPA's summary approvals of new alternative equivalent analytic methods and corrections to previously approved alternative equivalent analytic methods.

10) Statement of statewide policy objectives: These proposed amendments do not create or enlarge a State mandate, as defined in Section 3(b) of the State Mandates Act [30 ILCS 805/3(b)].

POLLUTION CONTROL BOARD

NOTICE OF PROPOSED AMENDMENTS

11) Are there any other amendments pending on this Part? No

12) Time, Place and manner in which interested persons may comment on this proposed rulemaking: The Board will accept written public comment on this proposal for a period of 45 days after the date of this publication. Comments should reference docket R12-4 and be addressed to:

John T. Therriault, Assistant Clerk
Illinois Pollution Control Board
State of Illinois Center, Suite 11-500
100 W. Randolph St.
Chicago, IL 60601

Please direct inquiries to the following person and reference docket R12-4:

Michael J. McCambridge
Staff Attorney
Illinois Pollution Control Board
100 W. Randolph 11-500
Chicago, IL 60601

Phone: 312/814-6924
E-mail: mccambm@ipcb.state.il.us

Request copies of the Board's opinion and order at 312-814-3620, or download a copy from the Board's Website at http:\\www.ipcb.state.il.us

13) Initial regulatory flexibility analysis:

A) Types of small businesses, small municipalities, and not-for-profit corporations affected: This rulemaking may affect those small businesses, small municipalities, and not-for-profit corporations that own or operate a public water supply.

B) Reporting, bookkeeping or other procedures required for compliance: The existing rules and proposed amendments require extensive reporting, bookkeeping and other procedures, including the preparation of reports, water analyses, and maintenance of operating records.

C) Types of professional skills necessary for compliance: Compliance with the existing rules and proposed amendments may require the services of an attorney, certified public accountant, chemist, and registered professional engineer.

14) Regulatory agenda on which this rulemaking was summarized July 2011

The full text of the Proposed Amendments begins on the next page:

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 611
PRIMARY DRINKING WATER STANDARDS

SUBPART A: GENERAL

SUBPART B: FILTRATION AND DISINFECTION

SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

SUBPART D: TREATMENT TECHNIQUES

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCLs) AND MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs)

SUBPART G: LEAD AND COPPER

Section

SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS

Section

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section

SUBPART R: ENHANCED FILTRATION AND DISINFECTION:
SYSTEMS THAT SERVE 10,000 OR MORE PEOPLE

Section

SUBPART S: GROUNDWATER RULE

Section

SUBPART T: REPORTING AND RECORDKEEPING

SUBPART U: CONSUMER CONFIDENCE REPORTS

SUBPART V: PUBLIC NOTIFICATION OF DRINKING WATER VIOLATIONS

SUBPART W: INITIAL DISTRIBUTION SYSTEM EVALUATIONS

Section

SUBPART X: ENHANCED FILTRATION AND DISINFECTION – SYSTEMS SERVING FEWER THAN 10,000 PEOPLE

Section

SUBPART Y: STAGE 2 DISINFECTION BYPRODUCTS REQUIREMENTS

Section

SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

Section

611.APPENDIX E	Mandatory Lead Public Education Information for Community Water Systems
611.APPENDIX F	Mandatory Lead Public Education Information for Non-Transient Non-Community Water Systems
611.APPENDIX G	NPDWR Violations and Situations Requiring Public Notice
611.APPENDIX H	Standard Health Effects Language for Public Notification
611.APPENDIX I	Acronyms Used in Public Notification Regulation
611.TABLE A	Total Coliform Monitoring Frequency
611.TABLE B	Fecal or Total Coliform Density Measurements
611.TABLE C	Frequency of RDC Measurement
611.TABLE D	Number of Lead and Copper Monitoring Sites
611.TABLE E	Lead and Copper Monitoring Start Dates
611.TABLE F	Number of Water Quality Parameter Sampling Sites
611.TABLE G	Summary of Section 611.357 Monitoring Requirements for Water Quality Parameters
611.TABLE H	CT Values (mg·min/ℓ) for Cryptosporidium Inactivation by Chlorine Dioxide
611.TABLE I	CT Values (mg·min/ℓ) for Cryptosporidium Inactivation by Ozone
611.TABLE J	UV Dose Table for Cryptosporidium, Giardia lamblia, and Virus Inactivation Credit
611.TABLE Z	Federal Effective Dates

AUTHORITY: Implementing Sections 7.2, 17, and 17.5 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/7.2, 17, 17.5, and 27].

SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg. 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1, 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020, effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999; amended in R99-12 at 23 Ill. Reg. 10348, effective August 11, 1999; amended in R00-8 at 23 Ill. Reg. 14715, effective December 8, 1999; amended in R00-10 at 24 Ill. Reg. 14226, effective September 11, 2000; amended in R01-7 at 25 Ill. Reg. 1329, effective January 11, 2001; amended in R01-20 at 25 Ill. Reg. 13611, effective October 9, 2001; amended in R02-5 at 26 Ill. Reg. 3522, effective February 22, 2002; amended in R03-4 at 27 Ill. Reg. 1183, effective January 10, 2003; amended in R03-15 at 27 Ill. Reg. 16447, effective October 10, 2003; amended in R04-3 at 28 Ill. Reg. 5269, effective March 10, 2004; amended in R04-13 at 28 Ill. Reg. 12666, effective August 26, 2004; amended in R05-6 at 29 Ill. Reg. 2287, effective January 28, 2005; amended in R06-15 at 30 Ill. Reg. 17004, effective October 13, 2006; amended in R07-2/R07-11 at 31 Ill. Reg. 11757, effective July 27, 2007; amended in R08-7/R08-13 at 33 Ill. Reg. 633,

effective January 2, 2009; amended in R10-1/R10-17/R11-6 at 34 Ill. Reg. 19848, effective December 7, 2010; amended in R12-4 at 36 Ill. Reg. _____, effective _____.

SUBPART A: GENERAL

Section 611.102 Incorporations by Reference

a) Abbreviations and short-name listing of references. The following names and abbreviated names, presented in alphabetical order, are used in this Part to refer to materials incorporated by reference:

"AMI Turbiwell Method" means "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter," available from NEMI or from SWAN Analytische Instrumente AG.

"ASTM Method" means a method published by and available from the American Society for Testing and Materials (ASTM).

"Colisure Test" means "Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water," available from Millipore Corporation, Technical Services Department.

"Colitag® Test" means "Colitag® Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations," available from CPI International.

"Chromocult® Method" means "Chromocult® Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," available from EMD Chemicals Inc.

"Determination of Inorganic Oxyhalide" means "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," available from NTIS.

"Dioxin and Furan Method 1613" means "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS," available from NTIS.

"E*Colite Test" means "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water," available from Charm Sciences, Inc. and USEPA, Water Resource Center.

"EC-MUG" means "Method 9221 F: Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia coli Procedure (Proposed)," available from American Public Health Association and American Waterworks Association.

"EML Procedures Manual" means "EML Procedures Manual, HASL 300," available from USDOE, EML.

"Enterolert" means "Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters," available from American Society for Microbiology.

"Georgia Radium Method" means "The Determination of Radium-226 and Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE or Ge(Li) Detectors," Revision 1.2, December 2004, available from the Georgia Tech Research Institute.

"GLI Method 2" means GLI Method 2, "Turbidity," Nov. 2, 1992, available from Great Lakes Instruments, Inc.

"Guidance Manual for Filtration and Disinfection" means "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources," March 1991, available from USEPA, NSCEP.

"Hach FilterTrak Method 10133" means "Determination of Turbidity by Laser Nephelometry," available from Hach Co.

"Hach SPDANS 2 Method 10225" means "Hach Company SPADNS 2 (Arsenic-free) Fluoride Method 10225 – Spectrophotometric Measurement of Fluoride in Water and Wastewater," available from the Hach Co.

"Hach TNTplus 835/836 Method 10206" means "Hach Company TNTplus 835/836 Nitrate Method 10206 – Spectrophotometric Measurement of Nitrate in Water and Wastewater," available from the Hach Co.

"ITS Method D99-003" means Method D99-003, Revision 3.0, "Free Chlorine Species ($HOCl^-$ and OCl^-) by Test Strip," available from Industrial Test Systems, Inc.

"Kelada 01" means "Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, And Thiocyanate," Revision 1.2, available from NTIS.

"m-ColiBlue24 Test" means "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24® Broth," available from USEPA, Water Resource Center and Hach Company.

"Method ME355.01" means "Determination of Cyanide in Drinking Water by GC/MS Headspace Analysis," available from NEMI or from H&E Testing Laboratory.

"Mitchell Method M5271" means "Determination of Turbidity by Laser Nephelometry," available from NEMI and Leck Mitchell, PhD.

"Mitchell Method M5331" means "Determination of Turbidity by LED Nephelometry," available from NEMI and Leck Mitchell, PhD.

"Modified Colitag™ Method" means "Modified Colitag™ Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water," available from NEMI and CPI International.

"NA-MUG" means "Method 9222 G: Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures," available from American Public Health Association and American Waterworks Association.

"NCRP Report Number 22" means "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," available from NCRP.

"New Jersey Radium Method" means "Determination of Radium 228 in Drinking Water," available from the New Jersey Department of Environmental Protection.

"New York Radium Method" means "Determination of Ra-226 and Ra-228 (Ra-02)," available from the New York Department of Public Health.

"OI Analytical Method OIA-1677" means "Method OIA-1677, DW Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," available from ALPKEM, Division of OI Analytical.

"ONPG-MUG Test" (meaning "minimal medium ortho-nitrophenyl-beta-d-galactopyranoside-4-methyl-umbelliferyl -beta-d-glucuronide test"), also called the "Autoanalysis Colilert System," is Method 9223, available in "Standard Methods for the Examination of Water and Wastewater," 18th, 19th, 20th, or 21st ed., from American Public Health Association and the American Water Works Association.

"Orion Method AQ4500" means "Determination of Turbidity by LED Nephelometry," available from Thermo Scientific.

"Palintest ChloroSense" means "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense," available from NEMI or Palintest Ltd.

"Palintest Method 1001" means "Method Number 1001," available from Palintest, Ltd. or the Hach Company.

"QuikChem Method 10-204-00-1-X" means "Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis," available from Lachat Instruments.

"Readycult® 2000" means "Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," v. 1.0, available from EMD Chemicals Inc.

"Readycult® 2007" means "Readycult® Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," v. 1.1, available from EMD Chemicals Inc.

"SimPlate Method" means "IDEXX SimPlate TM HPC Test Method for Heterotrophs in Water," available from IDEXX Laboratories, Inc.

~~"Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate Method," available from NEMI or Systea Scientific LLC.~~

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater," available from the American Public Health Association or the American Waterworks Association.

"Standard Methods Online" means the website maintained by the Standard Methods Organization (at www.standardmethods.org) for purchase of the latest versions of methods in an electronic format.

"Syngenta AG-625" means "Atrazine in Drinking Water by Immunoassay," February 2001 is available from Syngenta Crop Protection, Inc.

"Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate Method," available from NEMI or Systea Scientific LLC.

"Technical Bulletin 601" means "Technical Bulletin 601, Standard Method of Testing for Nitrate in Drinking Water," July 1994, available from Analytical Technology, Inc.

"Technicon Methods" means "Fluoride in Water and Wastewater," available from Bran & Luebbe.

"USEPA Asbestos Method 100.1" means Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water," September 1983, available from NTIS.

"USEPA Asbestos Method 100.2" means Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water," June 1994, available from NTIS.

"USEPA Environmental Inorganic Methods" means "Methods for the Determination of Inorganic Substances in Environmental Samples," August 1993, available from NTIS.

"USEPA Environmental Metals Methods" means "Methods for the Determination of Metals in Environmental Samples," available from NTIS.

"USEPA Inorganic Methods" means "Methods for Chemical Analysis of Water and Wastes," March 1983, available from NTIS.

"USEPA Interim Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75/008 (revised), March 1976. Available from NTIS.

"USEPA Method 1600" means "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-Glucoside Agar (mEI)," available from USEPA, Water Resource Center.

"USEPA Method 1601" means "Method 1601: Male-specific (F^+) and Somatic Coliphage in Water by Two-step Enrichment Procedure," available from USEPA, Water Resource Center.

"USEPA Method 1602" means "Method 1602: Male-specific (F^+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure," available from USEPA, Water Resource Center.

"USEPA Method 1604" means "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," available from USEPA, Water Resource Center.

"USEPA NERL Method 200.5 (rev. 4.2)" means Method 200.5, Revision 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma – Atomic Emission Spectrometry," October 2003, EPA 600/R-06/115. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 415.3 (rev. 1.1)" means Method 415.3, Revision 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," USEPA, February 2005, EPA 600/R-05/055. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 415.3 (rev. 1.2)" means Method 415.3, Revision 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," USEPA, August 2009, EPA 600/R-09/122. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 549.2" means Method 549.2, Revision 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection," June 1997. Available from USEPA, Office of Research and Development.

"USEPA OGWDW Methods" means the methods listed as available from the USEPA, Office of Ground Water and Drinking Water (Methods 302.0,

317.0 (rev. 2.0), 326.0 (rev. 1.0), 327.0 (rev. 1.1), 334.0, 515.4 (rev. 1.0), 524.3 (rev. 1.0), 531.2 (rev. 1.0), 552.3 (rev. 1.0), 557, 1622 (99), 1622 (01), 1622 (05), 1623 (99), 1623 (01), and 1623 (05)). Available from NTIS; USEPA, NSCEP; or USEPA, OGWDW.

"USEPA Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water," December 1988 (revised July 1991) (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0)); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement I," July 1990 (Methods 547, 550, and 550.1); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement II," August 1992 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0)); and "Methods for the Determination of Organic Compounds in Drinking Water – Supplement III," August 1995 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0)). Available from NTIS; USEPA, NSCEP; or USEPA, EMSL.

"USEPA Organic and Inorganic Methods" means "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," EPA 815/R-00/014, PB2000-106981, August 2000. Available from NTIS.

"USEPA Radioactivity Methods" means "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA 600/4-80/032, August 1980. Available from NTIS.

"USEPA Radiochemical Analyses" means "Radiochemical Analytical Procedures for Analysis of Environmental Samples," March 1979. Available from NTIS.

"USEPA Radiochemistry Procedures" means "Radiochemistry Procedures Manual," EPA 520/5-84/006, December 1987. Available from NTIS.

"USEPA Technical Notes" means "Technical Notes on Drinking Water Methods," available from NTIS and USEPA, NSCEP.

"USGS Methods" means "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory – Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments," available from NTIS and USGS.

"Waters Method B-1011" means "Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," available from Waters Corporation, Technical Services Division.

b) The Board incorporates the following publications by reference:

ALPKEM, Division of OI Analytical, P.O. Box 9010, College Station, TX 77842-9010, telephone: 979-690-1711, Internet: www.oico.com.

"Method OIA-1677 DW, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," EPA 821/R-04/001, January 2004 (referred to as "OI Analytical Method OIA-1677"), referenced in Section 611.611.
BOARD NOTE: Also available online for download from www.epa.gov/waterscience/methods/method/cyanide/1677-2004.pdf.

APHA. American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005 202-777-2742.

"Standard Methods for the Examination of Water and Wastewater," 17th Edition, 1989 (referred to as "Standard Methods, 17th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, including "Supplement to the 18th Edition of Standard Methods for the Examination of Water and Wastewater," 1994 (collectively referred to as "Standard Methods, 18 th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 19 th Edition, 1995 (referred to as "Standard Methods, 19 th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 20th Edition, 1998 (referred to as "Standard Methods, 20th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 21st Edition, 2005 (referred to as "Standard Methods, 21st ed."). See the methods listed separately for the same references under American Waterworks Association.

American Society for Microbiology, 1752 N Street N.W., Washington, DC 20036, 202-737-3600:

"Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters," Applied and Environmental Microbiology, Oct. 1996, vol. 62, no. 10, p. 3881 (referred to as "Enterolert"), referenced in Section 611.802.

BOARD NOTE: At the table to 40 CFR 141.402(c)(2), USEPA approved the method as described in the above literature review. The method itself is embodied in the printed instructions to the proprietary kit available from IDEXX Laboratories, Inc. (accessible on-line and available by download from www.asm.org, as "Enterolert™ Procedure"). ASTM approved the method as "Standard Test Method for Enterococci in Water Using Enterolert™," which is available in two versions from ASTM: ASTM Method D6503-99 (superceded) and ASTM Method D6503-99. While it is more conventional to incorporate the method as presented in the kit instructions or as approved by ASTM by reference, the Board is constrained to incorporate the version that appears in the technical literature by reference, which is the version that USEPA has explicitly approved.

AWWA. American Water Works Association et al., 6666 West Quincy Ave., Denver, CO 80235 (303-794-7711).

"National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli for Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method," S.C. Edberg, M.J. Allen & D.B. Smith, Applied Environmental Microbiology, vol. 54, iss. 6, pp 1595-1601 (1988), referenced in Appendix D to this Part.

"Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971 (referred to as "Standard Methods, 13th ed.").

Method 302, Gross Alpha and Gross Beta Radioactivity in

Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 303, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 304, Radium in Water by Precipitation, referenced in Section 611.720.

Method 305, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section 611.720.

Method 306, Tritium in Water, referenced in Section 611.720.

"Standard Methods for the Examination of Water and Wastewater," 17th Edition, 1989 (referred to as "Standard Methods, 17th ed.").

Method 7110 B, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium in Water, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium in Water by Precipitation, referenced in Section 611.720.

Method 7500-Ra C, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section

611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

"Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992 (referred to as "Standard Methods, 18 th ed.").

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic

Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium

Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation

Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9223, Chromogenic Substrate Coliform Test (Proposed) (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526~~,~~ and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

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Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

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Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II, referenced in Sections 611.381 and 611.531.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode

Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection Byproducts: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120 B, Gamma-Emitting Radionuclides, Gamma

Spectrometric Method, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radiactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

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Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

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Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.531.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Sections 611.381 and 611.382.

Method 6251, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-^{3}H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Sections 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9221 F, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia Coli Procedure (Proposed), referenced in Section 611.802.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526, 611.802, and 611.1004.

Method 9230 B, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

Method 9230 C, Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques, referenced in Section 611.802.

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Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic

Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.381.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.381.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.381.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.381.

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.381.

Method 4500-CN^- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F^- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F^- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F^- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H^+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-SiO_2 C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO_2 D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO_2 E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Sections 611.381 and 611.382.

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Method 6610, Method 6610 B, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

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Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

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USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water," December 1988 (revised July 1991), EPA 600/4-88/039, Doc. No. PB91-231480, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement I," July 1990, EPA 600/4-90/020, Doc. No. PB91-146027, referenced in Section 611.645 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement II," August 1992, EPA 600/R-92/129, Doc. No. PB92-207703, referenced in Sections 611.381 and 611.645. (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); and "Methods for the Determination of Organic Compounds in Drinking Water – Supplement III," August 1995, EPA 600/R-95/131, Doc. No. PB95-261616, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2

(rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only.) See also USEPA, EMSL and USEPA, NSCEP.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA 600/4-80/032, August 1980, Doc. No. PB80-224744, referenced in Section 611.720 (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0, 908.0, 908.1). See also USEPA, NSCEP.

USEPA Radiochemical Analyses, "Radiochemical Analytical Procedures for Analysis of Environmental Samples," March 1979, Doc. No. EMSL LV 053917, referenced in Section 611.720. (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.)

USEPA Radiochemistry Procedures, "Radiochemistry Procedures Manual," EPA 520/5-84-006, August 1984, Doc. No. PB84-215581 (referred to as ""), referenced in Section 611.720. (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.)

USEPA Technical Notes, "Technical Notes on Drinking Water Methods," EPA 600/R-94/173, October 1994, Doc. No. PB95-104766, referenced in Sections 611.531, 611.611, and 611.645. See also USEPA, NSCEP.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (2010~~2009~~): "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996." Also available online at http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm under the document designation "600R94173."

New Jersey Department of Environment, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625.

"Determination of Radium 228 in Drinking Water," August 1990 (referred to as "New Jersey Radium Method"), referenced in Section 611.720.

New York Department of Health, Radiological Sciences Institute, Center for Laboratories and Research, Empire State Plaza, Albany, NY 12201.

"Determination of Ra-226 and Ra-228 (Ra-02)," January 1980, Revised June 1982 (referred to as "New York Radium Method"), referenced in Section 611.720.

Palintest, Ltd., 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY (800-835-9629).

Palintest Method 1001, "Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry," Method 1001, August 1999, referenced in Section 611.611.

Palintest ChloroSense, "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense," September 2009, referenced in Sections 611.381 and 611.531. See also NEMI.

Standard Methods Online, available online from the Standard Methods Organization at www.standardmethods.org.

Method 3113 B-04, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B-04, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 6610 B-04, Carbamate Pesticides, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.

Method 9230 B-04, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

BOARD NOTE: Where, in appendix A to subpart C of 40 CFR 141 (2011), USEPA has authorized use of an approved alternative method from Standard Methods Online, and that version of the method appears also in Standard Methods, 21st ed., the Board cites only to Standard Methods, 21st ed. for that method. The methods that USEPA listed as available from Standard Methods Online, and which are listed above as in Standard Methods, 21st edition, are the following: 4500-P E-99 and, 4500-P F-99; (for orthophosphate);

4500-SO_4^{-2} C-97, 4500-SO_4^{-2} D-97, 4500-SO_4^{-2} E-97, and 4500-SO_4^{-2} F-97 (for sulfate);~~,~~ 6640 B-01 (for 2,4-D, 2,4,5-TP (silvex) (dalapon, dinoseb, pentachlorophenol, and picloram); 5561 B-00 (for glyphosate);~~,~~ and 9223 B-97 (for E. coli). Since each method is the same version from both sources, the Board views a copy from Standard Methods Online as equivalent to a copy from Standard Methods Online, even though the Board does not also cite to Standard Methods Online. The Board intends that use of the version of the method that is incorporated by reference is acceptable from either source ~~is acceptable~~.

SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340, Hinwil, Switzerland.

AMI Turbiwell Method, "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter," August 2009, referenced in Section 611.531. See also NEMI.

Syngenta Crop Protection, Inc., 410 Swing Road, Post Office Box 18300, Greensboro, NC 27419 (336-632-6000).

"Atrazine in Drinking Water by Immunoassay," February 2001 (referred to as "Syngenta AG-625"), referenced in Section 611.645.

Systea Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523.

Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate Method~~,~~" February 2009, referenced in Section 611.611. See also NEMI.

Thermo Scientific, 166 Cummings Center, Beverly, MA 01915~~.~~ (www.thermo.com).

Orion Method AQ4500, "Determination of Turbidity by LED Nephelometry," May 2009, referenced in Section 611.531. See also NEMI.

USDOE, EML. United States Department of Energy, Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson Street, New York, NY 10014-3621.

"EML Procedures Manual," HASL 300, 27th Edition, Volume 1,

1990 (referred to as "EML Procedures Manual (27th ed.)"), referenced in Section 611.720.

"EML Procedures Manual," HASL 300, 28th ed., 1997 (referred to as "EML Procedures Manual (28th ed.)"), referenced in Section 611.720.

USEPA, EMSL. United States Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 (513-569-7586).

USEPA Interim Radiochemical Methods, "Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75/008 (revised), March 1976, referenced in Section 611.720. See also NTIS.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water," December 1988 (revised July 1991), EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement I," July 1990, EPA 600/4-90/020, referenced in Sections 611.645 and 611.648 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement II," August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement III," August 1995, EPA 600/R-95/131, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA, NSCEP.

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," referenced in Section 611.720. See also NTIS.

USEPA, NSCEP. United States Environmental Protection Agency, National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242-0419 (accessible on-line and available by download from http://www.epa.gov/nscep/).

Dioxin and Furan Method 1613, Revision B, "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS," October 1994, EPA 821/B-94/005, referenced in Section 611.645. See also NTIS.

Guidance Manual for Filtration and Disinfection, "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources," March 1991, EPA 570/3-91-001, referenced in Section 611.111.

USEPA Asbestos Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water," September 1983, EPA 600/4-83-043, referenced in Section 611.611. See also NTIS.

USEPA Asbestos Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water," June 1994, EPA 600/R-94-134, referenced in Section 611.611. See also NTIS.

USEPA Environmental Inorganic Methods, "Methods for the Determination of Inorganic Substances in Environmental Samples," August 1993, EPA 600/R-93-100, referenced in Sections 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0) only.) See also NTIS.

USEPA Environmental Metals Methods, "Methods for the Determination of Metals in Environmental Samples – Supplement I," May 1994, EPA 600/R-94-111, referenced in Sections 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) See also NTIS.

USEPA Inorganic Methods, "Methods for Chemical Analysis of Water and Wastes," March 1983, EPA 600/4-79-020, referenced in Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) See also NTIS.

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," September 2009, EPA 815/B-09/014, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," July 2001, EPA 815/B-01/001, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis," June 2002, EPA 815/R-03/007, referenced in Sections 611.381 and 611.382. See also NTIS and USEPA, OGWDW.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry," May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer," August 2009, EPA 815/B-09/013, referenced in Section 611.531. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization," September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-Liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection," July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion

Chromatography Electrospray Ionization Tandem Mass Spectrometry," July 2003, EPA 815/B-03/002, referenced in Sections 611.381, 611.382, and 611.645. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 1622 (01), "Cryptosporidium in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, OGWDW.

USEPA Organic and Inorganic Methods, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000, EPA 815/R-00/014, referenced in Section 611.381. (Methods 300.1 (rev. 1.0) and 321.8 (rev. 1.0) only.) See also NTIS.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water," December 1988, revised July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement I," July 1990, EPA 600/4-90/020, referenced in Section 611.645 and 611.648 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement II," August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water – Supplement III," August 1995, EPA 600/R-95/131, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA, EMSL.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," August 1980, EPA 600/4-80/032, referenced in Section 611.720. (For methods 900.0, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1 only.) See also NTIS.

USEPA Technical Notes, "Technical Notes on Drinking Water Methods," October 1994, EPA 600/R-94/173, referenced in Sections 611.531, 611.611, and 611.645. See also NTIS.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (2011~~2007~~): "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996." Also available online at http://nepis.epa.gov/EPA/html/Pubs/pubtitleORD.htm under the document designation "600R94173."

USEPA, OGWDW. United States Environmental Protection Agency, USEPA Office of Ground Water and Drinking Water (accessible on-line and available by download from http://www.epa.gov/safewater/methods/).

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," September 2009, EPA 815/B-09/014, referenced in Section 611.381. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," USEPA, July 2001, EPA 815/B-01/001, referenced in Section 611.381. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis," USEPA, June 2002, EPA 815/R-03/007, referenced in Section 611.381. See also NTIS and USEPA, NSCEP.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry," USEPA, May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer," USEPA, August 2009, EPA 815/B-09/013, referenced in Section 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 515.4, rev. 1.0, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection," April 2000, EPA 815/B-00/001 (document file name "met515_4.pdf"), referenced in Section 611.645.

USEPA OGWDW Methods, Method 524.3, rev. 1.0, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," June 2009, EPA 815/B-09/009 (referred to as "Method 524.3 (rev. 1.0)"), referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization," September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection," USEPA, July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry," July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (05), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," December 2005, EPA 815/R-05/001, referenced in Sections 611.1004 and 611.1007.

USEPA OGWDW Methods, Method 1622 (01), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (99), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," April 1999, EPA 821/R-99/001, referenced in Section 611.1007.

USEPA OGWDW Methods, Method 1623 (05), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," December 2005, EPA 815/R-05/002, referenced in Sections 611.1004 and 611.1007.

USEPA OGWDW Methods, Method 1623 (01), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/025, referenced in Section 611.1007.

USEPA OGWDW Methods, Method 1623 (99), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," January 1999, EPA 821/R-99/006, referenced in Sections 611.1007.

BOARD NOTE: Many of the above-listed documents available from the USEPA, Office of Ground Water and Drinking Water are also listed as available from NTIS.

USEPA, ORD. USEPA, Office of Research and Development, National Exposure Research Laboratory, Microbiological & Chemical Exposure Assessment Research Division (accessible on-line and available by download from http://www.epa.gov/nerlcwww/ordmeth.htm).

USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma – Atomic Emission Spectrometry," October 2003, EPA 600/R-06/115, referenced in Sections 611.611 and 611.612.

USEPA NERL Method 415.3, rev. 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-05/055, referenced in Section 611.381.

USEPA NERL Method 415.3, rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-09/122, referenced in Section 611.381.

USEPA NERL Method 549.2, rev. 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection," June 1997.

USEPA Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460:

E*Colite Test, "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water," January 9, 1998, referenced in Section 611.802. See also Charm Sciences, Inc.

m-ColiBlue24 Test, "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24® Broth," Method No. 10029, rev. 2, August 17, 1999, referenced in Section 611.802. See also The Hach Company.

USEPA Method 1600, "EPA Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-Glucoside Agar (mEI)," September 2002, EPA 821/R-02/022 is an approved variation of Standard Methods, Method 9230 C, "Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques" (which has not itself been approved for use by USEPA) (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1600sp02.pdf), referenced in Section 611.802.

USEPA Method 1601,_"Method 1601: Male-specific (F^+) and Somatic Coliphage in Water by Two-step Enrichment Procedure," April 2001, EPA 821/R-01/030 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1601ap01.pdf), referenced in Section 611.802.

USEPA Method 1602,_"Method 1602: Male-specific (F^+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure," April 2001, EPA 821/R-01/029 (accessible on-line and available by download from

http://www.epa.gov/nerlcwww/1602ap01.pdf), referenced in Section 611.802.

USEPA Method 1604, "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," September 2002, EPA 821/R-02/024 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1604sp02.pdf), referenced in Section 611.802.

USGS. Books and Open-File Reports Section, United States Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

Methods available upon request by method number from "Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory – Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments," Open File Report 93-125, 1993, or Book 5, Chapter A-1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," 3rd ed., Open-File Report 85-495, 1989, as appropriate (referred to as "USGS Methods").

I-1030-85, referenced in Section 611.611.

I-1601-85, referenced in Section 611.611.

I-1700-85, referenced in Section 611.611.

I-2598-85, referenced in Section 611.611.

I-2601-90, referenced in Section 611.611.

I-2700-85, referenced in Section 611.611.

I-3300-85, referenced in Section 611.611.

Methods available upon request by method number from "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments," Chapter A5 in Book 5 of "Techniques of Water-Resources Investigations of the United States Geological Survey," 1997.

R-1110-76, referenced in Section 611.720.

R-1111-76, referenced in Section 611.720.

R-1120-76, referenced in Section 611.720.

R-1140-76, referenced in Section 611.720.

R-1141-76, referenced in Section 611.720.

R-1142-76, referenced in Section 611.720.

R-1160-76, referenced in Section 611.720.

R-1171-76, referenced in Section 611.720.

R-1180-76, referenced in Section 611.720.

R-1181-76, referenced in Section 611.720.

R-1182-76, referenced in Section 611.720.

Waters Corporation, Technical Services Division, 34 Maple St., Milford, MA 01757 (800-252-4752 or 508-482-2131, fax: 508-482-3625).

"Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," Method B-1011, August 1987 (referred to as "Waters Method B-1011"), referenced in Section 611.611.

c) The Board incorporates the following federal regulations by reference:

40 CFR 3.2 (2011~~2010~~) (How Does This Part Provide for Electronic Reporting?), referenced in Section 611.105.

40 CFR 3.3 (2011~~2010~~) (What Definitions Are Applicable to This Part?), referenced in Section 611.105.

40 CFR 3.10 (2011~~2010~~) (What Are the Requirements for Electronic Reporting to EPA?), referenced in Section 611.105.

40 CFR 3.2000 (2011~~2010~~) (What Are the Requirements Authorized State, Tribe, and Local Programs' Reporting Systems Must Meet?), referenced in Section 611.105.

40 CFR 136.3(a) (2011~~2010~~), referenced in Section 611.1004.

Appendix B to 40 CFR 136 (2011~~2010~~), referenced in Sections 611.359, 611.609, and 611.646.

40 CFR 142.20(b)(1) (2011~~2010~~), referenced in Section 611.112.

d) This Part incorporates no later amendments or editions.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.130 Special Requirements for Certain Variances and Adjusted Standards

a) Relief from the fluoride MCL.

1) In granting any variance or adjusted standard to a supplier that is a CWS from the maximum contaminant level for fluoride listed in Section 611.301(b), the Board will require application of the best available technology (BAT) identified at subsection (a)(4) of this Section for that constituent as a condition to the relief, unless the supplier has demonstrated through comprehensive engineering assessments that application of BAT is not technically appropriate and technically feasible for that supplier.

2) The Board will require the following as a condition for relief from the fluoride MCL where it does not require the application of BAT:

A) That the supplier continue to investigate the following methods as an alternative means of significantly reducing the level of fluoride, according to a definite schedule:

i) A modification of lime softening;

ii) Alum coagulation;

iii) Electrodialysis;

iv) Anion exchange resins;

v) Well field management;

vi) The use of alternative sources of raw water; and

vii) Regionalization; and

B) That the supplier report results of that investigation to the Agency.

3) The Agency must petition the Board to reconsider or modify a variance or adjusted standard, pursuant to Subpart I of 35 Ill. Adm. Code 101, if it determines that an alternative method identified by the supplier pursuant to subsection (a)(2) of this Section is technically feasible and would result in a significant reduction in fluoride.

4) Best available technology for fluoride reduction is as follows:

A) Activated alumina absorption centrally applied; and

B) Reverse osmosis centrally applied.

BOARD NOTE: Subsection (a) derived from 40 CFR 142.61 (2011~~2003~~).

b) Relief from an IOC, VOC, or SOC MCL.

1) In granting to a supplier that is a CWS or NTNCWS any variance or adjusted standard from the maximum contaminant levels for any VOC or SOC, listed in Section 611.311(a) or (c), or for any IOC, listed in Section 611.301, the supplier must have first applied the best available technology (BAT) identified at Section 611.311(b) (VOCs and SOCs) or Section 611.301(c) (IOCs) for that constituent, unless the supplier has demonstrated through comprehensive engineering assessments that application of BAT would achieve only a minimal and insignificant reduction in the level of contaminant.

BOARD NOTE: USEPA lists BAT for each SOC and VOC at 40 CFR 142.62(a), for the purposes of variances and exemptions (adjusted standards). That list is identical to the list at 40 CFR 141.61(b).

2) The Board may require any of the following as a condition for relief from an MCL listed in Section 611.301 or 611.311:

A) That the supplier continue to investigate alternative means of compliance according to a definite schedule; and

B) That the supplier report results of that investigation to the Agency.

3) The Agency must petition the Board to reconsider or modify a variance or adjusted standard, pursuant to Subpart I of 35 Ill. Adm. Code 101, if it determines that an alternative method identified by the supplier pursuant to subsection (b)(2) of this Section is technically feasible.

BOARD NOTE: Subsection (b) derived from 40 CFR 142.62(a) through (e)(2011~~2003~~).

c) Conditions requiring use of bottled water, a point-of-use treatment device, or a point-of-entry treatment device. In granting any variance or adjusted standard from the maximum contaminant levels for organic and inorganic chemicals or an adjusted standard from the treatment technique for lead and copper, the Board may impose certain conditions requiring the use of bottled water, a point-of-entry treatment device, or a point-of-use treatment device to avoid an unreasonable risk to health, limited as provided in subsections (d) and (e) of this Section.

1) Relief from an MCL. The Board may, when granting any variance or adjusted standard from the MCL requirements of Sections 611.301 and 611.311, impose a condition that requires a supplier to use bottled water, a point-of-entry treatment device, a point-of-use treatment device, or other means to avoid an unreasonable risk to health.

2) Relief from corrosion control treatment. The Board may, when granting an adjusted standard from the corrosion control treatment requirements for lead and copper of Sections 611.351 and 611.352, impose a condition that requires a supplier to use bottled water, a point-of-use treatment device, or other means, but not a point-of-entry treatment device, to avoid an unreasonable risk to health.

3) Relief from source water treatment or service line replacement. The Board may, when granting an exemption from the source water treatment and lead service line replacement requirements for lead and copper under Sections 611.353 or 611.354, impose a condition that requires a supplier to use a point-of-entry treatment device to avoid an unreasonable risk to health.

BOARD NOTE: Subsection (c) derived from 40 CFR 142.62(f) (2011~~2003~~).

d) Use of bottled water. Suppliers that propose to use or use bottled water as a condition for receiving a variance or an adjusted standard from the requirements of Section 611.301 or Section 611.311 or an adjusted standard from the requirements of Sections 611.351 through 611.354 must meet the requirements of either subsections (d)(1), (d)(2), (d)(3), and (d)(6) or (d)(4), (d)(5), and (d)(6) of

this Section.

1) The supplier must develop a monitoring program for Board approval that provides reasonable assurances that the bottled water meets all MCLs of Sections 611.301 and 611.311 and submit a description of this program as part of its petition. The proposed program must describe how the supplier will comply with each requirement of this subsection (d).

2) The supplier must monitor representative samples of the bottled water for all contaminants regulated under Sections 611.301 and 611.311 during the first three-month period that it supplies the bottled water to the public, and annually thereafter.

3) The supplier must annually provide the results of the monitoring program to the Agency.

4) The supplier must receive a certification from the bottled water company as to each of the following:

   A) that the bottled water supplied has been taken from an approved source of bottled water, as such is defined in Section 611.101;

   B) that the approved source of bottled water has conducted monitoring in accordance with 21 CFR 129.80(g)(1) through (g)(3);

   C) and that the bottled water does not exceed any MCLs or quality limits as set out in 21 CFR 165.110,~~103.35,~~ 110, and 129.

5) The supplier must provide the certification required by subsection (d)(4) of this Section to the Agency during the first quarter after it begins supplying bottled water and annually thereafter.

6) The supplier must assure the provision of sufficient quantities of bottled water to every affected person supplied by the supplier via door-to-door bottled water delivery.

BOARD NOTE: Subsection (d) derived from 40 CFR 142.62(g) (2011~~2003~~).

e) Use of a point-of-entry treatment device. Before the Board grants any PWS a variance or adjusted standard from any NPDWR that includes a condition requiring the use of a point-of-entry treatment device, the supplier must demonstrate to the Board each of the following:

1) That the supplier will operate and maintain the device;

2) That the device provides health protection equivalent to that provided by central treatment;

3) That the supplier will maintain the microbiological safety of the water at all times;

4) That the supplier has established standards for performance, conducted a rigorous engineering design review, and field tested the device;

5) That the operation and maintenance of the device will account for any potential for increased concentrations of heterotrophic bacteria resulting through the use of activated carbon, by backwashing, post-contactor disinfection, and heterotrophic plate count monitoring;

6) That buildings connected to the supplier's distribution system have sufficient devices properly installed, maintained, and monitored to assure that all consumers are protected; and

7) That the use of the device will not cause increased corrosion of lead and copper bearing materials located between the device and the tap that could increase contaminant levels at the tap.

BOARD NOTE: Subsection (e) derived from 40 CFR 142.62(h) (2011~~2003~~).

f) Relief from the maximum contaminant levels for radionuclides ~~(effective December 8, 2003)~~.

1) Relief from the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity (excluding radon and uranium), and beta particle and photon radioactivity.

A) Section 611.330(g) sets forth what USEPA has identified as the best available technology (BAT), treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in Section 611.330(b), (c), (d), and (e), for the purposes of issuing relief equivalent to a federal section 1415 variance or a section 1416 exemption.

B) In addition to the technologies listed in Section 611.330(g),

Section 611.330(h) sets forth what USEPA has identified as the BAT, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in Section 611.330(b), (c), (d), and (e), for the purposes of issuing relief equivalent to a federal section 1415 variance or a section 1416 exemption to small drinking water systems, defined here as those serving 10,000 persons or fewer, as shown in the second table set forth at Section 611.330(h).

2) The Board will require a CWS supplier to install and use any treatment technology identified in Section 611.330(g), or in the case of small water systems (those serving 10,000 persons or fewer), listed in Section 611.330(h), as a condition for granting relief equivalent to a federal section 1415 variance or a section 1416 exemption, except as provided in subsection (f) (3) of this Section. If, after the system's installation of the treatment technology, the system cannot meet the MCL, that system will be eligible for relief.

3) If a CWS supplier can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment technologies identified in this Section would only achieve a de minimus reduction in the contaminant level, the Board may issue a schedule of compliance that requires the system being granted relief equivalent to a federal section 1415 variance or a section 1416 exemption to examine other treatment technologies as a condition of obtaining the relief.

4) If the Agency determines that a treatment technology identified under subsection (f)(3) of this Section is technically feasible, it may request that the Board require the supplier to install and use that treatment technology in connection with a compliance schedule issued pursuant to Section 36 of the Act [415 ILCS 5/36]. The Agency's determination must be based upon studies by the system and other relevant information.

5) The Board may require a CWS to use bottled water, point-of-use devices, point-of-entry devices, or other means as a condition of granting relief equivalent to a federal section 1415 variance or a section 1416 exemption from the requirements of Section 611.330, to avoid an unreasonable risk to health.

6) A CWS supplier that uses bottled water as a condition for receiving relief equivalent to a federal section 1415 variance or a section 1416 exemption from the requirements of Section 611.330 must meet the requirements specified in either subsections (d)(1) through (d)(3) or (d)(4) through

(d)(6) of this Section.

7) A CWS supplier that uses point-of-use or point-of-entry devices as a condition for obtaining relief equivalent to a federal section 1415 variance or a section 1416 exemption from the radionuclides NPDWRs must meet the conditions in subsections (e)(1) through (e)(6) of this Section.

BOARD NOTE: Subsection (f) derived from 40 CFR 142.65 (2011~~2003~~).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.611 Inorganic Analysis

Analytical methods are from documents incorporated by reference in Section 611.102. These are mostly referenced by a short name defined by Section 611.102(a). Other abbreviations are defined in Section 611.101.

a) Analysis for the following contaminants must be conducted using the following methods or an alternative method approved pursuant to Section 611.480. Criteria for analyzing arsenic, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical procedures, are contained in USEPA Technical Notes, incorporated by reference in Section 611.102.

BOARD NOTE: Because MDLs reported in USEPA Environmental Metals Methods 200.7 and 200.9 were determined using a 2× preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium by USEPA Environmental Metals Method 200.7, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by USEPA Environmental Metals Method 200.9; antimony and lead by Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; and lead by ASTM Method D3559-96 D or D3559-03 D unless multiple in-furnace depositions are made.

1) Alkalinity.

A) Titrimetric.

i) ASTM Method D1067-92 B, ~~or~~ D1067-02 B, or D1067-06 B; ~~or~~

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2320 B; or ~~.~~

iii) Standard Methods Online, Method 3113 B-04.

B) Electrometric titration: USGS Methods: Method I-1030-85.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320 B as an approved alternative method for alkalinity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1067-06 B and Standard Methods Online, Method 3113 B-04 as approved alternative methods for alkalinity in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

2) Antimony.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, hydride technique: ASTM Method D3697-92, D3697-02, or D3697-07.

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev.2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113B and USEPA NERL Method 200.5 as approved alternative methods for antimony in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3697-07 as an approved alternative method for antimony in appendix A to subpart C of

40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908. USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

3) Arsenic.

BOARD NOTE: If ultrasonic nebulization is used in the determination of arsenic by Method 200.8, the arsenic must be in the pentavalent state to provide uniform signal response. For direct analysis of arsenic with Method 200.8 using ultrasonic nebulization, samples and standards must contain one mg/ℓ of sodium hypochlorite.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

C) Atomic absorption, furnace technique.

i) ASTM Method D2972-97 C, D2972-03 C, or D2972-08 C; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or~~:~~

iii) Standard Methods Online, Method 3113 B-04.

D) Atomic absorption, hydride technique.

i) ASTM Method D2972-97 B, D2972-03 C, or D2972-08 B; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3114 B; or~~:~~

iii) Standard Methods Online, Method 3114 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2972-08 B and C as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908. USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-04 as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

4) Asbestos: Transmission electron microscopy: USEPA Asbestos Method-100.1 or USEPA Asbestos Method-100.2.

5) Barium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed., Method 3111 D.

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 D, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for barium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added

Standard Methods Online, Method 3113 B-04 as an approved alternative method for barium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

6) Beryllium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3645-97 B or D3645-03 B; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or ~~-~~

iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for beryllium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3645-08 B as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

7) Cadmium.

A) Inductively coupled plasma arc furnace: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for cadmium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for cadmium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

8) Calcium.

A) EDTA titrimetric.

i) ASTM Method D511-93 A, D511-03 A, or D511-09 A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Ca D or Standard Methods, 20th or 21st ed., Method 3500-Ca B.

B) Atomic absorption, direct aspiration.

i) ASTM Method D511-93 B, D511-03 B, or D511-09 B; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3120 B, and 3500-Ca B and USEPA NERL Method 200.5 as approved alternative methods for calcium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for calcium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for calcium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

9) Chromium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3120 B and USEPA NERL Method 200.5 as an approved alternative methods~~method~~ for chromium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for chromium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

10) Copper.

A) Atomic absorption, furnace technique.

i) ASTM Method D1688-95 C, D1688-02 C, or D1688-07 C; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or~~.~~

iii) Standard Methods Online, Method 3113 B-04.

B) Atomic absorption, direct aspiration.

i) ASTM Method D1688-95 A, D1688-02 A, or D1688-07 A; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

D) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

E) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES), USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D1688-07 A and C as approved alternative methods for copper in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

11) Conductivity; Conductance.

A) ASTM Method D1125-95(1999) A; or

B) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2510 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2510 B as an approved alternative method for conductivity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

12) Cyanide.

A) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN^- C), followed by spectrophotometric, amenable.

i) ASTM Method D2036-98 B or 2036-06 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN^- G.

B) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN^- C), followed by spectrophotometric, manual.

i) ASTM Method D2036-98 A or D2036-06 A;

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN^- E; or

iii) USGS Methods, Method I-3300-85.

C) Spectrophotometric, semiautomated: USEPA Environmental Inorganic Methods, Method 335.4 (rev. 1.0).

D) Selective electrode: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN^- F.

E) UV/Distillation/Spectrophotometric: Kelada 01.

F) Microdistillation/Flow Injection/Spectrophotometric: QuickChem 10-204-00-1-X.

G) Ligand exchange and amperometry.

i) ASTM Method D6888-03.

ii) OI Analytical Method OIA-1677 DW.

H) Gas chromatography-mass spectrometry headspace: Method ME355.01.

BOARD NOTE: USEPA added ASTM Method D2036-06 A and Standard Methods, 21st ed., Methods 4500-CN^-E, F, and G as approved alternative methods for cyanide in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Method ME355.01 as an approved alternative method for cyanide in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

13) Fluoride.

A) Ion Chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03; ~~or~~

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or.

iv) Hach SPADNS 2 Method 10225.

B) Manual distillation, colorimetric SPADNS: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F⁻ B and D.

C) Manual electrode.

i) ASTM Method D1179-93 B, D1179-99 B, or D1179-04 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F⁻ C.

D) Automated electrode: Technicon Methods, Method 380-75WE.

E) Automated alizarin.

i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F⁻ E; or

ii) Technicon Methods, Method 129-71W.

F) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00 (2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500⁻ B, C, D, and E and ASTM Method D1179-04 B as approved alternative methods for fluoride in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Hach SPADNS 2 Method 10225 as an approved alternative method for fluoride in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

14) Lead.

A) Atomic absorption, furnace technique.

i) ASTM Method D3559-96 D, D3559-03 D, or D3559-08; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or~~.~~

iii) Standard Methods Online, Method 3113 B-04.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Differential Pulse Anodic Stripping Voltammetry: Palintest Method 1001.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for lead in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3559-08 D as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

15) Magnesium.

A) Atomic absorption.

i) ASTM Method D511-93 B, D511-03 B, or D511-09 B; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

B) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

C) Complexation titrimetric.

i) ASTM Method D511-93 A, D511-03 A, or D511-09 A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Mg E or Standard Methods, 20th or 21st ed., Method 3500-Mg B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3120 B, and 3500-Mg B and USEPA NERL Method 200.5 as approved alternative methods for magnesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for magnesium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for magnesium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

16) Mercury.

A) Manual cold vapor technique.

i) USEPA Environmental Metals Methods, Method 245.1 (rev. 3.0);

ii) ASTM Method D3223-97 or D3223-02; or

iii) Standard Methods, 18th, 19th, or 21st ed., Method 3112 B.

B) Automated cold vapor technique: USEPA Inorganic Methods, Method 245.2.

C) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3112 B as an approved alternative method for mercury in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

17) Nickel.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

E) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for nickel in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for nickel in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

18) Nitrate.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03;

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or

iv) Waters Test Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_3^- F.

C) Ion selective electrode.

i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_3^- D; or

ii) Technical Bulletin 601.

D) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_3^- E.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrate to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

F) Reduction-colorimetric: Systea Easy (1-Reagent).

G) Direct colorimetric: Hach TNTplus 835/836 Method 10206.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-NO_3^- D, E, and F as approved alternative methods for nitrate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Hach TNTplus 835/836 Method 10206 as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

19) Nitrite.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03;

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or

iv) Waters Test Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_3^- F.

C) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_3^- E.

D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO_2^- B.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrite to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

F) Reduction-colorimetric: Systea Easy (1-Reagent).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-NO_3^- E and F; and 4500-NO_2^- B as approved alternative methods for nitrite in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrite in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348).

20) Orthophosphate (unfiltered, without digestion or hydrolysis).

A) Automated colorimetric, ascorbic acid.

i) USEPA Environmental Inorganic Methods, Method 365.1 (rev. 2.0); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-P F.

B) Single reagent colorimetric, ascorbic acid.

i) ASTM Method D515-88 A; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-P E.

C) Colorimetric, phosphomolybdate: USGS Methods, Method I-1601-85.

D) Colorimetric, phosphomolybdate, automated-segmented flow: USGS Methods, Method I-2601-90.

E) Colorimetric, phosphomolybdate, automated discrete: USGS Methods, Method I-2598-85.

F) Ion Chromatography.

i) USEPA Environmental Inorganic Methods: Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B.

G) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for orthophosphate to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-P E and F as approved alternative methods for orthophosphate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

21) pH: electrometric.

A) USEPA Inorganic Methods, Method 150.1 or Method 150.2;

B) ASTM Method D1293-95 or D1293-99; or

C) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-H^+ B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-H^+ B as an approved alternative method for pH in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

22) Selenium.

A) Atomic absorption, hydride.

i) ASTM Method D3859-98 A, D3859-03 A, or D3859-08 A; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3114 B; or~~.~~

iii) Standard Methods Online, Method 3114 B-09.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3859-98 B, D3859-03 B, or D3859-08 B; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or~~.~~

iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

23) Silica.

A) Colorimetric, molybdate blue: USGS Methods, Method I-1700-85.

B) Colorimetric, molybdate blue, automated-segmented flow: USGS Methods, Method I-2700-85.

C) Colorimetric: ASTM Method D859-94, D859-00, or D859-05.

D) Molybdosilicate: Standard Methods, 18th or 19th ed., Method 4500-Si D or Standard Methods, 20th or 21st ed., Method 4500-SiO_2 C.

E) Heteropoly blue: Standard Methods, 18th or 19th ed., Method 4500-Si E or Standard Methods, 20th or 21st ed., Method 4500-SiO_2 D.

F) Automated method for molybdate-reactive silica: Standard Methods, 18th or 19th ed., Method 4500-Si F or Standard Methods, 20th or 21st ed., Method 4500-SiO_2 E.

G) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

H) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added ASTM Method D859-05, Standard Methods, 21st ed.; Methods 3120 B and 4500-SiO_2 C, D, and E; and USEPA NERL Method 200.5 as approved alternative methods for silica in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

24) Sodium.

A) Inductively coupled plasma: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Atomic absorption, direct aspiration: Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Ion chromatography: ASTM Method D6919-03 or D6919-09.

D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA~~USPEA~~ NERL Method 200.5 as approved alternative methods for sodium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D6919-09 as an approved alternative method for sodium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

25) Temperature; thermometric: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2550.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2550 as an approved alternative method for temperature in appendix A to subpart C on June 3, 2008 (at 73 Fed. Reg. 31616).

26) Thallium.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

b) Sample collection for antimony, arsenic (effective January 22, 2004), asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium pursuant to Sections 611.600 through 611.604 must be conducted using the following sample preservation, container, and maximum holding time procedures:

BOARD NOTE: For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4° C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of USEPA Environmental Metals Method 200.7, 200.8, or 200.9 are followed.

1) Antimony.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

2) Arsenic.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

3) Asbestos.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

4) Barium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

5) Beryllium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

6) Cadmium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

7) Chromium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

8) Cyanide.

A) Preservative: Cool to 4° C. Add sodium hydroxide to pH greater than 12. See the analytical methods for information on sample preservation.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

9) Fluoride.

A) Preservative: None.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within one month.

10) Mercury.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 28 days.

11) Nickel.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

12) Nitrate, chlorinated.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

13) Nitrate, non-chlorinated.

A) Preservative: Concentrated sulfuric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

14) Nitrite.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

15) Selenium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

16) Thallium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

c) Analyses under this Subpart N must be conducted by laboratories that received approval from USEPA or the Agency. The Agency must certify laboratories to conduct analyses for antimony, arsenic (effective January 23, 2006), asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium if the laboratory does as follows:

1) It analyzes performance evaluation (PE) samples, provided by the Agency pursuant to 35 Ill. Adm. Code 186, that include those substances at levels not in excess of levels expected in drinking water; and

2) It achieves quantitative results on the analyses within the following acceptance limits:

A) Antimony: ± 30% at greater than or equal to 0.006 mg/ℓ.

B) Arsenic: ± 30% at greater than or equal to 0.003 mg/ℓ.

C) Asbestos: 2 standard deviations based on study statistics.

D) Barium: ± 15% at greater than or equal to 0.15 mg/ℓ.

E) Beryllium: ± 15% at greater than or equal to 0.001 mg/ℓ.

F) Cadmium: ± 20% at greater than or equal to 0.002 mg/ℓ.

G) Chromium: ± 15% at greater than or equal to 0.01 mg/ℓ.

H) Cyanide: ± 25% at greater than or equal to 0.1 mg/ℓ.

I) Fluoride: ± 10% at 1 to 10 mg/ℓ.

J) Mercury: ± 30% at greater than or equal to 0.0005 mg/ℓ.

K) Nickel: ± 15% at greater than or equal to 0.01 mg/ℓ.

L) Nitrate: ± 10% at greater than or equal to 0.4 mg/ℓ.

M) Nitrite: ± 15% at greater than or equal to 0.4 mg/ℓ.

N) Selenium: ± 20% at greater than or equal to 0.01 mg/ℓ.

O) Thallium: ± 30% at greater than or equal to 0.002 mg/ℓ.

BOARD NOTE: Derived from 40 CFR 141.23(k) and appendix A to 40 CFR 141 (2011~~2010~~).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.612 Monitoring Requirements for Old Inorganic MCLs

a) Analyses for the purpose of determining compliance with the old inorganic MCLs of Section 611.300 are required as follows:

1) Analyses for all CWSs utilizing surface water sources must be repeated at

yearly intervals.

2) Analyses for all CWSs utilizing only groundwater sources must be repeated at three-year intervals.

3) This subsection (a)(3) corresponds with 40 CFR 141.23(1)(3), which requires monitoring for the repealed old MCL for nitrate at a frequency specified by the state. The Board has followed the USEPA lead and repealed that old MCL. This statement maintains structural consistency with USEPA rules.

4) This subsection (a)(4) corresponds with 40 CFR 141.23(1)(4) ,which authorizes the state to determine compliance and initiate enforcement action. This statement maintains structural consistency with USEPA rules.

b) If the result of an analysis made under subsection (a) of this Section indicates that the level of any contaminant listed in Section 611.300 exceeds the old MCL, the supplier must report to the Agency within seven days and initiate three additional analyses at the same sampling point within one month.

c) When the average of four analyses made pursuant to subsection (b) of this Section, rounded to the same number of significant figures as the old MCL for the substance in question, exceeds the old MCL, the supplier must notify the Agency and give notice to the public pursuant to Subpart V of this Part. Monitoring after public notification must be at a frequency designated by the Agency by a SEP granted pursuant to Section 611.110 and must continue until the old MCL has not been exceeded in two successive samples or until a different monitoring schedule becomes effective as a condition to a variance, an adjusted standard, a site specific rule, an enforcement action, or another SEP granted pursuant to Section 611.110.

d) This subsection (d) corresponds with 40 CFR 141.23(o), which pertains to monitoring for the repealed old MCL for nitrate. This statement maintains structural consistency with USEPA rules.

e) This subsection (e) corresponds with 40 CFR 141.23(p), which pertains to the use of existing data up until a date long since expired. This statement maintains structural consistency with USEPA rules.

f) Except for arsenic, for which analyses must be made in accordance with Section 611.611, analyses conducted to determine compliance with the old MCLs of Section 611.300 must be made in accordance with the following methods,

incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.

1) Fluoride: The methods specified in Section 611.611(c) must apply for the purposes of this Section.

2) Iron.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.;

ii) Method 3113 B, 18th, 19th, or 21st ed.;

iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

B) Standard Methods Online, Method 3113 B-04.

C~~B~~) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4); or

ii) Method 200.9 (rev. 2.2).

D~~C~~) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for iron in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for iron in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

3) Manganese.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.;

ii) Method 3113 B, 18th, 19th, or 21st ed.; or

iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

B) Standard Methods Online, Method 3113 B-04.

CB) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4);

ii) Method 200.8 (rev. 5.3); or

iii) Method 200.9 (rev. 2.2).

DC) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for manganese in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for manganese in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

4) Zinc.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.; or

ii) Method 3120 B, 18th , 19th, 20th, or 21st ed.

B) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4); or

ii) Method 200.8 (rev. 5.3).

C) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for zinc in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

BOARD NOTE: The provisions of subsections (a) through (e) of this Section derive from 40 CFR 141.23(l) through (p) (2011~~2010~~). Subsections (f)(2) through (f)(4) of this Section relate exclusively to additional State requirements. The Board retained subsection (f) of this Section to set forth methods for the inorganic contaminants for which there is a State-only MCL. The methods specified are those set forth in 40 CFR 143.4(b) and appendix A to subpart C of 40 CFR 141 (2011~~2010~~), for secondary MCLs.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.645 Analytical Methods for Organic Chemical Contaminants

Analysis for the Section 611.311(a) VOCs under Section 611.646; the Section 611.311(c) SOCs under Section 611.648; the Section 611.310 old MCLs under Section 611.641; and for THMs, TTHMs, and TTHM potential must be conducted using the methods listed in this Section. ~~All methods are from USEPA Organic Methods, unless otherwise indicated.~~ All methods are incorporated by reference in Section 611.102. Other required analytical test procedures germane to the conduct of these analyses are contained in the USEPA document, "Technical Notes of Drinking Water Methods," incorporated by reference in Section 611.102.

a) Volatile Organic Chemical Contaminants (VOCs).

Contaminant	Analytical Methods
Benzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Carbon tetrachloride	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0) and~~,~~ 551.1 (rev. 1.0)
Chlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1), 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,2-Dichlorobenzene	USEPA Organic Methods, Methods

	502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,4-Dichlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,2-Dichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
cis-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
trans-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Dichloromethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,2-Dichloropropane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Ethylbenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Styrene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Tetrachloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)and; 551.1 (rev. 1.0)
1,1,1-Trichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and; 524.2 (rev. 4.1);; USEPA OGWDW Methods,

	Method 524.3 (rev. 1.0) and~~,~~ 551.1 (rev. 1.0)
Trichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0) and~~,~~ 551.1 (rev. 1.0)
Toluene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,2,4-Trichlorobenzene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,1-Dichloroethylene	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
1,1,2-Trichloroethane	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Vinyl chloride	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)
Xylenes (total)	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~;~~ USEPA OGWDW Methods, Method 524.3 (rev. 1.0)

BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for all of the VOCs in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

b) Synthetic Organic Chemical Contaminants (SOCs).

Contaminant	Analytical Methods
2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD or dioxin)	Dioxin and Furan Method 1613 (rev. B)

2,4-D	USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Method 515.4 (rev. 1.0);~~,~~ ASTM Method D5317-93 or D5317-98; Standard Methods, 21st ed., Method 6640 B
2,4,5-TP (Silvex)	USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Method 515.4 (rev. 1.0);~~,~~ ASTM Method D5317-93 or D5317-98; Standard Methods, 21st ed., Method 6640 B
Alachlor	USEPA Organic Methods, Methods 505 (rev. 2.1)[1], 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Atrazine	USEPA Organic Methods, Methods 505 (rev. 2.1)[1], 507 (rev. 2.1), 508.1 (rev. 2.1), 525.2 (rev. 2.0), and 551.1 (rev. 1.0);~~,~~ Syngenta AG-625[2]
Benzo(a)pyrene	USEPA Organic Methods, Methods 525.2 (rev. 2.0), 550, and 550.1
Carbofuran	USEPA Organic Methods, Methods 531.1 (rev. 3.1);~~,~~ USEPA OGWDW Methods, Method 531.2 (rev. 1.0);~~,~~ Standard Methods, 18th ed. Supplement, 19th ed., or 20th ed., Method 6610;~~ or~~ Standard Methods, 21st ed., Method 6610 B;~~ or~~ Standard Methods Online, Method 6610 B-04
Chlordane	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.1), and 525.2 (rev. 2.0)

Dalapon	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 552.1 (rev. 1.0), and 552.2 (rev. 1.0);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Methods 515.4 (rev. 1.0), 552.3 (rev. 1.0), and 557;~~ and~~ Standard Methods, 21st ed., Method 6640 B
Di(2-ethylhexyl)adipate	USEPA Organic Methods, Methods 506 (rev. 1.1) and~~,~~ 525.2 (rev. 2.0)
Di(2-ethylhexyl)phthalate	USEPA Organic Methods, Method 506 (rev. 1.1) and~~,~~ 525.2 (rev. 2.0)
Dibromochloropropane (DBCP)	USEPA Organic Methods, Methods 504.1 (rev. 1.1), USEPA OGWDW Methods, Method 524.3 (rev. 1.0) and~~,~~ 551.1 (rev. 1.0)
Dinoseb	USEPA Organic Methods, Methods 515.1 (rev. 4.0) and~~,~~ 515.2 (rev. 1.1);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Methods~~Method~~ 515.4 (rev. 1.0) and~~,~~ 555 (rev. 1.0); Standard Methods, 21st ed., Method 6640 B
Diquat	USEPA NERL Method 549.2 (rev. 1.0)
Endothall	USEPA Organic Methods, Method 548.1 (rev. 2.0)
Endrin	USEPA Organic Methods, Method 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Ethylene dibromide (EDB)	USEPA Organic Methods, Methods 504.1 (rev. 1.1);~~,~~ USEPA OGWDW Methods, Methods~~Method~~ 524.3 (rev. 1.0) and~~,~~ 551.1 (rev.1.0)
Glyphosate	USEPA Organic Methods, Method 547;~~,~~ Standard Methods, 18th ed., 19th ed., ~~or~~ 20th, or 21st ed., Method 6651 B

Heptachlor	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Heptachlor Epoxide	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev.1.0)
Hexachlorobenzene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Hexachlorocyclopentadiene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Lindane	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Methoxychlor	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Oxamyl	USEPA Organic Methods, Method 531.1 (rev. 3.1); USEPA OGWDW Methods, Method 531.2 (rev. 1.0); Standard Methods, 18th ed. Supplement, 19th ed.~~,~~ or 20th ed. Method 6610; Standard Methods, 21st ed., Method 6610 B;~~ or~~ Standard Methods Online, Method 6610 B-04
PCBs (measured for compliance purposes as decachlorobiphenyl)	USEPA Organic Methods, Method 508A (rev. 1.0)
PCBs (qualitatively identified as Aroclors)	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)

Pentachlorophenol	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 515.2 (rev. 1.1), 525.2 (rev. 2.0), and 555 (rev. 1.0);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Method 515.4 (rev. 1.0);~~,~~ ASTM Method D5317-93 or D5317-98 (2003); Standard Methods, 21st ed., Method 6640 B
Picloram	USEPA Organic Methods, Methods 515.1 (rev. 4.0), 515.2, (rev. 1.1) and 555 (rev. 1.0);~~,~~ USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0);~~,~~ USEPA OGWDW Methods, Method 515.4 (rev. 1.0);~~,~~ ASTM Method D5317-93 or D5317-98 (2003); Standard Methods, 21st ed., Method 6640 B
Simazine	USEPA Organic Methods, Methods 505 (rev. 2.1)[1], 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)
Toxaphene	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 2.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6610 B and Standard Methods Online, Method 6610 B-04 as approved alternative methods for carbofuran and oxamyl on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for dibromochloropropane and ethylene dibromide in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA approved Standard Methods, 21st ed., Method 6640 B and Standard Methods Online, Method 6640 B-01 and USEPA OGWDW Methods, Method 557 as approved alternative methods for dalapon in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 21st ed., Method 6640 B as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dinoseb, pentachlorophenol, and picloram in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods Online, Method 6640 B-01 as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dalapon, dinoseb, pentachlorophenol, and picloram and in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). Since the version of Method 6640-B that appears in Standard Methods Online is the same as that which appears in Standard Methods, 21st

ed., the Board has cited only to Standard Methods, 21st ed. USEPA added Standard Methods, 21st ed., Method 6651 B as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods Online, Method 6651 B-00 as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). Since the version of Method 6651 B that appears in Standard Methods Online is the same as that which appears in Standard Methods, 21st ed., the Board has cited only to Standard Methods, 21st ed.

c) Total Trihalomethanes (TTHMs).

Contaminant	Analytical Methods
Total Trihalomethanes (TTHMs), Trihalomethanes (THMs), and Maximum Total Trihalomethane Potential	USEPA Organic Methods, Methods 502.2 (rev. 2.1) and~~,~~ 524.2 (rev. 4.1)~~:~~, USEPA OGWDW Methods, Methods~~Method~~ 524.3 (rev. 1.0) and~~,~~ 551.1 (rev. 1.0)

BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for total trihalomethane in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

d) State-Only MCLs (for which a method is not listed in subsections (a) through (c)~~above~~).

Contaminant	Analytical Methods
Aldrin	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)
DDT	USEPA Organic Methods, Methods 505 (rev. 2.1) and~~,~~ 508 (rev. 3.1)
Dieldrin	USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)

e) The following footnotes are appended to method entries in subsections (a) and (b) of this Section:

[1] denotes that, for the particular contaminant, a nitrogen-phosphorus detector should be substituted for the electron capture detector in method 505 (or another approved

method should be used) to determine alachlor, atrazine, and simazine if lower detection limits are required.

[2] denotes that Syngenta Method AG-625 may not be used for the analysis of atrazine in any system where chlorine dioxide is used for drinking water treatment. In samples from all other systems, any result for atrazine generated by Syngenta Method AG-625 that is greater than one-half the maximum contaminant level (MCL) (in other words, greater than 0.0015mg/ℓ or 1.5 µg/ℓ) must be confirmed using another approved method for this contaminant and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Syngenta Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

BOARD NOTE: Derived from 40 CFR 141.24(e) and appendix A to subpart C of 40 CFR 141.(2011)~~(2010), as amended at 74 Fed. Reg. 38348 (August 3, 2009) and 75 Fed. Reg. 32295 (June 8, 2010)~~.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.680 Sampling, Analytical, and other Requirements (Repealed)

~~a)~~ ~~Required monitoring.~~

~~1)~~ ~~A CWS supplier that serves a population of 10,000 or more individuals and which adds a disinfectant (oxidant) to the water in any part of the drinking water treatment process must analyze for TTHMs in accordance with this Subpart P.~~

~~2)~~ ~~For the purpose of this Subpart P, the minimum number of samples required to be taken by the supplier must be based on the number of treatment plants used by the supplier. However, the Agency shall, by a SEP issued pursuant to Section 611.110, provide that multiple wells drawing raw water from a single aquifer be considered one treatment plant for determining the minimum number of samples.~~

~~3)~~ ~~All samples taken within an established frequency must be collected within a 24-hour period.~~

~~b)~~ ~~A CWS supplier that serves 10,000 or more individuals.~~

~~1)~~ ~~For a CWS supplier utilizing surface a water source in whole or in part,~~

and for a CWS supplier utilizing only a groundwater source, except as provided in Section 611.683, analyses for TTHMs must be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least 25 percent of the samples must be taken at locations within the distribution system reflecting the maximum residence time (MRT) of the water in the system. The remaining 75 percent must be taken at representative locations in the distribution system, taking into account the number of persons served, different sources of water and different treatment methods employed. The results of all analyses per quarter must be arithmetically averaged and reported to the Agency within 30 days after the supplier's receipt of such results. All samples collected must be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses must be conducted in accordance with the methods listed in Section 611.685.

2) Upon application by a CWS supplier, the Agency must, by a SEP issued pursuant to Section 611.110, reduce the monitoring frequency required by subsection (b)(1) to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the MRT of the water in the system, if the Agency determines that the data from at least one year of monitoring in accordance with subsection (b)(1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.

3) If at any time during which the reduced monitoring frequency prescribed under this subsection (b) applies, the results from any analysis exceed 0.10 mg/ℓ TTHMs and such results are confirmed by at least one check sample taken promptly after such results are received, or if the CWS supplier makes any significant change to its source of water or treatment program, the supplier must immediately begin monitoring in accordance with the requirements of subsection (b)(1), which monitoring must continue for at least one year before the frequency may be reduced again. The Agency must, by a SEP issued pursuant to Section 611.110, require monitoring in excess of the minimum frequency where it is necessary to detect variations of TTHM levels within the distribution system.

BOARD NOTE: Subsections (a) and (b) of this Section are derived from 40 CFR 141.30(a) and (b) (2010), modified to remove the limitation regarding addition of disinfectant.

c) Surface water sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers must have submitted at least one initial sample per treatment plant for analysis or analytical results from a certified laboratory for

~~MRT concentration taken between May 1, 1990, and October 31, 1990. After written request by the supplier and the determination by the Agency that the results of the sample indicate that the CWS supplier is not likely to exceed the MCL, the CWS must continue to submit one annual sample per treatment plant for analysis or analytical results from a certified laboratory to the Agency taken between May 1 and October 31 of succeeding years. If the sample exceeds the MCL, the CWS must submit to the Agency samples in accordance with the sampling frequency specified in subsection (b) of this Section.~~

~~BOARD NOTE: This is an additional State requirement.~~

~~d)~~ ~~Groundwater sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers are not required to submit samples for THM analysis under this Subpart P.~~

~~BOARD NOTE: This is an additional State requirement.~~

(Source: Repealed at 36 Ill. Reg. _____, effective _____)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.720 Analytical Methods

a) The methods specified below, or alternative methods approved by the Agency pursuant to Section 611.480, incorporated by reference in Section 611.102, are to be used to determine compliance with Section 611.330, except in cases where alternative methods have been approved in accordance with Section 611.480.

1) Gross Alpha and Beta.

A) Standard Methods.

i) Method 302, 13th ed.; or

ii) Method 7110 B, 17th, 18th, 19th, 20th, or 21st ed.;

B) USEPA Interim Radiochemical Methods: pages 1-3;

C) USEPA Radioactivity Methods, Method 900.0;

D) USEPA Radiochemical Analyses: pages 1-5;

E) USEPA Radiochemistry Procedures, Method 00-01; or

F) USGS Methods, Method R-1120-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 B as an approved alternative method for gross alpha and beta in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

2) Gross Alpha.

A) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 7110 C; or

B) USEPA Radiochemistry Procedures, Method 00-02.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 C as an approved alternative method for gross alpha in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

3) Radium-226.

A) ASTM Methods.

i) Method D2460-97 or D2460-07; or

ii) Method D3454-97 or D3454-05;

B) New York Radium Method;

C) Standard Methods.

i) Method 304, 13th ed.;

ii) Method 305, 13th ed.;

iii) Method 7500-Ra B, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-Ra C, 17th, 18th, 19th, 20th, or 21st ed.;

D) EML Procedures Manual (27th or 28th ed.), Method Ra-04;

E) USEPA Interim Radiochemical Methods: pages 13-15 or 16-23;

F) USEPA Radioactivity Methods, Methods 903.0, 903.1;

G) USEPA Radiochemical Analyses, pages 19-32;

H) USEPA Radiochemistry Procedures, Method Ra-03 or Ra-04; or

I) USGS Methods.

i) Method R-1140-76; or

ii) Method R-1141-76.

J) Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7500-Ra B and C as approved alternative methods for radium-226 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2460-07 and D3454-05 as approved alternative methods for radium-226 in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

4) Radium-228.

A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., Method 7500-Ra D;

B) New York Radium Method;

C) USEPA Interim Radiochemical Methods, pages 24-28;

D) USEPA Radioactivity Methods, Method 904.0;

E) USEPA Radiochemical Analyses, pages 19-32;

F) USEPA Radiochemistry Procedures, Method Ra-05;

G) USGS Methods, Method R-1142-76;

H) New Jersey Radium Method; or

I) Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Ra D as an approved alternative method for radium-228 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

5) Uranium.

A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., Method 7500-U C;

B) Standard Methods, 20th ed., Method 3125;

C) ASTM Methods.

i) Method D2907-97;

ii) Method D3972-97 or D3972-02;

iii) Method D5174-97, D5174-02, ~~or~~ D5174-07, or D3972-09; or

iv) Method D5673-03 or Method 5673-05;

D) USEPA Radioactivity Methods, Methods 908.0, 908.1;

E) USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3);

F) USEPA Radiochemical Analyses, pages 33-48;

G) USEPA Radiochemistry Procedures, Method 00-07;

H) EML Procedures Manual (27th or 28th ed.), Method U-02 or U-04; or

I) USGS Methods.

i) Method R-1180-76;

ii) Method R-1181-76; or

iii) Method R-1182-76.

BOARD NOTE: If uranium (U) is determined by mass, a conversion factor of 0.67 pCi/µg of uranium must be used. This conversion factor is based on the 1:1 activity ratio of ^{234}U and ^{238}U that is characteristic of naturally occurring uranium.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-U C and ASTM D5673-05 as approved alternative methods for uranium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D5174-07 as an approved alternative method for uranium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added ASTM Method D3972-09 as an approved alternative method for uranium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

6) Radioactive Cesium.

A) ASTM Methods.

i) Method D2459-72; or

ii) Method D3649-91, D3649-98a, or D3649-06;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.; or

ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods, pages 4-5;

E) USEPA Radioactivity Methods, Methods 901.0, 901.1;

F) USEPA Radiochemical Analyses, pages 92-95; or

G) USGS Methods.

i) Method R-1110-76; or

ii) Method R-1111-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-Cs B as approved alternative methods for radioactive cesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3649-06 as an approved alternative method for radioactive cesium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

7) Radioactive Iodine.

A) ASTM Methods.

i) D3649-91, D3649-98a, or D3649-06; or

ii) D4785-93, D4785-98, or D4785-08;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.;

ii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;

iii) Method 7500-I C, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-I D, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods, pages 6-8 or 9-12;

E) USEPA Radiochemical Analyses, pages 92-95; or

F) USEPA Radioactivity Methods, Methods 901.1 or 902.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-06 and D4785-08 as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

8) Radioactive Strontium-89 & 90.

A) Standard Methods.

i) Method 303, 13th ed.; or

ii) Method 7500-Sr B, 17th, 18th, 19th, 20th, or 21st ed.;

B) EML Procedures Manual (27th or 28th ed.), Method Sr-01 or Sr-02.

C) USEPA Interim Radiochemical Methods, pages 29-33;

D) USEPA Radioactivity Methods, Method 905.0;

E) USEPA Radiochemical Analyses, pages 65-73;

F) USEPA Radiochemistry Procedures, Method Sr-04; or

G) USGS Methods, Method R-1160-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Sr B as an approved alternative method for radioactive strontium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

9) Tritium.

A) ASTM Methods: Method D4107-91, D4107-98, or D4107-08;

B) Standard Methods.

i) Method 306, 13th ed.; or

ii) Method 7500-^{3}H B, 17th, 18th, 19th, 20th, or 21st ed.;

C) USEPA Interim Radiochemical Methods, pages 34-37;

D) USEPA Radioactivity Methods, Method 906.0;

E) USEPA Radiochemical Analyses, pages 87-91;

F) USEPA Radiochemistry Procedures, Method H-02; or

G) USGS Methods, Method R-1171-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-^{3}H B as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D4107-08 as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

10) Gamma Emitters.

A) ASTM Methods.

i) Method D3649-91, D3649-98a, or D3649-06; or

ii) Method D4785-93, D4785-00a, or D4785-08;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.;

ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.; or

iii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

D) USEPA Radioactivity Methods, Methods 901.0, 901.1, or 902.0;

E) USEPA Radiochemical Analyses, pages 92-95; or

F) USGS Methods, Method R-1110-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120, 7500-Cs B, and 7500-I B as approved alternative methods for gamma emitters in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-08 and D4785-08 as approved alternative methods for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

b) When the identification and measurement of radionuclides other than those listed in subsection (a) of this Section are required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," available from NTIS.

2) EML Procedures Manual (27th or 28th ed.), available from USDOE, EML.

c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96σ, where σ is the standard deviation of the net counting rate of the sample).

1) To determine compliance with Section 611.330(b), (c), and (e), the detection limit must not exceed the concentrations set forth in the following table:

Contaminant	Detection Limit
Gross alpha particle activity	3 pCi/ℓ
Radium-226	1 pCi/ℓ
Radium-228	1 pCi/ℓ
Uranium	1 µg/ℓ

BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (2011~~2009~~).

2) To determine compliance with Section 611.330(d), the detection limits must not exceed the concentrations listed in the following table:

Radionuclide	Detection Limit
Tritium	1,000 pCi/ℓ
Strontium-89	10 pCi/ℓ
Strontium-90	2 pCi/ℓ
Iodine-131	1 pCi/ℓ
Cesium-134	10 pCi/ℓ
Gross beta	4 pCi/ℓ
Other radionuclides	1/10 of applicable limit

BOARD NOTE: Derived from 40 CFR 141.25(c) Table C (2011~~2009~~).

d) To judge compliance with the MCLs listed in Section 611.330, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 and appendix A to subpart C of 40 CFR 141 (2011~~2010~~).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.APPENDIX F Mandatory Lead Public Education Information for Non-Transient Non-Community Water Systems

1) INTRODUCTION

The United States Environmental Protection Agency (USEPA) and (insert name of water supplier) are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the USEPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/ℓ). Under Federal law we are required to have a program in place to minimize lead in your drinking water by (insert date when corrosion control will be completed for your system). This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give us a call at (insert water system's phone number). This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

2) HEALTH EFFECTS OF LEAD

Lead is found throughout the environment in lead-based paint; air; soil; household dust; food; certain types of pottery, porcelain, and pewter; and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells, and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination – like dirt and dust – that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

3) LEAD IN DRINKING WATER

A) Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

B) Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass, and chrome plated brass

faucets, and in some cases, pipes made of lead that connect houses and buildings to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes, and other plumbing materials to 8.0%.

C) When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

4) STEPS YOU CAN TAKE TO REDUCE EXPOSURE TO LEAD IN DRINKING WATER

A) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one gallon.

B) Do not cook with or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it.

C) The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.

D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include the following:

i) (Insert the name or title of facility official if appropriate) at (insert phone number) can provide you with information about your facility's water supply; and

ii) The Illinois Department of Public Health at 217-782-4977 or 312-814-2608 or the (insert the name of the city or county health department) at (insert phone number) can provide you with information about the health effects of lead.

BOARD NOTE: Derived from 40 CFR 141.85(a)(2) (2011~~2002~~). The Department of Public Health (Department) regulates non-community water supplies, including non-transient, non-community water supplies. The Department has incorporated this Part into its regulations at 77 Ill. Adm. Code 900.15(a)(2)(A) and 900.20(k)(2). Thus, the Board has included the notice language of 40 CFR 141.85(a)(2) in~~an~~ this Section for the purposes of facilitating federal review and authorization of the Illinois drinking water regulations.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

PART 611
PRIMARY DRINKING WATER STANDARDS

SUBPART A: GENERAL

Section

SUBPART B: FILTRATION AND DISINFECTION

Section

SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

SUBPART D: TREATMENT TECHNIQUES

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCLs) AND MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs)

SUBPART G: LEAD AND COPPER

SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

SUBPART Z: ENHANCED TREATMENT FOR CRYPTOSPORIDIUM

AUTHORITY: Implementing Sections 7.2, 17, and 17.5 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/7.2, 17, 17.5, and 27].

SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg. 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1, 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020, effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999; amended in R99-12 at 23 Ill. Reg. 10348, effective August 11, 1999; amended in R00-8 at 23 Ill. Reg. 14715, effective December 8, 1999; amended in R00-10 at 24 Ill. Reg. 14226, effective September 11, 2000; amended in R01-7 at 25 Ill. Reg. 1329, effective January 11, 2001; amended in R01-20 at 25 Ill. Reg. 13611, effective October 9, 2001; amended in R02-5 at 26 Ill. Reg. 3522, effective February 22, 2002; amended in R03-4 at 27 Ill. Reg. 1183, effective January 10, 2003; amended in R03-15 at 27 Ill. Reg. 16447, effective October 10, 2003; amended in R04-3 at 28 Ill. Reg. 5269, effective March 10, 2004; amended in R04-13 at 28 Ill. Reg. 12666, effective August 26, 2004; amended in R05-6 at 29 Ill. Reg. 2287, effective January 28, 2005; amended in R06-15 at 30 Ill. Reg. 17004, effective October 13, 2006; amended in R07-2/R07-11 at 31 Ill. Reg. 11757, effective July 27, 2007; amended in R08-7/R08-13 at 33 Ill. Reg. 633, effective ~~December 30, 2008~~January 2, 2009; amended in R10-1/R10-17/R11-6 at 34 Ill. Reg. 19848, effective December 7, 2010; amended in R12-4 at 36 Ill. Reg. _____, effective _____.

SUBPART A: GENERAL

Section 611.102 Incorporations by Reference

a) Abbreviations and short-name listing of references. The following names and abbreviated names, presented in alphabetical order, are used in this Part to refer to materials incorporated by reference:

"AMI Turbiwell Method" means "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter," available from NEMI or from SWAN Analytische Instrumente AG.

"ASTM Method" means a method published by and available from the American Society for Testing and Materials (ASTM).

"Colisure Test" means "Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water," available from Millipore Corporation, Technical Services Department.

"Colitagâ Test" means "Colitagâ Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations," available from CPI International.

"Chromocult(r) Method" means "Chromocult(r) Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," available from EMD Chemicals Inc.

"Determination of Inorganic Oxyhalide" means "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," available from NTIS.

"Dioxin and Furan Method 1613" means "Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS," available from NTIS.

"E*Colite Test" means "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water," available from Charm Sciences, Inc. and USEPA, Water Resource Center.

"EC-MUG" means "Method 9221 F: Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia coli Procedure (Proposed)," available from American Public Health Association and American Waterworks Association.

"EML Procedures Manual" means "EML Procedures Manual, HASL 300," available from USDOE, EML.

"Enterolert" means "Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters," available from American Society for Microbiology.

"Georgia Radium Method" means "The Determination of Radium-226 and Radium-228 in Drinking Water by Gamma-ray Spectrometry Using HPGE or Ge(Li) Detectors," Revision 1.2, December 2004, available from the Georgia Tech Research Institute.

"GLI Method 2" means GLI Method 2, "Turbidity," Nov. 2, 1992, available from Great Lakes Instruments, Inc.

"Guidance Manual for Filtration and Disinfection" means "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources," March 1991, available from USEPA, NSCEP.

"Hach FilterTrak Method 10133" means "Determination of Turbidity by Laser Nephelometry," available from Hach Co.

"Hach SPDANS 2 Method 10225" means "Hach Company SPADNS 2 (Arsenic-free) Fluoride Method 10225 - Spectrophotometric Measurement of Fluoride in Water and Wastewater," available from the Hach Co.

"Hach TNTplus 835/836 Method ~~10206,~~10206" means "Hach Company TNTplus 835/836 Nitrate Method 10206 ~~Spectorphotometric~~ - Spectrophotometric Measurement of Nitrate in Water and Wastewater," available from the Hach Co.

"ITS Method D99-003" means Method D99-003, Revision 3.0, "Free Chlorine Species (HOCl- and OCl-) by Test Strip," available from Industrial Test Systems, Inc.

"Kelada 01" means "Kelada Automated Test Methods for Total Cyanide, Acid Dissociable Cyanide, And Thiocyanate," Revision 1.2, available from NTIS.

"m-ColiBlue24 Test" means "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24(r) Broth," available from USEPA, Water Resource Center and Hach Company.

"Method ME355.01" means "Determination of Cyanide in Drinking Water by GC/MS Headspace Analysis," available from NEMI or from H&E Testing Laboratory.

"Mitchell Method M5271" means "Determination of Turbidity by Laser Nephelometry," available from NEMI and Leck Mitchell, PhD.

"Mitchell Method M5331" means "Determination of Turbidity by LED Nephelometry," available from NEMI and Leck Mitchell, PhD.

"Modified Colitag(tm) Method" means "Modified Colitag(tm) Test Method for Simultaneous Detection of E. coli and other Total Coliforms in Water," available from NEMI and CPI International.

"NA-MUG" means "Method 9222 G: Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures," available from American Public Health Association and American Waterworks Association.

"NCRP Report Number 22" means "Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure," available from NCRP.

"New Jersey Radium Method" means "Determination of Radium 228 in Drinking Water," available from the New Jersey Department of Environmental Protection.

"New York Radium Method" means "Determination of Ra-226 and Ra-228 (Ra-02)," available from the New York Department of Public Health.

"OI Analytical Method OIA-1677" means "Method OIA-1677, DW Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," available from ALPKEM, Division of OI Analytical.

"ONPG-MUG Test" (meaning "minimal medium ortho-nitrophenyl-beta-d-galactopyranoside-4-methyl-umbelliferyl -beta-d-glucuronide test"), also called the "Autoanalysis Colilert System," is Method 9223, available in "Standard Methods for the Examination of Water and Wastewater," 18th, 19th, 20th, or 21st ed., from American Public Health Association and the American Water Works Association.

"Orion Method AQ4500" means "Determination of Turbidity by LED Nephelometry," available from Thermo Scientific.

"Palintest ChloroSense" means "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense," available from NEMI or Palintest Ltd.

"Palintest Method 1001" means "Method Number 1001," available from Palintest, Ltd. or the Hach Company.

"QuikChem Method 10-204-00-1-X" means "Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis," available from Lachat Instruments.

"Readycult(r) 2000" means "Readycult Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," v. 1.0, available from EMD Chemicals Inc.

"Readycult(r) 2007" means "Readycult(r) Coliforms 100 Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters," v. 1.1, available from EMD Chemicals Inc.

"SimPlate Method" means "IDEXX SimPlate TM HPC Test Method for Heterotrophs in Water," available from IDEXX Laboratories, Inc.

~~"Systea Easy (1 Reagent)" means "Systea Easy (1 Reagent) Nitrate Method," available from NEMI or Systea Scientific LLC.~~

"Standard Methods" means "Standard Methods for the Examination of Water and Wastewater," available from the American Public Health Association or the American Waterworks Association.

"Standard Methods Online" means the website maintained by the Standard Methods Organization (at www.standardmethods.org) for purchase of the latest versions of methods in an electronic format.

"Syngenta AG-625" means "Atrazine in Drinking Water by Immunoassay," February 2001 is available from Syngenta Crop Protection, Inc.

"Systea Easy (1-Reagent)" means "Systea Easy (1-Reagent) Nitrate Method," available from NEMI or Systea Scientific LLC.

"Technical Bulletin 601" means "Technical Bulletin 601, Standard Method of Testing for Nitrate in Drinking Water," July 1994, available from Analytical Technology, Inc.

"Technicon Methods" means "Fluoride in Water and Wastewater," available from Bran & Luebbe.

"USEPA Asbestos Method 100.1" means Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water," September 1983, available from NTIS.

"USEPA Asbestos Method 100.2" means Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water," June 1994, available from NTIS.

"USEPA Environmental Inorganic Methods" means "Methods for the Determination of Inorganic Substances in Environmental Samples," August 1993, available from NTIS.

"USEPA Environmental Metals Methods" means "Methods for the Determination of Metals in Environmental Samples," available from NTIS.

"USEPA Inorganic Methods" means "Methods for Chemical Analysis of Water and Wastes," March 1983, available from NTIS.

"USEPA Interim Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75/008 (revised), March 1976. Available from NTIS.

"USEPA Method 1600" means "Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-Glucoside Agar (mEI)," available from USEPA, Water Resource Center.

"USEPA Method 1601" means "Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure," available from USEPA, Water Resource Center.

"USEPA Method 1602" means "Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure," available from USEPA, Water Resource Center.

"USEPA Method 1604" means "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," available from USEPA, Water Resource Center.

"USEPA NERL Method 200.5 (rev. 4.2)" means Method 200.5, Revision 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma - Atomic Emission Spectrometry," October 2003, EPA 600/R-06/115. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 415.3 (rev. 1.1)" means Method 415.3, Revision 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," USEPA, February 2005, EPA 600/R-05/055. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 415.3 (rev. 1.2)" means Method 415.3, Revision 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," USEPA, August 2009, EPA 600/R-09/122. Available from USEPA, Office of Research and Development.

"USEPA NERL Method 549.2" means Method 549.2, Revision 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection," June 1997. Available from USEPA, Office of Research and Development.

"USEPA OGWDW Methods" means the methods listed as available from the USEPA, Office of Ground Water and Drinking Water (Methods 302.0, 317.0 (rev. 2.0),

326.0 (rev. 1.0), 327.0 (rev. 1.1), 334.0, 515.4 (rev. 1.0), 524.3 (rev. 1.0), 531.2 (rev. 1.0), 552.3 (rev. 1.0), 557, 1622 (99), 1622 (01), 1622 (05), 1623 (99), 1623 (01), and 1623 (05)). Available from NTIS; USEPA, NSCEP; or USEPA, OGWDW.

"USEPA Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water," December 1988 (revised July 1991) (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0)); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement I," July 1990 (Methods 547, 550, and 550.1); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement II," August 1992 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0)); and "Methods for the Determination of Organic Compounds in Drinking Water - Supplement III," August 1995 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 1.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0)). Available from NTIS; USEPA, NSCEP; or USEPA, EMSL.

"USEPA Organic and Inorganic Methods" means "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," EPA 815/R-00/014, PB2000-106981, August 2000. Available from NTIS.

"USEPA Radioactivity Methods" means "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA 600/4-80/032, August 1980. Available from NTIS.

"USEPA Radiochemical Analyses" means "Radiochemical Analytical Procedures for Analysis of Environmental Samples," March 1979. Available from NTIS.

"USEPA Radiochemistry Procedures" means "Radiochemistry Procedures Manual," EPA 520/5-84/006, December 1987. Available from NTIS.

"USEPA Technical Notes" means "Technical Notes on Drinking Water Methods," available from NTIS and USEPA, NSCEP.

"USGS Methods" means "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory - Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments," available from NTIS and USGS.

"Waters Method B-1011" means "Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," available from Waters Corporation, Technical Services Division.

b) The Board incorporates the following publications by reference:

ALPKEM, Division of OI Analytical, P.O. Box 9010, College Station, TX 77842-9010, telephone: 979-690-1711, Internet: www.oico.com.

"Method OIA-1677 DW, Available Cyanide by Flow Injection, Ligand Exchange, and Amperometry," EPA 821/R-04/001, January 2004 (referred to as "OI Analytical Method OIA-1677"), referenced in Section 611.611.
BOARD NOTE: Also available online for download from www.epa.gov/waterscience/methods/method/cyanide/1677-2004.pdf.

APHA. American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005 202-777-2742.

"Standard Methods for the Examination of Water and Wastewater," 17th Edition, 1989 (referred to as "Standard Methods, 17th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992, including "Supplement to the 18th Edition of Standard Methods for the Examination of Water and Wastewater," 1994 (collectively referred to as "Standard Methods, 18 th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 19 th Edition, 1995 (referred to as "Standard Methods, 19 th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 20th Edition, 1998 (referred to as "Standard Methods, 20th ed."). See the methods listed separately for the same references under American Waterworks Association.

"Standard Methods for the Examination of Water and Wastewater," 21st Edition, 2005 (referred to as "Standard Methods, 21st ed."). See the methods listed separately for the same references under American Waterworks Association.

American Society for Microbiology, 1752 N Street N.W., Washington, DC 20036, 202-737-3600:

"Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters," Applied and Environmental Microbiology, Oct. 1996, vol. 62, no. 10, p. 3881 (referred to as "Enterolert"), referenced in Section 611.802.

BOARD NOTE: At the table to 40 CFR 141.402(c)(2), USEPA approved the method as described in the above literature review. The method itself is embodied in the printed instructions to the proprietary kit available from IDEXX Laboratories, Inc. (accessible on-line and available by download from www.asm.org, as "Enterolert(tm) Procedure"). ASTM approved the method as "Standard Test Method for Enterococci in Water Using Enterolert(tm)," which is available in two versions from ASTM: ~~ASTMMethod~~ASTM Method D6503-99 (superceded) and ~~ASTMMethod~~ASTM Method D6503-99. While it is more conventional to incorporate the method as presented in the kit instructions or as approved by ASTM by reference, the Board is constrained to incorporate the version that appears in the technical literature by reference, which is the version that USEPA has explicitly approved.

AWWA. American Water Works Association et al., 6666 West Quincy Ave., Denver, CO 80235 (303-794-7711).

"National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli for Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method," S.C. Edberg, M.J. Allen & D.B. Smith, Applied Environmental Microbiology, vol. 54, iss. 6, pp 1595-1601 (1988), referenced in Appendix D to this Part.

"Standard Methods for the Examination of Water and Wastewater," 13th Edition, 1971 (referred to as "Standard Methods, 13th ed.").

Method 302, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 303, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 304, Radium in Water by Precipitation, referenced in Section 611.720.

Method 305, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section 611.720.

Method 306, Tritium in Water, referenced in Section 611.720.

"Standard Methods for the Examination of Water and Wastewater," 17th Edition, 1989 (referred to as "Standard Methods, 17th ed.").

Method 7110 B, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended, and Dissolved), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-3H B, Tritium in Water, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium in Water by Precipitation, referenced in Section 611.720.

Method 7500-Ra C, Radium 226 by Radon in Water (Soluble, Suspended, and Total), referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90 in Water, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

"Standard Methods for the Examination of Water and Wastewater," 18th Edition, 1992 (referred to as "Standard Methods, 18 th ed.").

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-CN- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.531.

Method 4500-ClO2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO2 D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

Method 4500-F- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO2- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO3- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO3- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO3- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-3H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed), referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method (Proposed), referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method (Proposed), referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9223, Chromogenic Substrate Coliform Test (Proposed) (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections ~~611.526,~~611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

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Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

"Standard Methods for the Examination of Water and Wastewater," 19th Edition, 1995 (referred to as "Standard Methods, 19th ed.").

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg E, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Sections 611.381 and 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO2 D, Chlorine Dioxide, DPD Method, referenced in Sections 611.381 and 611.531.

Method 4500-ClO2 E, Chlorine Dioxide, Amperometric Method II, referenced in Sections 611.381 and 611.531.

Method 4500-CN- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO2- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO3- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO3- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO3- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Section 611.381.

Method 6251 B, Disinfection Byproducts: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120 B, Gamma-Emitting Radionuclides, Gamma Spectrometric Method, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-3H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radiactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Section 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (Proposed), referenced in Section 611.1004.

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Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

"Standard Methods for the Examination of Water and Wastewater," 20th Edition, 1998 (referred to as "Standard Methods, 20th ed.").

Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-CN- C, Cyanide, Total Cyanide after Distillation, referenced in Section 611.611.

Method 4500-CN- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.531.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.531.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.531.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.531.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.531.

Method 4500-ClO2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO2 D, Chlorine Dioxide, DPD Method, referenced in Section 611.531.

Method 4500-ClO2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.531.

Method 4500-F- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO2- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO3- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO3- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO3- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-Si C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-Si D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-Si E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Sections 611.381 and 611.382.

Method 6251, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, referenced in Section 611.381.

Method 6610, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6651, Glyphosate Herbicide (Proposed), referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-3H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

Method 7500-Sr B, Total Radioactive Strontium and Strontium 90, Precipitation Method, referenced in Section 611.720.

Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

Method 7500-U C, Uranium, Isotopic Method, referenced in Section 611.720.

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method, referenced in Section 611.531.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique, referenced in Sections 611.526 and 611.531.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density, referenced in Sections 611.526 and 611.531.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test, referenced in Sections 611.526.

Method 9221 E, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Fecal Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9221 F, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Escherichia Coli Procedure (Proposed), referenced in Section 611.802.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction, referenced in Sections 611.526 and 611.531.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure, referenced in Sections 611.526 and 611.531.

Method 9222 D, Membrane Filter Technique for Members of the Coliform Group, Fecal Coliform Membrane Filter Procedure, referenced in Section 611.531.

Method 9222 G, Membrane Filter Technique for Members of the Coliform Group, MF Partition Procedures, referenced in Section 611.526.

Method 9223, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526 and 611.531.

Method 9223 B, Chromogenic Substrate Coliform Test (also referred to as the variations "Autoanalysis Colilert System" and "Colisure Test"), referenced in Sections 611.526, 611.802, and 611.1004.

Method 9230 B, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

Method 9230 C, Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques, referenced in Section 611.802.

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Method 2130 B, Turbidity, Nephelometric Method, referenced in Section 611.531.

Method 2320 B, Alkalinity, Titration Method, referenced in Section 611.611.

Method 2510 B, Conductivity, Laboratory Method, referenced in Section 611.611.

Method 2550, Temperature, Laboratory, and Field Methods, referenced in Section 611.611.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method, referenced in Sections 611.611 and 611.612.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method, referenced in Section 611.611.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method, referenced in Sections 611.611 and 611.612.

Method 3500-Ca B, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method, referenced in Section 611.611.

Method 3500-Mg B, Magnesium, Calculation Method, referenced in Section 611.611.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity, referenced in Section 611.611.

Method 4500-Cl D, Chlorine, Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl E, Chlorine, Low-Level Amperometric Titration Method, referenced in Section 611.381.

Method 4500-Cl F, Chlorine, DPD Ferrous Titrimetric Method, referenced in Section 611.381.

Method 4500-Cl G, Chlorine, DPD Colorimetric Method, referenced in Section 611.381.

Method 4500-Cl H, Chlorine, Syringaldazine (FACTS) Method, referenced in Section 611.381.

Method 4500-Cl I, Chlorine, Iodometric Electrode Method, referenced in Section 611.381.

Method 4500-ClO2 C, Chlorine Dioxide, Amperometric Method I, referenced in Section 611.531.

Method 4500-ClO2 E, Chlorine Dioxide, Amperometric Method II (Proposed), referenced in Section 611.381.

Method 4500-CN- E, Cyanide, Colorimetric Method, referenced in Section 611.611.

Method 4500-CN- F, Cyanide, Cyanide-Selective Electrode Method, referenced in Section 611.611.

Method 4500-CN- G, Cyanide, Cyanides Amenable to Chlorination after Distillation, referenced in Section 611.611.

Method 4500-F- B, Fluoride, Preliminary Distillation Step, referenced in Section 611.611.

Method 4500-F- C, Fluoride, Ion-Selective Electrode Method, referenced in Section 611.611.

Method 4500-F- D, Fluoride, SPADNS Method, referenced in Section 611.611.

Method 4500-F- E, Fluoride, Complexone Method, referenced in Section 611.611.

Method 4500-H+ B, pH Value, Electrometric Method, referenced in Section 611.611.

Method 4500-NO2- B, Nitrogen (Nitrite), Colorimetric Method, referenced in Section 611.611.

Method 4500-NO3- D, Nitrogen (Nitrate), Nitrate Electrode Method, referenced in Section 611.611.

Method 4500-NO3- E, Nitrogen (Nitrate), Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-NO3- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method, referenced in Section 611.611.

Method 4500-O3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method, referenced in Section 611.531.

Method 4500-P E, Phosphorus, Ascorbic Acid Method, referenced in Section 611.611.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method, referenced in Section 611.611.

Method 4500-SiO2 C, Silica, Molybdosilicate Method, referenced in Section 611.611.

Method 4500-SiO2 D, Silica, Heteropoly Blue Method, referenced in Section 611.611.

Method 4500-SiO2 E, Silica, Automated Method for Molybdate-Reactive Silica, referenced in Section 611.611.

Method 5310 B, TOC, Combustion-Infrared Method, referenced in Section 611.381.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method, referenced in Section 611.381.

Method 5310 D, TOC, Wet-Oxidation Method, referenced in Section 611.381.

Method 5910 B, UV-Absorbing Organic Constituents, Ultraviolet Absorption Method, referenced in Sections 611.381 and 611.382.

Method 6251, Disinfection By-Products: Haloacetic Acids and Trichlorophenol, referenced in Section 611.381.

Method 6610, Method 6610 B, Carbamate Pesticide Method, referenced in Section 611.645.

Method 6640 B, Acidic Herbicide Compounds, Micro Liquid-Liquid Extraction Gas Chromatographic Method, referenced in Section 611.645.

Method 7110 B, Gross Alpha and Gross Beta Radioactivity, Evaporation Method for Gross Alpha-Beta, referenced in Section 611.720.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed), referenced in Section 611.720.

Method 7120, Gamma-Emitting Radionuclides, referenced in Section 611.720.

Method 7500-Cs B, Radioactive Cesium, Precipitation Method, referenced in Section 611.720.

Method 7500-3H B, Tritium, Liquid Scintillation Spectrometric Method, referenced in Section 611.720.

Method 7500-I B, Radioactive Iodine, Precipitation Method, referenced in Section 611.720.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method, referenced in Section 611.720.

Method 7500-I D, Radioactive Iodine, Distillation Method, referenced in Section 611.720.

Method 7500-Ra B, Radium, Precipitation Method, referenced in Section 611.720.

Method 7500-Ra C, Radium, Emanation Method, referenced in Section 611.720.

Method 7500-Ra D, Radium, Sequential Precipitation Method, referenced in Section 611.720.

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Method 7500-U B, Uranium, Radiochemical Method, referenced in Section 611.720.

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BOARD NOTE: See the Board note appended to Standard Methods Online in this Section about methods that appear in Standard Methods, 21st ed. which USEPA has cited as available from Standard Methods Online.

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USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," EPA 600/4-80/032, August 1980, Doc. No. PB80-224744, referenced in Section 611.720 (Methods 900.0, 901.0, 901.1, 902.0, 903.0, 903.1, 904.0, 905.0, 906.0, 908.0, 908.1). See also USEPA, NSCEP.

USEPA Radiochemical Analyses, "Radiochemical Analytical Procedures for Analysis of Environmental Samples," March 1979, Doc. No. EMSL LV 053917, referenced in Section 611.720. (Pages 1-5, 19-32, 33-48, 65-73, 87-91, and 92-95 only.)

USEPA Radiochemistry Procedures, "Radiochemistry Procedures Manual," EPA 520/5-84-006, August 1984, Doc. No. PB84-215581 (referred to as ""), referenced in Section 611.720. (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04 only.)

USEPA Technical Notes, "Technical Notes on Drinking Water Methods," EPA 600/R-94/173, October 1994, Doc. No. PB95-104766, referenced in Sections 611.531, 611.611, and 611.645. See also USEPA, NSCEP.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (2010)~~ (2011)~~: "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996." Also available online at http://nepis.epa.gov/~~?~~EPA/~~?~~html/~~?~~Pubs/~~?~~pubtitleORD.htm under the document designation "600R94173."

New Jersey Department of Environment, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625.

"Determination of Radium 228 in Drinking Water," August 1990 (referred to as "New Jersey Radium Method"), referenced in Section 611.720.

New York Department of Health, Radiological Sciences Institute, Center for Laboratories and Research, Empire State Plaza, Albany, NY 12201.

"Determination of Ra-226 and Ra-228 (Ra-02)," January 1980, Revised June 1982 (referred to as "New York Radium Method"), referenced in Section 611.720.

Palintest, Ltd., 21 Kenton Lands Road, P.O. Box 18395, Erlanger, KY (800-835-9629).

Palintest Method 1001, "Lead in Drinking Water by Differential Pulse Anodic Stripping Voltammetry," Method 1001, August 1999, referenced in Section 611.611.

Palintest ChloroSense, "Measurement of Free and Total Chlorine in Drinking Water by Palintest ChloroSense," September 2009, referenced in Sections 611.381 and 611.531. See also NEMI.

Standard Methods Online, available online from the Standard Methods Organization at www.standardmethods.org.

Method 3113 B-04, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method, referenced in Sections 611.611 and 611.612.

Method 3114 B-04, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method, referenced in Section 611.611.

Method 6610 B-04, Carbamate Pesticides, High-Performance Liquid Chromatographic Method, referenced in Section 611.645.

Method 9230 B-04, Fecal Streptococcus and Enterococcus Groups, Multiple Tube Techniques, referenced in Section 611.802.

BOARD NOTE: Where, in appendix A to subpart C of 40 CFR 141 (2011), USEPA has authorized use of an approved alternative method from Standard Methods Online, and that version of the method appears also in Standard Methods, 21st ed., the Board cites only to Standard Methods, 21st ed. for that method. The methods that USEPA listed as available from Standard Methods Online, and which are listed above as in Standard Methods, 21st edition, are the following: 4500-P E-~~99,~~99 and 4500-P F-~~99,~~99; (for orthophosphate); 4500-SO4-2 C-97, 4500-SO4-2 D-97, 4500-SO4-2 E-97, and 4500-SO4-2 F-97 (for sulfate); 6640 B-~~01,~~01 (for 2,4-D, 2,4,5-TP (silvex)~~,~~ (dalapon, dinoseb, pentachlorophenol, and picloram); 5561 B-00 (for glyphosate); and 9223 B-97 (for E. coli). Since each method is the same version from both sources, the Board views a copy from Standard Methods Online as equivalent to a copy from Standard Methods Online, even though the Board does not also cite to Standard Methods Online. The Board intends that use of the version of the method that is incorporated by reference is acceptable from either source ~~is acceptable~~.

SWAN Analytische Instrumente AG, Studbachstrasse 13, CH-8340, Hinwil, Switzerland.

AMI Turbiwell Method, "Continuous Measurement of Turbidity Using a SWAN AMI Turbiwell Turbidimeter," August 2009, referenced in Section 611.531. See also NEMI.

Syngenta Crop Protection, Inc., 410 Swing Road, Post Office Box 18300, Greensboro, NC 27419 (336-632-6000).

"Atrazine in Drinking Water by Immunoassay," February 2001 (referred to as "Syngenta AG-625"), referenced in Section 611.645.

Systea Scientific LLC, 900 Jorie Blvd., Suite 35, Oak Brook, IL 60523.

Systea Easy (1-Reagent), "Systea Easy (1-Reagent) Nitrate Method~~.~~" February 2009, referenced in Section 611.611. See also NEMI.

Thermo Scientific, 166 Cummings Center, Beverly, MA ~~01915.~~ 01915 (www.thermo.com)

Orion Method AQ4500, "Determination of Turbidity by LED Nephelometry," May 2009, referenced in Section 611.531. See also NEMI.

USDOE, EML. United States Department of Energy, Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson Street, New York, NY 10014-3621.

"EML Procedures Manual," HASL 300, 27th Edition, Volume 1, 1990 (referred to as "EML Procedures Manual (27th ed.)"), referenced in Section 611.720.

"EML Procedures Manual," HASL 300, 28th ed., 1997 (referred to as "EML Procedures Manual (28th ed.)"), referenced in Section 611.720.

USEPA, EMSL. United States Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, OH 45268 (513-569-7586).

USEPA Interim Radiochemical Methods, "Interim Radiochemical Methodology for Drinking Water," EPA 600/4-75/008 (revised), March 1976, referenced in Section 611.720. See also NTIS.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water," December 1988 (revised July 1991), EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement I," July 1990, EPA 600/4-90/020, referenced in Sections 611.645 and 611.648 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement II," August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement III," August 1995, EPA 600/R-95/131, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA, NSCEP.

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," referenced in Section 611.720. See also NTIS.

USEPA, NSCEP. United States Environmental Protection Agency, National Service Center for Environmental Publications, P.O. Box 42419, Cincinnati, OH 45242-0419 (accessible on-line and available by download from http://www.epa.gov/nscep/).

Dioxin and Furan Method 1613, Revision B, "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS," October 1994, EPA 821/B-94/005, referenced in Section 611.645. See also NTIS.

Guidance Manual for Filtration and Disinfection, "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources," March 1991, EPA 570/3-91-001, referenced in Section 611.111.

USEPA Asbestos Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water," September 1983, EPA 600/4-83-043, referenced in Section 611.611. See also NTIS.

USEPA Asbestos Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water," June 1994, EPA 600/R-94-134, referenced in Section 611.611. See also NTIS.

USEPA Environmental Inorganic Methods, "Methods for the Determination of Inorganic Substances in Environmental Samples," August 1993, EPA 600/R-93-100, referenced in Sections 611.381, 611.531, and 611.611. (Methods 180.1 (rev. 2.0), 300.0 (rev. 2.1), 335.4 (rev. 1.0), 353.2 (rev. 2.0), and 365.1 (rev. 2.0) only.) See also NTIS.

USEPA Environmental Metals Methods, "Methods for the Determination of Metals in Environmental Samples - Supplement I," May 1994, EPA 600/R-94-111, referenced in Sections 611.611, 611.612, and 611.720. (Methods 200.7 (rev. 4.4), 200.8 (rev. 5.3), 200.9 (rev. 2.2), and 245.1 (rev. 3.0) only.) See also NTIS.

USEPA Inorganic Methods, "Methods for Chemical Analysis of Water and Wastes," March 1983, EPA 600/4-79-020, referenced in Section 611.611. (Methods 150.1, 150.2, and 245.2 only.) See also NTIS.

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," September 2009, EPA 815/B-09/014, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," July 2001, EPA 815/B-01/001, referenced in Sections 611.381 and 611.382. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis," June 2002, EPA 815/R-03/007, referenced in Sections 611.381 and 611.382. See also NTIS and USEPA, OGWDW.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry," May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer," August 2009, EPA 815/B-09/013, referenced in Section 611.531. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization," September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-Liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection," July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry," July 2003, EPA 815/B-03/002, referenced in Sections 611.381, 611.382, and 611.645. See also USEPA, OGWDW.

USEPA OGWDW Methods, Method 1622 (01), "Cryptosporidium in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, OGWDW.

USEPA Organic and Inorganic Methods, "Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1," August 2000, EPA 815/R-00/014, referenced in Section 611.381. (Methods 300.1 (rev. 1.0) and 321.8 (rev. 1.0) only.) See also NTIS.

USEPA Organic Methods, "Methods for the Determination of Organic Compounds in Drinking Water," December 1988, revised July 1991, EPA 600/4-88/039, referenced in Sections 611.645 and 611.648 (Methods 508A (rev. 1.0) and 515.1 (rev. 4.0) only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement I," July 1990, EPA 600/4-90/020, referenced in Section 611.645 and 611.648 (Methods 547, 550, and 550.1 only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement II," August 1992, EPA 600/R-92/129, referenced in Sections 611.381 and 611.645 (Methods 548.1 (rev. 1.0), 552.1 (rev. 1.0), and 555 (rev. 1.0) only); "Methods for the Determination of Organic Compounds in Drinking Water - Supplement III," August 1995, EPA 600/R-95/131, referenced in Sections 611.381, 611.645, and 611.648 (Methods 502.2 (rev. 2.1), 504.1 (rev. 1.1), 505 (rev. 2.1), 506 (rev. 1.1), 507 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 515.2 (rev. 4.1), 524.2 (rev. 4.1), 525.2 (rev. 2.0), 531.1 (rev. 3.1), 551.1 (rev. 1.0), and 552.2 (rev. 1.0) only). See also NTIS and USEPA, EMSL.

USEPA Radioactivity Methods, "Prescribed Procedures for Measurement of Radioactivity in Drinking Water," August 1980, EPA 600/4-80/032, referenced in Section 611.720. (For methods 900.0, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1 only.) See also NTIS.

USEPA Technical Notes, "Technical Notes on Drinking Water Methods," October 1994, EPA 600/R-94/173, referenced in Sections 611.531, 611.611, and 611.645. See also NTIS.

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (~~2007)~~ (2011): "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996." Also available online at http://nepis.epa.gov/EPA/html/~~?~~Pubs/~~?~~pubtitleORD.htm under the document designation "600R94173."

USEPA, OGWDW. United States Environmental Protection Agency, USEPA~~,~~ Office of Ground Water and Drinking Water (accessible on-line and available by download from http://www.epa.gov/safewater/methods/).

USEPA OGWDW Methods, Method 302.0, "Determination of Bromate in Drinking Water Using Two-Dimensional Ion Chromatography with Suppressed Conductivity Detection," September 2009, EPA 815/B-09/014, referenced in Section 611.381. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 317.0, rev. 2.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography with the Addition of a Postcolumn Reagent for Trace Bromate Analysis," USEPA, July 2001, EPA 815/B-01/001, referenced in Section 611.381. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 326.0, rev. 1.0, "Determination of Inorganic Oxyhalide Disinfection By-Products in Drinking Water Using Ion Chromatography Incorporating the Addition of a Suppressor Acidified Postcolumn Reagent for Trace Bromate Analysis," USEPA, June 2002, EPA 815/R-03/007, referenced in Section 611.381. See also NTIS and USEPA, NSCEP.

USEPA OGWDW Methods, Method 327.0, rev. 1.1, "Determination of Chlorine Dioxide and Chlorite Ion in Drinking Water Using Lissamine Green B and Horseradish Peroxidase with Detection by Visible Spectrophotometry," USEPA, May 2005, EPA 815/R-05/008, referenced in Sections 611.381 and 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 334.0, "Determination of Residual in Drinking Water Using an On-line Chlorine Analyzer," USEPA, August 2009, EPA 815/B-09/013, referenced in Section 611.531. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 515.4, rev. 1.0, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection," April 2000, EPA 815/B-00/001 (document file name "met515_4.pdf"), referenced in Section 611.645.

USEPA OGWDW Methods, Method 524.3, rev. 1.0, "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/~~?~~Mass Spectrometry," June 2009, EPA 815/B-09/009 (referred to as "Method 524.3 (rev. 1.0)"), referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 531.2, rev. 1.0, "Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization," September 2001, EPA 815/B-01/002 (document file name "met531_2.pdf"), referenced in Section 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 552.3, rev. 1.0, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection," USEPA, July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645.

USEPA OGWDW Methods, Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry," July 2003, EPA 815/B-03/002, referenced in Sections 611.381 and 611.645. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (05), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," December 2005, EPA 815/R-05/001, referenced in Sections 611.1004 and 611.1007.

USEPA OGWDW Methods, Method 1622 (01), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/026, referenced in Section 611.1007. See also USEPA, NSCEP.

USEPA OGWDW Methods, Method 1622 (99), "Method 1622: Cryptosporidium in Water by Filtration/IMS/FA," April 1999, EPA 821/R-99/001, referenced in Section 611.1007.

USEPA OGWDW Methods, Method 1623 (05), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," December 2005, EPA 815/R-05/002, referenced in Sections 611.1004 and 611.1007.

USEPA OGWDW Methods, Method 1623 (01), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," April 2001, EPA 821/R-01/025, referenced in Section 611.1007.

USEPA OGWDW Methods, Method 1623 (99), "Method 1623: Cryptosporidium and Giardia in Water by Filtration/IMS/FA," January 1999, EPA 821/R-99/006, referenced in Sections 611.1007.

BOARD NOTE: Many of the above-listed documents available from the USEPA, Office of Ground Water and Drinking Water are also listed as available from NTIS.

USEPA, ORD. USEPA, Office of Research and Development, National Exposure Research Laboratory, Microbiological & Chemical Exposure Assessment Research Division (accessible on-line and available by download from http://www.epa.gov/nerlcwww/ordmeth.htm).

USEPA NERL Method 200.5, rev. 4.2, "Determination of Trace Elements in Drinking Water by Axially Viewed Inductively Coupled Plasma - Atomic Emission Spectrometry," October 2003, EPA 600/R-06/115, referenced in Sections 611.611 and 611.612.

USEPA NERL Method 415.3, rev. 1.1, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-05/055, referenced in Section 611.381.

USEPA NERL Method 415.3, rev. 1.2, "Determination of Total Organic Carbon and Specific UV Absorbance at 254 nm in Source Water and Drinking Water," February 2005, EPA 600/R-09/122, referenced in Section 611.381.

USEPA NERL Method 549.2, rev. 1.0, "Determination of Diquat and Paraquat in Drinking Water by Liquid-Solid Extraction and High Performance Liquid Chromatography with Ultraviolet Detection," June 1997.

USEPA Water Resource Center (RC-4100T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460:

E*Colite Test, "Charm E*Colite Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia coli in Drinking Water," January 9, 1998, referenced in Section 611.802. See also Charm Sciences, Inc.

m-ColiBlue24 Test, "Total Coliforms and E. coli Membrane Filtration Method with m-ColiBlue24(r) Broth," Method No. 10029, rev. 2, August 17, 1999, referenced in Section 611.802. See also The Hach Company.

USEPA Method 1600, "EPA Method 1600: Enterococci in Water by Membrane Filtration Using Membrane-Enterococcus Indoxyl-b-D-Glucoside Agar (mEI)," September 2002, EPA 821/R-02/022 is an approved variation of Standard Methods, Method 9230 C, "Fecal Streptococcus and Enterococcus Groups, Membrane Filter Techniques" (which has not itself been approved for use by USEPA) (accessible on-line and available by download from http://www.epa.gov/?nerlcwww/?1600sp02.pdf), referenced in Section 611.802.

USEPA Method 1601, "Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure," April 2001, EPA 821/R-01/030 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1601ap01.pdf), referenced in Section 611.802.

USEPA Method 1602, "Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure," April 2001, EPA 821/R-01/029 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1602ap01.pdf), referenced in Section 611.802.

USEPA Method 1604, "Method 1604: Total Coliforms and Escherichia coli in Water by Membrane Filtration Using a Simultaneous Detection Technique (MI Medium)," September 2002, EPA 821/R-02/024 (accessible on-line and available by download from http://www.epa.gov/nerlcwww/1604sp02.pdf), referenced in Section 611.802.

USGS. Books and Open-File Reports Section, United States Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

Methods available upon request by method number from "Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory - Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments," Open File Report 93-125, 1993, or Book 5, Chapter A-1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," 3rd ed., Open-File Report 85-495, 1989, as appropriate (referred to as "USGS Methods").

I-1030-85, referenced in Section 611.611.

I-1601-85, referenced in Section 611.611.

I-1700-85, referenced in Section 611.611.

I-2598-85, referenced in Section 611.611.

I-2601-90, referenced in Section 611.611.

I-2700-85, referenced in Section 611.611.

I-3300-85, referenced in Section 611.611.

Methods available upon request by method number from "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments," Chapter A5 in Book 5 of "Techniques of Water-Resources Investigations of the United States Geological Survey," 1997.

R-1110-76, referenced in Section 611.720.

R-1111-76, referenced in Section 611.720.

R-1120-76, referenced in Section 611.720.

R-1140-76, referenced in Section 611.720.

R-1141-76, referenced in Section 611.720.

R-1142-76, referenced in Section 611.720.

R-1160-76, referenced in Section 611.720.

R-1171-76, referenced in Section 611.720.

R-1180-76, referenced in Section 611.720.

R-1181-76, referenced in Section 611.720.

R-1182-76, referenced in Section 611.720.

Waters Corporation, Technical Services Division, 34 Maple St., Milford, MA 01757 (800-252-4752 or 508-482-2131, fax: 508-482-3625).

"Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography," Method B-1011, August 1987 (referred to as "Waters Method B-1011"), referenced in Section 611.611.

c) The Board incorporates the following federal regulations by reference:

40 CFR 3.2 (~~2010)~~ (2011) (How Does This Part Provide for Electronic Reporting?), referenced in Section 611.105.

40 CFR 3.3 (~~2010)~~ (2011) (What Definitions Are Applicable to This Part?), referenced in Section 611.105.

40 CFR 3.10 (~~2010)~~ (2011) (What Are the Requirements for Electronic Reporting to EPA?), referenced in Section 611.105.

40 CFR 3.2000 (~~2010)~~ (2011) (What Are the Requirements Authorized State, Tribe, and Local Programs' Reporting Systems Must Meet?), referenced in Section 611.105.

40 CFR 136.3(a) (~~2010)~~ (2011), referenced in Section 611.1004.

Appendix B to 40 CFR 136 (~~2010)~~ (2011), referenced in Sections 611.359, 611.609, and 611.646.

40 CFR 142.20(b)(1~~)~~ (~~2010~~) (2011), referenced in Section 611.112.

d) This Part incorporates no later amendments or editions.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.130 Special Requirements for Certain Variances and Adjusted Standards

a) Relief from the fluoride MCL.

1) In granting any variance or adjusted standard to a supplier that is a CWS from the maximum contaminant level for fluoride listed in Section 611.301(b), the Board will require application of the best available technology (BAT)

identified at subsection (a)(4) of this Section for that constituent as a condition to the relief, unless the supplier has demonstrated through comprehensive engineering assessments that application of BAT is not technically appropriate and technically feasible for that supplier.

2) The Board will require the following as a condition for relief from the fluoride MCL where it does not require the application of BAT:

A) That the supplier continue to investigate the following methods as an alternative means of significantly reducing the level of fluoride, according to a definite schedule:

i) A modification of lime softening;

ii) Alum coagulation;

iii) Electrodialysis;

iv) Anion exchange resins;

v) Well field management;

vi) The use of alternative sources of raw water; and

vii) Regionalization; and

B) That the supplier report results of that investigation to the Agency.

3) The Agency must petition the Board to reconsider or modify a variance or adjusted standard, pursuant to Subpart I of 35 Ill. Adm. Code 101, if it determines that an alternative method identified by the supplier pursuant to subsection (a)(2) of this Section is technically feasible and would result in a significant reduction in fluoride.

4) Best available technology for fluoride reduction is as follows:

A) Activated alumina absorption centrally applied; and

B) Reverse osmosis centrally applied.

BOARD NOTE: Subsection (a) derived from 40 CFR 142.61 (~~2003)~~ (2011).

b) Relief from an IOC, VOC, or SOC MCL.

1) In granting to a supplier that is a CWS or NTNCWS any variance or adjusted standard from the maximum contaminant levels for any VOC or SOC, listed in Section 611.311(a) or (c), or for any IOC, listed in Section 611.301, the supplier must have first applied the best available technology (BAT) identified at Section 611.311(b) (VOCs and SOCs) or Section 611.301(c) (IOCs) for that constituent, unless the supplier has demonstrated through comprehensive engineering assessments that application of BAT would achieve only a minimal and insignificant reduction in the level of contaminant.

BOARD NOTE: USEPA lists BAT for each SOC and VOC at 40 CFR 142.62(a), for the purposes of variances and exemptions (adjusted standards). That list is identical to the list at 40 CFR 141.61(b).

2) The Board may require any of the following as a condition for relief from an MCL listed in Section 611.301 or 611.311:

A) That the supplier continue to investigate alternative means of compliance according to a definite schedule; and

B) That the supplier report results of that investigation to the Agency.

3) The Agency must petition the Board to reconsider or modify a variance or adjusted standard, pursuant to Subpart I of 35 Ill. Adm. Code 101, if it determines that an alternative method identified by the supplier pursuant to subsection (b)(2) of this Section is technically feasible.

BOARD NOTE: Subsection (b) derived from 40 CFR 142.62(a) through (e)~~(2003)~~ (2011).

c) Conditions requiring use of bottled water, a point-of-use treatment device, or a point-of-entry treatment device. In granting any variance or adjusted standard from the maximum contaminant levels for organic and inorganic chemicals or an adjusted standard from the treatment technique for lead and copper, the Board may impose certain conditions requiring the use of bottled water, a point-of-entry treatment device, or a point-of-use treatment device to avoid an unreasonable risk to health, limited as provided in subsections (d) and (e) of this Section.

1) Relief from an MCL. The Board may, when granting any variance or adjusted standard from the MCL requirements of Sections 611.301 and 611.311, impose a condition that requires a supplier to use bottled water, a point-of-entry treatment device, a point-of-use treatment device, or other means to avoid an unreasonable risk to health.

2) Relief from corrosion control treatment. The Board may, when granting an adjusted standard from the corrosion control treatment requirements for lead and copper of Sections 611.351 and 611.352, impose a condition that requires a supplier to use bottled water, a point-of-use treatment device, or other means, but not a point-of-entry treatment device, to avoid an unreasonable risk to health.

3) Relief from source water treatment or service line replacement. The Board may, when granting an exemption from the source water treatment and lead service line replacement requirements for lead and copper under Sections 611.353 or 611.354, impose a condition that requires a supplier to use a point-of-entry treatment device to avoid an unreasonable risk to health.

BOARD NOTE: Subsection (c) derived from 40 CFR 142.62(f) (~~2003)~~ (2011).

d) Use of bottled water. Suppliers that propose to use or use bottled water as a condition for receiving a variance or an adjusted standard from the requirements of Section 611.301 or Section 611.311 or an adjusted standard from the requirements of Sections 611.351 through 611.354 must meet the requirements of either subsections (d)(1), (d)(2), (d)(3), and (d)(6) or (d)(4), (d)(5), and (d)(6) of this Section.

1) The supplier must develop a monitoring program for Board approval that provides reasonable assurances that the bottled water meets all MCLs of Sections 611.301 and 611.311 and submit a description of this program as part of its

petition. The proposed program must describe how the supplier will comply with each requirement of this subsection (d).

2) The supplier must monitor representative samples of the bottled water for all contaminants regulated under Sections 611.301 and 611.311 during the first three-month period that it supplies the bottled water to the public, and annually thereafter.

3) The supplier must annually provide the results of the monitoring program to the Agency.

4) The supplier must receive a certification from the bottled water company as to each of the following:

A) that the bottled water supplied has been taken from an approved source of bottled water, as such is defined in Section 611.101;

B) that the approved source of bottled water has conducted monitoring in accordance with 21 CFR 129.80(g)(1) through (g)(3);

C) and that the bottled water does not exceed any MCLs or quality limits as set out in 21 CFR ~~103.35,~~ 165.110, 110, and 129.

5) The supplier must provide the certification required by subsection (d)(4) of this Section to the Agency during the first quarter after it begins supplying bottled water and annually thereafter.

6) The supplier must assure the provision of sufficient quantities of bottled water to every affected person supplied by the supplier via door-to-door bottled water delivery.

BOARD NOTE: Subsection (d) derived from 40 CFR 142.62(g) (~~2003)~~ (2011).

e) Use of a point-of-entry treatment device. Before the Board grants any PWS a variance or adjusted standard from any NPDWR that includes a condition requiring the use of a point-of-entry treatment device, the supplier must demonstrate to the Board each of the following:

1) That the supplier will operate and maintain the device;

2) That the device provides health protection equivalent to that provided by central treatment;

3) That the supplier will maintain the microbiological safety of the water at all times;

4) That the supplier has established standards for performance, conducted a rigorous engineering design review, and field tested the device;

5) That the operation and maintenance of the device will account for any potential for increased concentrations of heterotrophic bacteria resulting through the use of activated carbon, by backwashing, post-contactor disinfection, and heterotrophic plate count monitoring;

6) That buildings connected to the supplier's distribution system have sufficient devices properly installed, maintained, and monitored to assure that all consumers are protected; and

7) That the use of the device will not cause increased corrosion of lead and copper bearing materials located between the device and the tap that could increase contaminant levels at the tap.

BOARD NOTE: Subsection (e) derived from 40 CFR 142.62(h) ~~(2003)~~ (2011).

f) Relief from the maximum contaminant levels for radionuclides ~~(effective December 8, 2003).~~

1) Relief from the maximum contaminant levels for combined radium-226 and radium-228, uranium, gross alpha particle activity (excluding radon and uranium), and beta particle and photon radioactivity.

A) Section 611.330(g) sets forth what USEPA has identified as the best available technology (BAT), treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in Section 611.330(b), (c), (d), and (e), for the purposes of issuing relief equivalent to a federal section 1415 variance or a section 1416 exemption.

B) In addition to the technologies listed in Section 611.330(g), Section 611.330(h) sets forth what USEPA has identified as the BAT, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for the radionuclides listed in Section 611.330(b), (c), (d), and (e), for the purposes of issuing relief equivalent to a federal section 1415 variance or a section 1416 exemption to small drinking water systems, defined here as those serving 10,000 persons or fewer, as shown in the second table set forth at Section 611.330(h).

2) The Board will require a CWS supplier to install and use any treatment technology identified in Section 611.330(g), or in the case of small water systems (those serving 10,000 persons or fewer), listed in Section 611.330(h), as a condition for granting relief equivalent to a federal section 1415 variance or a section 1416 exemption, except as provided in subsection (f) (3) of this Section. If, after the system's installation of the treatment technology, the system cannot meet the MCL, that system will be eligible for relief.

3) If a CWS supplier can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment technologies identified in this Section would only achieve a de minimus reduction in the contaminant level, the Board may issue a schedule of compliance that requires the system being granted relief equivalent to a federal section 1415 variance or a section 1416 exemption to examine other treatment technologies as a condition of obtaining the relief.

4) If the Agency determines that a treatment technology identified under subsection (f)(3) of this Section is technically feasible, it may request that the Board require the supplier to install and use that treatment technology in connection with a compliance schedule issued pursuant to Section 36 of the Act [415 ILCS 5/36]. The Agency's determination must be based upon studies by the system and other relevant information.

5) The Board may require a CWS to use bottled water, point-of-use devices, point-of-entry devices, or other means as a condition of granting relief equivalent to a federal section 1415 variance or a section 1416 exemption from the requirements of Section 611.330, to avoid an unreasonable risk to health.

6) A CWS supplier that uses bottled water as a condition for receiving relief equivalent to a federal section 1415 variance or a section 1416 exemption from the requirements of Section 611.330 must meet the requirements specified in either subsections (d)(1) through (d)(3) or (d)(4) through (d)(6) of this Section.

7) A CWS supplier that uses point-of-use or point-of-entry devices as a condition for obtaining relief equivalent to a federal section 1415 variance or a section 1416 exemption from the radionuclides NPDWRs must meet the conditions in subsections (e)(1) through (e)(6) of this Section.

BOARD NOTE: Subsection (f) derived from 40 CFR 142.65 (~~2003)~~ (2011).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.611 Inorganic Analysis

Analytical methods are from documents incorporated by reference in Section 611.102. These are mostly referenced by a short name defined by Section 611.102(a). Other abbreviations are defined in Section 611.101.

a) Analysis for the following contaminants must be conducted using the following methods or an alternative method approved pursuant to Section 611.480. Criteria for analyzing arsenic, chromium, copper, lead, nickel, selenium, sodium, and thallium with digestion or directly without digestion, and other analytical procedures, are contained in USEPA Technical Notes, incorporated by reference in Section 611.102.

BOARD NOTE: Because MDLs reported in USEPA Environmental Metals Methods 200.7 and 200.9 were determined using a 2? preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e., no sample digestion) will be higher. For direct analysis of cadmium by USEPA Environmental Metals Method 200.7, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by USEPA Environmental Metals Method 200.9; antimony and lead by Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; and lead by ASTM Method D3559-96 D or D3559-03 D unless multiple in-furnace depositions are made.

1) Alkalinity.

A) Titrimetric.

i) ASTM Method D1067-92 B, ~~or~~ D1067-02 B, or D1067-06 B; ~~or~~

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2320 B~~.~~; or

iii) Standard Methods Online, Method 3113 B-04.

B) Electrometric titration: USGS Methods~~,~~ : Method I-1030-85.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2320 B as an approved alternative method for alkalinity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D1067-06 B

and Standard Methods Online, Method 3113 B-04 as approved alternative methods for alkalinity in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

2) Antimony.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, hydride technique: ASTM Method D3697-92, D3697-02, or D3697-07.

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113B and USEPA NERL Method 200.5 as approved alternative methods for antimony in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3697-07 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908. USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for antimony in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

3) Arsenic.

BOARD NOTE: If ultrasonic nebulization is used in the determination of arsenic by Method 200.8, the arsenic must be in the pentavalent state to provide uniform signal response. For direct analysis of arsenic with Method 200.8 using ultrasonic nebulization, samples and standards must contain one mg/l of sodium hypochlorite.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

C) Atomic absorption, furnace technique.

i) ASTM Method D2972-97 C, D2972-03 C, or D2972-08 C; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B~~.~~; or

iii) Standard Methods Online, Method 3113 B-04.

D) Atomic absorption, hydride technique.

i) ASTM Method D2972-97 B, D2972-03 C, or D2972-08 B; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3114 B~~.~~; or

iii) Standard Methods Online, Method 3114 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., ~~Methods~~Method 3113 ~~B and 3114~~ B and USEPA NERL Method 200.5 as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2972-08 B and C as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. ~~57908).~~57908. USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-04 as approved alternative methods for arsenic in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

4) Asbestos: Transmission electron microscopy: USEPA Asbestos Method -100.1 or USEPA Asbestos Method -100.2.

5) Barium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed., Method 3111 D.

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 D, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for barium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for barium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

6) Beryllium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3645-97 B~~,~~ or D3645-03 B~~, or D3645-08 B; or~~;

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B~~.~~; or

iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for beryllium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3645-08 B as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for beryllium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

7) Cadmium.

A) Inductively coupled plasma arc furnace: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for cadmium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for cadmium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

8) Calcium.

A) EDTA titrimetric.

i) ASTM Method D511-93 A, D511-03 A, or D511-09 A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Ca D or Standard Methods, 20th or 21st ed., Method 3500-Ca B.

B) Atomic absorption, direct aspiration.

i) ASTM Method D511-93 B, D511-03 B, or D511-09 B; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3120 B, and 3500-Ca B and USEPA NERL Method 200.5 as approved alternative methods for calcium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for calcium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for calcium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

9) Chromium.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3120 B and USEPA NERL Method 200.5 as an approved alternative ~~method~~methods for chromium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for chromium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

10) Copper.

A) Atomic absorption, furnace technique.

i) ASTM Method D1688-95 C, D1688-02 C, or D1688-07 C; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B~~.~~; or

iii) Standard Methods Online, Method 3113 B-04.

B) Atomic absorption, direct aspiration.

i) ASTM Method D1688-95 A, D1688-02 A, or D1688-07 A; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

D) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

E) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES)~~:~~ , USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D1688-07 A and C as approved alternative methods for copper in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for copper in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

11) Conductivity; Conductance.

A) ASTM Method D1125-95(1999) A; or

B) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2510 B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2510 B as an approved alternative method for conductivity in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

12) Cyanide.

A) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN- C), followed by spectrophotometric, amenable.

i) ASTM Method D2036-98 B or 2036-06 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN- G.

B) Manual distillation (ASTM Method D2036-98 A or Standard Methods, 18th, 19th, or 20th ed., Method 4500-CN- C), followed by spectrophotometric, manual.

i) ASTM Method D2036-98 A or D2036-06 A;

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN- E; or

iii) USGS Methods, Method I-3300-85.

C) Spectrophotometric, semiautomated: USEPA Environmental Inorganic Methods, Method 335.4 (rev. 1.0).

D) Selective electrode: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-CN- F.

E) UV/Distillation/Spectrophotometric: Kelada 01.

F) Microdistillation/Flow Injection/Spectrophotometric: QuickChem 10-204-00-1-X.

G) Ligand exchange and amperometry.

i) ASTM Method D6888-03.

ii) OI Analytical Method OIA-1677 DW.

H) Gas chromatography-mass spectrometry headspace: Method ME355.01.

BOARD NOTE: USEPA added ASTM Method D2036-06 A and Standard Methods, 21st ed., Methods 4500-CN- E, F, and G as approved alternative methods for cyanide in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Method ME355.01 as an approved alternative method for cyanide in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

13) Fluoride.

A) Ion Chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03; ~~or~~

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B.; or

iv) Hach SPADNS 2 Method 10225.

B) Manual distillation, colorimetric SPADNS: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F- B and D.

C) Manual electrode.

i) ASTM Method D1179-93 B, D1179-99 B, or D1179-04 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F- C.

D) Automated electrode: Technicon Methods, Method 380-75WE.

E) Automated alizarin.

i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-F- E; or

ii) Technicon Methods, Method 129-71W.

F) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for fluoride to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00 (2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-F- B, C, D, and E and ASTM Method D1179-04 B as approved alternative methods for fluoride in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Hach SPADNS 2 Method 10225 as an approved alternative method for fluoride in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

14) Lead.

A) Atomic absorption, furnace technique.

i) ASTM Method D3559-96 D, D3559-03 D, or D3559-08 ~~D; or~~;

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.; or

iii) Standard Methods Online, Method 3113 B-04.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Differential Pulse Anodic Stripping Voltammetry: Palintest Method 1001.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and USEPA NERL Method 200.5 as approved alternative methods for lead in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3559-08 D as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for lead in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

15) Magnesium.

A) Atomic absorption.

i) ASTM Method D511-93 B, D511-03 B, or D511-09 B; or

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

B) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

C) Complexation titrimetric.

i) ASTM Method D511-93 A, D511-03 A, or D511-09 A; or

ii) Standard Methods, 18th or 19th ed., Method 3500-Mg E or Standard Methods, 20th or 21st ed., Method 3500-Mg B.

D) Ion chromatography: ASTM Method D6919-03 or D6919-09.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3120 B, and 3500-Mg B and USEPA NERL Method 200.5 as approved alternative methods for magnesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D511-09 A and B as approved alternative methods for magnesium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added ASTM Method D6919-09 as an approved alternative method for magnesium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

16) Mercury.

A) Manual cold vapor technique.

i) USEPA Environmental Metals Methods, Method 245.1 (rev. 3.0);

ii) ASTM Method D3223-97 or D3223-02; or

iii) Standard Methods, 18th, 19th, or 21st ed., Method 3112 B.

B) Automated cold vapor technique: USEPA Inorganic Methods, Method 245.2.

C) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3112 B as an approved alternative method for mercury in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

17) Nickel.

A) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, direct aspiration technique: Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

E) Atomic absorption, furnace technique: ~~Standard Methods, 18th, 19th, or 21st ed., Method 3113 B.~~

i) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B; or

ii) Standard Methods Online, Method 3113 B-04.

F) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for nickel in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for nickel in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

18) Nitrate.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03;

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or

iv) Waters Test Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO3- F.

C) Ion selective electrode.

i) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO3- D; or

ii) Technical Bulletin 601.

D) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO3- E.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrate to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

F) Reduction-colorimetric: Systea Easy (1-Reagent).

G) Direct colorimetric: Hach TNTplus 835/836 Method 10206.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B and 4500-$NO3^-$ D, E, and F as approved alternative methods for nitrate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348). USEPA added Hach TNTplus 835/836 Method 10206 as an approved alternative method for nitrate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

19) Nitrite.

A) Ion chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03;

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B; or

iv) Waters Test Method B-1011, available from Millipore Corporation.

B) Automated cadmium reduction.

i) USEPA Environmental Inorganic Methods, Method 353.2 (rev. 2.0);

ii) ASTM Method D3867-90 A; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO3- F.

C) Manual cadmium reduction.

i) ASTM Method D3867-90 B; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO3- E.

D) Spectrophotometric: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-NO2- B.

E) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for nitrite to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

F) Reduction-colorimetric: Systea Easy (1-Reagent).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-NO_3^- E and F; and 4500-NO_2^- B as approved alternative methods for nitrite in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Systea Easy (1-Reagent) as an approved alternative method for nitrite in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 73 Fed. Reg. 38348).

20) Orthophosphate (unfiltered, without digestion or hydrolysis).

A) Automated colorimetric, ascorbic acid.

i) USEPA Environmental Inorganic Methods, Method 365.1 (rev. 2.0); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-P F.

B) Single reagent colorimetric, ascorbic acid.

i) ASTM Method D515-88 A; or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-P E.

C) Colorimetric, phosphomolybdate: USGS Methods, Method I-1601-85.

D) Colorimetric, phosphomolybdate, automated-segmented flow: USGS Methods, Method I-2601-90.

E) Colorimetric, phosphomolybdate, automated discrete: USGS Methods, Method I-2598-85.

F) Ion Chromatography.

i) USEPA Environmental Inorganic Methods, Method 300.0 (rev. 2.1) or USEPA Organic and Inorganic Methods, Method 300.1 (rev. 1.0);

ii) ASTM Method D4327-97 or D4327-03; or

iii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4110 B.

G) Capillary ion electrophoresis: ASTM Method D6508-00(2005).

BOARD NOTE: On March 12, 2007 (at 72 Fed. Reg. 11200), USEPA amended the entry for orthophosphate to add capillary ion electrophoresis in the table at corresponding 40 CFR 141.23(k)(1) to allow the use of "Waters Method D6508, Rev. 2." The Board attempt to locate a copy of the method disclosed that it is an ASTM method originally approved in 2000 and reapproved in 2005. The Board has cited to the ASTM Method D6508-00(2005).

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 4110 B, 4500-P E and F as approved alternative methods for orthophosphate in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

21) pH: electrometric.

A) USEPA Inorganic Methods, Method 150.1 or Method 150.2;

B) ASTM Method D1293-95 or D1293-99; or

C) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 4500-H+ B.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 4500-H+ B as an approved alternative method for pH in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

22) Selenium.

A) Atomic absorption, hydride.

i) ASTM Method D3859-98 A, D3859-03 A, or D3859-08 A; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3114 B~~.~~; or

iii) Standard Methods Online, Method 3114 B-09.

B) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

C) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

D) Atomic absorption, furnace technique.

i) ASTM Method D3859-98 B, D3859-03 B, or D3859-08 B; ~~or~~

ii) Standard Methods, 18th, 19th, or 21st ed., Method 3113 B~~.~~; or
iii) Standard Methods Online, Method 3113 B-04.

E) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 3113 B and 3114 B and USEPA NERL Method 200.5 as approved alternative methods for selenium in

appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3859-08 A and B as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on November 10, 2009 (at 74 Fed. Reg. 57908). USEPA added Standard Methods Online, Method 3113 B-04 and Method 3114 B-09 as approved alternative methods for selenium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

23) Silica.

A) Colorimetric, molybdate blue: USGS Methods, Method I-1700-85.

B) Colorimetric, molybdate blue, automated-segmented flow: USGS Methods, Method I-2700-85.

C) Colorimetric: ASTM Method D859-94, D859-00, or D859-05.

D) Molybdosilicate: Standard Methods, 18th or 19th ed., Method 4500-Si D or Standard Methods, 20th or 21st ed., Method 4500-SiO2 C.

E) Heteropoly blue: Standard Methods, 18th or 19th ed., Method 4500-Si E or Standard Methods, 20th or 21st ed., Method 4500-SiO2 D.

F) Automated method for molybdate-reactive silica: Standard Methods, 18th or 19th ed., Method 4500-Si F or Standard Methods, 20th or 21st ed., Method 4500-SiO2 E.

G) Inductively coupled plasma.

i) USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4); or

ii) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 3120 B.

H) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added ASTM Method D859-05, Standard Methods, 21st ed.; Methods 3120 B and 4500-SiO2 C, D, and E; and USEPA NERL Method 200.5 as approved alternative methods for silica in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

24) Sodium.

A) Inductively coupled plasma: USEPA Environmental Metals Methods, Method 200.7 (rev. 4.4).

B) Atomic absorption, direct aspiration: Standard Methods, 18th, 19th, or 21st ed., Method 3111 B.

C) Ion chromatography: ASTM Method D6919-03 or D6919-09.

D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 3113 B and ~~USPEA~~USEPA NERL Method 200.5 as approved alternative methods for sodium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

USEPA added ASTM Method D6919-09 as an approved alternative method for sodium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

25) Temperature; thermometric: Standard Methods, 18th, 19th, 20th, or 21st ed., Method 2550.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 2550 as an approved alternative method for temperature in appendix A to subpart C ~~of 40 CFR 141~~ on June 3, 2008 (at 73 Fed. Reg. 31616).

26) Thallium.

A) Inductively coupled plasma-mass spectrometry: USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3).

B) Atomic absorption, platform furnace technique: USEPA Environmental Metals Methods, Method 200.9 (rev. 2.2).

b) Sample collection for antimony, arsenic (effective January 22, 2004), asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium pursuant to Sections 611.600 through 611.604 must be conducted using the following sample preservation, container, and maximum holding time procedures:

BOARD NOTE: For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4? C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid. Acidification of samples for metals analysis is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instructions in Section 8.3 of USEPA Environmental Metals Method 200.7, 200.8, or 200.9 are followed.

1) Antimony.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

2) Arsenic.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

3) Asbestos.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

4) Barium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

5) Beryllium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

6) Cadmium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

7) Chromium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

8) Cyanide.

A) Preservative: Cool to 4° C. Add sodium hydroxide to pH greater than 12. See the analytical methods for information on sample preservation.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

9) Fluoride.

A) Preservative: None.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within one month.

10) Mercury.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 28 days.

11) Nickel.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

12) Nitrate, chlorinated.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

13) Nitrate, non-chlorinated.

A) Preservative: Concentrated sulfuric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 14 days.

14) Nitrite.

A) Preservative: Cool to 4° C.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within 48 hours.

15) Selenium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

16) Thallium.

A) Preservative: Concentrated nitric acid to pH less than 2.

B) Plastic or glass (hard or soft).

C) Holding time: Samples must be analyzed as soon after collection as possible, but in any event within six months.

c) Analyses under this Subpart N must be conducted by laboratories that received approval from USEPA or the Agency. The Agency must certify laboratories to conduct analyses for antimony, arsenic (effective January 23, 2006), asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium if the laboratory does as follows:

1) It analyzes performance evaluation (PE) samples, provided by the Agency pursuant to 35 Ill. Adm. Code 186, that include those substances at levels not in excess of levels expected in drinking water; and

2) It achieves quantitative results on the analyses within the following acceptance limits:

A) Antimony: ± 30% at greater than or equal to 0.006 mg/l.

B) Arsenic: ? 30% at greater than or equal to 0.003 mg/l.

C) Asbestos: 2 standard deviations based on study statistics.

D) Barium: ± 15% at greater than or equal to 0.15 mg/l.

E) Beryllium: ± 15% at greater than or equal to 0.001 mg/l.

F) Cadmium: ± 20% at greater than or equal to 0.002 mg/l.

G) Chromium: ± 15% at greater than or equal to 0.01 mg/l.

H) Cyanide: ± 25% at greater than or equal to 0.1 mg/l.

I) Fluoride: ± 10% at 1 to 10 mg/l.

J) Mercury: ± 30% at greater than or equal to 0.0005 mg/l.

K) Nickel: ± 15% at greater than or equal to 0.01 mg/l.

L) Nitrate: ± 10% at greater than or equal to 0.4 mg/l.

M) Nitrite: ± 15% at greater than or equal to 0.4 mg/l.

N) Selenium: ± 20% at greater than or equal to 0.01 mg/l.

O) Thallium: ± 30% at greater than or equal to 0.002 mg/l.

BOARD NOTE: Derived from 40 CFR 141.23(k) and appendix A to 40 CFR 141 (~~2010~~) (2011).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.612 Monitoring Requirements for Old Inorganic MCLs

a) Analyses for the purpose of determining compliance with the old inorganic MCLs of Section 611.300 are required as follows:

1) Analyses for all CWSs utilizing surface water sources must be repeated at yearly intervals.

2) Analyses for all CWSs utilizing only groundwater sources must be repeated at three-year intervals.

3) This subsection (a)(3) corresponds with 40 CFR 141.23(1)(3), which requires monitoring for the repealed old MCL for nitrate at a frequency specified by the state. The Board has followed the USEPA lead and repealed that old MCL. This statement maintains structural consistency with USEPA rules.

4) This subsection (a)(4) corresponds with 40 CFR 141.23(1)(4) , which authorizes the state to determine compliance and initiate enforcement action. This statement maintains structural consistency with USEPA rules.

b) If the result of an analysis made under subsection (a) of this Section indicates that the level of any contaminant listed in Section 611.300 exceeds the old MCL, the supplier must report to the Agency within seven days and initiate three additional analyses at the same sampling point within one month.

c) When the average of four analyses made pursuant to subsection (b) of this Section, rounded to the same number of significant figures as the old MCL for the substance in question, exceeds the old MCL, the supplier must notify the Agency and give notice to the public pursuant to Subpart V of this Part. Monitoring after public notification must be at a frequency designated by the Agency by a SEP granted pursuant to Section 611.110 and must continue until the old MCL has not been exceeded in two successive samples or until a different monitoring schedule becomes effective as a condition to a variance, an adjusted standard, a site specific rule, an enforcement action, or another SEP granted pursuant to Section 611.110.

d) This subsection (d) corresponds with 40 CFR 141.23(o), which pertains to monitoring for the repealed old MCL for nitrate. This statement maintains structural consistency with USEPA rules.

e) This subsection (e) corresponds with 40 CFR 141.23(p), which pertains to the use of existing data up until a date long since expired. This statement maintains structural consistency with USEPA rules.

f) Except for arsenic, for which analyses must be made in accordance with Section 611.611, analyses conducted to determine compliance with the old MCLs of Section 611.300 must be made in accordance with the following methods, incorporated by reference in Section 611.102, or alternative methods approved by the Agency pursuant to Section 611.480.

1) Fluoride: The methods specified in Section 611.611(c) must apply for the purposes of this Section.

2) Iron.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.;

ii) Method 3113 B, 18th, 19th, or 21st ed.; ~~or~~

iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

B) Standard Methods Online, Method 3113 B-04.

~~B~~C) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4); or

ii) Method 200.9 (rev. 2.2).

~~C~~D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added this method as an approved alternative method in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for iron in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for iron in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

3) Manganese.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.;

ii) Method 3113 B, 18th, 19th, or 21st ed.; or

iii) Method 3120 B, 18th, 19th, 20th, or 21st ed.

B) Standard Methods Online, Method 3113 B-04.

~~B~~C) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4);

ii) Method 200.8 (rev. 5.3); or

iii) Method 200.9 (rev. 2.2).

~~C~~D) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B, 3113 B, and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for manganese in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added Standard Methods Online, Method 3113 B-04 as an approved alternative method for manganese in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

4) Zinc.

A) Standard Methods.

i) Method 3111 B, 18th, 19th, or 21st ed.; or

ii) Method 3120 B, 18th , 19th, 20th, or 21st ed.

B) USEPA Environmental Metals Methods.

i) Method 200.7 (rev. 4.4); or

ii) Method 200.8 (rev. 5.3).

C) Axially viewed inductively coupled plasma-atomic emission spectrometry (AVICP-AES): USEPA NERL Method 200.5.

BOARD NOTE: USEPA added Standard Methods, 21st ed.; Methods 3111 B and 3120 B and USEPA NERL Method 200.5 as approved alternative methods for zinc in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

BOARD NOTE: The provisions of subsections (a) through (e) of this Section derive from 40 CFR 141.23(l) through (p) (~~2010)~~ (2011). Subsections (f)(2) through (f)(4) of this Section relate exclusively to additional State requirements. The Board retained subsection (f) of this Section to set forth methods for the inorganic contaminants for which there is a State-only MCL. The methods specified are those set forth in 40 CFR 143.4(b) and appendix A to subpart C of 40 CFR 141 (~~2010)~~ (2011), for secondary MCLs.

(Source: Amended at 36 Ill. Reg. _____~~—~~, effective ~~_____~~ _____)

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.645 Analytical Methods for Organic Chemical Contaminants

Analysis for the Section 611.311(a) VOCs under Section 611.646; the Section 611.311(c) SOCs under Section 611.648; the Section 611.310 old MCLs under Section 611.641; and for THMs, TTHMs, and TTHM potential must be conducted using the methods listed in this Section. ~~All methods are from USEPA Organic Methods, unless otherwise indicated.~~ All methods are incorporated by reference in Section 611.102. Other required analytical test procedures germane to the conduct of these analyses are contained in the USEPA document, "Technical Notes of Drinking Water Methods," incorporated by reference in Section 611.102.

a) Volatile Organic Chemical Contaminants (VOCs).

ContaminantAnalytical MethodsBenzeneUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Carbon tetrachlorideUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)ChlorobenzeneUSEPA Organic Methods, Methods 502.2 (rev. 2.1), ~~and~~ 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,2-DichlorobenzeneUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,4-DichlorobenzeneUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,2-DichloroethaneUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)cis-DichloroethyleneUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~

and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)trans-Dichloroethylene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Dichloromethane~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,2-Dichloropropane~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Ethylbenzene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Styrene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Tetrachloroethylene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)~~,~~and 551.1 (rev. 1.0)1,1,1-Trichloroethane~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)Trichloroethylene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)Toluene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,2,4-Trichlorobenzene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,1-Dichloroethylene~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)1,1,2-Trichloroethane~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Vinyl chloride~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)Xylenes (total)~~USEPA Organic Methods, Methods 502.2 (rev. 2.1)~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW Methods, Method 524.3 (rev. 1.0)

BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for all of the VOCs in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

b) Synthetic Organic Chemical Contaminants (SOCs).

Contaminant~~Analytical Methods~~2,3,7,8-Tetrachlorodibenzodioxin (2,3,7,8-TCDD or dioxin)Dioxin and Furan Method 1613 (rev. B)2,4-D~~USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, Method 515.4 (rev. 1.0)~~,~~; ASTM Method D5317-93 or D5317-98; Standard Methods, 21st ed., Method 6640 B2,4,5-TP (Silvex)~~USEPA Organic Methods, Methods 515.2 (rev. 1.1), 555 (rev. 1.0), and 515.1 (rev. 4.0)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, Method 515.4 (rev. 1.0)~~,~~; ASTM Method D5317-93 or D5317-98; Standard Methods, 21st ed., Method 6640 BAlachlor~~USEPA Organic Methods, Methods 505 (rev. 2.1)1, 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0) Atrazine~~USEPA Organic Methods, Methods 505 (rev. 2.1)1, 507 (rev. 2.1), 508.1 (rev. 2.1), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)~~,~~; Syngenta AG-6252Benzo(a)pyrene~~USEPA Organic Methods, Methods 525.2 (rev. 2.0), 550, and 550.1Carbofuran~~USEPA Organic Methods, Methods 531.1 (rev. 3.1)~~,~~; USEPA OGWDW Methods, Method 531.2 (rev. 1.0)~~,~~; Standard Methods, 18th ed. Supplement, 19th ed., or 20th ed., Method 6610~~ or~~; Standard Methods, 21st ed., Method 6610 B~~ or~~; Standard Methods Online, Method 6610 B-04Chlordane~~USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.1), and 525.2 (rev. 2.0)Dalapon~~USEPA Organic Methods, Methods 515.1 (rev. 4.0), 552.1 (rev. 1.0), and 552.2 (rev. 1.0)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, Methods 515.4 (rev. 1.0), 552.3 (rev. 1.0), and 557; ~~and~~ Standard Methods, 21st ed., Method 6640 BDi(2-ethylhexyl)adipate~~USEPA Organic Methods, Methods 506 (rev. 1.1)~~ and 525.2 (rev. 2.0)Di(2-ethylhexyl)phthalate~~USEPA Organic Methods, ~~Methods~~~~Method 506 (rev. 1.1)~~ and 525.2 (rev.

2.0)Dibromochloropropane (DBCP)USEPA Organic Methods, Methods 504.1 (rev. 1.1), USEPA OGWDW Methods, Method 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)DinosebUSEPA Organic Methods, Methods 515.1 (rev. 4.0)~~,~~ and 515.2 (rev. 1.1)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, ~~Method~~Methods 515.4 (rev. 1.0)~~,~~ and 555 (rev. 1.0);
Standard Methods, 21st ed., Method 6640 BDiquatUSEPA NERL Method 549.2 (rev. 1.0)EndothallUSEPA Organic Methods, ~~Methods~~Method 548.1 (rev. ~~1.0~~2.0)EndrinUSEPA Organic Methods, ~~Methods~~Method 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)Ethylene dibromide (EDB)USEPA Organic Methods, Methods 504.1 (rev. 1.1)~~,~~; USEPA OGWDW Methods, ~~Method~~Methods 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)GlyphosateUSEPA Organic Methods, ~~Methods 547,~~ ~~,~~Method 547; Standard Methods, 18th ed., 19th ed., ~~or~~ 20th, or 21st ed., Method 6651 BHeptachlorUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)Heptachlor EpoxideUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)HexachlorobenzeneUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)HexachlorocyclopentadieneUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)LindaneUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)MethoxychlorUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)OxamylUSEPA Organic Methods, ~~Methods~~Method 531.1 (rev. 3.1); USEPA OGWDW Methods, Method 531.2 (rev. 1.0); Standard Methods, 18th ed. Supplement, 19th ed. or 20th ed.~~,~~ Method 6610; Standard Methods, 21st ed., Method 6610 B; ~~or~~ Standard Methods Online, Method 6610 B-04PCBs (measured for compliance purposes as decachlorobiphenyl)USEPA Organic Methods, ~~Methods~~Method 508A (rev. 1.0)PCBs (qualitatively identified as Aroclors)USEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)PentachlorophenolUSEPA Organic Methods, Methods 515.1 (rev. 4.0), 515.2 (rev. 1.1), 525.2 (rev. 2.0), and 555 (rev. 1.0)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, Method 515.4 (rev. 1.0)~~,~~; ASTM Method D5317-93 or D5317-98 (2003); Standard Methods, 21st ed., Method 6640 BPicloramUSEPA Organic Methods, Methods 515.1 (rev. 4.0), ~~515.2~~515.2, (rev. 1.1)~~,~~ and 555 (rev. 1.0)~~,~~; USEPA Organic and Inorganic Methods, Method 515.3 (rev. 1.0)~~,~~; USEPA OGWDW Methods, Method 515.4 (rev. 1.0)~~,~~; ASTM Method D5317-93 or D5317-98 (2003); Standard Methods, 21st ed., Method 6640 BSimazineUSEPA Organic Methods, Methods 505 (rev. 2.1)1, 507 (rev. 2.1), 508.1 (rev. 2.0), 525.2 (rev. 2.0), and 551.1 (rev. 1.0)ToxapheneUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 2.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 6610 B and Standard Methods Online, Method 6610 B-04 as approved alternative methods for carbofuran and oxamyl on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for dibromochloropropane and ethylene dibromide in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348). USEPA approved Standard Methods, 21st ed., Method 6640 B and Standard Methods Online, Method 6640 B-01 and USEPA OGWDW Methods, Method 557 as approved alternative methods for dalapon in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added Standard Methods, 21st ed., Method 6640 B as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dinoseb, pentachlorophenol, and picloram in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods~~,~~ Online, Method 6640 B-01 as an approved alternative method for 2,4-D, 2,4,5-TP (Silvex), dalapon, dinoseb, pentachlorophenol, and picloram and in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). Since the version of Method 6640 -B that appears in Standard Methods Online is

the same as that which appears in Standard Methods, 21st ed., the Board has cited only to Standard Methods, 21st ed. USEPA added Standard Methods, 21st ed., Method 6651 B as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). USEPA added Standard Methods Online, Method 6651 B-00 as an approved alternative method for glyphosate in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014). Since the version of Method 6651 B that appears in Standard Methods Online is the same as that which appears in Standard Methods, 21st ed., the Board has cited only to Standard Methods, 21st ed.

c) Total Trihalomethanes (TTHMs).

ContaminantAnalytical MethodsTotal Trihalomethanes (TTHMs), Trihalomethanes (THMs), and Maximum Total Trihalomethane PotentialUSEPA Organic Methods, Methods 502.2 (rev. 2.1)~~,~~ and 524.2 (rev. 4.1)~~,~~; USEPA OGWDW ~~Method~~Methods, 524.3 (rev. 1.0)~~,~~ and 551.1 (rev. 1.0)
BOARD NOTE: USEPA added USEPA OGWDW Method 524.3 (rev. 1.0) as an alternative method for total trihalomethane in appendix A to subpart C of 40 CFR 141 on August 3, 2009 (at 74 Fed. Reg. 38348).

d) State-Only MCLs (for which a method is not listed ~~above).~~in subsections (a) through (c)).

ContaminantAnalytical MethodsAldrinUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)DDTUSEPA Organic Methods, Methods 505 (rev. 2.1)~~,~~ and 508 (rev. 3.1)DieldrinUSEPA Organic Methods, Methods 505 (rev. 2.1), 508 (rev. 3.1), 508.1 (rev. 2.0), and 525.2 (rev. 2.0)
e) The following footnotes are appended to method entries in subsections (a) and (b) of this Section:

1 denotes that, for the particular contaminant, a nitrogen-phosphorus detector should be substituted for the electron capture detector in method 505 (or another approved method should be used) to determine alachlor, atrazine, and simazine if lower detection limits are required.

2 denotes that Syngenta Method AG-625 may not be used for the analysis of atrazine in any system where chlorine dioxide is used for drinking water treatment. In samples from all other systems, any result for atrazine generated by Syngenta Method AG-625 that is greater than one-half the maximum contaminant level (MCL) (in other words, greater than 0.0015mg/l or 1.5 µg/l) must be confirmed using another approved method for this contaminant and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Syngenta Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

BOARD NOTE: Derived from 40 CFR 141.24(e) and appendix A to subpart C of 40 CFR 141~~ (2010), as amended at 74 Fed. Reg. 38348 (August 3, 2009) and 75 Fed. Reg. 32295 (June 8, 2010)~~ (2011).

(Source: Amended at 36 Ill. Reg. _____~~__~~, effective _____~~_____~~)

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS~~ (REPEALED)~~

Section 611.680 Sampling, Analytical, and other Requirements (Repealed)

a) Required monitoring.

1) A CWS supplier that serves a population of 10,000 or more individuals and which adds a disinfectant (oxidant) to the water in any part of the drinking water treatment process must analyze for TTHMs in accordance with this Subpart P.

2) For the purpose of this Subpart P, the minimum number of samples required to be taken by the supplier must be based on the number of treatment plants used by the supplier. However, the Agency shall, by a SEP issued pursuant to Section 611.110, provide that multiple wells drawing raw water from a single aquifer be considered one treatment plant for determining the minimum number of samples.

3) All samples taken within an established frequency must be collected within a 24-hour period.

b) A CWS supplier that serves 10,000 or more individuals.

1) For a CWS supplier utilizing surface a water source in whole or in part, and for a CWS supplier utilizing only a groundwater source, except as provided in Section 611.683, analyses for TTHMs must be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least 25 percent of the samples must be taken at locations within the distribution system reflecting the maximum residence time (MRT) of the water in the system. The remaining 75 percent must be taken at representative locations in the distribution system, taking into account the number of persons served, different sources of water and different treatment methods employed. The results of all analyses per quarter must be arithmetically averaged and reported to the Agency within 30 days after the supplier's receipt of such results. All samples collected must be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses must be conducted in accordance with the methods listed in Section 611.685.

2) Upon application by a CWS supplier, the Agency must, by a SEP issued pursuant to Section 611.110, reduce the monitoring frequency required by subsection (b)(1) to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the MRT of the water in the system, if the Agency determines that the data from at least one year of monitoring in accordance with subsection (b)(1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.

3) If at any time during which the reduced monitoring frequency prescribed under this subsection (b) applies, the results from any analysis exceed 0.10 mg/l TTHMs and such results are confirmed by at least one check sample taken promptly after such results are received, or if the CWS supplier makes any significant change to its source of water or treatment program, the supplier must immediately begin monitoring in accordance with the requirements of subsection (b)(1), which monitoring must continue for at least one year before the frequency may be reduced again. The Agency must, by a SEP issued pursuant to Section 611.110, require monitoring in excess of the minimum frequency where it is necessary to detect variations of TTHM levels within the distribution system.

BOARD NOTE: Subsections (a) and (b) of this Section are derived from 40 CFR 141.30(a) and (b) (2010), modified to remove the limitation regarding addition of disinfectant.

~~c) Surface water sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers must have submitted at least one initial sample per treatment plant for analysis or analytical results from a certified laboratory for MRT concentration taken between May 1, 1990, and October 31, 1990. After written request by the supplier and the determination by the Agency that the results of the sample indicate that the CWS supplier is not likely to exceed the MCL, the CWS must continue to submit one annual sample per treatment plant for analysis or analytical results from a certified laboratory to the Agency taken between May 1 and October 31 of succeeding years. If the sample exceeds the MCL, the CWS must submit to the Agency samples in accordance with the sampling frequency specified in subsection (b) of this Section.~~

~~BOARD NOTE: This is an additional State requirement.~~

~~d) Groundwater sources for a CWS supplier that serves fewer than 10,000 individuals. Suppliers are not required to submit samples for THM analysis under this Subpart P.~~

~~BOARD NOTE: This is an additional State requirement.~~

(Source: Repealed at 36 Ill. Reg. _____, effective _____)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.720 Analytical Methods

a) The methods specified below, or alternative methods approved by the Agency pursuant to Section 611.480, incorporated by reference in Section 611.102, are to be used to determine compliance with Section 611.330, except in cases where alternative methods have been approved in accordance with Section 611.480.

1) Gross Alpha and Beta.

A) Standard Methods.

i) Method 302, 13th ed.; or

ii) Method 7110 B, 17th, 18th, 19th, 20th, or 21st ed.;

B) USEPA Interim Radiochemical Methods: pages 1-3;

C) USEPA Radioactivity Methods, Method 900.0;

D) USEPA Radiochemical Analyses: pages 1-5;

E) USEPA Radiochemistry Procedures, Method 00-01; or

F) USGS Methods, Method R-1120-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 B as an approved alternative method for gross alpha and beta in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

2) Gross Alpha.

A) Standard Methods, 18th, 19th, 20th, or 21st ed., Method 7110 C; or

B) USEPA Radiochemistry Procedures, Method 00-02.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7110 C as an approved alternative method for gross alpha in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

3) Radium-226.

A) ASTM Methods.

i) Method D2460-97 or D2460-07; or

ii) Method D3454-97 or D3454-05;

B) New York Radium Method;

C) Standard Methods.

i) Method 304, 13th ed.;

ii) Method 305, 13th ed.;

iii) Method 7500-Ra B, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-Ra C, 17th, 18th, 19th, 20th, or 21st ed.;

D) EML Procedures Manual (27th or 28th ed.), Method Ra-04;

E) USEPA Interim Radiochemical Methods: pages 13-15 or 16-23;

F) USEPA Radioactivity Methods, Methods 903.0, 903.1;

G) USEPA Radiochemical Analyses, pages 19-32;

H) USEPA Radiochemistry Procedures, Method Ra-03 or Ra-04; or

I) USGS Methods.

i) Method R-1140-76; or

ii) Method R-1141-76.

J) Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7500-Ra B and C as approved alternative methods for radium-226 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D2460-07 and D3454-05 as approved alternative methods for radium-226 in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

4) Radium-228.

A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., Method 7500-Ra D;

B) New York Radium Method;

C) USEPA Interim Radiochemical Methods, pages 24-28;

D) USEPA Radioactivity Methods, Method 904.0;

E) USEPA Radiochemical Analyses, pages 19-32;

F) USEPA Radiochemistry Procedures, Method Ra-05;

G) USGS Methods, Method R-1142-76;

H) New Jersey Radium Method; or

I) Georgia Radium Method.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Ra D as an approved alternative method for radium-228 in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

5) Uranium.

A) Standard Methods, 17th, 18th, 19th, 20th, or 21st ed., Method 7500-U C;

B) Standard Methods, 20th ed., Method 3125;

C) ASTM Methods.

i) Method D2907-97;

ii) Method D3972-97 or D3972-02;

iii) Method D5174-97, D5174-02, ~~or~~ D5174-07, or D3972-09; or

iv) Method D5673-03 or Method 5673-05;

D) USEPA Radioactivity Methods, Methods 908.0, 908.1;

E) USEPA Environmental Metals Methods, Method 200.8 (rev. 5.3);

F) USEPA Radiochemical Analyses, pages 33-48;

G) USEPA Radiochemistry Procedures, Method 00-07;

H) EML Procedures Manual (27th or 28th ed.), Method U-02 or U-04; or

I) USGS Methods.

i) Method R-1180-76;

ii) Method R-1181-76; or

iii) Method R-1182-76.

BOARD NOTE: If uranium (U) is determined by mass, a conversion factor of 0.67 pCi/µg of uranium must be used. This conversion factor is based on the 1:1 activity ratio of 234U and 238U that is characteristic of naturally occurring uranium.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-U C and ASTM D5673-05 as approved alternative methods for uranium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D5174-07 as an approved alternative method for uranium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295). USEPA added ASTM Method D3972-09 as an approved alternative method for uranium in appendix A to subpart C of 40 CFR 141 on June 24, 2011 (at 76 Fed. Reg. 37014).

6) Radioactive Cesium.

A) ASTM Methods.

i) Method D2459-72; or

ii) Method D3649-91, D3649-98a, or D3649-06;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.; or

ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods, pages 4-5;

E) USEPA Radioactivity Methods, Methods 901.0, 901.1;

F) USEPA Radiochemical Analyses, pages 92-95; or

G) USGS Methods.

i) Method R-1110-76; or

ii) Method R-1111-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-Cs B as approved alternative methods for radioactive cesium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D3649-06 as an approved alternative method for radioactive cesium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

7) Radioactive Iodine.

A) ASTM Methods.

i) D3649-91, D3649-98a, or D3649-06; or

ii) D4785-93, D4785-98, or D4785-08;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.;

ii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;

iii) Method 7500-I C, 17th, 18th, 19th, 20th, or 21st ed.; or

iv) Method 7500-I D, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods, pages 6-8 or 9-12;

E) USEPA Radiochemical Analyses, pages 92-95; or

F) USEPA Radioactivity Methods, Methods 901.1 or 902.0.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120 and 7500-I B, C, and D as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-06 and D4785-08 as approved alternative methods for radioactive iodine in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

8) Radioactive Strontium-89 & 90.

A) Standard Methods.

i) Method 303, 13th ed.; or

ii) Method 7500-Sr B, 17th, 18th, 19th, 20th, or 21st ed.;

B) EML Procedures Manual (27th or 28th ed.), Method Sr-01 or Sr-02.

C) USEPA Interim Radiochemical Methods, pages 29-33;

D) USEPA Radioactivity Methods, Method 905.0;

E) USEPA Radiochemical Analyses, pages 65-73;

F) USEPA Radiochemistry Procedures, Method Sr-04; or

G) USGS Methods, Method R-1160-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-Sr B as an approved alternative method for radioactive strontium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616).

9) Tritium.

A) ASTM Methods: Method D4107-91, D4107-98, or D4107-08;

B) Standard Methods.

i) Method 306, 13th ed.; or

ii) Method 7500-3H B, 17th, 18th, 19th, 20th, or 21st ed.;

C) USEPA Interim Radiochemical Methods, pages 34-37;

D) USEPA Radioactivity Methods, Method 906.0;

E) USEPA Radiochemical Analyses, pages 87-91;

F) USEPA Radiochemistry Procedures, Method H-02; or

G) USGS Methods, Method R-1171-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Method 7500-3H B as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Method D4107-08 as an approved alternative method for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

10) Gamma Emitters.

A) ASTM Methods.

i) Method D3649-91, D3649-98a, or D3649-06; or

ii) Method D4785-93, D4785-00a, or D4785-08;

B) Standard Methods.

i) Method 7120, 19th, 20th, or 21st ed.;

ii) Method 7500-Cs B, 17th, 18th, 19th, 20th, or 21st ed.; or

iii) Method 7500-I B, 17th, 18th, 19th, 20th, or 21st ed.;

C) EML Procedures Manual (27th or 28th ed.), Method Ga-01-R;

D) USEPA Radioactivity Methods, Methods 901.0, 901.1, or 902.0;

E) USEPA Radiochemical Analyses, pages 92-95; or

F) USGS Methods, Method R-1110-76.

BOARD NOTE: USEPA added Standard Methods, 21st ed., Methods 7120, 7500-Cs B, and 7500-I B as approved alternative methods for gamma emitters in appendix A to subpart C of 40 CFR 141 on June 3, 2008 (at 73 Fed. Reg. 31616). USEPA added ASTM Methods D3649-08 and D4785-08 as approved alternative methods for tritium in appendix A to subpart C of 40 CFR 141 on June 8, 2010 (at 75 Fed. Reg. 32295).

b) When the identification and measurement of radionuclides other than those listed in subsection (a) of this Section are required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions," available from NTIS.

2) EML Procedures Manual (27th or 28th ed.), available from USDOE, EML.

c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent

confidence level (1.96s, where s is the standard deviation of the net counting rate of the sample).

1) To determine compliance with Section 611.330(b), (c), and (e), the detection limit must not exceed the concentrations set forth in the following table:

ContaminantDetection LimitGross alpha particle activity3 pCi/lRadium-2261 pCi/lRadium-2281 pCi/lUranium1 µg/l
BOARD NOTE: Derived from 40 CFR 141.25(c) Table B ~~(2010)~~ (2011).

2) To determine compliance with Section 611.330(d), the detection limits must not exceed the concentrations listed in the following table:

RadionuclideDetection LimitTritium1,000 pCi/lStrontium-8910 pCi/lStrontium-902 pCi/lIodine-1311 pCi/lCesium-13410 pCi/lGross beta4 pCi/lOther radionuclides1/10 of applicable limit
BOARD NOTE: Derived from 40 CFR 141.25(c) Table C (2011).

d) To judge compliance with the MCLs listed in Section 611.330, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 and appendix A to subpart C of 40 CFR 141 ~~(2010)~~ (2011).

(Source: Amended at 36 Ill. Reg. _____, effective _____)

Section 611.~~Appendix~~APPENDIX F Mandatory Lead Public Education Information for Non-Transient Non-Community Water Systems

1) INTRODUCTION

The United States Environmental Protection Agency (USEPA) and (insert name of water supplier) are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the USEPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/l). Under Federal law we are required to have a program in place to minimize lead in your drinking water by (insert date when corrosion control will be completed for your system). This program includes corrosion control treatment, source water treatment, and public education. We are also required to replace the portion of each lead service line that we own if the line contributes lead concentrations of more than 15 ppb after we have completed the comprehensive treatment program. If you have any questions about how we are carrying out the requirements of the lead regulation please give us a call at (insert water system's phone number). This brochure explains the simple steps you can take to protect you and your family by reducing your exposure to lead in drinking water.

2) HEALTH EFFECTS OF LEAD

Lead is found throughout the environment in lead-based paint; air; soil; household dust; food; certain types of pottery, porcelain, and pewter; and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells, and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal

mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination -- like dirt and dust -- that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.

3) LEAD IN DRINKING WATER

A) Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

B) Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass, and chrome plated brass faucets, and in some cases, pipes made of lead that connect houses and buildings to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes, and other plumbing materials to 8.0%.

C) When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

4) STEPS YOU CAN TAKE TO REDUCE EXPOSURE TO LEAD IN DRINKING WATER

A) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one gallon.

B) Do not cook with or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it.

C) The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.

D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include the following:

i) (Insert the name or title of facility official if appropriate) at (insert phone number) can provide you with information about your facility's water supply; and

ii) The Illinois Department of Public Health at 217-782-4977 or 312-814-2608 or the (insert the name of the city or county health department) at (insert phone number) can provide you with information about the health effects of lead.

BOARD NOTE: Derived from 40 CFR 141.85(a)(2) ~~(2002)~~ (2011). The Department of Public Health (Department) regulates non-community water supplies, including non-transient, non-community water supplies. The Department has incorporated this Part into its regulations at 77 Ill. Adm. Code 900.15(a)(2)(A) and 900.20(k)(2). Thus, the Board has included the notice language of 40 CFR 141.85(a)(2) ~~as~~ in this Section for the purposes of facilitating federal review and authorization of the Illinois drinking water regulations.

(Source: Amended at 36 Ill. Reg. _____, effective _____)

~~ILLINOIS REGISTER~~

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~~POLLUTION CONTROL BOARD~~

~~NOTICE OF PROPOSED AMENDMENTS~~

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