

ILLINOIS POLLUTION CONTROL BOARD
November 19, 1992

IN THE MATTER OF:)
)
SAFE DRINKING WATER ACT) R91-3
) (Identical in Substance Rules)
UPDATE, PHASE II AND COLIFORM)
RULES (7/1/90 - 1/31/91))

IN THE MATTER OF :) R92-9
SAFE DRINKING WATER ACT) (Identical in Substance Rules)
PHASE I CORRECTIONS) (Consolidated)

Adopted Rule. Final Order.

OPINION OF THE BOARD (by J. Anderson):¹

SUMMARY OF TODAY'S ACTION

Pursuant to Section 17.5 of the Environmental Protection Act (Act), the Board today updates its regulations that are identical in substance to USEPA regulations implementing the Safe Drinking Water Act (SDWA). The Board rules are contained in 35 Ill. Adm. Code 611. The text of the rules appears in a separate order, adopted this same day.

Section 17.5 of the Act provides for quick adoption of regulations that are "identical in substance" to federal regulations; Section 17.5 provides that Title VII of the Act and Section 5 of the Illinois Administrative Procedure Act (APA) shall not apply. Because this rulemaking is not subject to Section 5 of the APA Ill. Rev. Stat. 1991 ch. 111½, par. (1005-5 et seq.), it is not subject to first notice or to second notice review by the Joint Committee on Administrative Rules (JCAR).

As discussed more fully below, this rulemaking involves major revisions and additions to the Illinois SDWA rules, as originally adopted August 9, 1990, in docket R88-26 (effective September 20, 1990). It includes the federal amendments to the coliform rules, as adopted by USEPA January 8 and 15, 1991, January 15, 1992, and June 10, 1992; the Phase II amendments of January 30, 1992; and the Phase II corrections and Phase IIB rules of July 1, 1991.

¹ The Board wishes to acknowledge the efforts of those staff members who participated in the preparation of these adopted amendments. Morton F. Dorothy, attorney, assembled the proposal for public comment. Under the direction of Kathleen M. Crowley, Senior Attorney, Michael J. McCambridge, attorney, assisted by LouAnn C. Burnett, environmental scientist, reviewed the public comments received and drafted the final opinion and order.

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The result of these amendments has been a significant rewrite and reorganization of the Illinois SDWA regulations. Originally delayed by the sheer volume of the January, 1991 amendments, the Board adopted a proposal for public comment on March 11, 1992. Further delay resulted from the volume and nature of the comments received.

For the convenience of the regulated community, the Board then decided to include the July 1, 1991 Phase II corrections and certain elements of the Phase IIB rules, along with the coliform amendments of January and June, 1992. Additionally, while the Board was assembling this adopted rule, USEPA submitted comments highlighting certain corrections necessary for Illinois to maintain state primacy. We are accordingly consolidating R92-9, the reserved docket for those corrections, with the R91-3 Phase II docket, and are including amendments to the existing rules addressed to the primacy issues.

Finally, the Board must observe that its experience in developing the SDWA rules does not exactly parallel its experience in developing identical in substance regulations in other federal program areas, such as the RCRA and UIC hazardous waste programs. The federal hazardous waste programs, for example, are relatively new programs created largely out of "whole cloth". They regulate a relatively new industry.

The federal SDWA program, in contrast, is an overlay on state programs which in many areas pre-date the adoption of the Illinois Environmental Protection Act in 1970. They regulate municipal, community, private and other water supplies which have been delivering drinking water to their customers for generations. The relationship of the state, through the Board, the Agency, and the Department of Public Health, with these supplies has historically been one that relies less on the threat of enforcement in achieving compliance, than on the trust in a partnership whose goal is to safeguard the public health through the provision of adequate quantities of the best possible quality of drinking water.

The public comments filed early in this proceeding lead the Board to conclude that the reworking of the drinking water rules, commenced in R88-26 in response to the SDWA identical in substance mandate, was not responding to the needs of the Agency and the regulated community as well as the Board had hoped when the rules were adopted. In adopting these Phase II rules, we have revisited some of the language and regulatory structure adopted in the original Phase I rulemaking. Our intent has been to make the rules more "user friendly". Our goal was to better reflect industry practice and terminology, as well as the Agency's experience in administering the rules in light of the continuing evolution of USEPA guidance documents interpreting sometimes less-than-perfectly-drafted federal regulations.

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We believe that our joint efforts have resulted in a regulatory framework and base text that will prove to be more readily usable by affected agencies and entities, and more easily capable of being updated, than were our early rules in this area.

FEDERAL ACTIONS COVERED BY THIS RULEMAKING

The SDWA program was drawn from 40 CFR 141 (national primary drinking water regulations or NPDWRs) and 143 (national secondary drinking water regulations or NSDWRs). The nominal update period of this docket was from July 1, 1990 through December 31, 1990. No federal amendments occurred during that period. By our March 11, 1992 opinion and order, the Board extended the update period through January 31, 1991, in order to embrace the significant federal Phase II NPDWRs, which USEPA adopted on January 30, 1991. Therefore, for this extended update period, the principal amendments to the federal regulations occurred as follows:

56 Fed. Reg. 636	January 8, 1991
56 Fed. Reg. 1556	January 15, 1991
56 Fed. Reg. 3578	January 30, 1991

The January 8 action amended the federal coliform sampling regulations. The January 15 rulemaking stayed a portion of the June 29, 1989 federal total coliform NPDWR. The January 30 action adopted Phase II NPDWRs for a number inorganic, volatile organic, and synthetic organic chemical contaminants, as well as monitoring requirements for a number of unregulated inorganic and organic chemical contaminants.

USEPA subsequently corrected and amended the affected sections in a way that makes it desirable for the Board to use the following later federal actions in the present update period:

56 Fed. Reg. 26547	June 7, 1991
56 Fed. Reg. 30266	July 1, 1991
57 Fed. Reg. 1850	January 15, 1992
57 Fed. Reg. 22178	May 27, 1992
57 Fed. Reg. 24744	June 10, 1992

The June 7 action was the lead and copper rules. The July 1 and May 27 actions are the federal Phase IIB amendments and corrections to the Phase II rules, which affects the earlier Phase II regulations in some regards. The January 15 and June 10 actions affect the coliform rules. (The majority of the June 7 action (except that portion pertaining to the definition of "maximum contaminant level") and those segments of the Phase IIB rules promulgating new MCLs are not the subject of this docket. Rather, they are the subject of docket R91-15.)

Finally, USEPA completed its primacy review of the Board's Phase I rules during the time since the proposal for public

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comment, in March. The corrections, although not major, affect several Sections of the existing rules adopted in R88-26, in August 1990. Since the time is short for the Board to adopt the necessary corrections, we hereby consolidate the corrections docket, R92-9, with the Phase II and coliform amendments docket, R91-3, in order to avoid any unnecessary delay in assuring that the Phase I rules are "identical in substance" to USEPA rules as required by Section 17.5 of the Act.

PUBLIC COMMENTS

The Board received some public comments in advance of the formal proposal in this Docket. They are summarized as follows:

- PC 1 Illinois Environmental Protection Agency (Agency) (Stephen C. Ewert, Deputy Counsel), June 17, 1991
- PC 2 Agency (Stephen C. Ewert, Deputy Counsel), June 19, 1991
- PC 3 Environetics, Inc, (Lee Flores, National Sales Manager), February 10, 1992
- PC 4 Agency, January 23, 1992

PC 1 and PC 2 are preliminary comments by the Agency, which the Board received in the course of developing the Proposal. PC 3 and PC 4 requested inclusion of the January 15, 1992 Federal Register, in which USEPA approved the MMO-MUG test for total coliform. The inclusion of this test is discussed in detail below.

The Board has since received the following additional public comments:

- PC 5 USEPA Region V (Charlene J. Denys, Chief, Drinking Water Section, to Roger D. Selberg, Manager, Division of Public Water Supplies, Agency), April 20, 1992
- PC 6 Secretary of State, Administrative Code Division, May 12, 1992
- PC 7 Northern Illinois Water Corp. (Andrew J. Keiser, P.E., Production Manager), May 22, 1992
- PC 8 Environetics (Lee Flores, National Sales Manager), May 28, 1992 (and June 2, 1992 correction)
- PC 9 Illinois Department of Commerce and Community Affairs (DCCA), Regulatory Flexibility Unit (Linda D. Brand, Manager), June 1, 1992

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- PC 10 Agency (S. Ewart), June 4, 1992
- PC 11 Environetics (L. Flores), June 17, 1992
- PC 12 Agency (S. Ewart), November 10, 1992 (with attached July 3, 1992 letter from Chritiane Saada-Blume, Chief, State Programs Unit, USEPA Region V to Lou Allyn Byus, Assistant Manager, Field Operations Agency)
- PC 13 Regulatory Workgroup Minutes (Board and Agency), June 26, 1992
- PC 14 Agency (Roger D. Selburg, Division Manager, Division of Public Water Supplies; enclosing June 22, 1992 letter from Edward P. Watters, Chief, Safe Drinking Water Branch, USEPA Region V), July 21, 1992
- PC 15 USEPA (Christiane Saada-Blume, Chief, State Programs Unit, Region V; to Agency, LouAllyn Byus), August 24, 1992

In summary, PC 5 highlights the need of USEPA to receive a completed "crosswalk", indicating the correlation between the federal provisions and Illinois provisions, so it can conduct its review of the proposed rules. PC 6 cites a few Illinois Administrative Code format corrections necessary before final adoption. PC 7, PC 10, and PC 12 comment on various substantive aspects of the proposed amendments. PC 8 and PC 11 request that the Board include the June 10, 1992 USEPA approval of the Colilert test for *E. coli*, which is discussed in detail below. PC 9 indicates that DCCA has found no negative economic impact for the proposed rules. PC 13 through PC 15 highlight revisions necessary to the R88-26 Phase I rules in order to maintain state primacy for the drinking water program. PC 14 embraces the details of the USEPA review of Illinois' Phase I rules, PC 13 includes the jointly formulated Illinois response, and PC 15 is the USEPA reply.

REASONS FOR DELAY ORDERS AND SUBSEQUENT DELAY

Section 7.2(b) of the Act requires that identical in substance rulemakings be completed within one year after the first USEPA action in the batch period. If the Board is unable to do so, it must find that an "extension of time" is necessary, give the reasons why the one year period is insufficient, publish the finding and reasons in the Illinois Register and specify a date when the Board anticipates completion of the rulemaking.

The Board entered a reasons for extension Order on January 9, 1992. This appeared in the Illinois Register on February 14,

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1992 (16 Ill. Reg. 2708). The Board cited federal errors in the Phase II rules and indicated that we hoped to have a proposal out by March 1, 1992 and to adopt final amendments by June 4, 1992. We adopted a proposal for public comment on March 11, 1992. It appeared in the Illinois Register on April 10, 1992 (16 Ill. Reg. 5582).

Subsequently anticipating further delay after reviewing public comments, we adopted another reasons for delay order on June 23, 1992. It appeared in the Illinois Register on July 31, 1992 (16 Ill. Reg. 12241). That notice cited the difficulties in adapting the federal rules to the Illinois scheme and the public comments received as the reasons for delay. The newly-projected date for completion of this rulemaking was October 1, 1992.

Further delay occurred due to unforeseen and uncontrollable circumstances. The rules have undergone significant structural and substantive change since the proposal for public comments. The USEPA Phase II corrections that occurred on July 1, 1991 and May 27, 1992 have been added because they changed the direction for several of the federal provisions. For similar reasons, the January 15, 1992 and June 10, 1992 federal revisions to the coliform rule have been added. Finally, in order to maintain Illinois primacy authorization, USEPA comments relating to provisions not previously involved have been incorporated into this docket. The deadline for state (both Board and Agency) action on these Phase I corrections is December 3, 1992. This does not allow the use of a separate docket for the corrections, R92-9, as originally planned.

SDWA REGULATORY HISTORICAL SUMMARY

The Board adopted the initial round of USEPA drinking water regulations, including the "Phase I" rules, adopted by USEPA prior to June 30, 1989, as follows:

R88-26 114 PCB 149, August 9, 1990 (14 Ill. Reg. 16517, effective September 20, 1990).

Subsequent dockets updated the regulations to include federal amendments since that time:

R90-4 112 PCB 317, June 21, 1990 (dismissal; no USEPA amendments July 1 through December 31, 1989)

R90-13 117 PCB 687, December 20, 1990 (15 Ill. Reg. 1562, effective January 22, 1991) (January 1, 1990 through June 30, 1990)

R90-21 116 PCB 365, November 29, 1990 (14 Ill. Reg. 20448, effective December 11, 1990) (Corrections to R88-26)

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- R91-3 Present docket, proposal for public comment March 11, 1992 (USEPA Phase II and Coliforms; July 1, 1990 through January 31, 1991)
- R91-15 Reserved docket (USEPA Lead and Copper and Phase IIB; February 1, 1991 through July 1, 1991)
- R92-3 Reserved docket (USEPA Phase V; July 2, 1991 through December 31, 1991)
- R92-9 Present docket, consolidated (Corrections to Phase I rules, R88-26)

GENERAL DISCUSSION OF PRESENT ISSUES

Most of this Update concerns the USEPA "Phase II" rules. This involves the adoption of "revised MCLs" for several inorganic chemical contaminants (IOCs), volatile organic chemical contaminants (VOCs), and synthetic organic chemical contaminants (SOCs, including pesticides and PCBs). Accompanying these revised MCLs is a major overhaul of the monitoring and reporting requirements. Other segments of the amendments relate to biological testing for coliform bacteria in drinking water. Finally, segments of the adopted amendments are corrections to the existing rules from R88-26, adopted by the Board on August 9, 1990. USEPA highlighted several deficiencies in those rules. These corrections are necessary to retain state primacy under the federal regulations.

The Board staff began working on the Phase II and coliform rules in February, 1991, shortly after the rules appeared in the Federal Register. The Phase II and coliform rules required considerable work over a 13-month period, in order to prepare the proposal for public comment that the Board adopted on March 11, 1992. In response to the public comments received, we felt several revisions were necessary. The Board spent a period of another seven months making these significant revisions to the proposed rules, preparing them for final adoption. During the public comment period, Board staff had significant interaction with Agency and USEPA staff, as well as with the regulated community, in developing these changes.

Normally, the Board's final opinion reiterates the discussions contained in the proposed opinion. As a result of the changes made to the text of the rules, and in light of the nature of the comments received, the Board deviates from that practice in this proceeding. The following discussion limits itself to discussing the source and nature of the amendments made and a discussion of the issues raised by the public comments. Persons desiring a fuller discussion of the issues raised by the federal approach should consult the proposed opinion of March 11, 1992. This opinion will not review that discussion except to the

degree necessary and within the scope of the detailed, section-by-section discussions that follow. However, these discussions will highlight the differences between the proposed version and the text of the rules as amended.

Overview of the Federal Actions Involved

On January 8, 1991, at 56 Fed. Reg. 643, USEPA amended the microbiological monitoring requirements by adding a new method for detection of *E. coli* and modifying an existing method for detection of total coliforms for determining compliance with the microbiological MCLs. (Suppliers that detect the presence of total coliforms must test for *E. coli*.) The amended methodology for total coliforms is the MTF Technique or Presence-Absence (PA) Coliform Test. The revisions relate to transfer of coliform-positive cultures to EC medium. The new presence-absence test methods for *E. coli* involved the use of EC medium or nutrient agar supplemented with 4-methylumbelliferyl- β -*D*-glucuronide (MUG) and observance of fluorescence upon ultraviolet irradiation after incubation.

On January 15, 1991, at 56 Fed. Reg. 1557, USEPA granted a stay of the ban on variances and exemptions from the total coliform MCL for certain systems. A supplier that demonstrates that a violation of the total coliform requirement is due to the persistent growth of coliforms in the distribution system can obtain a variance or exemption (adjusted standard in the Illinois scheme). The supplier must show that the problem does not result from fecal or pathogenic contamination, a treatment from lapse or deficiency, or from a distribution system operation or maintenance problem.

On January 30, 1991, at 56 Fed. Reg. 3578, USEPA promulgated the Phase II regulations. This instituted maximum contaminant levels (MCLs) for basically five categories of additional chemical contaminants. Three of these have specified associated maximum contaminant levels (MCLs): inorganic chemical contaminants ("IOCs": asbestos, cadmium, chromium, fluoride, mercury, nitrate, nitrite, and selenium), volatile organic chemical contaminants ("VOCs": *cis*-1,2-dichloroethylene, ethylbenzene, monochlorobenzene, *o*-dichlorobenzene, styrene, tetrachloroethylene, toluene, *trans*-1,2-dichloroethylene, xylenes, and 1,2-dichloropropane)², and synthetic organic chemical contaminants ("SOCs": alachlor, atrazine, carbofuran,

² Phase I, from 54 Fed. Reg. 27526 (June 29, 1989), included the following VOCs: benzene, tetrachloromethane or carbon tetrachloride, *para*-dichlorobenzene, trichloroethylene, 1,1,1-trichloroethane, 1,1-dichloroethylene, and 1,2-dichloroethane.

chlordan, dibromoethylene or EDB, dibromochloropropane or DBCP, heptachlor, heptachlor epoxide, lindane, methoxychlor, toxaphene, polychlorinated biphenyls or PCBs, 2,4-D, and 2,4,5-T). Two categories do not have specified MCLs: unregulated inorganic chemical contaminants (aldrin, benzo(a)pyrene, butachlor, carbaryl, dalapon, di(2-ethylhexyl)adipate, di(2-ethylhexyl)-phthalates, dicamba, dieldrin, dinoseb, diquat, endothall, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, 3-hydroxycarbofuran, methomyl, metolachlor, metribuzin, oxamyl (vydate), picloram, propachlor, simazine, and 2,3,7,8-tcdd (dioxin)) and unregulated organic chemical contaminants (antimony, beryllium, nickel, sulfate, thallium, and cyanide).

The federal rulemaking adopted a new cyclical monitoring scheme for these contaminants. USEPA initiated a system of three-year compliance periods and nine-year compliance cycles for monitoring. (One compliance cycle includes three compliance periods.) The first compliance cycle and the first compliance period begin January 1, 1993. This means that the first compliance period ends December 31, 1995 and the first compliance cycle ends on December 31, 2001. As soon as one compliance period or compliance cycle ends, a new one begins.

USEPA requires routine monitoring in each compliance period, which varies in frequency, primarily by contaminant group. For asbestos, USEPA requires one sample at each entry point during the first compliance period of each compliance cycle. For nitrate, four quarterly samples are required during the first year of the first compliance period of the first compliance cycle, and one sample in each year after that. USEPA contemplates a single sample for nitrite during the first compliance period. For all other IOCs, USEPA requires one sample during each compliance period for groundwater supplies, and annual sampling for surface water and mixed supplies. For SOCs, USEPA requires four consecutive quarterly samples in the first compliance period, then one sample in each compliance period for supplies serving fewer than 3,300 persons or two for suppliers serving 3,300 persons or more. For VOCs, USEPA requires four consecutive quarterly samples at each entry point in the first compliance period, then two annual samples in the second compliance period and one sample in each subsequent compliance period for groundwater supplies, or continuing annual samples beginning in the second compliance period for surface water and mixed supplies.

Significant in the monitoring scheme is the federal use of mechanisms to reduce the burden and cost of monitoring for suppliers, areas or sampling points that meet certain criteria. For example, USEPA will allow the use of existing monitoring results that generally comply with the new scheme and which was collected after certain dates, rather than requiring new results. USEPA contemplates the use of waivers that reduce the frequency

of monitoring under certain circumstances for a source of water, a sampling point or an area and the enforcement authority has made specific findings. A "use" waiver is supported by a finding that a chemical has never been made, used, transported, stored, or used in the area. A "susceptibility" waiver is based on a finding that the source or supply is not vulnerable to contamination by a chemical because of such factors as previous data, contaminant transport and persistence, source protection, etc. The waivers expire at varying times for the various chemical contaminants, but they range in duration from one compliance period to an entire compliance cycle. Some are renewable indefinitely without additional monitoring, but others are not or require reduced monitoring, depending on the variables cited.

One mechanism for reducing the burden of monitoring that the Agency does not support and the Board has not adopted is composite sampling. Under this scheme, suppliers can composite the samples from up to five distinct sampling points for a single analysis. For systems serving fewer than 3,300 persons, multiple suppliers can composite together. Otherwise only a single supplier can composite from multiple sampling points within a single system. The problems with composite sampling are that method detection limits sometimes do not allow the conclusion that all composited sampling points are below the MCL and unless such a conclusion is possible, the supplier(s) must singly repeat the sampling for each composited sampling point and analyze each sample separately. The Agency, by PC 10, has stated its support for this approach.

The detected presence of a contaminant in the water from a sampling point can trigger more frequent monitoring under the new federal scheme. This means that if the chemical contaminant is present above either the maximum contaminant level or some lower "action level", the supplier must sample that point at an increased frequency for that contaminant. The "action level" varies by contaminant or contaminant group. If the increased monitoring supports a finding by the enforcement authority that the presence of the contaminant is "reliably and consistently" below the MCL or the "action level", the supplier can return to a reduced monitoring frequency. For IOCs generally the action level is the MCL, but for nitrate and nitrite it is one-half the MCL. For VOCs and SOCs generally the action level is "detection" and the MCL, but for vinyl chloride increased monitoring if it "detects" one of seven surrogate VOCs. The increased monitoring frequency is quarterly on an ongoing basis, at least until the supplier has a specified minimal amount of data to support a "reliably and consistently" determination. Then the monitoring returns to the frequency generally required.

The sampling for the unregulated chemical contaminants is a single round for each sampling point. The supplier must complete

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the monitoring for the unregulated contaminants before the end of the first compliance period (December 31, 1995). USEPA has provided for grandfathering of data on these contaminants and for waivers of the monitoring requirement.

The federal scheme specifies other aspects of monitoring as well. The rules set forth sampling and analytical protocol. They specify analytical methods and sampling points. These vary by the water source or the contaminant of interest. Some of the methods are new.

Other aspects of the Phase II regulations have prompted no action by the Board because the federal rules involved either have no substantive impact or they would not adapt well to the Illinois regulatory scheme and they are optional provisions not required of the state. Having no substantive impact are maximum contaminant level goals (MCLGs) for each of the IOCs, VOCs, and SOCs. This is the level of contaminant that USEPA considers a goal for a MCL, although in most cases the MCL actually adopted is higher. They are not required provisions, so the Board has not adopted them. An example of optional provisions not adapting well to the Illinois scheme are those USEPA made for composite sampling for chemical contaminants. The Board has similarly not adopted these.

On July 1, 1991, at 56 Fed. Reg. 30274, USEPA promulgated the Phase IIB regulations. These amendments added a new IOC (barium) and four new SOCs (aldicarb, aldicarb sulfoxide, aldicarb sulfone, and pentachlorophenol). (Those aspects are the subject of docket R91-15, not this proceeding.) They also amended the general monitoring requirements and effected several corrections to the Phase II rules. The main amendments to the monitoring requirements included updating several methods, expansion of others to include a new chemical contaminant, elimination of consumer tap sampling for VOCs, rewording some of the existing provisions, inserting an effective date of January 1, 1993 for several requirements, setting forth laboratory certification requirements for PCB analyses, and selection of seven two-carbon chlorinated compounds whose detection will trigger the need to monitor quarterly for vinyl chloride.

The Board has adopted those segments of the Phase IIB amendments that pertain to monitoring or which constitute corrections to the January 30, 1991 Phase II rules at this time. They directly affect the amendments under consideration from Phase II. We did not adopt the new MCLs and the requirements directly related to those five new contaminants. Those are new material not directly related to the amendments involved in the proposal for public comment.

On January 15, 1992, at 57 Fed. Reg. 1852, USEPA approved another presence-absence test for *E. coli*. Suppliers using the

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MMO-MUG Test (minimal medium ortho-nitrophenyl- β -*d*-galactopyranoside-4-methylumbelliferyl- β -*d*-glucuronide test) for total coliforms are now required to further test the samples for *E. coli* by transferring the coliform positive, MUG-negative culture from the MMO-MUG test to EC medium supplemented with MUG and test for fluorescence upon ultraviolet irradiation after incubation. PC 3 urges the Board to include this method in the present docket. The Agency also brought it to the Board's attention in PC 4.

On May 27, 1992, at 57 Fed. Reg. 22178, USEPA imposed a partial stay of certain of the July 1, 1991 Phase IIB regulations. USEPA stayed the MCLs for three new SOC contaminants (aldicarb, aldicarb sulfoxide, and aldicarb sulfone). USEPA left the monitoring and certain of the public notice requirements for these contaminants intact. However, the Board needs to take no action based on this federal action at this time. That action will occur when we adopt the new MCLs for those chemical contaminants in docket R91-15.

Finally, on June 10, 1992, at 57 Fed. Reg. 24747, USEPA made changes to the MMO-MUG tests for total coliform and *E. coli*. Suppliers could use hepes buffer instead of phosphate buffer when using the MMO-MUG test for total coliforms. When the supplier uses the hepes buffer, it could use the total coliform test sample for detection of *E. coli*, by testing for ultraviolet fluorescence and further incubation and testing for fluorescence if total coliform positive. USEPA simultaneously made the additional testing of MMO-MUG coliform-positive samples in EC medium supplemented with MUG and optional test. PC 8 and PC 11 request that the Board include this test in this docket.

Federally-Initiated Corrections to Existing Phase I Rules

In addition to the amendments derived from federal regulatory action, this docket includes numerous corrections to the existing rules. These are corrections addressing USEPA comments submitted upon its primacy review of the existing Phase I regulations adopted in R88-26, on August 9, 1990 (effective September 20, 1990).

The USEPA comments identified various deficiencies in the Illinois Phase I program. The majority of the deficiencies are in those segments of the program administered by the Department of Public Health (relating to non-community water supplies). As to those relating to the Board- and Agency-administered segments of the drinking water program, their volume is not large, and many of them are very minor. Of the 34 USEPA comments relating to the Board's rules, 16 do not require rulemaking corrections, six involve correction of typographical errors, and five are minor corrections to the language selected by the Board in its rules. The actions in response to the other seven USEPA comments

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require the restoration of snippets of federal language omitted by the Board in adopting R88-26 (four), the clarification of certain limitations on state authority under federal law to grant a certain type of adjusted standard without USEPA concurrence before it becomes effective (one), the deletion of references to Agency delegation of authority to units of local government (one), and correction of the edition of an analytical method referenced (one).

DETAILED SECTION-BY-SECTION-ANALYSIS

With the above general discussion of the federal actions involved in this proceeding, the Board discusses the amendments on a more detailed, section-by-section basis. This discussion focuses on the details of the actions taken, not on the generalities of the federal actions discussed above. This discussion will not repeat that discussion.

Definitions--Section 611.101

The definitions section does not derive from any single provision of the USEPA drinking water regulations. Although the federal rules do have a definitions section (40 CFR 141.2), many more of the definitions adopted by the Board derive from terms and phrases as used and defined by USEPA elsewhere in its rules. Where definitions derive from a specific USEPA provision, a Board Note accompanying the definition so notes.

The Board adds definitions of "compliance cycle", "compliance period", "distribution system", "entry point", "GWS" ("groundwater system"), "initial compliance period", "L", "MFL", "mg", "mg/L", "mixed system", "MUG", "nm", "old MCL", "Phase I", "Phase II", "Phase IIB", "reliably and consistently", "repeat compliance period", "representative", "SEP", "source", "SWS" ("surface water system"), "SOC" ("synthetic organic chemical contaminant"), "transient, non-community water system" ("transient non-CWS"), "treatment", " μg ", and "USEPA". Most of these words, abbreviations, and phrases are used extensively by USEPA in the federal regulations from which the Board derives the Illinois rules, and USEPA describes many. The rest are used in the Illinois version of the rules for convenience or clarity.

The Board further amends several existing definitions: "Act", "Agency", "best available technology", "CT" ("CT_{calc}"), "CT_{99.9}", "community water system" ("CWS"), "diatomaceous earth filtration", "disinfectant contact time", "disinfection", "GC/MS", "groundwater under the direct influence of surface water", "inactivation ratio", "maximum total trihalomethane potential" ("MTP"), "near the first service connection", "non-community water system" ("non-CWS"), "non-transient non-community water system" ("NTNCWS"), "performance evaluation sample",

"Picocurie" ("pCi"), "Public Health", "public water system" ("PWS"), "residual disinfectant concentration" ("RCD" or "C"), "sanitary survey", "slow sand filtration", "supplier of water" ("supplier"), "surface water", "system with a single service connection", "total trihalomethanes" ("TTHM"), "trihalomethane" ("THM"), "virus", "VOC" ("volatile organic chemical contaminant"), and "waterborne disease outbreak".

Finally, the Board updates all references to the Code of Federal Regulations to the 1991 edition, eliminating unnecessary references to the Federal Register, wherever these appear. Many of these definitions are not specifically referenced as amended. Due to the routine nature of these amendments, the Board will not specifically refer to them in this opinion.

The definitions added and amended in this proceeding are listed below. This listing indicates the nature of the action and any change since the proposed version of the text and any pertinent comments received:

- "Act" (amended): Cited now as the 1991 edition, and "1/2", which appeared in the original and in the proposal for public comment, is now rendered as " $\frac{1}{2}$ ".
- "Agency" (amended): we added a Board Note in response to an Agency comment (PC 12) explaining that to the extent that the Department of Public Health regulates non-community supplies by reference to the Board's rules, "Agency" will mean the Department.
- "Ai" ("inactivation ratio") (added): used as a formula abbreviation in the definition of "inactivation ratio" throughout the existing text.
- "Best available technology" (amended): "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.
- "CT" ("CT_{calc}") (amended): The abbreviation, as it appeared in the original and in the proposal for public comment, is now rendered in the way most commonly encountered in the literature and most readily understood by the regulated community, using the subscript.
- "CT_{99.9}" (amended): The abbreviation, as it appeared in the original and in the proposal for public comment, is now rendered in the way most commonly encountered in the literature and most readily understood by the regulated community, using the subscript.

"Community water system" ("CWS") (amended): The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment. The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Compliance cycle" (added): Derived from the USEPA definition at 40 CFR 141.2, as adopted at 56 Fed. Reg. 3578 (Jan. 30, 1991). The federal Phase II and Phase IIB requirements institute a cyclical system for monitoring drinking water contamination. A nine-year "compliance cycle" comprises three three-year "compliance periods. The first compliance cycle and compliance period begin January 1, 1993. Subsequent compliance periods begin in three-year intervals thereafter, and compliance cycles begin in subsequent nine-year periods. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.

"Compliance period" (added): Derived from the USEPA definition at 40 CFR 141.2, as adopted at 56 Fed. Reg. 3578 (Jan. 30, 1991). The federal Phase II and Phase IIB requirements institute a cyclical system for monitoring drinking water contamination. A nine-year "compliance cycle" comprises three three-year "compliance periods. The first compliance cycle and compliance period begin January 1, 1993. Subsequent compliance periods begin in three-year intervals thereafter, and compliance cycles begin in subsequent nine-year periods.

"Diatomaceous earth filtration" (amended): USEPA corrected a misspelling in its 40 CFR 141.21(f)(3)(ii) (corresponding with 35 Ill. Adm. Code 611.526(e)(2)) use of "membrane" at 57 Fed. Reg. 24747 (June 10, 1992). USEPA did not correct the misspelling at its 40 CFR 141.2 definition of "diatomaceous earth filtration", but the Board makes the correction in this definition.

"Disinfectant contact time" (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency.

"Disinfection" (amended): "Which", which appeared in the original and in the proposal for public comment, is now

rendered as "that", for grammatic correctness.

"Distribution system" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.601(a), 611.631(e), 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board revises the proposed version of the definition by adding the phrase "to the point of consumer ownership", in order to clarify that the distribution system does not include consumer plumbing.

"Entry point" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.601(a), 611.631(e), 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board adopts the proposed version of the definition without revision.

"GC/MS" (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment. An illustrative abbreviation was added to the end of the original and proposal for public comment versions to indicate the meaning of part of the abbreviation defined.

"Groundwater under the direct influence of surface water" (amended): The Board corrects the reference to Section 611.212 from how it appeared in the original and in the proposal for public comment.

"GWS" ("groundwater system") (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.600(d), 611.601(a), 611.631(e), 611.640, 611.646(a), 611.648(a), and 611.658(e) because we felt

that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment. "Which", which appeared in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Inactivation ratio" (amended): The abbreviations, as they appeared in the original and in the proposal for public comment, are now rendered in the way most commonly encountered in the literature and most readily understood by the regulated community, using the subscript.

"Initial compliance period" (added): Derived from the USEPA definition at 40 CFR 141.2, as adopted at 56 Fed. Reg. 3578 (Jan. 30, 1991). The federal Phase II and Phase IIB requirements institute a cyclical system for monitoring drinking water contamination. A nine-year "compliance cycle" comprises three three-year "compliance periods. The first compliance cycle and compliance period begin January 1, 1993.

"L" (added): The original and the proposal for public comment lacked a definition of this frequently-used abbreviation. This is especially important where, as here, the Board uses a non-standard abbreviation.

"Maximum total trihalomethane potential" ("MTP") (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment. The Board changes from using "deg.", as used in the original and in the proposal for public comment, to using the symbol "°" because the symbol is readily recognized by the regulated community.

"MFL" (added): The Board proposed this definition at this Section and at Section 611.600(d) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. We have deleted the Section 611.600(d) duplicate definition. Otherwise, we adopt the proposed version of the definition without revision.

- "mg" (added): The original and the proposal for public comment lacked a definition of this frequently-used abbreviation.
- "mg/L" (added): The original and the proposal for public comment lacked a definition of this frequently-used abbreviation. This is especially important where, as here, the Board uses a non-standard abbreviation.
- "Mixed system" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.600(d), 611.601(a), 611.631(e), 611.640, 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness. Otherwise, we adopt the proposed version of the definition without revision.
- "MUG" (added): This commonly-used abbreviation represents a reagent with a lengthy chemical name. The Board uses the abbreviation throughout the text of the rules and provides a definition here, giving the chemical name.
- "Near the first service connection" (amended): The adopted amendments include a revision that eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.
- "nm" (added): The original lacked a definition of this frequently-used abbreviation. The Board changed the text of the proposal for public comment by adding a parenthetical indicating the fraction represented.
- "Non-community water system" ("non-CWS") (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. In response to an Agency comment (PC 12), we added a new abbreviation for this term, "NCWS", for possible future use. We did not go further at this time and incorporate this abbreviation into any substantive provisions, preferring to give fuller consideration to the possible consequences before doing so. The adopted version eliminates the need to elsewhere seek definition of abbreviations used, as was

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required in the original and the proposal for public comment. "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Non-transient non-community water system" ("NTNCWS") (amended): The adopted version eliminates the need to elsewhere seek definition of abbreviations used, as was required in the original and the proposal for public comment.

"Old MCL" (added): The adopted rules add this definition, which did not appear in the proposal for public comment. Due to the parallel existence of two sets each of MCLs for inorganic and organic chemical contaminants, the Board found it necessary to make a distinction between them in the monitoring and analytical provisions. This definition clarifies the terms used in those substantive provisions. A Board Note clarifies that the use of "old MCL" in Subpart O refers only to organic chemical contaminants.

"Performance evaluation sample" (amended): In response to an Agency comment (PC 12), we deleted the present reference to the Department of Public Health with respect to non-community systems and added references to the Department of Public Health, with respect to microbiological samples, and to the Illinois Department of Nuclear Safety, with respect to radiological samples. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.

"Phase I" (added): It has become common to refer to the federal regulations and the contaminants that they regulate by the "phase" in which USEPA promulgated them. The Board reverted to this common usage in the adopted regulations and added this definition for the sake of clarity, giving the date and cite of the principal federal action involved. At some future time when there is no difference in regulatory impact based on the date of federal implementation, the Board may drop this usage.

"Phase II" (added): See discussion of "Phase I".

"Phase IIB" (added): See discussion of "Phase I".

"Picocurie" ("pCi") (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency.

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"Public Health" (amended): we added a Board Note in response to an Agency comment (PC 12) explaining that to the extent that the Department of Public Health regulates non-community supplies by reference to the Board's rules, "Agency" will mean the Department.

"Public water system" ("PWS") (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. The Board revised the original and the proposal for public comment by relocating the last explanatory phrase to the main body of the definition and by eliminating the need to look elsewhere to provide meaning for the abbreviations used. "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Reliably and consistently" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.600(d) and 611.640 because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. In response to an Agency comment (PC 12), the Board revised the proposed version of the definition by adopting a version of the definition set forth by the Agency as already reviewed and acceptable to USEPA. The focus of the revised version is on the Agency determination based on factors set forth. Those factors are similar to the core of the proposed definition. The Board believes that the proposed definition was more precise and enforceable, but we deferred to USEPA and the Agency in this instance.

"Repeat compliance period" (added): Derived from the USEPA definition at 40 CFR 141.2, as adopted at 56 Fed. Reg. 3578 (Jan. 30, 1991). The federal Phase II and Phase IIB requirements institute a cyclical system for monitoring drinking water contamination. A nine-year "compliance cycle" comprises three three-year "compliance periods. The first compliance cycle and compliance period begin January 1, 1993. Subsequent compliance periods begin in three-year intervals thereafter, and compliance cycles begin in subsequent nine-year periods.

"Representative" (added): This is a phrase used extensively

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throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.601(a), 611.631(e), 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board significantly revises the proposed version of the definition by adopting language suggested by the Agency in PC 10 (at page 13). The Board agrees that the Agency-suggested language more fully reflects the intended federal usage of this term.

- "Residual disinfectant concentration" ("RCD" or "C") (amended): The Board adopted the definition of "RDC" in R88-26. The Board intended to add language to make it clear that, for purposes of the requirement of Section 611.241(d) of maintaining a detectable RDC in the distribution system, "RDC" means a residual of free or combined chlorine. However, this change was inadvertently omitted from the final Order. The Board has therefore amended the definition in this Docket. There was no change from the text of the proposal for public comment.
- "Sanitary survey" (amended): The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.
- "SEP" (added): Throughout the text of the rules, the Board adopts use of the abbreviation for special exception procedure. This definition supports the use of the abbreviation. We have not changed the text of the proposal for public comment.
- "Slow sand filtration" (amended): The adopted version eliminates the need to adopt a definition for an abbreviation used, as would have been required by the original and the proposal for public comment.
- "SOC" ("synthetic organic chemical contaminant") (added): USEPA groups chemical contaminants into various categories in its regulations and imposes differing requirements on each group. To do so, USEPA refers to the groups by paragraph where they appear in the federal regulations. The Board believes it is less cumbersome to use the abbreviations that USEPA commonly uses in its discussions of these contaminant groups.

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Therefore, we revert to this common usage in the adopted regulations and added this definition for the sake of clarity, giving the date and cite of the principal federal action involved. We prefer the use ". . . chemical contaminant" to ". . . chemical, as suggested by PC 10, because none of these compounds appear naturally.

"Source" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.601(a), 611.631(e), 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board adopts the proposed version of this definition without revision.

"Supplier of water" ("supplier") (amended): The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.

"Surface water" (amended): "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"SWS" ("surface water system") (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.600(d), 611.601(a), 611.631(e), 611.640, 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board revises the proposed version of the definition by eliminating the need to elsewhere seek definition of an abbreviation used and by eliminating a cross-reference to another definition.

"System with a single service connection" (amended): "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Total trihalomehanes" ("TTHM") (amended): The opening

wording was changed from the original and the proposal for public comment for the sake of stylistic consistency. The adopted version eliminates the need to elsewhere seek definition of abbreviations used, as was required in the original and the proposal for public comment. We amended the Board Note in response to an Agency comment (PC 12) to add a cross-reference to the definition of trihalomethane for a listing of the four compounds that USEPA considers trihalomethanes. We did this despite our general tendency not to cross-reference definitions or repeat the essence of one definition within another.

"Transient, non-community water system" ("transient non-CWS") (added): Although these systems are beyond the Board's and the Agency's statutory authority to regulate (the Department of Public Health regulates them), the Board adopts the totality of the USEPA drinking water regulations, and USEPA (PC 14) has suggested that Public Health use the Board's rules in its enforcement. The Board adds the definition, which does not appear in the federal rules and which did not appear in the proposal for public comment. In response to an Agency comment (PC 12), we added a new abbreviation for this term, "TNCWS", for possible future use. We did not go further at this time and incorporate this abbreviation into any substantive provisions, preferring to give fuller consideration to the possible consequences before doing so. Also in response to this comment, we added the word "daily" to refer to "public water supplies" and "non-community" in the last line.

"Treatment" (added): This is a phrase used extensively throughout the substantive portions of the federal Phase II and Phase IIB regulations without definition. The Board proposed this definition at Sections 611.601(a), 611.631(e), 611.646(a), 611.648(a), and 611.658(e) because we felt that definition of such a vital phrase would benefit the clarity of the regulations. The Board decided to adopt the definition as a global definition, applicable throughout Part 611, rather than adopt the definition separately at each of the other sections as proposed. The Board revises the proposed version of the definition by repunctuation, by changing a cross-reference to other definitions to accommodate the changed location, and by replacing "which" with "that", for grammatic correctness. In response to an Agency comment (PC 12), we added references to include microbiological and radiological treatment and changed "chlorination" into "disinfection".

"Trihalomethane" ("THM") (amended): The opening wording was changed from the original and the proposal for public comment for the sake of stylistic consistency.

" μ g" (added): The abbreviation as it appeared in the original and in the proposal for public comment, is now rendered in the way most commonly encountered in the literature and most readily understood by the regulated community, using the Greek " μ " ("mu") for "micro".

"USEPA": This is an abbreviation commonly used in Board Notes and other areas of the regulatory text. The Board adds this definition to the original and the proposed versions of the text for the sake of clarity.

"VOC" ("volatile organic chemical contaminant") (amended): USEPA groups chemical contaminants into various categories in its regulations and imposes differing requirements on each group. To do so, USEPA refers to the groups by paragraph where they appear in the federal regulations. The Board believes it is less cumbersome to use the abbreviations that USEPA commonly uses in its discussions of these contaminant groups. Therefore, we revert to this common usage in the adopted regulations and added this definition for the sake of clarity, giving the date and cite of the principal federal action involved. We prefer the use ". . . chemical contaminant" to ". . . chemical, as suggested by PC 10, because none of these compounds appear naturally.

"Virus" (amended): "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness.

"Waterborne disease outbreak": "Which", which appeared in the original and in the proposal for public comment, is now rendered as "that", for grammatic correctness. The adopted version eliminates the need to elsewhere seek definition of an abbreviation used, as was required in the original and the proposal for public comment.

Revisions to the Analytical Requirements

USEPA extensively updated and revised the analytical procedures allowed for specific biological and chemical contaminants. Discussion of these revisions is important to subsequent discussions of the updates to the incorporations by reference and the substantive analytical requirements.

At 56 Fed. Reg. 642 (Jan. 8, 1991), USEPA amended one microbiological method for total coliform and added two

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microbiological methods for *E. coli*. The methods themselves are set forth in the USEPA rules.

At 56 Fed. Reg. 3582 (Jan. 30, 1991) USEPA added 40 CFR 141.23(k) to change the former 40 CFR 141.23(f) inorganic chemical analytical procedures. According to the federal requirements, community water supplies (CWSs) and non-transient, non-community water systems (NTNCWSS) must use these methods for demonstrating compliance with the MCLs of 40 CFR 141.62 (corresponding with the "revised MCLs" of 35 Ill. Adm. Code 611.301,)) and transient, non-community water systems must use these methods to demonstrate compliance with 40 CFR 141.11 (corresponding with the "old MCLs of 35 Ill. Adm. Code 611.300) or 40 CFR 141.62 (the "revised MCLs"), as appropriate. At 56 Fed. Reg. 30275 (July 1, 1991) USEPA amended 40 CFR 141.23(k) to make some corrections to the January 30, 1991 amendments.

At 56 Fed. Reg. 3583 (Jan. 30, 1991), USEPA amended 40 CFR 141.24(e) (corresponding with 35 Ill. Adm. Code 611.645) to change the analytical method for the sole organic contaminant for which an MCL remains at 40 CFR 141.12(a) (corresponding with 35 Ill. Adm. Code 611.310(a)): endrin. (Lindane, toxaphene, and methoxychlor are now listed in new section 141.61(c) (35 Ill. Adm. Code 311(c)) as SOCs, and heptachlor and heptachlor epoxide are now listed at both Sections 611.310 and 611.311 due to additional state requirements that apply to them.) USEPA replaced the previous methods with a single new method. At 56 Fed. Reg. 3585-86, USEPA added 141.24(f)(16) (corresponding with 35 Ill. Adm. Code 611.646(p)), setting forth new methods for the 40 CFR 141.61(a)(9) through (a)(18) (corresponding with 35 Ill. Adm. Code 611.311(a)) Phase II VOCs, and 141.24(h)(12) (corresponding with 35 Ill. Adm. Code 611.648(l)), setting forth new methods for the 40 CFR 141.61(c) (Section 611.311(c)) SOCs. This action update "Organic Methods" from the September, 1986 edition to the December, 1988 edition. Unaffected were the 40 CFR 141.61(g)(10) (corresponding with 35 Ill. Adm. Code 611.647(j)) methods for the 40 CFR 141(a)(1) through (a)(8) (Section 611.311(a)) Phase I VOCs and the 40 CFR 141.30(e) (Section 611.685) methods for TTHM.

At 56 Fed. Reg. 30275 (July 1, 1991) USEPA added 40 CFR 141.23(q) to correct a deficiency in the January 30, 1991 amendments. By the January 30, 1991 amendments, USEPA left no requirements for analytical methods for CWSs and NTNCWSS for the 40 CFR 141.11 (old inorganic) MCLs. USEPA reinserted the former analytical requirements for the 40 CFR 141.11 inorganics at 40 CFR 141.23(l) through (q). 40 CFR 141.23(q) represents the analytical methods.

At 56 Fed. Reg. 30277-79 (July 1, 1991), USEPA amended the applicability and organic chemical analytical methods at 40 CFR 141.24(e), (f)(16), and (h)(12). At subsection (e), USEPA

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corrected an error and added a new method for the 40 CFR 141.12(a) MCL for endrin. At paragraph (f)(16), USEPA made the methods originally for Phase II VOCs applicable to both Phase I and Phase II VOCs. At paragraph (h)(12)(iv), USEPA expanded the method to include and additional SOC, and at paragraphs (h)(12)(vi) and (h)(12)(vii), USEPA updated the methods to subsequent versions. Also at 56 Fed. Reg. 30279, USEPA limited the existing monitoring requirements (and analytical methods) of 40 CFR 141.24(g) for the Phase I VOCs. Essentially, those existing requirements (and methods) apply only to existing facilities for the purposes of initial monitoring until January 1, 1993.

At 57 Fed. Reg. 1852 (Jan. 15, 1992), USEPA expanded a microbiological method for total coliform, the "EC Medium + MUG Test", to require persons using it to further use it to test for *E. coli*. The method itself is set forth in the USEPA rules. At 57 Fed. Reg. 24747 (June 10, 1992) USEPA approved the "Autoanalysis Colilert System" (the "Minimal Medium ONPG-MUG Test") for testing for the presence of total coliforms and *E. coli*. USEPA simultaneously changed the status of the "EC Medium + MUG Test" by approving it for use for *E. coli* as an alternative to the "Minimal Medium ONPG-MUG Test". USEPA incorporated a journal article by reference for the method.

In general, as to 40 CFR 141.21(f), USEPA has approved four new microbiological presence-absence methods: one for fecal coliforms, two for *E. coli*, and one combined test for total coliforms and *E. coli*. The federal rules set forth the new methods, with the following two exceptions: USEPA incorporated the method for making EC medium supplemented with MUG from "Standard Methods", and it incorporated "Minimal Medium ONPG-MUG Test" from a journal article.

In general, as to 40 CFR 141.23(k) (35 Ill. Adm. Code 611.611) (which applies by its terms to all CWSs and NTNCWSs as to the 40 CFR 141.62 (35 Ill. Adm. Code 611.301) MCLs and to transient systems as to the 40 CFR 141.11 (35 Ill. Adm. Code 611.300) and 141.62 MCLs for nitrate and nitrite), where USEPA did not add a new method or delete an existing method, these amendments updated "Inorganic Methods" from the 1979 edition to the 1983 edition, updated the version of the ASTM method, or updated "Standard Methods" from the 14th edition to the 16th edition. It also specified the use of appendix 200.7A as a supplement to "Inductively Coupled Plasma Method" 200.7 where that method appeared.

In general, as to 40 CFR 141.23(q) (35 Ill. Adm. Code 611.611) (which applies by its terms to all CWSs and NTNCWSs as to the 40 CFR 141.62 (35 Ill. Adm. Code 611.301) MCLs and to transient systems as to the 40 CFR 141.11 (35 Ill. Adm. Code 611.300) and 141.62 MCLs for nitrate and nitrite), where USEPA

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did not add a new method or delete an existing method, these amendments updated "Inorganic Methods" from the 1979 edition to the 1983 edition, updated the version of the ASTM method, or updated "Standard Methods" from the 14th edition to the 16th edition. It also specified the use of appendix 200.7A as a supplement to "Inductively Coupled Plasma Method" 200.7 where that method appeared.

In general, as to 40 CFR 141.24(e) (35 Ill. Adm. Code 611.645) (which applies to the old MCL for endrin), amended 40 CFR 141.24(f) (35 Ill. Adm. Code 611.646) (which applies to VOCs), and 40 CFR 141.24(h) (35 Ill. Adm. Code 611.648) (which applies to SOCs), all methods are new. As to 40 CFR 141.23(g) (35 Ill. Adm. Code 611.647) (which applies to Phase I VOCs), there is no change. However, this subsection applies only to existing suppliers until January 1, 1993 for the purposes of initial monitoring (already completed). See 40 CFR 141.24(g), as amended at 56 Fed. Reg. 30279 (July 1, 1993). There is no change in the methods of 40 CFR 141.30(e) (35 Ill. Adm. Code 611.685) (which apply to TTHM).

USEPA is also requiring the Board to revert in one method to an earlier version in the corrections to the Phase I rules. USEPA commented (PC 14) that the Board should have used the 16th, rather than the 17th, edition of "Standard Methods" for Methods 908 and 909 at Section 611.531.

The Board makes all revisions made or required by USEPA, including the one to the existing text of the Phase I rules. In effecting the amendments, except as to "Organic Methods" 515.1 and 525.1, we delete the version of the rule as it would appear in the substantive provisions of the rules. Rather, the incorporations by reference in Section 611.102 indicate the appropriate version. The Board corrects four obvious USEPA errors in citing wrong methods for arsenic, fluoride, lead, and mercury. USEPA revised the "Inorganic Methods" arsenic method from the 1979 edition to the 1983 edition in adopting 40 CFR 141.23(k)(2), at 56 Fed. Reg. 3582, then reverted to the 1979 edition in the Phase II corrections, at 56 Fed. Reg. 30275. USEPA did not highlight this change as a correction, so the Board retains the 1983 reference. 40 CFR 141.23(k)(3) cites methods "43 A and C" of "Standard Methods", which do not exist. Methods 413A and 413C are for fluoride, which the Board assumes is what USEPA intended. 40 CFR 141(q)(8) cites methods 301A II and 301A III of the 16th edition of "Standard Methods". These methods do not exist in the 16th edition, although they appear in the 14th. The Board corrects the reference to the 14th edition. Finally, 40 CFR 141(q)(8) cites ASTM method D3223-69 for mercury, whereas previous 40 CFR 141.23(f) cited D3223-79 and 40 CFR 141.23(k)(1) now cites D3223-86. The Board believes that USEPA intended to retain D3223-79 at section 141.23(q), and has adopted this correction. Another deviation from the federal text is that the

Illinois Administrative Procedure Act, Ill. Rev. Stat. 1991 ch. 127, par. 1001-1 et seq., will not allow the Board to incorporate the journal article by reference. Instead the Board has extracted the method described in the article and set it forth in Appendix D.

The following describes the essential details of the changes in analytical methodology by test:

Arsenic:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(2), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). (There is no new 40 CFR 141.62(b) MCL for arsenic.) These amendments updated "Inorganic Methods" from the 1979 to the 1983 edition; updated "Standard Methods" from the 14th edition to the 16th edition; and deleted "Inductively Coupled Plasma Method" 200.7.

56 Fed. Reg. 30275 (July 1, 1991) amended 40 CFR 141.23 (k)(2) to change the "Inorganic Methods" back to the 1979 edition; to update the ASTM methods to D2972-88A and D2972-88B; and to update "USGS Method" I-1062-78 (1979 ed.) to I-1062-85 (1986 ed.). It restored "Inductively Coupled Plasma Method" 200.7 and updated it to include appendix 200.7A (as a supplement). It also replaced former "Standard Methods" 301A VII, 404A, and 404B(4) with new methods 307A and 307B. 56 Fed. Reg. 30276-77 (July 1, 1991) also added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for arsenic. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition, deleting Method 206.4; updated the ASTM methods to D2972-88A and D2972-88B; updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Methods 301A VII, 404A, and 404B(4) with new Methods 307A and 307B; updated "USGS Method" I-1062-78 (1979 edition) to I-1062-85 (1986 edition); and updated the 200.7 "Inductively Coupled Plasma Method" to include appendix 200.7A as a supplement.

The Board has updated all analytical methods accordingly, with the exception that we have corrected the obvious USEPA error and included the 1983 edition of "Inorganic Methods" 206.2, 206.3, and 206.4 at Section 611.102 for the purposes of Section 611.611(b). Changed since the proposal for public comment are the addition of Section 611.612, to restore the text of the previous methods deleted and subsequently restored by USEPA to 40 CFR 141.23(q); deletion of the editions of methods at Sections 611.611 and 611.612 and their inclusion at the

incorporations by reference at Section 611.102; updating the method number (version) of the ASTM methods; updating the "Standard Methods" by deleting Methods 301A VII, 404A, and 404B(4) and replacing them with Methods 307A and 307B of the 16th edition; and restoration of the "Inductively Coupled Plasma Method" 200.7 as supplemented by appendix 200.7A.

Asbestos:

56 Fed. Reg. 3581-82 (Jan. 30, 1992) added 40 CFR 141.23(k)(1), which added analytical methods for this new contaminant of interest. "Asbestos Methods" is added. The Board has updated the analytical methods accordingly. There is no change since the proposal for public comment.

Barium:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments deleted the previous ASTM methods; updated "Inorganic Methods" from the 1979 to the 1983 edition; updated "Standard Methods" from the 14th edition to the 16th edition, replacing former Method 301A IV with Methods 303C and 304; and supplemented "Inductively Coupled Plasma Method" 200.7 with appendix 200.7A.

56 Fed. Reg. 30275 (July 1, 1991) did not amend the 40 CFR 141.23 (k)(1) methods for barium. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for barium. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition; updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Method 301A IV with new Method 308 (which references Methods 304 and 303C); and updated the 200.7 "Inductively Coupled Plasma Method" to include appendix 200.7A as a supplement.

The Board has updated all analytical methods accordingly. Changed since the proposal for public comment are the addition of Section 611.612, to restore the text of the previous methods deleted and subsequently restored by USEPA to 40 CFR 141.23(q); deletion of the editions of methods at Sections 611.611 and 611.612 and their inclusion at the incorporations by reference at Section 611.102; updating the "Standard Methods" by deleting Method 301A IV and replacing it with Methods 303C and 304 of the 16th edition; and by updating the "Inductively Coupled Plasma Method" 200.7 to include appendix 200.7A as a supplement.

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Cadmium:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments deleted the previous ASTM methods; updated "Inorganic Methods" from the 1979 to the 1983 edition, deleting Method 213.1; updated "Standard Methods" from the 14th edition to the 16th edition, replacing Methods 301A II and 301A III with Method 304; and supplemented "Inductively Coupled Plasma Method" 200.7 with appendix 200.7A.

56 Fed. Reg. 30275 (July 1, 1991) did not amend 40 CFR 141.23 (k)(1) with regard to cadmium. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for cadmium. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition; updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Methods 301A II and 301A III with new Method 310A (which references methods 303A and 303B); and updated the 200.7 "Inductively Coupled Plasma Method" to include appendix 200.7A as a supplement.

The Board has updated all analytical methods pertaining to the revised MCL for cadmium at Section 611.301 according to the federal amendments. However, at 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for cadmium, effective July 30, 1992. Changed since the proposal for public comment are the deletion of the editions of methods at Section 611.611 and their inclusion at the incorporations by reference at Section 611.102; updating the "Standard Methods" by deleting Methods 301A II and 301A III and replacing them with Method 304 of the 16th edition; and by updating the "Inductively Coupled Plasma Method" 200.7 to include appendix 200.7A as a supplement.

Chromium:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments deleted the previous ASTM methods; updated "Inorganic Methods" from the 1979 to the 1983 edition, deleting Method 218.1; updated "Standard Methods" from the 14th edition to the 16th edition, replacing former Methods 301A II and 301A III with Method 304; and supplemented "Inductively Coupled Plasma Method" 200.7 with appendix 200.7A.

56 Fed. Reg. 30275 (July 1, 1991) did not amend 40 CFR 141.23 (k)(1) with regard to chromium. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for chromium. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition, deleting Method 218.2; updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Methods 301A II and 301A III with Method 312A (which references methods 303A, 303B, and 304); and updated the 200.7 "Inductively Coupled Plasma Method" to include appendix 200.7A as a supplement.

The Board has updated all analytical methods pertaining to the revised MCL for chromium at Section 611.301 according to the federal amendments. However, at 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for chromium, effective July 30, 1992. Changed since the proposal for public comment are the deletion of the editions of methods at Sections 611.611 and their inclusion at the incorporations by reference at Section 611.102; and by updating the "Inductively Coupled Plasma Method" 200.7 to include appendix 200.7A as a supplement.

Fluoride:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(3), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments updated "Inorganic Methods" from the 1979 to the 1983 edition and updated "Standard Methods" from the 14th edition to the 16th edition. 56 Fed. Reg. 30275 (July 1, 1991) did not amend 40 CFR 141.23 (k)(3).

The Board has updated all analytical methods accordingly, with the exception that we have corrected the obvious USEPA error and substituted "Standard Methods" 413A and 413C for Methods "43A" and "43C". Changed since the proposal for public comment are the addition of Section 611.612, to restore the text of the previous methods deleted by USEPA, as updated by USEPA (although USEPA did not restore them for the purposes of the old MCL for fluoride), and deletion of the editions of methods at Sections 611.611 and 611.612 and their inclusion at the incorporations by reference at Section 611.102.

Lead:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section. This eliminated the methods for lead. (There is no new 40 CFR 141.62(b) MCL for lead.)

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56 Fed. Reg. 30275 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for lead. (56 Fed. Reg. 30274 repealed the old MCL for lead effective December 7, 1992, the date the new lead and copper rules become effective.) This updated "Inorganic Methods" from the 1979 edition to the 1983 edition and updated the "Standard Methods" from the 14th edition to the 16th edition.

The Board has updated all analytical methods accordingly, with the exception that we have corrected the obvious USEPA error and included the 14th edition of "Standard Methods" 301A II and 301A III at Section 611.102 for the purposes of Section 611.612(f)(3). Changed since the proposal for public comment are the addition of Section 611.612, to restore the text of the previous methods deleted and subsequently restored by USEPA to 40 CFR 141.23(q); and deletion of the editions of methods at Section 611.612 and their inclusion at the incorporations by reference at Section 611.102.

Mercury:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments updated "Inorganic Methods" from the 1979 to the 1983 edition; updated "Standard Methods" from the 14th edition to the 16th edition, replacing Method 301A VI with Method 303F; and updated ASTM method D3223-79 to D3223-80.

56 Fed. Reg. 30275 (July 1, 1991) amended 40 CFR 141.23 (k)(1) to change the version of the ASTM method to D3223-86. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for mercury. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition, deleting Method 206.4, and updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Method 301A VI with new Method 320A (referencing Method 303F).

The Board has updated all analytical methods pertaining to the revised MCL for mercury at Section 611.301 according to the federal amendments. However, at 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for mercury, effective July 30, 1992. Changed since the proposal for public comment are the deletion of the editions of methods at Sections 611.611 and their inclusion at the incorporations by reference at Section 611.102 and updating

the method number (version) of the ASTM method.

Nitrate:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments deleted previous ASTM method D992-71 and updated methods D3867-79A and D3867-79B to methods D3867-85A and D3867-85B; updated "Inorganic Methods" from the 1979 to the 1983 edition, deleting Method 352.1 and adding Method 300.0 (retaining Methods 353.1, 353.2, and 353.3); updated "Standard Methods" from the 14th edition to the 16th edition, replacing Methods 419C, 419D, and 605 with Methods 418C and 418F; and added Orion Research ion selective electrode method WeWWG/5880 and Millipore Corp. method B-1011.

56 Fed. Reg. 30275 (July 1, 1991) amended 40 CFR 141.23 (k)(1) to update the ASTM method to D3867-90. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for nitrate. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition and updated the "Standard Methods" from the 14th edition to the 16th edition.

The Board has updated all analytical methods pertaining to the revised MCL for nitrate at Section 611.301 according to the federal amendments. However, at 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for nitrate, effective July 30, 1992. Changed since the proposal for public comment are the deletion of the editions of methods at Section 611.611 and their inclusion at the incorporations by reference at Section 611.102 and updating the ASTM methods by replacing D3867-85A and D3867-85B with D3867-90.

Nitrite:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) added 40 CFR 141.23(k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments added "Inorganic Methods" (1983 edition) 300.0, 353.2, 353.3, and 354.1; "Standard Methods" (16th edition) 418C and 418F; ASTM Methods D3867-85A and D3867-85B; and Millipore Corp. method B-1001 for nitrite. 56 Fed. Reg. 30275 (July 1, 1991) amended 40 CFR 141.23 (k)(1) to update the ASTM methods to D3867-90.

The Board has updated all analytical methods for nitrate according to the federal amendments. Changed since

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the proposal for public comment are the deletion of the editions of methods at Section 611.611 and their inclusion at the incorporations by reference at Section 611.102 and the updating of the method number (version) of the ASTM methods.

Selenium:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section and added new subsection (k)(1), which sets forth the analytical requirements for the revised MCLs of section 141.62(b). These amendments updated "Inorganic Methods" from the 1979 to the 1983 edition, deleting Method 270.3; updated "Standard Methods" from the 14th edition to the 16th edition, replacing Method 301A VII with Methods 303E and 304; updated ASTM method D3859-79 to methods D3859-84A and D3859-84B; and updated "USGS Method" I-1667-78 (1979) to I-3667-85 (1985).

56 Fed. Reg. 30275 (July 1, 1991) amended 40 CFR 141.23 (k)(1) to update the ASTM method to D3859-88; to delete "Standard Method" 303E; and to delete "USGS Method" I-3667-85. 56 Fed. Reg. 30276-77 (July 1, 1991) added 40 CFR 141.23(q) to change the analytical methods that apply for the purposes of the 40 CFR 141.11 MCL for selenium. This updated "Inorganic Methods" from the 1979 edition to the 1983 edition; updated the "Standard Methods" from the 14th edition to the 16th edition, replacing former Method 301A VII with new Method 303F; and updated "USGS Method" I-1667-78 (1979) to I-1667-85 (1985).

The Board has updated all analytical methods for selenium according to the federal amendments. However, at 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for selenium, effective July 30, 1992. Changed since the proposal for public comment are the deletion of the editions of methods at Sections 611.611 and 611.612 and their inclusion at the incorporations by reference at Section 611.102; updating the method number (version) of the ASTM methods to method D3859-88B (for gaseous hydride) and D3859-88A (for furnace technique); deleting "Standard Method" 303E; and deleting "USGS Method" I-3667-85.

Silver:

56 Fed. Reg. 3581-82 (Jan. 30, 1991) repealed former 40 CFR 141.23(f) and the methods at that section. This deleted "Inorganic Methods" 272.1 and 272.2, "Standard Method" 301A II, and "Inductively Coupled Plasma Method" 200.7 for silver. At 56 Fed. Reg. 30276, USEPA repealed the 40 CFR 141.11 MCL (old MCL) for silver, effective July 30, 1992.

The Board has updated all analytical methods for silver according to the federal amendments. There is no change from the proposal for public comment with regard to silver.

VOCs:

At 56 Fed. Reg. 3583, USEPA amended 40 CFR 141.24(e) to change the analytical method for the sole organic contaminant for which an MCL remains at 40 CFR 141.12(a): endrin. (Lindane, toxaphene, and methoxychlor are now listed in new section 141.61(c).) Deleted were "Pesticide Methods", ASTM D3086-79, "Standard Method" 509A (14th edition), "USGS Methods" chapter A-3, and SPE-500. The new method is "Organic Method" 508.

SOCs:

At 56 Fed. Reg. 3583, USEPA amended 40 CFR 141.24(e) to replace "Pesticide Methods", ASTM Method D3086-79, "Standard Method" 509A (14th edition), "USGS Methods" chapter A-3, and SPE-500 with "Organic Method" 508 for the purposes of the sole section 141.12(a) MCL for endrin. USEPA added 40 CFR 141.24(f)(16) to add "Organic Methods" (1988 edition) 502.1, 502.2 503.1, 524.1, and 524.2 for the Phase II VOCs. USEPA updated "Organic Methods", at 40 CFR 141.24(e), (f)(16), and (h)(12) to the December 1988 edition, leaving the reference at 40 CFR 141.24(g)(10) as the September, 1986 edition. USEPA added 40 CFR 141.24(h)(12) to replace "Pesticide Methods", ASTM Method D3478-79, "Standard Method" 509B, and USGS Methods" chapter A-3 for 2,4-D and 2,4,5-TP (Silvex) and add "Organic Methods" (1988 edition) 504 (for dibromopropane and dibromoethylene), 505 (for alachlor, carbofuran, chlordane, heptachlor, heptachlor epoxide, toxaphene, and as a PCB screen), 507 (for alachlor and atrazine), 508 (for chlordane, heptachlor, heptachlor epoxide, lindane, methoxychlor, and as a PCB screen), 508A (for decachlorobiphenyl, if PCB is detected using 505 or 508), 515.1 for 2,4-D, pentachlorophenol, or 2,4,5-TP), 525 for alachlor, atrazine, chlordane, heptachlor, heptachlor epoxide, lindane, methoxychlor, or pentachlorophenol), and 531.1 (for aldicarb, aldicarb sulfoxide, aldicarb sulfone, or carbofuran) for the SOCs. (USEPA promulgated the MCLs for aldicarb, aldicarb sulfoxide, aldicarb sulfone, and pentachlorophenol on July 1, 1991 as Phase IIB contaminants. These are the subject of docket R91-15.)

At 56 Fed. Reg. 30277-79 (July 1, 1992), USEPA amended the applicability and analytical methods at 40 CFR 141.24(e), (f)(16), and (h)(12). Added to the subsection (e) method applicable to the 40 CFR 141.12(a) MCL for endrin is "Organic Methods" (1988 edition) Method 505. The paragraph (f)(16) methods for Phase II VOCs now also apply

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to the Phase I VOCs. Finally, at paragraph (h)(12), USEPA expanded "Organic Method" 508 to include toxaphene and updated "Organic Method" 515.1 to revision 5.0 (1991 edition) and 525 to 525.1, revision 3.0 (1991 edition).

The Board updates the analytical methods according to the federal amendments. Changed since the proposal for public comment are the expansion of the methods at Section 611.646(p) to include the Phase I VOCs; the expansion of "Organic Methods" 505 and 508, at Section 611.648(1) to include endrin and toxaphene (508 only); and updating "Organic Methods" 515.1 to revision 5.0 (May, 1991) and 525 to 525.1, revision 3.0 (May, 1991).

Microbiologicals

At 56 Fed. Reg. 642 (Jan. 8, 1991), USEPA amended one microbiological method for total coliform and added two microbiological methods for *E. coli*. The methods themselves are set forth in the USEPA rules. USEPA only incorporated the methods for preparing the EC medium and agar medium by reference. The reference incorporated is Method 908C of "Standard Methods", 16th edition.

At 57 Fed. Reg. 1852 (Jan. 15, 1992), USEPA expanded a microbiological method for total coliform, the "EC Medium + MUG Test", to require persons using it to further use it to test for *E. coli*. The method itself is set forth in the USEPA rules. At 57 Fed. Reg. 24747 (June 10, 1992) USEPA approved the "Autoanalysis Colilert System" (the "Minimal Medium MMO-MUG Test") for testing for the presence of total coliforms and *E. coli*. USEPA simultaneously changed the status of the "EC Medium + MUG Test" by approving it for use for *E. coli* as an alternative to the "Minimal Medium ONPG-MUG Test". For the method, USEPA incorporated a journal article by reference: S. Edberg, M. Allen & D. Smith, "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with Presence-Absence Techniques", *Applied and Environmental Microbiology*, vol. 55, pp. 1003-1008.

Incorporations by Reference--Section 611.102

In light of the foregoing discussion of changes in the analytical methods, the Board makes the following amendments to the incorporations by reference:

1. The phrase, "in this Part refer to", is added since the proposal for public comment to clarify that the defined abbreviations apply only for the purposes of Part 611.

2. The abbreviations are amended as follows: "Asbestos Methods" is added; "Indigo Method" is amended to use the exact method number used in "Standard Methods" (17th ed.) ("O3" changed to "O₃") (changed since proposal for public comment); "Inorganic Methods" is amended to indicate its availability from ORD Publications; "MMO-MUG Test" is amended to show that the test is now available from Environetics, Inc.; "Pesticide Methods" and "SPE Test Method" are deleted (changed since proposal for public comment).
3. Access Analytical Systems, Inc. is amended to show that the MMO-MUG Test is now available from Environetics, Inc., and "See" is now capitalized (changed since proposal for public comment).
4. ASTM methods: a colon and a phone number are added; methods D992-71, D1687-77D, D3086-79 (changed since proposal for public comment), D3478-85 (changed since proposal for public comment), and D3557-78A and B (changed since proposal for public comment) are deleted; and methods D2972-88A or B (changed since proposal for public comment), D3223-86, D3859-88 (changed since proposal for public comment), and D3867-90 (changed since proposal for public comment) are updated.
5. "Standard Methods (13th ed.): method 302 is repunctuated (changed since proposal for public comment).
6. "Standard Methods (14th ed.): methods 301A IV, 301A VI, 301A VII, 404A, 404B(4), 419C, 419D, 509A (changed since proposal for public comment), 509B (changed since proposal for public comment), and 605 are deleted; method 214A is added (changed since proposal for public comment); methods 301A II and 301A III are retained (changed since proposal for public comment); and methods 302 (punctuation changed since proposal for public comment), 320 and 320A ("s" added) and 412D (number changed) are corrected (changed since proposal for public comment).
7. "Standard Methods (16th ed.): method 214A (changed since proposal for public comment) is deleted; and methods 303C, 303E, 303F, 307A (changed since proposal for public comment), 307B (changed since proposal for public comment), 418C, and 418F are added. In response to an Agency comment (PC 12), we amended "Ph" to "pH" for Method 423.
8. "Standard Methods (17th ed.): method 4500-O₃ is added (changed since proposal for public comment).
9. Environetics punctuation corrected (changed since

proposal for public comment).

10. J.T. Baker Chemical Co. is deleted with the "SPE Test Method" (changed since proposal for public comment).
11. Millipore Corp. is added with Method B-1011.
12. NTIS: repunctuated (changed since proposal for public comment); phone number added (changed since proposal for public comment); "Analytical Method of Determination of Asbestos Fibers in Drinking Water", "Methods for Chemical Analysis of Water and Wastes" (1979 and 1983 ed.; 1979 ed. added since proposal for public comment), and "Methods for Determination of Organic Compounds in Drinking Water" (1986 and 1988 ed.; 1986 ed. added since proposal for public comment) are added; "Methods for Chemical Analysis of Water and Wastes" (document number) is amended; and limitations on the utility are added to "Methods for Chemical Analysis of Water and Wastes" (1979 and 1983 ed.) and "Methods for Determination of Organic Compounds in Drinking Water" (1986 and 1988 ed.).
13. ORD Publications is added since the proposal for public comment because the USEPA rules state this as the source of "Methods for Chemical Analysis of Water and Wastes".
14. Orion Research, Inc. is repunctuated since the proposal for public comment.
15. Technicon Industrial Systems, Inc. is repunctuated since the proposal for public comment.
16. USEPA: repunctuated since the proposal for public comment; Appendix 200.7A is referenced by number in method 200.7 (changed since proposal for public comment); "Methods for Organochlorine Pesticides and Chloro-phenoxy Acid Herbicides in Drinking Water and Raw Source Water" is deleted; and "Methods for Chemical Analysis of Water and Wastes" is corrected and its availability from ORD Publications is stated (changed since proposal for public comment). In response to an Agency comment, we replace a now obsolete telephone number with an address used by USEPA in the Code of Federal Regulations text of its rules with regard to the availability of these references.
17. USGS: "Methods for Analysis of Organic Substances in Water" is deleted (changed since proposal for public comment); and "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments" is corrected (changed since proposal for public comment).
18. Code of Federal Regulations: all references are

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updated to the 1991 edition. A reference to 40 CFR Subpart G, which sets forth the limitations on the state's authority to grant exceptions to a federal requirement of general applicability. (See discussion of Alternative Treatment Techniques, below.)

Special Exemption Permits--Section 611.110

The federal Phase I and Phase II regulations contemplate a system of waivers of sampling and monitoring requirements. They also contemplate that the states will allow suppliers to use existing monitoring data and relax increased monitoring frequencies. In R88-26, the Board chose a method whereby the Agency will evaluate such requests from general requirements and set forth criteria that authorizes the Agency to issue "special exception permits" ("SEPs"). This provision is centrally located in Section 611.110, and various substantive provisions located throughout the SDWA rules contain authorizations for the Agency to grant SEPs under certain circumstances pursuant to this Section.

At 56 Fed. Reg. 3578-97 (Jan. 30, 1991), USEPA promulgated the Phase II regulations. At 56 Fed. Reg. 30274-81 (July 1, 1992), USEPA extensively corrected and amended the Phase II rules when it promulgated the Phase IIB rules. Most significantly, these amendments extended the use of waivers to an additional group of VOCs and to new SOCs. These amendments included definite factors for consideration in evaluating a request for a SEP from certain of the provisions. Both expedience and the federal actions have prompted the Board to significantly amend the central SEP provision of Section 611.110 to accommodate the federal rules.

Initially, for convenience, the Board has replaced the repeated use of the words "special exception permit" with the abbreviation "SEP", both here and elsewhere in Part 611. Further, the Board has added subsection (d) to clarify that there are two ways for a SEP to be issued: the supplier may request one, or the Agency may initiate one at its discretion. A new Board Note, added since the proposal for public comment, clarifies that the authorization provisions throughout Part 611 are not intended to mandate that the Agency exercise its discretion and initiate a SEP.

In response to the federal amendments, and since the proposal for public comment, the Board adds subsection (e), which sets forth the factors the Agency must consider in evaluating a SEP request submitted pursuant to certain substantive provisions of the rules. USEPA codified these factors within the segments of the substantive rules that authorize a grant of a SEP. The Board has chosen to centrally locate the factors here to avoid undue distraction and repetition in those rules. The new federal

waiver provisions that set forth factors for consideration are codified at 40 CFR 141.24(f)(8) (as to VOC monitoring), 141.24(h)(6) (as to SOC monitoring), and 141.40(n)(4) (as to unregulated organic and inorganic compounds). Sections 141.24(f)(8) and 141.24(h)(6) are stand-alone provisions, and the section 141.40(n)(4) provision references the factors set forth at section 141.24(h)(6). There is substantial identity of the factors between the two subsections of section 141.24, with limited factors unique to the VOCs, on the one hand, and SOCs and unregulated compounds, on the other. Therefore, placing all of the factors in a single location with clear statements of their applicability is desirable. For these reasons, the Board has chosen not to engage in actual separate listings of the factors at Sections 611.631(d) or 611.658(d) (consolidated since the proposal for public comment as Section 611.510(d), for unregulated chemical contaminants), at Section 611.646(h) (for VOCs), or at Section 611.648(f) (for SOCs). Rather, those provisions each reference Section 611.110(e). In response to an Agency comment (PC 12), we added a cross-reference to the Agency regulations that it uses to determine the zone of influence.

SDWA § 1415 Variances--Section 611.111

USEPA amended 40 CFR 141.4(b) at 56 Fed. Reg. 1557 (Jan. 15, 1991). It stayed the effective date of the prohibition against granting a variance or exemption from the MCL for total coliforms under certain circumstances. In essence, the stay allows Illinois to grant a variance or adjusted standard from the total coliform MCL if the supplier demonstrates that the persistent growth of total coliforms is not from fecal or pathogenic contamination and it is not due to a treatment lapse or deficiency or a operation or maintenance problem in the distribution system.

The Board adopts the federal stay with minimal deviation in the language. The Board divides the language of subsection (f) into two subsections. The stay is couched in subsection (f)(1) in terms of exceptions from a general declaration that the Board will not grant a variance or adjusted standard from the total coliform MCL unless certain circumstances exist (the federally-enumerated conditions are fulfilled). For clarity, and changed since the proposal for public comment, the word "from" is added to begin each conditional clause.

The Board makes a small number of minor amendments to the pre-existing text of Section 611.111, since the proposal for public comment, for increased clarity. "That" is substituted for "which" in four clauses of subsections (b)(1) and (g), and "level" is added to the second sentence of subsection (g), for consistency with the defined usage in the first sentence. A comma is removed from subsection (g). Finally, the Board Note is updated to the 1991 Code of Federal Regulations.

SDWA § 1416 Variances--Section 611.112

The major, federally-derived amendment to Section 611.112 arises from the USEPA 40 CFR 141.4(b) stay of the prohibition against exemptions or variances from the total coliform MCL, as amended at 56 Fed. Reg. 1557 (Jan. 15, 1991). The Board amends subsection (g) by dividing it into two subsections and adding the federal stay language, identical to that added to Section 611.111(f)(1). As with Section 611,111(f), the Board adopts the federal stay at Section 611.112(g)(1) with minimal deviation in the language by dividing the existing language of subsection (g) into two subsections and couching it in terms of exceptions from a general declaration. Also, for clarity, and changed since the proposal for public comment, the word "from" is added to begin each conditional clause.

As with Section 611.111, the Board makes amendments not in the proposal for public comment for clarity. We change "that", at subsections (d)(1)(A), (d)(1)(B), and (d)(2). Subsection (c)(2) is reworded and a comma is removed from, and a full subsection number is added to, subsection (d)(2) for clarity. Finally, the version of the Code of Federal Regulations is updated in the Board Note.

A final correction made to Section 611.112 subsequent to the proposal for public comment is driven by USEPA comments on Phase I primacy (PC 14). USEPA commented that the Board must state at this Section that we will not grant a variance from the residual disinfectant concentration requirements of Sections 611.241(c) and 611.242(b) (40 CFR 141.72(a)(3) and (b)(1)).

Alternative Treatment Techniques--Section 611.113

Since the proposal for public comment, the Board has added amendments to Section 611.113. These are wholly derived from USEPA Phase I primacy comments (PC 14). USEPA commented that except for certain contaminants listed at 40 CFR Subpart G, only USEPA can allow an alternative treatment technique pursuant to 40 CFR 142.46. USEPA stated that the Illinois rules must state that USEPA concurrence is necessary for the Board to grant an adjusted standard or allow an alternative treatment technique, in order for the Illinois rules to fulfill the stringency requirements of SDWA §1413(a)(1) (42 U.S.C. §300g-2(a)(1)) and 40 CFR 142.10(a) an 142.11(a)(1).

In response, the Board amends Section 611.113 by adding a new subsection (e). This new subsection states that all adjusted standards allowing an alternative treatment technique are subject to the limitations of 40 CFR 142 Subpart G and do not become effective until approved by USEPA pursuant to 40 CFR 142.46.

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Maximum Contaminant Levels and Finished Water Quality--
Section 611.121

Originally, Section 611.121 derived from the federal definition of "maximum contaminant level" at 40 CFR 141.2. The original structure of that federal definition gave it the substantive effect of a prohibition against certain levels of contamination at certain locations in the distribution system (the consumers' taps). At 56 Fed. Reg. 26547 (June 7, 1991), as part of the lead and copper rules amendments (the subject of docket R91-15), USEPA amended this definition (and others). USEPA removed the references to the consumer tap ("free flowing outlet of the ultimate user") and contaminants added in the course of treatment. The Board makes this amendment at this time and since the proposal for public comment because this is a fundamental definition, and certain other issues raised in the course of Board deliberations makes it expedient to make them without delay.

During the course of Board deliberations and since the proposal for public comment, an issue arose concerning relating to the lack of a general narrative standard. The previous narrative standard, at Section 604.201, was erroneously repealed in the large-scale repeals of former rules as part of implementation of the Phase I rules, in R88-26. The Board notes this error and the deficiency it creates in the rules, so we restore the standard of that Section at this time.

We codify the former narrative standard as subsection (b), with minimal rewording for clarity. The substantive aspects of the amended federal definition of maximum contaminant level is codified as subsection (a). This takes the form of a prohibition against exceeding an MCL for any contaminant in the water as delivered to the consumer.

We note that the monitoring provisions of Subparts K through Q require suppliers to use specific locations to demonstrate compliance. However, we do not construe these location restrictions as inhibiting other persons from seeking to enforce compliance by performing independent monitoring.

As a whole, Section 611.121 now essentially prohibits delivering deleterious water to consumers. It prohibits delivering water that exceeds the MCL, that is deleterious to health or the distribution system, or that is offensive to the senses. It requires that the operator employ good practice in treating water, in that it requires that contaminants added during the course of treatment appear in the water delivered to consumers in concentrations no greater than those required by good practice or not at all, as is the case for those that have deleterious or unknown physiologic effects.

Filtration and Disinfection: General Requirements--
Section 611.220

Section 611.220 derives from 40 CFR 141.70. Since the proposal for public comment, USEPA Phase I primacy comments (PC 14) have prompted amendments. 40 CFR 141.70(b)(1) refers to section 141.71 (corresponding with 35 Ill. Adm. Code 611.230 through 611.233). The Illinois rule referred to Section 611.230). USEPA commented that the Board should change this reference to Sections 611.230 through 611.232, which we do now by amendment. 40 CFR 141.70(b)(2) refers to sections 141.73 and 141.72(b) (corresponding with 35 Ill. Adm. Code 611.250 and 611.242, respectively). The Illinois rule referred to Sections 611.230 and 611.232 (corresponding with 40 CFR 141.70 preamble and 141.71(b)). USEPA commented that the Board should change these references to Sections 611.250 and 611.242, which we do now by amendment. We also use this opportunity to change "1/2" to "½" and update the version of the Illinois Revised Statutes to 1991, at subsection (c), and update the version of the Code of Federal Regulations, in the Board Note.

Filtration and Disinfection: Site-Specific Conditions--
Section 611.232

Section 611.232 derives from 40 CFR 141.71(b). Since the proposal for public comment, USEPA Phase I primacy comments (PC 14) have prompted amendments. 40 CFR 141.71(b)(1)(ii) requires the supplier to meet certain of the disinfection requirements for unfiltered sources at all times. USEPA commented that the caveat at subsection (a)(2), "unless the Agency determines that the failure was caused by circumstances that were unusual and unpredictable", made the Illinois provision less stringent. 40 CFR 141.71(b)(1)(iii), pertaining to certain other of the unfiltered source disinfection requirements, does include such a caveat relating to a state finding of unusual circumstances. As drafted, the Board rules originally combined both federal paragraphs into a single subsection, which caused the caveat to apply to both requirements. The Board corrects this by splitting subsection (a)(2) into two subsections, (a)(2)(A) and (a)(2)(B), and restricting the caveat to subsection (a)(2)(B) (corresponding with 40 CFR 141.71(b)(1)(iii)).

USEPA also commented that subsection (c) refers to Agency delegation to a unit of local government, even though the state represented that no such delegations would occur. The Board corrects this by deleting the reference and concomitantly rectifying the sentence grammar. We update the Code of Federal Regulations Reference in the Board Note.

Filtration and Disinfection: Unfiltered Supplies--
Section 611.241

Section 611.241 derives from 40 CFR 141.72(a). Since the proposal for public comment, USEPA Phase I primacy comments (PC 14) have prompted amendments. 40 CFR 141.72(a)(4)(i) (pertaining to unfiltered systems and corresponding with 35 Ill. Adm. Code 611.241(d)(1)) refers to 40 CFR 141.74(b)(6) (pertaining to sampling points for RDC in unfiltered systems and corresponding with 35 Ill. Adm. Code 611.532(f)). The Illinois rule referred to Section 611.532(e) (pertaining to continuous monitoring for RDC in unfiltered systems and corresponding with 40 CFR 141.74(b)(5)). USEPA commented that the correct reference to the RDC measurement point is Section 611.533(c)(1) (which corresponds with 40 CFR 141.74(c), relating to filtered systems). In response to the USEPA comment, we amend the reference at subsection (d)(1) to "611.532(e)" to read "611.532(f)", rather than referring to filtered systems, as suggested by USEPA. We use this opportunity to update the version of the Code of Federal Regulations in the Board Note. In response to an Agency comment (PC 12), we changed the reference to "CT" in the preamble to subsection (a) to "CT_{99.9}". This is despite the fact that it appears as "CT" in 40 CFR 141.72(a)(1). The definitions Section makes "CT" synonymous with "CT_{calc}", which is not what USEPA intended here.

Filtration and Disinfection: Filtration--Section 611.250

Section 611.250 derives from 40 CFR 141.73. Since the proposal for public comment, USEPA Phase I primacy comments (PC 14) have prompted amendments. USEPA highlighted the omission of the word "filtered" at subsection (a)(2), which we now restore.

In a general comment, USEPA questioned the Board's use of "must" and "shall". USEPA stated that the Board's usage eliminated Illinois' (the Agency's) discretion to choose to exercise an option when certain circumstances arise. Without elaboration of differences in federal and Illinois administrative law and usage conventions, the Board has reviewed the cited provisions (including this one) and decided that amendment is appropriate. 40 CFR 141.73(a)(1) includes the following language: "[I]f the State determines . . . , the State may However, in no case may the state" R88-26 rendered this as, "[I]f the Agency determines . . . , the Agency shall However, in no case shall the Agency" The Board drafted Illinois law requirements into the first sentence cited. The Agency has full discretion in its evaluation of the situation, but once it has determined that the conditions supporting a finding exist, Illinois law does not permit it to deny relief on some arbitrary or uncodified basis. As to the second sentence, use of "shall" in the negative case is grammatically incorrect.

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The Board amends this to "may". We further update the Board Note to the most recent version of the Code of Federal Regulations.

Treatment Techniques: General Requirements--Section 611.295

Section 611.295 derives from 40 CFR 141.110, added by USEPA at 56 Fed. Reg. 3594 (Jan. 30, 1991). It states that the treatment techniques of Subpart D (40 CFR 141 subpart K), established in lieu of MCLs for specified contaminants, constitute national primary drinking water regulations (NPDWRs). Changed since the proposal for public comment is the version of the Code of Federal Regulations in the Board Note.

Treatment Techniques: Acrylamide and Epichlorohydrin--Section 611.296

Section 611.296 derives from 40 CFR 141.111, added by USEPA at 56 Fed. Reg. 3594 (Jan. 30, 1991). It establishes a limitation on polymer treatment: the dose rate of polymer (parts per million) times the unreacted monomer content of the polymer (weight percent) cannot exceed 0.05 for acrylamide or 0.20 for epichlorohydrin. The Board has changed the structure and language for clarity since the proposal for public comment. The maximum products that a supplier cannot exceed are placed in a separate subsection, in order to highlight those numbers. The provision relating to certifications (now subsection (c)) is changed grammatically and for clarity. The source of the certification is now stated consistent with subsection (a). "May", which is more clearly permissive and more consistent in usage with the style of Illinois' regulations, is used in place of "can". We believe that this structure follows the federal rule more closely than that suggested by the Agency in PC 10. Also changed since the proposal for public comment is the version of the Code of Federal Regulations in the Board Note.

MCLs: Old MCLs for Inorganic Chemicals--Section 611.300

Section 611.300 derives from 40 CFR 141.11, amended by USEPA at 56 Fed. Reg. 3578 (Jan. 30, 1991) and 56 Fed. Reg. 30274 (July 1, 1991). The federal amendments immediately deleted the entry for silver; made the entries for cadmium, chromium, mercury, nitrate, and selenium expire on July 30, 1992 (the effective date of the revised MCLs of section 141.62(a)); will make the entry for lead expire on December 7, 1992 (the effective date of the lead and copper rule, which are the subject of docket R91-15); and will delete the entry for barium expire on January 1, 1993 (the effective date of the Phase IIB rules, also the subject of R91-15). The Board makes these amendments with minor deviation from the federal text.

Initially, the Board added notations with regard to the future expiration of the entries for lead and barium without

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giving dates certain for their expiration. We do not believe that USEPA intends that there be no MCLs for these chemical contaminants in Illinois. Rather, since we believe that USEPA intended them to expire when their respective new regulations take effect, we added a note explaining the federal dates and state that their deletion from this Section will occur in a future rulemaking.

The Board makes other revisions to the text since the proposal for public comment. Since July 30, 1992 is past, we delete the language from the preamble to subsection (a) that related to a future expiration date, and we actually delete the entries for cadmium, chromium, mercury, nitrate, and selenium and their corresponding notations as to future expiration (now past). We have also added an explanation of the existence of listings at both this Section and Section 611.301(a) (corresponding with 40 CFR 141.62(b)) for fluoride. We also restore the note, erroneously omitted, which designates manganese as an additional state requirement. Since USEPA has brought about dual listings of MCLs, the adopted rule now refers to those of this Section as "old MCLs" in the section heading and subsections (a), (b), and (c) (and those of Section 611.301 elsewhere in the rules as "revised MCLs"). We render "which" as that in subsection (e)(1) for grammatic correctness; update all references to the 1991 Code of Federal Regulations; delete the applicability cross-reference from the Board Note to subsection (b) and the reference to "Public Health" from subsection (d)(2), as superfluous in light of the Board Note that follows; and clearly state in the Board Note to subsection (d) that Public Health may regulate nitrate.

MCLs: Revised MCLs for Inorganic Chemicals--Section 611.301

Section 611.301 derives from 40 CFR 141.62, added by USEPA at 56 Fed. Reg. 3594 (Jan. 30, 1991) and amended at 56 Fed. Reg. 30280 (July 1, 1991) (excluding barium, which is the subject of docket R91-15). Federal subsection (a) is reserved. Federal subsection (b) establishes MCLs that differ in applicability. Fluoride applies only to community supplies (CWSS). Asbestos, cadmium, chromium, mercury, and selenium apply to CWSS and non-transient, non-community systems (NTNCWSS). Nitrate, nitrite, and total nitrate and nitrite apply to CWSS, NTNCWSS, and transient, non-community supplies (transient non-CWSS). Federal subsection (c) sets forth the treatment techniques that USEPA has identified as the best available technology (BAT) for each inorganic chemical contaminant.

In the proposal from public comment, the Board deviated from the federal text. We retain part of that deviation and correct the rest. In the subsection (b) statement of applicability we chose to refer to the contaminants by name, stating that all of the MCLs apply to CWSS, all apply also to NTNCWSS with exception, and others apply also to transient non-CWSS, rather than

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referring to them by a paragraph number. We retain this form, but we delete the name of selenium as an exception for NTNCWSSs. USEPA clearly made the MCL for this contaminant applicable to these supplies. We further correct the BAT treatment techniques for asbestos (deleting differentiation based on asbestos source not in the federal rule) and barium (adding electro dialysis in response to PC 10) to correct errors in the proposal for public comment. (Although it might have been desirable for USEPA to make a distinction in asbestos BAT based on whether the asbestos is from the raw water source or from corrosion in the distribution system, this is not part of the federal rule and we do not add it to the adopted rule.)

The Board makes additional revisions since the proposal for public comment. In subsection (a) we reserve the section by clearly stating that USEPA has reserved it and we are using the statement to maintain structural consistency. Although it is lengthier than the original cross-reference, we received criticism for using a meaningless cross reference. We correct the punctuation of subsection (b) by adding a period. We resort to use of the technical symbols " \leq " and " μg " because these are more readily understood by the technical community that uses the Board's rules. Finally, the Board updates the version of the Code of Federal Regulations in the Board Note.

MCLs: Old MCLs for Organic Chemicals--Section 611.310

Section 611.310 derives from 40 CFR 141.12, amended by USEPA at 56 Fed. Reg. 3578-79 (Jan. 30, 1991) and 56 Fed. Reg. 30274 (July 1, 1991). The federal amendments delete the MCLs for lindane, methoxychlor, toxaphene, 2,4-D, and 2,4,5-TP (Silvex). USEPA has adopted "revised MCLs" for these chemical contaminants at new section 141.61 (corresponding with Section 611.311). (Along with MCLs for chlordane, heptachlor, and heptachlor epoxide.) (This creates MCLs at both Section 611.310 and Section 611.311 for heptachlor, heptachlor epoxide, and 2,4-D. The Board retains both MCL listings because the state MCLs at Section 611.310 are more stringent than the federal MCLs, but violation of the federal MCLs of Section 611.311 impose more stringent reporting, monitoring, and notice requirements. The Board now believes that deletion of the Section 611.311 (corresponding with 40 CFR 141.61) entries for these three chemical contaminants would render the state regulations less stringent for the purposes of primacy.)

The Board adopts the federal amendments with additional revision since the proposal for public comment. Initially, we deleted the listings for chlordane, lindane, methoxychlor, and toxaphene, at subsection (a), and that for 2,4,5-TP (Silvex), at subsection (b). The new federal MCL of section 141.61 for chlordane is more stringent than the former state MCL for this contaminant. Retaining a listing as this Section would be

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inconsistent with and less stringent than the new federal MCL. As to lindane, methoxychlor, toxaphene, and 2,4,5-TP (Silvex), the July 30, 1992 effective date of the revised MCLs is now past. We further delete subsection (d) to integrate the TTHM MCL into subsection (c), since the July 1, 1992 effective date for small systems is now past, and amend the Board Note that follows to clearly indicate that the TTHM MCL is an additional state standard to the extent it applies to small systems. We amend the Board Notes to reflect the most recent Code of Federal Regulations and extensively amend those that follow subsections (a) and (b) to explain the dual MCL listings of heptachlor, heptachlor epoxide, and 2,4-D. In response to an Agency comment (PC 12) that we capitalize "state" in the Board Note to subsection (a), we changed this to "Illinois". Throughout various passages of the rules we refer to "additional state requirements" and otherwise use the word "state" without capitalization. We prefer to remain consistent. Therefore, we made this substitution here.

MCLs: Revised MCLs for Organic Chemicals--Section 611.311

Section 611.311 derives from 40 CFR 141.61, added by USEPA at 56 Fed. Reg. 3593 (Jan. 30, 1991) and amended at 56 Fed. Reg. 30280 (July 1, 1991) (by adding MCLs for aldicarb, aldicarb sulfoxide, aldicarb sulfone, and pentachlorophenol, which are the subject of docket R91-15 as Phase IIB contaminants). This added MCLs for ten new VOCs at subsection (a) (o-dichlorobenzene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,2-dichloropropane, ethylbenzene, monochlorobenzene, styrene, tetrachloroethylene, toluene, and total xylenes). At subsection (c), it added MCLs for six SOCs for which there were previously no MCLs (alachlor, atrazine, carbofuran, dibromochloropropane, ethylene dibromide, and polychlorinated biphenyls (PCBs)), amended the MCLs for five SOCs formerly listed in section 141.12 (Section 611.310) (2,4-D, lindane, methoxychlor, toxaphene, and 2,4,5-TP (Silvex)), and added MCLs for three SOCs for which an MCL previously existed at Section 611.310 only as an additional state requirement (chlordan, heptachlor, and heptachlor epoxide). At subsection (b) the amendments set forth the best available treatment technology (BAT) (whether granular activated carbon or packed tower aeration) for each of the VOC and SOC contaminants (including the Phase I VOCs).

Since the proposal for public comment, the Board has changed the regulatory text. Significantly, the Board has revised the phraseology used to refer to the contaminants to use words closer to those used by USEPA. We now refer to "Phase I" and "Phase II" "volatile organic chemical contaminants" ("VOCs") and "synthetic organic chemical contaminants" ("SOCs") and have reworded portions of the preambles to each of subsections (a) through (c) accordingly. We have removed all references in subsection (a) to the July 30, 1992 effective date since that is now past. We have

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corrected the BAT at subsection (b) for toluene and listed those for seven SOCs omitted from the proposal (aldicarb, aldicarb sulfoxide, aldicarb sulfone, 2,4-D, heptachlor, heptachlor epoxide, and pentachlorophenol). This is even though those for four (aldicarb, aldicarb sulfoxide, aldicarb sulfone, and pentachlorophenol) are Phase IIB contaminants (the subject of docket R91-15). Listing the BAT without listing an MCL imposes no substantive requirement. At subsection (c) we have added entries for three SOCs (2,4-D, heptachlor, and heptachlor epoxide) previously omitted due to the existence of more stringent state MCLs. The reasons for this are explained in the preceding discussion, and the Board has modified the Board Note appended to subsection (c) to highlight the dual listings for these three contaminants. We believe that this comports with the Agency's comments in PC 10. In response to another Agency comment (PC 12), we deleted the decimal point from the MCLs for toluene and total xylenes because the decimal does not appear in the federal text. The Agency comment requested that the Board add a Board Note explaining the fact that if the Department of Public Health regulates non-CWSs by reference to the Board rules, "Agency" will mean "Public Health" as to those entities. Instead of doing this here, we did it in the definitions of "Agency" and "Public Health" in Section 611.101. "Public Health" appears in multiple locations in the rules. Finally, we update all references to the 1991 Code of Federal Regulations.

MCLs: Turbidity--Section 611.320

The Board adds amendments to Section 611.320 (corresponding with 40 CFR 141.13) in response to the USEPA Region V Phase I primacy comments (PC 14). USEPA stated that the Board neglected to state that the MCL requirements for filtered systems applies until June 29, 1993. We amend to add this statement. We also change the date of the Code of Federal Regulations.

General Monitoring Requirements: Unregulated Contaminants--Section 611.510

Section 611.510 derives from 40 CFR 141.40(n), added by USEPA at 56 Fed. Reg. 3592 (Jan. 30, 1992). USEPA is requiring suppliers to sample and analyze their waters for compounds for which there are no MCLs. CWSs and NTNCWSs must take four consecutive quarterly samples at each sampling point for each of the listed organic chemical contaminants (aldrin, benzo(a)pyrene, butachlor, carbaryl, dalaphon, di(2-ethylhexyl)adipate, di-(2-ethylhexyl)phthalate, dicamba, dinoseb, diquat, endothall, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, 3-hydroxycarbofuran, methomyl, metolachlor, metribuzin, oxamyl (vydate), picloram, propachlor, simazine, and 2,3,7,8-TCDD (dioxin)) and one sample at each sampling point for each of the listed inorganic chemical contaminants (antimony, beryllium, nickel, sulfate, thallium, and cyanide). Suppliers serving fewer

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than 150 service connections may send a letter to the state before January 1, 1994 stating that its system is available for sampling, rather than actually performing the sampling and analyses. The federal rule allows the use of waivers (SEPs) from the requirements: from the unregulated organic chemicals on the same basis as for SOCs (discussed below) and from the inorganic chemicals on the basis of data collected after January 1, 1990. The sampling points are each entry point and, for surface water and mixed systems only, at points in the distribution system that are representative of each source after treatment. USEPA allows confirmation sampling for questionable results. (USEPA also allows composite sampling, a provision not adopted by the Board.)

In the proposal for public comment, the Board proposed this provision in two segments: one pertaining to unregulated inorganic chemical contaminants (Section 611.631) and one pertaining to unregulated organic chemical contaminants (Section 611.658). We have chosen to instead follow the USEPA format and consolidate these into a single Section. We have therefore reverted to language that more closely follows the USEPA rule, with certain structural exceptions. We have taken identical language from federal paragraphs (n)(5) and (n)(6) (corresponding with subsection (e) and (f)) relating to alternative sampling points and consolidated it into subsection (i), adding the condition that the Agency must approve these alternative locations by SEP. We did not adopt a counterpart to federal paragraph (n)(9), which pertains to composite sampling. Since the proposal for public comment, we have moved the definitions that we proposed for Sections 611.631 and 611.658 to the general definitions, at Section 611.101. Finally, we have deleted the use of multiple Board Notes throughout the text in favor of two notes (following subsections (i) and (l)) as to the source of the Illinois rule and updated the references to the Code of Federal Regulations.

Microbiological Monitoring Requirements: Repeat Coliform Monitoring--Section 611.522

The Board amends Section 611.522 since the proposal for public comment in response to USEPA Phase I primacy comments. USEPA commented that the Phase rules limit the Agency's discretion to allow certain actions once it has determined that certain conditions exist. The foregoing discussion of the differences between what Illinois and federal administrative law require (at Section 611.250) support the Board's original approach. The Agency has the discretion to evaluate the circumstances and formulate its determination, but once it has determined that the circumstances set forth by rule exist, it has no discretion to arbitrarily and capriciously deny relief. In this instance, if the Agency determines that the supplier cannot repeat sample within 24 hours, it has no further authority to use some other basis for not allowing an extension. However, in

reviewing this Section in light of the USEPA comments, the Board noticed that subsection (a) does not have the customary language relating to the Agency determination. We add that language. Additionally, we replace "which" with "that" in the appropriate places in subsections (a) and (c) for grammatic correctness and update the reference to the Code of Federal Regulations in the Board Note.

Microbiological Monitoring Requirements: Invalidation of Total Coliform Samples--Section 611.523

The Board amends Section 611.523 since the proposal for public comment in response to USEPA Phase I primacy comments. Subsection (a)(3) states that the Agency "determines that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system". USEPA criticized the Illinois Phase I rule because it does not enunciate a standard for Agency determination. The federal rule uses "substantial grounds to believe" as a standard. Despite the difficulty of such language, we amend this sentence in significant part as follows: "determines that there are substantial grounds to believe that a total coliform-positive . . .". We use this opportunity to modify the references to the subsections within subsection (a) for clarity and to update the Board Note reference to the Code of Federal Regulations.

Microbiological Monitoring Requirements: Invalidation of Total Coliform Samples--Section 611.523

Section 611.526 derives from 40 CFR 141.21(f), which USEPA amended at 56 Fed. Reg. 642-43 (Jan. 30, 1991), 57 Fed. Reg. 1852 (Jan. 15, 1992), and 57 Fed. Reg. 24747 (June 10, 1992). The effect of the federal amendments is to amend three analytical methods for fecal coliforms (multiple tube fermentation (MTF) or P-A coliform test, membrane filter (MF) test, and the MMO-MUG test with hepes buffer techniques), to approve three methods for *E. coli* (EC medium supplemented with MUG, nutrient agar supplemented with MUG, and the minimal medium ONPG-MUG (MMO-MUG) test), and to approve an alternative test to the MMO-MUG test for *E. coli* (incubation and observation of total coliform-positive, MUG-negative MMO-MUG samples using EC medium supplemented with MUG). The Board amends Section 611.523 in accordance with the federal amendments.

Since the proposal for public comment, the Board makes a few changes. We add the federal amendments to 40 CFR 141.21(f) that occurred in January and June, 1992: adding the MMO-MUG test with hepes buffer for total coliforms (subsection (c)(4)), the minimal medium MMO-MUG test for *E. coli* (subsection (f)(3)), and the alternative MMO-MUG (supplemented EC medium) test for *E. coli* (subsection (g)) and amending the multiple tube fermentation (MTF) or P-A coliform test to delete the word "bottle"

(subsection (e)(1)). We repunctuate subsections (c)(1) through (c)(3) and (f)(2) for consistency and clarity. We delete the editions of methods at subsections (c)(1)(A), (c)(2)(A), (d), and (f)(2), instead relying on the incorporations by reference at Section 611.102 for this information. We substitute "that" for "which" as subsection (e)(2) and use the familiar scientific notation characters ("±", "°", and "μg") at subsections (e)(2), (f)(1), and (f)(2). Finally, the Board updates the reference to the Code of Federal Regulations and includes later references to the Federal Register in the Board Note.

Turbidity Monitoring--Section 611.560

The Board amends Section 611.560 since the proposal for public comment in response to the USEPA Phase I primacy comments. USEPA commented that the Phase rules limit the Agency's discretion to allow certain actions once it has determined that certain conditions exist. The foregoing discussion of the differences between what Illinois and federal administrative law require (at Section 611.250) would normally support the Board's original approach. The Agency has the discretion to evaluate the circumstances and formulate its determination, but once it has determined that the circumstances set forth by rule exist, it has no discretion to arbitrarily and capriciously deny relief. However, subsection (a)(1) involved here refers to the Department of Public Health, which actually regulates non-community systems in Illinois. In this instance, use of the word "may" in place of "shall" is appropriate. The Department does not derive its authority from the Environmental Protection Act. We amend that subsection accordingly. Additionally, we replace "which" with "that" in the appropriate places in subsection (d) for grammatic correctness, repunctuate the methods references and remove the edition (see the foregoing discussion) at subsections (a)(2)(A)(i) and (a)(2)(A)(ii), and update the reference to the Code of Federal Regulations in the Board Note.

Inorganic Monitoring: Violation of State MCL--Section 611.591

The Board has renumbered Section 611.591 from Section 611.602 in response to the federal Phase II amendments. Originally proposed without amendment (despite the erroneous underlining), since the proposal for public comment we make amendments. Consistent with the changed approach of calling the previous MCLs of Section 611.300 "old MCLs", we add "old" where necessary and add a reference to Section 611.300 in the preamble for further clarity. We substitute "that" for "which" in the preamble for grammatic correctness. In response to an Agency comment (PC 12), we added "that" to subsection (g).

Inorganic Monitoring: Frequency of State Monitoring--
Section 611.592

The Board has renumbered Section 611.592 from Section 611.603 in response to the federal Phase II amendments. Originally proposed without amendment (despite the erroneous underlining), since the proposal for public comment we make amendments. Consistent with the changed approach of calling the previous MCLs of Section 611.300 "old MCLs", we add "old" where necessary in the preamble and add a reference to Section 611.300 for further clarity. We substitute "that" for "which" in the preamble for grammatic correctness.

Inorganic Monitoring: Applicability--Section 611.600

Section 611.600 derives from the preamble of 40 CFR 141.23 and the listing of detection limits in paragraph (a)(4)(i). USEPA amended the preamble and added the detection limits at 56 Fed. Reg. 3579 (Jan. 30, 1991). All systems (CWSS and NTNCWSS) must use the methods of section 141.23 (35 Ill. Adm. Code 611.600 through 611.611) to determine compliance with the MCLs of section 141.62 (Section 611.301). (Additionally, the federal language requires that transient, non-CWSS must use these methods for the nitrate and nitrite MCLs of section 141.11 (Section 611.300) "as appropriate", but the federal amendments do not leave any MCLs for those species at that section. Nevertheless, the Board follows the federal language.) The detection limits set forth have a dual purpose: they indicate the level of necessary performance of analytical laboratories, and they give the threshold level where a contaminant is "detected". (This latter concept is vital for the purposes of monitoring VOC and SOC species (see below discussion), but not so for inorganic contaminants.)

Since the proposal for public comment, we change the regulatory language. We moved all of the definitions of proposed subsection (d) to Section 611.101 and renumbered proposed subsection (e) to subsection (d). We follow our scheme of referring to the MCLs of Section 611.300 (40 CFR 141.11) as "old MCLs" and those of Section 611.301 (40 CFR 141.62) as "revised MCLs" in the preamble. We correct the reference to Section 611.Appendix A in the table entry for barium. Finally, we update the reference in the Board Note to the 1991 Code of Federal Regulations.

Inorganic Monitoring: Frequency--Section 611.601

Section 611.601 derives from 40 CFR 141.23(a)(1) through (a)(3) and (a)(5), which USEPA amended at 56 Fed. Reg. 3579 (Jan. 30, 1991). (Former Section 611.601 in the Illinois rules now appears as Section 611.635; there is no Illinois counterpart to 40 CFR 141.23(a)(4), which relates to composite sampling.) The

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federal rule now requires each supplier to take at least one sample at each entry point and, in the case of surface water and mixed source suppliers, at points in the distribution system representative of each source after treatment. For multiple source systems, the sampling must occur when water representative of all sources is used. The federal rules allow for the use of alternative sampling points (in Illinois by SEP), composite sampling (not adopted in Illinois), and it sets forth the monitoring frequencies (cross-referenced to other provisions in the Illinois rules).

Since the proposal for public comment, the Board has changed various segments of Section 611.601. We moved all of the definitions of proposed subsections (a) to Section 611.101 and renumbered proposed subsections (b) through (e) to subsections (a) through (d). Subsection (a), which requires suppliers to take representative samples, corresponds with portions of federal paragraphs (a)(1) and (a)(2). We add the federal January 1, 1993 effective date. We divided subsection (a) into subsections and restored to subsection (a)(2) certain federal language relating to representative samples, rather than rely on the defined word "representative", and made a new subsection (a)(3) to contain certain language repeated at the end of both federal paragraphs. Subsection (b), which sets forth the required sampling points, derives from elements of federal paragraphs (a)(1) through (a)(3). The Board has "fleshed out" the formerly abbreviated language of subsection (b) to make it follow the federal language more closely, restoring the language of subsection (b)(3) in its entirety. We have added explanatory language in favor of a cross reference to the "dummy section", subsection (c). Finally, we substitute "following" for indicated in the preamble of subsection (d) and update the Code of Federal Regulations reference in the Board Note.

Inorganic Monitoring: Asbestos--Section 611.602

Section 611.602 derives from 40 CFR 141.23(b), which USEPA amended at 56 Fed. Reg. 3580 (Jan. 30, 1991). (Former Section 611.602 in the Illinois rules now appears as Section 611.591.) The federal rule now requires each supplier to sample and analyze for asbestos once in the first compliance period of each compliance cycle. It allows the state to waive this requirement if it determines that the system is not vulnerable to contamination from the raw water source or corrosion of asbestos-cement pipe. Waivers expire at the end of each compliance cycle. On the other hand, if the system is vulnerable only from the source water, the supplier must sample at the entry points or from representative points in the distribution system, as per the general rule. If the system is vulnerable to pipe corrosion, the supplier must sample at a consumer tap served by asbestos-cement pipe under circumstances when corrosion is most likely to occur. A supplier whose system exceeds the MCL for asbestos must begin

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quarterly monitoring. The state may reduce the monitoring frequency if it determines, based on consecutive quarterly samples (two for groundwater systems or four for surface water and mixed systems), that the supplier's water is reliably and consistently below the MCL. USEPA allows the use of existing data collected after January 1, 1990 if it is generally consistent with the monitoring requirements.

In adapting the federal rules to the Illinois scheme, the Board has made certain accommodations. Chief among the revisions, we have chosen to use the special exception permit (SEP) mechanism in place of waivers and other determinations that allow actions apart from the general rule. The Agency may grant a SEP that waives the monitoring requirement under the federally-enumerated circumstances. The Agency may by SEP reduce the quarterly monitoring frequency if it makes the "reliably and consistently" determination. It is by SEP that the Agency may "grandfather" existing data. Aside from this, the deviations from the federal text are format and non-substantive.

Since the proposal for public comment, the Board revises the rule text, mostly to follow the federal text more closely. We add the federal January 1, 1992 effective date to subsection (a)(1). We cite the factors for consideration in the end of subsection (b). We add "or both" to the preamble of subsection (c) for clarity and restore the federal "and the corrosive nature of the water" to subsection (c)(2). Similarly, we add a references to SEP and asbestos contamination to subsection (d) for clarity. We substitute "that" for "which" at subsection (h). By integrating the essence of proposed subsection (i)(3), we reword subsection (i)(1) for clarity and for consistency with other similar provisions that provide for Agency determinations based on its consideration of criteria set forth. To subsection (i)(2) we add "at a minimum" to restore an essential federal minimum data requirement. Proposed subsections (i)(4)(A) and (i)(4)(B), now integrated into a unitary subsection (i)(3), have no counterpart in the federal language of 40 CFR 141.23(b)(9). Therefore, adopting a trigger level other than the MCL for increased monitoring would have constituted an additional state requirement. We substantively change proposed subsection (i)(4), now renumbered to subsection (i)(3), so that it is the MCL and not some arbitrary contaminant level that trigger a return to quarterly monitoring. Partly in response to PC 7, we restore the federal "grandfather clause" for existing data from 40 CFR 141.23(b)(9), omitted from the proposal for public comment, to new subsection (j). Finally, we move the Board Note to the end of the Section and update the Code of Federal Regulations reference to 1991.

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Inorganic Monitoring: Barium, Cadmium, Chromium, Fluoride, Mercury, and Selenium--Section 611.603

Section 611.603 derives from 40 CFR 141.23(c), which USEPA amended at 56 Fed. Reg. 3580 (Jan. 30, 1991). (Former Section 611.603 in the Illinois rules now appears as Section 611.592.) The federal rule requires each supplier to monitor for barium, cadmium, chromium, fluoride, mercury, and selenium: groundwater suppliers once each compliance period and surface water and mixed suppliers once each year at each sampling point. It allows the state to waive this requirement as to any of these contaminants to a minimum of once each compliance cycle (nine years) for surface water and mixed systems (based on the results from at least three consecutive annual samples) or groundwater systems (based on three rounds of sampling) if it determines that all previous analytical results were below the MCL. The state must consider such factors as reported analytical results, the variability of the results, and other circumstances that affect contaminant levels (groundwater pumping rates, changes in system configuration and operation, and stream flows or characteristics) in determining the appropriate reduction in monitoring frequency. Waivers expire at the end of each compliance cycle. On the other hand, a supplier whose system exceeds the MCL for any of these inorganic chemical contaminants must begin quarterly monitoring. The state may reduce the monitoring frequency if it determines, based on consecutive quarterly samples (two for groundwater systems or four for surface water and mixed systems), that the supplier's water is reliably and consistently below the MCL. Although USEPA does not expressly allow the "grandfathering" of existing data, it parenthetically allows the use of existing data to obtain a waiver, so long as at least one sample was collected after January 1, 1990.

In adapting the federal rules to the Illinois scheme, the Board has made certain accommodations. Chief among the revisions, we have chosen to use the special exception permit (SEP) mechanism in place of waivers and other determinations that allow actions apart from the general rule. The Agency may grant a SEP that waives the monitoring requirement under the federally-enumerated circumstances. The Agency may by SEP reduce the quarterly monitoring frequency if it makes the "reliably and consistently" determination. Finally, the federal rules do not expressly mention mixed systems. The Board adds references to mixed systems together with references to surface water systems at subsections (a)(1) and (c), consistent with the USEPA's approach for other chemical contaminants. Aside from this, the deviations from the federal text are format and non-substantive.

Since the proposal for public comment, the Board revises the rule text, mostly to follow the federal text more closely. In the preamble, we refer to the Section 611.301 MCLs as "revised" MCLs. We add "samples" to the preamble of subsection (a) and add

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"at least" to both subsections (a)(1) and (a)(2) to clarify that this is a minimal requirement. We add "SEP" to the titles of subsections (b) through (f), "SEP that allows" to subsection (b), "grant a SEP that allows" to subsection (d), and "during the term of the SEP" to subsection (e) for clarity. We cite the factors for consideration in the end of subsections (c) and (d). We add language to the beginning of subsection (f)(2) that requires the Agency to state the basis for issuing the SEP. We restore the federal phrase "changes in" to subsection (e)(3) where it refers to stream flows or characteristics. By integrating the essence of proposed subsection (h)(3), we reword subsection (h)(1) for clarity and for consistency with other similar provisions that provide for Agency determinations based on its consideration of criteria set forth. Subsection (h)(1) is further corrected so that the federally-designated reduction to the original monitoring frequency replaces annual. Proposed subsections (h)(4)(A) and (h)(4)(B), now integrated into a unitary subsection (h)(3), have no counterpart in the federal language of 40 CFR 141.23(d)(2) and (d)(3). Therefore, adopting a trigger level other than the MCL for increased monitoring would have constituted an additional state requirement. We substantively change proposed subsection (h)(4) so that it is the MCL and not some arbitrary contaminant level chosen by the Agency that triggers a return to quarterly monitoring. Finally, we updated the Code of Federal Regulations reference to 1991 in all of the Board Notes.

Inorganic Monitoring: Nitrate--Section 611.604

Section 611.604 derives from 40 CFR 141.23(d), which USEPA amended at 56 Fed. Reg. 3580-81 (Jan. 30, 1991). The federal rule requires each Community water system (CWS) and non-transient, non-community water system (NTNCWS) supplier to monitor for nitrate: groundwater suppliers once each year and surface water and mixed suppliers once each quarter at each sampling point. (Transient non-CWSs must monitor annually.) Unlike for the other inorganic contaminants, the federal rule does not allow the state to waive this requirement based on the results from previous samples. A supplier whose system is equal to or exceeds one-half the MCL for nitrate must begin quarterly monitoring for at least a year following the quarter in which the exceedance occurred (four consecutive quarters for surface water systems and no express mention of mixed systems). The state may reduce the monitoring frequency to annually if it determines, based on the consecutive quarterly samples, that the supplier's water is reliably and consistently below the MCL, for groundwater systems, or one-half the MCL, for surface water systems (there is no express mention of mixed systems). A surface water system must return to quarterly monitoring if the nitrate level in any sample is equal to or greater than (actually written as less than, an obvious error) one-half the MCL. (There is no express mention of groundwater and mixed systems returning to quarterly

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monitoring.) Systems returning to annual monitoring must sample during the quarter that previously resulted in the highest nitrate level. USEPA does not allow the "grandfathering" of existing data for nitrate.

In adapting the federal rules to the Illinois scheme, the Board has made certain accommodations. We have significantly restructured the federal provision while retaining its substantive provisions intact. Chief among the substantive revisions, we have chosen to use the special exception permit (SEP) mechanism to allow a reduction in monitoring frequency. The Agency may by SEP reduce the quarterly monitoring frequency if it makes the "reliably and consistently" determination. We provide a violation of the MCL as the trigger at subsection (b)(2)(B) for groundwater systems to return to quarterly monitoring, something that USEPA did not expressly provide at paragraph (d)(2). Further, we correct the federal error in using "< 50 percent of the MCL" in paragraph (e)(2) when referring to a return to quarterly monitoring. We use "greater than or equal to" in subsection (c)(2). Aside from this, the deviations from the federal text are format and non-substantive.

Since the proposal for public comment, the Board revised the rule text, mostly to follow the federal text more closely. We have reverted to the federal language at subsection (a), eliminating differentiation between (or mention of) groundwater and surface water systems and following the base federal requirement of one sample for each sampling point during the first compliance period. Initiation of a state-designated monitoring regimen for nitrite would constitute an additional state requirement. We add the federal language relating subsection (b)(1) to GWS suppliers. We have deleted the former cross-reference at "dummy" subsection (b), replacing it with an explanation. We have designated proposed subsection (c)(1) as subsection (c)(1)(A) (adding a subsection heading), so we could add the federal provision, as subsection (c)(1)(B), that quarterly monitoring continues for a minimum of four consecutive quarters. Proposed subsections (c)(2) and (c)(2)(b) are integrated subsection (c)(2) and reworded consistent with other provisions by which the Agency makes determinations based on the facts presented to allow reduced monitoring. We substantively change proposed subsection (c)(2)(B) so that it is the MCL and not some arbitrary contaminant level chosen by the Agency that triggers a return to quarterly monitoring. Proposed subsections (c)(2)(C)(i) and (c)(2)(C)(ii), now integrated into a unitary subsection (c)(2)(B), have no direct counterpart in the federal language of 40 CFR 141.23(e)(3). Therefore, adopting a trigger level other than the MCL for increased monitoring would have constituted an additional state requirement. We add "samples" to the preamble of subsection (a) and add "at least" to both subsections (a)(1) and (a)(2) to clarify that this is a minimal requirement. Therefore, adopting a trigger level other than the

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MCL for increased monitoring would have constituted an additional state requirement. The former cross-reference in "dummy" subsection (d) is replaced with an explanation. In response to an Agency comment (PC 12), we corrected the reference to "subsection (g)" to "subsection (b)(1)" in subsection (b)(2)(B) and deleted "for any contaminant". Finally, we update the Code of Federal Regulations reference to 1991 in all of the Board Notes.

Inorganic Monitoring: Nitrite--Section 611.605

Section 611.605 derives from 40 CFR 141.23(e), which USEPA amended at 56 Fed. Reg. 3581 (Jan. 30, 1991). The federal rule requires each Community water system (CWS), non-transient, non-community water system (NTNCWS), and transient non-CWS supplier to take at least one sample during the first compliance period (January 1, 1993 through December 31, 1995) at each sampling point to monitor for nitrite. Like nitrate and unlike for the other inorganic contaminants, the federal rule does not allow the state to waive this requirement based on the results from previous samples. Like nitrate, a supplier whose system is equal to or exceeds one-half the MCL for nitrite must begin quarterly monitoring for at least a year following the quarter in which the exceedance occurred (four consecutive quarters). The state may reduce the monitoring frequency to "the frequency specified by the State" if the initial sample is less than one-half the MCL. However, after quarterly monitoring, the reduced frequency is annual if the state determines, based on the consecutive quarterly samples, that the supplier's water is reliably and consistently below one-half the MCL. (There is no differentiation between groundwater, surface water, and mixed systems.) Systems returning to annual monitoring must sample during the quarter that previously resulted in the highest nitrite level. USEPA does not allow the "grandfathering" of existing data for nitrite.

In adapting the federal rules to the Illinois scheme, the Board has made certain accommodations. We have significantly restructured the federal provision while retaining its substantive provisions intact. Chief among the substantive revisions, we have chosen to use the special exception permit (SEP) mechanism to allow a reduction in monitoring frequency. The Agency may by SEP reduce the quarterly monitoring frequency if it makes the "reliably and consistently" determination. Aside from this, the deviations from the federal text are format and non-substantive.

Since the proposal for public comment, the Board revises the rule text, mostly to follow the federal text more closely. In subsection (b)(1) the language is shifted to an affirmative statement of obligation. Similarly, subsections (b)(2) and (c)(1) are reworded consistent with other provisions by which the

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Agency makes determinations based on the facts presented to allow reduced monitoring. We substantively change proposed subsection (b)(2)(C) so that it is the MCL and not some arbitrary contaminant level chosen by the Agency that triggers a return to quarterly monitoring. Proposed subsections (b)(2)(C)(i) and (b)(2)(C)(ii), now integrated into a unitary subsection (b)(2)(C), have no counterpart in the federal language of 40 CFR 141.23(c)(8). Therefore, adopting a trigger level other than the MCL for increased monitoring would have constituted an additional state requirement. Although we correct this Section in response to PC 10, the Board cannot adopt the full language suggested by that comment for this reason. We rephrase subsection (c)(2)(A) to "A request for a SEP . . ." and add "the results from . . ." for greater clarity. At subsection (d) we substitute "that" for "which", add the parenthetical plural to "quarter(s)" (in response to PC 7 and PC 10), and add "previously". Finally, we updated the Code of Federal Regulations reference to 1991 in all of the Board Notes.

Inorganic Monitoring: Confirmation Samples--Section 611.606

Section 611.606 derives from 40 CFR 141.23(f), which USEPA amended at 56 Fed. Reg. 3581 (Jan. 30, 1991). The federal rule allows the state to require a second sample at the same point if the analytical results reveal that a sample exceeds the MCL (as soon after the original as possible for asbestos, barium, cadmium, chromium, fluoride, mercury, or selenium, but no longer than two weeks after the original sample, or within 24 hours of notice of the results for nitrate or nitrite, completing the analysis within two weeks). If the supplier cannot comply with the reanalysis time limit for nitrate and nitrite, it must immediately give its consumers the required public health notices. The average of the results of the original sample and the confirmation sample are used to determine compliance. USEPA allows states the discretion to delete the results of obvious sampling errors.

The Board proposed this provision with only minimal deviation from the federal text. Since the proposal for public comment, the Board has revised parenthetical language that appears at the end of subsection (a) to more closely follow the federal text. In response to PC 7 and PC 10, we add "or confirmation" to subsection (c), in order to provide for suspect confirmation samples. We further amended reference to the Code of Federal Regulations to the 1991 edition in the Board Note.

Inorganic Monitoring: More Frequent Monitoring--Section 611.607

Section 611.607 derives from 40 CFR 141.23(g), which USEPA added at 56 Fed. Reg. 3581 (Jan. 30, 1991). The federal rule allows the state to require more frequent monitoring and confirmation sampling of "positive or negative results" at the

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discretion of the state. The Board did not propose such a provision. Rather, we merely proposed renumbering former Section 611.607 to Section 611.603, which we now do. Since the proposal for public comment we add an explanatory statement.

Inorganic Monitoring: Additional Optional Monitoring--
Section 611.608

Section 611.608 derives from 40 CFR 141.23(h), which USEPA added at 56 Fed. Reg. 3581 (Jan. 30, 1991). The Federal rule allows suppliers to engage in additional optional monitoring without prior approval. The Board adopts this provision, only changing the date of the Code of Federal Regulations date in the Board Note.

Inorganic Monitoring: Averaging--Section 611.609

Section 611.609 derives from 40 CFR 141.23(i), which USEPA added at 56 Fed. Reg. 3581 (Jan. 30, 1991) and amended at 56 Fed. Reg. 30275-76 (July 1, 1991). The federal rule provides how compliance is determined. Compliance is determined through the results from samples from each sampling point (severally). For asbestos, barium, cadmium, chromium, fluoride, mercury, and selenium there are two methods for determining compliance. If the monitoring is more frequent than annually, compliance is determined from a one-year running average of samples from each individual point, with one exception: if any single sample would cause the running average to exceed the MCL, the system is out of compliance immediately. (Samples below the method detection limit are counted as zero for the purposes of averaging.) If the system is monitoring annually or less frequently, compliance is determined by the results from the individual samples from each sampling point, unless a confirmation sample is used (in which case the average of the two samples is used). For nitrate and nitrite the results from the individual samples are used to determine compliance, without regard to sampling frequency, but use of a confirmation sample is required (and the average of the two samples is used) if the result exceeds the MCL. The federal rule provides that a supplier need only make public notice of the violation to the portion of the system affected if the distribution system is separable form all other parts and there are no interconnections.

The Board proposed Section 611.609 with only minor deviation from the federal text. Since the proposal, we make a small number of minor revisions for clarity and to more nearly track the federal provision. "Suppliers which are monitoring" is now rendered "suppliers that monitor" in subsections (a) and (b). We restore the language in subsection (b) to "method detection limit." The "method detection limit" is determined by USEPA and set forth in Section 611.600. This is different from the "method detection limit", which is determined statistically based on

analytical results pursuant to 40 CFR 141.36, appendix B. We add an explanatory note. USEPA made this amendment at 56 Fed. Reg. 30274. To subsection (c) we follow the federal text to add a statement that Section 611.606 requires confirmation sampling. We reword subsection (d) by restoring the federal condition relating to interconnections and the language "persons served by that". We further reword subsection (d) by substituting the permissive "may" in place of "shall", so that it is no longer a requirement but an exception from a general rule, like it is in the federal rule, adding clarifying phrases "that is out of compliance" and "of the distribution system", and substituting "required by" for "pursuant to" in relation to Subpart T. Finally, we update the reference to the Code of Federal Regulations at the end.

Inorganic Monitoring: Monitoring Times--Section 611.610

Section 611.610 derives from 40 CFR 141.23(j), which USEPA added at 56 Fed. Reg. 3581 (Jan. 30, 1991). The federal rule requires suppliers to monitor during the compliance periods at the times designated by the state. The purpose is apparently to avoid overtaxing state resources by having too many suppliers monitor at the same time. The Board's proposal for public comment included this provision with only minor deviation from the federal text for clarity. The only change since the proposal for public comment is updating the Board Note reference to the Code of Federal Regulations.

Inorganic Monitoring: Analytical Procedures--Section 611.611

Section 611.611 derives from 40 CFR 141.23(k), which USEPA added at 56 Fed. Reg. 3581-83 (Jan. 30, 1991) and amended at 56 Fed. Reg. 30275-76 (July 1, 1991). (Previously, 40 CFR 141.23(f) set forth the analytical methods.) The federal rule sets forth the analytical methods a supplier must use in sampling for the inorganic chemical contaminants. The Board has already discussed the details of the federal and state changes in analytical methodology in a foregoing discussion preceding the incorporations by reference. We will not repeat that overview of the federal action involved and the Board's approach on a method-by-method basis. Rather, we now focus on the changes in this Section since the proposal for public comment.

As previously mentioned, all editions of methods appear in the incorporations by reference at Section 611.102. The Section is significantly repunctuated for consistency. We add to the preamble to subsections (a) and (d) a reference to the Sections to which these methods apply (Sections 611.600 through 611.604). For all references to Inductively Coupled Plasma Method 200.7 we add reference to supplementation by Appendix 200.7A (subsections (a)(2)(C), (a)(3)(B), and (a)(4)(B)). Following the USEPA amendments at 56 Fed. Reg. 30275, we update the ASTM method

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numbers (at subsections (a)(5)(A)(ii), (a)(6)(A)(ii), (a)(6)(C)(ii), (a)(7)(B)(ii), (a)(7)(C)(ii), (a)(8)(B)(ii), (b)(2)(B)(ii), and (b)(3)(B)(ii)) and the USGS method number (at subsection (b)(2)(D)). We add the methods previously omitted for selenium (ASTM D3859-88A for gaseous hydride atomic absorption) and arsenic (Inductively Coupled Plasma method 200.7 as supplemented). We correct the Standard Methods for arsenic to those cited by USEPA (subsection (b)(2)(C)). We add a Board Note to subsection (c)(1)(C) to indicate that the Standard Methods cited are a correction to an obvious USEPA error. We eliminate duplicative language from the references in sample collection to the use of hard or soft glass or plastic (at subsections (d)(1)(B), (d)(2)(B), (d)(3)(B), (d)(4)(B), (d)(5)(B), (d)(6)(B), (d)(7)(B), (d)(8)(B), (d)(9)(B), and (d)(10)(B)). We use the technical symbols "°" instead of "degrees" (at subsections (d)(1)(A), (d)(7)(A), and (d)(9)(A)) and "+" instead of "+/-" (subsections (e)(2)(B) through (e)(2)(I)). We change "which" to "that" in subsection (e)(1) and delete "which are" from the preamble of subsection (e)(2). We implement the federal correction at 56 Fed. Reg. 30275 to use a maximum mercury sample shelf-life of 28 days whether stored in plastic or glass (at subsection (d)(6)(C)). Finally, we correct the date of the Code of Federal Regulations in the final Board Note.

Inorganic Monitoring: Analytical Procedures for Old MCLs--
Section 611.612

Section 611.612 derives from 40 CFR 141.23(l) through (q), which USEPA added at 56 Fed. Reg. 30275-76 (July 1, 1991). (Previously, 40 CFR 141.23(f) set forth the analytical methods.) Since subsections (a) through (e) are updated versions of those formerly codified at Section 611.601, we chose to renumber that Section and amend it to account for the federal updates. Subsection (f), the actual analytical methods, was formerly codified as Section 611.606, even though it appears here as added. The federal rule sets forth the analytical methods a supplier must use in sampling for the inorganic chemical contaminants listed at Section 611.300 (the old MCLs; corresponding with 40 CFR 141.11). The Board has already discussed the details of the federal and state changes in analytical methodology in a foregoing discussion preceding the incorporations by reference. We will not repeat that overview of the federal action involved and the Board's approach on a method-by-method basis. Rather, we now focus on the deviations from the federal text supporting this Section.

The amendments to the language of former Section 611.601 primarily focus on assembling a Section that is substantively identical-in-substance and structurally similar to 40 CFR 141.23(l) through (q), with the addition of provisions for the additional state requirements. This has required the deletion of the existing language for contaminants whose MCLs have already

expired (cadmium, chromium, mercury, nitrate, and selenium, expired on July 30, 1992), a "grandfather" clause long since obsolete (subsection (d)), and an authorization for the state to determine compliance and commence enforcement action, which is redundant as a matter of Illinois law (subsection (a)(4)). The Board has maintained a structure that is linear to the federal structure except as to the analytical methods of subsection (f) (corresponding with federal subsection (g)), even though this has created a number of "dummy" subsections (subsections (a)(3), (a)(4), (d), and (e)). Rather than reiterating the methods for fluoride at subsection (f)(4), since fluoride appears in Section 611.300 with an "old MCL" and Section 611.301 with a "revised MCL" we cross-reference to the methods of Section 611.611(c). All of the Board Notes of former Section 611.601 now appear consolidated in the final Board Note. That Board Note explains why the Board deleted several analytical methods that appear in the federal rule (because the MCLs expired).

Finally, in the course of updating the analytical methods for the federal analytical methods, we update the state methods for copper, cyanide, iron, manganese, and zinc. We use the 16th edition of Standard Methods, the 1983 edition of Inorganic Methods, and the most recent version of ASTM in our present possession (1985). We supplement the Inductively Coupled Plasma Method with Appendix 200.7A

Inorganic Monitoring: Special Monitoring for Sodium--
Section 611.630

Section 611.630 derives from 40 CFR 141.41. USEPA did not amend this provision in the present update period. Rather, the amendments of 56 Fed. Reg. 3581-83 (Jan. 30, 1991) and 56 Fed. Reg. 30275-76 (July 1, 1991) have prompted the Board to renumber this provision from Section 611.610. We proposed using this opportunity to amend "special exception permit" in subsection (b) to the abbreviation "SEP" used elsewhere throughout the amended rules. Since the proposal for public comment, we further amend subsection (d)(1) to delete the edition of Standard Methods, in favor of using Section 611.102 for that purpose; to add the full ASTM method number to subsection (d)(3); and to update the version of the Code of Federal Regulations in the Board Note.

Inorganic Monitoring: Special Monitoring for Inorganic
Contaminants--Section 611.631

The Board originally proposed splitting 40 CFR 141.32 into two Sections: Section 611.631, for unregulated inorganic contaminants, and Section 611.658, for unregulated organic contaminants. Since the proposal for public comment, we have instead decided to keep with the federal format and retain both in a single location. We now codify both as Section 611.510. However, for the convenience of the regulated community, we place

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a cross-reference and a brief statement at this Section to alert the reader to those requirements.

Organic Monitoring: Definitions--Section 611.640

Section 611.640 does not derive from any particular federal section. Rather, it derives from usages of 40 CFR 141.24 and others developed by the Board in response to the federal amendments. The federal addition of the Phase II VOCs and the SOCs left the Board with the problem of designating these chemical contaminants in groups. As to the new contaminants of 40 CFR 141.61 (corresponding with Section 611.311), USEPA used the means of numbering the tabulated contaminants and referring to them by section, subsection, and paragraph numbers. The Board has chosen instead to refer to them in the manner actually used by USEPA and the regulated community in discussion of them. That makes these "Phase I" and "Phase II" "volatile organic chemical contaminants" ("VOCs") and "synthetic organic chemical contaminants" ("SOCs") (without regard to whether they are indeed "synthetic" or "volatile"). As to the MCLs for organic contaminants remaining at 40 CFR 141.12 (endrin, including those for which there is an additional state requirement: aldrin, 2,4-D, DDT, dieldrin, heptachlor, and heptachlor epoxide, but excluding THMs; corresponding with Section 611.310), the Board has chosen to refer to them as "old MCLs" for the sake of convenience.

We have significantly revised this Section since the proposal for public comment. What we proposed at "eight organic contaminants" is now defined as "Phase I VOCs". What was "eleven pesticides and PCBs" is now "Phase II SOCs". What we proposed as "ten organic contaminants" is now "Phase II VOCs". We also moved several definitions used elsewhere into the general definitions of Section 611.101: "GWS", "mixed system", "reliably and consistently", "revised MCL", and "SWS". (We instituted a general definition of "old MCL" but have chosen to retain a more specific local definition at this Section.) Additionally, the Board has reworded the definition of "old MCL" for clarity and added 2,4-D, heptachlor, and heptachlor epoxide to the definition of "Phase II SOC" and added Board Notes to the definitions of "old MCL" and "Phase II SOC" explaining the dual status of these contaminants. We have corrected the former "derived from" references in the Board Notes because, as explained above, there is no single source for these definitions. However, we add references to the locations in the federal regulations where USEPA sets forth the contaminants of each type. We believe Agency comment PC 10 generally supports this approach.

Organic Monitoring: Old MCLs--Section 611.641

Section 611.641 derives from 40 CFR 141.24(a) through (d), which USEPA amended at 56 Fed. Reg. 3583-85 (Jan. 30, 1991). The

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federal rule sets forth the requirements for analyzing the "old MCLs" of 40 CFR 141.12(a) (endrin, corresponding with Section 611.310). In proposing this Section for public comment, the Board chose to continue to use it for monitoring the additional state requirements of Section 611.310 (aldrin, 2,4-D, DDT, dieldrin, heptachlor, and heptachlor epoxide). The proposed amendments involved changing the references to "Section 611.310(a) and (b)" to "the old MCLs" (subsections (a) and (b)) and rendering "MCL" as "old MCL" (in subsection (c)). We further substituted "SEP" for "special exception permit", keeping with our trend to use the abbreviation throughout the text of the rules. Since the proposal for public comment, we only add "of" to subsection (a), restored "contaminant" to subsection (b), corrected the reference in subsection (c) to "subsection (a)", and updated the reference in the Board Note to the Code of Federal Regulations.

Organic Monitoring: Analytical Methods for Old MCLs--Section 611.645

Section 611.645 derives from 40 CFR 141.24(e), which USEPA amended at 56 Fed. Reg. 3583-85 (Jan. 30, 1991) and 56 Fed. Reg. 30277 (July 1, 1991). The federal rule sets forth the analytical methods for analyzing the "old MCLs" of 40 CFR 141.12(a) (endrin, corresponding with Section 611.310). In proposing this Section for public comment, the Board chose to reference Section 611.648(l), the methods for Phase II SOCs. Since the proposal for public comment we have deleted subsection (a) that limited the reference to Section 611.310 and updated the Code of Federal Regulations reference in the Board Note. (We also found it necessary to add "endrin" in Section 611.648(l) under the same methods as set forth in 40 CFR 141.24(e) in order to complete this federal requirement. As to the additional state requirements old MCLs, 2,4-D, Heptachlor, and heptachlor epoxide are already listed in that Section in response to the federal amendments. As to DDT and dieldrin, the Board has chosen to add them to methods 505 and 508 because both are in the class of chlorinated pesticides included by those methods and dieldrin is a stereoisomer of endrin.)

Organic Monitoring: VOCs--Section 611.646

Section 611.646 derives from 40 CFR 141.24(f), which USEPA amended at 56 Fed. Reg. 3583-85 (Jan. 30, 1991) and 56 Fed. Reg. 30277-79 (July 1, 1991). The federal rule sets forth the monitoring and analytical requirements for the volatile organic chemical contaminants (VOCs). Suppliers must apply this provision for demonstrating compliance with the MCLs of 40 CFR 141.61(a) (corresponding with 35 Ill. Adm. Code 611.311(a)) beginning January 1, 1993. Groundwater suppliers must take one sample at each entry point that is representative of each well after treatment. Surface water and mixed source suppliers must

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sample at each entry point or at points in the distribution system that are representative of each source after treatment. If the system uses multiple sources, the sampling must occur at a time of normal operating procedure. The sampling is quarterly for four consecutive quarters for all of the VOCs but vinyl chloride for community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs). If the initial monitoring is completed by December 31, 1992 and the system did not detect any VOC contaminant, the (GWS or SWS) supplier can go to annual monitoring beginning January 1, 1993. After a minimum of three years of annual monitoring and no detection of a VOC contaminant, a GWS (not SWS) supplier can shift to sampling once per compliance period (three years).

After completion of the initial monitoring and having not detected any VOC contaminant, a GWS or SWS supplier may apply to the state for a waiver from certain of the monitoring requirements. Such waivers granted to a GWS last a maximum of six years and to a SWS they last a maximum of one compliance period. USEPA set forth factors for state consideration of a waiver request, including consideration of known previous use of the contaminant in the watershed or zone of influence of a well, previous monitoring results, the proximity to a potential source of contamination, the environmental persistence and transport of the contaminant, the number of persons served by the system and its proximity to a larger system, and how well the source is protected from contamination. The GWS supplier granted such a waiver must take one sample during the term of the waiver for the purposes of the state reconfirming the waiver. (For a SWS supplier, this reconfirmation is once during each compliance period, and for a GWS it is once during the maximum six-year term of the waiver.)

If a supplier detects any VOC contaminant, excluding vinyl chloride, it must begin monitoring quarterly at each sampling point where it detected the VOC. However, the state may decrease the monitoring frequency to annual during the quarter(s) that previously showed the highest contaminant level if (based on a minimum of two consecutive quarterly samples for a GWS or four for a SWS) the state determines that the VOC level is reliably and consistently below the MCL. If a minimum of three consecutive annual samples demonstrate that the level of VOC is reliably and consistently below the MCL, the state may reduce the monitoring further by granting a waiver as described in the preceding paragraph.

Vinyl chloride is treated differently for monitoring purposes. The initial round of four quarterly samples applies to the VOCs excluding vinyl chloride. If a GWS supplier detects one or more of seven other two-carbon chlorinated VOCs (1,2-dichloroethane, 1,1-dichloroethylene, *cis*-1,2-dichloroethylene, *trans*-1,2-dichloroethylene, tetrachloroethylene, 1,1,1-trichloro-

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ethylene, or trichloroethylene) it must sample quarterly for vinyl chloride at the sampling point(s) where it detected the two-carbon VOC. If the results of the first sample do not detect vinyl chloride, the state may allow a reduction to one sample in each compliance period.

If a supplier violates the MCL for any VOC, it must begin sampling quarterly at the sampling point(s) that violated the MCL. After a minimum of four consecutive quarterly samples that show that the VOC level is reliably and consistently below the MCL, the state may allow annual monitoring during the quarter that previously indicated the highest level of the VOC contaminant.

The federal regulatory scheme for monitoring VOCs has a few other features. The states may require a supplier to initiate confirmation sampling for positive or negative results. USEPA allows the states to use composite sampling for up to five sampling points. Compliance is determined based on the levels at each sampling point, based on a running average of the last year's samples for systems sampling more frequently than annually (with any single sample that would cause the average to exceed the MCL demonstrating immediate non-compliance) and based on individual samples and the MCL for systems sampling annually or less frequently. As with the inorganic chemical contaminants, a system that is separable and without interconnections must only submit public notice of a violation to those persons served by portions of the distribution system affected. USEPA allows the states to increase the monitoring frequency in order to detect variations in the distribution system, and USEPA requires suppliers to monitor at a time specified by the state. States may allow the use of existing data collected after January 1, 1988 ("grandfather") if the data are consistent with the requirements of this section, and those that did not detect any VOC need only begin annual sampling on January 1, 1993.

USEPA sets forth the analytical methods laboratories must use to test for the VOCs. It approved three gas chromatographic (GC) methods from "Organic Methods" (502.1, 502.2, and 503.1) and two gas chromatographic-mass spectroscopic (GC-MS) methods (524.1 and 524.2). To obtain USEPA approval, a laboratory must analyze performance samples provided by USEPA or the state and achieve results within ± 20 percent of the actual contaminant content when that content is greater than 0.010 mg/l or within ± 40 percent if the level is less than 0.010 mg/l, and the laboratory must achieve a method detection limit of 0.0005 mg/l as determined using 40 CFR 136, appendix B. Laboratory certification is separate but similar for vinyl chloride. The laboratory must obtain certification for all of the other VOCs, then achieve a result within ± 40 percent of the actual level of vinyl chloride in the sample and a method detection limit of 0.0005 mg/l for vinyl chloride.

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The Board proposed the federal rules with deviations from the federal text. The first deviations are definitions. We proposed subsection (a) as a definitions provision. Those definitions do not derive from any particular provision of the federal rules. Rather, as with many of the definitions involved in this proceeding, these definitions derive from USEPA usage. Despite the lack of federal definitions, we feel that express definition of such fundamental terms is important. As we adopted this Section, subsection (a) is still a definitions provision, but we have retained only those definitions that take on meanings peculiar to this Section. Therefore, the definitions of "distribution system", "entry point", "GWS", "mixed system", "representative", "source", "SWS", and "treatment" now appear in Section 611.102. We retain the definition of "detection" as a definition of "detect" or "detection", with modification, and we add a definitions of "method detection limit", an independent concept.

In defining "detection" as 0.0005 mg/l, the Board followed confusing federal regulatory language. For VOCs, USEPA uses 0.0005 mg/l as the minimum "method detection limit" involved. Pursuant to subsection (t) (corresponding with 40 CFR 141.24(f)(20)), the "method detection limit" is derived by statistical analysis of analytical results pursuant to 40 CFR 136, appendix B. Federal paragraph (f)(20) provides in significant part as follows:

Each laboratory must determine the method detection limit (MDL) . . . , at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/l. This concentration is the detection concentration for purposes of this section.

What USEPA means by "detection concentration" is capable of more than one interpretation, depending on what "this" refers to, the MDL of the first sentence or the 0.0005 mg/l of the second sentence. Use of the phrase "detection concentration" does not add clarity because this term is used nowhere else in the section, and USEPA could intend "detection limit". However, federal paragraph (f)(7) parenthetically states that "[f]or the purposes of this section, detection is defined as ≥ 0.0005 mg/l," and paragraph (f)(11) states, "[i]f a contaminant . . . is detected at a level exceeding 0.0005 mg/l in any sample" See also 40 CFR 141.24(f)(14)(i). Therefore, apparently USEPA intends that 0.0005 mg/l is the "detection limit" for the purposes of increased monitoring. (Further, for all other contaminants the "detection limit" is the number that defines the minimally-acceptable "method detection limit".) We noted the ambiguity in the Board Note accompanying the definitions in subsection (a).

A change was made to the phraseology used in this Section.

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Previously, we referred to the Phase I VOCs as the "eight organic compounds" and the Phase II VOCs as the "ten organic compounds". As explained in an earlier segment of this discussion, we found it easier and less potentially confusing to refer to these as "Phase I VOCs" and "Phase II VOCs". This substitution occurred throughout the Section.

The preamble to federal subsection (f) and paragraphs (f)(1) and (f)(2) set forth the basic sampling requirements for groundwater source suppliers and surface water and mixed source suppliers, respectively. The Board codified these as subsections (b) and (c)(1) through (c)(3). Federal paragraph (f)(3) is a provision for multiple source suppliers, which we codified as subsection (c)(4). We followed the federal provisions within these subsections, and modified the structure and language to make it follow the USEPA rule more closely and to account for USEPA amendments of July 1, 1991. We phrased the basic sampling requirements affirmatively in subsections (c)(1) and (c)(2), rather than stating the location of the sampling points. To these two subsections we also restored federal language relating to the fact that samples must be "representative of each well after treatment" or "representative of each source". We similarly added "after treatment" to the provisions for entry point sampling locations. We reworded the subsection (c)(3) requirement for taking samples from the same point unless the Agency has granted a SEP to allow another point so it appears as a requirement for the supplier (as it appears in the federal language), rather than a requirement for the Agency, like it appeared in the proposal for public comment. Further removed from subsection (c)(3) was certain language that USEPA deleted relating to consumer tap sampling. Subsection (c)(4) now relates the requirement (appearing at the ends of federal paragraphs (f)(1) and (f)(2)) that relates the requirement for multiple source systems to sample at times when water from all sources is used. We read general support in PC 10 to this changed approach in subsection (c).

Subsections (e) through (j) (corresponding with federal paragraphs (f)(5) through (f)(10)) relate the provisions for reduced monitoring frequencies. These have been significantly reworded since the proposal for public comment so they follow the federal language more closely. Subsection (e), which applies to all suppliers, is now captioned "reduction to annual monitoring frequency". Subsection (f), which applies only to GWS suppliers, now appears without subsections, and it is captioned "GWS reduction to triennial monitoring frequency". We added "three-year" as descriptive of compliance period to subsection (f) for clarity. We integrated proposed subsection (g) and its subsections into a single statement, like it appears in the USEPA rules. The Board's trend has been to reword similar federal provisions in terms like "the Agency shall grant a SEP . . ." in this rulemaking. We relied on Section 611.110 to make it clear

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that the supplier can request a SEP. We did not reword this provision to "the Agency shall . . ." because there is a significant precondition to each request and subsection (h) (corresponding with 40 CFR 141.24(f)(8)) sets forth factors for Agency consideration. A Board Note indicates that the parallel provisions that relate to the term of a SEP ("waiver" in the federal) appear in subsections (i) and (j), and "detect" is defined in subsection (a).

The Board further changed the language of subsections (h) through (j) since the proposal for public comment. We moved the federal factors for consideration in granting a SEP ("waiver") from subsection (h) to Section 611.110(e). We have already discussed with relation to Section 611.110 why we have done so. We also added to subsection (h) a reference to subsections (e) and (f) to which this provision applies. Federal paragraph (f)(7) is specific to GWSSs, and paragraph (f)(10) to SWSSs. We incorporated the elements common to both into subsection (g) and placed those specific to GWSSs in subsection (i). In response to an Agency comment (PC 12), we substituted "re-apply" for "filing a new application" in subsection (i). Subsection (j) applies specifically to SWSSs and mixed systems. We changed the segment of subsection (i) relating to reconfirmation of the vulnerability assessment to language closer to that used by USEPA. We corrected the language of subsection (i)(1) to make it clear that the verification of the vulnerability assessment does not grant a SEP ("waiver") for two more compliance periods. Rather, the reconfirmation can only grant a SEP for the second compliance period up to the maximum term of six years. We added a Board Note that explicitly states that subsection (i) does not apply to surface water and mixed source systems. We revised subsection (j), which relates to a SEP granted to SWSSs and mixed systems. (USEPA did not expressly include mixed systems, but the Board has followed the general federal practice of grouping them together with surface water systems and done so here. PC 10 supports this approach. We added an explanation to the Board Note.)

Unlike all other federal provisions that the state may specify a monitoring frequency in granting a SEP, the Board believes that retaining the authority for the Agency to specify a monitoring frequency is important for subsection (j)(2) (proposed as subsection (j)(1)). We base this conclusion on our reading of the federal rules. Initially, USEPA does not specify an explicit reduced monitoring frequency for VOCs in parallel paragraph (f)(10) as it does for other contaminants. Second, VOCs are the only contaminants for which reconfirmation is required once the SEP ("waiver") has been granted. Third, USEPA seems to place a greater emphasis on VOCs than on the other contaminants. Finally, the VOC content of the source water can vary widely for surface waters, and the Agency is in the best position to determine the vulnerability of a source water to contamination. For the Board to conclude that allowing the Agency to specify a

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monitoring frequency is an "additional state requirement" would likely force a USEPA finding that the Illinois regulations are "less stringent" than the federal rules. It would also result in the Agency granting fewer of these SEPs from the burdensome monitoring requirements of this Section. We believe that requiring the Agency to base its determination on its vulnerability assessment and the provisions of the Environmental Protection Act relating to permit appeals adequately protect against any arbitrary Agency selection of frequencies.

Subsections (k) and (l) (corresponding with 40 CFR 141.24(f)(11) and (f)(12)) are parallel provisions that relate the actions necessary if a supplier detects a VOC. Subsection (k) relates to increased monitoring if a VOC is "detected", and subsection (l) if the level exceeds the MCL. In both cases, a SEP allowing a decreased monitoring frequency is possible if the Agency determines that the VOC level is "reliably and consistently" below the MCL. Both contemplate a return to quarterly monitoring if this proves not true. Since the proposal for public comment, we used "that" for specificity as to the contaminant and the sampling point in subsections (k)(1) and (l)(1), the provisions that relate the federal requirements for quarterly monitoring. In subsections (k)(2) and (l)(2) we related the federal provision for an Agency grant of a SEP ("waiver") if the contaminant level is reliably and consistently below the MCL. We reworded subsections (k)(2)(A) and (k)(2)(C) and (l)(2)(A) and (l)(2)(C), consistent with similar provisions for other contaminants, so that the Agency must grant the SEP if it makes a "reliably and consistently" determination, and the Agency cannot specify an arbitrary level of contaminant to trigger quarterly monitoring once again. In specifying a "trigger level" for renewed quarterly monitoring for subsection (k)(2)(C), however, the Board used the MCL as the threshold that prompts a return to quarterly monitoring, just like we did for subsection (l)(2)(C).

For all other similar provisions, it is either the MCL (or some fraction of the MCL, as in the case of nitrate and nitrite) that triggers the increased monitoring (even for subsection (l), relating to VOCs). This makes it easy in those instances to use the "trigger level" as the level that prompts a return to quarterly monitoring. In the case of increased VOC monitoring frequency prompted by a "detection", it appears that USEPA intended to promptly assure that increased monitoring would detect any upward trend in the concentration of a group of contaminants of particular interest. As to the VOCs, it is apparent that USEPA intended that if no such trend asserted itself decreased monitoring could result. However, USEPA also intended that increased monitoring would again result if the VOC level no longer appeared "reliably and consistently" below the MCL--i.e., by this provision USEPA intended that the system must increase its monitoring frequency if there is an upward trend in

contaminant level. For federal paragraph (f)(12) (corresponding with subsection (l)), USEPA uses the MCL itself as the trigger for increased monitoring. Therefore, it appears that any level of VOC contaminant reliably and consistently below the MCL is a situation wherein reduced monitoring is acceptable. For these reasons, the Board used the MCL as the level that triggers a return to quarterly monitoring for the purposes of subsection (k). If subsequent comments make it appear that there is a better alternative, the Board can revisit this issue in a later docket.

In response to PC 7 and PC 10 we revised subsections (k)(3) and (l)(2)(D) so that the monitoring occurs in the "quarter(s)" that previously resulted in the highest VOC level. This contemplates problems with multiple peak VOC levels occurring in more than one quarter. Subsection (k)(4) (which does not have a counterpart in subsection (l)) allows a relaxation of the monitoring frequency to that allowed by an Agency vulnerability assessment under subsection (g), allowing as little as one sample in a six year period. We reworded this for clarity since the proposal for public comment.

USEPA added paragraph (f)(11)(v) (corresponding with subsection (k)(5)) on July 1, 1991. This applies when a supplier must monitor directly for vinyl chloride. A corresponding amendment did not appear in the proposal for public comment. Basically, as described in the foregoing discussion, the supplier must test quarterly for vinyl chloride if it detects any of seven "surrogate" VOCs. The Agency may issue a SEP obviating reduce the frequency of testing for vinyl chloride to once every three years if none is detected in the first round of sampling.

Subsections (m), (n), (o), (r), and (s) concern the handling of the data obtained from monitoring, and subsection (u) requires suppliers to monitor at times specified by the Agency. Subsection (m) (corresponding with federal paragraph (f)(13)) allows the Agency to require confirmation sampling for any results it finds doubtful. Since the proposal for public comment, we chose the SEP mechanism for the Agency to require confirmation samples. As proposed, the supplier must detect a VOC in a sample before the Agency can use this mechanism. In response to PC 7 and PC 10, we add "or confirmation" to subsection (m)(3), in order to provide for suspect confirmations samples. Averaging of results pursuant to subsection (o) is used to determine compliance, unless the Agency determines that sampling error occurred for the original sample. The Board adopted no counter part to federal paragraph (14), which relates to composite sampling. Rather, since the proposal for public comment, subsection (n) became a "dummy" provision explaining this fact. Subsection (o) sets forth the procedure for averaging results obtained on a greater than annual frequency basis. It is similar to all other data averaging provisions in the Phase II

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rules. Since the proposal for public comment it received only minor revisions for clarity. Subsection (r) is the "grandfather" clause, allowing the use of existing data. Since the proposal for public comment, we added, as subsection (r)(2), that a SEP is the vehicle for Agency approval of existing data. This is partly in response to PC 7. Subsection (s), unchanged since the proposal, allows the Agency to specify more frequent monitoring or more numerous sampling points if it determines that such is necessary to detect variations in a distribution system.

Subsections (p), (q), and (t) (corresponding with 40 CFR 141.24(f)(16), (f)(17), and (f)(20)) relate to analytical laboratories performing VOC (and vinyl chloride) analyses. Subsection (p) sets forth the analytical methods that laboratories must use, as previously discussed. Subsection (q) sets forth the procedure for laboratory certification for all VOCs, including vinyl chloride. The Board repunctuated this subsection since the proposal for public comment. We also added subsection (q)(2) in response to the USEPA amendments of July 1, 1991. It sets forth the certification procedure for vinyl chloride. Subsection (t) requires laboratories to determine the method detection limit (MDL) using the method of 40 CFR 136, appendix B. As originally worded, the Board adopted this as a requirement for certification. The USEPA structure, to which we reverted, states this as a requirement for certified laboratories. Those laboratories are required to achieve a MDL of 0.0005 mg/l or less. The Board omitted the final sentence of the federal provision: "This concentration is the detection concentration for purposes of this section." As described above, this statement is confusing at the least. If it means that 0.0005 mg/l is the "detection limit", for the purposes of the VOCs, it is superfluous in light of 40 CFR 141.24(f)(7), (f)(11), and (f)(14)(i).

Organic Monitoring: Phase I VOCs (Initial Monitoring, until January 1, 1993)--Section 611.647

Section 611.647 derives from 40 CFR 141.24(g), which USEPA amended at 56 Fed. Reg. 30279 (July 1, 1991). The federal rule sets forth the initial monitoring and analytical requirements for the Phase I volatile organic chemical contaminants (VOCs). Suppliers must apply this provision for demonstrating compliance with the MCLs of 40 CFR 141.61(a)(1) through (a)(8) (corresponding with 35 Ill. Adm. Code 611.311(a)) until January 1, 1993. The federal amendments imposed the termination date of January 1, 1993 and limited application of this provision to the Phase I VOCs (benzene, carbon tetrachloride, p-dichlorobenzene., 1,2-Dichloroethane, 1,1-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, vinyl chloride).

In the proposal for public comment, the Board proposed adding mixed systems to subsections (b) and (h)(2); substituting

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"SEP" for "special exception permit" where it appeared (subsections (h), (h)(4), (i), and (m)); adding "dummy" cross-references to a provision stating the potential applicability of Public Health rules (subsections (d)(2) and (e)); limiting the applicability of subsection (h) to until January 1, 1993; and using "eight organic contaminants" throughout. Since the proposal for public comment we limited the applicability of this Section to until January 1, 1993 and added the other federal amendments that limit this to initial monitoring. We reverted to using "Phase I VOCs" to refer to the contaminants. We substituted "that" for "which" in subsections (f), (i), (k)(1)(A). We corrected various passages to follow the federal rules: "GWS suppliers" and "entry points" (subsection (a)), "suppliers" and "shall" (subsection (b)), "system" (subsection (c)), and "NTNCWS" (subsection (i)). We add the technical symbols "°" (subsection (g)(1)(B)) and "±" (subsections (k)(1)(C), (k)(1)(D), and (k)(2)(B)). In response to an Agency comment (PC 12), we added "or fewer" and deleted "less than" in subsection (h)(1)(B)(ii) and (h)(2)(B)(ii) because this is the number used by USEPA in 40 CFR 141.24(g)(8)(i)(B)(1) and (g)(8)(ii)(B)(1). We substituted an explanatory "dummy" for the cross-reference at subsection (m).

Organic Monitoring: SOCs--Section 611.648

Section 611.648 derives from 40 CFR 141.24(h), which USEPA added at 56 Fed. Reg. 3585-87 (Jan. 30, 1991) and amended at 56 Fed. Reg. 30279 (July 1, 1991). The federal rule sets forth the initial monitoring and analytical requirements for the Phase II synthetic organic chemical contaminants (SOCs). Suppliers must apply this provision for demonstrating compliance with the MCLs of 40 CFR 141.61(c). The federal rules require all CWSs and NTNCWSs to take four quarterly samples at each sampling point during the first compliance period beginning January 1, 1993. The sampling points are each entry point that is representative of each well after treatment, for GWSs, or each entry point that is representative of each source or each entry point to the system after treatment, for surface water systems and mixed systems.

If during the initial monitoring in the first three-year compliance period the supplier does not detect any SOC, the state may reduce the monitoring frequency (to a minimum of two quarterly samples each compliance period for systems serving 3,300 or fewer persons or to a minimum one sample per compliance period for systems serving more than 3,300 persons). The federal rules allow the state to grant waivers of the monitoring requirements lasting for a single compliance period each upon consideration of specified factors, including consideration of known previous use of the contaminant in the watershed or zone of influence of a well, previous monitoring results, the proximity to a potential source of contamination, the environmental

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persistence and transport of the contaminant, how well the source is protected from contamination, elevated nitrate levels at the source, and the use of PCBs in equipment used to treat and distribute water. If the state determines that the contaminant was not used, transported, stored, or disposed in the area, it may grant a waiver without consideration of the other factors.

If a supplier detects any SOC contaminant (defined by a specified level for each contaminant), it must begin monitoring quarterly at each sampling point where it detected the SOC. However, the state may decrease the monitoring frequency to annual during the quarter(s) that previously showed the highest contaminant level if (based on a minimum of two consecutive quarterly samples for a GWS or four for a SWS) the state determines that the VOC level is reliably and consistently below the MCL. If a minimum of three consecutive annual samples demonstrate that the level of VOC is reliably and consistently below the MCL, the state may reduce the monitoring further by granting a waiver as described in the preceding paragraph. If the monitoring detects one or more related contaminants (aldicarb, aldicarb sulfoxide, or aldicarb sulfone or heptachlor or heptachlor epoxide), subsequent monitoring must include all of the related contaminants.

If a supplier violates the MCL for any SOC, it must begin sampling quarterly at the sampling point(s) that violated the MCL. After a minimum of four consecutive quarterly samples that show that the SOC level is reliably and consistently below the MCL, the state may allow annual monitoring during the quarter that previously indicated the highest level of the SOC contaminant.

The federal regulatory scheme for monitoring SOCs has a few other features. The states may require a supplier to initiate confirmation sampling for positive or negative results. USEPA allows the states to use composite sampling for up to five sampling points. Compliance is determined based on the levels at each sampling point, based on a running average of the last years' samples for systems sampling more frequently than annually (with any single sample that would cause the average to exceed the MCL demonstrating immediate non-compliance) and based on individual samples and the MCL for systems sampling annually or less frequently. As with the inorganic chemical contaminants and the VOCs, a system that is separable and without interconnections must only submit public notice of a violation to those persons served by portions of the distribution system affected. USEPA allows the states to increase the monitoring frequency in order to detect variations in the distribution system, and USEPA requires suppliers to monitor at a time specified by the state. States may allow the use of existing data collected after January 1, 1990 ("grandfather") if the data are consistent with the requirements of this section, and those that did not detect any

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VOC need only begin annual sampling on January 1, 1993.

USEPA sets forth the analytical methods laboratories must use to test for the SOCs. It approved six gas chromatographic (GC) methods from "Organic Methods" (504, 505, 507, 508, 508A and 515.1), one gas chromatographic-mass spectroscopic (GC-MS) method (525.1), and one HPLC method (531.1), specifying which method is acceptable for which contaminants. If the system detects one or more PCBs using the general methods (505 or 508), it must reanalyze the sample using a specified method (508A) to quantify the PCB content as decachlorobiphenyl. To obtain USEPA approval, a laboratory must analyze performance samples provided by USEPA or the state and achieve results within ± 40 to ± 45 percent, 0 to 200 percent, or 2 standard deviations (depending on the particular contaminant) of the actual contaminant content.

The Board proposed the federal rules with deviations from the federal text. The first deviations are definitions. We proposed subsection (a) as a definitions provision. Those definitions do not derive from any particular provision of the federal rules. Rather, as with many of the definitions involved in this proceeding, these definitions derive from USEPA usage. Despite the lack of federal definitions, we feel that express definition of such fundamental terms is important. As we adopted this Section, subsection (a) is still a definitions provision, but we have retained only those definitions that take on meanings peculiar to this Section. Therefore, the definitions of "distribution system", "entry point", "GWS", "mixed system", "representative", "source", "SWS", and "treatment" now appear in Section 611.102. We retained the definition of "detection" as a definition of "detect" or "detection", with modification, and we added a definition of "method detection limit", an independent concept.

A change was made to the phraseology used in this Section. Previously, we referred to the Phase II SOCs as the "eleven organic compounds and PCBs". As explained in an earlier segment of this discussion, we found it easier and less potentially confusing to refer to these as "Phase II SOCs". This substitution occurs throughout the Section. We also frequently substituted "that" for "which" for most restrictive relative clauses and use "three-year" as descriptive of "compliance period" for greater clarity. Subsections (j) and (p) now appear as explanatory "dummy" subsections, rather than as the proposed cross-references. Subsection (k)(3) is clarified by adding "for a supplier out of compliance". Finally, all references to the Code of Federal Regulations are updated in the Board Notes.

The preamble to federal subsection (h) and paragraphs (h)(1) and (h)(2) set forth the basic sampling requirements for groundwater source suppliers and surface water and mixed source suppliers, respectively. The Board has codified these as

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subsections (b) and (c)(1) through (c)(3). Federal paragraph (h)(3) is a provision for multiple source suppliers, which we have codified as subsection (c)(4). We follow the federal provisions within these subsections, and have modified the structure and language to make it follow the USEPA rule more closely and to account for USEPA amendments of July 1, 1991. We phrased the basic sampling requirements affirmatively in subsections (c)(1) and (c)(2), rather than stating the location of the sampling points. To these two subsections we also restored federal language relating to the fact that samples must be "representative of each well after treatment" or "representative of each source". We similarly added "after treatment" to the provisions for entry point sampling locations. We reworded the subsection (c)(3) requirement for taking samples from the same point unless the Agency has granted a SEP to allow another point, so it appears as a requirement for the supplier (as it appears in the federal language), rather than a requirement for the Agency, as it appeared in the proposal for public comment. Further removed from subsection (c)(3) was certain language that USEPA deleted relating to consumer tap sampling. Subsection (c)(4) now relates the requirement (appearing at the ends of federal paragraphs (h)(1) and (h)(2)) for multiple source systems to sample at times when water from all sources is used.

Subsection (d) (corresponding with federal paragraph (h)(4)) sets forth the monitoring frequencies for GWS and SWS suppliers. We added language since the proposal for public comment that clarifies the compliance period intended in each clause, whether the first compliance period or a subsequent compliance period.

Subsections (e) and (f) (corresponding with federal paragraphs (h)(5) through (h)(9)) relate the provisions for reduced or increased monitoring frequencies. These have been significantly reworded since the proposal for public comment so they follow the federal language more closely. Subsection (e), which applies to all suppliers, is now captioned "reduction to annual monitoring frequency". We integrated proposed subsections (e) and (f) and their subsections into single statements, as they appear in the USEPA rules. The Board's trend was to reword similar federal provisions in terms like "the Agency shall grant a SEP . . ." in this rulemaking. We relied on Section 611.110 to make it clear that the supplier can request a SEP. We did not reword this subsection (e) to "the Agency shall . . ." because subsection (f) (corresponding with 40 CFR 141.24(h)(6)) sets forth factors for Agency consideration.

The Board further changed the language of subsection (f) since the proposal for public comment. We moved the federal factors for consideration in granting a SEP ("waiver") to Section 611.110(e). We have already discussed with relation to Section 611.110 why we have done so. We also added to this subsection a

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reference to subsection (e) (and hence to (d)) to which this provision applies.

Subsections (g) and (h) (corresponding with 40 CFR 141.24(h)(7) and (h)(8)) are parallel provisions that relate the actions necessary if a supplier detects a VOC. Subsection (g) relates to increased monitoring if a VOC is "detected", and subsection (h) if the level exceeds the MCL. In both cases, a SEP allowing a decreased monitoring frequency is possible if the Agency determines that the VOC level is "reliably and consistently below the MCL. Both contemplate a return to quarterly monitoring if this proves not true. In subsections (g)(2) and (h)(2) we related the federal provision for an Agency grant of a SEP ("waiver") if the contaminant level is reliably and consistently below the MCL. We reworded subsections (g)(2)(C) and (h)(2)(C), consistent with similar provisions for other contaminants, so that the Agency must grant the SEP if it makes a "reliably and consistently" determination, and the Agency cannot specify an arbitrary level of contaminant to trigger quarterly monitoring once again.

As was discussed with regard to VOCs, there is some difficulty in selecting a "trigger level" that prompts an increased monitoring frequency after a reduction from quarterly monitoring prompted by a "detect". For the same reasons as for the VOCs, discussed above, it appears that any level of SOC contaminant reliably and consistently below the MCL is a situation wherein reduced monitoring is acceptable. For these reasons, the Board used the MCL as the level that triggers a return to quarterly monitoring for the purposes of subsection (k). As for the VOCs, if subsequent comments make it appear that there is a better alternative, the Board can revisit this issue in a later docket.

In response to PC 7 and PC 10 we revised subsections (g)(3) and (h)(2)(D) so that the monitoring occurs in the "quarter(s)" that previously resulted in the highest SOC level. As with VOCs, this contemplates problems with multiple peak VOC levels occurring in more than one quarter. Subsection (g)(4) (which does not have a counterpart in subsection (h)) allows a relaxation of the monitoring frequency to that allowed by an Agency vulnerability assessment under subsection (f), allowing as little as one sample in a three year period. We reworded this for clarity since the proposal for public comment.

Subsections (i), (k), (n), and (o) relate to handling the data obtained from monitoring, and subsection (q) requires suppliers to monitor at times specified by the Agency. Subsection (i) (corresponding with federal paragraph (h)(9)) allows the Agency to require confirmation sampling for any results it finds doubtful. Since the proposal for public comment, we chose the SEP mechanism for the Agency to require

confirmation samples. As proposed, the supplier must detect a SOC in a sample before the Agency can use this mechanism. In response to PC 7 and PC 10, we add "or confirmation" to subsection (i)(3), in order to provide for suspect confirmation samples. Averaging of results pursuant to subsection (k) is used to determine compliance, unless the Agency determines that sampling error occurred for the original sample. The Board has adopted no counterpart to federal paragraph (h)(10), which relates to composite sampling. Rather, since the proposal for public comment, subsection (j) has become a "dummy" provision explaining this fact. Subsection (k) sets forth the procedure for averaging results obtained on a greater than annual frequency basis. It is similar to all other data averaging provisions in the Phase II rules. Since the proposal for public comment it received only minor revisions for clarity. Subsection (n) is the "grandfather" clause, allowing the use of existing data. Since the proposal for public comment, we added, as subsection (n)(2), that a SEP is the vehicle for Agency approval of existing data. This is partly in response to PC 7. Subsection (o) allows the Agency to specify more frequent monitoring or more numerous sampling points if it determines that such is necessary to detect variations in a distribution system. Since the proposal for public comment, we have added non-limiting factors enunciated by USEPA at federal paragraph (h)(15) as examples of when additional monitoring is necessary. A Board Note explains the source and nature of the factors.

Subsections (l), (m), (r), and (s) (corresponding with 40 CFR 141.24(h)(12), (h)(13), (h)(18), and (h)(19)) relate to analytical laboratories performing SOC (and PCB) analyses. Subsection (l) sets forth the analytical methods that laboratories must use, as previously discussed. Subsection (m) sets forth the methods for PCBs. Subsection (r) gives the detection limits for the various SOCs. We divided this into two subsections since the proposal for public comment and added the detection limits for the PCBs, which USEPA added on July 1, 1991. Subsection (s) sets forth the procedure for laboratory certification for all SOCs, including PCBs. USEPA added this subsection on July 1, 1991, and we added this subsection since the proposal for public comment.

Organic Monitoring: Monitoring for 36 Organic Contaminants--
Sections 611.651 and 611.657

Sections 611.651 and 657 derived from 40 CFR 141.40, which USEPA amended at 56 Fed. Reg. 3592 (Jan. 30, 1991). It set forth requirements for monitoring for 36 organic contaminants for which there were no MCLs at that time, and the monitoring was to have been completed by January 1, 1992. USEPA adopted MCLs at 40 CFR 141.61 for 13 of the 36 contaminants (*trans*-1,2-dichloroethylene; monochlorobenzene; *cis*-1,2-dichloroethylene; *o*-dichlorobenzene; toluene; *p*-xylene, *o*-xylene, and *m*-xylene, conjunctively as total

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xylenes; 1,2-dichloropropane; ethylbenzene; styrene; ethylene dibromide (EDB); and dibromochloropropane). The federal rules also set forth the analytical procedures for these compounds. Although USEPA has not repealed this provision, the Board does so because the time for compliance is past and its continued existence could result in confusion.

Organic Monitoring: Special Monitoring for Organic Compounds--
Section 611.658

The Board originally proposed splitting 40 CFR 141.32 into two Sections: Section 611.631, for unregulated inorganic contaminants, and Section 611.658, for unregulated organic contaminants. Since the proposal for public comment, we have instead decided to keep with the federal format and retain both in a single location. We now codify both as Section 611.510. However, for the convenience of the regulated community, we place a cross-reference and a brief statement at this Section to alert the reader to those requirements.

Reporting and Public Notice: MCL Violations--Section 611.851

Section 611.851 derives from 40 CFR 141.32(a), which USEPA amended at 56 Fed. Reg. 3585-87 (Jan. 30, 1991). USEPA amended paragraph (a)(1)(iii) (corresponding with 35 Ill. Adm. Code 611.851(a)(3)(C)) to add "nitrite" and change the references to section 141.62 (corresponding with Section 611.301) for the MCLs and section 141.23(i)(3) for the determination of compliance. The Board proposed the addition of nitrite, but failed to change the reference for the revised MCLs. Since the proposal for public comment we added the reference to the new MCLs. In response to an Agency comment (PC 12), we changed the existing reference to "CWS" in subsection (c)(2) to "non-CWS" because it is to non-CWSs that this provision applies.

Reporting and Public Notice: Other Violations--Section 611.852

Section 611.852 derives from 40 CFR 141.32(b), which USEPA did not amend during the present update period. Since the proposal for public comment, the Board added amendments in response to the USEPA Phase I primacy comments. We added a statement to the end of subsection (c)(1) that requires a supplier to repeat notice by hand delivery every three months as long as the variance or adjusted standard remains in effect. We also changed "PWS" to "non-CWS" in subsection (c)(2). We further made the "that"- "which" substitution in the preamble and updated the Code of Federal Regulations reference in the Board Note.

Reporting and Public Notice: Mandatory Health Effects Language--
Section 611.855

Section 611.855 derives from 40 CFR 141.32(e), which USEPA

amended at 56 Fed. Reg. 3587-92 (Jan. 30, 1991) and 56 Fed. Reg. 30279-80 (July 1, 1991). However, the Board did not need to amend this Section in response to those amendments because the segments affected appear in Section 611.Appendix A. Rather, since the proposal for public comment, the Board added amendments in response to the USEPA Phase I primacy comments. We changed the cross-reference to Section 611.854. We further completed the reference to Section 611.Appendix A and updated the Code of Federal Regulations reference in the Board Note.

Mandatory Health Effects Information--Section 611.Appendix A

Section 611.Appendix A derives from 40 CFR 141.32(e), which USEPA amended at 56 Fed. Reg. 3587-92 (Jan. 30, 1991) and 56 Fed. Reg. 30279-80 (July 1, 1991). The federal rule sets forth the contaminant-by-contaminant mandatory health effects information that suppliers must submit to the public when they violate an MCL. The USEPA amendments of January 30, 1991 added mandatory information for 33 chemical contaminants for which there are new MCLs (asbestos, cadmium, chromium, mercury, nitrate, nitrite, selenium, acrylamide, alachlor, atrazine, carbofuran, chlordane, dibromochloropropane (DBCP), o-dichlorobenzene, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, 1,2-dichloropropane, 2,4-D, epichlorohydrin, ethylbenzene, ethylene dibromide (EDB), heptachlor, heptachlor epoxide, lindane, methoxychlor, monochlorobenzene, polychlorinated biphenyls (PCBs), styrene, tetrachloroethylene, toluene, toxaphene, 2,4,5-TP (Silvex), and xylenes (total)). The Board added these notices. The July 1, 1991 amendments added notices for five chemical contaminants (barium, aldicarb, aldicarb sulfoxide, aldicarb sulfone, and pentachlorophenol). The Board did not adopt these five notices because they are for new Phase IIB contaminants, which are the subject of docket R91-15.

The Board further made a small number of corrections to the existing notices. We deleted the Board Note on the notice for 1,1,1-trichloroethane (paragraph 8) and amended those for fluoride (paragraph 9) and at the end of the appendix to reflect the most recent Code of Federal Regulations. We corrected misspellings of "caused" (in paragraph 10) and "contaminated" (in paragraphs 11 and 12). Since the proposal for public comment we substituted an explanatory sentence in place of a cross-reference at "dummy" paragraphs 13, 14, 16, 25-27, and 46, reserved by USEPA. We also corrected the language of notices for 2,4-D, heptachlor, and heptachlor epoxide, so they now appear as in the federal regulations. PC 10 supports this addition.

Autoanalysis Colilert P-A Method--Section 611.Appendix D

Section 611.Appendix D derives from a method in a journal that USEPA incorporated by reference at 40 CFR 141.21(f)(3)(iv) (corresponding with Section 611.526 at 57 Fed. Reg. 24747 (June

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10, 1992). The article, "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and *Escherichia coli* from Drinking Water: Comparison with Presence-Absence Techniques", appeared in the April, 1989 issue of Applied and Environmental Microbiology. It evaluated a method for simultaneous measurement of total coliforms and *E. coli*.

The Board cannot incorporate the method by reference because it is not "rules, regulations, standards, and guidelines of an agency of the United States or a nationally or state recognized organization or association . . .". See Ill. Rev. Stat. 1991 ch. 127, par. 1005-75. We therefore had to extract the method from the descriptions in the article and set it forth in this appendix. This did not appear in the proposal for public comment. A Board Note cites the source of the article and where in the federal and Illinois rules it is used.

Fecal or Total Coliform Density Measurements--Section 611.Table B

Section 611.Table B derives from 40 CFR 141.71(b)(1). USEPA did not amend this provision during the present update period, so the adopted amendments were not part of the proposal for public comment. Rather, the Board amended this table in response to the USEPA Phase I primacy comments (PC 14). We corrected the first entry in the table so that it includes 500 persons served. We also updated the Board Note citation to the Code of Federal Regulations.

Fecal or Total Coliform Density Measurements--Section 611.Table C

Section 611.Table C derives from 40 CFR 141.71(b)(5) and (c)(2). USEPA did not amend these provisions during the present update period, so the adopted amendments were not part of the proposal for public comment. Rather, the Board amended this table in response to the USEPA Phase I primacy comments (PC 14). We corrected the first entry in the table so that it includes 500 persons served. We also updated the Board Note citation to the Code of Federal Regulations.

Federal Effective Dates--Section 611.Table D

Section 611.Table D derives from no particular federal provision. Rather, the Board believes that setting forth the federal effective dates for the various federal MCLs would prove useful to the regulated community. We have added this for reference since the proposal for public comment.

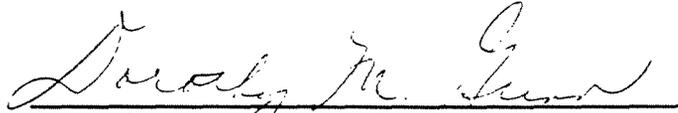
CONCLUSION

This final opinion supports the Board's final order of this same day. The Board will promptly file these rules with the

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Secretary of State for publication in the Illinois Register.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above final opinion was adopted on the 19th day of November, 1992, by a vote of 7-6.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board