Public Water Systems

Effective date: 11/9/11

Summary of Express Terms

These amendments are necessary due to the promulgation by the United States Environmental Protection Agency (EPA) of the Ground Water Rule (GWR) on October 11, 2006, in order to make New York's regulations of Public Water Systems (PWS) consistent with EPA requirements.

The GWR was promulgated to reduce the risk of exposure to fecal contamination that may be present in public water systems that use ground water sources. The GWR also specifies when corrective action (which may include disinfection) is required to protect consumers who receive water from ground water systems from bacteria and viruses.

The new requirements of the GWR include:

- new Maximum Contaminant Levels/Treatment Techniques for indicators of fecal contamination in ground water sources (wells);
- expanded requirements for conducting inspections of public water systems known as sanitary surveys;
- additional record-keeping requirements for public water systems and local and state health departments; and
- customer notification by public water systems when there is a significant deficiency in the facilities or operation of the public water system or if there is fecal

contamination of the raw source water and the system does not provide at least 4-log (99.99%) removal or disinfection of viruses.

Water systems must correct significant deficiencies at facilities or in system operation which may allow contaminated water to reach consumers, when directed by the State or local health department. Customers must be notified and the system must correct this violation of the regulation, either immediately or after development of an approved correction plan.

The minimum required concentration of disinfectant entering the water distribution system (and for chemical disinfectants other than chlorine) is clarified. Systems using chlorine must maintain a minimum of 0.2 mg/l at the entry point, and must notify the State if the concentration falls below that level for four or more hours. Systems must take specific actions if the system fails to meet these requirements, and notify the public in case of failure to meet the specified requirements.

Monitoring plan requirements are expanded to require inclusion of all required sampling locations and frequencies. For simple ground water systems, these monitoring plans will be simple to prepare. While comprehensive monitoring plans are currently required in Department guidance, the current requirements apply only to plans for monitoring disinfection byproducts.

Consecutive PWS, who purchase or otherwise obtain water from PWS's using ground water sources (wholesalers), must describe in their monitoring plan the process by which they will notify their wholesaler in the event of a total-coliform positive sample (unless invalidated or determined to have originated in the distribution system). If the consecutive system, or the wholesaler, provides 4-log treatment that is confirmed, using process compliance monitoring, this additional notification and source water sampling is not required. Confirmation of treatment system performance through measurements and record keeping is known as process compliance monitoring.

Several tables summarizing violation determination or monitoring frequencies have been revised and or added. The affected tables and substantial changes include:

Table 6

- New treatment technique violations when fecal contamination is found at a system that does not provide 4-log microbial treatment.
- The required fecal indicator will remain *E.coli*. (If fecal contamination is observed in the untreated source water, corrective action must be taken.)

Table 11

- Enterococcus and bacteriophage are added as fecal contaminants, however no monitoring requirements are added.
- Systems with disinfection waivers will no longer be eligible for reduced microbiological monitoring, previously allowed at State discretion.

New Table 11B

- Lists actions required when microbial contamination is detected in routine or follow-up monitoring samples.

GWR Notifications are added to Table 13 of Required Notifications

Tables 15 and 15A

- Revised to reflect changes to disinfection residual measurement as amended by the GWR

All PWS's must respond to notification of significant deficiencies observed at the PWS and indicate that failure to address any significant deficiencies is a treatment technique violation.

The requirements for completion of daily operation records are simplified to allow for the use of electronic or other forms. These records must include documentation of process compliance monitoring at ground water systems where 4-log treatment is required.

Reporting requirements for all PWS's specific to GWR violations and significant deficiencies have been expanded to ensure that consumers are informed of source contamination or threats to the quality of water provided by the water system.

The reporting responsibilities of consecutive systems are clarified, and include notification of the wholesaler from whom they purchase water as well as the health department, whenever microbiological contamination is observed.

Ground water systems must notify the State within 24 hours of a GWR violation. Failure to do so will result in the requirement for a Tier 1 notification for failure to notify as well as for the violation.

Pursuant to the authority vested in the Public Health and Health Planning Council and the Commissioner of Health by section 225 of the Public Health Law, Subpart 5-1 of Title 10 (Health) of the Official Compilation of Codes, Rules and Regulations of the State of New York is amended, to be effective upon publication of a Notice of Adoption in the New York State Register, as follows:

Existing Section 5-1.1, Definitions, is being renumbered and amended to be in alphabetical and sequential order, as noted below.

Existing subdivisions (a)-(f) of section 5-1.1 are renumbered to be subdivisions (b)-(g), respectively. A new subdivision (a) is added to section 5-1.1 to read as follows:
(a) "-log treatment" means the reduction of a specified proportion of viruses, bacteria, protozoa or other organisms present in drinking water expressed as factors of ten, through disinfection (inactivation) and/or removal. For example, 3-log treatment removes or inactivates 999 out of 1000 organisms or 99.9 percent.

A new subdivision (h) to section 5-1.1 is added to read as follows:
(h) Consecutive system means a public water system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

Existing subdivisions (g)-(h) of section 5-1.1 are renumbered to be subdivisions (i)-(j), respectively. A new subdivision (k) to section 5-1.1 is added to read as follows:

(k) Corrective action means the action(s) taken by a water system consistent with the requirements of this code including one or more of the following: correcting significant deficiencies; providing an alternate source of water; removing source(s) of contamination; providing treatment; or other action acceptable to the State.

Existing Subdivisions (i)-(v) of section 5-1.1 are renumbered to be subdivisions (l)-(y), respectively. A new subdivision (z) of section 5-1.1 is added to read as follows:
(z) Fecal indicator means a microorganism (for example a bacteriophage, coliphage, or bacterium) that is used to determine the sanitary quality of drinking water and the likelihood of the presence of pathogen contamination from the waste of warm-blooded animals. The most commonly used fecal indicator is *Escherichia coli (E. coli).*

Existing subdivisions (w)-(ad) of section 5-1.1 are renumbered to be subdivisions (aa)-(ah), respectively. Subdivision (ah) to section 5-1.1, as renumbered, is amended to read as follows:
(ah) Ground water directly influenced by surface water<u>, also known as Ground Water Under the Direct Influence of surface water, or GWUDI,</u> means any water beneath the surface of the ground which exhibits significant and rapid shifts in water characteristics such as turbidity, temperature, conductivity or pH which closely correlates to climatological or surface water conditions and/or which contains macroorganisms, algae, large diameter (three microns or greater) pathogens or insect parts of a surface water origin.

Existing subdivision (ae) of section 5-1.1 is renumbered to be subdivision (ai). Subdivision (ai) of section 5-1.1 is amended to read as follows:

(ai) Ground water source means a source of water supply taken from a ground water aquifer and developed in accordance with section 5-1.22 of this Subpart, but shall not include an admixture of surface water or water exposed to the ground surface. Any ground water source at a system that uses surface water or ground water under the direct influence of surface water that does not receive treatment as described in subdivision 5-1.30(b) of this Subpart, prior to the first customer, is subject to all requirements applicable to ground water systems and ground water sources.

Existing subdivisions (af)-(av) of section 5-1.1 are renumbered to be subdivisions (ak)-(ba), respectively. A new subdivision (aj) is added to section 5-1.1 to read as follows:

(aj) Ground water system means a public water system that uses only ground water, excluding any surface water or ground water under the direct influence of surface water.

Existing subdivisions (aw)-(bd) of section 5-1.1 are renumbered to be subdivisions (bc)-(bj), respectively. A new subdivision (bb) is added to section 5-1.1 to read as follows:

(bb) Process compliance monitoring means the State-approved measurements and records of water system operation and/or water quality parameters that demonstrate the effectiveness of the treatment process(es) employed by the public water system to achieve a treatment technique requirement.

Existing subdivisions (be)-(bf) of section 5-1.1 are renumbered to be subdivisions (bl)-(bm), respectively. A new subdivision (bk) is added to section 5-1.1 to read as follows:
(bk) Sanitary survey means an onsite review of a water system including the water source, facilities, equipment, operations maintenance, and monitoring compliance of a public water system to evaluate the adequacy of the system, its sources and operations and the distribution of safe drinking water. The survey must include evaluation of the following components: source; treatment; distribution system; finished water storage; pumps, pump facilities, and controls; monitoring, reporting, and data verification; system management and operation; and operator compliance with State requirements. Review of each of these categories of system operation need not be completed in a single visit.

Existing subdivisions (bg)-(bu) of section 5-1.1 are renumbered to be subdivisions (bo)-(cc), respectively. A new subdivision (bn) is added to section 5-1.1 to read as follows:
(bn) Significant deficiency means a defect in a system's design, operation or maintenance, or a failure or malfunction of its source, treatment, storage, or distribution, that causes or is reasonably expected to cause the introduction of contamination into water delivered to consumers. Significant deficiencies also include: loss of ability to deliver an adequate quantity of water; inadequate barriers of protection including failure of monitoring; conditions that pose an obvious security risk to the water system; or any other condition with the potential to cause a future public health hazard (i.e. before the next scheduled sanitary survey).

Existing subdivisions (bv)-(cb) of section 5-1.1 are renumbered to be subdivisions (ce)-(ck), respectively. A new subdivision (cd) is added to section 5-1.1 to read as follows:

(cd) Treatment technique means any minimum treatment or action specified by this Part or designated by the State as necessary to prevent the entry of contamination into or to reduce the level of a contaminant in drinking water delivered by a public water system.

A new subdivision (cl) of section 5-1.1 is added to read as follows:

(cl) Wholesale system means a public water system that treats source water as necessary to produce finished water and then delivers some or all of that finished water to another public water system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

Section 5-1.22 is amended to read as follows:

5-1.22 Approval of plans and completed works.

(a) No supplier of water shall make, install or construct, or allow to be made, installed or constructed, a public water system or any addition or deletion to or modification of a public water system until the plans and specifications have been submitted to and approved by the State. Materials used in the design, construction and repair of a public water system shall be lead-free. For this Subpart, lead-free shall mean solder or flux which contains no more than 0.2 percent lead and pipes, pipe fittings or any appurtenances which contain no more than eight percent lead.

(b) [Recommended Standards for Water Works[2], 2003 edition, published by the Great Lakes-Upper Mississippi River Board of State and Provisional Public Health and

Environmental Managers and available from Health Research Inc., P.O. Box 7126, Albany, NY 12224, Standards for Water Wells[3] and Special Requirements for Wells Serving Public Water Systems[4], all available for public inspection at the Bureau of Water Supply Protection of the Department of Health, Flanigan Square, 547 River Street, Troy, NY 12180, shall, in their entirety, be the basis on which all plans and specifications for public water systems will be approved. The department]Approval of plans and specifications for public water systems shall be based on the following standards in their entirety. The State may allow deviations from these standards in accordance with procedures [and criteria] established by the commissioner.

(1) "Recommended Standards for Water Works", (Appendix 5-A)

(2) Standards for Water Wells (Appendix 5-B)

(3) Special Requirements for Wells Serving Public Water Systems (Appendix 5-D)

(c) The State may approve such plans or may require such modification which is deemed necessary to protect public health or safety. Application for plan approval shall be made on a form prescribed by the department.

(d) A supplier of water shall receive the approval of the State before placing into service any public water system constructed under the requirements of this section.

[2See Appendix 5-A, infra.
3See Appendix 5-B, infra.
4See Appendix 5-D, infra.]

Subdivision 5-1.30 (a) is amended to read as follows:

(a) Minimum treatment for a ground water source shall be disinfection by chlorination or other [disinfection] microbial contaminant treatment acceptable to the [department] State

in accordance with the provisions of section 5-1.22 of this Subpart. If chemical disinfection is used, the disinfectant residual concentration must be maintained at all times and under no circumstances shall be less than the required concentration for more than four hours. Unless other corrective action is approved by the State, any ground water source where fecal contamination has been observed, or where a significant deficiency may be causing or has the potential to cause the introduction of contamination into the water delivered to customers, must be treated to remove or inactivate 99.99% (4-log) of viruses. Continuous monitoring of active microbial treatment processes is required, except as provided in section 5-1.52 table 15 of this Subpart.

Paragraph (2) of Subdivision 5-1.30 (b) is amended to read as follows:

(2) For [for] systems using chlorine, the free chlorine residual disinfection concentration in the water entering the distribution system [can not be less than 0.2 milligrams per liter for more than four hours.] must be at least 0.2 milligrams per liter and may not be less than the required minimum concentration for compliance for more than four hours. Systems using other chemical disinfectants shall maintain residual disinfection levels entering the distribution system comparable to requirements for systems using chlorination. Continuous monitoring is required, except as provided in section 5-1.52 table 15 of this Subpart; and

Paragraph (5) of subdivision 5-1.30(c) is amended to read as follows:

(5) For systems using chlorine, the free chlorine residual disinfection concentration in the water entering the distribution system [cannot be less than] must be at least 0.2

milligrams per liter and may not be less than the required minimum concentration for compliance for more than four hours, unless the State determines that any such failure was caused by circumstances that were unusual or unpredictable. Systems using other chemical disinfectants shall maintain residual disinfection levels entering the distribution system comparable to requirements for systems using chlorination. Continuous monitoring is required, except as provided in section 5-1.52 table 15 of this Subpart.

Subdivision 5-1.30(d) is amended to read as follows:

(d) Notwithstanding anything to the contrary in sections 5-1.12, 5-1.23, 5-1.51 or 5-1.77 of this Subpart, if the public water system fails to comply with the treatment technique and/or the monitoring requirements of subdivisions (a), (b), (c) or (g) of this section, fails to install the filtration and/or disinfection treatment [facilities] required by this section or fails to comply with the avoidance criteria requirements contained in subdivision (c) of this section, the system violates this Subpart and shall make State and public notification, including any required mandatory health effects language. Pursuant to subdivision (c) of this section, if at any time the raw water turbidity exceeds five nephelometric turbidity units, the system shall consult with the State within 24 hours of learning of the exceedance. Based on this consultation, the State may determine that the exceedance constitutes a public health hazard, [as defined in paragraph 5-1.1(aw)(4)] as found in paragraph (4) of subdivision 5-1.1(bc) of this Subpart, which requires a Tier 1 notification. When consultation does not take place within the 24 hour period, the water system must distribute a Tier 1 notification no later than 48 hours after the system learns of the violation. [Pursuant to subdivisions (b) and (c) of this section, if the free chlorine

residual falls below 0.2 milligrams per liter in the water entering the distribution system, for a system using chlorine, the system shall make State notification. The system must make State notification whether the residual was restored to at least 0.2 milligrams per liter within four hours.] Ground water systems that are required to provide 4-log virus treatment, surface water systems and Ground Water Under the Direct Influence of surface water (GWUDI) systems that use chemical disinfection must notify the State whenever residual disinfectant levels in the water entering the distribution system are less than the specified concentration pursuant to subdivisions (b) and (c) of this section. Any water system that uses chemical disinfection must make State notification whenever disinfectant residual levels entering the distribution system are not restored within four hours.

Subdivision 5-1.30 (g) is amended to read as follows:

(g) When [chlorine] a chlorine-based chemical disinfectant is used [as the disinfectant, a free chlorine residual shall be maintained], the residual disinfectant concentration in the distribution system, measured as free or combined chlorine shall be maintained at detectable concentrations at representative points in the distribution system, in accordance with the monitoring requirements in [provision of] section 5-1.52 [table] Table 11 [footnotes 1 and 6] of this Subpart. No more than five percent of the free chlorine residual samples shall be undetectable in any two consecutive months that the system serves water to the public. Chlorine residual or heterotrophic bacteria analyses shall be performed in accordance with section 5-1.52 Table 11 of this Subpart.

Monitoring for heterotrophic bacteria may be substituted for free chlorine residuals. A heterotrophic plate count result equal to or less than 500 colonies per milliliter is considered to be equivalent to a measurable free chlorine residual.

Subdivision 5-1.51 (c) is amended to read as follows:

(c) Each system [required to monitor for disinfection byproducts must develop and implement a monitoring plan] must develop and implement a monitoring plan that includes all monitoring requirements specified in this Subpart. This plan must be completed by January 31, 2012. The system must maintain the plan and make it available for inspection by the State and the general public [no later than 30 days after the compliance date. If the system is a community or nontransient noncommunity system that uses surface water or ground water under the direct influence of surface water and serves 10,000 or more people, the monitoring plan must be made available by January 31, 2002. If the system is a community or nontransient noncommunity system that uses surface water or ground water under the direct influence of surface water and serves fewer than 10,000 people, or it is a community or nontransient noncommunity system using only ground water, the monitoring plan must be made available by January 31, 2004. All community and nontransient noncommunity systems using surface water or ground water under the direct influence of surface water that serve more than 3,300 people must submit a copy of the monitoring plan to the State, or provide written acknowledgement and acceptance of a plan provided by the State, no later than the date of the first report required in section 5-1.72 of this Subpart]. After review, the State may require changes in any plan elements. Failure to monitor in accordance with the

monitoring plan is a monitoring violation. Systems may only use [only] data collected in accordance with the monitoring plan to qualify for reduced monitoring [of disinfection byproducts or disinfection byproduct precursors]. The monitoring plan must include at least the following elements, as applicable:

(1) specific locations and schedules for collecting samples for [any] all applicable parameters listed in [this section] section 5-1.42, section 5-1.43, Tables 8A-12 of section 5-1.52, and section 5-1.61 of this Subpart;

(2) how the system will calculate compliance with MCLs, MRDLs, and treatment techniques;

(3) if [approved for monitoring as] the system is a consecutive system, or [if] it is providing water to a consecutive system, and has been approved for modified monitoring under the provisions of section 5-1.76 of this Subpart, the sampling plan must reflect the entire distribution system for any analytes approved for modified monitoring;

(4) consecutive ground water systems must define and implement a protocol for notifying the system from which they receive water of any total coliform positive samples so the source can be tested for fecal contamination, unless the wholesale ground water system provides 4-log virus treatment at peak flow before or at the first customer as confirmed through process compliance monitoring.

Repeal Tables 6, 11, 13, 15 and 15A of section 5-1.52. New Tables 6, 11, 11B, 13, 15 and 15A are added to section 5-1.52 to read as follows:

Table 6. Microbiological Contaminants Maximum Contaminant Level (MCL)/Treatment Technique (TT) Violation Determination

Contaminant	Sample Location	MCL or TT	Performance Standard[1,2]	Determination of MCL/TT violation[3]
Total coliform	Distribution Sample Sites	MCL	No positive sample[4]	An MCL violation occurs at systems collecting 40 or more samples per month when more than 5.0 percent of the total coliform samples are positive.
		MCL		An MCL violation occurs at systems collecting less than 40 samples per month when two or more samples are total coliform positive.
Escherichia coli (E. coli)		MCL	No positive sample[4]	An MCL violation occurs when a total coliform positive sample is positive *for E. coli* and a repeat total coliform sample is positive or when a total coliform positive sample is negative for *E. coli* but a repeat total coliform sample is positive and the sample is also positive for *E. coli*.[5]
Fecal indicator: *E. coli*, and/or enterococci, and/or coliphage	Untreated Water from a Ground Water Source	TT	No fecal indicator in samples collected from raw source water from a ground water source.[6]	A TT violation occurs when a raw water sample is positive for the fecal indicator contaminant and system does not provide and document, through process compliance monitoring, 4-log virus treatment during peak flow at first customer. If repeat sampling of the raw water is directed by the State and all additional samples are negative for fecal indicator, there is no TT violation.[6]

[1]A public water system must comply with the MCL for total coliform each month the system is required to monitor for total coliform.

[2]All samples collected in accordance with Table 11 footnotes 1, and 2 and Table 11B of this section, and samples collected in accordance with section 5-1.51(g) of this Subpart shall be included in determining compliance with the MCL unless any of the samples have been invalidated by the State.

[3]For notification purpose, an *E. coli* MCL violation in the distribution system is a public health hazard requiring Tier 1 notification.

[4] See Table 13 for public notification requirements.

[5] If any total coliform or *E. Coli* sample is positive, repeat samples must be collected in accordance with Table 11B of this section.

[6]If raw water source sample is fecal indicator positive, the water system, in consultation with the State, may collect an additional 5 samples within 24 hours at each source that tested fecal indicator positive. If none of the additional samples are fecal indicator positive, then there is no TT violation. Note that Tier 1 notification must be made after the initial raw water fecal indicator positive sample, even if it is not confirmed.

Table 11 Microbiological Minimum Monitoring Requirements (Refer to Table 11B following any positive samples) [1,2,3,4]

Contaminant	Type of water system	Number of samples based on population			
		Population Served	**Minimum number of Samples per month[4]**	**Population Served**	**Minimum number of Samples per month[4]**
Total coliform in distribution system[5]	Community	Up to 1,000[6]	1	59,001 to 70,000	70
		1,001 to 2,500	2	70,001 to 83,000	80
		2,501 to 3,300	3	83,001 to 96,000	90
		3,301 to 4,100	4	96,001 to 130,000	100
		4,101 to 4,900	5	130,001 to 220,000	120
		4,901 to 5,800	6	220,001 to 320,000	150
		5,801 to 6,700	7	320,001 to 450,000	180
		6,701 to 7,600	8	450,001 to 600,000	210
		7,601 to 8,500	9	600,001 to 780,000	240
		8,501 to 12,900	10	780,001 to 970,000	270
		12,901 to 17,200	15	970,001 to 1,230,000	300
		17,201 to 21,500	20	1,230,001 to 1,520,000	330
		21,501 to 25,000	25	1,520,001 to 1,850,000	360
		25,001 to 33,000	30	1,850,001 to 2,270,000	390
		33,001 to 41,000	40	2,270,001 to 3,020,000	420
		41,001 to 50,000	50	3,020,001 to 3,960,000	450
		50,001 to 59,000	60	3,960,001 or more	480
	Noncommunity using surface water or groundwater directly influenced by surface water	All	Same as community		
	Noncommunity using only groundwater not directly influenced by surface water	≤1,000	Quarterly		
		>1,000	Same as community		
Escherichia coli (E. coli)	Community and Noncommunity	All	Any routine or repeat samples that are Coliform positive must be analyzed for *E. coli.*[4]		
Fecal Indicator in Raw Source Water[7]	All ground water systems unless providing 4-log virus treatment and process compliance monitoring	All	State discretion[8]		

1Public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system and throughout the reporting period according to a written monitoring plan which is subject of State review and revision as described in subdivision 5-1.51(c) of this Subpart.

2Public water systems using surface water or groundwater directly influenced by surface water, and which do not provide filtration, must collect and analyze at least one sample for total coliforms near the first service connection each day the turbidity level of the raw water exceeds 1.49 NTU. This sample shall be collected within 24 hours. Results of this sample must be included in determining compliance with the Maximum Contaminant Level (MCL) of total coliforms in Table 6 of this section.

Table 11 (cont.)

[3]Samples taken to determine disinfection practices after pipe repair, replacement, etc. are not to be used for determining MCL compliance for total coliforms in Table 6 of this section.

[4] See Table 11B for repeat sampling requirements following any total coliform or *E. Coli* positive samples.

[5]If chlorine or chloramines are used as the disinfectant, a chlorine residual determination shall be made at the same time and location that the sample is collected for total coliform analysis. Monitoring for heterotrophic bacteria may be substituted for free chlorine residuals. A heterotrophic plate count result equal to or less than 500 colonies per milliliter is considered to be equivalent to a measurable free chlorine residual.

[6] The State may, in writing, reduce the monitoring frequency to quarterly for a community water system serving 1,000 or fewer persons if the system has no history of total coliform contamination and a sanitary survey conducted in the past five years shows that the system is supplied solely by a protected groundwater source and the system and groundwater source are free of sanitary defects. Systems that have been granted a disinfection waiver are not eligible for reduced monitoring frequency.

[7]Fecal indicators include *Escherichia coli (E. coli)*, enterococci, and coliphage. Only *E. coli* testing will be required, unless otherwise directed by the State.

[8]State discretion shall mean that monitoring is required when the State has reason to believe the Maximum Contaminant Level or Treatment Technique (MCL/TT) has been violated, the potential exists for an MCL/TT violation or the contaminant may present a risk to public health.

Table 11B Repeat Microbiological Sampling Requirements following Total Coliform Positive and/or Fecal Indicator Positive Sample(s) [1]

Type of Positive Sample	Type of Water System/Source	System Size	Number of Repeat Samples Required within 24 hours of notification	Sampling Location	Required action for positive repeat samples
Routine total coliform sample(s) from distribution system positive	Surface water, GWUDI[2], or ground water performing 4-log virus treatment and process compliance	More than one service connection	Four distribution system samples	The same sampling site where the original coliform-positive sample was collected, one sample within five service connections upstream, one sample within five service connections downstream and one sample taken at random in the distribution system.	Distribution sampling must be repeated until total coliform is not detected in repeat samples or it is determined that the MCL has been violated.[3]
		One service connection	One distribution system sample[4]	Original sampling location	
	Ground water system or ground water source not providing (or not documenting) 4-log virus treatment[5]	Population >1,000	Four distribution system samples and source water sample(s) collected in accordance with a State-approved sampling plan[6]	The same distribution system sampling site where the original coliform-positive sample was collected, one sample within five service connections upstream, one sample within five service connections downstream and one sample taken at random in the distribution system. An additional sample must be collected from each raw water source or according to State approved sampling plan.[6,7]	Distribution sampling must be repeated until total coliform is not detected in repeat samples or it is determined that the MCL has been violated.[3]
		Population ≤ 1,000 and more than one service connection	Four samples, three at specified locations in the distribution system and one sample to characterize raw water quality. Additional raw water samples according to approved sampling plan if multiple sources are in use. [5, 8]	The same distribution system sampling site where the original coliform-positive sample was collected, one sample within five service connections upstream, and one sample within five service connections downstream. A fourth sample can be taken at random in the distribution system or collected from a single raw water source. An additional sample must be collected from each raw water source or according to State approved sampling plan.[6,7, 8]	
		One service connection	One distribution system sample and source water sample(s) in accordance with a State-approved sampling plan[4,6,8]	Original sampling location. An additional sample must be collected from each raw water source or according to State approved sampling plan.[6,7, 8]	
		Wholesale System of any size	After notification by consecutive system of total coliform-positive sample[6, 7, 9, 11]	Collect one raw water sample at each source or in accordance with a State-approved sampling plan.[6, 7, 9]	As directed by State[10]
Source water sample(s) fecal indicator positive[7, 10]	Ground water system or ground water source not providing or not documenting 4-log virus treatment	All	Five raw water samples for fecal indicator or immediate corrective action as directed by State[6, 9, 11]	Fecal indicator sampling from source or sources with initial fecal indicator positive samples[6, 7]	As directed by State[10, 11]

Table 11B (cont.)

[1] After any total coliform positive sample from the distribution system, the system must collect repeat samples on the same day and within 24 hours of being notified.

[2] GWUDI = Ground Water Under the Direct Influence of surface water

[3]The month following repeat sample collection, the system must collect a minimum of five routine distribution system samples. The State may waive, in writing, the requirement to collect five routine samples the next month the system provides water to the public, if the State carries out an onsite visit before the end of the next month and the State determines why the sample was total coliform positive and establishes that the system has corrected the problem. The State cannot waive the requirement to collect five routine samples solely on the basis that all the repeat samples were total coliform negative. Before the end of the next month the system serves water to the public, at least one routine sample to determine compliance with the MCL must be collected by the system as required in Table 11. If the State determines that the system has corrected the problem that allowed the total coliform contamination and if all repeat samples were total coliform negative, only the routine samples will be required the following month.

[4] The sample may be collected in four (4) bottles of equal sample volume taken consecutively from the same tap, or a single bottle four (4) times the minimum sample volume. If *E. coli* is used as the fecal indicator at a ground water system, a single sample of three (3) times the minimum sample volume or three (3) bottles of minimum required sample volume may be collected consecutively from the tap and the fourth sample collected from the raw water source. This source water sample result must be used to determine compliance with all Table 6 requirements.

[5] If a consecutive system purchasing (or otherwise obtaining) ground water from a wholesale system has a total coliform-positive sample from the distribution system, the system must notify the wholesale system and collect distribution system repeat samples as specified in Table 11B within 24 hours. The wholesale system must collect raw source water sample(s) unless the system provides 4-log virus treatment at peak flow before or at the first customer as confirmed through process compliance monitoring.

[6] Sampling plan requirements are given in subdivision 5-1.51 (c) of this Subpart.

[7] Fecal indicators include *E. coli*, enterococci and coliphage. Sampling for fecal indicators other than *E.coli* is at State discretion.

[8] A system with a single well may collect a single raw water sample to serve as both a distribution repeat sample to replace the “at random” location sample and a raw water sample taken following a routine total coliform positive sample, if *E. coli* is used as the fecal indicator. If this dual-purpose source water sample is collected, the sample result must be used to determine compliance with all Table 6 requirements.

[9] Wholesale system source water sampling requirements are in addition to distribution system sampling requirements for consecutive systems.

[10]In the event of a fecal indicator positive sample from the raw source water, the state must be notified immediately and may require immediate corrective action. In no case will notification be later than 24 hours as described in paragraph 5-1.78(d)(4) of this Subpart.

[11]If a ground water wholesale system does not perform 4-log virus treatment and process compliance monitoring, and has a fecal indicator positive sample from a raw source water, the system must notify any consecutive systems as well as any of its own customers.

Table 13 - REQUIRED NOTIFICATIONS

Contaminant/Situation (Subpart 5-1 citations)	**Single sample exceeds MCL/MRDL[1]**	**MCL/MRDL/TT[1] violation**	**Failure to meet monitoring requirements and/or failure to use applicable testing procedure**
Public Health Hazard (section 5-1.1(bc))[2]	Not applicable	State Tier 1	State Tier 1
Escherichia coli (E. coli) in distribution system (section 5-1.52 tables 6, 11 and 11B)	[3]State Not applicable, or [4]Tier 1	State Tier 1	State [5]Tier 3, or Tier 1
E. coli or other fecal indicator detected in ground water source at system not providing both 4-log virus treatment and process compliance monitoring (section 5-1.52 tables 6, 11 and 11B)	[2,3, 5, 6]Tier 1	[6]Tier 1	State [2, 5, 7]Tier 3, or Tier 1
Total coliform in distribution system (section 5-1.52 tables 6, 11 and 11B)	Not applicable	[8]State [9]Tier 2, or Tier 1	State Tier 3, or Tier 2 as directed by State
Entry Point Turbidity monthly average (section 5-1.52 tables 4 and 10)	[10]State	State Tier 2	State Tier 3
Entry Point Turbidity two day average (section 5-1.52 tables 4 and 10)	State	State [11]Tier 2, or Tier 1	State Tier 3
Raw Water Turbidity (subdivision 5-1.30(d) and section 5-1.52 table 10A)	State	State [11]Tier 2, or Tier 1	State Tier 3
Filtered Water Turbidity Single exceedance of the maximum allowable Turbidity level (section 5-1.52 tables 4A and 10A)	State	State [11]Tier 2, or Tier 1	State Tier 3
Filtered Water Turbidity Treatment Technique violation (section 5-1.52 tables 4A and 10A)	Not applicable	State Tier 2	State Tier 3

Table 13 (cont.)

Contaminant/Situation (Subpart 5-1 citations)	**Single sample exceeds MCL/MRDL[1]**	**MCL/MRDL/TT[1] violation**	**Failure to meet monitoring requirements and/or failure to use applicable testing procedure**
Distribution Point Turbidity (section 5-1.52 tables 5, 10 and 10A)	Not applicable	State Tier 2	State Tier 3
[12, 13] Treatment Technique violations other than turbidity (subdivisions 5-1.12, 5-1.30 and 5-1.71(d))	Not applicable	State [2, 13]Tier 2, or Tier 1	State [13]Tier 3
[14]Free chlorine residual less than 0.2 mg/L at the entry point (subdivision 5-1.30(d))	Not applicable	State	Not applicable
[15]Free chlorine residual less than required minimum for a ground water system or ground water source required to provide 4-log virus treatment (subdivision 5-1.30(a))	Not applicable	State [9]Tier 2, or Tier 1	Tier 2
Inorganic chemicals and physical characteristics listed in Tables 8A and 8B (section 5-1.52 tables 1, 8A, and 8B)	State	State Tier 2	State Tier 3
Chloride, iron, manganese, silver, sulfate, and zinc (section 5-1.52 tables 1 and 8D)	Not applicable	State Tier 3	State Tier 3
Sodium (section 5-1.52 tables 1 and 8D)	State if the level exceeds 20 mg/L	Tier 2 if the level exceeds 270 mg/L	Tier 3
Nitrate, Nitrite, Total Nitrate and Nitrite (section 5-1.52 tables 2 and 8C)	State	State Tier 1	State [16]Tier 1, or Tier 3
Lead and Copper (sections 5-1.40 to 1.49)	Not applicable	State Tier 2	State Tier 3
Organic Chemicals Group 1 and 2 (section 5-1.52 table 9C)	State	State Tier 2	State Tier 3

Table 13 (cont.)

Contaminant/Situation (Subpart 5-1 citations)	**Single sample exceeds MCL/MRDL[1]**	**MCL/MRDL/TT[1] violation**	**Failure to meet monitoring requirements and/or failure to use applicable testing procedure**
Principal Organic Contaminants Unspecified Organic Contaminants Total POCs and UOCs (section 5-1.52 tables 3, 9B and 9D)	State	State Tier 2	State Tier 3
Radiological Contaminants (section 5-1.52 tables 7 and 12)	State	State Tier 2	State Tier 3
Monitoring and Control of Disinfection Byproduct Precursors (section 5-1.60 to 5-1.64)	Not applicable	State Tier 2	State Tier 3
Disinfectant residuals Chlorine and Chloramine (section 5-1.52 tables 3A and 15)	State	State Tier 2	State Tier 3
Disinfectant residual Chlorine dioxide At entry point (section 5-1.52 tables 3A and 15)	State	State Tier 2	State [17]Tier 3, or Tier 2
Disinfectant residual Chlorine dioxide In distribution system (section 5-1.52 tables 3A and 15)	State	State [18]Tier 1	State [18]Tier 1
Disinfection byproducts Trihalomethanes Haloacetic acids (section 5-1.52 tables 3 and 9A) and Bromate and Chlorite (section 5-1.52 tables 1 and 8B)	Not applicable	State Tier 2	State Tier 3

Table 13 (cont.)

Contaminant/Situation (Subpart 5-1 citations)	**Single sample exceeds MCL/MRDL[1]**	**MCL/MRDL/TT[1] violation**	**Failure to meet monitoring requirements and/or failure to use applicable testing procedure**
Acrylamide and Epichlorohydrin (subdivision 5-1.51(j))	Not applicable	State Tier 2	Not applicable
Operation under a variance or exemption	Not applicable	Tier 3	Not applicable
Violation of conditions of a variance or exemption	Not applicable	State Tier 2	Not applicable
Disruption of water service of four hours or more (subdivision 5-1.23(b))	Not applicable	[19]State	Not applicable

[1]MCL-maximum contaminant level, MRDL-maximum residual disinfectant level, TT-treatment technique

[2]Community systems must describe in their annual water supply statement (5-1.72(e)), prepared in accordance with section 5-1.72(f), any Public Health Hazard that is determined to be a violation, or any uncorrected significant deficiency, and indicate whether corrective action is completed. This notice must be repeated every year until the annual report documents that corrective action is completed in accordance with section 5-1.22 of this Subpart.

[3] State notification must be made by the supplier of water within 24 hours of learning of an *E. coli* positive sample.

[4]Public notification normally does not have to be issued for an *E. coli* positive sample prior to the results of the repeat samples. However, there may be situations where the State determines that a Tier 1 notification is necessary to protect the public health. The supplier of water must provide the Tier 1 notification no later than 24 hours after learning of the State's determination.

[5]Failure to test for *E. coli* requires a Tier 1 notification if testing is not done after any repeat sample tests positive for coliform. All other *E. coli* monitoring and testing procedure violations require Tier 3 notification.

[6]At a ground water system, Tier 1 notification is required after initial detection of *E. coli* or other fecal indicator in raw source water, if system does not provide 4-log virus treatment and process compliance monitoring. Confirmation of *E. coli* or other fecal indicator in the source water requires Tier 1 notification. Failure to take confirmatory samples may be a public health hazard requiring Tier 1 notification.

[7] Notice of the fecal indicator positive raw water sample must be made in the annual water supply statement (5-1.72(e)), until the annual report documents that corrective action is completed.

Table 13 (cont.)

[8]State notification must be made by the supplier of water within 24 hours of learning of the violation.

[9]Tier 2 notification is normally required, however, there may be situations where the State determines that a Tier 1 notification is necessary to protect the public health. The supplier of water must provide the Tier 1 notification no later than 24 hours after learning of the State's determination.

[10]If the daily entry point analysis exceeds one NTU, a repeat sample must be taken as soon as practicable and preferably within one hour. If the repeat sample exceeds one NTU, the supplier of water must make state notification.

[11]Systems must consult with the State within 24 hours after learning of the violation. Based on this consultation, the State may subsequently decide to elevate the violation from a Tier 2 to a Tier 1 notification. If consultation does not take place within the 24-hour period, the water system must distribute a Tier 1 notification no later than 48 hours after the system learns of the violation.

[12]These violations include the following: failure to comply with the treatment technique or monitoring requirements in section 5-1.30(a), (b), (c), and (g) of this Subpart; failure to comply with the avoidance criteria in section 5-1.30(c) of this Subpart; and failure to install filtration or disinfection treatment facilities required by section 5-1.30 of this Subpart; failure to report to the state information required in section 5-1.72(c)(3) of this Subpart; and failure to maintain records required in section 5-1.72(c)(7) of this Subpart.

[13]Any significant deficiency that is not corrected or where correction has not begun according to a State-approved corrective action plan within 120 days, or as directed by the State, is a treatment technique violation and must be addressed in accordance with the requirements in section 5-1.12. If the deficiency is a public health hazard, the deficiency must be addressed as directed by the State and Tier 1 notification is required.

[14]Applies to systems that have surface water or groundwater directly influenced by surface water as a source and use chlorine. The system must make State notification whether the residual was restored to at least 0.2 mg/L within four hours.

[15]Required minimum chlorine residual at point that demonstrates adequate CT for disinfected water from ground water sources at first customer.

[16]Failure to take a confirmation sample within 24 hours for nitrate or nitrite after an initial sample exceeds the MCL requires a Tier 1 notification. Other monitoring violations for nitrate or nitrite require a Tier 3 notification.

[17]Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system requires a Tier 2 notification. Other monitoring violations for chlorine dioxide at the entrance to the distribution system require a Tier 3 notification.

[18]If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system the day after the MRDL is exceeded at the entry point also triggers Tier 1 notification.

[19]Tier 1 notification is required if the situation meets the definition of a public health hazard.

Table 15 Entry Point Disinfectant Monitoring Frequency for Systems Using Chemical Disinfection[1]

Water System Source Type	Population served	Samples per day[4]
Surface Water or Ground Water under the Direct Influence of Surface Water (GWUDI)[2, 3]	Up to 500	1
	501 - 1,000	2
	1,001 - 2,500	3
	2,501 - 3,300	4
	> 3,300	Continuous monitoring required[5]
Ground Water System or ground water source required to provide 4-log virus treatment and process compliance monitoring [6, 7, 8]	≤ 3,300	1[9]
	> 3,300	Continuous monitoring required[5]
Ground Water System or ground water source with other than 4-log virus treatment	Any	1[9]

[1]See also Table 15A for distribution system disinfectant residual sampling locations and frequency depending on disinfectant used.

[2]If at any time chlorine residual concentration falls below 0.2 mg/L at the entry point for a surface water or GWUDI system, the system must collect and analyze a grab sample every four hours until the chlorine residual concentration is again equal to or greater than 0.2 mg/L.

[3]Entry point samples collected at Surface Water or GWUDI systems

[4]The day's grab samples may not be conducted at the same time.

[5]If there is a failure in the continuous monitoring equipment, grab samples, every four hours, may be conducted in lieu of continuous monitoring, but for no more than five working days (fourteen working days for ground water systems) following the failure of the equipment.

[6]If at any time the disinfectant concentration at a ground water system falls below the minimum required in the process compliance monitoring plan approved by the State, the system must collect and analyze a grab sample every four hours until the disinfectant residual concentration is again at or above minimum required levels, without exceeding other applicable concentration requirements in Table 3A.

[7]Any ground water system required to provide 4-log virus treatment because of fecal contamination of the source or because of significant deficiencies in system operation, and using chemical disinfection, must demonstrate minimum disinfectant residual at a location that demonstrates adequate concentration to provide the required treatment at the first customer during peak flow according to the sampling plan developed for the system. These samples to confirm the minimum disinfection residual are to be collected at the frequency in this table.

[8]Lowest daily concentration must be recorded on operation report.

[9]A minimum of one disinfectant residual concentration must be recorded on operation report every day.

Table 15A
Disinfectant Residual Minimum Distribution System Monitoring Requirements for Systems Using Chemical Disinfection

Disinfectant	Type of Water System	Routine Monitoring
Chlorine Chloramines	Community and Nontransient Noncommunity	Sample at the same time and same points in the distribution system as total coliform sampling[1]
Chlorine Dioxide[2]	Community, Nontransient Noncommunity and Transient Noncommunity	Daily sample at the entrance to the distribution system[3]

[1]Community Water Systems using surface water or ground water under the direct influence of surface water may use heterotrophic plate count results of equal to or less than 500 colonies per milliliter as equivalent to a free chlorine residual as outlined in table 11, footnote 5, in lieu of taking separate samples for disinfection residuals

[2]Monitoring is required if chlorine dioxide is used for either oxidation or disinfection.

[3]If the Maximum Residual Disinfectant Level (MRDL) of 0.8 mg/L is exceeded, the system must take three samples in the distribution system on the following day. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used and there are no rechlorination stations, the system must take 3 samples as close to the first customer as possible, at intervals of at least 6 hours. If chlorine is used and there is a rechlorination station, the system must take one sample as close to the first customer as possible, one sample representing average residence time, and one sample representing maximum residence time.

The title of Table 16 of Section 5-1.52 is amended to read as follows:

Table 16. Additional Contaminants [Required to be Reported] for which Reporting is Required Pursuant to 5-1.72 (e)-(h) of this Subpart

Section 5-1.70 is amended to read as follows:

5-1.70 Applicability.

Sections 5-1.70 through 5-1.79 of this Subpart shall be applicable to all public water systems, provided the systems serve 15 or more service connections or serve 25 or more persons. Subdivisions 5-1.71 (c) and (d), subdivision 5-1.72 (c), and paragraph 5-1.78(a)(4) apply to all public water systems.

New subdivisions (c) and (d) of Section 5-1.71 are added, to read as follows:

(c) If the State notifies the supplier of water that a significant deficiency exists, the supplier of water shall consult with the State within 30 days regarding corrective action. Within 120 days of being notified that a significant deficiency exists (or earlier if the State determines that action is necessary to protect public health), the supplier of water shall correct the significant deficiency or be in compliance with a corrective action plan to correct the deficiency. The corrective action plan must specify appropriate modifications and/or improvements to the existing system or facility as may be necessary to fully conform to the requirements of this Subpart.

(d) Any significant deficiency that is not corrected or where correction has not begun according to a corrective action plan prepared to meet the requirements of this code, within 120 days, or as directed by the State, is a treatment technique violation and must be addressed in accordance with the requirements in section 5-1.12. If the deficiency is a

public health hazard, the deficiency must be addressed as directed or approved by the State and Tier 1 notification is required.

Subdivision 5-1.72 (c) is amended to read as follows:

(c) Complete records shall be kept of the operation of a public water system [on forms provided or approved by the department].

(1) A copy of [such] daily operation records in a format provided or approved by the State shall be sent to the State by the 10th calendar day of the next reporting period. These records shall include the results of all tests, measurements or analysis required to be made by this Subpart or as requested by the State. [Other] All operational records shall be available [for inspection by the State] to the State either upon request or in conjunction with periodic sanitary surveys conducted by the State.

* * *

New paragraph (4) is added to subdivision 5-1.72(c) to read as follows:

(4) Ground water systems and ground water sources that are required to conduct process compliance monitoring to assure the achievement of 4-log virus treatment, must record the lowest treatment performance each day and record the date and duration of any failure to achieve 4-log virus treatment for a period of more than four hours. In the event of failure to achieve required virus treatment, the system shall continue to monitor treatment performance every four hours until the system returns to compliance with minimum performance requirements. The State must be notified of any failure to meet process

compliance monitoring requirements as well as any failure to achieve 4-log virus treatment, as soon as possible, but no later than the end of the next business day.

Paragraph (2) of subdivision 5-1.72(d) is amended to read as follows:

(2) Records of corrective actions taken by the supplier of water to correct significant deficiencies and/or violations of the requirements of this Subpart shall be retained for at least [three] ten years.

Paragraph (5) of subdivision 5-1.72(f) is amended to read as follows:

(5) Information on detected contaminants from sampling used to determine compliance. For the purpose of this subdivision (except Cryptosporidium, Giardia, and radon monitoring), detected means: at or above the contaminant's minimum detection limit (MDL), as specified in Appendix 5-C of this Subpart or as prescribed by the State. Any contaminants specified in sections 5-1.41 (lead and copper) and 5-1.51 of this Subpart and section 5-1.52 tables 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D, 10, 10A, 11, 11A, 11B, 12, 16 and 17 of this Subpart that are detected during compliance monitoring must be displayed in one table or in several adjacent tables. Additionally, the report shall include detected monitoring results for samples collected and analyzed by the State and/or detected monitoring results of additional samples required by the State. If a system is allowed to monitor for specific contaminants less often than once a year, the table must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are from the most recent testing done in

accordance with the regulations. No data older than five years need be included. For the contaminants listed in section 5-1.52 tables 8A, 8B, 8C, 8D, 9A, 9B, 9C, 9D, 10, 10A, 11, 11B, 12, 16 of this Subpart the table(s) must contain:

Subparagraph (*viii*) of paragraph (5) of subdivision 5-1.72(f) is amended to read as follows:

(*viii*) for *E. coli* detected in the distribution system: the total number of positive samples; and

New paragraphs (16) and (17) of subdivision 5-1.72(f) are added to read as follows:

(16) Water systems are required to include information regarding significant deficiencies as follows:

(*i*) any significant deficiency that remains uncorrected at the end of the year (December 31) or any other significant deficiency as directed by the State. A description of the significant deficiency must include: the date the significant deficiency was identified by the State; status of corrective action; the completion date if corrective action has been completed; and if corrective action has not been completed, the reason why it has not been completed. Uncorrected significant deficiencies must be reported each year until the annual report documents that corrective action is completed; and

(*ii*) any failure to take corrective action to correct a significant deficiency in system facilities or operation, including a description of the significant deficiency, the date the significant deficiency was identified by the State, and the reason why corrective action has not been taken.

(17) Ground water systems and systems with ground water sources are also required to include information regarding source sampling and process compliance monitoring as follows:

(*i*) Report of fecal indicator positive ground water source sample, including: the date the fecal contamination of the source was identified; the likely source of the contamination, if known; the date(s) and status of any corrective action; and potential health effects language prescribed by the State.;

(*ii*) If required to perform 4-log virus treatment, failure to provide the treatment must be described including date(s) of failure and whether 4-log virus treatment has resumed; and

(*iii*) If required to perform 4-log virus treatment, failure to meet process compliance monitoring requirements must be described including date(s) of failure and whether the required process compliance monitoring has resumed.

Subdivision 5-1.74(a) is amended to read as follows:

(a) For determining compliance with the Subpart, results of analyses may be considered only if they have been performed by an environmental laboratory approved in accordance with Subpart 55-2 of this Title of the administrative rules and regulations of the State (10 NYCRR Part 55, Subpart 55-2). However, measurements for pH, temperature, conductivity, turbidity, disinfectant residual, alkalinity, calcium, orthophosphate, bromide, chlorite, total organic carbon (TOC) concentration, dissolved organic carbon concentration, ultraviolet (UV) absorption [at 254 nanometers], and silica may be performed by any person with a demonstrated ability to perform these analyses.

Section 5-1.76 is amended to read as follows:

5-1.76 [Monitoring of consecutive] Consecutive public water systems.

(a) When a public water system supplies water to one or more [other] consecutive public water systems, the State may modify the monitoring requirements of this Subpart when the circumstances justify treating them as a single system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule approved by the State, in accordance with the provisions of sections 5-1.51 and 5-1.52 of this Subpart.

(b) Consecutive systems must follow section 5-1.52 Table 11B of this Subpart in the event of a total coliform positive sample from their distribution system. When a consecutive system that receives ground water from a wholesale system is notified of a positive total coliform sample result, the consecutive system must, within 24 hours, notify the State, the wholesale system and any other wholesale system that owns and/or operates ground water sources that provides water used by the consecutive system. If all the water provided by the consecutive system has been subject to 4-log virus treatment and process compliance monitoring, notification by the consecutive system about the total coliform sample is not required.

After notification, the wholesaler must, within 24 hours, test its raw water source(s) for fecal indicator organism(s) in accordance with section 5-1.52 Table 11B of this Subpart at the location(s) specified in the monitoring plan described in section 5-1.51 of this Subpart.

New subdivision (c) is added to Section 5-1.77 to read as follows:

(c) Ground water systems and ground water sources that complete corrective action to correct significant deficiencies or address fecal contamination of a ground water source must notify the state within 30 days of the completion of the action.

New paragraph (4) is added to subdivision 5-1.78(a) to read as follows:

(4) Public notification is required when a significant deficiency is identified at a public water system that is not required to prepare an annual water supply statement (report), as directed in sections 5-1.72 (e) and (f) of this subpart. If the water system has been notified by the State of a significant deficiency and it has not been corrected as directed or approved by the State, the system must notify its customers in a format prescribed or approved by the State. Notice must be provided if any significant deficiency has not been corrected within 12 months of State notification or as otherwise directed by the State. The system must continue to inform the public until the significant deficiency is corrected.

Subdivision 5-1.78 (c) is amended to read as follows:

(c) Tier 1 notification requirements (public health hazards, as defined in subdivision [5-1.1(aw)] 5-1.1 (bc) of this Subpart, require Tier 1 notification).

Paragraph (4) of Subdivision 5-1.78(d) is renumbered to be Paragraph (5) and a new Paragraph (4) is added to read as follows:

(4) Consultation with the State is required within 24 hours after a ground water system or ground water source learns of any of the following:

(i) A fecal indicator positive sample from the source(s) as specified in section 5-1.52 table 6 of this subpart;

(ii) A significant deficiency that is considered to constitute a public health hazard; or

(iii) Failure of 4-log virus treatment by the water system that is not resolved within four hours.

The State will determine whether Tier 1 notification is required to protect public health. When consultation does not take place within the 24-hour period, the water system must distribute Tier 1 notification no later than 48 hours after the system learns of the violation or exceedance.

Appendix 5-A is REPEALED and a new Appendix 5-A is added to read as follows:

APPENDIX 5-A

RECOMMENDED STANDARDS FOR WATER WORKS, 2007 EDITION

"Recommended Standards for Water Works, 2007 edition", published by Health Research Inc., Health Education Services Division, P.O. Box 7126, Albany, NY 12224, (518) 439-7286, www.hes.org and reported by the Water Supply Committee of the Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers. Available from Health Research Inc., at the address above, for a nominal fee. Also available online at http://10statesstandards.com/waterstandards.html and is available for viewing at the Department of State, One Commerce Plaza, 99 Washington Avenue, Albany, NY 12231 and the Bureau of Water Supply Protection,

Department of Health, Flanigan Square, 547 River Street, Troy, NY 12180.

Item IV. of the table of contents of Appendix 5-C is amended to read as follows:

IV. Microbiological Contaminants (Tables 6, 11, 11A, 11B)

The text of item IV. of Appendix 5-C is amended, and the table and footnotes thereto are repealed and a new table and footnotes are added, so that item IV. reads as follows:

IV. MICROBIOLOGICAL CONTAMINANTS ([Tables 6, 11 and 11A] Tables 6, 11, 11A and 11B)

A. Laboratory Certification - Measurement of total coliforms, fecal coliforms, *E.coli*., enterococci, coliphage and heterotrophic plate count (HPC) must be conducted by a laboratory certified by the Department's Environmental Laboratory Approval Program (ELAP) for the method used.
B. Approved Methods – the following analytical methods are acceptable for measurement of microbiological contaminants:

Approved Methods[1,2]	Media	Reference Method[3,4]
Total Coliforms[5]		
Fermentation broth method[6,7,8]	LTB BGLB Broth	SM 9221B
	P-A Broth BGLB Broth[8,10]	SM 9221D
Enzyme substrate method	Colilert, Colilert-18[11]	SM 9223
	Colisure[12,13]	SM 9223
	E*colite Test[14]	
Membrane filter method	mEndo or LES-Endo	SM 9222B
	MI Agar[9]	
	m-ColiBlue 24[15]	
Fecal Coliforms[5]		
Fermentation broth method	EC broth	SM 9221E

	A-1 broth[17]	SM 9221E
Membrane filter method	MFC	SM 9222D
Escherichia coli		
Enzyme substrate method	Colilert or Colilert-18	SM 9223
	Colisure[12,13]	SM 9223
	E*Colite[14]	
	LTB or P/A broth then EC-MUG[16]	SM 9221F[16]
Membrane filter method	MI Medium[9]	
	m-ColiBlue24[15]	
	mEndo or LES Endo[16] then NA-MUG[16]	SM 9222G[16]
Heterotrophic Bacteria[5]		
Pour plate method		SM 9215B
Enterococci		
	Multiple-Tube Technique	9230B[18]
	Membrane Filter Technique	EPA Method 1600[19]
	Enterolert[20]	
Coliphage		
	Two-Step Enrichment Presence-Absence Procedure	EPA Method 1601[21]
	Single Agar Layer Procedure	EPA Method 1602[22]

[1]It is strongly recommended that laboratories evaluate the false-positive and negative rates for the method(s) they use for monitoring total coliforms. Laboratories are also encouraged to establish false-positive rates within their own laboratory and sample matrix (drinking water or source water) with the intent that if the method they choose has an unacceptable false-positive or negative rate, another method can be used. When one of the approved methods does not include confirmatory samples, it is recommended that confirmatory analysis is performed on a minimum of 5% of all total coliform-positive samples. Methods for establishing rates of false-positive and

negative may be established based on: lactose fermentation; the rapid test for β-galactosidase and cytochrome oxidase; multi-test identification systems; or equivalent confirmation tests. False-positive and false negative information is often available in published studies and/or from the manufacturer(s).

[2]Preparation of EC medium is described in Method 9221 E (paragraph 1a) and preparation of Nutrient Agar is described in Method 9221 B (paragraph 3). Both methods are in "Standard Methods for the Examination of Water and Wastewater", 20th Edition, 1998, and 21st Edition, 2005; either edition may be used.

[3]SM = "Standard Methods for the Examination of Water and Wastewater", 20th Edition, 1998, or 21st Edition, 2005, American Public Health Association, Washington, D.C.; either edition may be used.

[4]Methods 9221 A, B; 9222 A, B, C; 9221 D and 9223 are contained in “Standard Methods for the Examination of Water and Wastewater", 20th Edition, 1998, or 21st Edition, 2005, American Public Health Association, Washington, D.C.; either edition may be used.

[5] The time from sample collection of a drinking water sample to initiation of total coliform analysis may not exceed 30 hours. The time from sample collection of a drinking water sample to initiation of heterotrophic bacteria analysis may not exceed 8 hours. Raw water samples may not exceed 8 hours. Systems are encouraged, but not required to hold samples below 10°C during transit.

[6] Lactose broth, as commercially available, may be used in lieu of lauryl tryptose broth, if the system conducts at least 25 parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate for total coliforms, using lactose broth, is less than 10 percent.

[7] If inverted tubes are used to detect gas production, the media should cover these tubes at least one-half to two-thirds after the sample is added.

[8] No requirement exists to run the completed phase on 10 percent of all total coliform-positive confirmed tubes.

[9]Preparation and use of MI agar is set forth in the article, "New medium for the simultaneous detection of total coliform and *Escherichia coli* in water" by Brenner K.P., et al., 1993, Appl. Environ. Microbiol. 59:3534-3544. Also available from the Office of Water Resources Center (RC-4100), 1200 Pennsylvania Avenue, SW, Washington, D.C. 20460, EPA 600/J-99/225.

[10]Six-times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.

[11]The Chromogenic Substrate Coliform Test or ONPG-MUG Test is also known as the Autoanalysis Colilert System.

[12]A description of the Colisure Test, Feb. 28, 1994, may be obtained from the IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092.

[13] The Colisure test may be read after an incubation time of 24 hours.

[14] A description of the E*Colite® Test, "Presence/Absence for Coliforms and *E. coli* in Water", Dec. 21, 1997, is available from Charm Sciences, Inc., 659 Andover St., Lawrence, MA 01843–1032 or from EPA's Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

[15] A description of the m-ColiBlue24® Test, ''Total Coliforms and *E. coli* Membrane Filtration Method with m-ColiBlue24 Broth,'' Method No. 10029 Revision 2, Aug. 17, 1999, is available from Hach Company, 100 Dayton Avenue, Ames, IA 50010 or from EPA's Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460.

[16] EC–MUG (Method 9221F) or NA–MUG (Method 9222G) can be used for *E. coli* testing step as described in § 141.21(f)(6)(i) or (ii) after use of Standard Methods 9221 B, 9221 D, (for 9221F) or 9222 B, or 9222 C (for 9222G).

[17]A-1 Broth may be held up to 3 months in a tightly closed screwcap tube at 4°C.

[18]Methods are described in Standard Methods for the Examination of Water and Wastewater 20th edition, 1998 or 21st edition, 2005; copies may be obtained from the American Public Health Association, Washington, DC.

[19]EPA Method 1600: Enterococci in Water by Membrane Filtration Using membrane-Enterococcus Indoxyl–b–D–Glucoside Agar (mEI) EPA 821–R–02–022 (September 2002) is an approved variation of Standard Method 9230C. The method is available at http://www.epa.gov/nerlcwww/ 1600sp02.pdf or from EPA's Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW, Washington, DC 20460. The holding time and

temperature for ground water samples are specified in footnote 2 above, rather than as specified in Section 8 of EPA Method 1600.

[20]Medium is available through IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092. Preparation and use of the medium is set forth in the article ‘‘Evaluation of Enterolert for Enumeration of Enterococci in Recreational Waters,’’ by Budnick, G.E., Howard, R.T., and Mayo, D.R., 1996, Applied and Environmental Microbiology, 62:3881–3884.

[21]EPA Method 1601: Male-specific (F+) and Somatic Coliphage in Water by Two-step Enrichment Procedure; April 2001, EPA 821–R–01–030. Method is available at http://www.epa.gov/nerlcwww/1601ap01.pdf or from EPA’s Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

[22]EPA Method 1602: Male-specific (F+) and Somatic Coliphage in Water by Single Agar Layer (SAL) Procedure; April 2001, EPA 821–R–01– 029. Method is available at http://www.epa.gov/nerlcwww/1602ap01.pdf or from EPA’s Water Resource Center (RC–4100T), 1200 Pennsylvania Avenue, NW., Washington, DC 20460.

VI. of Appendix 5-C is amended to read as follows:

VI. RESIDUAL DISINFECTANTS

A. Approved Methods – The analysis of [Residual Disinfectants] residual disinfectants shall be conducted using one of the following analytical methods:

Disinfectant	Reference Methodology	Reference Methods[1]
Free and Combined Chlorine[2]	Amperometric Titration Method	4500-C1 D
	Low Level Amperometric Titration	4500-Cl E
	DPD Ferrous Titrimetric Method	4500-C1 F
	DPD Colorimetric Method[3]	4500-C1 G
	Syringaldazine (FACTS) Method	4500-C1 H
Ozone	Indigo Colorimetric Method	4500-O_3 B
Chlorine Dioxide	DPD Method	4500-$C1O_2$ D
	Amperometric Method II	4500-$C1O_2$ E

[1] "Standard Methods for the Examination of Water and Wastewater", [18th Edition, 1992] 20th Edition, 1998, or [19th Edition, 1995] 21st Edition, 2005, American Water Works Association, Water Environment Federation, American Public Health Association; either edition may be used.

[2]Free and total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument provided the chemistry, accuracy, and precision of the measurement remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every 5 days, or with a protocol approved by the State.

[3]The Hach Company Method No. 8167 (Version no. 1, dated April 24, 1995) as found in Hach Method 8021 in the "Water Quality Analysis Handbook", 3rd edition, by Hach Company, Loveland, Colorado, 1997, pg. 335, for determining total chlorine is an acceptable version of the spectrophotometric, DPD, Standard Method 4500-C1-G in "Standard Methods for the Examination of Water and Wastewater", [18th Edition, American Public Health Association, 1992], 20th Edition, 1998, or 21st Edition 2005; either edition may be used.

VII. of Appendix 5-C is amended to read as follows:

VII. GENERAL REFERENCES

More information about the regulations pertaining to the parameters listed in this appendix can be found in 40CFR parts 141.23, 141.24, National Primary and Secondary Drinking Water Regulations.

Copies of documents referenced in this appendix may be obtained from the National Technical Information Services, U.S. Department of Commerce, 5285 Pont Royal Road, Springfield, Virginia 22161 or online at: http://www.ntis.gov/.

Copies of cited references are available for review and inspection from Records Access Officer, Department of Health, [Room 2230, Corning Tower, Empire State Plaza, Albany, New York 12237] Corning Tower, Room 2364, Albany, New York 12237-0044 and New York State Department of State, Office of Information Services, [41 State Street]99 Washington Ave., Albany, New York 12231.

Copies of "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, American Public Health Association, Washington, D.C., are available for review and inspection from the Department of Health, Bureau of Water Supply Protection, 547 River Street, Room 400, Troy, NY 12180.

U.S. EPA. "Technical Notes on Drinking Water Methods", Office of Research and

Development, Washington, DC 20460. EPA/600/R-94/173, October 1994 (EPA, 1994).

Copies of EPA analytical methods may be obtained online at http://water.epa.gov/scitech/drinkingwater/labcert/analyticalmethods_ogwdw.cfm, by contacting EPA's Safe Drinking Water Hotline at 1-800-426-4791, or by [email: sdwh@erols.com]contacting the EPA using one of the contact options listed at http://water.epa.gov/drink/contact.cfm.

Regulatory Impact Statement

Statutory Authority:

Public Health Law Section 201(1)(l) authorizes the Department of Health (DOH) to regulate public water systems. In addition, Section 225 (8) requires the DOH to establish a system of public notification of public health hazards to be used by public water systems (PWSs). The revisions are in accord with the requirements of the United States Environmental Protection Agency for the Ground Water Rule (GWR), at 71 FR 65574, November 8, 2006, Vol. 71, No. 216 Correction 71 FR 67427, November 21, 2006, Vol. 71, No. 224.

Legislative Objectives:

The legislative objective is to protect public health. The purpose of promulgating these revised regulations is the enhancement of current protections governing public water supply systems with ground water sources for protection of the health of the consumers. Further, it is necessary to update the State Sanitary Code to be consistent with federal requirements in order to minimize burdens placed on regulated parties.

Needs and Benefits:

An estimated 8,600 public water systems (PWSs) in New York State, serving over 3.6 million people, use ground water as the source of drinking water. The United States Environmental Protection Agency (EPA) promulgated revised federal drinking water regulations to reduce potential adverse health risks that may be associated with ground water sources and, in particular, the risks associated with fecal contamination. Fecal contamination includes all of the bacteria and viruses—both pathogenic (disease-causing) and non-pathogenic—found in feces. Under certain circumstances, these microorganisms can migrate into ground water sources. Unlike existing requirements for surface water sources, no earlier federal regulations required filtration or disinfection of ground water sources to remove microbial contaminants, although New York State currently requires disinfection at all public water systems, including ground water systems.

These revisions to the PWS regulations, 10 NYCRR Subpart 5-1, are proposed to implement federally mandated provisions of the GWR that were promulgated in October 2006 and became effective December 1, 2009. The GWR aims to improve upon the protection provided by existing sanitary survey requirements for Ground Water Systems (GWSs). A risk-targeted approach was selected for implementation. Because of the difficulties involved in monitoring for the wide range of specific pathogenic bacteria and viruses that could occur in ground water, one of the key provisions of the risk-targeted approach is monitoring for a more easily measured bacterial or viral fecal indicator microorganism. Based on source water sampling results, as well as sanitary survey

results, PWSs will be required to take action to minimize the possible presence of pathogenic bacteria and viruses that pose threats to human health.

In the event that the revisions are not made, water systems will still be required to comply with the regulations, and additionally work directly with a second agency for oversight and enforcement. Oversight of public water systems in New York State is by State and Local Health Departments: State, City, and County Health Departments (SLHDs). If the revised regulations are not adopted, oversight of water systems for the GWR will be done directly by EPA while oversight for the implementation of the remaining aspects of public water system oversight will continue under the SLHDs. Additional reporting will be required for both agencies.

The Economic Analysis for the GWR (EAGWR) that was prepared by EPA (EPA 815-R-06-014, October 2006), is available at: http://www.epa.gov/safewater/. It reports that the "GWR will provide important protection against illnesses and deaths attributable to ground water contamination. EPA also believes that the GWR will provide this desired protection from groundwater pathogen contamination at a justifiable cost." EPA found that "The GWR is cost-effective (using either the Enhanced or the Traditional Cost of Illness approach): no other alternative achieves greater benefits at the same cost or the same benefits at lower cost."

After a new federal regulation is adopted, requirements must be fulfilled so the State can obtain primacy enforcement responsibility (primacy), a formal process of transfer of

authority for rule implementation in which EPA ensures that the State has the authority to take all necessary actions for rule implementation. The GWR was promulgated with a primacy deadline of October 2008 but with the option of a two-year extension. The extension of the date that final primacy requirements are due to the EPA was negotiated and, on November 24, 2008, approved by EPA Region 2. The date for submission of the primacy package by New York State for primacy in implementing the GWR is now November 8, 2010. These revisions of the State Sanitary Code, Subpart 5-1, are needed to incorporate rule requirements and revisions to obtain primacy for GWR implementation from the EPA.

Costs:

Costs to Public Water Systems:

The costs to ground water systems to comply with the rule were estimated based on EPA's EAGWR. For those approximately 300 systems in New York State (3.5% of approximately 8,600 systems statewide) needing capital construction to comply with the rule, initial capital costs were estimated by EPA at an average of about $1.51 per household per year. For systems serving less than 10,000 customers (over 99% of all ground water systems), the average per system cost was estimated at an average of $1900. Overall, the cost of compliance is estimated at less than $1 per ground water system customer household per year.

Costs to the Agency, the State and Local Governments for the Implementation and Continuation of the Rule:

State and local government agencies are affected in several ways by these rule revisions. Some public water systems are operated by local, state or federal government agencies. In New York State, direct supervision of public water systems is performed by SLHDs. The cost to the government agencies that operate water systems to comply with these revised rules will be higher than any increases in oversight costs incurred to implement this rule. There will be little increase in the cost of oversight from the current cost of oversight activities required under the existing rules because most oversight activities are currently required. There will be a small increase in the cost related to record keeping, but the greatest impact to oversight will be the increased effort to enforce rule provisions. Still, if the regulations are not revised, and oversight is split between the SLHDs and the EPA who could retain GWR primacy, the burden on public water systems will be greater.

Source(s) of Cost Information:

The EAGWR was developed by the EPA to evaluate costs of GWR implementation and summarized costs nationally. The report is available online at the address given above. The costs were proportionally applied to the size and type of ground water Public Water Systems in New York State. For the purposes of the EAGWR, one-time and yearly costs were projected over a 25-year time period to coincide with the estimated life span of

capital equipment and a time lag of 5 to 10 years for treatment technology installation after rule promulgation.

Local Government Mandates:

These revised rules impose little change in what is requested of the SLHDs. Most of the SLHDs that will be overseeing implementation of these rules are operated by the county governments. None of the provisions affect public water systems owned or operated by local governments any differently from systems operated by any other public or private parties. Local governments that operate public water systems will have to comply with the revised regulations, but the new compliance standards will apply even if the revised regulations are not adopted.

Paperwork:

These revised regulations do not require new forms or other paperwork but for some PWS there will be revisions to the current forms. The biggest increase in paperwork will be for any systems for which enforcement action will be required. If these revisions are not made, the paperwork burden will increase because system reporting will need to go to the EPA as well as the SLHDs. Reporting requirements may vary between the two agencies resulting in two different reporting standards.

Duplication:

Adoption of these revised regulations will reduce duplication in effort for public water systems that use ground water sources because without the revisions, the EPA will not grant primacy to the State for GWR provisions. Without State primacy, systems will face the complication of direct oversight by both EPA and SLHDs for drinking water rules compared with the current system of oversight by SLHDs. States were granted discretion for certain aspects of rule implementation, without reducing the standard for implementation. The simplest approach that met minimum requirements and protected public health was selected in coordination for rule implementation with advice from a Ground Water Rule Implementation Work Group (GWRIWG) that included representatives of the regulated community and local governments.

Alternatives:

The GWRIWG, consisting of members of groups impacted by the revisions to the regulations under the GWR, met several times to provide advice to the Bureau of Water Supply Protection on rule implementation. Some of the options discussed but not selected might have posed an even greater financial or administrative burden on the public water systems. The alternative of not revising the regulations was considered. This would make oversight of water system compliance with the ground water rule the responsibility of the EPA. That option would assign additional reporting and

coordination efforts to the water systems in order to report to, meet with, and otherwise be overseen by both the EPA and the SLHD that would retain primacy for enforcement of other drinking water regulations. The proposed rule revisions are the better alternative.

Federal Standards:

These revisions are proposed because of changes in the minimum standards of the federal government for public water systems. After the federal government adopts drinking water regulations under the Safe Drinking Water Act, the state obtains primacy for oversight of rule implementation through the primacy process, which includes revising state regulations and developing or revising implementation guidance documents. Certain aspects of GWR implementation were left to states. The proposed options were selected to provide the least impact on public water systems while meeting rule requirements and protecting public health. For example, EPA requires states to select a fecal indicator but suggests that using two is more protective. To date, available information from New York public water systems do not show that the additional expense of requiring sampling for two indicators of fecal contamination would be more protective than continuing the practice of sampling for E. Coli.

If the proposed revisions to the regulations are not adopted, the federal standards will be implemented directly by the federal EPA and may result in a greater regulatory and compliance burden on the water systems.

Compliance Schedule:

Public Water Systems must comply with GWR requirements effective December 1, 2009, even if these proposed regulatory revisions are not promulgated. SLHDs will have to ensure that all 8 components of the sanitary survey are completed at all community water systems by December 31, 2012 and noncommunity water systems by December 31, 2014. Since sanitary surveys are already required at all public water systems in New York State, this will require only minor changes in the documentation of the sanitary survey.

Effective December 1, 2009, any time a routine coliform sample has a positive result at a ground water system that does not provide and document effective treatment, the water system will have to collect one or more follow-up samples from the raw source water. If the system is complying with the GWR by treating the water, they will have to ensure that process compliance monitoring demonstrates adequate, effective treatment and report the measurements to the SLHD with their monthly operations report.

Note: The above compliance schedule was established by EPA and has taken effect. In late 2008, The NY State Department of Health (DOH) and the EPA signed an agreement extending the deadline for DOH to obtain primary enforcement responsibility (‘‘primacy’’) for implementing the GWR, as required under federal regulations. The extension agreement expires on November 8, 2010. When DOH obtains primacy, it will

accept authority and responsibility for implementing all aspects of the GWR. The extension agreement authorized DOH to implement day-to-day oversight of rule implementation, while EPA conducts any required GWR enforcement actions on issues that are not resolved within 60 days. Expeditious adoption of these regulatory changes will allow the Department to submit the primacy package to EPA prior to the expiration of the extension agreement.

Contact Person: Katherine Ceroalo
New York State Department of Health
Bureau of House Counsel, Regulatory Affairs Unit
Corning Tower Building, Rm. 2438
Empire State Plaza
Albany, New York 12237
(518) 473-7488
(518) 473-2019 (FAX)
REGSQNA@health.state.ny.us

Regulatory Flexibility Analysis for Small Businesses and Local Governments

Effect of Rule:

The revisions to 10 NYCRR Subpart 5-1 are necessary to implement the Federal Ground Water Rule (GWR). If the revisions are not made, the provisions of the rule will be imposed directly by the United States Environmental Protection Agency (EPA), in addition to the current structure where oversight of public water system compliance with the rest of 10 NYCRR Part 5 is conducted by State and Local (City and County) Health Departments (SLHDs). So the impact of adopting these revisions to the regulations will benefit small businesses by allowing oversight to remain the responsibility of the SLHDs. Systems will have one fewer set of reporting paperwork to prepare and one less agency directly overseeing regulatory compliance. Because most of the sources for ground water systems are not contaminated, most water systems will need to make only minor adjustments to current operation requirements in order to implement the requirements of the GWR.

Local governments and small businesses operate most of the ground water public water systems (GWPWS) affected by these revisions to 10 NYCRR Subpart 5-1. The revised regulations impact about 8,600 of the almost 10,000 public water systems in New York State. Of these impacted systems, 8 serve a population greater than 100,000, 60 serve populations between 10,000 and 100,000, and the rest serve smaller populations. Of the seven largest systems, two are water authorities (one mixed public and private ownership,

the other local government owned), three are operated by privately owned companies, and two are municipalities. It is estimated that over 95% of the impacted water systems are either small businesses or local governments. In New York State, about 950 GWPWS are operated by local governments, over 200 GWPWS by state agencies and 16 GWPWS by the federal government.

Compliance Requirements:

These revisions require only minor changes to record keeping or reporting requirements for public water systems. Up to 10 % of the water systems may need to provide additional documentation of disinfection adequacy in the event that they increase the documentation of treatment process as one of the alternatives they may take to comply with the rule requirements. For most of these systems, the additional documentation would amount to recording disinfectant concentration, an existing requirement, at a new or alternate location from currently required location(s), once a day. If these revisions are not made, reporting requirements will increase as new reporting to the EPA will be required in addition to reporting to the SLHD, but the content of the reports will be the same whether one or two agencies provide oversight.

Professional Services:

The revision of these rules require only minor changes to the requirements for professional services that a small business or local government is likely to need to comply with the rule. There will be a small (averaging less than $5 per system per year) increase in water sampling costs for some of the water systems, particularly those that use more than one well to supply water to their customers on a regular basis. In the event that contamination in the form of a total coliform positive sample is detected during routine sampling of the distribution system at a public water system, source water sampling must be completed to determine whether fecal contamination is present in the source water. A typical water sample analyzed for total coliform and E. Coli costs about $50, including sampling and analysis.

Ground water systems that serve less than 1000 customers will have additional sampling costs if they have more than one well. Because systems must sample either each well or representative wells according to their sampling plan, systems with a sampling plan can minimize the need for additional sampling. Of the systems impacted by this rule, 703 have more than two wells, and 1389 use two wells. The remaining systems operate a single well. The 114 systems with a single well serving 1000 or more people may incur additional sampling costs (averaging less than $5 per system per year) to comply with this rule. The other 5889 systems serving less than 1000 population with one well will not be required to pay for any extra samples under these rules, unless they have fecal contamination in the source water.

Because of the enhanced treatment requirements in the few cases of a public water system where fecal contamination is confirmed in the source water, professional services may be required for design of new or updated water treatment or other system updates. Prices will vary with the complexity of required design. EPA estimated costs were prorated for New York State and the cost for professional design services was estimated to be about $0.30 (thirty cents) per household per year.

Compliance Costs:

The EPA estimates that the mean annual cost per household for complying with the GWR will be less than $1 a year for 96% of households affected by the new requirements of the rule. For an estimated 83% of systems, there will be no additional costs incurred in complying with this rule. For those systems needing capital construction to comply with the rule, initial capital costs were estimated by EPA as an average of about $1.51 per household per year, with an average of $1900 per system serving less than 10,000 customers (over 99% of all ground water systems). As described under "Compliance Requirements", above, the cost to systems of compliance with GWR requirements will be higher if the regulations are not revised as direct oversight would be performed by both EPA and the SLHDs. Because compliance with the federal regulations is mandatory for public water systems, the overall workload is similar, but higher costs come from the time and effort spent meeting and otherwise communicating with the EPA, an additional oversight agency.

Economic and Technological Feasibility:

Extensive research has been completed by the EPA to determine whether small businesses and local governments can economically and technically comply with these revised regulations. Their report includes cost/benefit and feasibility analyses and is available online at: http://www.epa.gov/safewater/disinfection/gwr/pdfs/support_gwr_economicanalysis.pdf.

Currently available technology is adequate to meet GWR requirements, although ongoing or future innovation may result in water treatment that would use less energy and/or chemicals while remaining effective at protecting the health of consumers. About 5% of systems may need to add to currently utilized facilities in order to comply with this rule, most of which would be at minimal additional expense.

Minimizing Adverse Impact:

Water systems will have to comply with the requirements of the GWR even if these rules are not revised. In reviewing aspects of rule implementation over which the EPA granted limited discretion to states, costs for implementation as well as ease of implementation by water systems and effective protection of ground water from contamination were considered. For example, some systems are required to complete triggered monitoring, following the trigger of a total coliform positive sample from the distribution system of a

public water system. The proposed regulations will require testing for the most effective single fecal indicator, rather than the optional two or three fecal indicator organisms that may be selected by states. Another example is that when a sample collected from the distribution system is found to contain total coliform bacteria (TC+), at a public water system serving less than 1000 population, the system may use one of their currently required follow-up samples rather than collecting an additional sample at the raw water source. Again, the adverse impact of implementing this federally mandated rule will be greater if the regulations are not revised because of the additional oversight agency added if the state is unable to obtain primacy for rule implementation.

Small Business and Local Government Participation:

An ad hoc work group was organized to provide advice to the Department on those aspects of GWR implementation over which states were given discretion. For example, states are instructed to choose at least one fecal indicator organism and were encouraged to select two microorganisms as fecal indicators for use under the rule. The group provided valuable advice on this and other topics. The work group consensus was in favor of the Department's adoption of the GWR. The following organizations and individuals were invited to participate and kept apprised of work group meetings and progress:

- New York State Section of the American Water Works Association (NYSAWWA)
- New York State Association of Towns

- New York State Conference of Environmental Heath Directors
- New York State Association of County Health Officials
- New York State Rural Water Association (NYRWA)
- New York State Housing Association, Inc.
- League of Women Voters
- New York State Hospitality & Tourism Association
- Empire State Restaurant & Tavern Association
- New York State Restaurant Association
- Operators of NY State Public Water Systems (not a group)

Of these, most groups accepted the invitation and participated in some form, whether by attending meetings and participating in discussions, by providing comments on proposed alternatives, or by coordinating with representatives of other groups who were not able to participate directly. Local governments were represented through the participation of county health department staff (CEHD). The interests of water systems were represented by NYSAWWA and NYRWA. In addition, the USEPA consulted with small businesses, water organizations, states and other representatives in writing the requirements of the federal GWR that these revisions to the State Sanitary Code (in 10 NYCRR) are intended to address.

Rural Area Flexibility Analysis

Types and Estimated Numbers of Rural Areas:

The proposed revisions to 10 NYCRR Subpart 5-1 are being made in response to promulgation of the federal Ground Water Rule (GWR) that resulted in revisions to several sections of federal regulations. The GWR goal is to reduce exposure to fecal contamination in the drinking water provided by public water systems. These proposed revisions are needed in order for the New York State Department of Health, Bureau of Water Supply Protection to obtain primacy from the United States Environmental Protection Agency (EPA) for enforcement of the GWR. If New York does not obtain primacy for rule enforcement, the public ground water systems will be required to comply with the rule provisions under the additional oversight of the EPA. That means that instead of direct oversight provided by the by State and Local (City and County) Health Departments (SLHDs) where the water system is located, the system will be overseen by the SLHD for implementation of some rules and by the EPA for the GWR. The revisions impact all public ground water systems including many public water systems in rural areas. However, if these revisions to the regulations are not made, the impact on systems across the state will not be reduced, and in fact may be greater.

The revisions apply to public water systems in New York State that use ground water as the source for any part of their drinking water. In New York's rural counties, much of the population served by public water systems is served by a large number of mostly small

public ground water systems. Most surface water systems (surface water systems supply drinking water to over 80% of New York's population served by community/residential public water systems) are not impacted by this rule. Ground water sources are used by 87% of the public water systems in the state (serving about 30% of the community water system population (Note, because some surface water systems also use ground water sources, this does not add up to 100%)). Many of the systems that use ground water are located in the 42 of the 62 counties in New York State that are considered rural.

Statewide, about 70% of public water systems that use ground water are in rural counties, defined as those counties with a population less than 200,000 residents. These ground water systems serve about 60% of the residential population served by public water systems in these rural counties. The rural counties also host 68%, (4305 of the 6343) of the ground water noncommuity water systems in the state (those public water systems at schools, factories, motels, restaurants and other locations with nonresidential or seasonal consumers). These noncommunity systems in rural counties serve 74% of the population served by noncommuity public water systems.

EPA's analysis of the economic impact of the GWR indicates that there will be a proportionally higher impact on small systems required to implement changes to their operation, particularly in cases where treatment is added or enhanced in order to meet rule requirements, largely because there are fewer customers per system to share the cost. While most rural systems are small systems, EPA did not differentiate between rural and suburban small water systems in their economic impact analysis.

Reporting, Record keeping and Other Compliance Requirements; and Professional Services:

These revisions do not substantially change reporting or record keeping requirements for public water systems in rural areas. Water systems are currently required to maintain records and report to the SLHDs no less than monthly. For a few systems, there may be minor changes in reporting requirements, but for most systems, reporting requirements will not change. Because of the enhanced treatment requirements in the case of a public water system where fecal contamination is found in the source water, in some cases, professional services may be required for design of new or updated water treatment or other system updates. If not adopted, the federal GWR provisions will be directly overseen at the water systems by the EPA. This would add the complication of oversight being provided by two separate agencies, so the impact of not updating the regulations on systems will be greater than authorizing the New York State Department of Health and its designees to enforce the new provisions.

Costs:

The United States Environmental Protection Agency estimates that the mean annual cost per household for complying with the GWR will be less than $1 a year for 96% of households affected by the new requirements of the rule. For an estimated 83% of systems, there will be no additional costs incurred in complying with this rule. For those

systems needing capital construction to comply with the rule, initial capital costs were estimated by EPA as an average of about $1.51 per household per year, with an average of $1900 per system serving less than 10,000 customers (over 99% of all ground water systems). Again, the cost will be higher if the regulations are not revised as compliance with the federal regulations is mandatory for the public water systems.

Minimizing Adverse Impact:

In developing the discretionary aspects of GWR implementation, efforts were taken to make implementation as simple as possible, and to minimize blanket requirements such as universal chlorination requirements or the sudden elimination of disinfection waivers. For most rural public water systems, any additional costs for implementation of revised rule provisions will be minimal and be incurred over a period of several years. If a rural water system is found to have fecal contamination of the source water, then immediate action will be required to provide safe drinking water to the system's customers.

Rural Area Participation:

An ad hoc work group was organized to provide advice on those aspects of GWR implementation over which states were given discretion. For example, states are instructed to choose at least one fecal indicator organism and were encouraged to select two microorganisms as fecal indicators for use under the rule. The group provided

advice on this and other items. The work group consensus was in favor of the Department's adoption of the GWR. The following organizations and individuals were invited to participate and kept apprised of work group meetings and progress:

- New York State Section of the American Water Works Association (NYSAWWA)
- New York State Association of Towns
- New York State Conference of Environmental Heath Directors
- New York State Association of County Health Officials
- New York State Rural Water Association (NYRWA)
- New York State Housing Association, Inc.
- League of Women Voters
- New York State Hospitality & Tourism Association
- Empire State Restaurant & Tavern Association
- New York State Restaurant Association
- Operators of NY State Public Water Systems (not a group)

Several of these work group participants represent rural communities and businesses. The Restaurant Association (who also represented the Tavern Association) and the New York State Housing Association, Inc., represent numerous businesses which operate public water systems in rural areas. Staff from participating County Health Departments, including a representative of the New York State Conference of Environmental Health Directors and staff of New York State Health Department District and Regional Offices represented rural areas across the state. The New York Rural Water Association and

New York Section of the American Water Works Association both have members who work at or own ground water systems in rural areas and participated in development of the regulations.

Job Impact Statement

The Department of Health has determined that the proposed revisions will not have substantial adverse impact on jobs or employment opportunities. The proposed revisions enhance existing requirements under the State Sanitary Code for protection of drinking water quality. In the event that these revisions are not adopted by New York State, the requirements will be imposed directly by the United States Environmental Protection Agency. Thus, the adoption of the changes to the regulations will not substantially impact employment. It is possible that new technologies or products developed to comply with the revised rules would bring new employment opportunities to the state.

Assessment of Public Comment

Public comments were submitted to the NYS Department of Health (DOH) in response to this regulation from the Long Island Water Conference and the Dutchess County Department of Health. These comments and the Department of Health's responses are summarized below:

1. COMMENT: Is the time of the next sanitary survey an appropriate time frame for determining whether a deficiency is significant?

RESPONSE: Because most significant deficiencies are based on observations made during sanitary surveys, any deficiency that is likely to pose a threat to system operation or management prior to the next sanitary survey visit should be cited as a significant deficiency. Guidance will be provided to assist in making these determinations.

2. COMMENT: The definition of significant deficiency may result in arbitrary enforcement actions.

RESPONSE: The existing rules for public water systems include, in subdivision 5-1.71(b), "The supplier of water and the person or persons operating a water treatment plant or distribution system shall exercise due care and diligence in the operation and maintenance of these facilities and their appurtenances to ensure continued compliance with the provisions of this Subpart." The introduction of the phrase 'significant

deficiency' in new paragraph 5-1.1(bn) provides more specific criteria as does specifying the timing as 'before the next sanitary survey'. This does not change the overall requirement in Subpart 5-1, but does provide a better standard for determining when a significant deficiency occurs. No change was needed to address this comment.

3. COMMENT: The provision on correcting significant deficiencies in paragraph 5-1.12(a) will result in unintended consequences and inconsistent requirements.

RESPONSE: The Department acknowledges that the provisions about correcting significant deficiencies were not clear in 5-1.12(a). This provision has been removed from this paragraph and retained in paragraphs 5-1.71(c) and (d) for clarity. This did not change the requirements, only clarified them.

4. COMMENT: The wording in Subdivision 5-1.30(a) precluded acceptable ways to return system to compliance.

RESPONSE: Subdivision 5-1.30(a) has been revised to more clearly reflect the federal requirements for responding to fecal contamination and significant deficiencies.

5. COMMENT: The term 'required concentration' is not clear.

RESPONSE: The required concentration for water entering the distribution system will vary from one water system to another. The 0.2 mg/l is a required minimum

concentration, but in some cases 0.2 mg/l will not be adequate to meet design requirements and a single numerical value will not suffice. No revision is needed to address this comment.

6. COMMENT: The term "unusual and unpredictable" in subdivision 5-1.30(c) is vague.

RESPONSE: This term, "unusual and unpredictable", is currently in subdivision 5-1.30(c) and is not proposed for revision. Revision to this subdivision will be considered in future amendments to this Subpart.

7. COMMENT: Paragraph 5-1.30(e) allows the State to grant disinfection waivers. Commenter is concerned that a waiver may be granted even if there is fecal contamination of the source.

RESPONSE: Paragraph 5-1.30(e) currently precludes the granting of a waiver if a source is contaminated. This subdivision was not proposed for change and protection will not be decreased if the paragraph remains unchanged.

8. COMMENT: Clarification is needed between monitoring plan and sample schedule.

RESPONSE: A sample schedule is part of a monitoring plan. The elements of the sampling plan are set forth in 5-1.51(c). This topic will be addressed more fully in guidance.

9. COMMENT: Monitoring plan lacks specificity, also concern that making the monitoring plan publicly available may pose a security threat.

RESPONSE: Minimum standards for monitoring plans are described generally in subdivision 5-1.51(c) and will be addressed in more detail in guidance. The plans may be prepared with security sensitive locational information kept confidential at the discretion of the water supplier.

10. COMMENT: Table 11 data presented in a confusing manner.

RESPONSE: Tables 11 and 11B were revised to clarify that monitoring may be required by the State but routine monitoring is not required for fecal indicators. These revisions clarified, but did not change, monitoring requirements.