

FILTRATION AVOIDANCE UNDER THE SAFE DRINKING WATER ACT

INTRODUCTION

The last two decades have seen a substantial increase in the number of outbreaks of waterborne disease.¹ The most recent large scale outbreak occurred in Wisconsin in the spring of 1993,² killing forty-seven people.³ A report published by the Natural Resources Defense Council ("NRDC") entitled "Think Before You Drink," states that 28.8 million people drank water that violated Environmental Protection Agency ("EPA") health standards in 1991 and 1992, and 36.4 million people drank water that violated health standards in 1992 and 1993.⁴ The report also states that overall there were 223,042 violations of EPA standards during calendar years 1992 and 1993.⁵ Even with the presence of these recorded outbreaks and reported violations "water treatment authorities generally agree that the overall quality of U.S.

1. *Water in Crisis: A Guide to the World's Fresh Water Resources* 27 (Peter H. Gleick, ed. 1993) (citing B. L. Herwaldt et al., *Waterborne-disease Outbreaks*, 40 CDC SURVEILLANCE SUMMARIES, MMWR 1-13 (1991)); see also Memorandum from Albert F. Appleton, Comm'r of New York City Dep't of Env'tl. Protection, to agency employees, 1 (Apr. 14, 1992) (citing BACKGROUND PAPER ON DEP'S PROPOSED WATERSHED PROTECTION AND FILTRATION AVOIDANCE PROGRAM) (on file with author) [hereinafter Appleton Memo].

2. *Milwaukee Mayor Orders Tough Regulations Following Outbreak of Illness from Parasite*, 23 Env't. Rep. (BNA) 3205 (Apr. 23, 1993). More than 800,000 people in Milwaukee who relied on the municipal water supply were forced to boil drinking water for a week. *Study of Waterborne Disease Inadequate*, THE ASSOC. PRESS, Sept. 25, 1993, available in LEXIS, News Library, WIRES File [hereinafter *Waterborne Disease Study*].

3. *Waterborne Disease Study*, *supra* note 2, at 2. In a similar occurrence, "[a]n estimated 13,000 people in Carrollton County, Ga., which has a population of 64,900, were sickened by an outbreak of cryptosporidium in 1987. Although Carrollton's water plant met requirements, it was determined that its filtration system wasn't operating at maximum efficiency." Donald Smith, *How Clean is U.S. Drinking Water?*, THE ASSOC. PRESS, Sept. 3, 1993, available in LEXIS, News Library, WIRES File.

4. Natural Resources Defense Council, *Think Before You Drink* 4 (1994). See also Scott Allen, *Contaminated Water Report Criticized; Regional Activists Say Alarm Hurts Cause*, BOSTON GLOBE, Sept. 28, 1993, at 21 (criticizing the 1993 NRDC report).

5. Natural Resources Defense Council, *supra* note 4, at 4. See also *Water Crisis? Well, Sort of*, USA TODAY, Sept. 29, 1993, at 10A. This article points out that NRDC has found so many violations of water quality because of tougher federal standards. *Id.* However, as pointed out by the General Accounting Office, the investigative arm of Congress, most of the standards are not being met because of funding shortfalls to state environmental agencies. *Waterborne Disease Study*, *supra* note 2, at 2.

drinking water is excellent, especially compared to that of many other countries."⁶

The most frequently identified cause of outbreaks in the United States is the pathogenic disease-causing protozoa *Giardia lamblia*.⁷ This parasite, found as cysts in raw water, can cause giardiasis, a severe gastrointestinal illness.⁸ From 1971 to 1985, ninety-two cases of giardiasis were reported.⁹

Increasing awareness of these drinking water pollution problems has made citizens wary of drinking tap water. An increase in bottled water and home water filter sales provides evidence of public distrust of public water supplies.¹⁰ The Safe Drinking Water Act ("SDWA" or "Act") addresses this growing concern about the contamination of drinking water by toxic chemicals and pesticides.¹¹

In the mid-eighties congressional environmental committees considered legislation mandating the filtration of all surface water supplies.¹² After a long battle in both congressional chambers, a legislative exemption was created for water supplies that met "avoidance criteria."¹³ These criteria include watershed

6. Smith, *supra* note 3, at 1. According to a 1992 report by the environmental study group Worldwatch, "[n]early one of every three people in the developing world—some 1.2 billion people—lacks access to a safe and reliable water supply . . . [and] [w]aterborne diseases account for about 80 percent of all illnesses in developing nations." *Id.*

7. Appleton Memo, *supra* note 1, at 1.

8. *Id.*

9. *Id.* See generally Sara Terry, *Drinking Water Comes to a Boil*, N.Y. TIMES, Sept. 26, 1993, § 6 (Magazine), at 42.

10. Kristin M. Fox, *How Clean is Yours?*, BUZZWORM, July 1992, at 18. "More than 700 different brand labels of water are produced by approximately 430 bottling facilities in the US, and there are more than 75 brands of imported waters." *Id.* "Americans bought 2.45 billion gallons of bottled water in 1993, according to preliminary estimates by the Manhattan consulting firm Beverage Marketing Corp." Caroline E. Mayer, *Are You Worried About Your Water?; Millions are Turning Off the Tap and Buying by the Bottle*, WASH. POST, Feb. 2, 1994, at E1. The 1993 figure represents a 7.1% sales increase over 1992 and is nearly double the 3.7% increase from the previous year. *Id.* Reports by the International Bottled Water Association show that today, one in six American households buys bottled water regularly, while only one in 17 did so nine years ago. *Id.*

11. Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j-11 (1988 & Supp. IV 1992), codified by Pub. L. No. 93-523, 88 Stat. 1660 (1974), as amended by Pub. L. No. 95-190, 91 Stat. 1393 (1977), and Pub. L. No. 99-339, 100 Stat. 642 (1986) [hereinafter SDWA].

12. See 132 CONG. REC. S6284 (daily ed. May 21, 1986) (statement of Sen. Durenberger).

13. 42 U.S.C. § 300g-1(c)(ii) (providing filtration variances).

protection programs and objective water quality measurements of purity.¹⁴

As finally adopted in 1986, the Safe Drinking Water Act Amendments directed EPA to promulgate regulations requiring filtration unless avoidance criteria were met.¹⁵ Pursuant to this legislation, EPA promulgated the Surface Water Treatment Rule ("SWTR"), which specifically requires filtration unless certain water quality standards are met or appropriate watershed protection measures are taken.¹⁶

The SDWA's main focus is filtration of water before it reaches consumers. This approach is similar to that taken by other major environmental statutes which, like the SDWA, impose technological devices or fixes on pollution at the end of the waste stream.¹⁷ Like these other major environmental statutes, the SDWA sets national quality standards. Specifically, the SDWA sets drinking water standards and mandates filtration of water supplies which are not meeting these national standards. Provisions in the SDWA and subsequent regulations, however, allow a water supplier to avoid installing expensive filtration technology if it can show that its water source is pristine and will remain that way.¹⁸

This allowance in the regulatory mechanism has prodded several cities to develop environmental programs which prevent the future contamination of their water supply.¹⁹ Although the SDWA has as its primary focus the filtration of water, the filtration avoidance provision has launched several progressive programs which stress watershed protection and preservation of the natural ecosystem filtration mechanisms.²⁰ Rather than

14. *Id.* § 300g-1(b)(7)(C)(i).

15. *Id.*

16. Surface Water Treatment Rule, 40 C.F.R. §§ 141.70-141.75 (1993). To be affected by the SWTR, a public water system must serve 15 connections and be supplied by a surface water source or a groundwater source under the direct influence of surface water. *Id.* §§ 141.2, 141.70 (definition of public water system).

17. *See, e.g.*, Clean Air Act, 42 U.S.C. §§ 7401, 7409-7412 (1988); Clean Water Act, 33 U.S.C. §§ 1251, 1311-1345 (1988).

18. 42 U.S.C. § 300g-1(b)(7)(C)(i); 40 C.F.R. §§ 141.71-141.75.

19. *See, e.g.*, STAFF, DRINKING WATER SECTION, HEALTH DIVISION, ORE. DEP'T OF HUM. RESOURCES, OREGON DRINKING WATER PROGRAM, BIENNIAL REPORT (July 1, 1988-June 30, 1990); MASS. DEP'T OF HEALTH, MASSACHUSETTS DRINKING WATER (1992); N.Y. CITY DEP'T OF ENVTL. PROTECTION, NEW YORK CITY'S 1993 LONG-TERM WATERSHED PROTECTION & FILTRATION AVOIDANCE PROGRAM (1993) [hereinafter FILTRATION AVOIDANCE].

20. *See* sources cited *supra* note 19.

building costly filtration systems, certain water providers have embarked on a campaign to prevent their water supplies from deteriorating through aggressive land use controls and enforcement techniques.²¹

Protecting the watershed area rather than filtering drinking water creates other tangential benefits. Green spaces, fishing areas, and animal habitats are benefitted by watershed area protection. Also, some water suppliers have expressed the view that installing a filtration device at the "end of the pipe" creates a disincentive for preserving water quality.²² Therefore, some municipalities have opted for preservation rather than end of the pipe filtration.

This note examines filtration avoidance under the Safe Drinking Water Act ("SDWA") and the Surface Water Treatment Rule ("SWTR").²³ Although originally formulated as a way to avoid filtration, the programs which arose as a result of the exemption are very progressive in their attempt to assure safe drinking water. Section I covers the enabling language of the SDWA. Section II addresses the applicable federal regulations. Section III provides a brief explanation of how states are delegated responsibility under the SDWA. Section IV examines how New York City, one public water supplier, has been affected by the filtration requirements and has chosen to pursue its goals. Section V explores the progressiveness of the filtration avoidance program and provides some ideas for its expansion. The note concludes by advocating an expansion of this new, preventative, environmental approach contained in the SDWA.

I. THE SAFE DRINKING WATER ACT

The Safe Drinking Water Act was adopted in 1974 and was extensively modified by the Safe Drinking Water Act Amendments of 1986. The two distinct components of the Act are the regulation of water contamination at the tap,²⁴ and the control of certain types of groundwater.²⁵ The SDWA involves four major programs:

21. *Id.*

22. Appleton Memo, *supra* note 1, at 5.

23. 42 U.S.C. § 300g-1(b)(7)(C)(i); 40 C.F.R. § 141.71-141.75.

24. 42 U.S.C. §§ 300g-300g-6 (public water systems).

25. *Id.* §§ 300h-300h-7 (protection of underground drinking water sources).

- 1) national drinking water regulations;
- 2) regulation of underground injection wells;
- 3) protection of aquifers that are a "sole source" of municipal drinking water; and
- 4) protection of areas around wellheads that supply municipal systems.²⁶

As with most environmental statutes, EPA has the power to set certain standards for compliance with the Act while states have the authority to establish stricter standards.²⁷ Under the SDWA, EPA may both grant and revoke primary enforcement power.²⁸

The SDWA requires EPA to establish both national primary and secondary drinking water regulations.²⁹ These regulations apply to all public water systems.³⁰ Under the SDWA, a public water system is one which provides water to the public for human consumption and has at least fifteen service connections or

26. *Id.* §§ 300g-300g-6 (national drinking water regulations); *Id.* § 300h-3 (regulation of underground injection wells); *Id.* § 300h-6 (protection of aquifers that are a "sole source" of municipal drinking water); *Id.* § 300h-7 (protection of areas around wellheads that supply municipal systems). This note focuses primarily on the authority originating out of the national drinking water regulations, found at 42 U.S.C. §§ 300g-300g-6.

27. *See, e.g.*, Clean Air Act, 42 U.S.C. §§ 7401, 7601 (1988) (designation of EPA as lead agency); *Id.* § 7416 (states' ability to employ stricter standards); Clean Water Act, 33 U.S.C. §§ 1251, 1251(b) (1988) (designation of EPA as lead agency); *Id.* § 1251(d) (states' ability to employ stricter standards).

28. 42 U.S.C. § 300g-2. When a state has been granted primary enforcement power it is said to have "primacy." This enables the state to carry out the requirements of the SDWA as if the state were the federal agency. A state has primary enforcement authority when the EPA Administrator determines that, among other things, the state has adopted drinking water regulations which are no less stringent than the National Primary Drinking Water Regulations, it has adequate procedures for enforcement of the regulations, and has adequate record keeping procedures. *Id.* Wyoming is the only state that does not have primacy over the SDWA. *See* 140 CONG. REC. H9830 (daily ed. Sept. 27, 1994) (statement of Rep. Dingell) and *State Cannot Handle Primacy On Drinking Water Laws*, 188 Daily Env't. Rep. (BNA) 39 (Sept. 28, 1992). *See also* L. Morandi & B. Foster, *Compliance with the Safe Drinking Water Act: State Legislative Options*, 15 STATE LEGIS. REP. 7 (1990) (explaining that in 1990, Indiana, Wyoming, and the District of Columbia did not have primacy).

29. 42 U.S.C. §§ 300g-1(a), 300g-1(c).

30. *Id.* § 300g(1)-(8).

regularly serves at least twenty-five individuals.³¹ Certain public water systems which would otherwise qualify for regulation, may be exempt if they meet specific requirements.³² These requirements are that the public water system consist only of distribution and storage facilities, does not have any collection and treatment facilities, obtains all of its water from other public water systems, does not sell water to any person, and does not carry passengers in interstate commerce. To be granted this exemption, a public water system must meet each of these elements.³³

Currently, the SDWA requires EPA to regulate contaminants that may occur in public water systems.³⁴ These include bacteria, organic and inorganic chemicals, and radiological contaminants.³⁵ Before the 1986 amendments to the SDWA, the EPA Administrator was to determine what contaminants were to be regulated.³⁶ However, Congress made clear in the 1986 amendments its dissatisfaction with EPA's establishment of standards for only a small fraction of the contaminants having an adverse effect on human health.³⁷ To address this, the 1986 Act

31. *Id.* § 300f(4). The full definition of a "public water system" states:
The term "public water system" means a system for the provision to the public of piped water for human consumption, if such system has at least [15] service connections or regularly serves at least [25] individuals. Such term includes (A) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (B) any

collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

Id.

32. *Id.* § 300g(1)-(4).

33. *Id.*

34. *Id.* § 300g-1(b).

35. *Id.* § 300f(6). The term "contaminant" is defined under the SDWA as "any physical, chemical, biological, or radiological substance or matter in water." *Id.*

36. See Safe Drinking Water Act, Pub. L. No. 93-523, § 1, 88 Stat. 1660, 1661 (1974), as amended by Pub. L. No. 94-317, 90 Stat. 707 (1976), Pub. L. No. 94-484, 90 Stat. 2325 (1976), Pub. L. No. 95-190, 91 Stat. 1393 (1977), Pub. L. No. 96-63, 93 Stat. 411 (1979), and Pub. L. No. 96-502, 94 Stat. 2737 (1980).

37. 47 Fed. Reg. 9350 (1982); 48 Fed. Reg. 45,502 (1983) (previous EPA contaminants list). The Senate Report which accompanied passage of the 1986 amendment to the SDWA states:

While there has been improved compliance with existing drinking water standards, the Environmental Protection Agency has established standards for only a small fraction of the contaminants that are found in public water systems and that may have an adverse effect on human health. In order to

required EPA to regulate eighty-three specific contaminants listed by Congress.³⁸

Under the SDWA, EPA is directed to set a maximum contaminant level ("MCL") for each of these listed contaminants.³⁹ In water that is delivered to consumers, a public water system is required to attain contaminant levels less than the MCL for each particular contaminant. A public water system may achieve that level of attainment in any way it chooses.⁴⁰

The SDWA not only requires that an MCL be set for a contaminant, but requires EPA to pair that MCL with a maximum contaminant level goal ("MCLG").⁴¹ An MCLG is an unenforceable health goal for specific contaminants which the public water system must aspire to attain.⁴² The Act states that each MCLG be set at the level at which no adverse health effects will occur.⁴³ Each MCLG should also provide an adequate

address this fundamental deficiency [we adopt this legislation].

SENATE COMM. ON ENV'T. AND PUB. WORKS, SAFE DRINKING WATER ACT AMENDMENTS OF 1986, S. REP. NO. 56, 99th Cong., 2d Sess. 2 (1985), *reprinted in* 1986 U.S.C.C.A.N. 1566, 1567.

38. HOUSE COMM. ON ENERGY AND COMMERCE, SAFE DRINKING WATER ACT AMENDMENTS OF 1986, H.R. CONF. REP. NO. 575, 99th Cong., 2d Sess. 30 (1986), *reprinted in* 1986 U.S.C.C.A.N. 1566, 1593-94 (listing 83 contaminants).

39. 42 U.S.C. § 300g-1(b)(1). Under the SDWA the term "maximum contaminant level" means "the maximum permissible level of a contaminant in water which is delivered to any user of a public water system." *Id.* § 300f(3).

40. *Id.* § 300g-1(b)(6). Section 300g-1(b)(6) states:

Each national primary drinking water regulation which establishes a maximum contaminant level shall list the technology, treatment techniques, and other means which the Administrator finds to be feasible for purposes of meeting such maximum contaminant level, but a regulation under this paragraph shall not require that any specified technology, treatment technique, or other means be used for purposes of meeting such maximum contaminant level.

Id.

41. *Id.* § 300g-1(a)(3). Section 300g-1(a)(3) states: "Whenever a national primary drinking water regulation is proposed . . . the maximum contaminant level goal for such contaminant shall be proposed simultaneously." *Id.*

42. *Id.* § 300g-1(b)(4). Although largely aspirational goals under the SDWA, MCLGs are used in other areas as enforceable standards. See, e.g., Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9621(d)(2)(A) (1988 & Supp. IV 1992) (contaminant levels at remediation site may be required to attain MCLGs).

43. 42 U.S.C. § 300g-1(b)(4). Section 300g-1(b)(4) states:

Each maximum contaminant level goal established under this subsection shall be set at the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety. Each national primary drinking water regulation for a contaminant for which a

margin of safety.⁴⁴ The Act requires EPA to set MCLs as close to MCLGs as possible, within the limits of economic and technical feasibility.⁴⁵

In addition to promulgating MCLs and MCLGs, EPA is also authorized to issue treatment techniques which apply to public water systems.⁴⁶ In cases where MCLs are not applicable, treatment techniques can be mandated by EPA.⁴⁷ MCLs may not be applicable where it is either too expensive or the technology does not exist to measure the level of a particular contaminant in the water supply.⁴⁸ In that case, EPA can require that the water system treat the water in a specific way to prevent the occurrence of that contaminant.⁴⁹

For example, in a situation where it is too expensive to require all facilities to test for a certain virus but where the addition of a small amount of disinfectant would prevent that virus from being passed on to consumers, EPA could require public water systems to use that technique. This is different from the requirements of meeting an MCL, because, depending on the purity of the water, some facilities might not have to treat their water to meet an MCL. For this reason, an MCL requirement is different from the situation in which a treatment technique is

maximum contaminant level goal is established under this subsection shall specify a maximum level for such contaminant which is as close to the maximum contaminant level goal as is feasible.

Id. The term "feasible" is defined as "feasible with the use of the best technology, treatment techniques and other means which the Administrator finds . . . are available." *Id.* § 300g-1(b)(5).

44. *Id.* § 300g-1(b)(4).

45. *Id.* § 300g-1(b)(4)-(5). However, an MCLG may be set lower (more stringent) than an MCL because the MCLG provides a margin of safety and is an aspirational goal. *Id.* § 300g-1(b)(5).

46. *Id.* § 300g-1(b)(7)(A).

47. *Id.*

48. *Id.* Section 300g-1(b)(7)(A) states:

The Administrator is authorized to promulgate a national primary drinking water regulation that requires the use of a treatment technique in lieu of establishing a maximum contaminant level, if the Administrator makes a finding that it is not economically or technologically feasible to ascertain the level of the contaminant. In such case, the Administrator shall identify those treatment techniques which, in the Administrator's judgement, would prevent known or anticipated adverse effects on the health of persons to the extent feasible.

Id.

49. *Id.*

established, where all facilities must install a specific mandated treatment technique.

The SDWA, which gives EPA the discretion to require treatment techniques rather than setting an MCL, also directs EPA to promulgate regulations specifying criteria under which filtration is required for public systems supplied by surface water sources.⁵⁰ This congressional mandate for surface water sources is distinct from the requirements which apply to all public water sources.⁵¹ Section 300g-1(b)(7)(C)(i) was passed to address concerns that watersheds protecting surface supplies had been substantially degraded, and to protect the public from bacterial and viral contamination.⁵² The scientific studies which existed at that time indicated that groundwater purity was insured through the natural filtration process of passing through the soil. However, while surface waters are protected by the natural filtration process surrounding the body of water, the degradation of those buffers made surface bodies more susceptible to bacterial and viral contamination.⁵³ Therefore, it was Congress' intent to set criteria for surface water systems to determine when those systems would be required to filter their water.

50. *Id.* § 300g-1(b)(7)(C)(i). Section 300g-1(b)(7)(C)(i) states, in applicable part: [T]he Administrator shall propose and promulgate national primary drinking water regulations specifying criteria under which filtration (including coagulation and sedimentation, as appropriate) is required as a treatment technique for public water systems supplied by surface water sources. In promulgating such rules, the Administrator shall consider the quality of source waters, protection afforded by watershed management, treatment practices (such as disinfection and length of water storage) and other factors relevant to protection of health.

Id.

51. S. REP. NO. 56, *supra* note 37, at 7, *reprinted in* 1986 U.S.C.C.A.N. at 1572; H.R. CONF. REP. NO. 575, *supra* note 38, at 32, *reprinted in* 1986 U.S.C.C.A.N. at 1596. Although the SDWA does not specifically define surface water sources, EPA has defined that term as "all water which is open to the atmosphere and subject to surface runoff." National Primary Drinking Water Regulations, 40 C.F.R. § 141.2 (1993). EPA has also determined that the filtration requirement which applies to all surface waters also applies to groundwater sources under the direct influence of surface water. 40 C.F.R. § 141.70(a). Ground water under the direct influence of surface water is defined as

any water beneath the surface of the ground with (1) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlates to climatological or surface water conditions.

Id. § 141.2.

52. S. REP. NO. 56, *supra* note 37, at 7, *reprinted in* 1986 U.S.C.C.A.N. at 1572.

53. *Id.*

II. THE NATIONAL PRIMARY DRINKING WATER REGULATIONS

As directed by the Safe Drinking Water Act, EPA has promulgated federal regulations for public water systems which qualify under the Act.⁵⁴ The regulations are divided into two levels. National Primary Drinking Water Regulations ("NPDWRs" or "Primary Regulations") protect health and are enforceable against public water systems.⁵⁵ National Secondary Drinking Water Regulations ("NSDWRs" or "Secondary Regulations") protect public welfare and address aesthetic concerns such as water taste, color, and odor.⁵⁶ NSDWRs are not federally enforceable under the SDWA but are intended as guidelines for the states.⁵⁷ The Secondary Regulations are standards by which the states may chose to require stricter protection of drinking water.⁵⁸

EPA has promulgated maximum contaminant levels for the contaminants listed by Congress in the 1986 revisions to the SDWA.⁵⁹ EPA has set maximum contaminant level goals for contaminants of organic, inorganic, and microbiological substances.⁶⁰ EPA has established treatment techniques in lieu of MCLs for a number of contaminants for which it has determined that MCLs are not economically or technologically feasible.⁶¹ Treatment techniques have been established for

54. National Primary Drinking Water Regulations, 40 C.F.R. § 141 (1993); National Secondary Drinking Water Regulations, 40 C.F.R. § 143 (1993).

55. 40 C.F.R. § 141.1. These regulations are the main mechanism by which EPA regulates public water systems. *Id.*

56. 42 U.S.C. § 300(f)(2); 40 C.F.R. § 143.1.

57. 40 C.F.R. § 143.1.

58. *Id.*

59. 40 C.F.R. §§ 141.11-141.16.

60. *Id.* §§ 141.50-141.52.

61. *Id.* § 141.70(a). EPA has set treatment techniques for *Giardia lamblia* and enteric (stomach) viruses in lieu of establishing an MCL for each. *Id.* EPA determined that it was not economically or technologically feasible to measure the level of *Giardia lamblia* or enteric viruses in drinking water because

(1) the only analytical methods . . . available require levels of expertise that utility personnel generally do not have; (2) analysis by independent laboratories is generally very expensive; (3) validation procedures have not yet been established; (4) systems would have to monitor inordinately large and frequent samples of water to ensure that the occurrence of *Giardia* or enteric viruses is not of health risk significance (i.e., failure to detect *Giardia* in one or a few samples provides no assurance that *Giardia* do not occur at significant levels in the water supply); and (5) it is not possible to assure that these

Giardia lamblia, viruses, heterotrophic plate count bacteria, *Legionella*, and turbidity.⁶²

EPA has also satisfied the SDWA mandate to promulgate regulations that specify criteria under which filtration is required for public water systems supplied by surface water sources.⁶³ To satisfy this mandate, EPA promulgated the Surface Water Treatment Rule in June 1989.⁶⁴

Under the requirements of the SWTR, a public water system supplied by surface water or a groundwater source under the direct influence of surface water must either have instituted filtration on or before June 29, 1993, or meet the criteria for filtration avoidance.⁶⁵ The SWTR establishes two sets of criteria on which EPA bases approval of an application for filtration avoidance. First, the supply must meet a series of "objective

contaminants will be detected before they actually cause or contribute to increased risk to health, thus monitoring does not provide adequate advance notice as a means of assuring the safety of drinking water at the consumer's tap.

National Primary Drinking Water Regulations, 52 Fed. Reg. 42,178, 42,180 (1987).

62. 40 C.F.R. § 141.70(a). Treatment techniques have been established for these contaminants rather than MCLs because of the difficulty of establishing MCLs. EPA has also determined that *Giardia*, one of the organisms targeted by the SWTR, is resistant to regular treatment. Therefore, filtration rather than disinfection is mandated when this organism is present in a water supply. *Id.* Turbidity is "a measure of light scatter or absorption caused by suspended or colloidal matter, and is used as an indicator of treatment effectiveness, specifically for clarification and filtration processes." National Primary Drinking Water Regulations, 52 Fed. Reg. 42,178, 42,180.

63. 42 U.S.C. § 300g-1(b)(7)(C)(i).

64. 40 C.F.R. § 141.73. As EPA Region II noted in a surface water treatment rule determination:

The SWTR requires all public water systems supplied by unfiltered surface water sources to meet a series of water quality, operational, and watershed control criteria. These criteria, referred to as the filtration avoidance criteria, are detailed in 40 C.F.R. § 141.71. If, at any time, a system fails to meet the avoidance criteria, it may be required to provide filtration within 18 months of such failure.

REGION II, U.S. ENVTL. PROTECTION AGENCY, SURFACE WATER TREATMENT RULE DETERMINATION—NEW YORK CITY'S CATSKILL AND DELAWARE WATER SUPPLIES 1 (Dec. 30, 1993) (on file with author) [hereinafter RULE DETERMINATION].

65. 40 C.F.R. § 141.71. EPA also has current plans to promulgate a rule which would "set national standards for prevention of contamination in ground water that is not under the direct influence of surface water." *Draft of Proposed Drinking Water Rule Outlines Alternative Approaches for Systems*, 23 Env't Rep. (BNA) 1253 (Aug. 21, 1992). The rule would require public water systems using groundwater to disinfect the source water unless the system met the criteria for "natural disinfection" or unless the system qualified for an exemption under § 1415(a)(1)(B) of the SDWA. *Id.* at 1254. Promulgation of the rule is scheduled for 1995. *Id.* at 1253.

source water quality criteria" which are essentially measures of the purity of the source water.⁶⁶ Second, the supplier must satisfy "site-specific criteria" such as having a plan to ensure long-term watershed protection.⁶⁷

To meet the objective source water quality criteria, public water systems must treat any surface water source to achieve at least 99.9% removal and/or inactivation of *Giardia lamblia* cysts, and at least 99.99% removal and/or inactivation of viruses.⁶⁸ A system is deemed to be in compliance with objective source water quality criteria requirements if it complies with the treatment technique requirements of the SWTR, either by disinfection or filtration.⁶⁹

In addition to insuring the percentage reduction in *Giardia* and viruses, public water systems subject to the SWTR must also satisfy other objective source water quality criteria. Levels of total coliform or fecal coliform and levels of turbidity must be below a specified amount for the source water to be considered pure enough to avoid filtration.⁷⁰

Public water systems must also meet site-specific conditions in order to avoid filtration.⁷¹ Under the SWTR's site-specific requirements, public water systems must maintain a watershed control program which minimizes the potential for contamination by *Giardia lamblia* cysts and viruses in the source water. The watershed control program must document and characterize watershed hydrology and land ownership; "identify watershed characteristics and activities which may have an adverse effect on source water quality"; and monitor those characteristics and activities.⁷² The public water supply also "must demonstrate through ownership and/or written agreements with landowners within the watershed that it can control all human activities

66. 40 C.F.R. § 141.71(a).

67. *Id.* § 141.71(b).

68. *Id.* § 141.70(a)(1)-(2).

69. *Id.* § 141.72. The regulations define "disinfection" as "a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents." 40 C.F.R. § 141.2. This process is generally less expensive than filtration because all it involves is a regulated addition of chemicals like chlorine to the water before it reaches consumers. Filtration, which can be considerably more costly, requires that the water be passed through a porous material to reduce water contamination. See 40 C.F.R. § 141.2 (defining "disinfectant," "filtration," and "direct filtration").

70. *Id.* § 141.71(a)(1)-(2).

71. *Id.* § 141.71(b).

72. *Id.* § 141.71(b)(2)(i)-(iii).

which may have an adverse impact on the microbiological quality of the source water."⁷³ The watershed protection program must also provide for "on-site inspection to assess both the watershed control program and disinfection treatment processes."⁷⁴ Finally, filtration avoidance will be granted only if the watershed has not "been identified as a source of a waterborne disease outbreak."⁷⁵

Public water systems seeking a filtration exemption must submit an application for filtration avoidance. Once the public water system submits its application, the state must determine whether the watershed control program is adequate to minimize the potential for contamination by *Giardia lamblia* cysts and viruses in the source water.⁷⁶ The SWTR requires that the adequacy of the program be based on "the comprehensiveness of the watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the water system has maximized landownership and/or controlled land use within the watershed."⁷⁷

There are about 200,000 public water systems in the United States that get their water supply from surface waters or groundwater.⁷⁸ According to EPA, the SWTR will require 10,000 water supply systems to install or improve their bacteria filtration systems at a cost of \$3 billion.⁷⁹ Regardless of how many systems are actually affected, the cost of complying with the SWTR will ultimately depend on the ability of water suppliers to

73. *Id.* § 141.71(b)(2).

74. *Id.* § 141.71(b)(3).

75. *Id.* § 141.71(b)(4).

76. *Id.* § 141.71(b)(2).

77. *Id.*

78. *Surface and Ground Water Supply Systems Must Increase Bacteria Filtration, Monitoring*, 20 *Env't Rep.* (BNA) 484 (June 30, 1989). EPA estimated that "[f]or those systems installing filtration systems, the cost to each household would be \$50 to \$400 a year, but about 90[%] of affected households—21 million people—will pay \$50 or less annually." *Id.*

79. *Id.* Specifically, under the filtration rule, "1,500 systems will need to install filtration, 5,000 systems will need to upgrade existing filtration or disinfection, and 3,500 systems will need to install or upgrade disinfection or obtain another water source." *Id.* Some organizations dispute EPA's conservative figures that the entire cost of compliance will be \$3 billion. *New Filtration Rule Essential but Very Costly, AWWA Official Says*, 20 *Env't Rep.* (BNA) 514 (July 7, 1989) (American Water Works Association pointing out that a major portion of New York City's \$7.5 billion water system improvement project implements filtration).

institute adequate watershed protection programs to avoid installing expensive filtration facilities.

III. STATE FILTRATION AVOIDANCE PROGRAMS

The provisions of the Safe Drinking Water Act are designed to be carried out by the states. A state is granted primacy under the SDWA when EPA determines that the state can adequately implement the SDWA provisions.⁸⁰ When EPA promulgates new regulations, like the Surface Water Treatment Rule, EPA retains primary enforcement responsibility for the new rule until it approves a state's primacy revision package.⁸¹ If a new primacy determination is required, EPA usually promulgates the new requirements along with the new regulations.⁸²

In New York State, implementation and enforcement of the SDWA were formally delegated by EPA to the New York State Department of Health ("NYSDOH") on September 9, 1977.⁸³ New York State was granted primacy over the new Surface Water Treatment Rules on July 30, 1993 by EPA's acceptance of NYSDOH's primacy retention package.⁸⁴ EPA determined that New York's regulations were no less stringent than the corresponding federal regulations and that New York was meeting the primary enforcement responsibilities specified in 40 C.F.R. section 142.10.⁸⁵ However, a public hearing was requested and

80. Safe Drinking Water Act, 42 U.S.C. § 300g-2(a) (1988). A state is granted primacy to enforce the SDWA when EPA determines that the state: 1) has adopted regulations no less stringent than the corresponding federal regulations; 2) has adopted adequate procedures for enforcement, including monitoring and inspections; 3) has adequate record keeping; 4) has variance procedures which are no less stringent than the federal variance procedures; and 5) has adopted and can implement emergency plans. *Id.*

81. RULE DETERMINATION, *supra* note 64, at 1-2.

82. See National Primary Drinking Water Regulations, 40 C.F.R. 142.10 (1993), for specific primacy requirements. The regulatory primacy requirements parallel those of the statutory requirements but are more detailed. For example, under the statutory requirement that the state have adequate enforcement procedures, the regulations require that the state must specifically inventory public water systems, establish state water testing labs, assure that the design and construction of public water system facilities will be capable of complying with drinking water regulations, and have adequate statutory and regulatory enforcement powers to compel compliance with water regulations. *Id.*

83. RULE DETERMINATION, *supra* note 64, at 1.

84. *Id.* at 2.

85. *Id.*

The New York State regulations are contained in the Public Water Supplies Section of the Drinking Water Supplies Law (New York Code of Rules and

one was held on December 7, 1993.⁸⁶ EPA will review the hearing's record and decide whether to affirm or rescind its earlier determination.⁸⁷ Should EPA affirm its determination, NYSDOH will gain primary enforcement responsibility for all New York surface water systems.⁸⁸

Although filtration avoidance programs are controlled by states with primacy, EPA's stance politically has been to require filtration. A big battle occurred when EPA was accused of recommending filtration for New York City's supply in order to set an example for the rest of the country, and to require other smaller systems to filter.⁸⁹ During this battle, an EPA panel stated that granting New York filtration avoidance would send the wrong signal to other water systems and cause national ramifications for states and cities deciding whether to filter their supplies.⁹⁰

EPA Administrator Carol Browner, however, took a stance at odds with her own water experts by supporting New York City's plan to protect drinking water quality with watershed protection measures rather than requiring it to install a \$6 billion drinking water filtering plant.⁹¹ This decision relieved some of the political pressure surrounding the question of whether water systems would be required to filter their water supplies or be able to institute watershed protection. In states where filtration is required, local governments have complained about the costs of the SWTR.⁹² In fact, some cities and states are starting a major

Regulations Title 10 (Health), Chapter I, Part 5, Subpart 5-1): 5-1.1, 5-1.22, 5-1.30 (definitions); 5-1.52 (maximum contaminant levels for turbidity); 5-1.1, 5-1.30, 5-1.77, 5-1.78 (public notification); 5-1.30, 5-1.72, 5-4.2 (treatment requirements); 5-1.1, 5-1.20, 5-1.52 (criteria for avoiding filtration); 5-1.30, 5-1.52 (disinfection); 5-1.30, 5-1.52, 5-1.72, 5-1.74, 5-1.77 (monitoring and analysis); and 5-1.91, 5-1.92 (variances and exemptions).

Notice, 58 Fed. Reg. 61,088, 61,089 (1993).

86. RULE DETERMINATION, *supra* note 64, at 2.

87. *Id.*

88. *Id.*

89. *New York City Official Blasts EPA Over Report Recommending Filtration*, 23 Env't Rep. (BNA) 3229 (Apr. 30, 1993).

90. *Id.*

91. *New York: Browner Backs NYC Water Protection Plan*, GREENWIRE, Oct. 26, 1993, available in LEXIS, News Library, WIRES File.

92. Allen, *supra* note 4, at 21.

campaign to gut the Safe Drinking Water Act because they do not want to pay for the costly filtration devices.⁹³

IV. NEW YORK CITY'S RESPONSE TO THE SURFACE WATER TREATMENT RULE

The agency responsible for operating, maintaining, and protecting New York City's water supply is the New York City Department of Environmental Protection ("DEP").⁹⁴ Due to its qualification under the Safe Drinking Water Act as a public supplier of water, this agency has the primary responsibility of complying with the Surface Water Treatment Rule by either installing filtration devices for its supply or by seeking approval from EPA to avoid filtration.⁹⁵ DEP has elected to pursue both avenues with respect to the different watersheds over which it has authority.

New York City's water supply consists of three unfiltered surface water systems: Croton, Catskill, and Delaware. For the Catskill and Delaware water supply systems, DEP has pursued filtration avoidance, while for the Croton system, it has elected to install filtration equipment.⁹⁶ To filter its Croton system, the City is scheduled to construct the Jerome Park filtration plant in the Bronx by 1999.⁹⁷ DEP has chosen to install filtration facilities in the Croton system because it is in a highly-developed suburban area, which has contributed to a substantial deterioration of the surrounding ecosystem buffer and water quality in the reservoir. The development which surrounds the

93. *Id.*

94. NEW YORK CITY, N.Y., ADMIN. CODE, tit. 24, § 302 (1992). See also *City of N.Y. v. Mancini-Ciolo, Inc.*, 188 A.D.2d 633, 634, 591 N.Y.S.2d 518, 519-20 (1992) (describing New York City's authority to promulgate and enforce watershed regulations).

95. Surface Water Treatment Rule, 40 C.F.R. § 141.71 (1993).

96. FILTRATION AVOIDANCE, *supra* note 19, at 2 (document submitted to EPA describing New York City's proposed filtration avoidance program). The Catskill and Delaware systems cover an area of about 2,000 square miles. While much less developed than the Croton system, they are threatened by contamination resulting from such human activities as dairy farming and discharges from waste water treatment facilities that serve the area's population. *EPA Gives Conditional Approval for New York City to Avoid Filtration of Drinking Water*, BUSINESS WIRE, Dec. 30, 1993, available in LEXIS, News Library, WIRES File [hereinafter *EPA Gives Conditional Approval*].

97. *EPA Gives Conditional Approval*, *supra* note 96.

reservoir precludes it from being considered for future watershed protection.⁹⁸

To pursue filtration avoidance for the Delaware and Catskill watersheds, New York City submitted its original application for filtration avoidance in 1991, entitled New York City's Long-Range Water Quality, Watershed Protection and Filtration Avoidance.⁹⁹ On December 27, 1991, the New York State Department of Health granted conditional approval of New York City's filtration avoidance proposal, provided New York City met certain conditions.¹⁰⁰ However, in 1992, NYSDOH withdrew its conditional approval upon determining that it lacked primacy to administer the SWTR.¹⁰¹ Consequently, EPA evaluated the City's 1991 application.¹⁰²

On January 19, 1993, EPA approved the filtration avoidance application subject to further determinations by EPA and the City's compliance with the conditions for avoidance.¹⁰³ Although New York City had met all the quantifiable criteria for avoiding filtration under the SWTR, EPA conditioned approval of DEP's program on whether New York City could adequately protect the Delaware and Catskill drinking water supplies in the future.¹⁰⁴ The additional conditions imposed by EPA included "studies on microbiological contamination in the reservoirs and how to control it; purchasing land, easements, and/or development rights . . . [and] developing plans and schedules for remediating waste water treatment plant discharges."¹⁰⁵

The determination mandated "substantial compliance with [sixty-six] conditions for avoidance and numerous additional

98. *Id.*

99. FILTRATION AVOIDANCE, *supra* note 19, at 2.

100. *Id.*

101. *Id.*

102. *Id.*

103. *Id.*

104. *EPA Gives Conditional Approval, supra* note 96.

105. *Id.* Other areas of the country have not been as lucky as New York. Preliminary plans have been undertaken for the building of a filtration plant for a San Francisco owned system. *State Orders San Francisco to Filter its Surface Supply*, 229 ENGINEERING NEWS-REC. 18 (Aug. 3, 1992). This system supplies 2.6 million customers and consists of "six dams in the Sierra Nevada range, in a virtually all-granite watershed about 150 miles from the city." *Id.* California's Department of Health Services mandated filtration of the San Francisco supply by 1999. *Id.* It qualifies for an exemption under the federal regulations, but California mandated stricter procedures than the federal regulations and is requiring the facility to filter its water. *Id.*

reporting requirements."¹⁰⁶ These conditions also included establishing entire programs, conducting new research, refining the water system's operation and management, and committing to the substantial hiring and capital funding contained in the 1991 submission.¹⁰⁷ The determination required New York City to simultaneously conduct treatment studies and develop a conceptual filtration plant design.¹⁰⁸ The plant design would expedite construction of filtration facilities in the event EPA deems it necessary.

To prove to EPA that DEP can adequately protect the future of the Catskill and Delaware systems, DEP has submitted its final proposal. As part of its final filtration avoidance submission, DEP issued New York City's 1993 Long-Term Watershed Protection and Filtration Avoidance Program.¹⁰⁹ This final document submitted to EPA spelled out how New York City would comply with the filtration avoidance requirements of the Surface Water Treatment Rule and the additional requirements imposed by EPA.¹¹⁰

To satisfy the requirements of the SWTR and the filtration avoidance criteria, DEP mapped out an extensive program. Specifically, the Long-Term Watershed Protection and Filtration Avoidance Program included:

1. Comprehensive water quality inventory, surveillance and monitoring
2. Promulgation of new watershed regulations
3. Partnership programs with watershed communities and stakeholders
4. Kenisco Reservoir coliform remediation and spill protection
5. Upgrading of City-owned and non-City-owned sewage treatment facilities
6. Septic review, inspection and remediation
7. Enhanced enforcement of water quality regulations

106. FILTRATION AVOIDANCE, *supra* note 19, at 2. Although New York City meets the federal criteria, EPA has placed a number of special conditions on the City because it was concerned that the City could adequately protect its vast 2,000 square mile of watershed in the long-term. *EPA Gives Conditional Approval*, *supra* note 96.

107. FILTRATION AVOIDANCE, *supra* note 19, at 2.

108. *EPA Gives Conditional Approval*, *supra* note 96.

109. FILTRATION AVOIDANCE, *supra* note 19, at 2.

110. *Id.*

8. Land acquisition
9. Stream corridor protection
10. Natural resources management.¹¹¹

In carrying out a broad watershed protection program, DEP will create a comprehensive water quality inventory. DEP believes that water quality inventory, surveillance, and monitoring will aid in evaluating the differing management options and in identifying potentially sensitive areas for special attention. Pursuant to this inventory project, DEP plans to carry out extensive pathogen monitoring and research, monitoring and modeling of sewage treatment plant effluent near the watershed, hydrologic modeling, and aerial mapping.¹¹²

To fulfill its commitment to the anti-degradation goal of the watershed buffer area, DEP has substantially revamped the existing watershed regulations which originally became effective in 1953.¹¹³ The new draft watershed regulations were designed to ensure compliance with federal and state standards and provide DEP with greater authority to protect New York City's water supply.¹¹⁴

The proposed regulations were to take effect in 1994.¹¹⁵ These regulations should ensure control of a broad range of specific pollutants and potentially polluting activities, including sewage treatment plants, septic systems, storm water management, impervious surfaces, solid waste management, snow

111. *Id.* at 4 (punctuated as original).

112. *Id.* at 6.

113. See NEW YORK CITY, N.Y., RULES, ch. 18 (1953); N.Y. HEALTH LAW, tit. 10, §128.1 (1962) (granting New York City authority to adopt watershed regulations).

114. NEW YORK CITY DEP'T OF ENVTL. PROTECTION, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE DRAFT WATERSHED REGULATIONS FOR THE PROTECTION FROM CONTAMINATION, DEGRADATION, AND POLLUTION OF THE NEW YORK CITY WATER SUPPLY AND ITS SOURCES, E.S.-2 (1993).

The Draft Watershed Regulations are designed to minimize the discharge of pollutants into source waters from both point and non point sources, to minimize the adverse impacts of erosion, to limit the discharge of nutrients into waters which may accelerate the eutrophication process of the reservoirs, and to provide notification to the Department of Environmental Protection of ongoing or proposed activities which, either alone or in conjunction with other existing and proposed activities, may contaminate or degrade the City's water supply.

Id. at E.S.-1.

115. FILTRATION AVOIDANCE, *supra* note 19, at 8. By the close of 1994, these regulations were not yet finalized.

disposal, storage and discharge of petroleum products, pesticides, aquatic herbicides, fertilizers, and hazardous wastes and substances.¹¹⁶

Rather than relying on one institution to carry out the filtration avoidance program, DEP has developed partnerships with local community interests to create a more sensitive and comprehensive watershed protection plan.¹¹⁷ Two major initiatives designed to coordinate local efforts are the Watershed Agricultural (Whole Farm) Program and Whole Community Planning.¹¹⁸

The New York City Watershed Agricultural Program controls agricultural sources of water pollution and protects the economic viability of agricultural activities in the watershed.¹¹⁹ Whole Community Planning relies on the premise that protection measures are best implemented through a partnership between the City and local communities.¹²⁰ According to DEP, the goals of Whole Community Planning are to protect the quality of New York City's drinking water by enhancing the institutional mechanisms, financial incentives, and capacities of villages, towns, and counties so that they can develop and implement locally-based watershed protection and management strategies.¹²¹ Whole Community Planning recognizes that most decisions on growth management and pollution prevention are made at the local level. This, coupled with New York City's geographic and jurisdictional constraints, makes local coordination an integral part of the watershed protection program.

Because New York City will heavily regulate the watershed, it has recognized the need to work with individual towns surrounding the watershed. Traditionally, a big obstacle to a strong watershed protection program has been "opposition by upstate communities to land-use and pollution controls."¹²² Therefore, the City is attempting to ensure that these communities will be major beneficiaries of the new program.

116. *Id.* at 24-25.

117. *Id.* at 26.

118. *Id.* at 26, 28.

119. *Id.* at 26.

120. *Id.* at 28.

121. *Id.*

122. Robert F. Kennedy, Jr., *Embattled at the Source*, N.Y. TIMES, Aug. 5, 1993, at A21. Kennedy is a lawyer for the Hudson Riverkeeper and the Natural Resources Defense Council.

Many of these towns draw their water from New York City aqueducts and profit from the City's efforts to keep the water clean. In Westchester County, for example, eighty percent of the water comes from the New York City supply.¹²³ According to Robert F. Kennedy, if EPA "ordered the city to filter its water, these towns would be forced to build their own water treatment plants, which, because of economies of scale, would cause greater hardship to local residents than to the people of New York City."¹²⁴ Additionally, since the City pays taxes on the watershed land, "local communities pocket this money without having to shoulder infrastructure improvements for water, sewer and schools."¹²⁵

New York City owns and operates five sewage treatment plants and one sub-surface sewage disposal system within the Catskill and Delaware watersheds.¹²⁶ As part of the watershed program, the City is replacing the existing treatment systems with new ones and providing tertiary treatment before disposing of the effluent.¹²⁷ The City is also initiating two pilot studies designed to improve the quality of the effluent. The Membrane Filtration Pilot and the Cold Water Pilot are designed to further improve the quality of the effluent by addressing specific technical problems.¹²⁸

The remaining private sewage treatment plants will have to meet certain treatment requirements under the revised watershed regulations of the filtration avoidance program.¹²⁹ Proposed requirements include back-up power capacities and the application of certain technologies such as nutrient removal and

123. *Id.*

124. *Id.*

125. *Id.*

126. FILTRATION AVOIDANCE, *supra* note 19, at 40.

127. *Id.*

128. *Id.* The Membrane Filtration Pilot was developed to determine the relative effectiveness of ultra-filters, micro-filters, and conventional sand filters in the removal of *Giardia* and *Cryptosporidium*. Filtration of effluent ensures the ability of the natural watershed ecosystem to absorb the remaining biological load. The Cold Water Pilot was designed to address the problems with system failures of sewage treatment plants in cold weather environments. Cold weather slows the biological breakdown of effluent entering the plant because it decreases the productivity of the bacteria employed by the plant to break down the effluent. Because the sewage treatment plants located in the watershed experience periods of cold weather, the City is studying the effects of cold water temperatures on the new treatment plants. *Id.*

129. *Id.* at 43.

specified filtration.¹³⁰ The City has listed five private sewage treatment plants that must be upgraded.¹³¹

In addition to the large sewage treatment plants located within the Delaware and Catskill watersheds, there is also concern about smaller personal disposal systems located in the area, such as privately owned household septic systems. DEP is pursuing a program that will ensure the proper operation and maintenance of existing septic systems.¹³² DEP is also instituting a program capable of providing prompt detection and remediation in the event of septic system failure.¹³³ Because of the intrusiveness of some of the private septic system requirements, some cooperative septic maintenance programs are being developed as part of Whole Community Planning initiatives. The City hopes to achieve its goals through “[i]ntensive education and outreach to watershed residents, [i]nspection and baseline documentation of all septics in designated program areas, [r]egular inspection and pumping service [and] [s]eptage disposal capacity planning.”¹³⁴

According to DEP, “[m]any septic failures are due to improper siting and design at the time of installation.”¹³⁵ Therefore, DEP’s authority to review and approve new septic systems will ensure that they meet “recognized standards for appropriate soil, slope and other environmental conditions.”¹³⁶

The City has also explicitly defined the need for variable buffers between septic systems and reservoirs, wetlands, or watercourses.¹³⁷ In sensitive water supply areas, the installation of a conventional septic system requires a 100-foot buffer between the proposed site and the water supply.¹³⁸ When a conventional system cannot be used, DEP requires a variable buffer based on the parameters of soil percolation rates, depth of

130. *Id.* at 43-44.

131. *Id.* at 44-45.

132. *Id.* at 46.

133. *Id.* DEP has also created a Septic Remediation Working Group to track and study septic failures and their remediation. The group is examining the causes of septic failures and attempting to identify patterns associated with particular circumstances or environmental conditions. *Id.* at 49.

134. *Id.* at 46.

135. *Id.* at 48.

136. *Id.*

137. *Id.*

138. *Id.*

bedrock, and degree of slope or obvious rock outcroppings between the proposed site and the sensitive water supply area.¹³⁹

As part of DEP's expanded watershed protection program, stronger enforcement techniques are being employed to ensure that all local, state, and federal water quality-related regulations are enforced. This program includes expanded sewage treatment plant inspections, enhanced watershed inspection programs, and systematic DEP police patrols.¹⁴⁰

The aggressive enforcement program also includes an agreement between the State Department of Environmental Conservation ("DEC") and the DEP to coordinate the City's watershed protection program and the State's Pollution Discharge Elimination System under the Clean Water Act.¹⁴¹ The agreement provides methods for DEP and DEC to coordinate their enforcement of numerous watershed protection statutes and provides for

mutual notification of applications received; coordinated environment and permit reviews of projects; joint development of stricter discharge standards, water quality standards and monitoring requirements to reduce or eliminate duplication between DEP and DEC regulations; coordinated enforcement against point source dischargers; and coordination of standards regarding solid waste, pesticides, and petroleum and chemical bulk storage.¹⁴²

According to DEP, the New York City water supply system consists of nearly 1.2 million acres of land in upstate New York.¹⁴³ DEP believes that approximately thirty percent of this land is already protected by public ownership, including seven percent owned by the City and twenty-three percent by the

139. *Id.*

140. *Id.* at 54. Part of this program entails the establishment of an Environmental Investigations Unit designed to investigate complaints and intelligence gathered from other unit patrols. This unit would target illegal dumping, sewage discharges, illegal storage of hazardous material, spills, and other environmental insults. *Id.*

141. *Id.* at 50. *See also* Clean Water Act, 33 U.S.C. §§ 1251, 1311 (1988) (statutory requirements of the National Pollution Discharge Elimination System).

142. FILTRATION AVOIDANCE, *supra* note 19, at 50.

143. *Id.* at 57.

State.¹⁴⁴ As part of its filtration avoidance effort, the City will institute a Land Acquisition Program.¹⁴⁵ The primary goal of this program is to increase the acreage of the reserve around the watershed to ensure long-term protection of the natural filtration process. The Land Acquisition Program is designed to complement the City's other anti-degradation strategies.¹⁴⁶

Land acquisition under the plan may be through purchase or gift, and may involve transfers of fee simple or of lesser interests, including conservation easements. DEP stated in its application that it will not rule out the use of its powers of eminent domain in rare or emergency circumstances, but expects to carry out the plan through willing buyer/willing seller contracts.¹⁴⁷ In 1994, DEP planned to spend \$44 million to purchase approximately 10,000 additional acres.¹⁴⁸ DEP has also developed a long-term plan for the acquisition of an additional 70,000 acres over the next seven years.¹⁴⁹ DEP has targeted sensitive, undeveloped, privately-owned land for acquisition.¹⁵⁰ The plan also includes a prioritization based on "core area," "stream corridor," and "exceptional parcel" designations.¹⁵¹

Core areas include land in the watershed basin between the reservoir and the first ridge line.¹⁵² Rain that falls on the core area lands is speedily conveyed to the reservoir, and pollutants are carried along with minimal treatment or interception. Therefore, core area land is essential to provide adequate filtration. These areas are the most critical to the filtration avoidance program and, according to DEP, must be expanded to

144. *Id.*

145. *Id.* The Land Acquisition Program description in NEW YORK CITY'S LONG-TERM WATERSHED PROTECTION AND FILTRATION AVOIDANCE PROGRAM is only part of the City's application for filtration avoidance. DEP is currently meeting with EPA and preparing materials on this program to address new issues raised by EPA. When these materials are completed they will be submitted as an addendum to the filtration avoidance application. *Id.*

146. *Id.*

147. *Id.* at 60.

148. *Id.* at 57.

149. *Id.*

150. *Id.* "Land is considered 'sensitive' where significant changes in the natural ecosystem are expected to have adverse effects on water quality or degrade the watershed environment." *Id.*

151. *Id.* at 58.

152. *Id.*

meet future development pressures.¹⁵³ Therefore, the City has committed over forty percent of its land acquisition budget to acquire land in core areas.¹⁵⁴

Stream corridors average 250 feet on either side of a stream, but may vary.¹⁵⁵ These corridors transport pollutants to the watershed at a rapid rate, which is vital for the stream's ecological cleansing function.¹⁵⁶ DEP's goal is to fully protect stream corridors through various program controls.¹⁵⁷

Lastly, exceptional parcels are blocks of land, not defined as core areas or stream corridors, which meet other criteria singling them out for protection.¹⁵⁸ Examples of exceptional parcels include parcels of 500 acres or more; lands adjacent to existing City-owned land or other protected land; lands especially vulnerable to disturbance, such as wetlands; lands with steep slopes; lands containing fragile ecosystems; and lands required to support watershed partnership programs like the Whole Farming Planning Program.¹⁵⁹

In summary, these mechanisms represent New York City's response to EPA's new requirements under the SWTR. New York City's program is designed to protect public health and the future of its water supply. DEP is hoping that the Long-Term Watershed Protection & Filtration Avoidance Program will make it unnecessary to install an enormous filtration plant.

V. THE PROGRESSIVENESS OF THE FILTRATION AVOIDANCE PROGRAM

New York City is very serious about pursuing the filtration avoidance route, not only because it views filtration avoidance as the most ecologically sound approach, but because it will reduce the financial strain on the City in the long run. In July of 1993,

153. *Id.*

154. *Id.*

155. *Id.* at 58. The Land Acquisition Program is only one aspect of stream corridor protection, which is covered under the more general program of the Stream Corridor Protection Program ("SCPP"). The SCPP is a partnership program between DEP and riparian communities in the watersheds designed to develop protection plans for stream corridors. *Id.* at 64.

156. *Id.* at 58.

157. *Id.*

158. *Id.*

159. *Id.*

former Mayor David Dinkins proposed a multi-million dollar plan in support of New York City's Watershed Protection Program.¹⁶⁰ The Mayor's program set aside \$272 million to acquire land around all of the eighteen reservoirs to insulate them from pollution.¹⁶¹ The plan also allocated \$120 million to help towns that border the reservoirs create their own protection programs, \$230 million to hire technicians to ensure that the facilities and communities are complying with environmental laws, and \$128 million to rebuild antiquated upstate sewage plants that might contaminate the supply.¹⁶²

Although this proposed \$720 million plan is costly, it is still less costly than the projected expense to be incurred by building a new filtration plant.¹⁶³ New York City estimates that a filtration plant large enough to treat the Catskill and Delaware water systems would cost \$8 billion and have an operation and maintenance cost of \$300 million a year.¹⁶⁴

New York City is also taking a watershed protection approach for health reasons. A filtration plant does not always guarantee pure water. Although it would remove most disease-bearing organisms from city water, a filtration plant would still miss some of these organisms. Also, the filtration plant would be unable to remove many toxic and organic chemicals, carcinogens such as

160. Kennedy, *supra* note 122, at A21.

161. *Id.*

162. *Id.*

163. *Id.* Recently, Congress has been concerned that requiring water systems to filter their water, coupled with federal funding shortfalls to help these systems comply, has created a harsh result. For example, on October 9, 1992, Rep. Jolene Unsoeld stated: [m]any small towns and rural areas have been given regulatory orders to build water filtration and treatment facilities that they simply cannot afford. If the Federal Government is going to mandate this expensive program, it must also provide part of the technical and financial support needed to make the program work.

138 CONG. REC. E3162 (daily ed. Oct. 9, 1992).

164. Kennedy, *supra* note 122, at A21. According to Kennedy, there would be financial spillover effects if New York City were required to build such a costly filtration plant. To pay for the filtration plant, the city would likely have to double water rates for most residential users. The increased cost would hit less-affluent New Yorkers and their landlords particularly hard, because low-income dwellings tend to use more water than their more affluent counterparts. Low-income dwellings tend to house more people per unit, have more daytime use, and are more likely to have leaky pipes. Landlords who, because of rent-control laws, cannot pass increased water costs on to their tenants might not be able to justify the added costs. This would cause some of them to abandon rent-controlled properties and force the City to take ownership, creating an even larger financial burden on the City. *Id.*

benzene, and some pesticides that build up in unprotected reservoirs.¹⁶⁵

Even when filtration plants are installed, there is no guarantee that the plants will always function properly. The Milwaukee outbreak, which killed forty-seven people, occurred at a watershed that was filtering its water. In a similar occurrence, an estimated 13,000 people in Carrollton County, Georgia, were sickened by an outbreak of *Cryptosporidium* in 1987.¹⁶⁶ Although Carrollton's water plant met federal requirements, the filtration system was not operating at maximum efficiency when the outbreak occurred.¹⁶⁷ These incidents illustrate that more protection is needed than filtration at the end of the pipe.¹⁶⁸ Therefore, the best fall-back position for water quality protection is to ensure that the watershed's natural filtration system remains intact to prevent such emergencies.

In addition to health and economic considerations, other benefits have driven some municipalities to pursue watershed protection programs. Protecting the watershed's natural filtration system means protecting the buffers around the surface water. This enhancement and protection of the level of vegetation provides other positive effects, aside from protecting water quality. The aesthetic benefits of the green buffer lands, beautiful waterscapes, and recreational fisheries enhance the beauty of the surrounding area.

One fear among some environmentalists and certain public officials is that installing filtration may put development pressure on the watershed. The technology which purifies the water reaching consumers provides an imaginary safety net effect which justifies less protection around the watershed.¹⁶⁹ If there is

165. *Id.*

166. *How Clean is U.S. Drinking Water?*, *supra* note 3.

167. *Id.*

168. See, e.g., *Milwaukee Mayor Orders Tough Regulations Following Outbreak*, *supra* note 2. Former DEP Commissioner Albert F. Appleton has argued that it is better to protect the watershed than install a filtration plant. He has stated "[t]he question is whether we should replace this wonderful outdoor filtering mechanism [the watershed] we have with a structure of steel and concrete." *N.Y.C., EPA Expert Panel at Odds Over Need to Start Building Filtration Plants*, 23 *Env't Rep. (BNA)* 3205 (Apr. 23, 1993).

169. See Robert F. Kennedy, Jr., *Drinking From Sewers*, *N.Y. TIMES*, Feb. 7, 1992, at A29. According to Kennedy, filtration is at best a "stopgap solution." *Id.* Kennedy believes that even with filtration "[m]ost chemical contamination will remain untreated. Algae blooms will continue to cause taste and odor problems, and chlorine disinfection will react with pollutants to produce toxic trihalomethanes unaffected by filtration." *Id.*

continued development in the watershed, more pollutants are created, and less and less will be removed by filtration over time. If the source waters become contaminated, filtration will no longer be adequate to purify the water.¹⁷⁰ Thus, the source must be adequately protected.¹⁷¹

The view that watershed protection should be a major priority in ensuring drinking water quality is consistent with the language and legislative history of both the Safe Drinking Water Act and the Surface Water Treatment Rule. It is clear from the debates, committee reports, and the final language of the SDWA that Congress was aware of the merits of protecting the natural filtration process surrounding public water supplies. Filtration which has been partially mandated by the SDWA and subsequent regulations was seen as a necessity because of previous contamination of the watershed.

The statutory language of the SDWA indicates that Congress was aware that water quality could be preserved through watershed management.¹⁷² The language of the statute which authorizes EPA to promulgate filtration requirements contemplates watershed protection. Section 300g-1(b)(7)(C)(i) states:

[T]he Administrator shall propose and promulgate national primary drinking water regulations specifying criteria under which filtration . . . is required as a treatment technique for public water systems supplied by surface water sources. In promulgating such rules, the Administrator shall consider the *quality of source waters, protection afforded by watershed management, treatment practices . . . and other factors relevant to protection of health.*¹⁷³

This language illustrates that Congress was aware of the water quality benefits associated with watershed protection. It is a

170. *Interview: Kennedy Taps Land-Use Regs to Protect NYC Water*, GREENWIRE, June 4, 1993, available in LEXIS, News Library, WIRES File. Kennedy stated: "[t]here's been almost an institutional culture within the EPA that stresses engineering solutions to environmental problems. It's time people started saying, 'Well, there isn't always an engineering solution.'" *Id.*

171. *Id.*

172. 42 U.S.C. § 300g-1(b)(7)(C)(i).

173. *Id.* (emphasis added).

direct mandate to EPA to consider "protection afforded by watershed management" when determining whether filtration is needed.¹⁷⁴

The EPA regulations create water quality criteria which allow a water system to avoid filtration. Watershed criteria are considered only after the water quality criteria are satisfied. When filtration is required, no other mechanisms are employed to ensure future watershed protection. Only the threat of exceeding general maximum contaminant levels prevents total degradation of the watershed. This threat, however, does not protect the watershed like filtration avoidance programs. However, the practical effect of the SWTR is that the technology is installed and watershed protection is forgotten. Such an approach is contrary to the clear intent of Congress to consider watershed management.

The legislative history also indicates that Congress was aware that water quality could be protected through watershed protection. Both the Senate Environment and Public Works Committee's report and the House Energy and Commerce Committee's report, which accompanied the 1986 amendments to SDWA, provide guidance as to Congress' intent in passing the treatment technique requirements of section 300g-1(b)(7)(C)(i).¹⁷⁵ The Senate report's discussion section states:

Contamination of drinking water supplies by synthetic organic chemicals is not the only health problem faced by public water systems. Incidence of water borne [sic] disease continue to occur . . . The increasing incidence of such contamination is attributed to a number of factors, including development of *previously protected watersheds*. Filtration and disinfection techniques have been widely proven to be effective in removing bacterial and some viral contaminants from water.¹⁷⁶

From this language it is clear that Congress was cognizant of problems affecting watershed protection. Also, Congress' finding

174. *Id.*

175. S. REP. NO. 56, *supra* note 37, at 7, reprinted in 1986 U.S.C.C.A.N. at 1572; H.R. CONF. REP. NO. 575, *supra* note 38, at 32, reprinted in 1986 U.S.C.C.A.N. at 1596.

176. S. REP. NO. 56, *supra* note 37, at 7, reprinted in 1986 U.S.C.C.A.N. at 1572 (emphasis added).

that filtration is effective in removing *some* viral contaminants illustrates the importance of watershed protection.

Furthermore, in presenting the Conference Committee report on the Safe Drinking Water Act Amendments of 1986, Senator David Durenberger stated:

[T]he administrator is to consider whether there are protection measures that systems relying on surface waters can take which are as protective of public health as is filtration. Where such active measures to protect watersheds are in place, the system may not be required to install filtration.¹⁷⁷

Congress was well aware of the benefits which watershed protection provided to public health and water quality. According to Senator Durenberger, active measures to protect watersheds are as protective, if not more so, than filtration. This is also seen in the regulations, which allow an escape from filtration when watershed protection criteria are met. Watershed protection is the first priority. Therefore, according to Congressional intent, only when the watershed protection mechanism has failed is filtration to be instituted.¹⁷⁸

177. 132 CONG. REC. S6288 (daily ed. May 21, 1986) (statement of Sen. Durenberger).

178. As this note was going to the publisher, Congress was considering legislation which would amend the Safe Drinking Water Act during the 1994 term. However, Congress adjourned before adopting this legislation. One of the proposed bills, H.R. 3392, specifically addressed the current filtration avoidance program. H.R. 3392 stated:

(b) LIMITED ALTERNATIVE TO FILTRATION REQUIREMENTS.—Section 1412(b)(7)(C) is amended by adding at the end the following: '(v) As an additional alternative to the regulations promulgated pursuant to clauses (i) and (iii), including the criteria for avoiding filtration contained in 40 CFR 141.71, a State exercising primary enforcement responsibility for public water systems may establish, on a case-by-case basis and after notice and an opportunity of at least 90 days for public comment, alternatives to filtration requirements in effect on such date of enactment, in the case of systems having uninhabited, undeveloped watersheds in consolidated ownership, and having control over access to, and activities in, those watersheds if (taking into consideration the effects of wildlife in such watersheds) the State determines (and the Administrator concurs) that the public health will be fully protected by such alternatives consistent with the requirements of this title. The authority of a State to establish alternatives under this clause shall expire [three] years after the enactment of the Safe Drinking Water Act Amendments of 1994.'

140 CONG. REC. H9816 (daily ed. September 27, 1994). H.R. 3392 would have given states another opportunity to develop alternatives to filtration. The fact that the current Congress proposed such an amendment to the Safe Drinking Water Act indicates a dissatisfaction with EPA's current approach to mandating filtration.

EPA has interpreted the filtration rule as requiring consideration of watershed protection as a method of avoiding filtration. The preamble to the 1989 final SWTR illustrates EPA's view.¹⁷⁹ A summary of the filtration requirements states:

[S]ystems with very clean and protected source waters that meet the source water quality criteria . . . and certain site-specific criteria (including an effective watershed control program), are required to use only disinfection . . . Systems which cannot meet the source water quality criteria and site-specific criteria of this rule are required to filter their water.¹⁸⁰

EPA is the agency primarily charged with managing the requirements of the SDWA. As the lead agency, EPA has chosen to establish watershed protection methods as a way of avoiding filtration. From the statutory language, the legislative history, and EPA's interpretation of the SDWA, it is apparent that watershed protection is a necessary method for ensuring the integrity of the drinking water which reaches the consumer. EPA has required watershed protection to avoid filtration, but it has neither seen filtration avoidance as a viable option on a par with filtration, nor has it required watershed protection to be coupled with filtration. This failure runs counter to the language of the statute, the legislative history, and the policies underlying the SDWA.

To carry out the goals of the SDWA, EPA should reexamine its regulations. The current SWTR and EPA's current position on the SWTR does not adequately allow states to protect their water supply through watershed protection. Also, the SWTR do not mandate watershed protection methods once filtration is required. This policy should be changed to carry out the Congressional intent of the SDWA. EPA should require that public water suppliers both institute filtration when necessary and prod the states to initiate aggressive watershed protection methods.

179. National Primary Drinking Water Regulations, 54 Fed. Reg. 27,486, 27,504.

180. *Id.*

CONCLUSION

The Safe Drinking Water Act and its subsequent regulations have had positive effects on the quality of drinking water in the United States. The approach which has been taken to protect consumers has substantially improved water quality. However, not enough has been done to ensure the future integrity of the supply source. The mechanism which has been set up by EPA addresses the water reaching consumers, but it does not fully address the future protection of the natural systems which protect the purity of these waters. By requiring filtration only when a water supply fails to meet water quality criteria, the SWTR does not ensure adequate protection of the surrounding watershed. Initiatives that emphasize the institution of an aggressive watershed protection program to avoid filtration, and not for other positive benefits, send the wrong signal to water suppliers. Aggressive watershed protection should be the first priority for ensuring water quality. Filtration should be considered only as a last resort. This is consistent with the congressional intent behind the passage of the SDWA.

Even where a system is required to filter its water source, aggressive watershed protection should be instituted. EPA's SWTR is a step in the right direction, however, more should be done to establish greater incentives for the preservation of natural filtration systems. EPA should take the next step: reexamine the SWTR and promulgate regulations that place an even greater emphasis on watershed protection.

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