

Pace Environmental Law Review

Volume 10
Issue 2 *Spring 1993*

Article 3

April 1993

Land Use & the Protection of Drinking Water Supplies

Sarah J. Meyland

Follow this and additional works at: <https://digitalcommons.pace.edu/pelr>

Recommended Citation

Sarah J. Meyland, *Land Use & the Protection of Drinking Water Supplies*, 10 Pace Envtl. L. Rev. 563 (1993)

DOI: <https://doi.org/10.58948/0738-6206.1570>

Available at: <https://digitalcommons.pace.edu/pelr/vol10/iss2/3>

This Article is brought to you for free and open access by the School of Law at DigitalCommons@Pace. It has been accepted for inclusion in Pace Environmental Law Review by an authorized administrator of DigitalCommons@Pace. For more information, please contact dheller2@law.pace.edu.

Land Use & The Protection Of Drinking Water Supplies

Sarah J. Meyland*

I. Introduction

The protection and management of drinking water supplies and, by extension, the regulation of those land uses that affect environmentally sensitive land adjacent to water supplies, is accomplished through the state's use of its police power to protect the public health and safety.¹ In 1974, serious health concerns motivated the United States Congress to enact a broad, new program (the Safe Drinking Water Act) to ensure the quality of drinking water.² Congress amended the law in 1986 to set "mandatory guidelines for regulating key contaminants, require the monitoring of unregulated contaminants; establish benchmarks for water treatment technologies, bolster enforcement, and promote protection of groundwater

* J.D., St. John's University School of Law, 1990; M.S., Water Resources Management, Texas A & M University, 1978; B.S., Geological Oceanography, Humboldt State University, 1972; B.A., Marine Zoology, Humboldt State University, 1972; B.A., English, University of North Carolina, Greensboro, 1967. The author is currently the Executive Director of the Citizens Campaign for the Environment in Massapequa, New York and the Executive Director for the National Campaign for the Environment in Dallas, Texas.

1. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, PUB. NO. 570/9-91-005, *IS YOUR DRINKING WATER SAFE?* 5 (1991) [hereinafter *DRINKING WATER*].

2. *Id.* at 1.

sources.”³ Currently, the debate rages on regarding whether costly drinking water supply filtration and remediation can be avoided by the implementation of better land use management and the regulation of watersheds surrounding water supplies.

A. The Basic Public Health Principle: Take Water From the Best Available Source

Over one hundred fifty years ago, the principle of taking water from “the best available source” prompted New York City to choose for its water supply the isolated, upstate surface water watersheds rather than the abundant and readily accessible groundwater supplies of nearby Long Island.⁴ The best available sources were the waters of the Croton, Delaware Basin, and Catskill regions.⁵ Although New York City had built a significant water supply system across the south shore of Nassau County and Queens, the progressive impact of several building booms that occurred on Long Island finally required that these shallow groundwater-infiltration galleries and wells be abandoned in the 1940’s and 50’s due to the severe deterioration of water quality.⁶

The principle of supplying water from the best source is still applicable today. The U.S. Public Health Service Drinking Water Standards of 1962 stated that “the water supply should be obtained from the most desirable source which is feasible, and effort should be made to prevent or control pol-

3. *Id.*

4. See generally DAVID K. GORDON & ROBERT F. KENNEDY, JR., *THE LEGEND OF CITY WATER: RECOMMENDATIONS FOR RESCUING THE NEW YORK CITY WATER SUPPLY* 1 (1991) [hereinafter GORDON & KENNEDY]. The New York City water supply system was built in three stages from 1837 to 1967, and is comprised of “an intricate web of 19 gravity-fed reservoirs and three controlled lakes. It fans out for 125 miles from the city, holds 570 billion gallons of water and includes 300 miles of tunnels and aqueducts.” *Id.*

5. See generally *id.* at 1. “Although it functions as one, the New York City water supply is actually three distinct reservoir systems: the Croton to the east of the Hudson River, and the Catskill and Delaware to the west.” *Id.*

6. See generally NASSAU COUNTY DEPARTMENT OF HEALTH, *GROUNDWATER AND PUBLIC WATER SUPPLY FACTS* 64 (June 1992) [hereinafter GROUNDWATER AND PUBLIC WATER SUPPLY FACTS].

lution of the source.”⁷ This maxim was subsequently reflected in the drinking water quality standards (maximum contaminant levels — MCLs) developed by the US-EPA for the Safe Drinking Water Act. The standards were designed to reflect “either absolute health protection or the application of best available control technology to achieve MCLs as close to achieving absolute health protection as is economically feasible.”⁸

The philosophy of providing “absolute health protection” is also reflected in the technologies chosen to meet drinking water standards. These technologies are designed to provide the highest possible drinking water quality. However, they assume that the water produced will be free from contaminants because the raw water has contaminant concentrations typical of “relatively unpolluted drinking water supplies.”⁹ The effectiveness of the technologies themselves is thus dependent upon the assumption that the water source is essentially uncontaminated.

B. Drinking Water Regulations

The duty to protect the public health from drinking water contamination requires the selection of the most pristine sources economically feasible. The first drinking water standards were published in 1914 by the U.S. Public Health Service.¹⁰ By 1925, the government had only regulated water for three inorganic compounds and bacteria.¹¹ The primary concern during that period was to prevent the spread of infectious diseases, such as typhoid fever and cholera.¹² These standards were updated, and the list of regulated substances

7. ROBERT H. HARRIS ET AL., WATER QUALITY CONSIDERATIONS IN THE SELECTION OF SOURCES OF ADDITIONAL WATER FOR EBMUD 6 (1985) [hereinafter HARRIS].

8. *Id.*

9. *Id.*

10. *Id.* at 7. See also Leonard B. Dworsky, et al., *Water Resources Planning and Management in the United States Federal System: Long Term Assessment and Intergovernmental Issues*, 31 NAT. RESOURCES J. 475 (1991).

11. *Id.* These standards also identified another five substances whose presence at specified levels might have been considered grounds for rejection of a source. *Id.*

12. DRINKING WATER, *supra* note 1, at 3.

expanded, in 1946 and again in 1962.¹³

In 1976, the United States Environmental Protection Agency Interim Drinking Water Regulations¹⁴ expanded upon the principle that water supply sources should be kept as safe as possible. The regulations stated, "[p]roduction of water that poses no threat to the consumer's health depends on *continuous protection*."¹⁵ Because of human frailties associated with protection, "priority should be given to *selection of the purest source*."¹⁶ Proper discharge of the public health responsibility demands nothing less than the use and protection of "the most pristine source for drinking water."¹⁷

II. The Safe Drinking Water Act

A. History

The Safe Drinking Water Act (SDWA) was adopted by Congress in 1974 and amended in 1986¹⁸ "to ensure that public water supply systems meet *minimum* national standards for the protection of public health."¹⁹ The Amendments require the Environmental Protection Agency (EPA) to "[c]ontrol specific disease-causing organisms and indicators of their presence in drinking water, [r]equire public water-supply systems that use surface water sources . . . to filter their water unless it is established that their sources are very clean and well-protected," and "[r]equire public systems to disinfect their water."²⁰ Disinfection variances may be permitted "if the water comes from sources that are determined not to be at risk from microbiological contamination."²¹

13. HARRIS, *supra* note 7, at 7.

14. *Id.* See generally Current Drinking Water Regulations at 40 C.F.R. § 141 (1992).

15. HARRIS, *supra* note 7, at 7 (emphasis added)(citing 40 C.F.R. § 141 (1992)).

16. *Id.*

17. HARRIS, *supra* note 7, at 7.

18. Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j (1988) [hereinafter SDWA].

19. MARTIN S. JAFFE & FRANK DiNOVO, LOCAL GROUNDWATER PROTECTION 38 (1987) (emphasis added).

20. UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, PUB. NO. 570/9-89-008, PROTECTING OUR DRINKING WATER FROM MICROBES 1 (1989) [hereinafter MICROBES]

21. *Id.*

B. Standard-Setting

Prior to the 1986 amendments, the EPA had progressed only to the point of having set drinking water standards for twenty-two substances,²² even though there was tremendous pressure to move ahead more aggressively. The new amendments directed the EPA to set specific standards for sixty-one additional chemicals and to review the adequacy of standards for the twenty-two chemicals already regulated. The statutory deadline for completion of the standard-setting was June 1989 for all eighty-three regulated constituents in drinking water.²³

Today, in response to additional information about the presence and effects of toxic chemicals released into the environment, EPA is continuing to expand the list of regulated substances permissible in drinking water while also lowering the allowable contaminant levels. The standard-setting process has been extremely slow; most legislative deadlines have been missed and this trend will likely continue through most of the 1990's. This is true for nearly all standard-setting, not just those concerned with water supply regulations. For example, the General Accounting Office, when reviewing the level of chemical exposure in industrial settings, concluded:

'it will take more than a century to establish needed standards for substances already identified as hazardous The problem is compounded because new substances . . . are being introduced faster than standards are being established on existing substances.' If this is the case for chemicals in the working environment, the situation is far more critical in the general environment.²⁴

The inability to keep pace with chemicals that could pose

22. 40 C.F.R. § 141.11-16. Before 1986, only ten inorganic contaminants were regulated. They included arsenic, barium, cadmium, chromium, lead, mercury, nitrate, selenium, silver, and fluoride. The 1986 Amendments removed silver from the list of regulated contaminants. Eight organic chemicals, including endrin, lindane, methoxychlor, toxaphene, 2,4-D, 2,4,5-TP silvex, and trihalomethanes are now regulated. In addition, coliform bacteria, radium, beta particle, gross alpha radioactivity, and photon radioactivity are regulated. *Id.*

23. SDWA, 42 U.S.C. § 300g-1(b); *see also* DRINKING WATER, *supra* note 1, at 4.

24. HARRIS, *supra* note 7, at 14.

a threat to public health by contaminating drinking water supplies has been problematic. Thousands of chemicals have been discovered in drinking water supplies. Over one hundred of these are known to have detrimental health effects.²⁵

C. The Rulemaking Process

As of early 1993, the final rulemaking process for drinking water standards was still not complete. Phase V, which is comprised of the final rules for eighteen synthetic organic chemicals and five inorganic chemicals, was published in July, 1992.²⁶ The rulemaking process for setting drinking water standards and establishing acceptable treatment technologies and methodologies is scheduled to stretch beyond 1994 — five years after the congressionally-mandated completion date.²⁷ At the same time, comprehensive water quality monitoring requirements are set to take effect for all chemicals regulated to date in 1993.

As the EPA has progressed in setting water quality standards, it has been sensitive to a number of considerations that are not related to the health impacts of contaminated drinking water. These considerations include the costs associated with meeting the new standards, the effectiveness of certain treatment requirements, the problems of identifying responsibility for determining how frequently supplies need to be monitored, the rules for monitoring waivers, and the general attitude of the water supply industry. The actual health risk posed by drinking water contaminants and additives has been only one of the agency's considerations as it sets drinking water protection rules. Many of these extraneous issues tend to militate toward more lenient rules rather than more protective or restrictive rules.

25. *Id.*

26. Drinking Water; National Primary Drinking Water Regulations — Synthetic Organic Chemicals and Inorganic Chemicals; National Primary Drinking Water Regulations Implementation, 57 Fed. Reg. 31,776 (1992)(to be codified at 40 C.F.R. §§ 141, 142).

27. SDWA, 42 U.S.C. § 300g-1(b).

III. The Cost of Compliance

A. New York City's Cost of Compliance

The costs associated with meeting the new water quality standards and monitoring for compliance are expected to be considerable. In 1989, the EPA adopted the Surface Water Treatment Rule (SWTR).²⁸ Under the SWTR, "all water suppliers who draw from reservoirs, rivers or lakes must plan for filtration or design adequate watershed protection plans by December 1991."²⁹

To avoid the 1986 SDWA Amendments' filtration requirements, a water system must have a plan to insure that its water sources are clean and will remain as such.³⁰ If the EPA rejects the plan, the system has eighteen months from the date of the rejection to begin filtration.³¹ Exceptions based upon economic hardship, however, can prolong compliance for up to three years.³²

New York City, with its vast water supply system, has been pushing hard to delay or permanently avoid filtration.³³ For New York City, the cost of compliance with the SWTRs, through the creation of a complex filtration system, is estimated to be between \$1.5 and \$6.75 billion,³⁴ exclusive of an

28. Environmental Protection Agency, Drinking Water; Natural Primary Drinking Water Regulations; Filtration, Disinfection; Turbidity, Giardia Lamba, Viruses, Legionella and Heterotrophic Bacteria, 54 Fed. Reg. 27,486 (1989)(to be codified at 40 C.F.R. §§ 141, 142).

29. GORDON & KENNEDY, *supra* note 4, at 3; *see generally id.* at 30.

30. Allan R. Gold, *Drinking Water Will Be Purer, But At What Price?*, N.Y. TIMES, Oct. 7, 1990, at A4 [hereinafter Gold]. The system was required to begin complying with its watershed protection plan by December 1991. *Id.*

31. *Id.*

32. *Id.*

33. Gold, *supra* note 30, at A4.

34. Robert F. Kennedy, Jr., *A Legacy Down the Drain?*, NEWSDAY, Oct. 15, 1992, at 56 [hereinafter Kennedy]. "Conservative estimates indicate that it will cost New Yorkers \$6.75 billion in capital construction. . . ." *Id.*; William Murphy, *\$3 Billion to Debug City's Water: Tiny Parasite May Force a Filtration System to be Installed*, NEWSDAY, Jan. 30, 1990, at 5. "The city estimates it would cost \$2.5 billion to \$3 billion to meet the federal requirements by installing filtration systems on water from the Catskill and Delaware systems. . . . The state puts the price tag at \$2.82 billion." *Id.*; GORDON & KENNEDY, *supra* note 4, at 30. "No one knows the exact cost of filtering the Catskill/Delaware supply, but it won't be cheap. Estimates range from DOH's

annual operating cost of approximately \$300 million.³⁵ Once construction, operation, and maintenance costs are capitalized, the total estimate for filtration could approach \$8 billion dollars.³⁶

Since most of New York City's 1.5 billion gallon per day water supply comes from the still pristine reservoirs of the Catskills and Delaware County, a filtration plant is generally believed to be an unnecessary expense.³⁷ However, as the population of the Catskill region grows and thus, the pollution increases, many fear filtration is unavoidable.³⁸ Not by coincidence, New York City has undertaken an ambitious effort to strengthen its watershed protection regulations in order to delay, or possibly prevent, the need for such a filtration system.³⁹

Filtration will certainly have an adverse economic impact on all New York City residents. Some have stated that filter-

[Department of Health] guess of \$1.5 billion to the city's estimate of \$5 billion for construction." *Id.* at 30. Other environmental officials have estimated that it could cost New York City \$4 billion to build a plant to handle the daily flow of 1.5 billion gallons. Gold, *supra* note 30, at A4.

35. Kennedy, *supra* note 34, at 56. GORDON & KENNEDY, *supra* note 4, at 30. See also Gold, *supra* note 30, at A4 (stating that operation costs will total at least \$200 million).

36. GORDON & KENNEDY, *supra* note 4, at 30. "If activated carbon, one of the most widely used means of removing some toxins, were added to the [filtration] plant, however, construction costs would double and operating costs would triple. Taking the city's own estimate, that could mean the plant could cost a staggering \$10 billion to build and \$900 million a year to operate." *Id.*

37. Michael Specter, *Reprieve for New York on Water Filtering*, N.Y. TIMES, Jan. 20, 1993, at B2 [hereinafter Specter].

38. *Id.* The New York City Watersheds are certainly not as pure as they once were. Development, including housing, factories, and roadways, has increased pollution throughout the watershed area. Surprisingly though, despite the sewage runoff, road salt, and fertilizers that drain into nearby streams and reservoirs, two-thirds of the water supply remains amazingly clean. If left unprotected, the Delaware and Catskill reservoirs could face the same fate as the Croton system, which has been so degraded by unfettered development in its watershed that it will now cost about \$600 million to filter. *Save Our Liquid Assets, Please*, NEWSDAY, Nov. 8, 1992, at 31 [hereinafter *Liquid Assets*]. This is an enormous expenditure considering that only 10% of New York City's water comes from the Croton Reservoir. Jim Dwyer, *Threat to City Water Becomes Crystal Clear*, NEWSDAY, Aug. 22, 1990, at 2.

39. Specter, *supra* note 37, at B2. These protective measures could cost the city nearly \$1 billion over the next few years. While this is far less than the cost of a filtration plant, it is still a considerable amount for a "cash-strapped city." *Id.*

ing the Delaware and Catskill reservoirs "would swamp future generations of New Yorkers in oceans of debt."⁴⁰ Conceivably, the city's water rates could double without any guarantees that the water will be any cleaner.⁴¹

B. The National Cost of Compliance

The national cost of compliance with the 1986 Amendments will be significant. The EPA estimates that compliance with the revised total coliform rules alone will cost water supply systems collectively approximately \$70 million more than they now pay.⁴² Surface water systems that are not presently filtering may be required to spend \$2.3 billion to meet the SWTR criteria.⁴³ Public water systems that already filter, but may need to upgrade their facilities, could collectively spend \$660 million in additional capital costs.⁴⁴ Annual state administrative government costs are expected to increase considerably.⁴⁵ Operating expenses could raise the costs an additional \$500 to \$700 million.⁴⁶ Ultimately, these costs will be passed on to the consumer in the form of higher water bills.⁴⁷

C. Monitoring Schedules & Waivers

In response to the financial concerns over filtration, the EPA has attempted to soften the cost burden by providing generous monitoring schedules and waivers after preliminary quality screenings. For example, without waivers, water suppliers could pay as much as \$11,000 per water source each

40. *Liquid Assets*, *supra* note 38, at 31.

41. *Id.* Aside from higher water bills, the cost of filtration will have other adverse effects on New York City and its residents. Rising water and sewer charges, which have doubled since 1986, may force landlords to either pass the cost on to their tenants by raising apartment rental prices, or to abandon low-income residential buildings that have now become unprofitable. *Don't Drown Affordable Housing*, *NEWSDAY*, Aug. 23, 1992, at 23.

42. *MICROBES*, *supra* note 20, at 2.

43. *Id.* EPA has estimated that the cost of compliance with the 1986 Amendments will be between \$3 and \$5 billion. Gold, *supra* note 30, at A4.

44. *MICROBES*, *supra* note 20, at 2.

45. See generally GORDON & KENNEDY, *supra* note 4.

46. Gold, *supra* note 30, at A4.

47. *MICROBES*, *supra* note 20, at 2.

time the water is sampled during the initial 1993-1995 compliance period.⁴⁸ However, this cost could be cut to under \$1,000 if waivers were obtained for the most expensive contaminants, such as dioxin, Polychlorinated byphenyls (PCBs), Diquat, Ethylene dibromide (EDB), Dibromochloropropane (DCBP) or asbestos.⁴⁹ The costs could be further reduced if contaminants are not found during the initial monitoring period.⁵⁰ In addition, the EPA has shifted the responsibility for "Vulnerability Assessments" (evaluations of the water supply's susceptibility to contamination) to the water supplier.⁵¹ The results of these assessments will be used to determine the monitoring frequency required and, thus, the cost to the supplier for water quality testing.⁵²

D. Maximum Contaminant Levels

The 1986 SDWA amendments also provide for Maximum Contaminant Level Goals (MCLGs).⁵³ MCLGs are "the highest concentration[s] of a drinking-water contaminant at which no known or anticipated health effects occur, plus an adequate margin of safety."⁵⁴ While these health goals are non-enforceable, the EPA must set MCLs as close as possible to MCLGs, "taking into account the cost and limits of technology for large public water supplies."⁵⁵

As the EPA has set new drinking water standards for carcinogenic substances, it has stated that the MCLGs should reflect the ideal situation that "drinking water should be free from avoidable contamination and risk and that *quality degradation should not be permitted*."⁵⁶ The philosophy that

48. *Monitoring Costs for 1993-1995*, SAFE DRINKING WATER NEWSL. (Comprehensive Env'tl. Inc., Merrimack, N.H.), Nov. 10, 1992, at 166.

49. *Id.*

50. *Id.*

51. *Phase V Final Rules Published*, SAFE DRINKING WATER NEWSL. (Comprehensive Env'tl. Inc., Merrimack, N.H.), July 30, 1992, at 134.

52. *Id.* at 134-36.

53. SDWA, 42 U.S.C. § 300g-1(a); MICROBES, *supra* note 20, at 16.

54. MICROBES, *supra* note 20, at 16.

55. *Id.*

56. Environmental Protection Agency, National Primary Drinking Water Regulations; Volatile Synthetic Organic Chemicals, 49 Fed. Reg. 24,347 (1984)(to be codi-

there is no safe level of carcinogens is reflected in the setting of MCLGs at zero for many of the volatile and synthetic organic chemicals now being regulated under the SDWA.⁵⁷

However, meeting the drinking water standards, especially where water treatment technologies are necessary to remove contaminants, is not always adequate to protect the public health. Dr. Harris states, the "treatment of raw water to a degree which meets the EPA's standards for drinking water (i.e., maximum contaminant levels (MCLs)) does not ensure the attainment of water free from health risks."⁵⁸ The fact that MCLs incorporate factors such as the cost of treatment and technological feasibility, in addition to considering the risk to the public health, supports Dr. Harris's view. Based upon this information, it seems prudent to require public utilities to provide the safest water feasible and to strive to keep levels of carcinogens and other non-threshold toxins in drinking water, as well as source water, as close to zero levels (currently defined as non-detectable) as possible.⁵⁹

IV. Waterborne disease in the United States

While the United States' drinking water is among the safest in the world, between 1971 and 1985 there were "more than 500 'outbreaks' of waterborne disease involving 110,000 illnesses related to contaminated surface- and ground-water systems, household wells, and cisterns" reported.⁶⁰ Public health experts theorize that the actual number of illnesses may be considerably higher.⁶¹ Regardless of the actual number of waterborne disease outbreaks and illnesses, it must be kept in mind that "[v]irtually all of the illnesses associated with

fied at 40 C.F.R. § 141) (emphasis added).

57. See generally MICROBES, *supra* note 20, at 17. MCLGs which set zero levels for Giardia, viruses, and Legionella (bacteria which causes Legionnaire's Disease) have been published. *Id.* at 16.

58. HARRIS, *supra* note 7, at 40.

59. *Id.* at 40.

60. MICROBES, *supra* note 20, at 4. "An 'outbreak' is when two or more people contract similar illnesses after using drinking water from the same source that contains disease-causing organisms responsible for their maladies." *Id.*

61. *Id.* at 4.

inadequate water treatment or system operation could be avoided."⁶²

The feasibility of effectively treating drinking water for pathogens and chemical contaminants has recently come under review. In the case of chemical contaminants, activated carbon and air stripping towers can normally remove many volatile organic chemicals (VOCs) when beginning with relatively low concentrations in the source water. However, removal of higher molecular weight organic chemicals or VOCs at higher concentrations is less effective. Effectiveness of activated carbon is also dependent on the continuous oversight by the treatment facility operator to ensure that "breakthrough" of the contaminant does not occur. "Breakthrough" of an activated carbon filter occurs when the activated carbon granules have become saturated with the contaminant. If the carbon granules are not replaced with fresh carbon, then the exhausted carbon begins to shed its contaminant load back into the water, sometimes at higher levels than present to begin with. For carcinogenic organic chemicals, "absolute health protection can probably never be achieved by using treatment strategies alone; source protection, to prevent the introduction of these contaminants, has no substitute."⁶³

A. Filtration and the Control of Pathogens

The efficacy of treatment technologies, mainly water filtration under the Surface Water Treatment Rule (SWTR) for protection against pathogens, is also being re-examined.⁶⁴ Standard filtration plants which generally utilize sand-filter beds are not equipped to remove certain toxins, nor are they capable of effectively screening out the two pathogens the New York State Department of Health (DOH) is most concerned about, *Cryptosporidium*⁶⁵ and *Giardia lamblia*.⁶⁶

62. *Id.* at 9.

63. HARRIS, *supra* note 7, at 16.

64. MICROBES, *supra* note 20, at 2-3.

65. *Cryptosporidium* causes cryptosporidiosis, a disease that causes severe abdominal pain and diarrhea. It disappears rapidly in healthy persons, but is life-threatening to malnourished children, people taking drugs that suppress the immune

Recent outbreaks of Cryptosporidiosis have raised many concerns, including the possibility that the organism might be a fairly widespread cause of disease outbreaks, yet is going unreported since it is rarely looked for.⁶⁷ "In particular, the operation of existing filtration facilities is coming under scrutiny in some states, where the examination of finished water has shown that many plants may not be operating correctly . . . [thus,] organisms like *Cryptosporidium* and *Giardia lamblia* may be getting through the filtration barrier."⁶⁸

system (such as cancer or organ transplant patients), and those with acquired immuno-deficiency syndrome (AIDS). William Murphy, *Filtering Water Kills Parasite*, NEWSDAY, Jan. 31, 1990, at 4 [hereinafter Murphy].

"*Cryptosporidium* cannot be completely removed from a water supply even with careful treatment and high doses of disinfectants." GORDON & KENNEDY, *supra* note 4, at 30 (citing United Kingdom Department of Health, Department of the Environment, *Report of the Group of Experts on Cryptosporidium in Water Supplies: Summary, Conclusions, and Recommendations, and Government's Response* 31, July 20, 1990).

66. GORDON & KENNEDY, *supra* note 4, at 30. "*Giardia* can only be removed when disinfection is performed within narrow limits of pH, turbidity, water temperature, contact time and disinfectant dose." *Id.* (citing G.P. Kent et al., *Epidemic Giardiasis Caused By a Contaminated Water Supply*, AM. J. OF PUB. HEALTH, Feb. 1988, at 139). Such a process "requires a high degree of competence and attention from the treatment plant operator." GORDON & KENNEDY, *supra* note 4, at 30.

67. *Mid Year Update Drinking Water*, SAFE DRINKING WATER NEWSL. (Comprehensive Envtl. Inc., Merrimack, N.H.), July 1, 1992, at 123. [hereinafter *Mid Year Update*]. A suspected *Cryptosporidium* outbreak in April of 1992 caused the Medford, Oregon water supply to temporarily shut down. *Grass Is Greener in Medford: Water Threat Eliminated*, OREGONIAN, May 13, 1992, at D06. A "boil water notice" was issued to the area's 80,000 customers. *Id.* Ironically, Jackson County is the only area in the nation that routinely monitors and reports on *Cryptosporidium*. *Id.*

While there have not been any outbreaks of *Cryptosporidium* in New York, health officials remain concerned. Since the New York Metropolitan area has a significant portion of the state's AIDS cases, and health officials believe that the disease has been a contributing factor in a number of AIDS deaths, their concern with the water filtration issue is understandable. Murphy, *supra* note 65, at 4.

68. *Mid Year Update*, *supra* note 67, at 123. "In 1987, for example, 13,000 people contracted Cryptosporidiosis from a filtered public water supply in Carrollton, Georgia, that met both Federal and state drinking water standards. The outbreak was traced to faulty filtration equipment and improper maintenance." GORDON & KENNEDY, *supra* note 4, at 30 (citing Edward B. Hayes et al., *Large Community Outbreak of Cryptosporidiosis due to Contamination of a Filtered Public Water Supply*, NEW ENG. J. OF MED., May 25, 1989). In 1984, an outbreak in Braun Station, Texas, affected at least a third of the town's residents. Murphy, *supra* note 65, at 4.

B. Controlling Pollutants and Nutrients

Carcinogenic chemicals and pathogens are not the only serious problems for drinking water supplies. Conventional pollutants and nutrients, such as nitrates, have a far more significant effect on water supplies in terms of overall impact.⁶⁹ In 1989, the California State Water Resources Control Board reported that "[n]itrate contamination of drinking water (primarily groundwater resources) poses a threat equal to or exceeding that of toxic organic contamination."⁷⁰

Other California studies also noted a link between elevated nitrate and orthophosphate nutrient levels in specific watersheds and suggested that these would lead to significantly higher Trihalomethane (THM) concentrations by increasing the organic precursors to THM formation.⁷¹ THMs, which are by-products of the treatment process, are considered "one of the greatest threats to drinking water quality"⁷² and are regulated as a carcinogenic substance. Thus, the very act of water treatment through chlorination, in the presence of pollutants, may create an increased health risk in drinking water.⁷³

69. Runoff from upland regions carries nitrates, usually from nitrogen fertilizer and animal wastes, into the water supplies. While nitrogen is an essential nutrient, an overabundance of it in the water supply can prove unhealthy, and in some cases, deadly to humans and animals alike. Nitrate is converted to nitrite in the stomach and prevents blood hemoglobin from transporting oxygen from the lungs to the tissues. In humans this is referred to as "blue baby disease." FRED POWLEDGE, *WATER: THE NATURE, USES AND FUTURE OF OUR MOST PRECIOUS AND ABUSED RESOURCE* 103-04 (1982). When managed properly, nitrogen has a beneficial effect on crops. If improperly managed, its runoff can detrimentally affect lakes and estuaries by increasing the rate of eutrophication. PANEL ON NITRATES OF THE COORDINATING COMMITTEE FOR SCIENTIFIC AND TECHNICAL ASSESSMENTS OF ENVIRONMENTAL POLLUTANTS, NATIONAL ACADEMY OF SCIENCES, *NITRATES: AN ENVIRONMENTAL ASSESSMENT* 5-18 (1978). See also *DRINKING WATER*, *supra* note 1, at 12.

70. *Nitrate Contamination Poses Serious Threat to Drinking Water in California*, *THE GROUNDWATER NEWSL.* (Water Information Center, Inc., Plainview, N.Y.), Sept. 15, 1989.

71. HARRIS, *supra* note 7, at 46.

72. GORDON & KENNEDY, *supra* note 4, at 31.

73. *Id.* "Trihalomethanes - including the suspected carcinogen, chloroform - are produced when chlorine is added to water that already has been fouled with algae and other organic matter." *Id.* Since THMs are not removed by standard filtration, a recent report by the American Water Works Association concluded that "the best

C. Disinfection and Its By-Products

The disinfection issue is a complicated aspect of determining how to maintain a safe drinking water supply.⁷⁴ Due to its complexity, the EPA has left the disinfection issue as one of the last issues to be resolved under the 1986 SDWA Amendments.

The Disinfection By-Products Rule (DBPs) is to be proposed by mid-1993. The crux of the problem lies in balancing the need to control pathogens in water supplies through chlorination or other disinfection, while at the same time holding down the level of disinfection by-products created by disinfection.⁷⁵ The present MCL for total THMs is .10 mg/l and the MCLG is zero.⁷⁶ Currently, however, this standard applies only to water systems serving more than 10,000 people.⁷⁷

The new standard for disinfection and disinfection by-products (D-DBPs) addresses more than THMs to include by-products, such as chloroacetic acid, chloroacetonitriles, chlorate, and chlorite.⁷⁸ The use of chlorination as the typical disinfection agent is effective against bacteria and many other harmful organisms that may be present in drinking water,⁷⁹ but is not effective against some pathogens,⁸⁰ thus the need

way to reduce THM levels is to prevent pollution in the first place." *Id.*

74. Some researchers suggest that the long-term use of chlorinated drinking water "may slightly increase the risk of bladder and colon cancer." Currently, several studies on the effects of chlorine on human health are underway which may help to settle this on-going disinfection debate. At this point, the EPA believes that the benefits of chlorine as a treatment for waterborne, disease-causing organisms far outweighs the known risks from its by-products. MICROBES, *supra* note 20, at 12.

75. THMs, which are carcinogenic, are disinfection by-products. THMs include chloroform, bromoform, dibromodichloromethane and bromodichloromethane. Kenneth P. Cantor, Ph.D., *Cancer Risks Associated with Chlorination Byproducts*, 10 WATERREVIEW 2, 3 (1992) [hereinafter Cantor].

76. *Findings Link Chlorination With Bladder and Rectal Cancer*, 7 WATERREVIEW 2, 1 (1992) [hereinafter *Findings*].

77. *Id.* at 2.

78. *Id.*

79. Such as bacteria which cause cholera and typhoid fever. *Findings*, *supra* note 76, at 1.

80. For example, protozoa such as *Giardia lamblia* and *Cryptosporidium*, and some viruses, survive chlorination.

for SWTRs.⁸¹ As the EPA attempts to balance the risks on each side of the debate, the agency seems to view the D-DBR risk as a more chronic, long-term effect while microbial risks are more widespread and acute. The EPA is likely to set the standard at the lowest risk point where these two lines of concern cross. It appears that the earliest that this issue will be resolved and the regulations put into effect is 1997.⁸²

D. The Link Between Cancer and Chlorination

While the debate over where to set the D-DBP rule continues, fresh evidence linking cancer and chlorination has been released. According to Dr. Robert D. Morris, 6,500 of the 44,000 cases of rectal cancer per year and 4,200 of the 47,000 cases of bladder cancer per year are associated with the consumption of chlorinated water.⁸³

Dr. Morris's study comes on the heels of a major research effort. The National Bladder Cancer Study, conducted by Dr. Kenneth P. Cantor, an Epidemiologist with the National Cancer Institute, stated ". . . after 60 years exposure to chlorinated surface water, high tap water consumers who never had smoked cigarettes were at about a 3-fold risk as compared to nonsmokers never exposed to chlorinated surface water Among nonsmokers . . . bladder cancer risk increased with duration of chlorination surface water use."⁸⁴

The National Bladder Cancer study demonstrated that chlorinated groundwater generally produced fewer THMs than chlorinated surface waters.⁸⁵ According to the data, chlorinated drinking water from groundwater supplies typically contained chloroform, the most common THM, at levels of 0.8 parts per billion (ppb).⁸⁶ Interestingly, in New York, data from the Nassau County Health Department (NCHD) shows

81. MICROBES, *supra* note 20, at 11-12, 14-15.

82. Cantor, *supra* note 75, at 2.

83. *Id.* at 1 (citing to Dr. Morris's study published in the AM. J. OF PUB. HEALTH (July 1992)).

84. *Id.* at 3 (study reported in 79 J. OF NAT. CANCER INST. 1269-79 (1987)).

85. *Id.*

86. *Id.*

that a notable number of public water supply wells (3%) in the past three years have elevated chloroform levels, even before chlorination.⁸⁷ Within this narrow time span, the highest level was nineteen ppb in the raw water supply, prior to any chlorination.⁸⁸

Perhaps the most significant aspect of the findings concerning chloroform contamination in the raw water supply in Nassau County is that the majority of the chloroform was found in the wells of the deep Magothy Aquifer. These wells are the main source of drinking water for ninety percent of Nassau's 1.3 million residents.⁸⁹ How such a significant level of chloroform could be found at such depths raises serious questions about the water production practices on Long Island and, perhaps, elsewhere. Chloroform and bromodichloromethane, also detected in Nassau County drinking water supplies, are "animal carcinogens and the brominated compounds are mutagenic (cause mutations) in in-vitro laboratory tests."⁹⁰ Chloroform is also known to cause kidney damage.⁹¹

V. The State Role

A. The State's Authority

The state has a significant role in the protection of its water supply. When enacting the Safe Drinking Water Act, congress stated that it preferred that the states take on responsibility for a new program which would build upon the

87. GROUNDWATER AND PUBLIC WATER SUPPLY FACTS, *supra* note 6, at 56. Of 298 public water supply wells which draw from the Magothy Aquifer, eight (3%) were found to contain chloroform levels of approximately 2.9 ppb in 1991, nine wells (3%) had chloroform with the maximum level at 2.6 ppb in 1990, and nine wells (5%) had chloroform with the maximum level of 19 ppb in 1989. According to the NCHD, the current state maximum level for chloroform is 50 ppb. *Id.* at 50.

88. *Id.*

89. *Id.* at 29. The Magothy Aquifer is situated beneath Long Island, at depths which vary from between 80-150 feet at its northwestern end, to depths as great (or possibly greater than) 600 feet toward the eastern end of the island. Telephone Interview with Jim Rhodes, Public Health Sanitarian, Nassau County Health Department (Mar. 4, 1993).

90. Cantor, *supra* note 75, at 3.

91. HARRIS, *supra* note 7, at 51.

existing state water protection measures.⁹² The states have additional authority under this police power, which rests on the multiple prongs of the protection of public health, safety and the general welfare.

Sometimes, this state police power is thought to extend to such concerns as fiscal integrity and could justify further state control over property within the watershed. Recent surveys have found that contaminated drinking water supplies have had an adverse impact on local real estate values.⁹³ A study of a midwestern community where the groundwater quality ranged from actually contaminated to the point of non-potability to only potentially impacted, indicated that property value had been reduced by amounts ranging from \$19,000 for non-potable areas to \$3,000 in areas only potentially affected.⁹⁴

The public health implications, as well as the management responsibilities for compliance by water suppliers and the effects on property values, make a compelling justification for selecting drinking water sources with tomorrow's standards in mind. As Dr. Robert Harris has so cogently argued,

[a] water source in compliance with today's standards does not necessarily assure the provision of drinking water free from health risk; such a supply may, in fact, endanger health as will be indicated in some cases in the future by the failure to meet the then-existing drinking water standards. When it is appreciated that some contaminants present in polluted raw water sources cannot be easily reduced, much less eliminated, the most prudent course of action, when faced with a decision among alternative sources of drinking water, is to select the purest source available⁹⁵

The choice whether to use the best available water source and

92. DRINKING WATER, *supra* note 1, at 7.

93. Bonnie H. Keen, *Tax Assessment of Contaminated Property: Tax Breaks for Polluters?*, 19 B.C. ENVTL. L. REV. 885, 892 (1991).

94. *Effect of Groundwater Contamination on Home Values*, THE GROUNDWATER NEWSL. (Water Information Center, Inc., Plainview, N.Y.), Aug. 31, 1989, at 1.

95. HARRIS, *supra* note 7, at 13.

the obligation of providing safe water to the public are not simply academic exercises in good policy making. They have serious implications for the public health.

B. Contaminated Water and Health Risks

In 1990, the New York State Department of Health found forty wells in Queens, seventy-two wells in Nassau and ninety-two wells in Suffolk Counties affected by organic chemical contamination.⁹⁶ This meant that eighteen percent of Nassau's and twenty-two percent of Suffolk's water supply production facilities were polluted by synthetic organic chemicals (SOCs). It is important to understand the implications of such extensive contamination in a water supply serving 2.6 million people, since the incidence of breast cancer in Nassau County is one of the highest in the nation.⁹⁷ Many investigators have questioned what role, if any, water quality or other environmental factors play in this serious public health situation.⁹⁸

Viral and other disease-causing organisms, along with other types of chemicals, can pollute water supplies, causing major public health problems. The Center for Disease Control reports that, between 1971 and 1985, an average of 7,400 cases of illness per year were linked to drinking water.⁹⁹ "Total reported cases in this period ranged from 1983's high of 21,000 to 1985's low of 1,600. These numbers are generally thought to

96. Michael E. Burke, State of New York Department of Health, Bureau of Public Water Supply Protection, Interoffice Memorandum, "Community Water System Sources Affected by Organic Chemical Contamination" (Feb. 9, 1990).

97. "In Nassau, 106 of 100,000 women contract breast cancer, a rate that is 18 percent higher than the state average. In Suffolk the rate is 97 cases per 100,000 women." Joan Swirsky, *New Cancer Clusters Reported by Residents*, N.Y. TIMES, Sept. 27, 1992, § 13(LI), at 1.

98. *Id.* A survey conducted in 1990 on Long Island's South Shore demonstrated that "most people believed that the high cancer rates were caused by pesticides, drinking water and hazardous waste sites. Some people faulted electromagnetic fields from power lines and small unregulated factories working with materials like tungsten, celluloid, asbestos and adhesives." *Id.* Some experts, while stating that there is no "scientific evidence now to support a relationship between the clusters and [the above mentioned] environmental factors," point out that such factors are being considered for study. Residents, however, point out that the only thing these people have in common "is the air they breathe and the water they drink." *Id.*

99. DRINKING WATER, *supra* note 1, at 2.

be considerably lower than the actual figures because drinking water contaminants are not always considered suspect" and generally are not examined when diagnosing illnesses.¹⁰⁰

Another prominent health concern is the debilitating disease giardiasis. The intestinal parasite, *giardia lamblia*, which causes the ailment, can easily find its way into drinking water supplies.¹⁰¹ There were thirty-eight reported incidences of giardiasis between 1972 and 1980 throughout the country that affected more than 20,000 people.¹⁰² Reports continued to be received during the 1980's.¹⁰³ In New York State, reports of giardiasis have steadily increased since 1986.¹⁰⁴

Beyond the immediate health responses that may arise from consuming unsafe water, considerable uncertainty exists regarding the effect of consuming toxic chemicals at very low levels over long periods of time. Acute effects, such as immediate illness, may result from viruses or poisons.

[B]ut *chronic* . . . , long-term problems that develop over many years, are not so quickly diagnosed. There is genuine concern in the scientific community that prolonged exposure to certain elements, even at levels as low as a few parts per billion or trillion, may be increasing the incidence of cancer or heart disease.¹⁰⁵

One example of the type of health effect that can result is noted in a recent health survey conducted in Woburn, Massachusetts, indicating that "tap water laced with heavy metals and synthetic organic chemicals was highly correlated with prenatal deaths, ear and eye birth defects, kidney and urinary

100. *Id.* at 2-3.

101. MICROBES, *supra* note 20, at 5; see also GORDON & KENNEDY, *supra* note 4, at 30-31.

102. ENVIRONMENTAL LAW INSTITUTE, CLEAN WATER DESKBOOK 493 (1988).

103. For example, in 1985, about 3,800 people in Pittsfield, Massachusetts, contracted giardiasis from water drawn from a local reservoir. The cause was eventually traced to a malfunction in the chlorination machinery. GORDON & KENNEDY, *supra* note 4, at 31.

104. Murphy, *supra* note 65, at 5. In 1986, 961 cases of giardiasis were reported. The projected 1989 total was more than 2,300. *Id.*

105. DRINKING WATER, *supra* note 1, at 2.

disorders and leukemia in children in the area. Organic chemicals detected in the drinking water supplied included: trichloroethylene; 1,1,1 trichloromethane, chloroform, and trichlorotrifluorethane."¹⁰⁶

It is clear that, with respect to safe drinking water supplies, there is a legitimate and important public and governmental interest in providing maximum protection to the public health. Thus, regulations that ensure that the public receives the highest quality water from the safest and most protected source need to be enacted and enforced.¹⁰⁷

VI. Who Is Responsible for Providing the Safest Possible Water to the Public?

A key question in the debate over keeping the water supply safe is: Who is responsible for meeting this important public need? While the government is typically regarded as responsible for assuming this role, the question becomes one of *who is the government* for the purpose of supplying drinking water to the general public?

The Safe Drinking Water Act places the burden for ensuring that water is not a public health risk on the water utility by making it responsible for water quality from the source to the tap. Specifically, the states are charged with ensuring that public water systems and their operators comply with the SDWA.¹⁰⁸ The New York State Public Health Law goes even further than the SDWA, placing the responsibility for protecting the source of water more directly on the water supplier. Part five of the New York State Sanitary Code states that, "[t]he supplier of water and the person or persons operating a public water system *shall exercise due care and diligence in the maintenance and supervision of all sources of the public*

106. CLEAN WATER DESKBOOK, *supra* note 102, at 491.

107. "Enforcement is vital to the success of the Safe Drinking Water Act." DRINKING WATER, *supra* note 1, at 5. The SDWA Amendments "authorize EPA to file civil suits or issue administrative orders against public water systems in violation when States are slow to take appropriate enforcement action, or when the State asks EPA to act. Maximum civil penalties are now \$25,000 per day of violation." *Id.*

108. See SDWA, 42 U.S.C. §§ 300g-2, 300g-3.

water systems so as to *prevent*, so far as possible, their *pollution and depletion*.”¹⁰⁹

Part five also provides an outline instructing the water supplier on when and how a water utility should respond to water quality problems. Part five states:

Whenever the supplier of water determines that:

- 1) the water quality standards are or may be exceeded; OR
- 2) that any deleterious changes in raw water quality have occurred; OR
- 3) ‘that a change in the character of the watershed or aquifer has been observed which may affect water quality’; OR
- 4) that any combination of these exists,

then, “the supplier of water *shall* immediately notify the state” *and* take the following actions:

- 1) ‘undertake a study to determine the cause or causes of such conditions’;
- 2) install treatment where practicable;
- 3) initiate water sampling as needed;
- 4) ‘investigate *all* or part of the watershed or aquifer to verify any existing or potential changes in the character of the sources of water supply’; and
- 5) submit a written report to the state within 30-days of the onset of the conditions.¹¹⁰

Presently, water suppliers do not fully satisfy this requirement. The primary response by the public water supplier to contamination of the drinking water supply is to install wellhead treatment¹¹¹ for groundwater supplies or to abandon

109. N.Y. COMP. CODES R. & REGS. tit. 10, § 5-1.71 (1992). The statutory authority may be found in N.Y. PUB. HEALTH LAW § 225 (McKinney 1990 & Supp. 1990)(emphasis added).

110. N.Y. COMP. CODES R. & REGS. tit. 10, § 5-1.12 (1983).

111. A wellhead is the “surface and subsurface area surrounding a water well or wellfield.” The state is required to define the radius of the wellhead protection area and should consider the depth of the water table, the rate of speed at which contaminants travel and other topographic and geological information. SDWA, 42 U.S.C.

the service. In Nassau County, Long Island, between 1989 and 1991, eighty-three out of nearly 400 wells were handled in this way.¹¹² More importantly, however, the New York State Department of Health does not require water suppliers to take on the larger watershed protection role or completely fulfill the Part five requirement.

The responsibility of water utilities to protect the water sources is even more explicitly stated in New York State Law than in Part five of the Sanitary Code described above. The New York State Legislature has given water utilities the power and authority, under Article 11 of the Public Health Law,¹¹³ to regulate, control, and protect water sources through Watershed Rules and Regulations (WR&R). Few water suppliers have exercised this power fully or effectively. The New York City Department of Environmental Protection (NYC-DEP) is the most recent example of a water supplier trying to fashion Watershed Rules and Regulations that meet the needs of the public and yet do not exceed their legal authority.

A. Water Utilities' Perspective

In 1989, the League of Women Voters Education Fund sought to document the views and actions of water utilities regarding drinking water quality and protection. After interviewing 572 water utility officials and state drinking water program administrators, the League illuminated the divergent views of these two groups and how these differences translated into water practices and priorities. Only twenty-nine percent of state administrators actively require that water utilities control harmful land use and water use activities within their respective watersheds or recharge areas.¹¹⁴ Only forty-five percent have programs to even monitor activities in watersheds or recharge areas.¹¹⁵ Less than twenty-five percent

§ 300h-7(e).

112. GROUNDWATER AND PUBLIC WATER SUPPLY FACTS, *supra* note 6, at 70-71.

113. N.Y. PUB. HEALTH LAW § 1100 (McKinney 1990).

114. LEAGUE OF WOMEN VOTERS EDUCATION FUND, CROSSCURRENTS: THE WATER WE DRINK 9 (1989)[hereinafter CROSSCURRENTS].

115. *Id.*

of the water utilities indicated that they have authority to control land use within watershed/recharge zones.¹¹⁶ As previously noted, this last issue is definitely not the case in New York State. More significantly, seventy-six percent of the water utility officials believed that their most effective activity in protecting water supplies was to monitor raw water quality for certain basic characteristics like pH and turbidity.¹¹⁷ The value of this minimal water quality monitoring role was refuted by most state water officials, "only 19 percent of whom called it effective in source protection."¹¹⁸ Indeed, the two most commonly cited reasons why water utilities do not take a more active role in water source protection are a "lack of authority" and "conflicting authorities," where a number of political jurisdictions are involved.¹¹⁹

The water utility managers interviewed were especially critical and unsupportive of the requirements mandated by the 1986 SDWA Amendments. The League of Women Voters found that the utility managers believed the amendments "will not affect their water quality because their water is already safe."¹²⁰ Further, they believed the amendments would cause

a massive response to health risks that they perceive as negligible. Many respondents clearly do not consider low levels of chemical contamination in drinking water an unacceptable health risk; thus one manager emphasized, 'I don't buy the underlying premise of the amendments, which are based on zero risk.'¹²¹

In New York State, one reason that most water suppliers do not use the powers that the legislature has given them is that they do not feel it is their role. This is partly due to the fact that they do not believe that they bear any liability if

116. *Id.*

117. *Id.*

118. *Id.*

119. CROSSCURRENTS, *supra* note 114, at 9.

120. *Id.* at 13.

121. *Id.*

they fail to protect the water supply or the source of water they rely on. However, they are mistaken. The following review of case law demonstrates that water suppliers may be held liable for drinking water contamination under several legal theories.

B. Liability of Water Utilities Providing Contaminated Drinking Water

Usually, water utilities will acknowledge that they have an obligation to comply with regulatory mandates such as the SDWA. In this situation, both Federal and New York State law make it clear that the duty of compliance rests first with the public water supplier and, second, with the state as regulator and enforcer. Failure to comply with the statutes and regulations can result in the imposition of fines and civil penalties upon the water utility.¹²²

Because many public water suppliers are quasi-governmental, the defense to claims of liability has often been that, as public water suppliers, they are performing a governmental function and, thus, are insulated from liability. The courts have routinely rejected this view, holding that, with the exception of emergencies, public water suppliers are operating in a "proprietary" rather than governmental capacity. In *Gordon v. Medford*,¹²³ the court concluded that the public water supplier was "subject to the same obligation of exercising due care that the law would impose upon a private corporation similarly engaged."¹²⁴

Public water utilities must meet water quality criteria set by law and regulation. Even though water standards have changed over time, negligence case law has consistently imposed a duty of exercising reasonable or ordinary care to fur-

122. DRINKING WATER, *supra* note 1, at 5; SDWA, 42 U.S.C. § 300h-2; N.Y. ENVTL. CONSERV. LAW § 15-2723 (McKinney 1984).

123. 117 N.E.2d 284 (Mass. 1954) (involving an action for damages caused by the city's alleged negligence in furnishing rusty water to a partnership's laundry operations).

124. *Id.* at 286.

nish pure water.¹²⁵ An Oregon court went further, holding that "a water supplier may be held liable for furnishing impure water if it breaches its duty . . . of exercising reasonable and commensurate care and diligence in providing an adequate supply of water at *all times*."¹²⁶

However, what may be "ordinary care" under normal circumstances is transformed into a higher level of duty because of the potential impact on public health. Accordingly, ordinary care and vigilance becomes what some courts describe as "a high degree of faithfulness" in furnishing wholesome water.¹²⁷

1. Negligence

The increasingly stringent water quality standards add another factor to the duty question. The reasonable care standard is immediately challenged when the violation of a standard, rule or regulation is raised. Most courts agree that a violation may be *prima facie* evidence of the defendant's failure to meet the proper standard of care which the standard implicitly represents.

In *Osborne v. McMasters*,¹²⁸ the Minnesota Supreme Court laid out a four-point test to be used in determining negligence due to a statutory violation. The test questions whether:

- 1) the defendant violated the statute or ordinance;
- 2) the violation proximately caused the injury;
- 3) the injury was of the character which the statute or ordinance was designed to protect; and
- 4) the injury was to one for whose protection or benefit the statute was enacted.¹²⁹

125. 54 A.L.R.3d 942 (1973). "Water suppliers were said to be subject to the duty of exercising reasonable or ordinary care to furnish pure water" in many jurisdictions. *Id.*

126. *Coast Laundry, Inc. v. Lincoln City*, 497 P.2d 1224, 1227 (Or. 1972)(emphasis added).

127. *Hamilton v. Madison Water Co.*, 100 A. 659 (Me. 1917).

128. 41 N.W. 543 (Minn. 1889).

129. *Id.* at 543. See also *Scott v. Independent Sch. Dist. No. 709, Duluth*, 256

Even with the creation of this test, various jurisdictions differ in how they apply the negligence theory. A 1939 case held that a violation of a statutory requirement was negligence per se for failing to provide safe water to the public.¹³⁰

California has codified this presumption, thus shifting the burden to the defendant to prove that it is more reasonable than not that the violation is reasonable and justifiable under the circumstances.¹³¹ Other jurisdictions have held that a violation of a statute, ordinance or regulation only constitutes evidence of negligence that is to be submitted to the jury for its consideration.¹³²

Although a violation may translate into a finding of negligence, compliance does not necessarily mean that the standard of due care has been met. The statutory standard is often treated as merely a minimum, and a defendant may still be found negligent for failing to go beyond it if a reasonable person would have done so in the same circumstances. Authorities generally agree, however, that compliance should at least be admitted as evidence of due care, thus shifting the burden of proof to the plaintiff, who must then demonstrate that the circumstances required a level of duty that went beyond the minimum. Thus, compliance with the standard is not an absolute defense to negligence, but will provide rebuttable evidence of the exercise of due care.

While the question of due care and negligence is easily resolved when presented with objective numerical water quality standards, the issue becomes more subjective when examining the duty to protect the water supply and, by extension, the public health. In *Hayes v. Torrington*, a 1914 case that predated the era of regulatory standards, a Connecticut court

N.W.2d 485, 488 (Minn. 1977).

130. *Martin v. Springfield City Water Co.*, 128 S.W.2d 674 (Mo. 1939).

131. CAL. EVID. CODE § 669 (West 1993). "Under the negligence per se doctrine now codified in Evidence Code § 669, 'violation of a statute gives rise to a presumption of negligence in the absence of justification or excuse, provided that the person suffering . . . the injury . . . was one of the class of persons for whose protection the statute . . . was adopted.'" *Sierra-Bay Fed. Land Bank Ass'n v. Superior Ct.*, 227 Cal. App. 3d 318 (Cal. 1991).

132. *Id.*

examined a public water supplier's negligence based on its failure to: 1) take steps to protect the water supply from pollution; 2) undertake any measures for purifying the supply; or 3) notify the customers that the water was unwholesome.¹³³ The court specifically found that the water supplier should have inspected the watershed to preclude the possibility of pollution.¹³⁴ These three aspects are now codified in both Federal and New York State law.¹³⁵

In 1915, the Supreme Court of New Jersey similarly found a public water supplier negligent for allowing its water supply to become polluted, which resulted in an outbreak of typhoid fever.¹³⁶ In 1928, a New York Appellate Division court found the public water supplier liable for failing to notify the public of a dangerous condition which allowed pollution to enter the water supply.¹³⁷

2. Today's Standard of Care

With today's heightened understanding of the connection between watershed contamination and drinking water quality, an interesting question arises as to the standard of care and due diligence that is required of a public water supplier. A strong case could be made that a public water supplier has a duty to undertake wellhead protection under the SDWA for groundwater supplies and stringent watershed rules and regulations for surface and groundwater under Part five of New York State's Sanitary Code.¹³⁸ In other words, although both Federal and New York State laws appear to allow these two

133. *Hayes v. Torrington Water Co.*, 92 A. 406 (Conn. 1914).

134. *Id.* at 407.

135. SDWA, 42 U.S.C. § 300g-3(c); N.Y. PUB. HEALTH LAW § 225.8 (McKinney 1990).

136. *Jones v. Mt. Holly Water Co.*, 93 A. 860 (N.J. 1915).

137. *Weisner v. Albany*, 224 A.D. 239, 243, 229 N.Y.S. 622, 624 (1928) (The court found that the officials in charge of the water department had notice of the defective condition and the outbreak of diseases traceable to the impure water. The officials ignored the warnings and were subsequently found liable. Furthermore, the court held that the plaintiff only needed to show, by the best evidence available, that the contaminants were introduced into his system by means of the city water, so that the jury might, by reasonable inference, reach such a conclusion).

138. See generally N.Y. COMP. CODES R. & REGS. tit. 10, §§ 5-1.12 - 5-1.33 (1992).

programs to be discretionary, under a due diligence theory, the standard of due care may convert such discretion into a mandate.

3. The Extent of Liability

If public water suppliers have a duty to protect the quality of the water, including its source, the public water suppliers' liability for water quality also extends from the source to the customer's tap. This extended liability is made clear both in statute and case law. The definition of "maximum contaminant level" in the SDWA means the "maximum permissible level of a contaminant in water which is delivered *to any user* of a public water system."¹³⁹

In a Massachusetts case, the court found that the public water supplier's duty extended all the way to the tap. The court recognized that the water supplier assumed a duty of conducting his business "with reasonable judgement, skill and care" to his customers.¹⁴⁰ They concluded that the trial judge "was in error . . . in instructing the jury in substance that the responsibility of the defendant for the quality of its water stops at the water gate."¹⁴¹ Consistent with these "source-to-the-tap" responsibilities imposed on public water suppliers, it is worth noting that the ban on the use of lead-based solder for water supply plumbing is contained within the SDWA.¹⁴²

4. Breach of Warranty

Another legal approach that has been applied to questions of liability attributed to public water suppliers is breach of warranty. Under this legal approach, the public water supplier is liable for the water condition as it may affect its use. For this reason, water is buffered so as not to damage or leach

139. SDWA, 42 U.S.C. § 300f(3)(emphasis added).

140. *Horton v. North Attleboro*, 19 N.E.2d 15 (Mass. 1939).

141. *Id.* at 19.

142. SDWA, 42 U.S.C. § 300g-6(a); see also *DRINKING WATER*, *supra* note 1, at 4. "The lead ban prohibits the use of lead solders, flux and pipes in the installation or repair of public water systems and drinking water plumbing connected to these systems." *Id.*

copper plumbing. Further, since the SDWA and Part five of the New York State Sanitary Code require compliance with both MCLs and testing and monitoring requirements, an implied expectation of safety is created. Public notification requirements exist in both federal and state laws to provide warnings to the public when unsafe conditions arise in the water supply.¹⁴³

A breach of warranty claim against a water supplier, where the contaminated supply resulted in poisoning, was examined in 1939 by the Supreme Judicial Court of Massachusetts. The court upheld the liability of the water supplier for failing to maintain the water as fit for its intended purpose, human consumption, all the way to the customer's tap.¹⁴⁴

Based upon such precedents, it is clear that public water suppliers currently may be liable under both regulatory and tort theories. Typically, only regulatory liability is pursued.

VII. Controlling the Land in Order to Protect the Water

From a public health perspective, the most prudent course of action to ensure the protection of the water supply is to take water from the purest and best source available. Once that decision has been made, the next challenge is to keep the source as clean and pure as possible. In today's world, this would entail implementing protectionist regulations to control how the land in the watershed is used and how potential pollutants are managed.

There are various ways that land use controls for the protection of a water supply can be implemented. Most controls involve applications of state police power. When land use is regulated, the rights of landowners to use their property as they wish may conflict with the state's duty to protect the public health, safety and welfare.

The state's ability to regulate land use via its police power is derived from the Constitution and the basic principle of public health protection. State regulatory power is, how-

143. N.Y. PUB. HEALTH LAW § 225.8 (McKinney 1990). SDWA, 42 U.S.C. § 300g-3(c). See also *DRINKING WATER*, *supra* note 1, at 8-10.

144. *Horton*, 19 N.E.2d at 18.

ever, limited. State land use regulations have often been held to constitute a "taking," requiring just compensation under the Fifth Amendment.¹⁴⁵ However, not every state regulation that affects a private landowner's use of his land will automatically constitute a taking. While contemplating whether the state of Pennsylvania could legitimately preclude coal mining beneath certain people's homes, Justice Holmes stated in *Pennsylvania Coal Company v. Mahon*,¹⁴⁶ that the "[g]overnment hardly could go on if to some extent values incident to property could not be diminished without paying for every such change in general law. As long recognized, some values are enjoyed under an implied limitation and must yield to the police power. . . ."¹⁴⁷

A. Development of State Control Over Land Use

Common law provided that "no individual has a right to use his or her property so as to create a nuisance or otherwise harm others."¹⁴⁸ Over the years, the merging of common law nuisance concepts with legitimate public interests established the use of state police powers to ensure the protection of public health. This concept evolved into the public nuisance claim. For the purpose of preventing such nuisances, the police power could be exercised in a manner that in fact did diminish the rights, and sometimes the value, of a person's property without effecting a taking.

As Professor John Humbach of Pace University School of Law noted, one of the first legislated public nuisances was a land use regulation forbidding cottages to be built on rural lots of fewer than four acres in 16th century England.¹⁴⁹ Thus, it is in the realm of "public nuisances" that governments, through common law, have typically developed controls that

145. U.S. CONST. amend. V.

146. 260 U.S. 393 (1922).

147. *Id.* at 413.

148. *Keystone Bituminous Coal Ass'n v. DeBenedictis*, 480 U.S. 470 (1987).

149. John A. Humbach, *What is Behind the "Property Rights" Debate?*, 10 PACE ENVTL. L. REV. 21 (1992) [hereinafter Humbach]. See also Janet Loengard, *The As-ize of Nuisance: Origins of an Action at Commonlaw*, 37 CAMBRIDGE L. J. 144, 164-65 (1978).

seek to balance and determine which types of public harms to prohibit, and which to tolerate.

State governments have continually defined and redefined what constitutes a "public nuisance." Land uses that once were acceptable may become unacceptable as new information surfaces and reveals that the potential public harm far outweighs the benefits of such use. New York City is presently in the process of conducting just such a balancing act as it considers new standards for water supply protection through the use of Watershed Rules & Regulations.¹⁵⁰

B. Legal & Policy Considerations

When considering the degree to which New York State or its surrogate, such as the water supplier, can regulate land use activities for the purpose of water supply protection, it is important to recognize several basic legal and policy considerations. First, as a matter of law, the waters of New York state are owned by the state for the benefit of the inhabitants of the state.¹⁵¹ "The sovereign power to regulate and control the water resources of this state ever since its establishment has been and now is vested exclusively in the state of New York. . . ."¹⁵² Second, the state can regulate land uses that affect water in order to protect the public health, safety and welfare. "It is in the best interest of the state that provisions be made for the regulation and supervision of activities that deplete, defile, damage or otherwise adversely affect the waters of the state and the land resources associated therewith."¹⁵³ Third, the state's goal for protecting and managing its water resources, and especially drinking water, is very high. Its purpose is to ensure "the highest possible quality and quantity of these resources."¹⁵⁴ It further seeks to ensure the non-degradation of water resources in pristine, undeveloped

150. See generally GORDON & KENNEDY, *supra* note 4.

151. N.Y. ENVTL. CONSERV. LAW §§ 15-0103, 15-0105.2, 15-1701 (McKinney 1984).

152. § 15-0103.1.

153. § 15-0103.13.

154. § 15-1907.

areas.¹⁵⁵ The State Special Groundwater Protection Act's (SGPA) purpose is to "ensure the non-degradation of the high quality of groundwater recharged within the special groundwater protection area."¹⁵⁶

C. Control through Zoning

Zoning is obviously one method that employs the police power. In New York, local governments have the exclusive right to zone pursuant to statute. The original model zoning ordinance from the U.S. Department of Commerce in 1926 stated, "for the purpose of promoting health, safety, morals, or the general welfare of the community, the legislative body of cities and incorporated villages is hereby empowered to regulate . . ." various aspects of development.¹⁵⁷

While local government land use controls are important in helping to protect public water supplies, they are not the exclusive avenue by which government regulation can be exerted. More frequently, the state legislature itself is taking on the role of zoning, albeit in the form of "environmental zoning" or the creation of specific regulations that effectuate a public health and safety goal.

D. Water Protection Legislation

The New York State Legislature has enacted several land use regulations designed to protect public water supplies. The Long Island Landfill Law of 1983¹⁵⁸ prohibited the siting or

155. § 15-0514.6 (emphasis added).

156. § 55-0115.

157. Original Model Zoning Ordinance, U.S. Dept. of Commerce 1926 § 1.

158. N.Y. ENVTL. CONSERV. LAW § 27-0704 (McKinney 1984). The law provides, in part, that ". . . no person shall commence operation, including site preparation of a new landfill or of an expansion to an existing landfill which is located in a deep flow recharge area." § 27-0704.3. A "deep flow recharge area" is defined as "a sensitive recharge area within the counties of Nassau and Suffolk within the boundaries of [specific] hydrogeological zones . . ." § 27-0704.1(b).

The law was enacted for the purpose of phasing out landfilling as a solid waste management practice and encouraging resource recovery on Long Island while protecting the integrity of the Island's sole source aquifer. L. 1983, ch. 299 at 2502-2503. "Landfilling on Long Island has imperiled the integrity of its sole source aquifer. Continuation of these practices threatens to permanently pollute the drinking water

construction of new municipal landfills in certain sensitive aquifer recharge areas, based upon the potential risk to the drinking water supply. The Long Island Landfill law regulating this area was challenged on technical and constitutional grounds by local governments that claimed they unfairly usurped their rights, restricted their options to solve solid waste problems, and singled out Long Island for special regulation.¹⁵⁹ The New York Court of Appeals, however, found that the state legislature had a legitimate state interest in the protection of the water supply and thus could, in effect, treat Long Island specially.¹⁶⁰

In response to mounting concerns regarding the quality of the New York's groundwater resources, the Legislature enacted Article 55 of the ECL, the Sole Source Aquifer Protection Law¹⁶¹ and "designated the Central Pine Barrens as one of nine 'special groundwater protection areas' in the State."¹⁶² In 1990, the legislature further amended Article 55 to "impose the 'most detailed' review requirements in connection with the assessment of environmental impact upon special groundwater protection areas."¹⁶³

The "Incompatible Uses Law," enacted in 1983,¹⁶⁴ directed the Department of Environmental Conservation (DEC) to "promulgate rules and regulations which will restrict or prohibit incompatible uses over primary water supply aquifers, giving special attention where necessary to protect primary groundwater recharge areas."¹⁶⁵ "In undertaking its responsibilities under this section, the [DEC] shall give first

supply for Long Island." *Id.*

159. *Long Island Pine Barrens Soc'y, Inc. v. Planning Bd. of the Town of Brookhaven*, 606 N.E.2d 1373, 591 N.Y.S.2d 982 (N.Y. 1992).

160. *Id.*

161. N.Y. ENVTL. CONSERV. LAW §§ 55-0101 - 55-0117.

162. *Long Island Pine Barrens Soc'y, Inc. v. Planning Bd. of the Town of Brookhaven*, 178 A.D. 2d 18, 22, 581 N.Y.S.2d 803, 806 (1992) (citing N.Y. ENVTL. CONSERV. LAW § 55-0113[1][g]). "Such statement shall meet the requirements of the most detailed environmental impact . . ." See N.Y. ENVTL. CONSERV. LAW § 55-0117.6.

163. *Pine Barrens*, 178 A.D.2d at 24, 581 N.Y.S.2d at 806. See N.Y. ENVTL. CONSERV. LAW §§ 8-0109, 8-0109(9).

164. N.Y. ENVTL. CONSERV. LAW § 15-0514 (McKinney 1984).

165. § 15-0514.5.

attention to the protection of pristine, largely undisturbed or undeveloped areas to insure the non-degradation of the water resources of such areas."¹⁶⁶

The Wild, Scenic and Recreational Rivers Act,¹⁶⁷ was enacted for the purpose of instituting a statewide system to preserve certain rivers and their immediate environs, which possess outstanding "natural, scenic, historic, ecological and recreational values."¹⁶⁸ The Act is intended to benefit present and future generations by preserving these valuable resources. Scenic rivers are designated by the statute as wild, scenic or recreational.¹⁶⁹ The Commissioner of Environmental Conservation or the Adirondack Park Agency, who share jurisdictional power regarding the Act,¹⁷⁰ may submit proposals to the governor and legislature for designation of additional rivers.¹⁷¹ As with most environmental statutes, violators of the act may be civilly penalized.¹⁷² One of the key aspects of this law is the regulation of activities along the shorelines of designated rivers.

Last, but certainly not least, is the Public Health Law, Article 11,¹⁷³ which permits the State Department of Health to adopt rules and regulations to protect water supplies.¹⁷⁴ Numerous regulations have been established through this grant of power, such as the establishment of maximum contaminant levels¹⁷⁵ and minimum water treatment standards,¹⁷⁶

166. § 15-0514.6.

167. §§ 15-2701 - 15-2723.

168. § 15-2701.1.

169. §§ 15-2713 - 15-2714.

170. § 15-2705. *See also* 6 N.Y. COMP. CODES R. & REGS. tit. 10, § 666 (1986), for administration and management of the act outside of the Adirondack Park. The Park itself is regulated under 9 N.Y. COMP. CODES R. & REGS. tit. 9, § 577 (1991).

171. N.Y. ENVTL. CONSERV. LAW § 15-2705.

172. § 15-2723. Violators may be ordered to comply with the act by means of an injunction, mandamus, or other remedy. A penalty of not less than \$100 per day, nor more than \$1000 per day of violation may be imposed. *Id.*

173. N.Y. PUB. HEALTH LAW §§ 1100-1108.

174. § 1100(1).

175. N.Y. COMP. CODES R. & REGS. tit. 10, §§ 5-1.51, 5-1.52 (1983).

176. § 5-1.30 (1983). The minimum treatment standard for groundwater is disinfection by chlorination. Surface water and groundwater influenced by surface water must undergo filtration and disinfection in accordance with N.Y. COMP. CODES R. &

the supervisory and maintenance responsibilities of water suppliers,¹⁷⁷ and the amount of penalties that can be assessed against violators of such water protection regulations.¹⁷⁸

Clearly, in these instances, the right to control land and associated activities is not left to local government, as it is in traditional zoning, but it is vested in the state government and its agents. As many courts' holdings demonstrate, this is a proper and legitimate role for government, so long as there is a public interest and the regulation, as promulgated, is an appropriate means to protect that interest.

E. Constitutional Limitations of State Regulatory Authority

State authority to enact regulations that limit and control land use activities affecting the public health, safety, and welfare, particularly those for drinking water protection, has constitutional limits. Specifically, the Fifth Amendment limits state police power by providing that regulations which effectuate a taking of private property requires just compensation.¹⁷⁹

The original purpose of the Takings Clause was to ensure compensation where there had been a physical invasion of the land.¹⁸⁰ *Pennsylvania Coal Co. v. Mahon*,¹⁸¹ however, has been hailed as the cornerstone of modern takings law. In *Mahon*, Justice Holmes concluded that when state action "goes too far," denying the landowner economically viable use of his or her property, then the state must pay the citizen for

REGS. tit 10, § 5-1.22 (1983).

177. § 5-1.71.

178. N.Y. PUB. HEALTH LAW §§ 1102, 1103.

179. U.S. CONST. amend. V.

180. Humbach, *supra* note 149, at 25.

181. 260 U.S. 393 (1922). In *Pennsylvania Coal v. Mahon*, the dissent outlines the scope of constitutional uses of the police power:

- 1) the rights of landowners to use their land is not absolute.
- 2) landowners may not use land to create a public nuisance which would do damage to the public and threaten the public welfare.
- 3) when a public nuisance is created, the legislature has the power to prohibit such uses without paying compensation.
- 4) restrictions must have as their purpose the protection of the public.
- 5) even though imposed for a public purpose, it is not lawful unless the restriction is an appropriate means to a public end.

this unfair burden in order to avoid a due process violation.¹⁸² In 1980, the Supreme Court expounded on the *Mahon* principle by holding that a land use regulation will constitute a taking if it "does not substantially advance legitimate state interests."¹⁸³

By the early 1980's, three separate *per se* tests had been developed by the Supreme Court to determine whether there had been a taking. The Court specifically looked for the existence of: 1) a permanent physical invasion,¹⁸⁴ 2) an insufficient relationship between the state interest and the "Taking,"¹⁸⁵ or 3) a denial of "all economically viable use of [the owner's] land."¹⁸⁶

The clearest example of a permanent physical invasion involves civil forfeiture for the illicit use of land and chattels. A state regulation, such as the New York Administrative Code,¹⁸⁷ that advances a legitimate public interest, will be sustained notwithstanding the fact that the regulation may have completely "taken" the owner's property rights without compensation.¹⁸⁸ More commonly, however, governmental regulations will only affect a part of the property's value. In land use cases, the Supreme Court has "uniformly rejected the proposition that diminution in property value, standing alone, can establish a 'taking.'"¹⁸⁹ Courts have upheld property regulations where losses in land value of seventy-five percent¹⁹⁰ and even up to eighty percent,¹⁹¹ have been sustained by the owners.

An example of where the Court found a sufficient rela-

182. *Id.* at 415. See also Humbach, *supra* note 149, at 27.

183. *Agins v. Tiburon*, 447 U.S. 255, 260 (1980). See also Humbach, *supra* note 149, at 25.

184. *Loretto v. Teleprompter Manhattan CATV*, 458 U.S. 419 (1982).

185. *Agins*, 447 U.S. at 255.

186. *Pennsylvania Coal Co. v. Mahon*, 260 U.S. 393 (1922). See generally Humbach, *supra* note 149, at 29.

187. N.Y. ADMIN. CODE § 14-140(b), (c)(1).

188. *Property Clerk, New York City Police Dep't v. Small*, 153 Misc. 2d 673, 582 N.Y.S.2d 932 (N.Y. 1992).

189. *Pennsylvania Central Transp. Co. v. New York City*, 438 U.S. 104, 131 (1978).

190. *Euclid v. Ambler Realty Co.*, 272 U.S. 365 (1926).

191. *Hadacheck v. Sebastian*, 438 U.S. 394 (1915).

tionship between the state interest and the regulatory Taking can be found in *Agins v. Tiburon*.¹⁹² In *Agins*, the Court held that the ordinance affecting plaintiff's land substantially advanced the legitimate governmental goal of discouraging "premature and unnecessary conversion of open-space land to urban use" and reflected the proper exercise of the city's police power to protect the residents from the ill effects of urbanization.¹⁹³

Recent cases examining regulations that have greatly diminished the last few percentage points of current market value have considered such restrictions equivalent to a taking. This rule has been reflected in recent wetlands cases. The court in *Agins*, for example, used the "economically viable use" criterion, which may address the "percentage points" problem.

In general, regulatory takings cases have shown that the Takings Clause does not insure an owner against reductions in property value or loss of the most marketable use, nor does it assure the owner of a financial profit upon resale of the property. If the regulation effectively denies the owner of "all use" of his or her property, the restriction will most likely be considered a compensable "regulatory taking."¹⁹⁴

VIII. The Creation of Water Protection Rules

In order for strong drinking water protection regulations that affect land use to withstand scrutiny, they should contain certain basic features. First, there must be a *legitimate public purpose* such as the protection of the public health and safety by keeping the drinking water clean. Additionally, the new regulations should be the *most appropriate means* of achieving that purpose.

Second, as long as the particular restrictions do *not* cause the land to be "*worthless*," they will most likely be upheld.

192. 447 U.S. 255 (1980).

193. *Id.* at 261.

194. *Lucas v. South Carolina Coastal Council*, 112 S. Ct. 2886 (1992). For an in-depth discussion of regulatory takings, see *Lucas v. South Carolina Coastal Council: Colloquium*, 10 PACE ENVTL. L. REV. 1 (1992).

Third, the creation of water protection regulations is essentially a *balancing* act; lawmakers need to balance the anticipated benefit to the public against the interest of the affected property owners in the management of their land. The degree of control the landowners are to retain over their property must be examined and weighed in light of the risk and probability of contamination to the drinking water supply. It is critical to allow the owners some discretion concerning how their land may be used.

Fourth, the purpose of water protection regulations should be clearly stated. If the general public recognizes that the protection of a necessary resource is at the heart of a regulation, they will be more willing to offer their support and acceptance of new restrictions. Such support is important in avoiding protracted opposition to new laws and to the enforcement of subsequent land-management schemes.

Fifth, general scientific criterion, findings, and documentation are important, not only for guiding the technical aspects of the regulations, but also for assuring public acceptance of the new standards. Charges of arbitrariness may also be dismissed merely by the inclusion of such data. Maps may also prove beneficial. Maps that depict the sources of pollution which are being targeted by the regulations, the methods that will be utilized to control such pollution, and the bodies of water targeted for protection, may prove helpful in assessing the success and compliance of the proposed regulation.

IX. Conclusion

The original premise, that water should be supplied from the cleanest, safest source remains the best strategy for protecting public health. However, conditions change so that the source of drinking water and the watershed that surrounds it must be constantly and vigilantly inspected and protected. Even with the present state-of-the-art water treatment, contaminated water may place the public health at risk.¹⁹⁵

195. Michael DeCourcy Hinds, *Milwaukee's Water Suspected as Cause of Intestinal Illness*, N.Y. TIMES, April 9, 1993, at A1. A widespread outbreak of cryptosporidiosis, caused by *cryptosporidium* which slipped through the Milwaukee

The most notable examples of contaminated water affecting public health occur when the response is immediate and dramatic such as incidents caused by disease-producing pathogens and parasites. However, drinking water safety is also compromised by low levels of toxic chemicals which may have a long latency period before health consequences are evident. Expensive chemical removal technology, water filtration and chlorination may be both ineffective and, as in the case of chlorination, a health risk in itself. While federal and state agencies and health departments all work to assure a safe public water supply through quality control regulations, protection of the source waters through better watershed management and control is often the course taken last rather than first. In this respect, a significant player in the water protection picture is missing — the water supplier. Land use control, which is an indispensable component of watershed protection, must be the concern of all the public health overseers, including the water supplier. Some land use controls may of necessity require stringent limits on how the land can be used. Where a legitimate public purpose exists, such controls usually do not rise to the level of a taking. Serious control measures should not inhibit the exercise of appropriate land use regulations. Millions of people entrust their health and safety to the care of regulators and water suppliers in the belief that these water bureaucracies are taking all the steps necessary to keep the water safe and risk-free. When the source of the water supply is not kept as clean as it should be, using common sense as well as the letter of the law as a guide, the public's trust in the safety of the water may be misplaced.

water filtration plant, affected hundreds of people. This is another example of where sand-filtered and chlorinated water that met all regulatory quality standards allowed the parasite to pass into the drinking water. Michael DeCourcy Hinds, *Study Hinted at a Parasite Problem in Milwaukee*, N.Y. TIMES, April 10, 1993, at A6. According to Dr. Brian Buggy, a Milwaukee doctor, "It is true that cryptosporidium is always in municipal water. There was speculation that an unusually high level of run-off from the area's dairy farms spilled into Lake Michigan from the Milwaukee River near the water plant's intake pipe." *Id.* Once again, drinking water which has been contaminated through a lack of adequate watershed controls has produced serious illness because water treatment technologies were not effective in protecting the public health.