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An Agricultural Law Research Article

Development of A National Groundwater Protection Policy

by

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Originally published in BOSTON COLLEGE ENVIRONMENTAL AFFAIRS LAW REVIEW
11 B.C. ENVTL. AFF. L. REV. 211 (1984)

DEVELOPMENT OF A NATIONAL GROUNDWATER PROTECTION POLICY

*J. Stephen Dycus**

I. INTRODUCTION

We live in a throw-away society. Our economy and life style have come to depend upon our ability to throw things "away." Whatever we do not want — candy wrappers, wide neckties, rusty cars, toxic chemical wastes — all of it is taken away to the dump or flushed away down the drain.[1] It now comes as a shock to most of us to learn that there is no "away,"[2] that we must continue to live with the mess we make.

This growing realization has provoked massive efforts during the last decade to abate the pollution of the nation's air and waters. In the attempt to clean up our visible environment, however, we have largely ignored what we cannot see. In particular, the defilement of our groundwaters has not diminished, but has increased with the diversion of waste streams from air and surface waters to on-land or subsurface disposal.[3]

According to the Environmental Protection Agency, some 150 million metric tons of hazardous wastes were generated in the United

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1. "For fundamental and deeply rooted psychological reasons, as well as more mundane utilitarian considerations, it is characteristic of man to bury that which he fears and wishes to rid himself of." United States v. Price, 523 F. Supp. 1055, 1057 (1981).

2. Meridith Wright, Esq., lecture at Vermont Law School, November 18, 1980.

3. Ironically, the Environmental Protection Agency has sometimes encouraged this diversion. ENVIRONMENTAL PROTECTION AGENCY, PROPOSED GROUND WATER PROTECTION STRATEGY III-11 (1980) [hereinafter cited as the CARTER STRATEGY].

States in 1981.[4] This figure includes toxic chemicals, solvents, corrosive agents, and other regulated materials. About fifty-seven percent is disposed of by injecting it underground, sometimes above or into aquifers which supply drinking water.[5] Another thirty-eight percent is placed in pits, ponds, or lagoons of liquid standing on the surface.[6] Not included in these amounts are wastes from many smaller sources and wastes illegally disposed of. Also not included are materials which are not regulated, but which may pose real threats to human health or the environment. Besides industrial sources, leachate from municipal landfills, mining activities, individual septic tanks, buried storage tanks, agricultural applications, and road salt all contribute to the problem of groundwater contamination.[7]

The numbers are staggering. The potential impact on public health and the environment is equally impressive. More than one-half the nation's people depend on groundwater for their drinking water supplies.[8] Many of those underground supplies now are polluted, some with organic chemicals known to be carcinogenic, teratogenic or mutagenic, and a growing number of towns across the country are being forced to abandon their public wells.[9]

Several states have formulated strategies to deal with this threat.[10] Certainly the states have a critical role to play, both for practical administrative reasons and because the people who drink the water know the most about local needs and conditions. State and local efforts, however, have been hampered by a lack of reliable data and technical know-how, by political conflict, and by inadequate fund-

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4. A national survey released in August, 1983, reveals that this figure is about four times the previously estimated total. [14 Current Developments] ENV'T REP. (BNA) 715 (1983); Shabecoff, Hazardous Waste Exceeds Estimates, N.Y. Times, Aug. 31, 1983, at 1, col. 1.

5. Shabecoff, *supra* note 4.

6. *Id.* Results of earlier surveys may be found in ENVIRONMENTAL PROTECTION AGENCY, PLANNING WORKSHOPS TO DEVELOP RECOMMENDATIONS FOR A GROUND WATER PROTECTION STRATEGY, Appendices III-13 (1980) [hereinafter cited as WORKSHOPS or WORKSHOPS, APPENDICES].

7. Other groundwater pollution sources are described in SHIFRIN & NOLAN, GROUNDWATER PROTECTION BY RECHARGE ZONE MANAGEMENT 6 (1981); WORKSHOPS, *supra* note 6, at II-2; WORKSHOPS, APPENDICES, *supra* note 6, at III, IV, X-3.

8. "Over ten billion gallons a day provide the basic supply of drinking water for more than half our citizens. More than 90% of rural dwellers rely on groundwater, usually untreated from private wells, for domestic use." Memo from Groundwater Policy Group to EPA Administrator, March 5, 1982, at 3. The memo is reprinted at [13 Current Developments] ENV'T REP. (BNA) 290 (1982).

9. CARTER STRATEGY, *supra* note 3, at III-5. The effects of different kinds of groundwater pollution are described in some detail in ENVIRONMENTAL DEFENSE FUND, COMMENTS ON EPA'S PROPOSED GROUNDWATER PROTECTION STRATEGY 7-15 (1981).

10. *See infra* text at note 69.

ing.[11] There is also fear that parochial interests have been permitted to jeopardize the public health. While groundwater *allocation* has long been regarded as the responsibility of the states, groundwater *pollution* is now recognized as a national problem demanding a national solution.

Congress addressed this problem directly in the 1972 amendments to the Federal Water Pollution Control Act.[12] That act contains a broad mandate to "restore and maintain the . . . integrity of the Nation's waters",[13] along with an ingenious regulatory mechanism which can be applied to both groundwaters and surface waters. The Safe Drinking Water Act of 1974,[14] the Resource Conservation and Recovery Act of 1976,[15] and other Congressional measures are all directed at the same problem. Yet, the Environmental Protection Agency has until recently deferred action under these statutes that would protect groundwaters[16]—delaying the promulgation of regulations, failing to appeal adverse judicial decisions, and generally ignoring the problem.

Late in 1980, at least partly because of publicity surrounding the Love Canal tragedy, the EPA proposed a national Ground Water Protection Strategy.[17] This "Carter Strategy" called for full implementation of existing federal laws, but relied principally upon the cooperation of state governments for installation and enforcement of protective mechanisms. That proposal has been abandoned by the EPA under the Reagan administration.[18] In its place, the Agency has developed a draft proposed Groundwater Policy (Reagan Policy).[19] The new proposal resembles the old one in several ways, most importantly in its reliance on the development of effective state

11. *See infra* text at note 77.

12. Pub. L. No. 92-500, 86 Stat. 816 (1972) (now amended and codified at 33 U.S.C. §§ 1251-1376 (1976 & Supp. V 1981)).

13. 33 U.S.C. § 1251(a) (1976 & Supp. 1981).

14. 42 U.S.C. §§ 300f-300j-10 (1976 & Supp. V 1981).

15. 42 U.S.C. §§ 6901-6987 (1976 & Supp. V 1981).

16. CARTER STRATEGY, *supra* note 3, at III-11.

17. 45 Fed. Reg. 77,514 (1980).

18. *See infra* note 41.

19. A June 7, 1982 memorandum from EPA Administrator Anne M. Gorsuch to Regional Administrators and others orders the formulation of a new groundwater policy to be announced by September 30, 1982. An earlier memorandum from a Groundwater Policy Group appointed by Ms. Gorsuch, *see supra* note 8, describes "hypothetical policy assumptions" which strongly reflect the Carter Administration's Proposed Strategy. This correspondence is reproduced at [13 Current Developments] ENV'T REP. (BNA) 290 (1982). The latest widely available draft of the Reagan Policy, dated October 7, 1982, may be found at [13 Current Developments] ENV'T REP. (BNA) 907 (1982) [hereinafter cited as REAGAN POLICY]. This draft is referred to throughout the article.

rules and state enforcement. The new proposal also relies upon the adequacy of existing federal statutes and programs. It leaves entirely for state control any questions of groundwater supply, and it envisions the adoption of a classification or zoning scheme for groundwater.

It is not certain that the new draft policy ever will be formally proposed. Apparently reflecting a deep division of opinion within the Reagan administration, the draft was recently consigned for further study to an interagency committee on which the EPA is not even represented, and future implementation of the proposal is in doubt.[20] Yet the *proposal* represents *current* policy at the Agency. Its formal adoption would require little change in procedures already in place at EPA.

Recently, top officials at the EPA have been charged with misfeasance or plain corruption in implementing the nation's environmental laws, especially those affecting the pollution of groundwater.[21] Certainly, such behavior, if indicative of a lack of concern over the real threats posed to the nation's groundwater, might have affected the preparation of the draft proposal. The new EPA Administrator, William Ruckelshaus, has promised fundamental changes in the way the Agency conducts its business, so the statement of Agency policy could be materially altered before it is adopted. But because the current proposal reflects a fairly consistent response by EPA from the Agency's inception, any fundamental change in guiding policy or institutional attitude would be surprising.

The purpose of this article is to use the draft proposal as a convenient vehicle for the discussion of issues relating to the development of a wise groundwater policy. The stated goal of the proposed policy is "to safeguard the public health and sensitive environmental systems by protecting the quality of groundwater."[22] The mechanisms described in the proposal, however, and the premises upon which their use would be based, are flawed in various ways. Those flaws will be revealed in the following analysis of the proposal itself and of our accumulated experience with the EPA. This article will briefly examine the body of statutory authority which is available to EPA for the protection of groundwater, but which the Agency seems so reluctant to invoke. It will also discuss the proper roles of federal

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20. *See infra* text and notes at notes 44-45.

21. Some of the charges and their disposition are reviewed at [14 Current Developments] ENV'T REP. (BNA) 650 (1983).

22. REAGAN POLICY, *supra* note 19, at II.

and state governments, and will consider an alternate strategy more likely to meet the stated goal. It will be argued that only an unwavering commitment to the protection of the nation's groundwater supplies, reflected in a consistent and comprehensive federal policy, will forestall the serious threat currently facing our supply of drinking and irrigation water.

II. Emergence of a Federal Policy on Groundwater Protection

The federal government began to be conspicuously involved in efforts to protect groundwater in 1972, with the passage of amendments to the Federal Water Pollution Control Act.[23] Groundwater provisions in those amendments reflected a growing concern that the states had failed to meet the challenge to protect groundwater supplies, and that the problem had become national in scope.[24] Unfortunately, the applicability of that act's regulatory mechanisms to groundwater was, and remains, somewhat unclear.[25] There is no doubt, however, that provisions of the Safe Drinking Water Act of 1974,[26] the Toxic Substances Control Act[27] and Resource Conservation and Recovery Act of 1976,[28] and the Superfund legislation in 1980[29] were intended to establish federal control over certain aspects of the problem.

These statutory authorities, however, are poorly coordinated and do not deal with every aspect of the problem.[30] At least as far back as 1974, the EPA addressed the lack of groundwater protection provided by its National Pollution Discharge Elimination System (NPDES) program, resolving instead to provide states with the

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23. Pub. L. No. 92-500, 86 Stat. 816 (1972) (now amended and codified at 33 U.S.C. §§ 1251-1376 (1976 & Supp. V 1981)).

24. For example, while it is declared in § 101(b) to be "the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution," the Administrator of the EPA is instructed to "prepare or develop comprehensive programs for preventing, reducing, or eliminating the pollution of the navigable waters and groundwaters." § 102(a), 33 U.S.C. § 1252(a) (1976).

25. The response of the National Water Commission to this uncertainty was immediate and direct: "Federal legislation on control of surface water pollution should be expanded to include groundwater pollution, and the regulatory regime and enforcement techniques at the Federal level should be the same for both surface and groundwater." National Water Commission, Water Policies for the Future 244 (1973).

26. 42 U.S.C. §§ 300f-300j-10 (1976 & Supp. V 1981).

27. 15 U.S.C. §§ 2601-2629 (1982).

28. 42 U.S.C. §§ 6901-6987 (1976 & Supp. V 1981).

29. 42 U.S.C. §§ 9601-9657 (1976 & Supp. V 1981); 26 U.S.C. §§ 4611-4682 (1976 & Supp. V 1981).

30. The statutes are examined *infra* text at notes 178-372.

maximum incentive to develop their own groundwater regulatory programs.[31] It was not until just before the discoveries at Love Canal, however, that a movement began at EPA to develop a strong, coordinated federal strategy to deal with groundwater pollution. In the summer of 1980, EPA sponsored two workshops for some eighty government officials, industrialists, environmentalists, and others with expertise in the field to recommend preferred strategies.[32] Their views were said to be reflected in the EPA's Proposed Groundwater Protection Strategy (Carter Strategy) published several months later.[33]

The purpose of the Carter Strategy was to provide a framework for tying together regulatory efforts under various statutory authorities, and to furnish a policy basis for future decisions.[34] It recognized that coordination of efforts at all levels of government is essential, but it would have relied entirely upon the initiatives of the various states to develop and enforce their own groundwater protection programs.[35] States would have been encouraged, but not required, to classify aquifers within each state based upon current and future uses, and based upon federal groundwater quality standards.[36] Federal standards also would have prescribed technical requirements for activities on overlying lands.[37] Federal funding for state programs would have been conditioned on state compliance with annual agreements calling for conformity to the federal standards.[38] It was hoped that such a procedure would provide a generally uniform response, but with enough flexibility to tailor actions to state and

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31. ENVIRONMENTAL PROTECTION AGENCY, WATER QUALITY STRATEGY PAPER (1974).

32. CARTER STRATEGY, *supra* note 3, at II-1-17; WORKSHOPS, *supra* note 6. The workshop participants are listed in WORKSHOPS, *supra* note 6, at IV-IX. Workshop participants were furnished with background materials compiled by the EPA to acquaint them with physical problems of groundwater pollution, with issues surrounding its management, and with possible solutions. These documents provide valuable insights into EPA policies, practices, and priorities. They also reveal much about the EPA's perception of its authority under existing legislation, and about the political forces which help to shape its decisions.

33. "The strategy which is proposed . . . reflects in general terms, the recommendations of the eight work groups [into which the workshops were divided]." CARTER STRATEGY, *supra* note 3, at II-4. The groups were said to have presented "similar statements" of what should be the strategy's goal and the management approach needed to move toward this goal. Apparently, however, no consensus could be reached concerning technical requirements or federal/state roles. It is not clear just how influential the workshop recommendations were in the formulation of the EPA's proposals.

34. CARTER STRATEGY, *supra* note 3, at I-4.

35. *Id.* at VII-1.

36. *Id.* at VII-4-10.

37. *Id.* at VII-7, 8; VII-2, 3.

38. *Id.* at VII-2.

local conditions.[39] The Carter Strategy recognized that questions of groundwater quantity and quality are inextricably linked, and that groundwater management efforts must be coordinated with surface water quality programs.[40]

Although not expressly authorized by any statute, the proposed Strategy was responsive to broad policy mandates in each of the statutes mentioned earlier. It also provided a highly visible reaction to a widely recognized national crisis. Still, the Strategy failed to demonstrate a serious institutional commitment by the EPA to avoid the destruction of the nation's groundwater supplies.

The Carter Strategy was abandoned by the new EPA administrator,[41] and in 1982 a Groundwater Policy Group, consisting of senior Agency managers, was appointed to develop a new federal policy.[42] The result is a proposed Groundwater Policy (Reagan Policy) still in draft form, prepared by the EPA's Office of Water under the supervision of the Groundwater Policy Group.[43] In December 1982, the EPA proposal was sent for review to the Cabinet Committee on Natural Resources and the Environment, chaired by Interior Secretary Watt,[44] and its future at this writing is uncertain.[45] Although there apparently have been some revisions to the draft during the last few months, the most important points of the policy have not changed, according to several EPA staff members.

III. THE REAGAN EPA GROUNDWATER POLICY.

Despite the current Administration's disavowal of the proposed Carter Strategy, its own proposal, though much briefer, bears a strong resemblance to it. Indeed, the Groundwater Policy Group responsible for its drafting was directed to use as its starting point the con-

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39. *Id.* at VI-1.

40. *Id.* at V-1. No mechanism, however, is offered to control withdrawals of groundwater or to integrate controls of ground and surface water pollution.

41. A chronicle of the Reagan EPA's inaction on the Carter Strategy may be found at [12 Current Developments] ENV'T REP. (BNA) 69, 605, 797, 845, 1714 (1981-1982).

42. *See supra* note 19.

43. *Id.*

44. [13 Current Developments] ENV'T REP. (BNA) 1577 (1983).

45. This was the view of an EPA employee at the Office of Water, reported during a telephone interview on Feb. 23, 1983. *See also* Peterson, Watt Said to Block New Policy for Water Supply Safeguards, Washington Post, Feb. 18, 1983, at A4, col. 1. EPA Administrator Ruckelshaus has hinted that he favors adoption of a national groundwater policy. His interaction with former Secretary Watt on this issue is suggested in testimony before the House Government Operations Subcommittee on Environment, Energy, and Natural Resources on June 29, 1983, reported in [14 Current Developments] ENV'T REP. (BNA) 373 (1983).

sensus reached in public meetings in 1980.[46] The policy apparently is to be developed in two phases, the first dealing with a statement of general goals and premises, the second with implementation of the policy.[47]

The tone of the policy is set by the statement, "EPA commits its best efforts to turn existing statutory programs to the support of *States* as *they* protect our Nation's groundwater."[48] Although the draft available for review sets forth seven "operating principles" and a variety of "policy elements," it will be convenient to think of the proposed policy as being founded upon just five major premises:

A. State and local governments should have the lead role in managing and protecting groundwater.[49]
B. The proper federal role is 1) to coordinate and implement existing federal programs and 2) to encourage voluntary state and local program development.[50]
C. The regulation of water use and water rights and allocations are within the exclusive province of the states.[51]
D. The level of groundwater quality protection should be based upon current and projected uses of the water, *i.e.*, groundwater sources are to be classified or zoned.[52]
E. Existing statutory programs will enable us to meet groundwater protection goals.[53]

For a variety of reasons, the implementation of a policy based on these premises is not likely to protect either the public health or a wider environment.

It is not surprising that the proposed policy closely resembles current policy, and that the proposal for public review amounts to a request for approval of ongoing Agency practices.[54] Unfortunately, as the following discussion demonstrates, these current practices have

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46 *See supra* note 19.

47. Memorandum of Assistant Administrator for Water Eric Eidsness dated July 23, 1982, reported in [13 Current Developments] ENV'T REP. (BNA) 470 (1982).

48. REAGAN POLICY, *supra* note 19, at I. (emphasis added).

49. REAGAN POLICY, *supra* note 19, at I, III.1., IV.

50. *Id.* at I., III.1., IV.

51. *Id.* at III.7.

52. *Id.* at II., IV.

53. *Id.* at I., III.2.

54. One EPA insider has reportedly dismissed the draft policy as largely unimportant. It "doesn't commit a lot of resources, doesn't make anyone do much of anything, and doesn't give the states anything." [13 Current Developments] ENV'T REP. (BNA) 1800 (1983). The same report reflects sharp disagreement within the Reagan Administration over the contents of the proposal.

not always provided even the minimum level of environmental protection mandated by Congress. The proposed policy is in reality a policy which already has failed.

What follows is an examination of each of the five premises set out above, and an evaluation of each premise, relying on an understanding of EPA performance during four presidential administrations. In the process, detailed elements of the proposed policy itself will be described.

A. State and Local Governments Should Have the Lead Role in Protecting Groundwater.[55]

A major tenet of the Reagan Administration's philosophy, embodied in the term "the new federalism," is that the states and local governments ought to look out for themselves, with a minimum of federal government interference.[56] Reflecting this philosophy, the proposed policy suggests that groundwater protection is primarily the responsibility of the states.[57] Of course, the states already possess broad public health and police powers, and the states historically have made decisions about land use and water rights allocations. Decentralization of this function is appropriate, too, according to the policy, because of the diversity of groundwater conditions from state to state. Implementation of the EPA policy by the respective states would be entirely voluntary. Moreover, states would be given maximum flexibility in implementing delegated programs.[58]

It is now well settled that Congress has the power under the Commerce Clause to require compliance by states and individuals with federal rules for environmental protection.[59] There is some doubt, however, about the extent to which Congress has exercised that power to control groundwater pollution. In several statutes, Congress has provided that federal regulators must defer to states with programs at least as stringent as federal programs. The NPDES

55. REAGAN POLICY, *supra* note 19, at I., III.1., IV.

56. *See The New Federalism in Environmental Law: Taking Stock,* 12 ENVT'L. L. REP. (ENVT'L. L. INST.) 15,065 (1982).

57. REAGAN POLICY, *supra* note 19, at III.1.

58. The Carter Strategy was similar in proposing that states be left with the "key responsibilities for designing and implementing programs." CARTER STRATEGY *supra* note 3, at II-7. The EPA, however, would have formulated and issued "guidance" for state strategies, and would have "encouraged" their adoption by incorporating them into annual State/EPA Agreements. *Id.* at VII-2.

59. *See, e.g.,* Hodel v. Virginia Surface Mining and Reclamation Ass'n, 452 U.S. 264, 282 (1981). The same decision also tacitly disposes of Tenth Amendment challenges to various federal environmental laws. *Id.* at 289.

program in the Clean Water Act[60] is typical in requiring delegation of regulatory authority to the states under such circumstances.

In those acts requiring delegation, however, as well as in others which by their silence leave some authority to the states, there is considerable latitude for the agency charged with implementing each act to say how stringent the federal standards should be.[61] The need for federal intervention depends not only on the effect of groundwater pollution on federal interests; it depends also upon the success of the states and local governments in controlling such pollution on their own initiatives. It is to the EPA's choice of standards that the proposed policy is chiefly addressed.[62]

There may be valid reasons for leaving control over groundwater pollution to the states. If the pollution of groundwaters can be controlled by state enforcement of some minimum uniform federal standards, it should not matter that they are enforced by the states in a nonuniform way, taking into account local needs and conditions, or that the states impose more stringent standards.[63] There may even be some advantages to having the states assume the lead role. Because they are closer to the problem, local officials may be able to fashion more efficient solutions to accommodate peculiar local needs. Local officials are likely to be more politically accountable for their decisions, and to have greater credibility with local constituencies, especially if they are elected.

The interstate nature of the groundwater problem, however, which triggers Congress' Commerce Clause authority, requires an aggressive *federal* response at the agency level. The legislative

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60. The National Pollution Discharge Elimination System is described in Clean Water Act § 402, 33 U.S.C. § 1342 (1976 & Supp. V 1981).

61. The Agency's exercise of such discretion is considered *infra* text and notes at notes 178-372.

62. The draft proposal calls for creation of "relationships with other Federal agencies which have significant technical or groundwater protection responsibilities to foster coordinated policy development and implementation." The policy under consideration here, however, is a proposal designed to guide the EPA alone. Its implications for other agencies are suggested by its pre-publication review by the Cabinet Committee on Natural Resources and the Environment and by the controversy which apparently has prevented its reemergence from that committee. Peterson, *supra* note 45. For example, the Interior Department is said not to have a groundwater policy, although one is evolving around the theory that groundwater "is properly governed by state laws, except where Congress has legislated otherwise." *Id.* Both the Carter and Reagan proposals conclude that no new federal legislation is needed for the policy to be carried out.

63. It is possible, of course, that a state could adopt standards so much more stringent than the federal ones that industries would be encouraged to stay away, thus burdening interstate commerce.

history of the various federal statutes is replete with findings that groundwater pollution is a national problem demanding a national solution. Polluted groundwater migrates across state boundaries. It may affect travel and commerce by entering surface waters; or it may affect travellers, who have to drink it. Conflicting standards for groundwater quality may hamper interstate business[64] or may incite economically and socially disruptive industry migrations. They may also make the health of our nation's citizens dependent upon where they live. Simultaneously, the proliferation of varying local rules may impede the development of new technologies and practices which would be in the federal interest.[65]

In addition, local decisionmakers may lack the experience and sophistication to develop and enforce programs which truly reflect even the *local* public interest.[66] They may be more susceptible to the influences of narrow and local interests, or, they simply may not have the perspective needed to consider long-term effects on health or the economy, or be sensitive to transboundary effects. Even where local officials have the wisdom and resolve to adopt sound programs, they may welcome the imposition of federal standards which, for reasons of local politics, they feel powerless to implement on their own initiative.

The proposed policy declares that its implementation "will depend significantly on each individual State's desire and ability to coordinate its own efforts. . . . States determine their own problems, approaches and resource priorities."[67] Indeed, many states already

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64. The Carter Strategy provided:

> Since it is important to have a reasonable degree of consistency nationwide . . ., EPA would take the lead in working with the states to develop a common system. This will facilitate cooperation in dealing with interstate issues and will provide a more understandable regulatory environment from state to state for business and individuals.

CARTER STRATEGY, *supra* note 3, at VII-8. Many industry officials have supported the development of uniform federal standards, fearing that "too much state autonomy over environmental issues could create a hodge-podge of conflicting standards that could hamper interstate business." Pasztor, Many States Complain About Having to Assume Environmental Programs From Federal Agencies, Wall St. Journal, Aug. 24, 1982, at 54, col. 1; F. Shafroth, Municipal Rights and Remedies With Regard to Prior Toxic Groundwater Contamination 34 (1982) (unpublished manuscript).

65. Pasztor, *supra* note 64.

66. The Carter Strategy observes that:

> Some problems affecting groundwater are so serious, complex or ubiquitous that national action is warranted. Cases in which national action may be most effective could include situations, for example, where chemical substances, contamination pathways, and treatment processes are extremely complex and widespread. . . .

CARTER STRATEGY, *supra* note 3, at VII-10.

67. REAGAN POLICY, *supra* note 16, at IV.

have done much on their own to protect groundwater resources.[68] Several have adopted state groundwater policy statements.[69] Some, by their examples, have even shaped federal policy.[70] Others have at least accepted responsibility for some federally mandated programs. State responses, however, have been far from uniform,[71] and the question remains whether the mandated programs are stringent enough to protect the public interest.

While it is true that the states historically have exercised jurisdiction over groundwater disputes, neither common law nor local statutory rules regulating groundwater use have been particularly effective in preventing groundwater pollution.[72] Nor have the doctrines of nuisance or trespass provided effective protection.[73] Land use

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68. *See, e.g.,* the New York water pollution control program, N.Y. ENVT'L CONSERV. L. §§ 17-0101 - 1907 (McKinney 1973 & Supp. 1983), which has regulated discharges of pollutants to groundwaters since 1971. Groundwater management and protection programs for each state are summarized in U.S. WATER RESOURCES COUNCIL, STATE OF THE STATES: WATER RESOURCES PLANNING AND MANAGEMENT (1980) and U.S. WATER RESOURCES COUNCIL, STATE OF THE STATES: WATER RESOURCES PLANNING AND MANAGEMENT — GROUNDWATER SUPPLEMENT (1981); NAT'L CONF. OF STATE LEGISLATURES, HAZARDOUS WASTE MANAGEMENT: A SURVEY OF STATE LEGISLATION 1982 (1982); ENVIRONMENTAL PROTECTION AGENCY, SURFACE IMPOUNDMENTS AND THEIR EFFECTS ON GROUNDWATER QUALITY IN THE UNITED STATES—A PRELIMINARY SURVEY (1978) [hereinafter cited as SURFACE IMPOUNDMENTS]; WORKSHOPS, *supra* note 5, at VIII.

69. For example, Vermont adopted its Groundwater Protection Strategy, based in part on the proposed Carter Strategy, in October 1982. Several other states either have adopted or are considering such policy statements. Three years after its proposal by the New York Department of Environmental Conservation, however, the policy for that state is still in the discussion stage. Telephone interview with Dan Halton, Director, Bureau of Water Resources, New York Dept. of Env. Cons., Dec. 30, 1982.

70. The EPA has apparently used Connecticut's aquifer classification scheme as a model for its own policy proposal. Telephone interview with Fred Banach, Principal Sanitary Engineer, Water Compliance Unit, Connecticut Dept. of Env. Protection, Dec. 30, 1982.

71. *Supra* note 68.

72. Although it is clear enough that when a water supply is polluted by A and claimant B is thereby deprived of its use, courts have often resisted application of allocation doctrines to pollution problems, prefering instead to rely on nuisance, trespass, or negligence law. For example, although the court in Rose v. Socony-Vacuum Corp., 54 R.I. 411, 173 A. 627 (1934), refused to apply the absolute ownership doctrine of groundwater allocation in Rhode Island, it found no liability for pollution of a water well absent negligence or lack of skill on the part of the polluter. It took that court almost half a century to reverse itself in Wood v. Picillo, 443 A.2d 1244 (R.I. 1982). In the later decision, however, Rose was regarded as having been based on nuisance doctrine. The authors of Rest. Second of Torts have insisted on treating problems of pollution and consumptive uses separately. *Compare* RESTATEMENT (SECOND) OF TORTS §§ 832, 849 *with* § 858. Many states now have permit systems to control withdrawals of groundwater, but few of them require consideration of the impact of such withdrawals on groundwater quality. For an examination of the Reagan Policy proposal to treat groundwater supply and groundwater pollution problems independently, see *infra* text at notes 127-52.

73. The limited utility of these doctrines stems from the difficulty in tracing pollution to its source, or in the case of nuisance, in demonstrating that the polluter has acted unreasonably.

planning and zoning decisions have often been concerned more with the local tax base, jobs or aesthetics than with groundwater protection.[74] While states have long regulated some activities which threaten groundwater quality—for example, individual septic tanks, road salting, and land subdivision[75]—decisions by various state and local agencies affecting groundwater have usually been made without effective coordination among agencies.[76] Even those states with statutory authority for meaningful planning and protection have often lacked the necessary funding or know-how.[77] It is for these reasons that Congress has directed that uniform federal standards be established in this area.

The proposed EPA policy, however, like the Agency's current practice, seems to contemplate a relaxation of many existing federal standards.[78] One state agency official remarked to the author that individual states will likely respond to more relaxed federal rules in one of three ways: 1) those with programs already more stringent than they need to be will not care; 2) others will find it hard to resist political pressures at home to loosen local rules; or 3) some will jump at the chance to attract new industry by adopting the least restrictive standards.[79] If current federal programs are not adequate to safeguard the public health, and they may not be, such a varied response by state regulators is cause for alarm. The second element of the Reagan Strategy, which limits the EPA's role to simply coordinating and encouraging state efforts, increases reason for concern.

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74. SHIFRIN & NOLAN, *supra* note 7, at 12.

75. A more extensive catalog is set forth in E. Selig, An Overview of Laws Dealing With Groundwater, address to the National Water Well Ass'n, Atlanta, Ga. (Sept. 22, 1982).

76. CARTER STRATEGY, *supra* note 3, at III-13, 14.

77. SURFACE IMPOUNDMENTS, *supra* note 68, at 144-48; *Special Report, Crisis in State Toxic Substances Management* [13 Current Developments] ENV'T REP. (BNA) 795 (1982).

78. *See, e.g., infra* text and notes at notes 164-65, 218, 257-58.

79. Telephone interview with Reginald P. LaRosa, Director of Environmental Engineering, Vermont Agency of Environment Conservation, December 30, 1982. For an example of the last response, California Governor Deukmejian recently announced plans to "reshape California's business climate and stimulate economic expansion and job creation." [13 Current Developments] ENV'T REP. (BNA) 2223 (1983). These goals would be met by cutting back state regulations and speeding up environmental review processes for siting new business facilities. *Id. See* NORTHEAST-MIDWEST INST., BUILDING A WATER POLICY CONSENSUS: KEY ISSUES FOR THE EIGHTIES 13 (Merkowitz ed., 1982). There is a fear among some state regulators that very aggressive state programs may actually be punished by the EPA. *See Special Report, supra* note 77.

B. The Proper Federal Rule is 1) to Coordinate and Implement Existing Federal Programs, and 2) to Encourage Voluntary State and Local Program Development.[80]

The EPA proposes to more effectively implement the federal statutory programs which it is required to administer, but it will leave to the states the primary responsibility for protection of groundwater. The EPA will encourage, but not require, the states to develop their own protective programs.[81] This means that in states which do not develop their own programs, federal programs will provide the only protection for groundwater.

1) Coordinating and Implementing Existing Federal Programs.[82]

The EPA administers a number of statutory programs which may affect groundwater quality, directly or only incidentally.[83] The Reagan Policy proposes using elements from each of these programs to build a "cohesive groundwater protection strategy."[84] The proposed policy would create new institutional links within the EPA and new relationships with other federal agencies, to facilitate a more efficient and consistent federal approach.[85] It also would develop specific guidelines or mechanisms for making more consistent EPA regulatory decisions that affect groundwater.[86]

If a wise federal policy can be articulated, it only makes sense for that policy to be observed throughout the federal government. In some instances, interagency coordination is required by statute. Thus, when the Secretary of the Interior adopts regulations under the Surface Mining Control and Reclamation Act relating to air or water quality standards, he or she must get the approval of the EPA Administrator.[87] In other cases, agencies have entered into cooperative agreements on their own initiative.[88] Otherwise, decisions affecting groundwater quality are made quite independently by a variety of federal agencies, in many cases without any consideration of groundwater impact.[89]

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80. REAGAN POLICY, *supra* note 16, at I., III.3.-6., IV.
81. *Id.* at IV.
82. *Id.* at I., III.4.-6., IV.
83. These are cataloged in WORKSHOPS, APPENDICES, *supra* note 6, at VII.
84. REAGAN POLICY, *supra* note 19, at III.4.
85. *Id.* at IV.
86. *Id.*
87. 30 U.S.C. § 1251 (1976 & Supp. V 1981).
88. The draft policy cites the example of a USGS-EPA Coordinating Committee.
89. For example, grants, loans or other assistance by the Economic Development Ad-

The draft policy does not reveal how other agencies would be encouraged or required to cooperate with the EPA. Nor is it clear which agency would be the lead agency in coordinating or enforcing the implementation of a unified federal policy.[90] One can imagine a policy which would be self-enforcing, like the Water Resources Council Principles and Standards for Planning,[91] and which would apply to all federal activities affecting groundwater. The current proposal, however, contains no such suggestion.

Within the EPA itself, we should expect close coordination of activities among the several regional offices and the national headquarters.[92] We might also expect the Agency to administer its various programs in a way that reflects some uniform agency policy. For this purpose the Agency proposes developing guidelines or mechanisms to cover such elements as:

1) The yield, quality, location of aquifer, vulnerability, and competing uses for groundwater to be protected;
2) Factors to consider in limiting groundwater contamination, including the nature of the contaminants, hydrogeological setting, use and potential human exposure;
3) Non-environmental factors to be considered, such as technical and administrative feasibility, cost, available alternatives, and other competing uses;
4) Level or type of monitoring needed to assure compliance with federal rules.[93]

But various federal statutes already set standards for some of these elements.[94] Other elements, such as cost, should not be allowed to influence some agency decisions.[95] In some cases the Agency, without ex-

ministration under the Housing and Community Development Act of 1974 require no consideration of groundwater effects unless they constitute a "major Federal action" under NEPA, *infra* text at notes 354-55, or affect a sole source aquifer, *infra* text at note 273. *See* WATER RESOURCES COUNCIL, GROUNDWATER MANAGEMENT: DISCUSSION OF ISSUES IV-2 (1981).

90. Assistant Administrator Eidsness has said that the EPA would not seek that role. [13 Current Developments] ENV'T REP. (BNA) 880 (1982).

91. 18 C.F.R. § 711 (1982). The Principles and Standards require systematic consideration of economic, environmental and social impacts in all federal planning for the use of water and land resources. It calls for a cost-benefit analysis utilizing both monetary and non-monetary factors. *See also* President Carter's Water Policy Initiatives, 14 WEEKLY COMP. PRES. DOC. 1044 (June 6, 1978).

92. The draft policy calls for creation of "institutional linkages at the headquarters and regional levels to enhance program and policy coordination in areas such as State delegations, regulations, research and data acquisition and storage." REAGAN POLICY, *supra* note 19, at IV.

93. *Id.*

94. For example, criteria for identification or listing of hazardous waste under RCRA § 3001(a), 42 U.S.C. § 6921 (1976 & Supp. V 1981), include "toxicity, persistence, and degradability in nature, potential for accumulation in tissue, and other related factors."

95. For example, cost is not a criterion in RCRA § 3001(a), 42 U.S.C. § 6921 (1976 & Supp. V 1981).

press statutory authority, has already applied standards developed in one statutory program to other programs.[96] The draft policy does not specify how uniform standards would be developed.

The EPA earlier hoped to promote internal consistency and efficiency and ease the regulatory burden on industries with the adoption of its Consolidated Permitting regulations in 1979.[97] Under the regulations, only one application need be filed to satisfy the requirements of RCRA, the UIC program, NPDES, Clean Water Act Section 404, and the Clean Air Act PSD rules.[98] In addition to assembling the permitting rules in one book and easing the administrative burden for the EPA, this procedure offered the potential for integrating surface and groundwater strategies and systematically considering all the possible environmental impacts for each applicant.[99] The Agency, however, recently announced its intention to deconsolidate the permitting process.[100] Thus, although the EPA states as the second tenet of the Reagan Strategy that it will effect groundwater policies in part through coordinating existing programs, it may in fact be moving away from that role.

Further, no amount of program coordination would do the job unless each individual program were fully implemented. Although the draft policy calls groundwater quality protection a "unifying goal linking all relevant EPA program activities,"[101] the Agency has hardly tested the limits of its authority under any of the federal environmental statutes. Within the range of its discretion under these statutes, it now seems determined to do as little as possible, either through direct regulation or by imposing minimum federal standards

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96. For example, Primary Drinking Water Standards promulgated under the Safe Drinking Water Act have been used as groundwater quality standards in regulations for the UIC program, *infra*, text at notes 266-71, and the RCRA hazardous waste program, *infra*, text at note 345.

97. 44 Fed. Reg. 34,244 (1979). *See* Comment, *EPA's Consolidated Permitting Regulations: Miracle or Mirage?*, 10 ENVTL. REP. (ENVTL. L. INST.) 10,092 (1980). Consolidated permitting is not expressly mandated in any of the statutes, but is said to be authorized by provisions like Clean Water Act § 501(a) ("prescribe such regulations as are necessary") and § 101(f) ("encourage the drastic minimization of paperwork" and "prevent needless duplication"). 40 C.F.R. § 122.1(d) (1982).

98. The rules are collected at 40 C.F.R. §§ 122-124 (1982).

99. It could, for example, provide some coordination between surface and groundwater protection programs. As things now stand, the fact that a surface stream recharges an aquifer which supplies drinking water will not be considered in issuing an NPDES permit for discharge into the stream. WORKSHOPS, *supra* note 6, at VI-4.

100. 48 Fed. Reg. 14,146 (1983). Grouping of permit requirements in this fashion is said to make completion of applications unnecessarily difficult and complex.

101. REAGAN POLICY, *supra* note 19, at III.4.

upon the states.[102] In view of this history, the Agency's proposal to coordinate and implement existing programs is hardly reassuring.

2) Encouraging Voluntary State and Local Program Development.[103]

The draft policy expresses the hope that states will develop their own "long-range plans which define groundwater problems and the legal and institutional means . . . to address those problems."[104] Such development would be entirely voluntary. States would be absolutely free either to "determine their own problems, approaches and resource priorities," or not to do so, as they saw fit.[105] The EPA would provide technical support and information to assist states in these efforts. It might, for example, furnish the states with regulatory models, or help to coordinate various state programs.[106]

This kind of *support* for state regulatory efforts already has been enormously helpful; but the current proposal contains no *incentives* for state compliance with any federal policy, only verbal encouragement. In fact, the Reagan Administration's withdrawal of financial support for state program development makes it likely that many states will do no more than they are required by federal statute to do. In addition, while the EPA says it wants to provide technical support and guidance for the states, it is proposing drastic reductions in Agency programs which would enable it to do what it says.[107]

To assure compliance by states with the various statutory requirements,[108] the EPA has until recently required each state to enter into an annual State/EPA Agreement (SEA).[109] The agreements

102. Proof is found in the promulgation of regulations and enforcement under each statute, discussed *infra* text and notes at notes 178-372.

103. REAGAN POLICY, *supra* note 19, at I. III.3., IV.

104. *Id.* at IV.

105. *Id.*

106. *Id.* The Reagan Policy reports that nearly thirty states have begun to develop or are implementing strategies for the protection of groundwater. *Id.* at III.3.

107. *See infra* text at notes 120-26.

108. EPA says it will delegate specific regulatory programs upon attainment of "legislative requirements." REAGAN POLICY, *supra* note 19, at IV. However, fewer than two-thirds of the states and territories have approved NPDES programs; a smaller percentage have fully approved UIC or hazardous waste programs.

109. "The Agreement will provide a way for EPA Regional Administrators and States to coordinate and, to the maximum extent feasible, integrate a variety of programs under the Clean Water Act, the Resource Conservation and Recovery Act, the Safe Drinking Water Act and, potentially, other laws administered by EPA." 43 Fed. Reg. 43,425 (1978). The SEA is described in detail, and guidelines for its preparation are set forth at 44 Fed. Reg. 17,294-308 (1979). Its practical operation is described in ENVIRONMENTAL PROTECTION AGENCY, SUMMARY PROCEEDINGS: NATIONAL WATER QUALITY MANAGEMENT CONFERENCE 35 (1980).

describe each state's regulatory activities and goals for the coming year under RCRA,[110] SDWA,[111] and portions of the Clean Water Act.[112] Under the Carter Administration, completion of an SEA was made a prerequisite for state funding under various programs.[113] The SEA was to provide the *only* significant federal incentive under the Carter Strategy for state conformity to federal water policy.[114] Such agreements, however, now have been made voluntary. The Reagan Policy provides simply that "[w]here mutually agreed, State/EPA agreements or other mechanisms may be used to arrive at an understanding of the activities to be accomplished by the State and EPA in this area."[115]

There is even some evidence that the EPA is no longer concerned with requiring strict compliance by states or by individual polluters with federal statutory programs. For example, the number of enforcement cases referred to the Justice Department for prosecution has fallen dramatically during the past two years.[116] Further, the

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Although there is no explicit statutory authority for such agreements, each of the acts named requires the adoption of "necessary" regulations or coordination with other environmental programs. *See, e.g.*, CWA § 501(a), RCRA § 1006(b).

110. 43 Fed. Reg. 43,425-27 (1978).

111. 43 Fed. Reg. 47,130-32 (1978).

112. 43 Fed. Reg. 40,742-43, 40,746-47 (1978), promulgated under CWA §§ 106, 208, 303(c); 44 Fed. Reg. 30,020, 30,026, 30,029 (1979), issued under CWA §§ 106, 208, 314 and 205(g); 45 Fed. Reg. 7792 (1980), issued under CWA § 314.

113. For example, "[b]eginning in fiscal year 1980, State programs funded under [RCRA] will be part of the State/EPA agreement, and the State/EPA agreement must be completed before grant award." 40 C.F.R. § 35.738-6 (1982). To the same effect is 40 C.F.R. § 35.1016(c) (1982), promulgated under CWA § 205. For an argument that the EPA may not have the authority to impose such a requirement, see ENVIRONMENTAL DEFENSE FUND, *supra* note 9, at 39.

114. CARTER STRATEGY, *supra* note 3, at VII-2, 4.

115. REAGAN POLICY, *supra* note 19, at IV.

116. Referrals of civil cases under all statutes totalled 200 in FY 1980, 116 in FY 1981, and 100 in FY 1982. [13 Current Developments] ENV'T REP. (BNA) 807 (1982). Perhaps in response to congressional criticism, there is some indication that the pace of referrals is beginning to increase. [13 Current Developments] ENV'T REP. (BNA) 1029 (1982). A new Agency policy purportedly aimed at boosting case referrals would allocate enforcement personnel among the regions according to the number and type of cases referred in the past. While one region would gain, however, the others would lose up to half their enforcement staffs in FY 1983. [13 Current Developments] ENV'T REP. (BNA) 920 (1982).

The EPA is not solely responsible for the reduced enforcement effort. A staff memorandum of the House Energy and Commerce Subcommittee on Oversight and Investigations, dated March 9, 1983, concluded that the number of hazardous waste cases prosecuted by the Department of Justice has dropped sharply since 1980. While 88% of cases referred by the EPA to the Justice Department during FY 1980 were filed, in 1982 and 1983 to date only 13% and 14% of the cases were filed, respectively. Of 16 Superfund cases referred during 1982 and 1983, only one has been filed. [13 Current Developments] ENV'T REP. (BNA) 2075 (1983). H.R. 2867, 98th Cong., lst Sess. (1983), would amend RCRA to give the EPA authority to bring its own enforcement action if the Justice Department failed to act within 30 days of a referral.

Agency has proposed rule changes which would make it harder to monitor each state's progress or even for a state to monitor its own progress.[117]

State regulators long have relied on federal technical assistance in implementing their own programs. Many states lack either the financial means or the technical competence to develop much needed new information about groundwater pollution transport mechanisms, health effects, etc. Thus, it makes sense for the federal government to conduct research on groundwater pollution and its control, due to the enormous cost and complexity of the task, especially when the results of each study can often be applied in more than one state.[118] Yet, while the EPA says it intends to "maintain a strong and productive research and development program with emphasis on effective transfer of information, methods, and technology to State officials,"[119] it has made drastic reductions in its research and development budget.[120]

Beyond any failure of federal incentives or technical support, the EPA recently has begun to withdraw direct financial support for state program development. No grants would be made for the express purpose of implementing federal policy.[121] Funding for groundwater protection planning under the Clean Water Act Section 208 was ended in FY 1982,[122] and reduced grants to states under various statutory programs are planned.[123] In fact, former

117. For example, the EPA proposes to abandon its annual reporting requirement for hazardous waste generators under RCRA, and instead to conduct a biennial survey of 10% of such generators. This would deprive not only state and federal regulators, but also individual citizens, of information needed to monitor compliance with federal requirements. 47 Fed. Reg. 44,932 (1982).

118. Consideration of the economies of scale support centralization of this work and duplication of effort in the various states would be wasteful. *See* WATER RESOURCES COUNCIL, *supra* note 89, at V-3.

119. REAGAN POLICY, *supra* note 19, at IV, III.6.

120. The FY 1984 appropriation approved by Congress includes Research and Development funding of $142.7 million, about half of the $270 million provided in FY 1981. [14 Current Developments] ENV'T REP. (BNA) 396 (1983).

121. Memo from Groundwater Policy Group, *supra* note 8, at 9. In the same document the cost to the states through FY 1984 is estimated at as much as $9.5 million. States would, however, be free to substitute groundwater protection for other work now supported through federal grants. *Id.* at 2.

122. Some state regulators hope to continue groundwater planning with funding under the UIC program, Clean Water Act § 106, or § 205(j).

123. Original EPA budget proposals would have reduced grants for hazardous waste programs from $44 million in FY 1983 to $40 or $42 million in FY 1984; for UIC programs from $7 million to $6 million; and for public water supply protection from $27 million to $21 million. [13 Current Developments] ENV'T REP. (BNA) 1371 (1983). The appropriations bill approved by Congress is only slightly more generous. [14 Current Developments] ENV'T REP. (BNA) 396 (1983).

Administrator Gorsuch has stated that it was her belief that *all* state environmental grants should eventually be eliminated.[124] The states, however, are heavily dependent on such funds. Federal funds now supply about one-half of state environmental budgets,[125] and recent surveys of state administrators indicate that with funding cuts proposed for the FY 1984 budget, many states will let delegated programs go *back* to EPA, while other states simply will not qualify for primacy over their own programs in the first place.[126] It is likely that without federal assistance, other state programs not mandated by federal statute will also be dropped.

In short, the proposed policy offers no new federal incentives for compliance by the states, yet it asks the states to take a more active role in ensuring groundwater purity. In this respect, the proposal seems unrealistic, if, in fact, it is intended to provide more than the minimum protection for groundwater already mandated by statute.

C. The Regulation of Water Use and Water Rights is Within the Exclusive Province of the State.[127]

We have learned a lot since the Vermont Supreme Court declared in 1855:

> The secret, changeable, and uncontrollable character of underground water in its operations, is so diverse and uncertain that we cannot well subject it to the regulation of law, nor build upon it a system of rules, as is done in the case of surface streams.[128]

In the intervening time "the science of groundwater hydrology as well as societal concern for environmental protection has developed dramatically. As a matter of scientific fact the courses of subterranean waters are no longer obscure and mysterious."[129] It is fair to say that questions of groundwater movement and quantity and groundwater quality now are known to be inextricably linked in many instances.[130] Thus, it is surprising that the EPA would propose

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124. [13 Current Developments] ENV'T REP. (BNA) 924 (1982).

125. William Drayton, Chairman, American Environmental Safety Council [13 Current Developments] ENV'T REP. (BNA) 925 (1982). To the same effect is a survey by the National Governors' Association, *reported in* U.S. WATER RESOURCES COUNCIL, STATE OF THE STATES: MANAGEMENT OF ENVIRONMENTAL PROGRAMS IN THE 1980s (1982).

126. *Id.* Another survey with similar results is reported in [13 Current Developments] ENV'T REP. (BNA) 64 (1982). *See also* Pasztor, *supra* note 64.

127. REAGAN POLICY, *supra* note 19, at III.7.

128. Chatfield v. Wilson, 28 Vt. 49, 54 (1855).

129. Wood v. Picillo, 443 A.2d 1244, 1249 (R.I. 1982).

130. The Reagan Policy declares, "[w]ater quality and water quantity are closely linked." REAGAN POLICY, *supra* note 19, at III.7.

a national program to control groundwater pollution without asserting any authority over groundwater allocation. Its desire to leave issues of water use and water rights entirely to the states seems misguided.

We are now aware of many instances where groundwater extraction and diversion have affected groundwater quality. Many communities have experienced saltwater intrusion into fresh aquifers as a result of groundwater pumping.[131] Others have seen pollution "plumes" from waste dumps or disposal wells diverted by groundwater withdrawals, either within an aquifer or between aquifers.[132] In some cases, the perforation of impermeable strata by wells has allowed the migration of pollutants between aquifers. The resulting destruction of freshwater supplies has been enormously costly, as well as dangerous.[133]

These problems will be alleviated or prevented only through conjunctive management of pollution sources and groundwater withdrawals. Decisions about the siting and operation of pollution sources commonly require consideration of effects on drinking water supplies. By the same token, no water supply well of any sort should be installed without consideration of all the environmental effects. The EPA hopes that states will take into account the effects of such decisions if and when they develop their own comprehensive management strategies.[134] But the Agency "will not in any way invade this jurisdiction" of the states by directly regulating local groundwater use.[135] Where the states fail to undertake such conjunctive management, of course, the goals expressed in the national policy may not be met.

Groundwater allocation questions have usually been resolved by state authorities applying state laws. The effect of these state laws, however, is quite limited. While statutory permit systems have been adopted in most western states,[136] fewer than half the eastern states have any centralized planning or control of groundwater use.[137]

131. The physical problems, along with examples and proposed solutions, are described in MAGNUSON & MILLER, GROUNDWATER USE MANAGEMENT IN THE NORTHEAST: EXPERIENCE AND RECOMMENDATIONS, in GROUNDWATER USE MANAGEMENT IN THE NORTHEASTERN STATES 31 (L. Raymond ed. 1981); E. Selig, *supra* note 75, at 23-30.

132. *Id.*

133. *Id.*

134. REAGAN POLICY, *supra* note 19, at III.7.

135. *Id.*

136. One of the newest is the Arizona Groundwater Code, ARIZ. REV. STAT. §§ 45-401 to 637 (Supp. 1982).

137. As of June 1979, only 13 of 31 eastern states had any permit system for allocation of groundwater. WATER RESOURCES COUNCIL, *supra* note 89, at II-1.

None of the permit systems is really comprehensive.[138] Most require no consideration of the effect of withdrawals on water quality.[139] In addition, all states exempt some types of users (such as single family domestic consumption)[140] or amounts (for example, up to 50,000 gallons per day capacity),[141] or both, from regulation. Some regulate withdrawals only in areas or at times of critical shortages.[142] Where no permit scheme is applicable the decisional law of the state, enforced through two-party litigation, is controlling. In short, there is, with rare exception, no conjunctive management of groundwater quantity and quality by the states at this time.

Federal, not state, law has controlled the allocation of water among the states,[143] and in certain cases, has determined the result of claims by individual citizens against their own states.[144] Federal rules also have prevailed over contrary state laws in cases involving interstate commerce,[145] the power to tax and spend,[146] or use by the federal government of its own property.[147] Because the national interest in controlling groundwater pollution is so strong, there seems to be no want of constitutional authority for federal rules to control groundwater allocations as well, at least where a withdrawal might affect groundwater quality.[148] That states traditionally have controlled such allocations should not change the result.[149]

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138. Permit programs for the various states are described in WATER RESOURCES COUNCIL, STATE OF THE STATES: WATER RESOURCES PLANNING AND MANAGEMENT—GROUND WATER SUPPLEMENT (1981).

139. The New York law is an exception, in permitting limitations on certain wells on Long Island where salt water intrusion, for example, might result from overpumping. N.Y. ENVTL. CONSERV. L. § 15-1527 (McKinney 1973 & Supp. 1983).

140. FLA. STAT. ANN. § 373.326(2) (West 1974).

141. ARIZ. REV. STAT. § 45-454 (Supp. 1982).

142. *See, e.g.*, N.J. STAT. ANN. § 58:1A-4 (West 1982).

143. Allocations are made either judicially, through equitable apportionment, *see, e.g.*, Kansas v. Colorado, 206 U.S. 46 (1907), or by act of Congress, *see, e.g.*, Arizona v. California, 373 U.S. 546 (1963).

144. *See, e.g.*, Badgley v. City of New York, 606 F.2d 358 (2d Cir. 1979).

145. *See, e.g.*, First Iowa Hydro-Electric Cooperative v. Federal Power Comm., 328 U.S. 152 (1946), where state law would have prevented federal licensing of a hydro-electric dam; or Sporhase v. Nebraska, 102 S. Ct. 3456 (1982), where a state statute would have restricted the export of groundwater.

146. *See, e.g.*, United States v. Gerlach Livestock Co., 339 U.S. 725 (1950).

147. *See, e.g.*, Cappaert v. United States, 426 U.S. 128 (1976).

148. If rules for controlling water quality are properly grounded in the Commerce Clause, for example, so would be rules for water allocations which affect water quality.

149. In Hodel v. Virginia Surface Mining and Reclamation Ass'n, 452 U.S. 264 (1980), the Court refused to strike down portions of the federal Surface Mining Control and Reclamation Act on grounds that it interferes with the states' "traditional governmental function" of regulating land use.

Certainly, the federal government should make decisions about its own activities affecting groundwater availability in a way that is consistent with its own groundwater quality programs. There is some opinion that the federal government should give financial and technical aid to states for development of their own conjunctive management strategies.[150] Perhaps it also should demand that state groundwater allocations, however made, be consistent with federal pollution control programs.[151] One way to do this would be to require a groundwater quality impact analysis before any groundwater withdrawal could be made. In the event of a substantial impact, a withdrawal would be permitted by state regulators only if it did not conflict with some federal program.[152] It makes no more sense to insist on perfect state autonomy in such a case than it does to argue that, because states traditionally make land use decisions, a state permitted skyscraper can be erected at the end of a federally approved airport runway.

Thus, the EPA's policy of leaving questions of groundwater allocation entirely to the states seems misguided. This policy ignores the limited extent to which states consider water quality in making allocation decisions. It also fails to take into account the legitimate federal interests affected by groundwater withdrawals.

D. Groundwater Quality Protection Should be Based Upon Current and Projected Uses of the Water.[153]

A central premise of the Reagan Policy is that groundwaters should be protected in varying degrees only to the extent needed for "current and projected future uses."[154] The reason given is that all groundwaters are not of the same value, some serving a critical human or ecological need, others being so polluted that restoration is not feasible. Judgments would be made, albeit in the face of great uncertainty, about uses to be assigned to each aquifer, and protective

150. WATER RESOURCES COUNCIL, *supra* note 89, at V-7.

151. *Id.* at V-9. The Carter Strategy hinted at such a requirement in proposing that state strategies describe the interrelationship between federal programs and "state programs related to groundwater quantity and allocation uses." CARTER STRATEGY, *supra* note 3, at VII-3.

152. Such a requirement could be imposed as part of an approved state permitting process. This sort of "cooperative federalism" may be seen in various statutory programs. *See, e.g.*, a description of the surface mining program in Hodel v. Virginia Surface Mining and Reclamation Ass'n, 452 U.S. 264, 289 (1981).

153. *Id.* at II, IV.

154. *Id.* at II.

strategies would be fashioned for each aquifer accordingly. What is envisioned is a kind of zoning scheme for groundwaters, perhaps without any uniform standards to guide local decisionmakers. A policy of "non-degradation", one which is designed to prevent all detectable contamination, is expressly rejected as unfeasible.[155]

The Carter Strategy proposed the classification of each aquifer within every state "according to the differing degrees of protection warranted."[156] The EPA meant to develop detailed standards for classification, requiring consideration not only of present and future uses, but also of groundwater quality, yield, vulnerability to degradation, and availability of alternative supplies.[157] Levels of control for various polluting activities, from siting or technical requirements to outright bans, then would have been applied to each aquifer depending upon the use chosen.[158] The Reagan Policy mentions no such standards or control techniques, saying only that protection must be carried out "within statutory and economic constraints,"[159] recognizing the need for "flexibility to accommodate the great variations across the nation in natural climatic, geologic and hydrologic conditions and in the uses of groundwater."[160] Under either proposal, classification would be the job of the states.[161]

These classification schemes resemble the assignment of uses to surface waters under Section 303 of the Clean Water Act.[162] Unlike the Clean Water Act, however, neither proposal would require the application of uniform water quality criteria, based on scientific and technical factors, for each type of use. According to the EPA, technological bases for specification of groundwater quality standards

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155. *Id.*

156. CARTER STRATEGY, *supra* note 3, at V-5. Possible classifications ranged from "highly valued drinking water" at one extreme, to "limited waste disposal" at the other. *Id.* at VII-5. All groundwaters were to be presumptively classified at lower levels only after a "full and formal public review." *Id.* at VII-6. A similar presumption under the UIC program now has been abandoned. *See infra* notes 257-58.

157. CARTER STRATEGY, *supra* note 3, at VII-4.

158. *Id.* at VII-7. Where a federal program such as RCRA was involved, controls were to be at least as stringent as those prescribed in EPA regulations.

159. REAGAN POLICY, *supra* note 19, at II.

160. *Id.*

161. *Id.* at II, IV; CARTER STRATEGY, *supra* note 3, at VII-8. At least 15 states have already established aquifer classification systems. WATER RESOURCES COUNCIL, *supra* note 89, at II-4. Classification of aquifers is already contemplated in several federal statutes. *See, e.g.*, CWA § 106(e)(1), 33 U.S.C. § 1256(e)(1) (1976) (grants for pollution control programs); CWA § 201, 33 U.S.C. § 1281 (1976 & Supp. V 1981); municipal wastewater treatment guidelines, *infra* note 224; UIC program "exemption" of aquifers, *infra* text at notes 260-61.

162. The development of water quality standards for surface waters is discussed *infra* text and notes at 180-81.

are "simply not ready."[163] Yet, the success of the classification scheme is entirely dependent upon the maintenance of an appropriate groundwater quality standard for each aquifer.

Both proposals expressly reject a policy of nondegradation. Until very recently, the EPA has enforced a policy designed to "protect and enhance" the quality of air and surface waters and to forbid their degradation.[164] The Carter Strategy (and perhaps the Reagan Policy) would allow the deliberate lowering of groundwater quality from current levels, even to curtail existing uses, where competing uses such as waste disposal, energy production, agricultural or industrial uses were determined to be "necessary and appropriate."[165]

The proposal to make the degree of protection dependent on use is remarkable in several ways. First, it assumes that future drinking water and other needs can be reliably predicted. Of course, more than ordinary "judgment" will be required to accurately forecast patterns of growth, development and resettlement, competing uses, or the availability of alternate supplies, say, fifty or one hundred years into the future. The plain truth is that current use designations often will *determine* future uses, since it may be difficult to adjust the water quality in a given aquifer to accommodate changing needs.[166]

Second, even if we could accurately predict future needs, it may be impossible to predict the effects of current acts of degradation. The Carter Strategy recognized that "it is extremely difficult, if not impossible, at our current state of knowledge, to analyze changes in groundwater quality as a result of a particular land-use activity."[167] Such a realization counsels adoption of the most conservative approach to pollution control. Yet, a policy which permits certain activities believed to affect water quality according to anticipated future

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163. "There is more to be done in the areas of monitoring, groundwater modeling, fate and effect research, and other areas before groundwater quality standards can broadly serve as a basis for regulatory requirements at individual sites." CARTER STRATEGY, *supra* note 3, at VIII-3.

164. The EPA's long-standing non-degradation policy, and current plans to abandon it, are described *infra* note 218.

165. CARTER STRATEGY, *supra* note 3, at VII-7.

166. "[B]ecause it may often be exceedingly difficult and expensive to clean up groundwater once it is contaminated, a decision to classify groundwater now suitable for drinking for a less protective use can have far-reaching and, in some cases, devastating consequences." CARTER STRATEGY, *supra* note 3, at VII-5. The durability of groundwater pollutants is documented in SHIFRIN & NOLAN, *supra* note 7, at 1.

167. CARTER STRATEGY, *supra* note 3, at III-7. Furthermore, "groundwaters often remain underground for hundreds of years; contaminants deposited today in a given location may emerge miles away in the twenty-third century or beyond." *Id.* at VI-3.

use assumes that the extent of groundwater degradation *can* be predicted.

Third, downgrading of uses (and consequently of levels of control) by state and local regulators would create new opportunities, not based on any existing expectations, for private polluters to impose some of their costs on the public. There would be fewer incentives for product substitution, recycling of wastes, or development of new processes which generate fewer pollutants. Resulting industry migrations could be expected to make achievement of national uniformity impossible.

Certainly those activities which present a serious *risk* of groundwater contamination should be relegated to areas in which any pollution, *if it occurs*, would be least injurious. If hazardous wastes, for example, *must* be disposed of on or in the ground, it makes sense to locate a disposal facility so that if its containment is breached a major source of drinking water will not be destroyed.[168] The classification of an aquifer to permit its deliberate contamination, however—in effect to create a sacrifice zone—seems advisable only under the most extraordinary circumstances.

E. Existing Statutory Programs Will Enable Us to Meet Groundwater Protection Goals.[169]

The Reagan Policy, like the Carter Strategy before it, maintains that existing federal, state, and local laws will enable the protection of groundwater "without the creation of an additional Federally mandated program structure."[170] Local governments will exercise traditional land use planning and police powers. States will create special purpose districts or enforce statewide standards, and federal statutory authority will be exercised by all three levels of government.[171]

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168. RCRA regulations discussed *infra* notes 278-92, may provide little peace of mind, since there now is considerable evidence that all landfills eventually leak. *Infra* text and note at note 348. Vermont's Groundwater Protection Strategy (1982) creates two classes of aquifers: one which does or might serve as a community drinking water supply, to be given special protection; another representing all other uses. While the second type could be exposed to *risks* of contamination, deliberate degradation would not be allowed. Connecticut's program does permit discharges into one type of aquifer. STATE OF CONN., DEPT. ENVTL. PROTECTION, CONNECTICUT WATER QUALITY STANDARDS & CRITERIA 6 (1980).

169. REAGAN POLICY, *supra* note 19, at I., II.2.

170. *Id.* at III.2.

171. *Id.*

Many state regulators, however, feel that they lack sufficient statutory authority to protect groundwaters.[172] Local officials, too, are often frustrated by such limitations.[173] There may be, as the EPA suggests, ample federal authority to do the job, but that authority is meaningless unless it is exercised. In the development of a national groundwater policy, we have to be concerned not only with the adequacy of enabling legislation, but also with the resolve of the EPA to implement it.

Until now, the Agency has not always pursued its authority vigorously, but for a variety of reasons, has dragged its feet and taken the line of least resistance.[174] As the following discussion indicates, it has been consistently late in promulgating regulations.[175] It has often been reluctant to enforce either statutory directives or its own rules,[176] and it has refused to test the limits of its authority under many statutes, preferring instead a more restrictive view of its responsibilities.[177] The EPA appears to be guided already by an unannounced policy of non-exercise and non-intervention. The current proposal would only make that policy public.

The next section briefly examines the Agency's interpretation and application of the major federal acts affecting groundwater. It will be shown that the EPA probably does have sufficient authority to protect the nation's groundwaters, if only that authority were exercised. Where current authority is in doubt, reforms are suggested to make that authority clearer or more effective.

IV. Federal Statutory Programs.

A number of federal statutes directly address the protection of our nation's groundwaters. Many others, in their implementation, affect groundwater use or groundwater quality. Taken together, these acts reflect a strong *Congressional* policy to safeguard the health of our citizens and their environment through protecting groundwater

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172. Perhaps three-quarters of state officials feel their statutory authority is inadequate. Shifrin & Nolan, *supra* note 7, at 18.

173. *Id.*

174. The reasons usually given for the EPA's lack of progress in this area are overwork, underfunding, and the great technical complexity of the subject. Carter Strategy, *supra* note 3, at III-11, IV-1. Recent EPA proposals to cut its own staff and budget, however, indicate that the Agency believes those obstacles now have been overcome.

175. *See, e.g., infra* note 311.

176. Various examples appear in the following section, *infra* text and notes at notes 131-308.

177. *See, e.g., infra* text and notes at notes 185-202.

quality. The following discussion outlines the most important existing legislation, and explains how the Environmental Protection Agency has exercised its authority under these statutes.

A. Clean Water Act

In the 1972 Amendments to the Federal Water Pollution Control Act (commonly referred to as the Clean Water Act),[178] Congress clearly expressed its concern over the growing threat from groundwater pollution. It directed the EPA to "develop comprehensive programs for preventing, reducing, or eliminating the pollution of the navigable waters and groundwaters and improving the sanitary condition of surface and underground waters."[179] Reference was made throughout the Act to groundwaters, as well as to navigable waters, or more often simply to "waters." Both in the language of the Act and in its history there is considerable evidence that Congress intended the application of the same uniform regulatory mechanism for the protection of groundwaters that is plainly provided for surface waters. As the following discussion reveals, however, there is some evidence to the contrary, that it was Congress' intent that the various states retain control over their respective groundwater resources, with the assistance but not the direct intervention of the EPA.

The primary regulatory strategy of the Clean Water Act (CWA) consists of end-of-the-pipe source limitations, coupled with standards for water quality. Briefly, the EPA is required by Section 304(a) of the Act to develop and publish criteria for water quality, and to provide information on the "factors necessary to restore and maintain the chemical, physical, and biological integrity" of both navigable waters and groundwaters.[180] This information is used to promulgate water quality standards under Sections 303(a)-(c), which establish designated uses for particular bodies of water and quality standards based upon such uses.[181] The EPA must also publish guidelines under Section 304(b) for the purpose of adopting or revising end-of-the-pipe discharge limitations described in Section 301.[182] These ef-

178. 33 U.S.C. §§ 1251-1376 (1976 & Supp. V 1981) [hereinafter cited as CWA].

179. CWA § 102(a), 33 U.S.C. § 1281 (1976 & Supp. 1981).

180. 33 U.S.C. § 1314(a)(2)(A) (1976). Criteria for quality of *surface* waters, consisting of numerical standards for 48 specific pollutants, plus guidance on such related matters as smell, color and hardness, are found in ENVIRONMENTAL PROTECTION AGENCY, QUALITY CRITERIA FOR WATER (1976), 41 Fed. Reg. 32,947 (1976).

181. The procedure for establishment of water quality standards is described in Mississippi Comm. on Natural Resources v. Costle, 625 F.2d 1269 (5th Cir. 1980).

182. 33 U.S.C. § 1314(b) (1976 & Supp. V 1981).

fluent limitations are applied in the issuance of permits pursuant to the National Pollutant Discharge Elimination System (NPDES) outlined in Section 402.[183] A discharger, however, may be restricted even further if its discharge would threaten established water quality standards.[184] Other sections of the Act deal with planning for publicly owned waste treatment works, toxic pollutants, and a host of other water quality problems. The applicability of the Clean Water Act to activities affecting groundwater will now be examined by reviewing EPA efforts to apply the statute in several settings.

1) Three Cases Involving Underground Injections

In 1974, the EPA brought suit to require a permit for the disposal of organic chemical wastes into deep wells by the GAF Corporation.[185] No surface discharge permit was involved and no effect on any surface water supply was alleged. The district court found that no permit can be required until effluent limitations for groundwater are promulgated under Section 301.[186] In a second, and far more important holding, the court found that the EPA lacked authority under the Clean Water Act to directly regulate groundwater pollution at all, at least insofar as such pollution is not alleged to flow into or otherwise affect surface waters.[187] On the strength of this single

183. Sections 402(b)-402(f), 33 U.S.C. § 1342(b)-1342(f) (1976 & Supp. V 1981), provide that a state may establish its own discharge permit system to operate in lieu of the one administered directly by the EPA under § 402(a), 33 U.S.C. § 1342(e) (1976 & Supp. V 1981).

184. Water quality related effluent limitations are prescribed in 33 U.S.C. §§ 1311(b)(1)(c), 1312, and 1313(d) (1976). The relationship between these three sections is explained in Homestake Mining Co. v. EPA, 477 F. Supp. 1279, 1284-86 (D. S. Dak. 1979). *But see*, 33 U.S.C. §§ 1311(g) and 1311(h) (1976 & Supp. V 1981) describing circumstances in which an effluent limitation might be relaxed if public health or achievement of the 1983 fishable/swimmable standard in § 1251(a)(2) (1976) would not be jeopardized.

185. United States v. GAF Corp., 389 F. Supp. 1379 (S.D. Tex. 1975).

186. *Id.* at 1385-87. This in spite of the plain language of § 402(a)(1), 33 U.S.C. § 1342(a)(1) (1976), which states that even prior to taking implementing action with regard to listed sections, including § 301, 33 U.S.C. § 1311 (1976 & Supp. V 1981), the EPA may issue permits upon "such conditions as the Administrator determines are necessary to carry out the provisions of this chapter."

The courts are not yet in agreement on this point. *Compare* Republic Steel Corp. v. Train, 557 F.2d 91 (6th Cir. 1977), Ford Motor Co. v. EPA, 567 F.2d 661 (6th Cir. 1977), Washington v. EPA, 573 F.2d 583 (9th Cir. 1978), approving the holding in GAF, *with* NRDC v. Train, 510 F.2d 692, 710 (D.C. Cir. 1974), United States Steel Corp. v. Train, 556 F.2d 822, 830 (7th Cir. 1977), and United States v. Frezzo Bros., 602 F.2d 1123 (3d Cir. 1979). Republic Steel Corp. v. Train seems to be overruled, at least in part, by Republic Steel Corp. v. Costle, 581 F.2d 1228, 1231 (6th Cir. 1978).

187. GAF Corp., 389 F. Supp. at 1383-85. The GAF case is critically examined in Eckert, *EPA Jurisdiction Over Well Injection Under The Federal Water Pollution Control Act*, 9 NAT.

decision, not appealed by the EPA, and of an earlier opinion of its own General Counsel,[188] the Agency has issued no regulations for direct federal controls of groundwater discharges.

The EPA did decide, however, to require permits for groundwater discharges "associated" with surface water discharges.[189] This policy was challenged two years later in two factually similar cases, *Exxon v. Train*[190] and *United States Steel Corp. v. Train.*[191] In *Exxon*, the Fifth Circuit Court of Appeals decided that the EPA had no authority to limit waste disposals into deep wells, since the Clean Water Act only requires permits for discharges in "navigable" waters.[192] It also found that Section 402(b)(1)(D), providing that state NPDES programs must have the authority to control well disposals, did not give the EPA the same authority.[193] The court found

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RES. L. 455 (1976); Wilson, *Ground Waters: Are They Beneath the Reach of the Federal Water Pollution Control Act Amendments?*, 5 B.C. ENVT'L AFF. L. REV. 545 (1976); Note, *United States v. GAF Corp: A Leak in FWPCA?*, 6 ENVTL. L. 561 (1975).

188. Memorandum from Acting Deputy General Counsel, EPA, to Regional Counsel, Region IX, regarding Applicability of NPDES to Disposal of Pollutants into Wells, Dec. 13, 1973. The opinion is reproduced in Exxon Corp. v. Train, 554 F.2d 1311, 1320 n.21 (5th Cir. 1977). It states that the Agency's jurisdiction over groundwater discharges is limited to cases where a discharge into surface waters also is proposed or is occurring. This conclusion was based on a reading of CWA § 502(12), 33 U.S.C. § 1362(12) (1976), in which the term "discharge of a pollutant" is defined as "any addition of any pollutant to navigable waters." *Id.* at 1321 n.21. Since groundwaters are not navigable, the reasoning went, a discharge to groundwater could not, by itself, constitute a discharge requiring a permit under § 402, 33 U.S.C. § 1342 (1976 & Supp. V 1981). *Id.* at 1321 n.21.

189. 40 C.F.R. § 125.26(a), reproduced in Exxon Corp. v. Train, 554 F.2d 1310, 1320 (5th Cir. 1977). This policy was reiterated in Decision of the General Counsel No. 6 (April 8, 1975), reprinted *id.*

190. 554 F.2d 1310 (5th Cir. 1977).

191. 556 F.2d 822 (7th Cir. 1977).

192. 554 F.2d at 1318. Echoing the EPA General Counsel's earlier opinion, the court held that since § 502(12) defines "discharge of pollutant" as "any addition of any pollutant to *navigable* waters," the EPA has no authority to limit discharges into deep wells, since groundwaters, as such, are not navigable. This construction was earlier rejected in *GAF Corp.*, where the court observed that in § 502(7) "navigable waters" means "the waters of the United States, including the territorial seas." Said the *GAF Corp.* court, "[t]his definition effectively excludes from consideration any concept of navigability, in law or in fact." 389 F. Supp. at 1383. The *Exxon* court was simply mistaken in its contrary reading of *GAF Corp.* 554 F.2d at 1318 n.17.

The Conference Report on the 1972 Amendments referred to § 502(7) as follows: "The conferees fully intend that the term 'navigable waters' be given the broadest possible constitutional interpretation unencumbered by agency determinations which have been made or may be made for administrative purposes." S. REP. No. 1236, 92d Cong., 2d Sess. 144 (1972).

193. 554 F.2d at 1322. The *GAF Corp.* court found that "Congress could not possibly have meant to achieve in roundabout fashion what it expressly declined to accomplish straightforwardly." 389 F. Supp. at 1385. The *U.S. Steel* court, however, found the same authority in the EPA, since § 402(a)(3) provides that the EPA's permit program "shall be subject to the same terms, conditions, and requirements as apply to a state program." 556 F.2d at 852.

in the "structure" of the Act "a clear pattern of Congressional intent . . . of federal information gathering and encouragement of state efforts to control groundwater pollution," but not of direct federal control.[194] This conclusion is borne out, the court said, by the legislative history.[195]

In *United States Steel*, however, decided only six weeks earlier,[196] the Seventh Circuit Court had reached the opposite conclusion on the scope of the EPA's authority. That court described the Agency's permit requirement for deep well disposals as part of an overall effort to limit surface discharges.[197] Said the court, "EPA . . . could have properly concluded that too little is known about the effects of discharges into groundwaters to justify allowing increases in them."[198] Moreover, it found in the language of the Act and in its history evidence that Congress intended to provide federal controls of waste disposal into wells.[199]

No regulations have been promulgated under § 402(b)(1)(D), and it is not clear whether or how a state could be compelled to exercise the authority which it is required to demonstrate.

194. 554 F.2d at 1322. In support of this conclusion the court cited §§ 102(a), 104(a)(5), 106(e)(1), 208(b)(2)(K), 202(a)(2) (renumbered (b)(2)), 304(a), and 304(e) (renumbered (f)) as calling for disparate treatment of groundwaters, although some certainly apply with equal force to surface waters. To be sure, § 304(f), which requires the Administrator to issue information about "the disposal of pollutants in wells or in subsurface excavations," is not expressly linked, like § 304(b), to the development of effluent limitations. Other activities in the same section, however, such as mining, have been found to be point sources subject to direct control. *See, e.g.*, Sierra Club v. Abston Const. Co., 620 F.2d 41, 45 (5th Cir. 1980).

195. The court quoted from a report of the Senate Committee on Public Works, S. REP. NO. 414, 92d Cong., 1st Sess. 73 (1971):

> Several bills pending before the Committee provided authority to establish Federally approved standards for groundwaters which permeate rock, soil, and other subsurface formations. Because jurisdiction regarding groundwater is so complex and varied from state to state, the Committee did not adopt this recommendation.

554 F.2d at 1325. *See also* United States v. GAF Corp., 389 F. Supp. 1379, 1383 (S.D. Tex. 1975).

Both courts also attached great importance to the defeat on the House floor of an amendment which would have, among other things, extended unequivocally the regulatory reach of §§ 303(c), 502(11) and 502(12) to groundwater. 554 F.2d at 1327-29. The same amendment, however, would have removed the exemption in § 502(6) for injections related to oil and gas production. Most of the debate on the amendment centered on this latter issue, and some of it reflects an assumption by House members that injection wells would, unless expressly exempted, be regulated, 118 CONG. REC. 10,666 (1972). There is reason to believe that the entire amendment was defeated by the lobbying efforts of the petroleum industry.

196. *U.S. Steel* was decided on May 13, 1977, *Exxon* on June 27 of the same year. The *Exxon* court did not refer to the *U.S. Steel* case.

197. 556 F.2d at 851 n.60.

198. *Id.* 852 n.61.

199. For example, because of the express exclusion of injections for oil and gas production under § 502(6)(B), the court applied the canon *expressio unius est exclusio alterius*, to hold that other kinds of undergound injections may properly be regulated under § 402(a)(3) and (b). 556 F.2d at 852. A different interpretation of the legislative history is set forth, *id.* at 852-53.

Surprisingly, the decision in *Exxon* was not appealed by the EPA. While the regulation tested in these two cases is still on the books, the Agency has accepted the *Exxon* decision as "controlling in light of the Safe Drinking Water Act's coverage of underground waters."[200] Nevertheless, as the following discussion indicates, under the EPA's current interpretation of the Safe Drinking Water Act[201], a permit might not be required today for the types of underground injections which gave rise to the *Exxon, United States Steel,* or *GAF Corp.* cases.[202]

2) Regulation of Indirect Sources

The Agency has been more aggressive in asserting its authority to regulate pollution sources other than wells which do not connect directly or immediately with navigable waters. Since NPDES permits are required only for discharges from point sources,[203] in a number of cases, EPA authority has depended upon factual determinations that such sources were "point sources."[204] The case law indicates that the EPA has considerable discretion in characterizing a particular type of discharge as being from a point source.[205] Once it is so characterized, however, the Agency must regulate that dis-

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200. Memorandum from EPA General Counsel to Region II Director, Water Division, May 29, 1979, 43 Fed. Reg. 37,081 (1978).

201. *See infra* text and notes at notes 243-71.

202. With regard to the EPA's reliance on SDWA to control one source of groundwater pollution, it should be noted that after nine years, the Agency still has not promulgated final regulations for all types of wells under the UIC program.

203. CWA § 301(a), 33 U.S.C. § 1311(a) (1976), makes the "discharge of a pollutant unlawful," except in compliance with various numbered sections of the Act, including § 402, 33 U.S.C. § 1342 (1976 & Supp. V 1981). Section 502(12), 33 U.S.C. § 1362(12) (1976) says "discharge of a pollutant" means "any addition of any pollutant to navigable waters from any point source." The rationale for this limitation is not entirely clear.

204. The term "point source" is defined in § 502(14) to mean,

> any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. The term does not include return flows from irrigated agriculture.

33 U.S.C. § 1342(14) (1976 & Supp. V 1981). A "non-point source" has been defined as "one that does not confine its polluting discharge to one fairly specific outlet, such as a sewer pipe, a drainage ditch or a conduit." S. REP. No. 414, 92d Cong., 1st Sess. 98-99 (1971).

205. NRDC v. Costle, 568 F.2d 1369 (D.C. Cir. 1977) (concerning regulations for stormwater, agricultural and silvicultural sources). The EPA has successfully characterized as point sources coal mining spoil piles, Sierra Club v. Abston Const. Co., 620 F.2d 41 (5th Cir. 1980); coal storage areas, Consolidation Coal Co. v. Costle, 604 F.2d 239 (1979); a gold leaching operation, United States v. Earth Sciences, Inc., 599 F.2d 368 (10th Cir. 1979); a compost heap, United States v. Frezzo Bros., 602 F.2d 1123 (3d Cir. 1979); uncollected agricultural

charge.[206] Because CWA Section 502(14) expressly mentions a "well" as one type of point source, the decision not to regulate well discharges is puzzling.[207]

Other cases have addressed the need for a point source to discharge *directly* into navigable waters. One recent decision rejects the suggestion of such a requirement as frivolous.[208] Other courts have reached the same result by a liberal reading of the term "navigable waters," either treating diffused surface and groundwaters as tributaries,[209] or regarding such waters as "waters of the United States" within the meaning of Section 502(7).[210]

Although there is no evidence that the EPA has sought to extend its influence to groundwaters, as such, these indirect source cases suggest that it is responsible for regulating at least those point sources where a "clear hydrological nexus" exists between groundwaters affected by a discharge and a navigable waterway.[211] Such an interconnection certainly could be shown in many instances, and perhaps should be *presumed* in every case, requiring the discharger to disprove the existence of any threat to the nation's waters.

The EPA has recognized the potential for requiring NPDES permits for groundwater pollution, but it has dismissed the idea with the

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runoff, United States v. Oxford Royal Mushroom Products, Inc., 487 F. Supp. 852 (E.D. Pa. 1980); and a garbage dump, O'Leary v. Moyer's Landfill, Inc., 523 F. Supp. 642 (E.D. Pa. 1981). *But see* Appalachian Power Co. v. Train, 545 F.2d 1351 (4th Cir. 1976).

206. NRDC v. Costle, 568 F.2d 1369, 1377-78 (D.C. Cir. 1977).

207. The *GAF Corp.* court simply disregarded this explicit reference to follow what it called "the straight path of legislative history" to a different conclusion. 389 F. Supp. at 1304.

208. O'Leary v. Moyer's Landfill, Inc., 523 F. Supp. 642, 647 (E.D. Pa. 1981). In debate over the 1972 Amendments, Mr. Dingell remarked:

> It is quite clear that section 502(12) of the bill, in defining the term "discharge of a pollutant," does not in any way contemplate that the discharge be directly from the point source to the waterway. The situation is analogous to the court's holding in several cases, including the United States v. Esso Standard Oil Co. of Puerto Rico, 375 F.2d 621 (3d Cir. 1967), where a discharge from a port facility flowed "indirectly," that is by force of gravity over land to a waterway.

118 CONG. REC. 33,758 (1972).

209. *See, e.g.*, United States v. Texas Pipeline Co., 611 F.2d 345 (10th Cir. 1979). One court has observed:

> For the purposes of the Act to be effectively carried into realistic achievement, the scope of its control must extend to all pollutants which are discharged into any waterway . . . where any water which might flow therein could reasonably end up in any body of water, to which or in which there is some public interest, including underground waters.

United States v. Phelps Dodge Corp., 391 F. Supp. 1181, 1187 (D. Ariz. 1975).

210. *See, e.g.*, United States v. Weissman, 489 F. Supp. 1331 (M.D. Fla. 1980).

211. This term was used in Kentucky v. Train, 9 E.R.C. 1281 (E.D. Ky. 1976), to describe the responsibility of the EPA to fix water quality standards for subsurface waters.

brief explanation that there are "substantial legal problems" with it.[212] As a practical matter, of course, it may be difficult to develop uniform effluent limitations for groundwater discharges which would be appropriate for all sources and locations. Uniform numeric standards are not required by the Clean Water Act, however, even for surface waters.[213] A more flexible approach to permitting could still enable the sort of comprehensive program which Congress envisioned.[214]

3) Protection of Surface and Groundwater Quality

To complement its end-of-the-pipe discharge limitations, the Clean Water Act calls for establishment of water quality standards[215] to help "restore and maintain" the integrity of the nation's waters.[216] The EPA has adopted regulations and guidelines to set standards for the quality of *surface* waters within each state.[217] Until recently it has had a policy to prevent the degradation of surface waters, even though cleaner than the standards require.[218] It has taken no action, however, to directly regulate groundwater quality. Although Section 304(a) requires the Administrator to develop "criteria" and "information" on the quality of groundwaters, it never has done so; nor has the Agency required that states set their own standards for groundwater quality. It has refused to impose any federal require-

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212. WORKSHOPS, APPENDICES, *supra* note 6, at VI-20, 21.

213. NRDC v. Costle, 568 F.2d 1369, 1379 (D.C. Cir. 1977). Where numeric effluent limitations are unfeasible, permit conditions may prescribe practices and procedures to minimize pollution. *Id.* at 1379. Such conditions are expressly authorized in § 402(a)(2).

214. A number of state laws apply simply to "waters of the state," including groundwaters. SPDES programs in those states sometimes require permits for discharges to groundwaters. SURFACE IMPOUNDMENTS, *supra* note 68, at 138-144.

215. CWA § 303(a)-303(d), 303(f)-303(h), 33 U.S.C. § 1313(a)-1313(d), 1313(f)-1313(h) (1976 & Supp. V 1981).

216. CWA § 101(a), 33 U.S.C. § 1251(a) (1976).

217. See *supra* notes 180-81.

218. This nondegradation policy has been applied in the periodic review of state water quality standards under § 303(c). 40 C.F.R. §§ 35.1550(c)-(e) (1982). The policy is also described in 43 Fed. Reg. 29,588 (1978), and in ENVIRONMENTAL PROTECTION AGENCY, GUIDELINES FOR STATE AND AREAWIDE WATER QUALITY MANAGEMENT PROGRAM DEVELOPMENT (1976). Although existing water uses must be preserved, water cleaner than the 1983 fishable/swimmable standard in § 101(a)(2) may be degraded to that level as a result of "necessary and justifiable economic or social development." 40 C.F.R. § 35.1550(c), (e) (1982). CWA § 301(g), (h), added in 1977, would also permit some degradation.

In recently proposed changes to water quality rules, the Agency would abandon its nondegradation policy for surface waters, 47 Fed. Reg. 46,668 (1982). In the face of legislation which would codify existing water quality regulations, however, the Agency may withdraw its proposal. [14 Current Developments] ENV'T REP. (BNA) 646 (1983).

ments, even where an aquifer is shown to have a clear connection to a surface body.[219]

The result, of course, is a system which fully protects neither surface nor groundwaters. Congress, however, clearly recognized the interdependence of these two resources in calling for a "comprehensive program" of protection.[220] Such a program necessarily includes the monitoring and control of pollution both on the surface and underground.

4) Other Clean Water Act Authority

Several other sections of the Clean Water Act have been employed by the EPA, either in the planning or funding of state programs, or for the prevention or cleanup of inadvertent discharges which could migrate to groundwaters. There has been no deliberate regulation, however, of surface water discharges which might contaminate groundwater supplies, or vice-versa.

Section 208(b) calls for each state to develop a continuing area-wide waste treatment management planning process, including, among other things, "a process to control the disposal of pollutants on land or in subsurface excavations within such area to protect *ground* and surface water quality."[221] The Section 208 plan must describe best management practices (BMPs) selected by the local authority to control nonpoint sources of surface and groundwater contamination.[222] Funding for Section 208 planning has until recent-

219. Memorandum from EPA General Counsel to Director, Water Division, Region II (May 29, 1979) at 4. The General Counsel expressly rejected the holding in Kentucky v. Train, 9 E.R.C. 1281 (E.D. Ky. 1976), relying instead on legislative history to show that federal standards for groundwaters should not be required.

220. CWA § 102(a). "Water moves in hydrologic cycles and it is essential that discharges of pollutants be controlled at the source." S. REP. NO. 414, 92d Cong., 1st Sess. 77 (1971). In United States v. Ashland Oil & Transp. Co., 504 F.2d 1317 (6th Cir. 1974), the court declared that "Congress' clear intention . . . was to effect marked improvement in the quality of the total water resources of the United States, regardless of whether that water was at the point of pollution a part of a navigable stream." *Id.* at 1323.

221. CWA § 208(b)(2)(K), 33 U.S.C. § 1288(b)(2)(K) (1976) (emphasis added). Section 208(b) also requires development of processes to identify and control pollution from agriculture, silvicultural, mining and construction sources, and salt water intrusion resulting from fresh water diversions, including groundwater extractions. Section 208(b)(2)(F)-208(b)(2)(I), 33 U.S.C. § 1288(b)(2)(F)-1288(b)(2)(I) (1976 & Supp. V 1981). These provisions roughly parallel the requirements in § 304(f), 33 U.S.C. § 1314(f) (1976 & Supp. V 1981) for publication of federal guidelines.

Early on, the EPA decided that § 208, 33 U.S.C. § 1288 (1976 & Supp. V 1981), plans had to reflect the Agency's antidegradation policy for surface waters. *See* 40 Fed. Reg. 55,341 (1975). It has not, however, used the process to apply that policy to groundwaters.

222. Such practices are defined by the regulations only in the most general terms. *See* 40 C.F.R. § 35.1521-4(c)(1) (1982).

ly provided a major impetus for state groundwater protection efforts,[223] but such funding now has been curtailed by the EPA.

Section 201(g) authorizes funding for the construction of publicly owned treatment works which conform to approved Section 208 plans. Provision must be made for disposal of wastes from the treatment facility itself in a fashion that will not threaten underground water sources.[224] More broadly, Section 201(b) provides for "disposal of pollutants so that they will not migrate to cause water or other environmental pollution."[225] Thus, with or without funding, consideration must be given to alternative waste treatment techniques which will cause the least possible destruction to the environment, including groundwaters.[226]

Two sections require planning for accidental discharges which could affect groundwater. Section 304(e), adopted in 1977, calls for the development of best management practices for classes or categories of point sources to control plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage. The controls are aimed only at toxic or hazardous pollutants. Although the purpose is ostensibly to protect "navigable" waters, underground waters could also benefit from such efforts.[227] Such BMPs are only applicable as conditions in NPDES permits for point sources, however, and so could not affect a variety of nonpoint sources. Section 402(a)(2) also authorizes the Administrator to prescribe conditions for NPDES permits which could be fashioned to protect groundwaters in individual cases.[228]

Section 311 requires that on-shore facilities which may spill oil or hazardous substances on the ground, thus threatening groundwater supplies, adopt measures to prevent such spills or to clean them up if

223. Several examples are described in SHIFRIN & NOLAN, *supra* note 7, at 16.

224. 40 C.F.R. § 35.1521-4(f) (1982). Disposal of such wastes must be coordinated with requirements of Subtitles C and D of RCRA. *Id.*

225. 33 U.S.C. § 1281(b) (1976).

226. In EDF v. Costle, 439 F. Supp. 980 (E.D.N.Y. 1977), the Agency refused, after extensive experiments, to allow onland disposal of wastes in order to protect a groundwater supply. It instead issued a NPDES permit for discharge into surface waters. *Id.* at 1001-02. The Administrator has published information on alternatives pursuant to § 304(d)(2) in ENVIRONMENTAL PROTECTION AGENCY, ALTERNATIVE WASTE MANAGEMENT TECHNIQUES FOR BEST PRACTICABLE WASTE TREATMENT (1975).

227. The word "navigable" is omitted from the regulations, 40 C.F.R. § 125.102 (1982), where discharges must apply BMPs "for all activities which may result in significant amounts of those pollutants reaching waters of the United States." Criteria and standards for BMPs are found *id.* § 125, Subpart K.

228. The Administrator may impose "such conditions as . . . are necessary to carry out the provisions of this Act," § 402(a)(1), 33 U.S.C. § 1342(e)(1) (1976), and so is not restricted to the limitations contained in § 304(e), 33 U.S.C. § 1314(f) (1976 & Supp. V 1981).

they occur.[229] Guidelines for Spill Prevention Control and Countermeasure (SPCC) plans are contained in EPA regulations for the oil industry,[230] but not yet for other kinds of facilities.[231] The same section mandates preparation of a National Contingency Plan to direct federal and state efforts when spills occur, to minimize their impact on the environment.[232]

Finally, Section 504 gives the Administrator the authority to bring suit in an emergency to stop any discharge of pollutants which threatens the health or welfare of persons, or "to take such other action as may be necessary."[233] This section and similar provisions in the Safe Drinking Water Act and Resource Conservation and Recovery Act[234] have been used by the EPA a number of times to force the cleanup of materials which could destroy groundwater supplies. There still is considerable disagreement about whether these provisions are merely jurisdictional—a codification of the federal common law of nuisance[235]—and about whether these powers can be invoked by the EPA to deal with abandoned sites.[236] On a case-by-case basis,

229. CWA § 311(j)(1)(C), 33 U.S.C. § 1321(j)(1)(C) (1976). "Hazardous substances" in this instance are those defined under § 311(b)(2)(A), 33 U.S.C. § 1321(b)(2)(A) (1976 & Supp. V 1981).

230. 40 C.F.R. §§ 112.1-.7 (1982).

231. Proposed regulations requiring SPCC plans for facilities with NPDES permits may be found at 43 Fed. Reg. 39,276 (1978). No regulations have even been proposed for facilities not requiring NPDES permits. Such regulations, when they are promulgated, are to require coordination of SPCCs with § 304(e) BMPs. *Id.*

232. CWA § 311(c)(2), 33 U.S.C. § 1321(c)(2) (1976 & Supp. V 1981). The National Contingency Plan has recently been updated to satisfy requirements of the Superfund law, *infra*, text and notes at notes 362-372.

233. 33 U.S.C. § 1364(a) (1976 & Supp. V 1981).

234. The corresponding sections are SDWA § 1431(a), 42 U.S.C. § 300(a) (1976), and RCRA § 7003, 42 U.S.C. § 6973 (1976 & Supp. V 1981). CWA § 504 is concerned with a "pollution source or combination of sources [which] is presenting an imminent and substantial endangerment to the health of persons or to the welfare of persons where such endangerment is to the livelihood of such persons." 33 U.S.C. § 1364(a) (1976 & Supp. V 1981). RCRA § 7003 is broader in addressing threats to "health or the environment," and has been invoked more often. SDWA § 1431(a) concerns only a "contaminent which is present in or is likely to enter a public water system." 42 U.S.C. § 300(a) (1976). These provisions are examined in Skaff, *The Emergency Powers in the Environmental Protection Statutes: A Suggestion for a Unified Emergency Provision*, 3 HARV. ENVTL. L. REV. 298 (1979); Comment, *Hazardous Waste: EPA, Justice Invoke Emergency Authority*, 10 ENVTL. L. REP. (ENVTL. L. INST.) 10,034 (1980); Note, *Inactive or Abandoned Hazardous Waste Disposal Sites: Coping With a Costly Past*, 53 S. CAL. L. REV. 1709 (1980).

235. If a section merely reflects the common law of nuisance, then the action will be subject to all the defenses available in such cases. For decisions holding that the provisions are merely jurisdictional, see United States v. Midwest Solvent Recovery, Inc., 484 F. Supp. 138 (N.D. Ind. 1980); United States v. Solvents Recovery Service of New England, 496 F. Supp. 1127 (D. Conn. 1980). *But see* United States v. Price, 523 F. Supp. 1055 (D.N.J. 1981); United States v. Vertac Chemical Corp., 489 F. Supp. 870 (E.D. Ark. 1980).

236. *Compare* United States v. Price, 523 F. Supp. 1055 (D.N.J. 1981) (statute does not

however, they have furnished powerful, flexible tools for quickly averting such threats.[237]

Together, these provisions have the potential to form part of an integrated program for groundwater protection. That potential has been recognized by the EPA,[238] but not yet fully realized.

5) Potential for the Clean Water Act

The language of the Clean Water Act is unfortunately murky on a number of points. There is, however, plenty of evidence indicating that its regulatory apparatus was meant to apply with equal force to ground and surface waters. For example, during House debate on the 1972 Amendments, Representative Kemp stated that "[f]or the first time groundwaters have been given the same emphasis as surface waters . . . . [The Act] is an important step forward in the protection of the underground environment."[239] In addition, several courts have declared that in enacting the 1972 Amendments, Congress intended to "extend the Act's jurisdiction to the Constitutional limit,"[240] which clearly would encompass groundwater protection.

It would be extremely convenient to use the existing NPDES machinery[241] to control *all* groundwater discharges from *any* source. In the process, overlaps and gaps in coverage under the other federal acts would be avoided. The Consolidated Permitting program described above[242] furnishes a useful model. Until the EPA tests the limits of its authority, of course, we can not be certain how far the Act extends. A citizen's suit under Section 505 to require the Administrator to perform a nondiscretionary duty to control groundwater pollution could provide the catalyst for settlement of this question. In the meantime, if Congress would clarify its intent, it could make the whole regulatory and enforcement program unquestionably applicable to groundwater by simply deleting the word "navigable" wherever it appears in the Act.

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authorize general cleanup but does grant relief from further leaking into groundwater), *with* United States v. Waste Industries, Inc., No. 80-4-Civ-7 (E.D.N.C. 1983) (RCRA § 7003 does not apply to abandoned sites).

237. In these cases, the EPA need not comply with various formal requirements of the National Contingency Plan, as it would under CWA § 311 or under the Superfund Law. *See infra* text and notes at notes 364-65.

238. WORKSHOPS, APPENDICES, *supra* note 6, at VI.

239. 118 CONG. REC. 33,766 (1972), reported in *U.S. Steel,* 556 F.2d 822 at 852-53.

240. For recent cases, see Avoyelles Sportsmen's League v. Alexander, 511 F. Supp. 278, 285 (W.D. La. 1981), and cases cited therein.

241. *See supra* text and notes at notes 180-84.

242. *See supra* text and notes at notes 92-100.

B. Safe Drinking Water Act

Although the primary purpose of the Safe Drinking Water Act (SDWA)[243] is the establishment of state programs to regulate "public water systems,"[244] it also contains two strategies for protecting underground sources of drinking water. One is contained in the Underground Injection Control (UIC) program,[245] which regulates "the subsurface emplacement of fluids by well injection."[246] The other, contained in Section 1424(e) (known as the Gonzalez Amendment), provides some protection for "sole source" aquifers,[247] which are aquifers found to be the sole or primary drinking water source for a particular region.

The UIC program enables states to adopt their own regulations to prohibit any underground injection, except those authorized by permit or rule.[248] No injection may be allowed which would endanger "drinking water sources."[249] For this purpose, an injection is proscribed if it:

> may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such systems not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.[250]

If a state fails to adopt an approved UIC program, or having adopted one fails to enforce it, the EPA must install its own program.[251]

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243. 42 U.S.C. § 300f-300j (1976 & Supp. V 1981). Textual references hereinafter are to section numbers of the Act as enacted by Congress. An excellent history may be found in Douglas, *Safe Drinking Water Act of 1974—History and Critique*, 5 B.C. ENVT'L AFF. L. REV. 501 (1976).

244. "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 fifteen service connections or regularly serves at least twenty-five individuals . . . ." SDWA § 1401(4), 42 U.S.C. § 300f(4) (1976).

245. *Id.* §§ 1421-1424(d), 1425, 42 U.S.C. § 300h (1976 & Supp. V 1981). Regulations for the program are found at 40 C.F.R. §§ 122-124, 146 (1982).

246. SDWA § 1421(d)(1), 42 U.S.C. § 300h(d)(1) (1976 & Supp. V 1981).

247. This second strategy is described *infra* text and notes at notes 272-277.

248. *Id.* §§ 1421-1422, 42 U.S.C. § 300h-300h(1) (1976 & Supp. V 1981).

249. *Id.* § 1421(b)(1), 42 U.S.C. § 300h(b)(1) (1976 & Supp. V 1981).

250. *Id.* § 1421(d)(2), 42 U.S.C. § 300h(d)2 (1976). Specifications for the design of injection wells, and conditions for their operation, either by permit or by rule, are set forth at 40 C.F.R. § 146 (1982).

251. SDWA § 1422(c), 42 U.S.C. § 300h-1 (1976). The EPA recently announced proposed programs for each of 23 states and territories still lacking approved programs. 48 Fed. Reg. 40,098 (1983).

The EPA has now decided to rely entirely upon the UIC program to control all types of subsurface waste disposals.[252] Such reliance seems unwarranted for several reasons. First, by its terms, the program applies only to "underground injections."[253] Under the EPA's interpretation of this term, the disposal of wastes either in a hole wider than it is deep, or on the surface, will not require a UIC permit.[254] Furthermore, the program applies only to the disposal of "fluids."[255] Thus, emplacement of solid materials (even soluble ones) would seem to fall outside the reach of the program, even if they were placed directly into an aquifer used to supply a public water system.[256]

The Agency has further limited the applicability of the UIC program. The availability of a UIC permit depends upon the effect of an injection on an "underground source of drinking water" (USDW).[257] The Agency has recently decided that only an aquifer which currently supplies or has enough water to supply a public water system will be classified as a USDW.[258] Thus many private wells, especially those in rural areas, are left exposed to contamination. By concentrating solely on public water supplies, the Agency seems to have ig-

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252. Memorandum from EPA General Counsel, *supra* note 200.

253. SDWA § 1421(b)(1), 42 U.S.C. § 300h(b)(1) (1976 & Supp. V 1981).

254. "*Underground injection* (UIC) means a well injection . . . *Well injection* (UIC) means the subsurface emplacement of 'fluids' through a bored, drilled, or driven 'well'; or through a dug well, where the depth of the dug well is greater than the largest surface dimension." 40 C.F.R. § 122.3 (1982). *See also* 40 C.F.R. § 122.31(d)(1)(ii) (1982).

Congress recognized the threat to underground drinking water sources from surface impoundments of fluids when, in SDWA § 1442(a)(8)(c), it ordered a study of "ponds, pools, lagoons, pits, or other surface disposal of contaminants in underground water recharge areas." The results may be found in EPA, SURFACE IMPOUNDMENTS, *supra* note 68. An updated study in draft form has been leaked to the press, [13 Current Developments] ENV'T REP. 1503 (BNA) (1983).

255. "*Fluid* (UIC) means any material or substance which flows or moves whether in a semi-solid, liquid, sludge, gas, or any other form or state." 40 C.F.R. § 122.3 (1982).

256. Under § 1431 of the Act, however, the Administrator may move to prevent or abate such an action if the material is present in or is likely to enter a public water system and "may present an imminent and substantial endangerment to the health of persons." 42 U.S.C. § 300 (1976 & Supp. V 1981). *See supra* note 234. In some cases disposal of solid hazardous wastes in wells will be covered by the Resource Conservation and Recovery Act. 40 C.F.R. § 122.45 (1982).

257. *Id.* § 122.31(d). The EPA initially decided that each aquifer within a state should be regarded as a USDW if it supplied drinking water for human consumption *or* if it contained fewer than 10,000 mg/l of total dissolved solids. This meant that every aquifer within each state, except for the dirtiest ones, would be protected. 40 C.F.R. § 122.3 (1981).

258. 40 C.F.R. § 122.3 (1982). H.R. 3200, 98th Cong., 1st Sess. (1983), would amend the SDWA to expand the definition to include a source which "[m]ay reasonably be anticipated to be capable of supplying any public water system if such system utilized technologically advanced treatment which may become available."

nored the broader mandate of Section 1421(d)(2) to prevent groundwater contamination which "may otherwise adversely affect the health of persons."[259]

In addition, EPA regulations provide that an aquifer may be "exempted" from UIC protection if it does not currently serve as a source of drinking water, and cannot or will not be so used in the future because:

1) It is mineral, hydrocarbon, or geothermal energy producing, or is expected to become so;
2) It is at a depth or location making its use for drinking water economically or technologically impractical;
3) It is so contaminated that it would be impractical to render it fit for human consumption; or
4) It contains between 3,000 and 10,000 mg/l of dissolved solids.[260]

There is, however, no express authority for such an exemption in the Act. Further, by exempting aquifers that are already dirty, of course, we may simply be excusing the worst current groundwater polluters from compliance with the program. Such an exemption also ignores the possibility that a polluted acquifer may be cleaned up or may even cleanse itself if left alone. The decision to sacrifice a potential drinking water source for mineral or energy production, or for waste disposal, requires a confidence about future conditions which probably is not justified.[261]

Finally, the EPA has developed a classification scheme for the estimated 500,000 active injection wells in this country.[262] Each well is assigned to one of five categories, according to what is put into it or "injected", and according to its proximity to a drinking water

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259. 42 U.S.C. § 300h(d)(2) (1976 & Supp. V 1981).

260. 40 C.F.R. § 146.04 (1982). An aquifer also may be exempted if it is located over a Class III well mining area subject to subsidence or catastrophic collapse. *Id.* No aquifer is an "exempted aquifer" until it has been affirmatively so designated. *Id.* § 122.31(d).

261. "Generally," the EPA suggests, "the exceptions allowed in the UIC program will come into play, if at all, with regard to deeper aquifers . . . and then only if the portions of the aquifer do not have real potential to serve as drinking water sources." 44 Fed. Reg. 23,743 (1979). Agency policy on exemptions is explained further at 48 Fed. Reg. 40,098 (1983).

262. The classification scheme and its consequences are described at 40 C.F.R. §§ 122.31(d)-.34 (1982).

source.[263] General standards have been developed for the design and operation of four of the five categories of wells,[264] while individual siting and other specifications are set for each well.[265] There is wide disagreement, both inside and outside the Agency, about the technical soundness of these requirements. For example, the decision to rely on the Primary Drinking Water Standards as groundwater quality criteria for permitting well injections[266] has been criticized.[267] Such standards are designed to take into account the *cost* of treating water for use in a public water system,[268] while the UIC program requires that decisions be made finally to protect the "health of persons," without any mention of cost.[269] In any event, the standards cover only a few contaminants[270] and are thought by some to be too lax to adequately protect the public health.[271]

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263. The classes may be summarized as follows:

CLASS	FUNCTION	NUMBER OF WELLS
I	Industrial, municipal or hazardous waste disposal, beneath the deepest stratum containing a drinking water source within 1/4 mile of well bore.	400
II	Disposal of non-hazardous fluids brought to the surface in connection with oil and gas production or to increase recovery of oil or gas.	140,000
III	Injection of fluids for solution mining of minerals.	8,000
IV	Hazardous or radioactive waste disposal into or above strata that contain drinking water sources within 1/4 mile.	5,000-10,000
V	All other wells, *e.g.*, air condition-return flow wells	250,000-500,000

The numbers of wells appear with slightly different definitions in WORKSHOPS, APPENDICES, *supra* note 6, at V-10, 11.

264. 40 C.F.R. §§ 146.5-.52 (1982); 47 Fed. Reg. 32,129 (1982). Because of their great number and diversity, regulations to cover Class V wells have not yet been established, even though as a group such wells may pose a great threat to the public and the environment.

265. 40 C.F.R. §§ 146.11-.52 (1982).

266. *Id.* § 122.34.

267. *See* ENVIRONMENTAL DEFENSE FUND, *supra* note 9, at 26-32.

268. SDWA § 1412(b)(3), 42 U.S.C. § 300g-1(b)(3) (1976). The standards are set forth at 40 C.F.R. §§ 141.1-.40 (1982).

269. *See supra* text at notes 250.

270. Maximum contaminant levels have been established for only 10 inorganic chemicals, 7 organic chemicals, turbidity, coliform bacteria and some radioactive materials. 40 C.F.R. §§ 141.11-.16 (1982). The legislative history makes it clear that the protection of the Act should extend to "any injected substance (or derivative thereof), whether or not that substance is a contaminant subject to national primary drinking water regulations." H.R. REP. No. 1185, 93rd Cong., 2d Sess., *reprinted in* 1974 U.S. CODE CONG. & AD. NEWS 6481.

271. The failure by the EPA to adopt any standards for some dangerous pollutants, and the

Under the second groundwater protection strategy contained in the SDWA,[272] Section 1424(e),[273] if the Administrator finds that an aquifer is the sole or principal drinking water source for an area, no federally assisted project may be undertaken which could create a significant hazard to public health by contaminating that aquifer through a recharge zone.[274] Although the amendment was added for the particular purpose of preventing development of a large housing project overlying the Edwards Aquifer north of San Antonio,[275] at least ten aquifers nationwide now have received "sole source" designations.[276] The utility of this provision may be hampered by the fact that several of its operative terms are not clearly defined,[277] and there is as yet no indication how vigorously the EPA will exercise its authority to control development within the designated areas.

The Safe Drinking Water Act provides important safeguards for some groundwater sources. Unfortunately, however, it offers no protection, except incidentally, for agricultural or industrial groundwater users, or for surface water appropriators hydrologically connected to polluted aquifers. Moreover, as discussed above, because of the EPA's restricted interpretation of its mandate under this statute, even the limited potential of the Act for protection of public health has not been realized.

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failure to adopt more stringent standards for others, were challenged unsuccessfully in Environmental Defense Fund v. Costle, 578 F.2d 337 (D.C. Cir. 1978). One proposed amendment to the Act, H.R. 3200, 98th Cong., 1st Sess. (1983), would require the EPA to set standards for 14 volatile organic chemicals and for all toxic materials listed under CWA § 307.

272. It is suggested that a third strategy exists in the statutory mandate to promulgate drinking water regulations, prescribing "technology, treatment techniques, and other means." SDWA §§ 1412(a)(2), (b)(3), 42 U.S.C. §§ 300g-1(a)(2), 300g-1(b)(3) (1976). *See* Tripp & Jaffe, *Preventing Groundwater Pollution: Towards a Coordinated Strategy to Protect Critical Recharge Zones*, 3 HARV. ENVTL. L. REV. 1, 18 (1979). The EPA, however, has not seized upon this broad language to control groundwater discharges.

273. 42 U.S.C. § 300h-3(e) (1976 & Supp. V 1981). The Gonzalez Amendment is described generally in Hemphill, *Section 1424(e) of the Safe Drinking Water Act: An Effective Measure Against Groundwater Pollution?*, 6 ENVTL. L. REP. (ENVTL. L. INST.) 50,121 (1976); Wheatley and Castaneda, *Protection of Underground Drinking Water Supplies—The Gonzalez Amendment to the Safe Drinking Water Act*, 8 ST. MARY'S L.J. 40 (1976).

274. SDWA § 1424(e), 42 U.S.C. § 300h-3(e) (1976). A recharge area (or zone) is "[a]n area in which an aquifer is recharged by force or gravity, usually where a permeable layer lies close to the surface." 7 WATERS AND WATER RIGHTS 308 (R. Clark, ed. 1976).

275. Wheatley & Castaneda, *supra* note 273. The same project was the subject of earlier litigation in Sierra Club v. Lynn, 502 F.2d 43 (5th Cir. 1974), where the court remarked, "[t]he developer must meet any state or federal standards that are established in the future. More importantly, the developer must act to prevent the (project) from degrading the existing water quality in the aquifer." *Id.* at 63-64.

276. Regulations for only one aquifer, the Edwards Aquifer, have been published, 40 C.F.R. § 149 (1982), but they may provide a pattern for the others.

277. "Federal assistance" is defined in the statute as "a grant contract, loan guarantee, or

C. Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA),[278] like the Safe Drinking Water Act, is intended to complement the Clean Water Act by controlling a particular major source of groundwater pollution, namely the "disposal"[279] of "solid wastes"[280] in the environment.[281] The Act is intended to halt the open dumping of all wastes,[282] to prevent the mishandling of hazardous wastes which could especially endanger human health or the environment,[283] and to encourage the recycling of materials.[284] As with other Congressional efforts, however, the language of the Act itself and its limited interpretation by the EPA have prevented the full realization of its goals.

1) Elimination of Open Dumps

Several RCRA provisions were designed to eliminate open dumps, which threaten groundwater supplies. Both by statutory design, and

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otherwise." This has been taken to mean that a project of the federal government itself, or of a federal licensee, would not be affected. 42 Fed. Reg. 51,620 (1977). It is not clear what percentage of the drinking water for an area must be furnished before an aquifer may be characterized as "sole or principle" source. Also, the meanings of "contaminate" and "significant hazard" are not spelled out.

278. 42 U.S.C. §§ 6901-6987 (1976 & Supp. V 1981). Textual references hereinafter are to sections of the Act as passed by Congress.

279. The term "disposal" is broadly defined in RCRA § 1004(3), to mean the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

280. 42 U.S.C. § 6903(3) (1976). "Solid waste" includes "[g]arbage, refuse, sludge . . . and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities." RCRA § 1004(27), 42 U.S.C. § 6903(27) (1976). A survey by the EPA has revealed the existence of more than 180,000 pits, ponds and lagoons around the country whose liquid contents would constitute solid waste for this purpose. Ninety percent of them threaten groundwater supplies; 15% contain waste that may be considered hazardous. [13 Current Developments] ENV'T REP. (BNA) 1503 (1983).

281. "[T]he approach taken by this legislation eliminates the last remaining loophole in environmental law, that of unregulated land disposal of discarded materials and hazardous wastes." H. REP. NO. 1491, 94th Cong., 2d Sess. 4 (1976), *reprinted in* 1976 U.S. CODE CONG. & ADM. NEWS 6241. The genesis of the Act is described in Kovacs & Klucsik, *The New Federal Role in Solid Waste Management: The Resource Conservation and Recovery Act of 1976*, 3 COLUM. J. ENVTL. L. 205, 216-20 (1977).

282. RCRA §§ 1003, 1008, and Subtitle D, 42 U.S.C. §§ 6902, 6907, 6941-6949 (1976 & Supp. V 1981).

283. *Id.* § 1003 and Subtitle C, 42 U.S.C. §§ 6902, 6921-6931 (1976 & Supp. V 1981).

284. *Id.* §§ 1003, 5001-5004, 6002, 8005-8006, 42 U.S.C. §§ 6902, 6951-6954, 6962, 6985-6986 (1976 & Supp. V 1981).

by EPA interpretation of those provisions, however, the effectiveness of RCRA in eliminating open dumps is in doubt.

RCRA Section 1008[285] calls for the publication of "suggested guidelines" for management of the four billion tons of solid wastes generated in this country every year.[286] The EPA's guidelines for land disposal, the most threatening source of groundwater contamination, consist of criteria and operating standards for "sanitary landfills," designed primarily for municipal wastes.[287] Hazardous, agricultural, and mining wastes are expressly excluded from their coverage,[288] and while the guidelines set forth procedures for protection of ground and surface waters used as drinking water supplies,[289] they are mandatory for federal installations only, and are merely recommended to the states.[290]

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285. 42 U.S.C. § 6907 (1976 & Supp. V 1981).

286.

> [T]he suggested guidelines shall—(1) provide a technical and economic description of the level of performance that can be attained by various available solid waste management practices (including operating practices) which provide for the protection of public health and the environment; (2) . . . describe levels of performance, including appropriate methods and degrees of control, that provide at a minimum for (A) protection of public health and welfare: (B) protection of groundwaters and surface waters from leachates . . . .

RCRA § 1008(a), 42 U.S.C. § 6907(a) (1976 & Supp. V 1981).

287. 40 C.F.R. § 241 (1982).

> The recommended procedures are based on the practice of sanitary landfilling municipal solid waste . . . . Sanitary landfilling is the most widely applied environmentally acceptable land disposal method. If techniques other than the recommended procedures are used, or wastes other than municipal solid wastes are disposed, it is the obligation of the proposed facility's owner and operator to demonstrate to the responsible agency in advance by means of engineering calculations and data that the techniques employed will satisfy the requirements.

Id. §241.100(b). Presumably, this means that the disposal of other types of wastes or the use of alternative methods must have no greater or different impact upon the environment than a sanitary landfill would disposing of municipal wastes alone. The guidelines, however, contain no further instructions about such alternatives.

288. *Id.* § 241.100(a). The reason given is lack of sufficient information upon which to base recommended procedures. Nothing, however, could prevent the EPA from suggesting avoidance of *any* procedure which would have more than a stated minimum impact upon the environment, e.g., through violation of a groundwater quality standard.

289. The guidelines provide that:

> The location, design, construction, and operation of the land disposal site shall conform to the most stringent of applicable water quality standards established under the Clean Water Act. In the absence of such standards, the land disposal site shall . . . provide adequate protection to ground and surface waters used as drinking water supplies.

Id. § 241.204-1. In the absence of federal groundwater quality standards, "adequate protection" for groundwaters is said to be provided by the Primary Drinking Water Standards. *Id.* *See supra* text and notes at notes 266-71.

290. 40 C.F.R. § 241.100(c) (1982).

Section 4005(a) prohibits the "open dumping" of solid or hazardous wastes.[291] An open dump is any open waste facility which is neither a hazardous waste facility (regulated under Subtitle C), nor a sanitary landfill which meets performance standards under Section 4004(a).[292] The Administrator was directed by Section 4005(b) to publish an inventory of all open dumps in the country, using these criteria.[293] After two years, however, with some 2015 dumps identified,[294] the Agency decided not to allocate any more funds to the inventory project, and work on it seems to have ground to a halt.[295] In addition, the impact of the Section 4005(a) dumping prohibition is further limited by the EPA position that the provision may be enforced only by the states or by individuals under the Act's citizen suit provision, and not by the federal government directly.[296]

Section 4004(a) of RCRA, the sanitary landfill provision, declares that a facility will qualify as a sanitary landfill only if it presents no reasonable probability of adverse effects on health or the environment. EPA criteria established under Section 4004(a), however, address only the protection of drinking water sources.[297] Even those sources may be degraded to the levels of the National Primary Drinking Water Standards,[298] and uses other than human consumption are afforded no protection at all.[299] Nor is there any restriction

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291. 42 U.S.C. § 6945(a) (1976 & Supp. V 1981).

292. RCRA § 1004(14), 42 U.S.C. § 6903(14) (1976 & Supp. V 1981).

293. The EPA took the position that the inventory should be compiled by the states, using their own authority and resources. 44 Fed. Reg. 45,066 (1979).

294. 47 Fed. Reg. 18,425 (1982).

295. GENERAL ACCOUNTING OFFICE, SOLID WASTE DISPOSAL PRACTICES: OPEN DUMPS NOT IDENTIFIED, STATES FACE FUNDING PROBLEMS (1982). The third year's inventory, 48 Fed. Reg. 28,327 (1983), brought the total to only 2,081. [14 Current Developments] ENV'T REP. (BNA) 297 (1983).

296.

> The open dumping prohibition is a provision of Federal law which stands on its own, separate from the State planning program. In conjunction with the citizen suit provision, the open dumping prohibition creates a Federal cause of action allowing citizens and States to sue in Federal court for damaging solid waste management practices.

44 Fed. Reg. 45,072 (1979). The ability of a citizen plaintiff to maintain an action under this prohibition was confirmed in O'Leary v. Moyer's Landfill, 523 F. Supp. 642 (1981).

297. 40 C.F.R. § 257.3-4(b) (1982).

298. *Id.* § 257.3-4(c)(2). *See supra* text and notes at notes 266-71. Those standards are set forth for this purpose at 40 C.F.R. pt. 257, App. I (1982).

299. The EPA explains that in spite of the broader mandate of RCRA § 4004(a) to set criteria which would protect the environment, its rules concern only the water's use for drinking, because this is "first among several objectives in protecting groundwater quality," and because the Agency has not established standards for other uses. 44 Fed. Reg. 53,445 (1979).

on a groundwater discharge which could destroy surface water supplies, unless such a discharge can be said to require a NPDES permit.[300]

The RCRA open dump provisions leave primary responsibility for achieving its goals with the states. Total reliance has been placed on the states to develop their own solid waste management plans to prohibit open dumps, facilitate resource recovery, and coordinate regional planning for waste disposal.[301] Only those states with EPA approved plans, conforming to federal guidelines and criteria, are eligible to receive federal assistance to carry out those plans.[302] Federal budget cuts, however, have eliminated funds for such assistance, and the Act contains no other direct incentive for states to adopt their own comprehensive plans.

Even states with approved plans may not adequately protect the public health, since landfills granted permits by the states are not required by federal regulations to monitor leachates from landfill sites,[303] and total reliance is, therefore, placed on landfill operators to identify and exclude waste materials which should not be deposited in sanitary landfills.[304] The problem is compounded by the fact that "small generators" of hazardous wastes are free to dispose of their wastes in such facilities.[305]

2) Management of Hazardous Wastes

In enacting RCRA, Congress determined that certain wastes, because of the special danger they present to human health or the environment, require more direct regulation by the federal government.[306] Thus, it provided in Subtitle C of RCRA that each state

300. 40 C.F.R. § 257.3-3 (1982).

301. "At this time federal preemption of this problem is undesirable, inefficient, and damaging to local initiative . . . . [T]he provisions of this legislation, specifically do not authorize the federal government to take over the responsibility for discarded materials disposal planning." H.R. REP. NO. 1491, 94th Cong., 2d Sess. 33 (1976). Requirements for EPA approval of state plans are set forth in 40 C.F.R. § 256 (1982). At this writing about 20 states have approved plans.

302. RCRA § 4007(b), 42 U.S.C. § 6947(b) (1976). The Administrator must review approved plans from time to time, and must withdraw approval (and financial assistance) if a plan no longer meets the minimum requirements described in regulations promulgated under RCRA § 4007(a), 42 U.S.C. § 6947(a) (1976). Federal assistance is available to develop waste management programs in rural communities, whether or not a state plan has been approved. RCRA § 4009, 42 U.S.C. § 6949 (1976 & Supp. V 1981).

303. 40 C.F.R. § 256.22(b)(2) (1982).

304. *Id.*

305. *See infra*, text and notes at notes 319-23.

306. RCRA § 1002(b)(5), 42 U.S.C. § 6901(b)(5) (1976).

should develop its own program to control hazardous wastes, applying minimum federal standards, or suffer the EPA to install a federal program.[307] The generation of waste material identified as hazardous must be reported by its generator[308] to the EPA, and its transportation and handling must be monitored until it finally is properly disposed of.[309] Thus, the material is tracked from "cradle to grave."[310] As with the Clean Water Act and the Safe Drinking Water Act, however, the EPA has not yet recognized the full potential of the Act to protect groundwater supplies, and it has been extremely slow in implementing its provisions.[311]

Materials are deemed to be hazardous if they may cause or contribute to increases in mortality or illness, or pose a substantial hazard to human health or the environment.[312] The EPA has prepared a list of

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307. Authorized state programs are described in RCRA § 3006 and in 40 C.F.R. § 123 (1982). Fewer than 40 states have any interim authorization under § 3006(c) to administer their own programs, and it is feared that many states will fail to receive final authorization before January 26, 1985, when program responsibility will revert to the EPA. State programs, both approved and otherwise, are described in NATIONAL CONF. OF STATE LEGISLATURES, HAZARDOUS WASTE MANAGEMENT: A SURVEY OF STATE LEGISLATION 1982 (1982).

308. RCRA § 3010(a), 42 U.S.C. § 6930 (1976 & Supp. V 1981). A "generator" is defined by the regulations as "any person, by site, whose act or process produces hazardous waste identified or listed in Part 261 of this chapter or whose act first causes a hazardous waste to become subject to regulation." 40 C.F.R. § 260.10 (1982).

309. RCRA §§ 3002-3004, 42 U.S.C. §§ 6922-6924 (1976 & Supp. V 1981).

310. The RCRA hazardous waste program is described in S. EPSTEIN, L. BROWN, & C. POPE, HAZARDOUS WASTE IN AMERICA (1982); D. WEINBERG, G. GOLDMAN, AND S. BRIGGUM, HAZARDOUS WASTE REGULATION HANDBOOK—A PRACTICAL GUIDE TO RCRA AND SUPERFUND (1982); U.S. OFFICE OF TECHNOLOGY ASSESSMENT, TECHNOLOGIES AND MANAGEMENT STRATEGIES FOR HAZARDOUS WASTE CONTROL 268-99 (1983); Eckhardt, *Unfinished Business of Hazardous Waste Control*, 33 BAYLOR L. REV. 253 (1981); Friedland, *New Hazardous Waste Management System: Regulation of Wastes or Wasted Regulation?*, 5 HARV. ENVTL. L. REV. 89 (1981); Ganet, *Hazardous Waste Management Under the RCRA—An Overview of the Statute and EPA's Current Program*, 13 NAT. RESOURCES NEWSLETTER 1 (1981); Wilhelm, *Regulation of Hazardous Waste Disposal: Cleaning Up the Aegean Stables with a Flood of Regulations*, 33 RUTGERS L. REV. 906 (1981); Worobec, *Analysis of the Resource Conservation and Recovery Act*, 11 ENV'T REP. (BNA) 633 (1980); and Comment, *EPA Issues RCRA's 'Cradle-to-Grave' Hazardous Waste Rules*, 10 ENVTL. L. REP. (ENVTL. L. INST.) 10,130 (1980).

311. Those regulations which have been published are set forth at 40 C.F.R. §§ 122-124, 260-265 (1982). Regulations for Subtitle C of RCRA were to have been promulgated by April 21, 1978. When this deadline passed, a suit by environmental groups and the state of Illinois resulted in the due date being extended by two years to April 1980. Illinois v. Costle, 12 E.R.C. 1597 (D.D.C. 1979). Nevertheless, final regulations for identification and listing of hazardous wastes and for the manifest system were not published until May 19, 1980, 45 Fed. Reg. 33,066 (1980), and rules for land disposal were finally promulgated on July 26, 1982, 47 Fed. Reg. 32,274 (1982). The history of litigation over the delayed regulations is traced in Comment, *supra* note 251; and in Bromm, *EPA's New Land Disposal Standards*, 12 ENVTL. L. REP. (ENVTL. L. INST.) 15,027 (1982).

312. RCRA § 1004(5), 42 U.S.C. § 6903 (1976).

some 743 substances which have these qualities.[313] This list is intended to describe the most common and threatening waste materials and process wastes.[314]

If a particular solid waste does not appear on the EPA list, the generator is responsible for determining whether it is hazardous according to its toxicity, ignitability, corrosivity, or reactivity.[315] Characteristics such as carcinogenicity and mutagenicity need not be considered by the generator, although such qualities are counted in the EPA's listing process.[316] Moreover, a generator need not perform actual tests on an unlisted waste if he can declare with "certainty" that it is not hazardous, based upon his knowledge of the materials and processes.[317] It may be safely assumed that few cost-conscious plant managers will happily embrace the regulatory burden which follows from characterization of their wastes as "hazardous," and that many potentially dangerous materials will consequently escape regulation under Subtitle C.[318]

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313. Specific hazardous wastes are listed at 40 C.F.R. §§ 261.30-.33 (1982).

314. Criteria for listing may be found at 40 C.F.R. § 261.11 (1982). Although regulation cannot be avoided by mixing a hazardous waste with some other waste, unless the mixture exhibits no hazardous characteristics, *id.* § 261.3, the handling of materials listed in § 261.33 will be regulated only if they are in the form of "commercial chemical products," and not merely constituents of other wastes. O'Leary v. Moyer's Landfill, Inc., 523 F. Supp. 642, 656-657 (1981).

Although the organic chemicals industry is responsible for about 60% of the nation's hazardous waste, only a portion of such wastes are listed. The EPA has set as a high priority the listing of additional materials, including pesticides, dyes and pigments, and other chlorinated organics. 47 Fed. Reg. 55,880 (1982).

315. 40 C.F.R. §§ 262.10, 261.20-.24 (1982).

316. RCRA § 3001(a) provides that criteria for identifying the characteristics of hazardous waste, and for listing hazardous waste, should take into account "toxicity, persistence, and degradability in nature, potential for accumulation in tissue, and other related factors such as flammability, corrosiveness, and other hazardous characteristics." 42 U.S.C. § 6921(a) (1976). The EPA explains that an expanded set of characteristics for testing unlisted wastes would be impractical, since the tests would be beyond the capabilities of most generators. *See* 45 Fed. Reg. 33,105 (1980) and 40 C.F.R. § 261.10 (1982), setting forth criteria for identification of characteristics. Instead of placing the public at risk, however, the generator should be required to assume whatever burden is necessary to prove that its waste is nonhazardous.

317. 40 C.F.R. § 262.11(c)(2) (1982).

318. Individual generators may also petition to have a listed material declared nonhazardous in a particular setting, by showing that the material possesses none of the characteristics which caused it to be placed on the list. 40 C.F.R. § 260.22 (1982).

The Act itself contains exemptions of indeterminate duration for mining wastes, ash and other wastes from fossil fuel combustion, and fluid wastes from the production of oil, gas or geothermal energy, RCRA § 3001(b), 42 U.S.C. § 6921(b) (1976 & Supp. V 1981), even though such materials may be extremely dangerous when released in the environment. EPA regulations provide further exemptions for a variety of other materials, including household wastes and agricultural wastes returned to the soil as fertilizers. 40 C.F.R. § 261.4 (1982).

Due to enforcement difficulties,[319] the EPA has decided to exempt from regulation under this program any generators of up to 1000 kilograms per month of most hazardous wastes, provided such wastes are treated or disposed of in an approved hazardous waste management facility or a permitted sanitary landfill.[320] Such an exemption is not contemplated in the Act itself. Although ninety-one percent of all hazardous waste generators will thus escape direct regulation, the EPA estimates that the remaining nine percent of generators produce ninety-nine percent of all hazardous wastes.[321] Yet, because some waste materials are dangerous in exceedingly small amounts, this exemption is bound to facilitate the destruction of many groundwater supplies.[322] Given the real limits on enforcement capabilities, regulation of small generators by rule, rather than by permit, may be temporarily necessary. Once any waste is identified as hazardous, however, it should be delivered to a facility capable of properly disposing of it, instead of entrusting it to a sanitary landfill.[323]

Hazardous wastes which are not reused or recycled,[324] and not exempted by the small generator rules, must be disposed of in an ap-

319. The EPA earlier estimated that there are 760,000 individual generators of hazardous waste. 45 Fed. Reg. 33,102 (1980). Now it says that reducing the small generator exemption to 100 kg/mo would affect 13,000 additional generators; reducing it to zero would affect 560,000 additional generators. [13 Current Developments] ENV'T REP. (BNA) 887 (1982).

320. 40 C.F.R. § 261.5 (1982). The exemption is only 1 kg/mo for any of 122 "acute hazardous wastes," *Id.* § 261.5(e)(1), more for certain other materials. *Id.* § 261.5(e)(2).

321. 45 Fed. Reg. 33,102 (1980). A study by the Office of Technology Assessment, however, says the small generator exemption may exclude five percent of the hazardous waste stream, rather than one percent, as EPA suggests. [13 Current Developments] ENV'T REP. (BNA) 498 (1982).

322. On the first page of its Proposed Ground Water Protection Strategy (1980), the EPA reports that the dumping of a half gallon per day (about 54 kilograms per month) of solvents has, over time, rendered unusuable one-third of the municipal water supply for the 18,000 people of South Brunswick, New Jersey.

323. Although approved sanitary landfills are supposed to accept only wastes for which they are designed, such a facility designed to receive hazardous waste need not conform to standards for hazardous waste management facilities. 40 C.F.R. §§ 264.1(g)(1), 265.1(c)(5) (1982). It may be safely assumed that the delivery of small amounts of hazardous materials or the accumulation of such materials within landfills will frequently result in the transmission of such materials to groundwaters. Requiring delivery of small amounts of hazardous wastes to approved hazardous waste disposal facilities would, of course, remove some of the competitive advantage which small generators otherwise enjoy. The Florida Water Quality Assurance Act (1983) requires the establishment of local government hazardous waste collection facilities for generators of less than 1000 kg/mo, and provides stiff penalities for generators who fail to use them. [14 Current Developments] ENV'T REP. (BNA) 413 (1983). Legislation now pending in Congress would require regulation of small generators. S. 757, H.R. 2867, 98th Cong., 1st Sess. (1983).

324. 40 C.F.R. § 261.6(a) (1982) exempts from the Subtitle C requirements altogether some materials being legitimately recycled or reclaimed, or stored or treated for that purpose.

proved facility, whether on the generator's premises or elsewhere.[325] They may, however, be burned as fuel according to current rules, even though such burning may create a serious air pollution problem.[326]

By far the largest volume of hazardous wastes not burned as fuel, some 3.5 billion gallons in 1981,[327] is disposed of in underground injection wells, for which neither RCRA nor UIC standards have been developed.[328] Disposal on the land surface accounted for some two billion gallons in 1981.[329] Recent publication of interim final rules for land disposal[330] has resulted in a furious controversy about their adequacy.[331] It has also sparked serious proposals to prohibit the on-land disposal of hazardous wastes altogether.[332]

Others, such as sludge or listed wastes, must conform only to some of the requirements. *Id.* § 261.6(b). Recently proposed regulations for recycling would impose notification and storage permit requirements for recyclers, but would exempt from regulation only wastes being legitimately recycled. 48 Fed. Reg. 14,472 (1983).

325. 40 C.F.R. §§ 264-265 (1982).

326. It is estimated that as much as one-third of the 57 million tons of hazardous waste generated each year may thus escape regulation, at least in part, when it is treated as "recycled" under 40 C.F.R. § 261.6 (1982). New enforcement guidelines, however, are designed to prevent "sham recycling" by insisting that wastes being blended or burned have a certain minimum heat value, and that the wastes be actually consumed. 48 Fed. Reg. 11,157 (1983).

327. Survey for the EPA Office of Solid Waste, reported in 5 GERAGHTY & MILLER, INC. NEWSLETTER 1 (1983) [hereinafter cited as Survey].

328. Class IV wells injecting hazardous wastes into or above an underground source of drinking water (USDW) must comply with RCRA notice and annual reporting requirements. 40 C.F.R. § 122.45 (1982). Those injecting directly *into* a USDW in May 1980 may continue to do so at the same rate until 6 months after a state UIC program is approved, but no new wells may be established. *Id.* § 122.36. Existing hazardous waste wells injecting *above* a USDW may continue to operate until final regulations are published. 47 Fed. Reg. 4994 (1982). No criteria or standards for Class IV wells, however, have been developed under either UIC or RCRA.

S. 757, 98th Cong., 1st Sess. (1983), would amend RCRA to prohibit underground injection of hazardous wastes within 1/2 mile of the USDW. H.R. 3200, 98th Cong., 1st Sess. (1983), proposes a similar amendment to SDWA.

329. Survey, *supra* note 327. About 272 million gallons, only five percent of the total, was disposed of in proper incinerators. *Id.* Rules for incinerators are found at 40 C.F.R. §§ 264.340-.347, and 265.340-.347 (1982). Incineration is potentially one of the safest and most efficient disposal methods for most types of hazardous wastes. Because of relatively high costs, however, there are only about 15 high temperature controlled incinerators operating in the country. S. EPSTEIN, L. BROWN, & C. POPE, *supra* note 310.

330. 47 Fed. Reg. 32,274 (1982).

331. A flurry of lawsuits has been filed by 20 public interest and trade groups. [13 Current Developments] ENV'T REP. (BNA) 927 (1982). The EPA has indicated a willingness to negotiate changes on some issues, but not on others. [13 Current Developments] ENV'T REP. (BNA) 2210 (1983).

332. The National Governors Association recently approved a resolution that the EPA "should be required to develop regulations phasing out the burial of hazardous wastes where alternative treatment techniques are reasonably available .... The land disposal of wastes that are highly toxic or persistent should be immediately prohibited." Boffey, Experts Show-

The new rules are intended to apply to approximately 2,000 facilities which require permits.[333] The EPA says that the rules are designed to reduce planning uncertainty by avoiding regulatory schemes that rely on complicated predictions about the long term fate, transport, and effect of hazardous constituents in the environment.[334] While regulated industries may appreciate straightforward technical rules, without any requirement of scientific modeling or prediction, in order to facilitate their planning, they may still obtain variances from the rules by demonstrating that their wastes will never migrate to ground or surface water supplies.[335] Of course, such a demonstration must employ scientific prediction and may involve considerable uncertainty about environmental effects. In addition, the EPA has announced that it is considering a new "degree-of-hazard" approach to permitting land disposal facilities, based on environmental settings and an evaluation of costs and risks at each site.[336] Under this approach, the EPA would issue permits on more of an ad hoc basis rather than relying on consistent and more objective standards. In either case, the permitting process could become enormously more complicated and expensive for state regulators than was initially expected, and the public could be exposed to greater risk because of reliance on an uncertain scientific and technological data base.

The regulations contain design and operating standards for four kinds of land disposal facilities.[337] New hazardous waste landfills,

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ing Concern on Safety of Burying Toxic Waste in Landfills, N.Y. Times, March 16, 1983, at A20, col. 1. The State of California has now banned land disposal of five categories of hazardous wastes: cyanides, toxic metals, strong acids, PCBs, and halogenated organic compounds. [13 Current Developments] ENV'T REP. (BNA) 1383 (1982). The EPA is considering a similar limited restriction. 47 Fed. Reg. 48,726 (1982). Several bills now pending in Congress would forbid any land disposal of certain hazardous wastes: H.R. 2867, 98th Cong., 1st Sess. (1983); H.R. 1700, 98th Cong., 1st Sess. (1983); S. 757, 98th Cong., 1st Sess. (1983); S. 1363, 98th Cong., 1st Sess. (1983).

333. [13 Current Developments] ENV'T REP. (BNA) 363 (1982).

334. 47 Fed. Reg. 32,283 (1982).

335. 47 Fed. Reg. 32,357, 32,359, 32,365 (1982) (to be codified at 40 C.F.R. §§ 264.221(b), .251(b), .301(b)). An operator may allow the pollution of groundwaters to levels set out in the Interim Primary Drinking Water Standards for the 14 hazardous constituents, or even to higher levels if the operator shows that such higher levels will not endanger human health or the environment. 47 Fed. Reg. 32,351 (1982) (to be codified at 40 C.F.R. § 264.94).

336. 47 Fed. Reg. 55,880 (1982). *See also* 46 Fed. Reg. 11,126 (1981) for an earlier, similar proposal.

337. 47 Fed. Reg. 32,274 (1982), amending 40 C.F.R. §§ 122, 260, 264-265. The new regulations are discussed in Bromm, *EPA's New Land Disposal Standards*, 12 ENVTL. L. REP. (ENVTL. L. INST.) 15,027 (1982), and in an extended preamble in the Federal Register entry. "Land treatment facility," "landfill," "pile," and "surface impoundment" are defined at 40 C.F.R. § 260.10 (1982).

waste piles, and surface impoundments must install an impermeable liner to prevent leakage into groundwaters.[338] New landfills and piles are required to have leachate collection and removal systems, as well, to intercept any losses of fluids.[339] Existing facilities need not retrofit liners or leachate collection systems, even though they may continue to receive hazardous wastes,[340] and the EPA will allow some expansion of such a facility without compliance.[341]

Surface impoundments must remove all hazardous materials upon closure, or place a cover on top and maintain it for thirty years thereafter.[342] Other facilities, too, which leave hazardous wastes in place will remain responsible for containment of such materials for only thirty years,[343] although the wastes themselves may remain dangerous for generations.

Almost all facilities must install monitoring wells and test the groundwater regularly for leachates which might escape from the facility.[344] Groundwater may be degraded to the level of the fourteen hazardous substances in the National Interim Primary Drinking Water Standards, but not below background levels for other contaminants, unless the operator can show no threat to human health or the environment, in which case further degradation could be allowed.[345] If these standards are violated, the operator must take corrective action immediately.[346] Landfills, piles and surface impoundments may avoid the monitoring requirement by installing a double liner and a leak detection system.[347]

There is considerable skepticism about the standards, however. A number of experts have flatly stated that all liners eventually leak,

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338. 47 Fed. Reg. 32,357, 32,359, 32,365 (1982) (to be codified at 40 C.F.R. §§ 264.221(a), .251(a)(1), .301(a)(1)).

339. 47 Fed. Reg. 32,359, 32,365 (1982) (to be codified at 40 C.F.R. §§ 264.251(a)(2), .301(a)(2)).

340. 47 Fed. Reg. 32,315 (1982).

341. The new regulations exempt all *new* landfill units and cells constructed at interim status facilities from liner and leachate collection system requirements until a permit is issued, in effect postponing imposition of the standards. [13 Current Developments] ENV'T REP. (BNA) 532, 1391 (1982). S. 757, 98th Cong., 1st Sess. (1983), would amend RCRA to require double liners and leachate collection systems for all lateral expansions of existing landfills, as well as groundwater monitoring for all land disposal facilities.

342. 47 Fed. Reg. 32,358 (1982) (to be codified at 40 C.F.R. § 264.228).

343. 40 C.F.R. § 264.117 (1982); 47 Fed. Reg. 32,356 (1982) (to be codified at 40 C.F.R. § 264.117(a)(1)(i), (ii)).

344. 47 Fed. Reg. 32,352-55 (1982) (to be codified at 40 C.F.R. §§ 264.97-.99).

345. 47 Fed. Reg. 32,351 (1982) (to be codified at 40 C.F.R. § 264.94).

346. 47 Fed. Reg. 32,355-56 (1982) (to be codified at 40 C.F.R. § 264.100).

347. 47 Fed. Reg. 32,357, 32,360, 32,365 (1982) (to be codified at 40 C.F.R. §§ 264.222, .252, .253, .302).

that leachate collection systems do not work, and that the monitoring rules are inadequate.[348] Moreover, critics have charged that current regulations "contribute to the incomplete internalization of the full, long-term costs of land disposal."[349] According to the Chief of the EPA's Hazardous Waste Implementation Branch, "U.S. industry has the knowledge and technology to deal with the problem, but as long as cheap landfills are available and the government subsidizes it," alternative technologies will not be used.[350]

Aside from the Clean Water Act, RCRA is the only federal tool for systematic, prospective control of the enormous threat to groundwater. EPA's new land disposal rules indicate that the Agency will not use its full statutory authority under RCRA to protect vital groundwater supplies. The new rules do provide some economic incentives for recycling hazardous materials which otherwise would be discarded,[351] but the Agency could do much more to encourage source controls and in-stream recycling so that fewer wastes are generated. It could also require complete destruction or neutralization of wastes not recycled, instead of placing future generations of Americans at risk.[352]

D. Other Federal Statutory Authority

Several other statutes may provide the basis for a comprehensive federal groundwater protection policy. None has yet been used to its full potential for this purpose.[353]

The National Environmental Policy Act (NEPA)[354] requires consideration of the effect on groundwater quality and quantity for all major federal activities.[355] The Act itself contains no enforceable standards, although as a matter of *policy* each government agency could be required to protect and preserve some uniform groundwater quality standards, or to apply a nondegradation standard.

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348. Testimony before a House Science and Technology Subcommittee is reported in [13 Current Developments] ENV'T REP. (BNA) 1277 (1982).

349. Joel Hirshhorn of the Office of Technology Assessment, reported in [13 Current Developments] ENV'T REP. (BNA) 2211 (1983).

350. [13 Current Developments] ENV'T REP. (BNA) 1277 (1982).

351. 48 Fed. Reg. 14,472 (1983). The proposed rules would exempt from regulation hazardous materials actually reused by their generator or reclaimed by someone else, burned as or used in fuel, or recycled in certain other ways.

352. *See* S. 1363, 98th Cong., 1st Sess. (1983), described *infra* note 390.

353. Many of the statutes, along with their possible applications, are described in WORKSHOPS, APPENDICES VI and VIII.

354. 42 U.S.C. §§ 4321-4370 (1976 & Supp. V 1981).

355. NEPA § 102(2)(C), 42 U.S.C. § 4332(2)(C) (1976).

Section 309 of the Clean Air Act[356] requires the EPA to review and comment on the environmental effect of any federal government activities which invoke its authority, including proposed legislation or regulations, construction projects, or major agency actions. The Agency could use this "watchdog" authority to coordinate agency efforts to protect groundwater.[357]

While groundwater is not expressly mentioned in the Toxic Substances Control Act (TOSCA),[358] that Act gives the EPA broad powers to regulate the distribution in commerce, use, or disposal of any chemical substance that could present "an unreasonable risk of injury to health or the environment."[359] The Agency is specifically empowered both to prohibit and to prescribe particular methods of use or disposal, or even to prohibit the manufacture of such a threatening material.[360] The Act also contains a provision for abatement of imminent hazards posed by such materials.[361] This statutory authority could be employed by the EPA to further regulate the use and disposal of toxic substances in order to ensure the integrity of groundwater sources.

The Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)[362] is thought by the EPA to be the only comprehensive authority for the *cleanup* of spills and hazardous waste sites.[363] Superfund expands on the model furnished by Clean Water Act Section 311,[364] applying a revised National Contingency Plan whenever there is a release or "substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare."[365] The Act also mandates the listing and cleanup of at least 400 highest priority facilities in the country,[366] using funds ap-

356. 42 U.S.C. § 7609 (Supp. V 1981).

357. *See* WORKSHOPS, APPENDICES, *supra* note 6, at VI-2.

358. 15 U.S.C. §§ 2601-2609 (1982).

359. TOSCA § 6(a), 15 U.S.C. § 2605(e) (1982).

360. *Id.* §§ 6(a)(1), (2), (5) and (6), 15 U.S.C. §§ 2605(e)(1), (2), (5) and (6) (1982).

361. *Id.* § 7, 15 U.S.C. § 2606 (1982).

362. 42 U.S.C. §§ 9601-9657 (Supp. V 1981); 26 U.S.C. § 4611-4682 (Supp. V 1981).

363. "The Superfund program . . . is a remedial action cleanup program; it does not set standards nor does it regulate any activity." REAGAN POLICY, *supra* note 19, at I. Only the imminent endangerment statutes, *supra* notes 183-186, have been used in such a broad range of cases as Superfund seems to cover. Superfund has its own imminent endangerment provision in § 106. The Agency has concluded that RCRA may not be applied to inactive sites. 43 Fed. Reg. 58,945, 58,984 (1978).

364. *See supra* text at notes 229-32.

365. Superfund § 104(a)(1), 42 U.S.C. § 9604(A)(1) (Supp. V 1981).

366. *Id.* § 105(8), 42 U.S.C. § 9605(8)(B) (Supp. V 1981).

propriated for the purpose or collected through taxes on petroleum and chemical products.[367]

It was mainly due to controversy surrounding the implementation and enforcement of Superfund that the leadership of the EPA was replaced early in 1983.[368] The new Administrator has announced that he will bring a new emphasis to the program, acting promptly to investigate and clean up threatening waste dumps, then worrying later about who should pay for the work.[369] In any event, Superfund was intended to be primarily remedial in operation,[370] and it has been so regarded by the EPA, so that it provides little opportunity for advance planning or avoidance of hazards. It has been suggested, moreover, that the draft Reagan Policy conflicts with the National Contingency Plan,[371] which "precludes a consideration of future use of groundwater," and that the Policy perhaps should not cover Superfund.[372]

A number of other statutes provide the EPA with regulatory authority which could be invoked in order to protect groundwater supplies. Section 275(b) of the Uranium Mill Tailings Radiation Control Act[373] requires the EPA to set standards for activities at active mill sites, and Section 275(a) covers cleanup of inactive sites. The Surface Mining Control and Reclamation Act[374] expressly calls for protection of groundwater quality in the issuance of mining permits,[375] and the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA),[376] by requiring registration of all pesticides and other economic poisons, allows the EPA to impose restrictions on their use[377] or even to sus-

367. *Id.* §§ 201-232, 26 U.S.C. § 4611-4682 (Supp. V 1981).

368. A strategy of stressing voluntary compliance and administrative, rather than judicial enforcement, is revealed in a confidential memorandum from Assistant Administrator Lavelle, reported in [13 Current Developments] ENV'T REP. (BNA) 1483 (1982). An EPA internal report has confirmed charges of serious mismanagement of toxic waste programs. Shabecoff, Internal E.P.A. Review Criticizes Mismanagement in Toxic Cleanup, N.Y. Times May 11, 1983, at A1, col. 2.

369. Among many statements to that effect see Pasztor, EPA Moves to Accelerate Cleanup Work at Nation's Worst Chemical Waste Sites, Wall St. J., May 16, 1983.

370. In the preamble, it is declared to be "An Act to provide for liability compensation, cleanup, and emergency response for hazardous substances released into the environment and the cleanup of inactive hazardous waste disposal sites." Pub. L. No. 96-510, 94 Stat. 2767 (1980).

371. 47 Fed. Reg. 31,180 (1982).

372. Memorandum of EPA Assistant Administrator for Water, reported in [13 Current Developments] ENV'T REP. (BNA) 880 (1982).

373. 42 U.S.C. §§ 7901-7942 (Supp. V 1981).

374. 30 U.S.C. §§ 1201-1328 (Supp. V 1981).

375. 30 U.S.C. §§ 1257(b)(11), 1265(b)(10) (Supp. V 1981).

376. 7 U.S.C. § 136 (1982).

377. 7 U.S.C. § 136a(d) (1982).

pend their use in emergencies.[378] These statutes, as well as numerous other acts, administered by a variety of agencies, deal with particular sources of contamination or aquifer protection, and so too could be part of an integrated federal strategy to safeguard groundwater supplies from *future* acts of destruction.[379]

Although there is no comprehensive congressional plan for protection of the nation's groundwaters, many of the elements of such a plan may be found in the various statutes discussed above. Taken together, these statutes give the EPA and other federal agencies wide-ranging authority to achieve the goals of the Reagan Policy. The immediate problem in the EPA's policy proposal is not the sufficiency of its authority, although a more coherent congressional mandate certainly would be desirable. Rather, the problem is in the Agency's reluctance to assert that authority. The making and implementation of regulations has been marked by reticence and by compromise. Two Agency staff members recently expressed the opinion, for example, that 93 of the 115 worst hazardous waste sites first targeted for Superfund cleanup could not have been prevented under the current rules enforced by the EPA.[380]

We certainly cannot minimize the difficulty and complexity of the Agency's work, nor the political controversy surrounding its performance. Many devoted professional staff members have labored to enforce the nation's pollution control laws fully and aggressively. But until the EPA makes an institutional commitment, however, to coordinate the application of the various laws, and to push to the limits of its authority to protect the public's health and the environment, the need for new *authority* seems not to be an issue. On the other hand, new legislation may be helpful in clarifying the EPA's *responsibility* to act in areas where it has been reluctant to do so up to now.[381]

V. Elements of an Effective Groundwater Protection Strategy

The EPA, of course, is not entirely responsible for the lack of a coherent national groundwater program. Congress' instructions to the EPA have not always been perfectly clear, and the EPA's regulatory efforts have enjoyed a mixed reception in the courts. Under-

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378. 7 U.S.C. § 136d(c) (1982).

379. *See* Workshops, Appendices, *supra* note 6, at VII.

380. 4 Geraghty & Miller, Inc. Newsletter 2 (1982).

381. Examples may be found in pending amendments to the Clean Water Act, *supra* note 218; Safe Drinking Water Act, *supra* notes 258, 271; and RCRA, *supra* note 323.

funded, overworked, and beset by conflicting political forces, the Agency has certainly made notable progress given the conditions under which it must function. The Agency must assume responsibility, however, for failing to address this critical problem earlier, for giving in too often to parochial interests, and for generally neglecting to take the long view in protecting this vital resource for future generations.

Outlined below are proposals for elements of a new national groundwater protection policy. They depend for the most part on existing statutory authority, and are designed to eliminate the fundamental problems inherent in the EPA's treatment of this problem to date, as described above. No effort has been made to provide either a comprehensive plan or details for the immediate implementation of any one element. Rather, the proposals are intended to provoke critical thinking about new approaches to the problem.

A. *A Groundwater Impact Statement (GWIS) should be prepared for every activity which might have a significant effect on groundwater quality.*[382] The GWIS ought to be part of a wider, systematic analysis of environmental impacts which might be regulated under federal law. Preparation of such a statement for a proposed consumptive withdrawal of groundwater, for example, would require consideration of possible increases in concentration or redirection of pollutants already present in the aquifer; or, the GWIS for a new highway would have to consider runoff and infiltration from road salting. The burden of preparing the statement would be borne by the person, business, or agency whose activity might threaten the aquifer. With full opportunity for public participation, the GWIS procedure should increase the likelihood that all economic and other costs associated with each activity will be taken into account.

B. *National Pollutant Discharge Elimination System permits should be required for groundwater pollution.* Their administration would fit easily within the existing regulatory framework for surface waters.[383] Since the two sources are almost invariably interconnected, it makes sense to deal with the common problem of "water" pollution under a single program. No new regulatory machinery would be required. Uniform source limitations or best management

382. If the EPA is currently obliged under the Clean Water Act, for example, to regulate changes in or threats to groundwater quality, as suggested above, *supra* text and notes at notes 178-242, it certainly is empowered to require such statements from activities which might reasonably be expected to invoke its regulatory apparatus. *See supra* text and notes at notes 151-152.

383. *See supra* text and notes at notes 180-84, 241.

practices could be applied, perhaps with some tailoring to meet local needs and conditions. Uniform results would be assured by use of the same water quality strategy applied to surface waters, that is, national criteria based on locally designated uses (together with a nondegradation rule).[384] As with the surface water program, source limitations not stringent enough to achieve or preserve desired groundwater quality in a particular area would be scaled back under Sections 302, 301(b)(1)(c) or 303(d).[385] NPDES permitting could fill the gaps in other federal programs, such as in the operation of sanitary landfills under Subtitle D of RCRA.

C. *Nondegradation must be an integral part of the groundwater policy.* Because of the inherent difficulty in predicting future effects of groundwater contamination, or future needs for clean groundwater,[386] its application in a groundwater program is even more compelling than in the area of air or surface waters protection.

D. *The states have a vital role to play in the implementation of the policy, just as they do under NPDES.* An effective partnership of national and local governments will permit the application of uniform standards which are tailored to account for local needs and conditions. Technical assistance and financial support must obviously be provided by the EPA. Strong financial assistance must be given for state program development as well as for research to improve the quality of the information base on which planning and implementation must rely.

E. *Aquifer recharge areas should be identified as quickly as possible, and activities within those areas should be strictly controlled to minimize threats to the aquifers.*[387]

F. *Small volume disposers of hazardous materials should be regulated by rule, and stiff penalties should be assessed for violations.* Proper disposal facilities must be made available, perhaps by state governments, to businesses and individuals who have no other economical way of disposing of such materials.[388]

G. *On-land disposal of hazardous wastes should be prohibited.*[389] Criticism resulting from publication of the new land disposal rules under Subtitle C of RCRA indicates that the risks are unacceptable,

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384. *See supra* text and notes at notes 180-81, 184, 215-20.

385. *See supra* note 184.

386. *See supra* text and notes at notes 164-67, 218, 260-61.

387. A thoughtful discussion may be found in Tripp & Jaffe, *supra* note 272, at 31-46.

388. A recent enactment of the Florida legislature is one imaginative solution. *See supra* note 323.

389. *See supra* note 332.

especially since there apparently are alternative ways of disposing of hazardous materials. Moreover, the sacrifice of land areas for such an exclusive use ignores the possible land use needs of future generations.

H. *We must redouble our efforts to reuse or recycle wastes, to neutralize them so they are harmless, or to simply avoid their production in the first place.* A variety of tactics have been suggested.[390] Materials deposits, effluent charges, waste exchanges and process controls are only a few. Until we shift our focus from waste *disposal* to waste *avoidance* we will continue to need the expensive, complex regulatory apparatus described here.

I. *A public information campaign of unprecedented proportions should make groundwater contamination a serious moral concern.* The "Keep America Beautiful" program sponsored by the packaging and beverage industries provides a useful model. When the public is better informed about the problem, it will more readily accept needed controls and the associated costs. The public may also be directly involved in the abatement process through citizen suits under existing federal laws.

J. *One federal agency must provide leadership in directing the implementation of a uniform policy to guide all the machinery of government at all levels.* The EPA is the logical choice for this role. Obviously, the Agency's attitude towards its own role in ensuring groundwater quality must change.

VI. Conclusion

The EPA's proposal to develop some kind of coherent national groundwater pollution control strategy should be applauded. Its continuing encouragement and technical support have been enormously valuable to many states struggling to develop their own strong regulatory programs. The draft Reagan Policy, however, and indeed the policy followed by the Agency since its inception, seem unlikely to result in any uniformity in groundwater protection among the states. Of course, the proposal would not fill in the regulatory gaps left by the EPA's narrow interpretation of its duties under the various fed-

390. S. 1363, 98th Cong., 1st Sess. (1983), would require the EPA to specify best available management practices for each hazardous waste, using a heirarchy of methods as follows:

a) Reducing the volume of the waste;
b) Outside recycling or reuse;
c) Treatment to render it non-hazardous;
d) Treatment to reduce the hazard;
e) Disposal.

eral statutes. What is needed instead is the strongest possible institutional commitment by the EPA to take all measures within its authority to protect the nation's people and their environment.

Details of a solution will not be worked out overnight. We still have a great deal to learn about the very nature of the problem and all its implications. Difficult questions must be answered about the proper roles of federal and state governments. Even if we could reach a consensus about how to proceed, sheer inertia will make it difficult to change our old bad habits. Yet, we cannot be dissuaded by the complexity or persistence of the problem from seeking a wise solution. The problem simply will not go away, because there is no "away".