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### Opportunities for Innovation: State Strategies for Groundwater Protection

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**Opportunities for Innovation:  
State Strategies for Groundwater Protection**

Larry Morandi

National Conference of State Legislatures  
1560 Broadway, Suite 700  
Denver, Colorado 80202

**Uncovering the Hidden Resource:  
Groundwater Law, Hydrology, and Policy in the 1990s**

University of Colorado  
Natural Resources Law Center  
Boulder, Colorado  
June 15-17, 1992

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**I. Lack of federal direction has given states significant discretion to devise groundwater protection programs.**

A. What congressional legislation exists is found in several disparate statutes that address only a piece of the groundwater problem.

B. The U.S. Environmental Protection Agency's 1991 Groundwater Task Force Final Report emphasized that states should have primary responsibility for groundwater protection.

C. The federal agency is, however, offering states incentives to develop comprehensive, resource-based programs in line with EPA principles and guidelines.

**II. Determining the state's policy objective can be important to devising the program's components.**

A. *Wisconsin's* legislative intent is to "minimize the concentration of polluting substances in groundwater through the use of numerical standards in all groundwater regulatory programs." (1983 Act 410; Wis. Stat. Ann., 160.001)

B. *Iowa's* statement of intent is to "prevent contamination of groundwater from point and nonpoint sources of contamination to the maximum extent practical. . . . Adopting health-related groundwater standards may be of benefit in the overall groundwater protection or other regulatory efforts of the state. However, the existence of such standards, or the lack of them, shall not be construed or utilized in derogation of the groundwater protection goal and protection policies of the state." (1987 Chapter 225; Iowa Code, 455E.4-5)

**III. Regardless of how regulatory a program is, there are several essential components that often go underfunded.**

A. Aquifer mapping--to determine the location of groundwater sources and aquifer recharge areas to be protected, and the vulnerability of groundwater to contamination based on soil types and surface activities.

B. Groundwater monitoring--to determine the quality of groundwater and the movement of contaminants in an aquifer.

#### IV. Regulatory components.

A. Groundwater classification--designating acceptable uses for groundwater based on actual groundwater quality as determined by monitoring, or presumed groundwater quality as defined by existing land uses overlying an aquifer.

B. Groundwater quality standards--measurement devices to determine if groundwater contamination has occurred that may either be numeric (numbers that specify a maximum permissible level of a substance in groundwater) or narrative (the maintenance of a general level of groundwater quality).

1. *Wisconsin's* 1983 Act 410 sets two sets of standards: an enforcement level beyond which a violation would occur, and a preventive action limit (a percentage of the enforcement level) designed to notify dischargers that continued waste disposal may result in noncompliance with the enforcement standard.

2. In a 1989 report to the legislature, *Iowa's* Department of Natural Resources opposed the use of standards, arguing that "whereas the goal of the Groundwater Protection Act is to prevent contamination, establishing legal levels of contamination presents a situation where the department has no regulatory basis for formal action until the level of the standard is reached." (*The Role of Standards in Iowa's Groundwater Protection Program: A Report to the Iowa General Assembly* (Des Moines: Department of Natural Resources, January 1989), p. 16)

C. Discharge permits--used for specific points of discharge whose activity can be managed through a control technology.

1. Generally not applicable to nonpoint sources of pollution which increasingly are accounting for the greatest share of contamination, especially in heavily agricultural states.

2. A regulatory component in farming states could include designation of pesticide management areas where use of a specific pesticide (e.g., aldicarb, atrazine) is regulated or prohibited.

D. Land use management--techniques applied mainly to decisions affecting industrial and residential facility siting proposals whose land-disturbing activities in an aquifer recharge area may affect groundwater quality.

1. Wellhead protection programs shift the emphasis of groundwater programs from regulating specific discharge sources to protecting the resource (i.e., the aquifer) from a range of activities integrated into a comprehensive land use management plan.

2. Agricultural water use regulations may affect land use as in *Nebraska's* Department of Environmental Control's regulations which include "irrigation scheduling, proper timing of fertilizer and pesticide application and other fertilizer and pesticide management programs" in designated natural resources districts.

#### V. Voluntary components.

A. Research, education and demonstration projects--designed to provide practical information to farmers, for example, to convince them to shift away from land and chemical uses that have the potential to pollute groundwater.

1. *Iowa* has achieved a 20 percent reduction in nitrate applications to the soil over 10 years due to research, education and demonstration projects in specific areas of the state.

2. Issue becomes one of whether to spend money on regulatory measures--development and implementation of groundwater quality standards--or

development and marketing of alternative practices whose absence might preclude the availability of measures to comply with regulations.

B. Best management practices--activities designed to prevent discharges of pollutants into groundwater and encourage the protection of aquifer recharge areas that encompass structural and nonstructural controls and operation and maintenance procedures, including alterations in the application of agricultural chemicals and changes in land use.

1. *Minnesota's 1989 Groundwater Protection Act* (Senate File 262; Chapter 326) requires the Department of Agriculture to develop and promote voluntary best management practices for agricultural activities to prevent or minimize the extent of groundwater contamination to the maximum degree practicable.

2. If the voluntary practices are not employed or are not effective, the department may adopt water resource protection requirements to prevent a specific substance in groundwater from exceeding its health risk limit (i.e., water quality standard).

## VI. Program funding.

A. State general fund shortfalls and lack of federal financial assistance are increasing state dependence on alternative funding mechanisms for implementing groundwater protection programs.

B. Fees and dedicated taxes on products or activities with the potential to pollute groundwater are the most prevalent forms of alternative funding mechanisms.

1. 70 percent of *Wisconsin's* groundwater program is financed through fees on seven pollution sources: pesticides, fertilizers, septage haulers, wastewater and sludge disposal, solid and hazardous waste disposal, private sewage systems, and petroleum product storage tanks.



2. The Agricultural Management Account in *Iowa's* Groundwater Protection Fund is capitalized through a pesticide registration fee (0.20 percent of gross annual sales), a pesticide dealer license fee (0.10 percent of gross annual sales), and a nitrogen-based fertilizer tax (\$0.75 per ton).

3. *South Dakota's* groundwater protection program, contained in the 1989 Centennial Environmental Protection Act (House Bill 1291; Chapter 306), assesses fees on pesticide registrations (\$25 per pesticide) and fertilizer sales (\$0.30 per ton); the Groundwater Protection Fund also receives annual appropriations of \$125,000 from the state's Petroleum Release Compensation Fund.

4. *West Virginia's* 1991 groundwater protection legislation (House Bill 2377; Chapter 117) requires the Division of Natural Resources to establish a fee schedule assessed against permit applicants based on the relative potential of each category of discharge to contaminate groundwater; revenue raised is deposited initially in the Groundwater Protection Fund to cover administrative costs, with the excess above \$750,000 placed into the Groundwater Investigation and Remedial Response Fund for cleanup activities.

## VII. Implementation problems.

A. Insufficient monitoring to document groundwater quality and to share with all state agencies responsible for administering groundwater protection programs is common; there is an assumption that documenting changes in surface activities (e.g., less pesticide or fertilizer use determined through soil tests or sales data) correlates to improvements in groundwater quality.

### B. Lack of adequate funding.

1. A 1990 legislative audit of *Wisconsin's* groundwater program determined that it would be operating in a deficit situation by FY 1993 unless existing fee levels were raised.

2. The level of funding for *Iowa's* Agricultural Management Account has ranged from 42 percent of projections in FY 1988, to 89 percent of

projections in FY 1992; the availability of Exxon oil-overcharge revenue for energy-related agricultural programs (e.g. nitrate reduction)--which amounted to \$17.5 million through FY 1992--ends in the current fiscal year.

3. Increasing fee levels will generate opposition from the constituencies assessed unless the revenue is dedicated to groundwater protection and the credibility of earmarked funds is assured.

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