THE NEBRASKA WELLHEAD PROTECTION PROGRAM, AND ITS POSSIBLE IMPACTS ON AGRICULTURE

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OVERVIEW OF PROGRAM

The Nebraska Wellhead Protection (WHP) Program is the response of the State of Nebraska to Section 1428 of the 1986 Amendments to the Federal Safe Drinking Water Act, which required every state to develop a WHP program to protect the ground water used by public water supplies from health-threatening man-made contaminants. Section 1428 further required a WHP program to specify agency duties, delineate (map) Wellhead Protection Areas (WHPAs), inventory and manage potential ground water contaminant sources, plan contingency and new water supply wells, and assure participation in WHP decision-making by affected populations. State WHP program descriptions were to be approved by EPA, approved programs were to be Federally financially aided, and biennial state WHP progress reports were to be made to EPA. Federal aid to state WHP programs has never materialized, and most states waited for several years before starting these programs.

The development of the Nebraska Wellhead Protection Program was begun in 1988 by the Nebraska Department of Environmental Quality, (NDEQ). The program's substance was decided upon by a Technical Advisory Committee made up of scientific and legal specialists, and a Citizen's Advisory Committee made up of persons potentially affecting or affected by WHP. NDEQ wrote the WHP program description, which was submitted to EPA on June 19, 1989 and approved on June 21, 1991.

The approved Nebraska WHP Program makes NDEQ the lead implementation agency and the Nebraska Department of Health (NDOH) a partner in implementation. The statewide WHP effort consists primarily of technical advice and outreach/public education. NDOH and NDEQ are being aided in these efforts by the Natural Resources Districts, the Cooperative Extension Service, and numerous other agencies and organizations. Technical support is obtained from EPA, the United States Geological Survey, the (UNL) Conservation and Survey Division, and several other research-oriented agencies. Vehicles for education/outreach are WHP maps, WHP newsletters, the Statewide WHPA atlas, and public WHP meetings with slide shows. The Nebraska State WHP program description includes all of the elements specified in the 1986 amendments to the Safe Drinking Water Act.

Responsibility for carrying out concrete WHP measures rests entirely on the owner/operators of Nebraska's approximately 1500 public water supplies. Except where they duplicate pre-existing requirements, no WHP measures are mandatory. Where WHP measures coincide with the goals of funded programs (proper abandonment of disused water wells, retirement of agricultural land, etc.) some outside funding for such measures may be available.

Since its inception, the Nebraska WHP program has employed 0.5-1.5 FTE including at least one ground water geologist, and collaborated closely with the Environmental Health program of NDOH and the Underground Storage Tank, Hazardous Wastes, National Pollutant Discharge Elimination system, and Underground Injection Control programs of NDEQ. As of November 1, 1993, WHP maps for 121 public water systems had been drawn by NDEQ staff, and 12 more had been drawn by a private consultant.

The NDEQ maps are based on a cylindrical displacement method, while the consultant's maps were drawn using the computerized ground water flow model WHPA II. Each WHP map actually consists of two maps: a time-of-travel (TOT) map showing the distances from which contaminants could be drawn into the public wells in 60 days, six months, and one, two, ten, and twenty years; and a WHPA map showing a WHPA boundary following conspicuous, permanent map features around the outside edge of the 20-year TOT threshold.

Four WHP newsletters have been produced to date. Each addresses a part of WHP which corresponds to one of the requirements of the Safe Drinking Water Act. Newsletters are written in non-technical language and have enough content to inform rate payers and stimulate operators to seek more information. NDOH has distributed newsletters to all public water supply operators.

The State WHPA Atlas, which was funded by EPA grants, now has WHP maps for 121 public water supplies, including most of the State's largest systems and many of the systems which have already experienced ground water contamination problems. The Atlas has been distributed to Nebraska's bankers, professional planners and zoners, and Natural Resources Districts, in addition to interested consultants and realtors.

The current status of Wellhead Protection across Nebraska might be characterized as the "self-education" phase. WHPA mapping by NDEQ has provided public water supply operators and village and city councils with food for thought. The results of EPA-mandated water quality testing and the costs of well replacement have provided more food for thought. A few suppliers have done contaminant source inventories, which have also been enlightening. At present, few suppliers are ready to take the measures which will make a real difference in terms of public health and long-term savings: Contaminant Source Management through negotiation, compensation, and local regulation; the planning of new or contingency water supplies; and extensive ratepayer involvement in creating safe, financially-viable public water systems. However, sufficient awareness on a local level will eventually lead to voluntary undertaking of all of these measures.

POSSIBLE EFFECTS OF WELLHEAD PROTECTION ON AGRICULTURAL OPERATIONS

Numerous public water supply wells across Nebraska have been affected by agricultural chemical contamination. Many public water suppliers are presently attempting to determine what means they possess for preventing agricultural chemical contamination of their wells. Meanwhile the research establishment is still attempting to determine which agricultural practices will be protective of ground water in which soil/geologic settings (Hergert, 1993). This means that the impacts of Wellhead Protection on agriculture are difficult to predict.

What is certain is that until more field data are available, those land uses which have not been shown to contribute to ground water contamination, i.e. woodlots, pastures, wild hay production, or the "organic" production of row crops; will have the greatest appeal to concerned public water suppliers. On the highly productive farm land which is common in Nebraska, these land uses could represent substantial decreases in the land's profitability, saleability, and rentability.

A few of Nebraska's public water suppliers have approached operators of agricultural land within WHPAs for negotiations on land use. In one case where the farm operator and his relatives were ratepayers and the land in question was not prime farm land, a

compromise involving crop rotation was reached. This solution has an intuitive acceptability to both sides, and may ultimately be shown to be technically valid.

In some cases, communication and negotiation between farmers and public water suppliers has proven impossible. There is presently no legal mechanism for forcing either side to negotiate in good faith. Two such cases of stalemate have resulted in installation of nitrogen-removal treatment systems at a cost of about $1000.00 per ratepayer. The existing nitrate-removal systems in Nebraska were built on Community Development Block Grants, (which can not be used for the purchase of WHPA lands), but the statewide total of available grant money will only pay for about five public works projects of this magnitude per year (Charleston, 1993)

Public water suppliers have few regulatory Wellhead Protection options short of condemnation. Most of Nebraska's counties have no comprehensive plan, and therefore most special-case zoning with which public water suppliers might attempt to protect wells would not carry significantly deterrent penalties. Where zoning actually curtailed some economic activity, it is possible that a public water supplier would be sued in a Nebraska court, as happened in Florida (Dehan, 1992), for unlawfully "taking" a property owner's right to maximize income from his property.

SUGGESTIONS ON WELLHEAD PROTECTION FOR FARM OPERATORS

The lack of formal procedures for Wellhead Protection in Nebraska will be an asset if it leads to the application of good will and creative thinking. Some essentials to keep in mind are listed below:

1.) Information: Farm operators should find out whether their land is in a WHPA, and if so, whether the associated water system is experiencing ground water contamination problems.

2.) Communication: Regardless of past disagreements over school consolidation, surface water, etc., farm operators in WHPAs should get to know all decision makers involved in the public water supply, and educate these people about their farming operations.

3.) Negotiation: There are numerous technical means (CRP and other forms of land retirement, Best Management Practices, Organic Farming, and so forth) which could be used to protect public water supply wells from agricultural chemical contamination. There are also numerous administrative routes to carry out technical measures (sale or rental of land or easements, exchange of land, establishment of covenants, etc.). Farm operators in WHPAs should consider what Wellhead Protection measures they could offer to take if approached by the public water supplier, what administrative route would be most acceptable to them, and what type and level of compensation they would request.

REFERENCES

Charleston, Steve (Nebraska Department of Economic Development) 1993, verbal communication

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Hergert, Gary W. (University of Nebraska West Central Research and Extension center) 1993, verbal communication.