

### INTEGRATING PUBLIC WATER SUPPLY PROTECTION INTO THE STATE OF MAINE'S VISION

The Report of the Resolve 029 Task Force Submitted to the Joint Standing Committee on Natural Resources

> Prepared by Maine Department of Health and Human Services Center for Disease Control Division of Environmental Health Drinking Water Program

> > February, 2006

### **Executive Summary**

Water supply protection is the first line of defense in protecting public health. Protecting a water supply source has long been recognized as the cornerstone of providing safe drinking water. The most effective source protection method is to keep the area contributing water to the supply open and undeveloped. The Maine Drinking Water Program's (DWP) recently completed five year assessment of source protection for public water supplies identified rapid residential and commercial development in source protection areas as the most significant threat to water quality and quantity, and few water suppliers are prepared to deal with these risks. Public Water Systems (PWS) have a very limited suite of tools for source protection: they can purchase land, inspect existing activities, and ask local government to enact (and enforce) protective ordinances. Only one in five of Maine's community water systems have effective source protection plans in place after more than fifteen years of encouragement and incentives.

The effectiveness of water supply protection depends on numerous state and local government decisions and activities. Most of the programs that influence source protection exist for another purpose, and usually do not consider water supply protection in their decision making. PWS operators have few resources to intervene in local and state decision making, so their concerns are often not heard. To protect Public Health, state and local authorities should include water supply protection as a required part of their decision making criteria, and state agencies should adopt a consistent policy favoring source protection. Based on our review of existing statutes and practices, and in light of the current threat of development in source protection areas, we offer the following recommendations:

# Recommendation 1: Establish consistent policies among all State agencies to enhance source protection in all state decision making, development, and practices.

Recommendation 2: Create an effective program to maintain agricultural and forestry land uses in source protection areas.

2.1 Existing programs to maintain environmentally responsible agricultural and forestry uses should be provided with resources and given a focus to work in source protection areas to encourage land conservation.

2.2 Provide resources and direction to Agricultural and Forestry programs including nutrient management, sustainable forestry, and right to farm to work with landowners in source protection areas to minimize the impact of their activities.

# Recommendation 3: Mitigate the effects of existing and new development on drinking water quality through the use of education, incentives and enforcement.

3.1: Encourage active management (BMP's) of existing potentially threatening uses in source protection areas through municipal, PWS and state inspection of activities.

3.2 Develop a plan to target enforcement of existing environmental laws in source protection areas. 3.3 Add proximity to public water supplies as a review criterion for Environmental review programs, particularly NRPA and Site Location.

3.4 Set minimum standards for local source protection ordinances.

3.5 Amend PL 761 to require that a PWS's written response to notification of proposed changes in land use activities in source protection areas be required prior to approval of a local permit.

Our review shows that the second phase of Resolve 029, a public discussion of source protection options, refinement of these recommendations, and a report to the 123<sup>rd</sup> Legislature, is appropriate and necessary. The protection of water supply sources is a crucial part of Maine's economy, public health, and environment. We have the opportunity to build this understanding into existing state and local programs and make them more effective. As more land is developed in source protection areas, it becomes increasingly difficult and expensive to provide safe and adequate supplies of drinking water. Maine has been blessed with abundant, clean water. Unless we consider our actions carefully, we will lose that advantage.

#### Introduction

In 2005, the first regular session of the 122<sup>nd</sup> Legislature adopted Resolve 029 (LD 1265, as amended). The resolve states:

Sec. 1. Report. The Drinking Water Program within the Department of Health and Human Services, in consultation with the Department of Environmental Protection, the Department of Conservation, Maine Geological Survey and the Department of Agriculture, Food and Rural Resources shall submit a report as provided in this section to the Joint Standing Committee on Natural Resources by February 1, 2006. The report must address whether additional requirements are needed for source water protection in this State and describe recommended options to address those needs. Options may include, but are not limited to, water supply source water protection approaches modeled after shoreland zoning, use of statutory performance standards and use of specific land use prohibitions or controls. The report may not address minimum state standards for excavations of 5 or more acres for borrow, clay, topsoil or silt.

After receipt and review of the report, the Joint Standing Committee on Natural Resources may report out legislation to the Second Regular Session of the 122nd Legislature requiring the Drinking Water Program within the Department of Health and Human Services to establish a process to allow public comment on the options recommended by the department and to report to a future Legislature with subsequent recommendations after consideration of the public comments by the Drinking Water Program within the Department of Health and Human Services, the Department of Environmental Protection, the Department of Conservation, Maine Geological Survey and the Department of Agriculture, Food and Rural Resources.

#### **SUMMARY**

This amendment changes the title and replaces the bill with a resolve. The amendment requires the Drinking Water Program within the Department of Health and Human Services, in consultation with the Department of Environmental Protection, the Department of Conservation, Maine Geological Survey and the Department of Agriculture, Food and Rural Resources to submit a report to the Joint Standing Committee on Natural Resources by February 1, 2006. The report must address whether additional requirements are needed for source water protection in Maine and describe recommended options to address those needs. The amendment also authorizes the Joint Standing Committee on Natural Resources to report out legislation to the Second Regular Session of the 122nd Legislature requiring the Drinking Water Program to establish a process to allow public comment and to report to the joint standing committee of the Legislature having jurisdiction over natural resources matters with any subsequent recommendations after consideration of the comments.

In considering how to verify whether our current legislative framework provides a foundation for good source protection, we started by considering the principles of source protection, as developed by both water suppliers and the United States Environmental Protection Agency (EPA) over a number of years. The overall goal of source protection is to minimize the risk of aquifer or surface water contamination in areas contributing water to public water supplies. The most effective way to accomplish this is to maintain the area contributing water to the source as open and undeveloped. Ideally, the Public Water System (PWS) should own or control (through easements or other binding agreements) land use activities in the contributing area to their source.

For areas where ownership is not feasible, the PWS should work with local and state agencies to manage land use in the contributing area to minimize risks to water quality. Wellhead protection and watershed protection ordinances coupled with active monitoring appear to be the most effective local tools for land use management. State-wide restrictions on practices that pose an unacceptable risk to water supplies (e.g., underground storage tanks) are an important component of protection. As directed by the Legislature, representatives from the Maine Drinking Water Program (DWP), Maine Geological Survey (MGS), Maine Department of Environmental Protection (DEP), and Maine Department of Agriculture, Food and Rural Resources (DAFRR) met during 2005 to evaluate these principals and how effectively they are applied in Maine's laws and regulations. Participants included:

- ✤ Andrews Tolman, DWP
- Thomas Weddle, MGS
- John Hopeck, DEP
- ✤ William Seekins, DAFRR

A number of individuals from Maine Rural Water Association, Maine Water Utilities Association, the DEP and the DWP provided significant support and content to the review. They include Beth Pratte, David Braley, Robin Frost, and Nancy Beardsley from the DWP, Andrew Fisk, George Seel and Bruce Hunter from DEP, Susan Breau and Alex Wong from MRWA, Jeffrey McNelly, MWUA and Paul Hunt, PWD.

#### Maine's source protection status: results of the source water assessments

From 1999-2003 the DWP conducted a comprehensive assessment of risks to over 2,000 public water supplies in Maine. This work was funded by, and required by the 1996 amendments to the Safe Drinking Water Act. The assessments revealed some significant new factors contributing to risks to PWS. They identified future development as the major risk to Maine's water supplies. We have been fortunate in having many of our water supplies located in relatively rural, undeveloped areas. Many of these areas are currently experiencing significant development pressure, and many sources are at increasing risk.

Certain activities that pose risks to water sources are regulated by the state, and although many have provisions for source protection, the protection of water supplies is addressed through a large number of programs, none of which has complete control over water-quality related activities. Many of these regulations are reactive: they respond to either proposed land use changes, or to contamination events that have already occurred.

An analysis of growth patterns in Maine indicates that public water supplies are at risk in two areas. Many systems are losing customers as both residents and industries leave urban areas. At the same time, the rural areas where their sources are located (Figure 1) are experiencing unprecedented growth of low-density residential and commercial/industrial development, usually self-supplied with water, and using septic systems for waste disposal. Managing future development in source protection areas is the responsibility of almost 500 towns, and coordinating that effort represents a major challenge for Maine. We are working to build awareness of the importance and fragility of our water supplies. Part of this process includes attempting to "imbed" the source protection message into other, allied programs, like the Non-point Education for Municipal Officials (NEMO) program, as well as in guidance for town comprehensive planning.

Certain activities that pose risks to water sources are regulated by the state, and although many have provisions for source protection, the protection of water supplies is addressed through a large number of programs, none of which has complete control over water-quality related activities. Many of these regulations are reactive: they respond to either proposed land use changes, or to contamination events that have already occurred.

Recent work by Ayotte et al (United States Geological Survey, New Hampshire, 2004) involved an evaluation of low level MTBE (Methyl-tert-butyl Ether) concentrations in ground water. MTBE is a watersoluble gasoline additive used to improve air quality, and has been found to be a common contaminant from underground tank leaks and spills. In this study, low levels of MTBE were found to be strongly correlated with general development, road networks, and housing density. Even in the absence of gasoline stations or known spills and losses, development has resulted in MTBE being present in groundwater. Since MTBE is a 'leading edge' contaminant, it is likely that other substances are also present in the flow system, but moving more slowly. The widespread detection of MTBE in developed areas suggests that development, even when well-designed and managed, is a threat to groundwater quality.

More than 65% of all public water supplies serving more than 1,000 people are located in fast growing towns (Figure 1).



Figure 1

This means that their source protection areas are under development pressure, and only about 20% of Maine towns have source protection ordinances in place that manage development. Land use in groundwater source protection areas, according to an analysis of 1990 imagery, is about 15% developed (Figure 2, land use in

wellhead protection areas), and almost 20% is agriculture. Lake watersheds have, on the whole, low percentages of development (Figure 3, land use in PWS Lake Watersheds), but development is concentrated



#### Figure 2



on and near the lake shoreline, where it has the most impact. Source Protection is the first link in EPA's multiple barrier approach to public health protection. The shoreland of lakes is under intense pressure for development. The Drinking Water Program and public water suppliers have a very limited suite of tools they can use directly to accomplish protection. By finding partners and working with them, we can make progress in areas that would otherwise be impossible.

### Existing protection statutes and rules

Source water protection in Maine is influenced by a large number of existing laws, ordinances, rules, and practices in state and local government. In most cases, protection of public water supplies is not the main aim of the regulation. Table 1, below, summarizes the protection tools and threats and applicable laws and regulations.

Land-use management and activities management: Ownership and control options. Public water systems have authority to purchase, by eminent domain, land that is integral to the protection of their source. For many systems, financial and political constraints have kept this option out of their reach. The ultimate source of funds for land purchase is water rates, and rate increases are often difficult and contentious, particularly if used to buy land to keep it in open space, reducing the local tax base. While there are a number of systems who have purchased land and/or development rights in source protection successfully, it often requires partnerships with conservation organizations and local government to obtain land for source protection. For this to be a viable option for more systems, we need to both reduce both political and economic barriers and increase incentives for systems, landowners, and towns.

State and town level protection: Activities regulation can take two forms: management of existing land uses that may pose a threat and control of new activities. Existing threats pose the highest level of risk to water quality. Water Suppliers have authority to inspect and request the local health officer or code enforcement officer to abate any discharge, particularly from a wastewater disposal system. Any discharge other than domestic wastewater requires a DEP license, and the activity may be inspected and monitored by DEP staff. Suppliers, towns, and DEP all have extremely limited staff for inspection and monitoring.

Towns are also authorized to adopt source protection regulations, including both ground and surface water supplies. While nearly all (96%) community water systems have developed plans for source water protection, only 1/5 of community systems have towns with effective source protection ordinances. While there are a number of reasons for this gap, it appears to result primarily from a combination of limited water system ability to advocate for source protection and municipal resistance to restricting land use around water

supplies. Source protection is not a requirement for either the supplier or the town under current law. Towns are also required, under PL 761, to notify Public Water Suppliers of proposed land use changes in their source protection areas. Towns were sent maps showing the locations of source protection areas and material concerning the law's requirements in 2001, 2002, and 2003. A 2004 survey of PWS's indicated that towns were not notifying PWS's of applications as required by the law.

*Specific threats to water quality* are regulated by a variety of laws. In many cases, local regulation is authorized by statute, and ordinances are quite variable from town to town. Even when local ordinances are in place, their enforcement often is extremely limited. Generally speaking, Public Water Systems must rely on either state or municipal regulation to manage the location, operation, and management of potential threats.

Protection Tool	Public Water	Municipal	DEP	Other State
	System	Government		Agencies
Source Protection	Authorized by 35-	As part of open	No	DWP funding,
area ownership	A MRSA §6408	space plan?		open space
				programs?
Active management	Inspection	Possible local	Title 38, §413 requires a	
of existing activities	authorized under	ordinance-Code	license for discharge,	
	22 MRSA §2647-	enforcement	and the facilities may	
	A for suspected	30-A §3428, septic	be inspected/monitored	
	releases.	system malfunctions		
Wellhead/watershed	No	Authorized by 22	No	
Protection Zoning		MRSA §2642, 30-A,		
restrictions		MRSA §4312		I
Threat	NT	D 11 11	20 100 4 85(2,0	L
Underground	NO	Possible inrough	38 MRSA 9563-C	
Storage Tanks		zoning	prohibits new tanks in	
			Existing tanks regulated	
			by Chapter 601	
Aboveground	No	Possible through	Minimal standards for	State Fire
Storage Tanks	140	zoning	underground nining	Marshal
Storage Talks	u i i i i ii.	Zoming	SPCC for some	in an ona i
			facilities.	
Gravel Extraction	No	May be regulated by	38 MRSA §490-D	
		zoning	prescribes setbacks	
Sand Salt Piles	No	Possible zoning	Chapter 574 of DEP	DOT salt use
Salting of roads		-	regulations prohibits	policies?
			new sites in source	
			protection areas	
Subsurface Waste	No	LPI review	Industrial subsurface	Plumbing
disposal (septic			regulated by UIC and	Code, T 700.2
systems)			Discharge permits.	300 ft PWS
				setback
Underground	No	No	DEP Rule Chapter 543:	
Injection wells			UIC program registers	
			injection wells:	
			Discharge Permits 38	
T and anne d'an - f	No	I and and a sec	IVIKSA 9 413	
Landspreading Of	ОИГ	Local ordinance	Case-by case	
Landfills	No	Local ordinance	Case by case	
DCDA facilities	No	Local ordinance	Case by case	
Subdivision	No	Local ordinance	Case-by-case	
Subarvision		Local ordinance	developments	
			developments	

Table 1: Summary of Existing Laws and Regulations

Threat	Public Water System	Municipal Government	DEP	Other State Agencies
Above Ground storage tanks	No	Local ordinance	No	State Fire Marshal
Industrial /Commercial Development	No	Local ordinance?	Site Location for larger developments	
Fertilizers	No	Local ordinance	Some golf courses and related developments regulated	DAFFR nutrient mgt plans
Pesticides	No	Local ordinance	As above	Pesticides Control Board
Shore front development	No	Shore land Zoning may provide help	NRPA review of some activities	
Storm water disposal	No	Local Ordinance	Stormwater Regulations limit recharge in SWPA (Appendix D)	
Surface (land and water) Activities around intakes	No	Title 22, § 2642 authorizes municipal regulation	Certain lakes 12 MRSA § 13068-A limits motor size, type	I F&W 22 MRSA § 2648 400 ft intake radius
Animal husbandry/manure stockpiling.	No	Possible local ordinance	No	7 MRSA Ch747 nutrient management plans
GW/SW extraction	No	Local ordinance	Site Location, limited authority	LURC regulations
Boat launches/access	No	Local ordinance	Shoreland Zoning	IFW, DOC access program
Residential Uses	No	Local land use/zoning	Large subdivisions Site location review	LURC regulations
Overboard Discharges	No	No	38 MRSA §413 licenses all surface discharges	1

### Identification of opportunities for enhanced source protection

The authority to manage land use in areas contributing to public water supplies is widely scattered. Source protection is often a by-product of other land use decisions. Because water supply safety and security are the responsibility of the Supplier, land use decision makers often do not consider source protection in their deliberations unless it is a part of the list of requirements for approval. Even then, clear standards and linkage to water quality and quantity are needed for good decision making.

The protective ownership of land (or its development rights) avoids the necessity of regulating land development at the state and local level. Maintaining land in sustainable agricultural or forestry uses significantly lowers the risks to water supplies. The conservation of land in agriculture and forest uses in source protection area represents a cost-effective water quality management tool that also





can benefit the local economy. A combination of re-focusing existing resources and a fresh emphasis on land conservation would provide new opportunities for source protection.

After nearly 20 years of encouragement, authorization, grants, and pleading, 4 out of 5 community water supplies are without land ownership, control, or protective local ordinance. A high percentage of larger systems, serving more than 500, have effective land use controls, often through a local ordinance. However, most of Maine's community water supplies are small, with most serving fewer than 500 people (Figure 4, distribution of system size). These small systems usually do not have dedicated staff, trustees, or operators who can advocate for them with the local planning or select board. Protection of these small supplies requires understanding and motivation at the municipal level. Ninety percent of the 266 community systems serving fewer than 500 people do not have adequate source protection. For Non-transient Non Community systems, like schools, the percentage of protected systems is even lower.

### **Summary and Recommendations**

# Recommendation 1: Establish consistent policies among all State agencies to enhance source protection in all state decision making, development, and practices.

A number of state agencies have authority over activities that can either enhance or detract from protection of public water supplies. In many cases, public water supply protection is not part of the framework for site selection and permitting decisions. The Maine DWP should provide leadership and coordination for decisions that may influence source protection. Agencies that can assist source protection include:

- Department of Conservation: shoreland and boat launch development, park water supply development, forest management assistance and enforcement prioritization in source water protection areas.
- Inland Fisheries and Wildlife: surface use management of water supply lakes, boat launch development and management, wildlife area management, hatchery management.
- Department of Environmental Protection: shoreland zoning review, Natural Resources Protection Act permitting, enforcement prioritization in source protection areas. Spill response and clean-up and siting of new UST's are good models of how source protection areas can be prioritized in environmental activities.
- Department of Agriculture: prioritization of enforcement, technical and financial assistance activities when correcting environmental problems to give greater priority to source protection areas.
- State Planning Office: assistance to local entities with source protection land use planning, comprehensive plan and ordinance review.
- Land for Maine's Future Board: assistance with protection of open space; protection of water supplies currently not a criterion for conservation.

# Recommendation 2: Create an effective program to maintain agricultural and forestry land uses in source protection areas.

National research shows that well-managed forestry and agricultural uses help maintain water quality and availability. Many source protection areas are currently being converted from forestry and agricultural uses to residential and commercial development. These more intensive land uses, also known as "sprawl" pose greater risks to water quality, and often reduce the availability of both ground and surface waters by altering the hydrology of the area.

2.1 Existing programs(e.g., Nutrient Management, Right to Farm, Sustainable Forestry) to maintain environmentally responsible agricultural and forestry uses should be provided with resources and given a focus to work in source protection areas to encourage land conservation.

2.2 Provide resources and direction to Agricultural and Forestry programs including nutrient management, sustainable forestry, and right to farm to work with landowners in source protection areas to minimize the impact of their activities.

Although agricultural and forestry land uses represent the lowest level of threat to water quality, poor management can lead to a variety of problems, ranging from erosion and sedimentation to hydrocarbon and pesticide contamination of ground and surface waters. A combination of landowner education, conservation incentives, and, where needed, enforcement can significantly reduce these risks.

# Recommendation 3: Mitigate the effects of existing and new development on drinking water quality through the use of education, incentives and enforcement.

### Statewide activities:

3.1: Encourage active management (BMP's) of existing potentially threatening uses in source protection areas through municipal, PWS and state inspection of activities.

3.2 Develop a plan to target enforcement of existing environmental laws in source protection areas.

3.3 Add proximity to public water supplies as a review criterion for Environmental review programs, particularly NRPA and Site Location.

A number of public water supplies are located in relatively developed areas. It is not realistic to expect that businesses and residences will leave a source protection area. It is possible, through the use of education, incentives, and enforcement to mitigate the impact these activities have on water quality.

Maine has a strong array of environmental laws. We also have limited resources to enforce these laws. Programs like Pollution Prevention, Resource Conservation and Recovery Act and Underground Storage Tank inspection, Site Location, and Natural Resources Protection Act (NRPA) enforcement all can assist in reducing risks to public water supplies as well as helping maintain general environmental quality. Source protection areas should be identified on NRPA and Site Location applications, and minimizing the impact of development on water supplies should be an explicit review item under these laws. Focusing the energy in programs like these, as well as agricultural and forestry education and enforcement can reduce risks to public health.

### Local Government activities:

3.4 Set minimum standards for local source protection ordinances.

# 3.5 Amend PL 761 to require that a PWS's written response to notification of proposed changes in land use activities in source protection areas be required prior to approval of a local permit.

Make the adoption of ordinances meeting or exceeding state standards a municipal requirement, using an approach similar to shoreland zoning. Only 21% of all community public water supplies have effective land use controls on their source protection area. These systems serve a large portion of the PWS population (about 60%), but smaller systems have been unable to work successfully with local officials to develop and implement local protection plans. The DWP and its partners have been working with systems and towns for more than 15 years to encourage the adoption of local ordinances with outreach, small grants, technical assistance and model ordinances. Standards should be simple and risk-based.

For ground water sources, a small inner zone would have no new contaminant sources allowed and high levels of management at existing sources. A larger outer zone would require a review of risks associated with proposed development, and would encourage open-space conserving uses, like agriculture and forestry.

For surface water sources, the inner zone would be a part of shoreland zoning, and would include surface use restrictions near the intake, as well as resource protection zoning near the intake. For the watershed, a preference for sustainable agricultural and forestry uses and risk-based review standards for new development would be key components.

Although PWS's are nominally required to be notified of permit applications in source protection areas under PL 761, this provision has not been widely followed by local government. If a written response from the PWS was always a part of the record when the permit was processed, we could be sure that the PWS had been notified and had the opportunity to participate in the process. In many cases, the response might be that the PWS saw no threat in the change in land use. Even if the PWS intervened in the process, the decision would still lie with the local government.

Our review shows that the second phase of Resolve 029, a public discussion of source protection options, refinement of these recommendations, and a report to the 123<sup>rd</sup> Legislature, is appropriate and necessary. The protection of water supply sources is a crucial part of Maine's economy, public health, and environment. We have the opportunity to build this understanding into existing state and local programs and make them more effective. As more land is developed in source protection areas, it becomes increasingly difficult and expensive to provide safe and adequate supplies of drinking water. Maine has been blessed with abundant, clean water. Unless we consider our actions carefully, we will lose that advantage.