

The Safe Drinking Water and the Clean Water acts

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The Safe Drinking Water Act of 1986 and the Clean Water Act Amendments of 1991 present significant financial and technical challenges to municipalities in Maine and other states as they struggle to meet compliance standards. Steve Levy, executive director of the Maine Rural Water Association, offers a view of the effects of these requirements on rural communities; Chris Branch, public works director and city engineer for Lewiston, presents a large community perspective.

A large city view

by Chris Branch, Public Works Director/City Engineer, City of Lewiston

The Lewiston Public Works Department is a little different from many public works departments in the state. We have responsibility not only for our highways and streets and the storm drainage, but we also have responsibilities for water and sewer. We are also responsible for solid waste management, building maintenance, electrical operations including our street lighting system and a hydro-electric plant, and the municipal garage, which repairs all of the city vehicles. We have a staff of about 150 people, we operate about 25 facilities, and we have an engineering division. We have two major facilities: The solid waste management facility and the public works shop. The water and sewer operations are part of the city and are under the jurisdiction of the city council. They both operate as enterprise funds, but particularly so on the water side. Unlike most municipalities in the State of Maine, they are not set up as a district, but rather are part of the city government.

Obtaining an exception to the Safe Drinking Water Act

I first became aware of the Safe Drinking Water Act when I became Public Works Director in 1986. Shortly thereafter, in conjunction with the Auburn Water District, the two communities decided to seek an exception to filtration. We hired a consultant, Camp, Dresser and McKee (CDM) of Boston, to determine whether or not it was effective for us to seek an exception to filtration. Both Lewiston and the Auburn Water District get water from Lake Auburn. CDM started the study in about 1988. It took 12 to 18 months to complete the analysis, which included a lot of work on the lake. They recommended that we move forward with an application for exception to filtration.

At that point, we hired CDM to do some piloting, including ozone, filtration, and some work with chlorine and chloramines for disinfection. Piloting is doing studies of the water on a small scale. Sometimes these are called bench models or bench scales. These determine whether or not particular treatment alternatives are effective for your water supply. Effective means not only will it work, but also how much will it cost. We found that our water worked very well with ozone. We also found that we had good luck with chlorine and then treatment with chloramines or ammonia to cut down on the THMs (trihalomethanes). The exception to filtration application was completed last fall and submitted to the Division of Health Engineering (DHE) of the

Department of Human Services (DHS). We received official approval of our exception from the Division of Health Engineering on January 2, 1992. We are currently in the process of formalizing a consent order with the Division of Health Engineering. Our consultant is drawing together some information and a staff person at DHE has started to work with the attorney general's office to draft the order.

What will Lewiston have to do to meet the requirements to get an exception to filtration? Currently, the City of Lewiston meets all of the quality requirements and the "contact time" requirements. Contact time is the length of time from when we put our chlorine in the system until we reach our first customer. A three-mile long transmission main from Lake Auburn zigzags across the City of Auburn and crosses the river between the North Bridge and the Great Falls. We have had some problems with turbidity because current intake locations are too close to the shore. Because of "lake affects," when it is windy, the waves pound the shore and a sedimentation problem occurs. The water gets cloudy. We manage the high turbidity problem and meet the requirements by shutting down intakes for both Auburn and Lewiston and taking water out of reservoir systems. The reservoir in Lewiston is capable of maintaining water supplies for about 2 1/2 days. The longest turbidity event recorded has been less than 12 hours.

We will also need to install a parallel transmission main to increase contact time as demand increases. For the past few years, demand has actually decreased, due primarily to the declining economy. However, up until two or three years ago, we had seen a dramatic increase in demand. Before the economic problems occurred, the system had reached six and a half to seven million gallons a day, which is quite a bit of water for Maine.

We must install redundancy for the chlorine disinfection process. To make sure that we can always chlorinate, we must have a double system. Fortunately, we renovated our chlorine facility about five years ago, and we have chlorine redundancy built into the system except for a back-up generator. A back-up generator can probably be installed for less than \$100,000. We also need to add ammonia chloramines to the water at the Main Street pumping station, where the transmission main ends and then it goes into distribution mains.

One of the key issues in the Safe Drinking Water Act are trihalomethanes or THMs. At Main Street, based on the bench piloting, we can get a THM somewhere around 18 parts per trillion. That should work out well, at least based on all the information received to date. There apparently was consideration of lowering federal standards to 25 parts per trillion, but now it seems that there may be no change from the current standard of 100. Or it may go down to 50; no one is really sure. There is also discussion of identifying particular by-products of chlorination rather than just THMs as a group. We should be in pretty good shape because the THMs identified as particularly hazardous are not ones that we have a problem with. That covers most of the construction capital improvements required for the exception to filtration.

The other major area of work is watershed improvements. The Auburn Water District owns approximately 700 acres of land within the watershed, which totals about 3500 acres around Lake Auburn. It also owns sixty percent of the shore frontage. The City of Lewiston historically has done very limited watershed management. That had more to do with politics than anything else. Prior to 1980, it was not politically a good idea for the City of Lewiston to buy land in the

City of Auburn. The Auburn Water District wanted the control over the watershed. They just wanted Lewiston to pay them to manage it but not get involved in the management

Those times have ended. The City of Lewiston last year spent \$50,000, which is not a lot but it is a start, on watershed acquisition in Auburn. Last fall, we participated in the design of the new rules and regulations to restrict activities on the lake. We are also negotiating an agreement with the Auburn Water District on how to split the cost of future improvements within the watershed, to determine how costs will be shared on the land currently owned by the Auburn Water District, and how Lewiston can become an equal partner in the watershed management.

We have to show control over the land; that is a requirement of the exception. That is what we are doing now by negotiating with the Auburn Water District. In the future, we must buy more land within the watershed as it becomes available. We are also considering installation of a new lake intake to improve quality. We have already started to restrict activity on the lake. There has not been any swimming in Lake Auburn for 50 or 60 years. Boating is restricted on approximately one-third of the lake, areas where intakes are located now and potentially will be located in the future. The City of Auburn Planning Board and city council have cooperated to restrict activities within the Lake Auburn watershed. They have very restrictive standards for septic systems, much more restrictive than what the state requires. A very restrictive zoning requirement sets a very low density for future development in that area.

Finally, we must carefully examine erosion control measures, continue septic surveys, and so on. The biggest problem is the potential for a malfunctioning septic system. Some problems occurred in Lake Auburn, where fecal coliforms were discovered about a year ago. Camp, Dresser and McKee is working to identify the source of those problems and how those can be rectified and exactly where to put new lake intakes.

Our costs, compared to a lot of communities, have been relatively low. To date, engineering costs have been \$500,000. Capital improvements will total approximately \$6.2 million dollars, which includes the parallel main, the reservoir work, the chlorine redundancy and the chloramines, lake intake, and land acquisition. Annual costs for watershed management have been estimated by Camp, Dresser and McKee, including the capital improvements for the erosion control and also improvements for land acquisition, at about \$200,000 to \$300,000 a year for both the Lewiston Water Division and the Auburn Water District. The interest costs on bonds will cost about \$600,000. About \$800,000 a year in increased costs will be related to the Safe Drinking Water Act, and that will result in about a forty-five percent rate increase. Lewiston was fortunate. Filtration would have increased the cost over one hundred percent.

Clean Water Act

A lot of people think the Safe Drinking Water Act is expensive, but the scary thing for the City of Lewiston is not the Safe Drinking Water Act; it is the Clean Water Act. It affects us in three areas: combined sewer overflows (CSO), non-point source pollution (i.e., storm water runoff), and wetlands. The wetlands really do not affect us directly as much as the other two. In 1989, the city, recognizing the future problems with Clean Water Act mandates, hired a newly graduated engineer out of the University of Maine. He is called the CSO Coordinator. He has been setting

up rain gauges and is block testing on CSOs. We are in the process of hiring a consultant to do a Clean Water Act study, which involves analyzing CSOs and storm water runoff quality and quantity issues. The study and consultant selection is being undertaken with the Auburn Sewer District. Lewiston has 32 combined sewer overflows, of which 18 are licensed.

The study will monitor CSO discharge and receiving waters, and will develop models to analyze the impact. The consultants will use the monitoring to determine which type of engineered solution we should use. This analysis will include a financial impact. We think that it is imperative that financial impacts, and the ability of the community to fund the improvements, be included as part of this report.

We also feel that public participation is the key. I do not expect anybody to convince 40,000 people that we should do CSO work. But I will try to convince the influential people, who will show up at public meetings to voice support for this work, and to keep them educated and up-to-date and interested in the project. These people include members of the Androscoggin River Committee, which is a group of local citizens who are very concerned over the quality of the water in the river, and also members of organizations such as the Chamber of Commerce and some of the other key political people within the community.

An unusual situation exists on the Androscoggin River. International Paper, Boise Cascade, and James River (in Berlin, New Hampshire) all dump unbelievable amounts of material into the river long before it reaches Lewiston/Auburn. One of the key issues in our study will be to determine how much impact we will have on the river if we do all this work. One area that we will probably have to address is bacteria, and our consultants will focus on that. The cost of these improvements, based on our best guess, will be somewhere in excess of \$40 million. When you compare \$40 million to the \$6.2 million to be spent on the Safe Drinking Water Act, you can see why we do not think that \$6.2 million is the big ticket item.

The non-point source storm water issue is a little different. There are no communities within the State of Maine that exceed the 100,000 population, the level that requires licensing of storm water discharge. However, communities are required to license their landfill and also many public works facilities for storm water discharge. Lewiston's public works garage will be required to get a license. Based on historical precedence, Lewiston eventually will be required to deal with the non-point source issue, just like those communities over 100,000 are required to do it.

We have decided to include in that Clean Water Act study a plan similar to what we are putting together for CSOs. We want to have a study there ready to go when the time comes. In the meantime, we plan to incorporate changes into zoning codes, ordinances, and development standards that address the non-point source issue. We also want to address the issue, if we have improvements that will be needed, on an engineering basis.

We plan to put a method into operation where the city can collect fees from developers over a period of time. For example, a storm drainage district might collect fees based on the amount of impervious surface, which is an idea that has been used in Florida. Because of some success in these areas, we will have some preparation when the requirements are established.

Based on experiences with our landfill, we believe that it is much easier to work with a regulatory agency before you get into a situation where they dictate a schedule to you. So far we have been able to do that. On the non-point source issue, Lewiston is probably out in front of every other community in the state. On that issue, we have been able to make points with DEP and on our landfill work as well.

A serious problem has been a lack of information, particularly from the federal regulatory agencies, regarding the non-point source issue. We have received absolutely nothing on that or on CSOs. We were told by DEP that EPA would send us a letter last spring, which we have never received. We have called EPA on numerous occasions to ask some questions; they never return our phone calls. Had it not been for people at the DEP, who have been quite cooperative, we probably would not have received any information. Another problem is the length of time to receive response from a regulatory agency. A wetlands permit, which was supposed to be processed in 20 days, took over 100 days. Based on my conversations with a number of people, that was quick.

We have also found a lack of common sense by regulatory agencies in interpreting some laws. For example, our landfill has wetlands (technically), which are caused by leachate from the landfill. The wetlands are located on the landfill, but we must get a permit to construct the closeout in those wetlands. If that is not stupid, I do not know what is.

Obviously, another problem is costs. The Clean Water Act study will cost three-quarters of a million dollars. Construction costs for compliance with the Clean Water Act could be over \$40 million and \$6 million for Safe Drinking Water Act compliance. State-mandated solid waste will cost about \$15 million. The total is over \$60 million. With a bond cost for that \$60 million of \$6 million per year, that requires a five mill property tax rate increase for the City of Lewiston. Lewiston currently has, I believe, the highest property tax levee in the state at about 23 1/2 mills.

The real impact on the City of Lewiston of these issues - the Safe Drinking Water Act, the Clean Water Act - is financial. The residents of Lewiston will not let the city manager and the public works director put in a five mill property tax rate increase to finance this. We will have to cut something else, and the question becomes - what do you cut? Education? Police? Fire? Public works services? That is the big issue.

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