



Estimating Costs of Groundwater Resource Loss

By Barbara Priest

*Loss of a public water well to contamination may cost more than you think. Have you considered the cost of **not** protecting the wellhead area? Direct costs of losing your water supply to contamination may be substantial but indirect costs may far exceed them.*

Direct Costs

THE immediate and direct consideration is: time and funds needed to replace the use of your contaminated well(s). The estimated time to site a new well field, including acquiring land, drilling, setting up connections and getting all the necessary permits is about five years, if clean ground water is available. Over that period the supplier would still need to provide water to existing users, buying from other suppliers, switching to surface water use (if water rights are available) or bringing in bottled water. Another option might be to treat the contaminated water at the wellhead, provided the contaminant can be treated. Groundwater cleanup of a public water well can double or triple the cost of water to users.

The city of Milwaukie discovered the solvent TCE in its well water in 1988. EPA estimates that as little as five gallons of TCE spilled from a 50 gallon drum may have caused the contamination. The city's four wells are valued at \$300,000 each. Milwaukie was able to purchase water from Port-

land at a cost of about \$280,000 per year. The switch to Portland water and recovery cost of the treatment facility increased water rates to Milwaukie users by 58%. Three years later, with engineering costs over \$190,000 and a \$1.3 million bond for equipment and construction, the city has been able to treat the contaminated water. Additional rate increases are anticipated at 5% per year over the next few years. The total cost is estimated to be \$2 million, not including staff time or legal fees.

Direct cost summary

- Loss of developed wellfield
- Purchase of temporary water
- Engineering, construction and equipment costs
- Treatment
- Legal fees
- Increased water rates
- Inability to serve heavy water users
- Development of a new water source

Indirect Costs

INDIRECT costs will vary from site to site, but now that your well

water is contaminated, facility operations will come under increased public scrutiny. The community you serve will be stigmatized as having poor water, a situation which likely will have economic repercussions. The perception of contaminated water may cause would-be developers to look elsewhere, lower property values and otherwise reduce the tax base. Your operation may not be able to provide for peak capacity or drought crisis due to the loss of previous capacity. You will lose some of your users to other suppliers. Interconnected suppliers will worry about purchasing water from you, creating difficulties in negotiating water purchases.

In 1990, Springfield, Oregon, discovered one of its two high capacity wells in the SP/Maia wellfield was contaminated. The wellfield is situated adjacent to light manufacturing and wood processing facilities. Releases from leaky underground tanks are the suspected cause of the 1,1,1 TCA con-

Barbara Priest, MS, is the wellhead protection specialist for the Oregon DEQ.

Deja vu all over again...	
Perhaps we buried the information in the April issue: Drinking Water Section has a new home. Please use these addresses:	
(Correspondence, plan review and general matters-was PO Box 231)	
Drinking Water Section Oregon Health Division P.O. Box 14450 Portland OR 97214-0450	
(Water test results only-was PO Box 200)	
Drinking Water Section Oregon Health Division P.O. Box 14350 Portland OR 97214-0350	
(Tests of private wells for sale of property-was PO Box 6350)	
Drinking Water Section Oregon Health Division P.O. Box 14560 Portland OR 97214-0560	
(Physical location)	
Drinking Water Section Room 611 800 NE Oregon St., # 21 Portland OR 97232	
Inside this issue:	
Drought solutions.....	2
Troubleshooting lab reports.....	3
Training calendar	4
Phones	
Section Manager:	731-4010
Monitoring/ Compliance:	731-4381
Field Services	731-4317

Drought: Strategies for Small System

Survival

Many areas in Oregon are experiencing impacts from prolonged periods of below normal precipitation including the southeast, southwest and east. Water systems in some parts of the Willamette Valley are also becoming concerned about adequate water supplies.

A number of larger water suppliers have recently issued both voluntary and mandatory customer water use limits to maximize available supplies should dry weather continue into the fall. Many dry weather problems can be solved or minimized by careful operation and good advance planning. Failure to plan ahead can result in crises, water supply interruptions and inconvenience to users which might have been avoided.

Small systems can take action to monitor their water sources and be prepared to respond quickly if problems occur relating to the drought:

■ **Monitor flows at sources:** during dry conditions, water from springs and low capacity or shallow wells can decline rapidly. Flows from springs should be observed weekly or more often if

necessary. Output can be checked easily using a bucket and stopwatch. Pumping levels in wells should be monitored frequently. Unnoticed drops in water levels can result in the pump's breaking suction, causing pump damage. Water levels under pumping conditions can be checked using a tape or by reading the air line. Water levels should be measured and recorded weekly or more often.

■ **Control water use** to avoid using more than sources produce. If well or spring output falls or excessive use occurs due to hot weather, consumers must be advised to reduce nonessential use, especially for lawn watering and car washing. System operators should keep daily records of use if meters are available on the source well or spring and advise consumers if use is too high.

■ **Monitor treatment carefully:** Low water conditions may result in changes to the normal quality of the supply. Operators should review coliform bacteria test results and take extra care to be sure treatment, especially chlorination, is effective and uninterrupted.

■ **Water hauling:** If interruptions in supply occur in spite of these preventive actions, it may be necessary to obtain water from another source. Detailed water hauling guidelines are available from OHD. Generally, water should be hauled from an approved source, done using approved and clean containers such as commercial haulers

or milk trucks and hauled with an adequate chlorine residual. The local county health department or the Health Division can supply information on available water hauling vehicles.

■ **Alternate water sources:** If the use of alternate wells or other sources is considered, approval from the Health Division must be obtained in advance. This includes submitting well logs, site plans and water quality monitoring data. Use of alternate water sources requires advance planning.

More information and assistance is available from the Health Division **Phase II Update**

Section OHD 331-4317, conducted an advisory committee meeting May 13 in Eugene which was well attended. No formal oral testimony was offered but several written comments and suggestions were received and considered. After being edited, the rules were signed by the Health Division Administrator and filed June 9 with the Secretary of State and the Legislative Counsel. The rules, OAR 333-61-005 through 099, became effective on filing.

The final Synthetic Organic Compound use and susceptibility waiver document has been completed and is ready for distribution. For those who have not submitted a coupon from the April 1992 *PIPELINE*, the document is available from the Drinking Water Section. Systems with a population over 299 which must begin monitoring for the Phase II regulations in January 1993, must submit for receipt by Sept. 15 the information outlined in the document to be considered for a use and/or susceptibility waiver.

Staff Notes

John Huffman retired June 30 after more than 30 years of public service and over 15 years in the drinking water program. We wish John the very best in his new endeavors and will miss his work, expertise and good humor.

Ron Hall, former manager of the technical services unit of the Drinking Water Section, has been promoted to manager of the Environmental Services and Consultation Section. ESC is responsible for a variety of environmental health programs including food service, environmental toxicology, indoor air quality and shellfish regulation. We wish him well with his new challenges.

Chuck Stahl transferred to ESC from the Drinking Water Section's technical services unit and will be working in the Pendleton Office. Good luck, Chuck!

Bonnie Waybright and Michael Whiteley have joined the Drinking Water Section staff as Public Health Engineers.

In Memory

Drinking water program staff ask you to join us in remembering two friends and colleagues who passed away recently. Dr. Larry Foster, State Epidemiologist, directed many of the investigations involving drinking water that occurred over the years and contributed his time and energy to training water system operators on waterborne disease prevention. Chuck Harrison, general manager of the Clackamas Water District, played a key role in the program's technical advisory group, working on watershed management and emergency response issues. We will miss them both.

Water Tests: Getting Credit for Your Hard Work

by Pam Judd and Robin Peterson

Have you ever received a monitoring violation, when in fact you did the required monitoring? Or had to send a second copy of a microbiological test result because the first was lost? Or taken a sample, only to find you had to post a public notice anyway?

At times like these, the process can seem mysterious and be frustrating. We get several calls each month from concerned water system operators who unexpectedly have received an overdue notice from our office. They feel their test should have been received on time but wasn't.

Because many people are involved in the processing of a water sample, the cause of a missing report can be difficult to track. We may help by clarifying our end of the routine to give you an idea of what happens to your report once that sample is taken. Also consider the list below, "Troubleshooting Lab Reports." If one of yours ends up missing, you can do some investigating.

After you or your lab takes a sample, the water is analyzed and a report produced. You may have asked your lab to send test results directly to the Health Division or to you first. Ultimately, however, the report must go to the Health Division. The paper copy of the report is stored in office files for several years but you must also keep a copy.

When reports arrive, they are sorted and, if all necessary information is included, test results are entered into the database the same day. If information is missing or there is a problem, reports are pulled for closer attention.

A check of the computerized database about the 10th of

the month following the testing date reveals which systems have not submitted samples (as of the date of the check) and generates a notice which is sent to the water system. A second check of the database about the 25th of the month is used to list violations and generates another set of letters.

As you can see, it's important to get the report in on time and to include all the necessary information: system identification number, system name, test type, result, etc. Having your lab send the report directly to us can cut down on some of the paper handling often responsible for missing reports.

The Drinking Water Section monitors approximately 3,500 water systems in Oregon and many of them send in multiple reports monthly. With this volume of mail, and, in spite of our best efforts, there are opportunities for problems to occur. Sometimes a report may be lost; but more commonly, problems result when operators misunderstand procedures for collecting samples and reporting test results.

Your calls help us track down the source of the problem and correct errors. But before you call, you might want to consider the following list of trouble spots. See if you recognize any as your own. Gather what information you can, then give us a call and we will work together to solve the *mystery*.

Pam Judd, B.A., Office Specialist, and Robin Peterson, Office Assistant, both of the Monitoring and Compliance unit of the Drinking Water Section, receive and enter water test results.

Troubleshooting Lab Reports

Problem:	Cause:	You can help:
Incorrectly labeled tests	Routine samples marked "special" or "repeat." Routines are monthly or quarterly samples; Repeats are samples taken after a bad test; Specials are other tests, e.g., water main construction, raw water tests	Carefully mark water samples and call us if you have questions
No identifying information	Missing or illegible system name or identification number	Clearly label test reports; be sure to use system identification number and name
Test taken in wrong month or quarter	Sample taken at wrong time (we apply the test to the month or quarter the sample was collected)	Take sample early in the test period and check for the correct date.
Report arrives late	Test results miss cut-off date, sometimes due to using wrong address	Send in water sample early and check for correct address
Wrong form	Form is not state-approved, thus, does not include necessary information or format	Consult with your lab or the Drinking Water Section to be sure you are using the correct form
Report never arrives in our office due to miscommunication between operator and lab	The operator is waiting for the lab to send in results, while the lab is assuming the operator will.	Clarify the agreement you have with your lab

tamination. Formal site investigation is just beginning and cleanup time lines are unknown. The Springfield Utility Board (SUB) has spent

Continued on page 4

Resource Loss (Continued from page 1) in excess of \$155,000 investigating and trying to acquire replacement water supplies with limited success. It is estimated that replacing the SP/Maia wells may cost three times the original \$600,000 investment.

The Springfield Utility Board receives inquiries about groundwater contamination and water quality from consultants and attorneys on a regular

basis. A major concern for new businesses is to ensure a plentiful and clean water supply to avoid placing their facilities next to contaminated property which might limit use because of cleanup activities. Equally important is the perception of the quality and quantity of the supplier's water. Even though no one has said so specifically, it is SUB's belief that several businesses have chosen other locations after evaluating properties adjacent to the contaminated aquifer.

Today's savvy investors will not locate in an area without going through a complete environmental investigation. Springfield is looking forward to

having a wellhead protection program in place to protect its water supply, instill confidence in potential developers and attract new businesses.

Indirect Cost Summary

- Loss of peak capacity
- Inability to respond to crises
- Reluctance by other suppliers to interconnect
- Unknown clean up costs and timelines
- Future development opportunities and jobs lost
- Lower property values, bond rating and tax base
- Difficulties in negotiating water purchases
- Reassessment of water supply situation
- Opposition to future rate increases
- Increased consumer complaints

Training Calendar

Small Water System Training courses

Drinking Water Section, OHD
 Contact Claudia Stiff, 731-4317
Date County / other location
 July 29 Umpqua Community College,
 Campus Center, Indian Room
 Sept. 29 OSU Extension
 3328 Vandenburg Road
 Klamath Falls
 Oct Polk/Yamhill
 Nov Tillamook/Clatsop/Columbia

Safe Drinking Water Funding Seminar

Money and how utilities can finance implementation of the Safe Drinking Water Act is the topic of a seminar offered by the Pacific Northwest Section, American Water Works Assn., Oct. 15-16 at the Sheraton Airport Hotel, Portland. Aimed at officials of utilities and local health departments and water consultants throughout the Northwest, the seminar will address the potential

impacts of SDWA regulations and what it will take for utilities, big and small, to finance them. Contact Judy Gwynn, secretary-treasurer, PNS/AWWA, 503 / 246-5845.



Drinking Water Section, Oregon Health Division
 Department of Human Resources
 P.O. Box 14450
 Portland OR 97214-0450

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