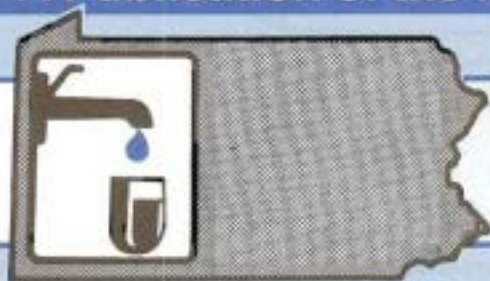


A Publication of the Pennsylvania Rural Water Association



The Keystone Tap

Winter 1993/94

VOL. VI, NO. 4

Pennsylvania Rural Water Association Sixth Annual Conference & Exposition March 27-29, 1994



Nittany Lion Inn, State College, PA



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Mt. Morris, PA 15349

May 19, 1993

Pa. Rural Water Association
Attn: Bill Keller
138 Bishop Street
Bellefonte, PA 16823

Dear Mr. Keller:

I'm writing you this letter to thank you for your time and knowledge and for helping us in regard to the smoke testing of our sanitary system. The time you spent with our operators provided them with enough knowledge to perform our own smoke testing in the future. It's good to know that help is only a phone call away when needed.

Sincerely,
Charles Nutter
Charles Nutter
Office Manager

BEECH CREEK BOROUGH AUTHORITY

Box 216
Beech Creek, PA 16822
Phone (717) 962-2291

October 6, 1993

PA Rural Water Association
138 West Bishop Street
Bellefonte, PA 16823

Dear Sirs,

We have received your newsletter and are very impressed.

The Authority members have requested me to ask you if it would be possible for us to receive seven of these each quarter so each one can have their own.

Thank you for your cooperation in this matter.

Sincerely,
Patricia Schultz
Patricia Schultz
Secretary

CASTLE ROCK ASSOCIATION

BOX 100
EDGMONT, PA 19028

June 9, 1992

Pennsylvania Rural Water Association
138 West Bishop Street
Bellefonte, PA 16823
Attention: Mr. Steve Krchnavy

Dear Steve:

On June 8, 1992, your circuit rider, Mr. Chris Shutt, visited our water system and provided us with a wealth of information and suggestions. Mr. Shutt is a true professional. His knowledge of the water business, DER regulations, operating and mechanical procedures is a great asset to the PA Rural Water Association and its members.

You, as the program director, and the Association are fortunate to have an individual of his character, dedication and knowledge as part of the staff. It is reassuring to know that if a problem arises that we cannot solve, we can rely on Chris for a solution.

Very truly yours,
George P. Evanko
George P. Evanko
Vice-President

/cae

**The Water Authority
of the Borough of Braddock**

Municipal Building
415 Sixth Street
Braddock, Pennsylvania 15104
Telephone: (412) 351-2272

November 23, 1993

Steve Krchnavy
PA Rural Water Association
138 Bishop Street
Bellefonte, PA 16823

Dear Mr. Krchnavy:

The Board of Directors and the Managerial Staff of the Braddock Water Authority would like to thank you and everyone at the Pennsylvania Rural Water Association (PRWA) who was instrumental in helping us to obtain the truck from Peoples Gas.

Steve, whenever you are ready, you may come and take the pictures that we talked about over the phone.

Again, thank you ever so much.

Sincerely,
Ruth Riley
Ruth Riley
Manager

RR/hw



The Keystone Tap

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NOTICE TO READERS

Pennsylvania Rural Water Association would like to invite you to prepare a short article about your water system or other topics which would be of interest to our readers. We also welcome articles from our Associate members.

Send your articles with black and white photographs, if available, to:

PRWA
 138 West Bishop Street
 Bellefonte, PA 16823

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The **KEYSTONE TAP** is the official publication of the **PENNSYLVANIA RURAL WATER ASSOCIATION**, 138 West Bishop Street, Bellefonte, PA 16823, and is published quarterly for distribution to representatives of Rural and Municipal Water Supplies. Issues are mailed free of charge to member and non-member rural water associations. Articles and photographs are encouraged with payment in complimentary copies. For more information regarding this publication, contact the PRWA office, 138 West Bishop Street, Bellefonte, PA 16823, 814-353-9302.



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Nitrate Contamination of Water Supplies: A Rural Dilemma

John K. O'Connell

A typical Pennsylvania community may draw its water supply from a surface source, such as a river or creek, or a groundwater source consisting of deep wells and natural springs. The implementation of strict pollution discharge standards and the promulgation of additional public drinking water regulations have significantly reduced the transmission of illnesses and diseases resulting from poor water quality. Nevertheless, the ill effects of man-made pollution on water supplies continues to be documented, and public and private water suppliers are increasingly faced with mounting costs for the treatment required to remove these pollutants.

Understanding the Problem

All sources of water contain impurities in varying amounts. Whether or not these contaminants are harmful to the public health depends on the composition and quantity of the contaminants present and the effectiveness of the treatment program intended to remove or reduce them.

In many rural Pennsylvania communities, one particularly troublesome contaminant is nitrate. Although this contamination is known to originate from various sources such as illegal residential and industrial pollution, subsurface sewage disposal, and land application of wastewater and sewage — sludge, agricultural practices are generally considered to be the most serious source of this contamination. Studies have shown that the nitrate level in water wells in various areas of Pennsylvania currently exceeds the state and federal maximum contaminant level (MCL) of 10 milligrams per liter (as nitrogen).

The nitrate cycle begins just below the ground surface where aerobic bacteria convert ammonia and organic nitrogen into nitrite, and then nitrate. As the negatively charged nitrate ions (anions) percolate downward through the soil, they are not actively retained by the soil since the soil has primarily positive charge (cation) exchange capacity. This nitrate is often accompanied by increased concentrations of bacteria, and in areas where the substratum is composed of porous material, this pollution freely percolates into the underlying aquifers. Figure 1 illustrates the nitrate cycle and the various sources of this pollution.

Public Health Concerns

Nitrate contamination in concentrations greater than 10 milligrams per liter (mg/l) has been associated with a serious and sometimes fatal illness in infants called methemoglobinemia. Methemoglobinemia, or "blue baby" syndrome, is a temporary blood disorder primarily inflicting infants under the age of six months.

Nitrite is a more potent form of nitrogen, and it is this form which is most dangerous to the infant's health. The reduced nitrite combines with hemoglobin in the infant's blood and interferes with the oxygen-transfer function. Hemoglobin is

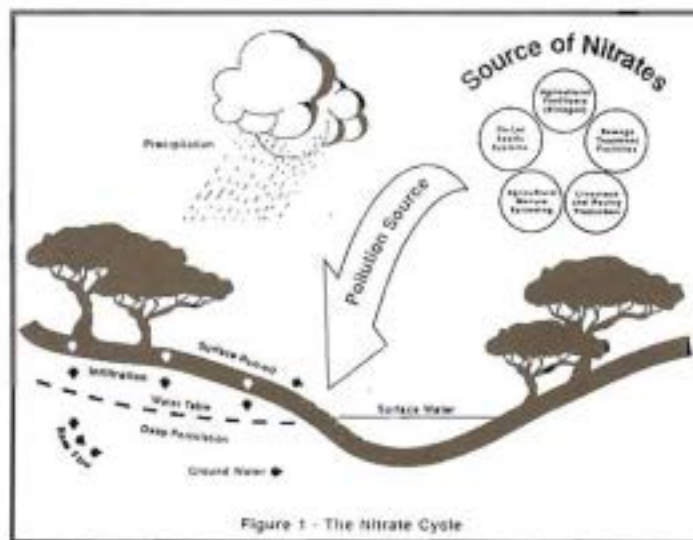


Figure 1 - The Nitrate Cycle

the pigment and oxygen carrying component of the blood that transports oxygen from the lungs to the body tissue. This oxygen transfer process is essential to human health. The reaction of the reduced nitrite with hemoglobin converts the hemoglobin to methemoglobin, which is incapable of carrying oxygen. This results in an oxygen deficiency that can cause death.

Although there have been very few cases of methemoglobinemia reported due to nitrate contamination of drinking water supplies, the potential for this illness to occur does exist, and the maximum contaminant standard of 10 mg/l of nitrate nitrogen (as nitrogen) is being increasingly enforced by the United States Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Resources (PA DER).

In specific areas where nitrate contamination has been most prevalent, health agencies sometimes recommend the use of bottled water for preparing baby formula as a means of protecting infants from high nitrate water. These agencies also advise pregnant women and nursing mothers against drinking water that contains high levels of nitrate. Healthy adults are not considered to be at risk from nitrate contaminated drinking water; however, they are not known to derive any benefit from it either.

Strategies for Effective Treatment

Numerous solutions have been developed for treating nitrate contaminated water to an acceptable quality. Because of the expense involved in planning and constructing any type of treatment process, water suppliers with limited resources often look for less costly alternatives. Several alternatives that are frequently considered are the development of a new water supply, blending of two or more independent water supplies, or interconnection with an out-

continued on page 4

Nitrate Contamination

continued from page 3

side water supply system. Each of these options has advantages and disadvantages. In some cases, the costs to implement one of these alternatives may prove to be more expensive than the installation of a treatment system.

With the increasing costs of developing a new source of water supply, the difficulty in finding a high quality source that will comply with the primary and secondary drinking water standards with minimal treatment, and the inherent risks that this new water source may also be contaminated over time, development of a new water supply is becoming a less viable option for addressing nitrate contamination problems.

Another option is to blend the water from two or more independent sources to produce a composite water supply of acceptable quality. This option is most often used in water systems where at least one of the water sources is known to be of good quality. Implementation of this alternative often requires modifications to the sources of supply so that the quantity of water supplied by each source can be carefully controlled. An effective operational plan and the proper equipment are essential to assure proper mixing of the water supplies. Frequent water sampling and quality control procedures are necessary to verify that the various sources are being blended in the proper proportions.

Biological denitrification has been used extensively for the removal of nitrate from wastewater streams. This method employs a "natural process" that utilizes anaerobic bacteria and an organic food source to reduce the nitrate to nitrogen gas. This process has not been applied to the treatment of drinking water supplies due to the problems associated with removing the bacterial colonies from the treated water.

Ion exchange is currently the most cost-effective and widely used process for the removal of nitrate pollution from water supplies. The ion exchange process functions exactly as the name implies. Water passing over a bed of insoluble resin material exchanges selected ions with the resin material. In the nitrate removal process, sulfate and nitrate anions are attached to the exchange resin and chloride ions are released into the water.

The capacity and selectivity of the exchange resin are two of the most important parameters in evaluating the performance of the process under operating conditions. Capacity is the estimated quantity of ions available for exchange. Selectivity is the preference of the exchange material for one group of ions over another group of ions. Selectivity is an important consideration when using ion exchange for nitrate removal since the process is not specific to nitrate, and other ions, particularly sulfate, are exchanged for chloride ions. When the capacity of the exchange resin has been exhausted, it is necessary to regenerate the resin bed with a concentrated salt solution to displace the sulfate and nitrate ions and replenish the resin with chloride ions.

Care must be exercised to assure that the resin is regenerated just prior to the point where it becomes completely exhausted. If the treatment unit continues to operate after the resin has reached its exhaustion point, breakthrough of the retained sulfate and nitrate ions can occur. Should

breakthrough occur, potentially dangerous nitrate spikes at concentrations up to three times the nitrate concentration of the untreated water can pass through the treatment unit and into the water system.

Figure 2 illustrates a typical anion exchange treatment system for the removal of nitrate. The basic system consists of pressurized, fixed bed, downflow units that are similar to pressure filters. In this system, the water enters the top of the treatment unit tank under pressure and is forced downward through the exchange resin bed to an underlying drainage system. The water is collected in this underdrain system and is conveyed out of the treatment unit to storage or to the water distribution system. A separate internal distribution system is provided to evenly disperse the concentrated salt brine solution over the resin bed during the regeneration cycle.

These treatment systems are fabricated and assembled by several different manufacturers; however, the principle of operation of the system is basically the same. There are basically five (5) operational phases for this type of treatment system. These phases are:

- Service
- Backwash
- Brine Feed
- Rinse
- Return to Service

The ion exchange process has proven to be an effective and reliable means for treating nitrate polluted water supplies to an acceptable quality. Major drawbacks of the system are the additional expenses associated with providing a salt brine to regenerate the resin and the problems associated with the disposal of the spent brine and regeneration cycle wastewater.

Conclusion

A knowledge of the various sources of nitrate pollution and how this pollution affects the water supply is critical to Pennsylvania water suppliers who are located in regions of the state where nitrate contamination is known to be a long-standing problem. The recent crackdown by the EPA in Pennsylvania and elsewhere suggests a new determination

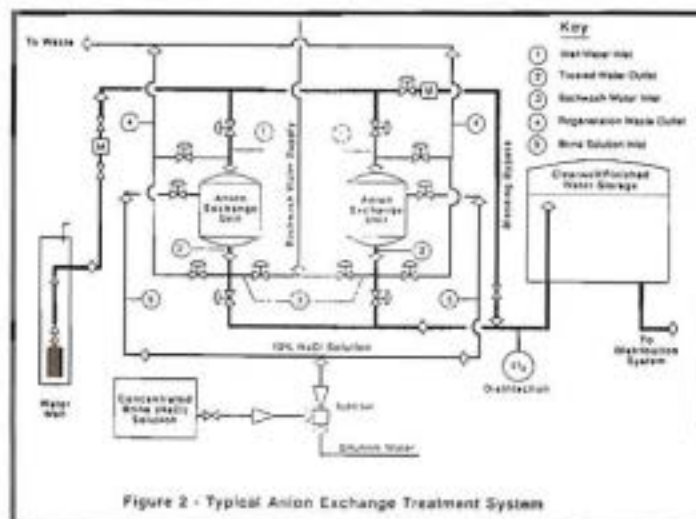


Figure 2 - Typical Anion Exchange Treatment System

continued on page 8

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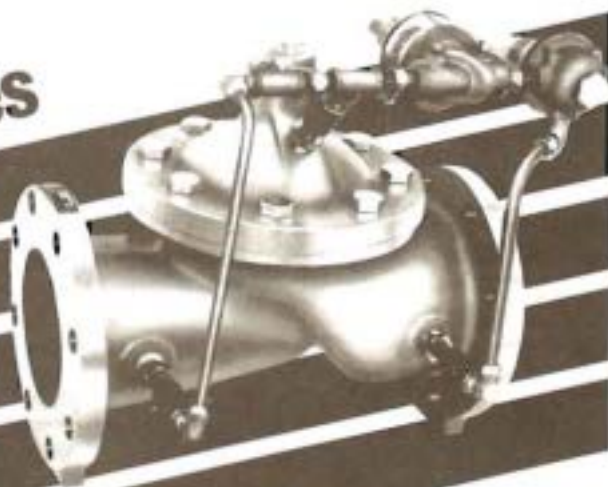
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Pennsylvania Rural Water Association Receives National Recognitions

The National Rural Water Association Annual Technical Conference was held October 27-29, 1993 in Portland, Oregon with all 45 state rural water associations in attendance. 1500 representatives, from all 50 states, were present as well as representatives from Puerto Rico and the International Rural Water Association based in Honduras, Central America.

Pennsylvania Rural Water Association was pleased to have all staff members nominated for National awards. During the Tribute to Excellence award ceremony held Tuesday, October 27th, PRWA received a total of 5 state awards plus 1 shared award. PRWA recognitions went to Stephen M. Krchnavy for Program Manager of the Year, Chris L. Shutt for Circuit Rider of the Year and Judy Muehl for Groundwater Protection Technician of the Year. Pennsylvania Rural Water Association also received an award for Excellence in Accounting and the most prestigious award of all, Excellence in Technical Assistance which was based on the quarterly reports and monthly technical assistance provided by the state association. Jearl Ramsey, West Virginia, received the Field Representative Award of the Year for the GECC (General Electric Capital Corporation) loan asset work done in the states of Pennsylvania, West Virginia, Maryland, Delaware and New Jersey.

Pennsylvania Rural Water Association is a non-profit organization that provides training and technical assistance to the water and wastewater systems in Pennsylvania. Four field staff and 3 office staff work with 7 volunteer board members in providing information to members and non-members across the state. The office is centrally located in Bellefonte, Pennsylvania and has been in existence since July of 1988. In this short period of time, membership has grown to over 500 system, associate and individual members. Plans are underway for the 1994 Annual State Conference and Exposition scheduled for March 27-29, 1994 at the Nittany Lion Inn, State College, PA. If you would like additional information about PRWA, you can contact their office at 800-653-PRWA.



Left to right: Judy Muehl, Groundwater Technician; Steve Krchnavy, Program Manager; Darrell Brown, President of National Rural Water Association; Barb Judeich, Office Manager; Bill Keller, Wastewater Technician; and Chris Shutt, Circuit Rider

INFORMATION NOTES:

- Pennsylvania has 2400 water systems with populations 10,000 or less and, of these, 2100 systems have a population of 3,300 or less.
- Pennsylvania has 900 wastewater systems in the state.
- Pennsylvania is one of 12 state rural water associations with the groundwater protection program. It is estimated that it costs \$1.00 in groundwater protection in comparison to \$1,000.00 in treatment of contaminated groundwater, making the old saying "an ounce of prevention is worth a pound of cure" very true.

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Can't Afford To Jar Test?

We often hear from treatment plants that they *want* to jar test, they know they *should* be jar testing, but they just can't seem to justify the cost of the equipment.

Granted, a good, dependable six-station jar tester isn't cheap. The cost for a complete setup is about \$1,400. In many cases, that can be a big chunk of a small system's annual equipment budget.

As a result, the purchase of a jar tester is frequently put off until next year, or "some day." Sometimes funding *never* comes.

What many operators fail to realize is that jar testing, in most cases, *saves money*. And in many cases, a *lot* of money. *So much* money, in fact, that the initial cost of jar testing equipment is often recovered in *less than one year*.

A jar test is conducted to determine the accurate dosage of alum or polymer (coagulants) to add to the water to trigger efficient flocculation. (Weather conditions, pH and temperature are just a few of the many variables which affect coagulant dosages).

In many plants where jar testing is *not* done, there is a tendency to dose a little extra, "just to be sure." This overdosing can result in on-going, unnecessarily high coagulant expenses.

An example of just such a situation was recently documented by Larry Rader, Program Manager for the West Virginia Rural Water Association:

A JAR TEST-IMONIAL

The operator of a small system (700-800 customers) attended one of Larry's jar test training workshops. After learning the procedure, the operator returned to his plant and began jar testing daily. The results were both instantaneous

and dramatic: Alum dosage went from 127 pounds per day to 53 pounds per day; lime dosage dropped from 42 pounds to under 5 pounds per day. This translated into a 58% reduction in alum usage and an 88% decrease in lime consumption.

The system experienced a \$1,700 savings during the first three months. Their annual alum and lime expenses had been in excess of \$11,000: They are now averaging under \$4,000. That's a savings of \$7,000 per year, or a 60% reduction in costs!

Larry reported that the town clerk thought something was amiss. They hadn't purchased chemicals in over two months, and their suppliers were calling to inquire as to why they had lost the business!

In short, this particular system saved enough money in the first three months to *pay for their jar tester in full*. The ensuing savings can be used to help fund other much-needed equipment or plant improvement projects.

As importantly, the *quality of the water improved!*

This is but one example of the impact jar testing can have. And, while dramatic, it is *not* an isolated case. *Many* small systems are in a position to experience similar savings.

All surface water systems should conduct jar tests. Those convinced that they can't afford to, need to reconsider. They may find that they can't afford *not* to.

Wes Skaperdas
General Manager
Phipps & Bird

Phipps & Bird, 8741 Landmark Road, Richmond Virginia, has manufactured jar test equipment for over 60 years.

Nitrate Contamination

continued from page 4

by the EPA to enforce the maximum nitrate contamination provisions of the Safe Drinking Water Act (SDWA) and the National Primary Drinking Water Regulations. The EPA also appears to be taking a more aggressive role in encouraging water suppliers to participate in programs that are designed to control nitrate contamination. These programs include local land use planning intended to control pollution sources and a wellhead protection program sponsored by the Pennsylvania Department of Environmental Resources.

Regardless of the effort expended by water suppliers to evaluate local pollution sources and to promote land use programs that will control this pollution at its source, there is very little that individual water suppliers can do to improve farming practices and other human habits which greatly contribute to the nitrate problem. Efforts by the U.S. Department of Agriculture Soil Conservation Service, the Pennsylvania Department of Environmental Resources, and other agencies are underway to encourage farmers to improve their farming practices. Additionally, efforts are underway to improve manure management practices and reduce the

amount of manure and chemical fertilizer nutrient pollution that enters Pennsylvania's streams and groundwater supply.

The long term prognosis for improvement in the nitrate contamination problem is, in many ways, intertwined with the result of these new efforts to control the pollution at its source. In the interim, water suppliers will most likely spend additional money on treating water to an acceptable quality. When the cost of treatment becomes too great, the alternate, but more difficult, solution will be the task of identifying new sources of water supply.

John K. O'Connell is an Engineering Specialist at Acer Engineers Consultants, Inc. in Lancaster, PA. Acer is a multidisciplinary consulting firm with offices in Pennsylvania, Maryland and Massachusetts offering services to public — and private—sector clients throughout the Middle Atlantic region. Engineering services encompass civil, structural, environmental, mechanical, electrical, transportation and traffic, as well as hydrological and flood applications.

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Process Control Mathematics Treatment Plant Worksheet

The following problems will give you some practice in working problems involving treatment plants and process control. These types of calculations often are necessary as part of process control, maintenance activities and reporting requirements.

1. A rectangular settling basin is 20 feet long, 8 feet wide and has a water depth of 6 feet. It treats a flow of 40,000 gallons per day. Calculate the detention time for this basin.
2. A treatment plant has a circular clarifier with a diameter of 18 feet. If the flow through the plant is 80,000 gallons per day, calculate the overflow rate in gpd/sq. ft.
3. Your small treatment plant has three sand filters, each 6 feet wide and 9 feet long. If the flow to the plant is 400,000 gpd, calculate the filtration rate (gpm/sq. ft.) with all three filters in service.

Process Control Mathematics Area/Volume Worksheet

The following problems will give you some practice in working problems that require you to calculate areas and volumes. These types of calculations often are necessary as part of process control, maintenance activities and reporting requirements.

1. A concrete tank is used to store finished water after treatment. The tank dimensions are 30 feet long, 20 feet wide and normal water depth in the tank is 10 feet. You have to drain the tank in order to do some concrete repair work. If the pump you use to dewater the tank pumps 125 gpm, how long will it take to empty the tank?
2. A new AquaStore standpipe is to be placed into service. The tank diameter is 15 feet and the tank overflow is located at 22 feet above the bottom of the tank. You have to disinfect the tank by adding enough sodium hypochlorite (5.25% available chlorine) to the tank contents to produce a chlorine concentration of 100 mg/L. How many gallons of sodium hypochlorite will you have to add?
3. You have been told to buy enough paint to paint a small steel hydropneumatic tank. The tank is 15 feet long and has a diameter of 48 inches. Because the tank is supported on piers you will have to paint the entire tank. The paint to be used will cover 450 sq. ft. per gallon. How many gallons of paint should you buy to give the tank two coats?

Answers on page 10

RETTEW

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PRWA

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Answers to MATH CORNER Treatment Plant problems:

1. $DT = \frac{V}{Q}$

$$DT = \frac{20' \times 8' \times 6' \times 7.5 \frac{\text{gal}}{\text{cf}} \times 24 \frac{\text{hr.}}{\text{d}}}{40,000 \text{ gpd}} = 4.32 \text{ hr.}$$

2. $OR = \frac{Q}{A}$

$$OR = \frac{80,000 \text{ gpd}}{0.785 (18)^2} = \frac{80,000 \text{ gpd}}{254.3} = 314.5 \frac{\text{gpd}}{\text{ft}^2}$$

3. $FR = \frac{Q}{A}$

$$FR = \frac{400,000 \text{ gpd}}{(3) (6') (9') (1440 \frac{\text{min.}}{\text{d}})} = 1.71 \frac{\text{gpm}}{\text{ft}^2}$$

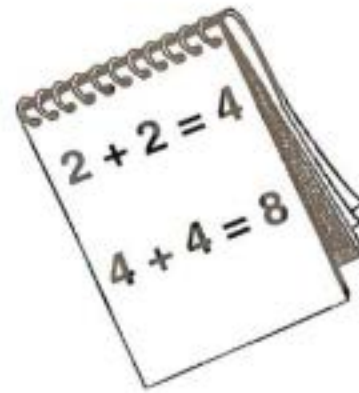
Answers to MATH CORNER Area/Volume problems:

1. $\text{Time} = \frac{V}{\text{pump rate } Q}$

$$V = 30' \times 20' \times 10' \times 7.5 \frac{\text{gal}}{\text{cf}} = 45,000 \text{ gal.}$$

$$\text{Time} = \frac{45,000 \text{ gal.}}{125 \text{ gpm}} = 360 \text{ min. or } \frac{360 \text{ min.}}{60 \frac{\text{min.}}{\text{hr.}}} = 6 \text{ hr.}$$

$$+ \quad \frac{\div}{-} \quad = \quad \times$$



2. $V \text{ tank} = 0.785 (15)^2 (22') (7.5 \frac{\text{gal.}}{\text{cf}}) = 29,143 \text{ gal.}$

$$16 C_2 = 100 \frac{\text{mg/L}}{\text{gal.}} \times 8.34 \frac{\text{lb.}}{1,000,000} \times \frac{29,143}{1,000,000} = 24.3 \text{ lb.}$$

Assume 1 gal. hypochlorite weighs 8.34 lb.
 1 lb. hypochlorite = $\frac{24.3}{8.34} = 2.91 \text{ gal.}$
 .0525

or gal. of hypochlorite = $\frac{463 \text{ lbs.}}{8.34 \text{ lb./gal.}} = 55.5 \text{ gals.}$ - say 56 gal.

or gal. of hypochlorite = $\frac{(29,143) (100 \text{ mg/L})}{52,500 \text{ mg/L}} = 55.5 \text{ gal.}$

3. $A = \text{ends} + \text{cylinder well}$
 $= (2) (0.785(4')^2) + (3.14)(4')(15')$
 $= 25.12 \text{ ft.}^2 + 188.4 \text{ ft.}^2 = 213.5 \text{ ft.}^2$

Two coats = $213.5 \times 2 = 427 \text{ sq. ft.}$

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Slow Sand Filtration Stages a Comeback

By Mel Hook and Richard San Giacomo

Once considered antiquated and obsolete, the practice of slow sand filtration for the treatment of drinking water is back in vogue. In the last few years, national and state level enforcement of the federal Safe Drinking Water Act and the associated Surface Water Treatment Rule have sparked renewed interest in slow sand filtration technology, especially in regard to its application in rural areas and small water systems. For communities with low to moderate water demands, slow sand filtration can prove a viable treatment for previously unfiltered surface water supplies.

A Nearly Extinct Process

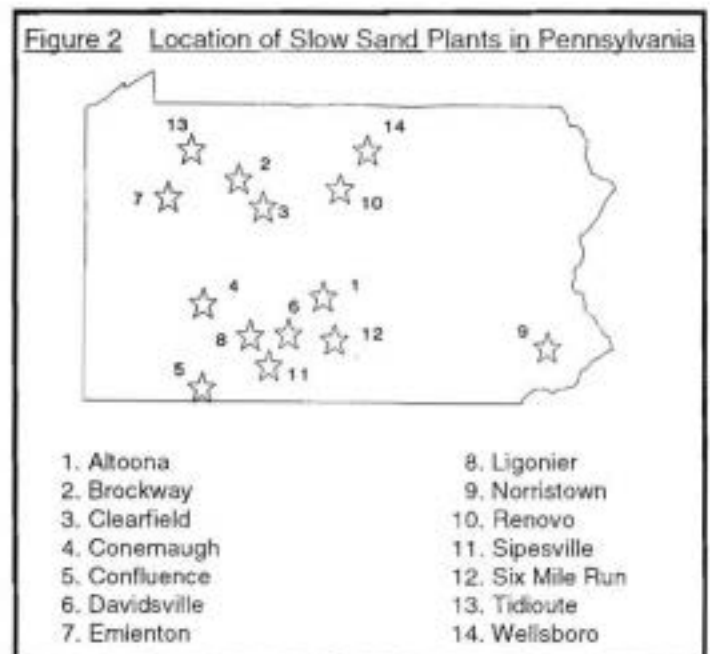
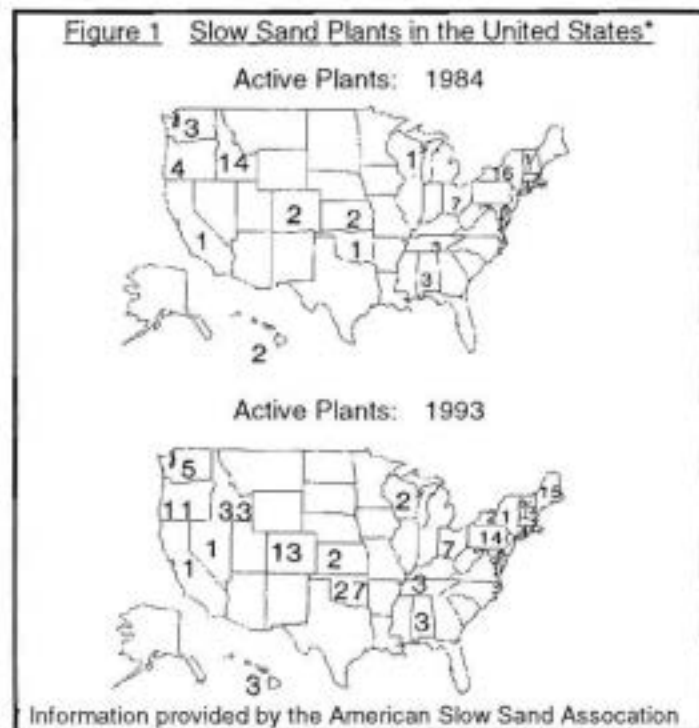
The first drinking water treatment plants — built in the early 1800s in the European capitals of Amsterdam, Paris, and London — all employed slow sand filtration methods. While slow sand filters designed after European models were constructed in the United States around the turn of the century, within a few decades rapid-rate filtration had largely supplanted the older method. Whereas slow sand filtration worked by simply percolating available raw water through a layer of fine sand, rapid filtration introduced the processes of coagulation, flocculation, and sedimentation to accommodate surface water of high turbidity, river water and water muddied by run-off from cultivated and sparsely vegetated areas. High turbidity in drinking water sources was common in the western United States where, in the early 20th century, many new treatment facilities were being constructed. Since raw water with turbidity levels much in excess of 10 Ntu tends to clog slow sand filters, rapid sand plants were favored in new construction.

The growth of cities in America also may have contributed

to the move to rapid filtration. With urban space at a premium, city planners and engineers opted for the smaller, though technically more complex, rapid filtration facilities. Slow sand filtration rates are as much as fifty times slower than those of conventional filtration; consequently, slow sand filtration plants require proportionally much larger surface areas to drive comparable volumes of unfiltered water through the filter media. In any case, rapid filtration became the overwhelming method of choice in the water industry. According to a 1988 study for the U.S. EPA by Logsdon and Fox, by 1940 rapid sand filters outnumbered slow sand facilities 23 to 1. As recently as 1984, the number of active plants in this county had dwindled to about 50. [Figure 1 compares the number of active plants in 1984 and the number operating today.]

Slow Sand Filtration in Pennsylvania

Pennsylvania's water supply industry has not been a complete stranger to slow sand filtration, whether in its infancy or resurgence. Slow sand treatment plants were built in Berwyn, Pennsylvania in 1898, and in Harrisburg in 1899. (The very first U.S. water treatment plant was a slow sand facility built in Poughkeepsie, New York in 1872.) Today, Pennsylvania has fifteen operating slow sand filtration plants. Only Idaho, Oklahoma, and New York have more. [See Figure 2]



Small, financially strapped water suppliers, faced with mandates to treat their drinking water, are taking a hard look at structurally simple, relatively inexpensive slow sand plants. Provided that turbidity levels of the source water are low to moderate, new slow sand filtration plants have been performing well, meeting EPA and state health departments'

continued on page 13



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Slow Sand Filtration

continued from page 11

rigorous performance criteria for levels of turbidity, disinfectant residuals, suspended solids, and color. [See Figure 3] The plants have also shown to be effective in removing giardia cysts, bacteria, and other impurities. The *schmutzdecke*, a biologically active film that forms at the top of the filter sand, physically traps suspended particles and chemically breaks down potentially harmful microorganisms. Perceived disadvantages of slow sand plants — their larger size requirements and slower filtration rates — are hardly inconveniences for facilities designed for communities of 5,000 or less.

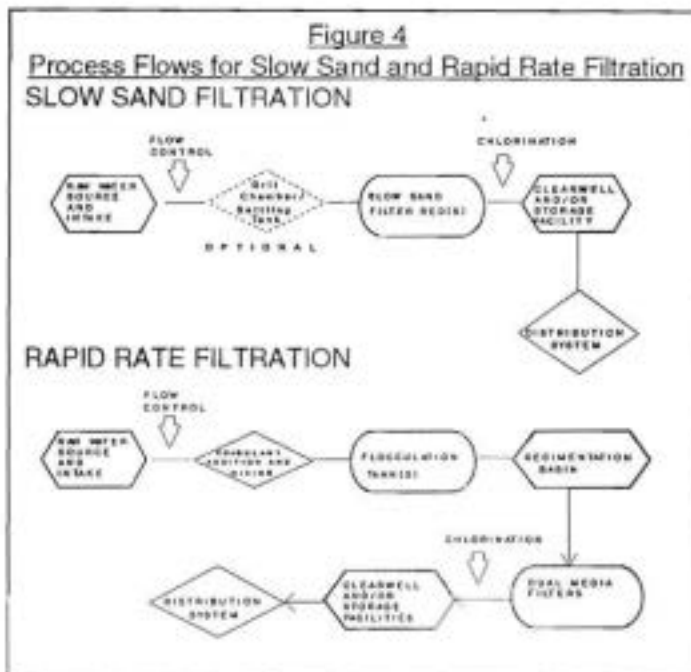
Figure 3
EPA Performance Criteria for Slow Sand Filtration

CONSTITUENT	ACCEPTABLE LIMITS
Turbidity Levels	≤ 1 NTU, 95% of the time with no reading in excess of 5 NTU
Disinfection Residuals	≤ 0.2 mg/liter
Total Coliform Bacteria	Less than 40 samples/month, no more than 1% positive 40 samples or more/month, no more than 5% positive
Giardia/Lambliia Removal	Cysts: ≥ 3- log Viruses: ≥ 4-log
Color	15 color units

New Slow Sand Plants Take Shape

Mel Hook, longtime manager for the Fox Chapel (PA) Water Authority and P.R.W.A. associate member, expects to see more small communities construct slow sand filtration plants as they seek to comply with the EPA's Surface Water Treatment Rule. "Communities that have been chlorinating high quality source water but not filtering it will have difficulty affording rapid rate filtration facilities. Even pre-fabricated, package plants have high costs associated with system pumps, chemical coagulant aids, cleaning requirements, continuous monitoring, and short filter runs. It can cost thousands of dollars a year to operate even the smallest package systems." Slow sand plants, in contrast, use sand and gravel that is reusable and often available locally, don't require chemical coagulant aids, and feature filter runs of 2 to 6 months that dramatically reduce cleaning and maintenance requirements. [Figure 4 shows flow diagrams comparing slow and rapid rate filtration.]

Mr. Hook is now Project Manager with R & D Engineering, a consulting firm that has recently engineered two slow sand filtration plants in the Southern Tier of New York State. Twenty miles northeast of Erie, Pennsylvania, a 350,000 gpd slow sand plant in Ripley, New York, has been operating efficiently since November 1990. According to Mr. Hook, the facility's \$550,000 price tag was less than a third of the estimated cost of a conventional treatment plant. "What's



more," he adds, "the design simplicity of the two 30- by 40-foot concrete filters and storage clearwell enabled the community to realize further construction savings by using a municipal labor force rather than conventional contracting methods. And this is a facility that is producing finished water with turbidity levels consistently below 0.2 Ntu." In September 1990, Ripley officials and employees were presented with the National Environmental Achievement Award. The award, given by the environmental group Renew America, recognizes responsiveness to environmental issues and community needs.



A 425,000 gpd slow sand filtration plant engineered for the Village of Woodridge, New York.

A second R & D designed slow sand filtration plant has been in operation since the fall of 1991 in the Village of Woodridge, New York. This 425,000 gpd facility features four 30- by 30-foot filters and was designed to match the fluctuating, seasonal water demands of a Catskill Mountain resort community. These successful applications of an older technology have proved gratifying to R & D Engineering

continued on page 16



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Slow Sand Filtration

continued from page 13

president Richard San Giacomo: "It's refreshing to find that not all our modern problems require complex, expensive solutions."

An Old Technology With a Future

EPA officials estimate that as many as 1,000 new slow sand plants may be engineered in response to concern over water quality and regulatory enforcement of the Surface Water Treatment Rule. The good news is that many small communities that might otherwise be forced out of the water supply business due to financial constraints may find, in slow sand filtration technology, an affordable option.

The number of active slow sand filtration plants in the U.S. has nearly tripled in the last ten years. The virtual disappearance of the process in this country was due, largely, to perceived disadvantages that never really applied to small systems and water supplies with low turbidity. Slow sand filtration remains a workable technology that is cost efficient and effective. The European capitals that introduced slow sand filtration in the 1830's still use it today.

For more information on slow sand filtration and its practical applications, contact Mel Hook, R & D Engineering, 40 Oak Spring Drive, Pittsburgh, Pennsylvania 15238-1744 (Phone: 412-967-0449).



Workers install the first layer of filter media (1½ to 2½ inch diameter gravel to a depth of 8 inches) for a slow sand filtration plant in Ripley, New York.

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The rally is being held earlier this year to allow system personnel to be home during National Water Week, the first week of May, 1994.

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Junior High Classes Aware of Geography



Judy Muehl, groundwater technician, and William Gough, geologist, use a model to demonstrate water conservation. (Gazette photo by Willis Bechtel)

In celebration of the National Geography Society's Geography Awareness Week, the Geography and Reading Departments at Indiana Junior High School will participate in various activities focusing on this year's theme: Water Matters: Every Day, Everywhere, Every Way.

This is the third year teachers have joined classes across the curriculum for this unit.

Teachers include geography teachers Jim Catana, Scott Mossgrove and Elaine Settlemier, and reading teachers Lorrie Gallo, Dr. Nedra Nastase, Lou Peightal, Rose Tripodi and Kathy Yerep.

The week begins with a large group presentation by Judy Muehl, groundwater technician for Pennsylvania Rural Water Association, and William Gough, geologist for Moody and Associates.

Throughout the day, they will present eight demonstrations to approximately 700 seventh and eighth graders. Using topographical maps of the area and a groundwater model, students will learn the source of their water and the need for conservation and preservation. This presentation was made possible by the PRWA and the League of Women Voters.

Throughout the week, students learn how pervasive water is in almost every aspect of life through mapping exercises, reading literature, using atlases, and watching videos.

Reprinted from *The Indiana Gazette*, Indiana, PA.

Test Your Geography I.Q.

1. The Chesapeake Bay is a major inlet of which ocean?
2. Which cash crop was destroyed in 1992 by hurricanes in both Louisiana and Hawaii?
3. Which is Canada's most popular province?
4. Tanzania is one of the chief sources for a dense, dark wood that is used to make clarinets and certain piano keys. Name this wood, which is one of the world's most expensive timber products.
5. As a result of events of Europe and the former Soviet Union during the past few years, many people have gained their independence. Which continent has gained the most new independent countries?



Question Source: National Geographic Society

Answers: 1. Atlantic; 2. sugarcane; 3. Ontario; 4. ebony; 5. Europe

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From Our Point of View

Questions & Answers Supplied by PRWA Associate Membership

We have asked our Associate Members to provide us with Three Questions most commonly asked of them by the small system personnel. Our initial questions and answers are provided by Barry Spiegel, Regional Manager of the Hach Company. Look for other Q & A columns in upcoming issues. If you have questions you would like addressed, you can send these to the PRWA office and we will direct them to the appropriate associate member. Send questions to: PRWA, 138 West Bishop St., Bellefonte, PA 16823 or Fax to 814-353-9341.



1. What does USEPA approved mean? Or is this test or instrument USEPA approved?

With regard to instruments, this phrase means that the instrument can be used for testing when results are to be reported. It does not mean the USEPA approves or disapproves specific laboratory or on-line instruments. However, the USEPA may establish minimum instrument design and performance criteria. For example, for turbidity measurements, minimum instrument specifications for turbidimeters are detailed in USEPA Method 180.1, paragraph 5.5. With regard to methods, "USEPA-Approved" means the procedure meets all the requirements of the applicable USEPA approved method or has

been approved as an alternate test procedure. Here, the USEPA is referring to the chemistries used in the particular test. For additional information regarding USEPA Approvals, call Hach and ask for publication literature code 4210.

2. How often should I calibrate my pH meter?

All pH meters should be calibrated at least one time per day using fresh buffer reagents each time. There are multiple ions in the atmosphere that can very quickly contaminate a sample that has been sitting around. For accuracy and reliability, always calibrate your pH meter with two buffers. pH 7 should always be one of the two. For example, calibrate with 4.0 and 7.0 or 7.0 and 10.0, but never 4.0 and 10.0. Remember, your pH meter is only as good as your buffer solutions.

3. When using Hach powdered reagents, why doesn't all the powder dissolve all the time? And, is the accuracy affected by the undissolved powder?

The answer is simple, it doesn't have to. Whether all the powder dissolves or not is a function of the concentration of the parameter you are measuring for. For example, chlorine, many times may result in left over undissolved powder in the bottom of a sample vial. This undissolved powder is a result of the concentration of chlorine in the sample. The higher the residual the less powder remaining. The lower the residual the more undissolved powder remains. Always check the step-by-step instructions that came with the test kit or refer to the Hach Water Analysis Handbook (lit code #8353) for additional information.

Authority Board Representation/P.U.C. Jurisdiction Reported from Committee

H.B. 1131 proposing to establish P.U.C. regulation for certain municipal authorities has been reported out of the House Consumer Affairs Committee. The legislation will be given consideration by the full House when they return to session next week.

H.B. 1131 introduced by Representative Keith McCall would extend P.U.C. rate regulation to any Authority which services outside the boundaries of the incorporating municipality and who does not allow representation on the authority board by neighboring municipalities for those portions of the service area.

P.M.A.A. testified at a hearing this summer before the Consumer Affairs Committee on H.B. 1131. Opposition to the legislation was presented by P.M.A.A. Solicitor and Legislative Committee Chairman George M. Aman. Mr. Aman outlined a number of concerns including the extreme cost and administrative burden of P.U.C. regulations and the discouragement of regionalization projects in the future.

Concerns were also presented regarding the potential unworkable size of authority boards and the historical investment of the incorporating municipality being turned over to possible minority control if the board becomes dominated by representatives of other municipalities.

P.M.A.A. members are urged to both call and write your representatives concerning the problems surrounding H.B. 1131. Additional calls and letters to Representative McCall may also help in educating the sponsors of the legislation as to its far reaching implications.

Representative Keith McCall
House Post Office, Main Capitol
Harrisburg, PA 17120
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It is expected that the Legislature will refer the Bill to the House Appropriations Committee for fiscal analysis.

P.M.A.A. urges you to contact your Legislator today!
Reprinted from CHAR, Vol. 33, No. 10, November 1993 issue.

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cally reducing leaching. Bennington has experienced a 95% decline in point-of-use (POU) first draw lead levels, with current values consistently below 10 ppb. Fitchburg recorded a 75% decline in copper levels and a 60% decline in lead levels after only six months of treatment, with first draw lead levels less than 10 ppb.

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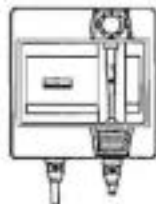


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by Deb Fagan, Member Services/Training

Yes, we have people registered for Pennsylvania Rural Water Association's Annual Technical Conference and Exposition on March 27th, 28th, and 29th, 1994 already! And, yes there are booths already reserved. Copying, mailing out and starting a return file have become fact! I can't believe how fast the year went! Conference '94, Conference '94, Conference '94 and Conference '94 is behind every word uttered, every sentence written, every meeting held and written on every send out from our office. Steve's "One More Thing" is always about Conference, Judy's busy planning a great Groundwater Session, maybe Chris is even wearing a "PRWA CONFERENCE '94" button on his Civil War uniform! Bill is practicing the piano (a hint of things to come), Barb is busy correlating brightly colored paper with a smirk, and Donna is wondering what the big "to do" is anyway. And me, I'm dreaming of being at the Conference. The great people, the entertainment, the interesting workshops, renewing old friendships, the food and the fun. I can't wait! It's a lot of hard work now, but oh are we ever going to have fun. Wait 'til you see what we have in store for you! Well the copy machine is free. See you at the Conference and be prepared for the time of your life!



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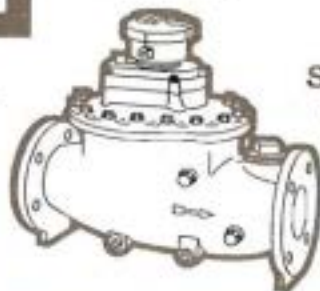
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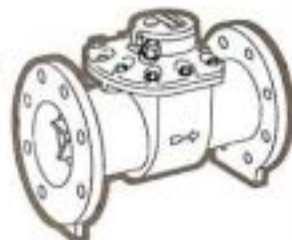
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“Ask Rash”

By Rash Limburger

Welcome everybody to another edition of the Ask Rash Show. Before I take any calls today, I have a news flash out of the P.R.W.A. Central offices in Bellefonte. You'll get a kick out of this one people. Bill Keller, Wastewater Circuit Rider of P.R.W.A. has become a "Sensitive Man of the '90's!" That's right! It seems that following a recent training seminar at the N.R.W.A. Conference in Portland, Oregon, Mr. Keller announced to the Staff & Board, and anyone who would listen, I imagine, that he had become a sensitive man of the '90's. Seems the instructor giving the session stated women are no longer attracted to macho men, but rather, sensitive compassionate men who aren't afraid to cry in front of people. Now I ask you, what do you think Mr. Keller's true motives are? The only time I've ever seen him shed a tear is when he misses last call at the bar, and his glass is empty. Well, we'll just have to wait and see what happens. O.K. Let's move on to the calls. Go ahead, caller.

Caller: "Hey Rash?"

Rash: "Go ahead."

Caller: "Yeah, this is the Flower Man, Rash, and I got a question here. I have this membership application in front of me, and I'd like to know, why should I join P.R.W.A., I mean, what's in it for me?"

Rash: Well, Flower Man, I could sit here and list all the membership benefits, such as the discounts, various publications, priority technical assistance, and the P.R.W.A. technical assistance library including videos, but really, what's in it for you is whatever you put into it. It is your participation in the association that will bring you the largest benefit. Personally, the biggest benefit to me is allowing me to mouth off in this magazine, and believe me, although my prose is invaluable, I'm sure there's always room for your contributions. Besides, my life has personally been a lot more enjoyable when I have the likes of Keller, Krchnavy and Shutt stopping over, for me to pick on.

Caller: Thanks Rash.

Rash: All right, next caller, Go ahead.

Caller: Yeah, Rash, can you tell me what's going on with Safe Drinking Water Act Reauthorization?

Rash: Sure, right now there are 2 versions being discussed, the Slattery/Bliley Bill, which N.R.W.A. and a host of other industry organizations support, and the Baucus Bill, which E.P.A. supports. @#\$!@# , I wouldn't be surprised if those animal rights activists come out with their own bill soon. If you need further information, you call P.R.W.A.

Caller: Thanks, Rash, love your show.

Rash: Of Course! One more caller .

Caller: Hey Rash?

Rash: Yeah

Caller: Who are you, really?

Rash: The most intelligent person you'll ever talk to! Good-bye.

Editor's note: The views expressed by Rash Limburger, especially of himself, are not necessarily those of this publication.



1994 Deadline for Advertising and Articles for the Keystone Tap

Spring Issue (April) will be February 15

Summer Issue (July) will be May 15

Fall Issue (October) will be August 15

Winter Issue (January 1995) will be November 15

To submit copy or for more information send to:
PRWA, 138 West Bishop Street, Bellefonte, PA 16823
Phone 814-353-9302 or Fax 814-353-9341

ENVIRONMENT

Ground Water Protection A Growing Concern

(NU) - More than half of all Americans rely on ground water as their primary source of drinking water.

In the past, it was generally accepted that underground water sources were protected and kept potable by the earth. After all, the planet has been recycling water for more than 3 billion years.

But, in the early '70s, it became apparent that the increased use of those water supplies and past environmental practices were posing a threat to one-fourth of all fresh underground water supplies.

Concerned water utility professionals are taking action at the local level to protect their groundwater sources. More than 500 communities, working with the National Rural Water Association (NRWA), EPA and state rural associations, have implemented wellhead protection plans to ensure a safe drinking-water supply.

These groundwater plans are simple five-step programs that are developed and implemented at the local level. The plans provide a low-cost way to protect drinking-water sources now and for future generations.

Protecting America's ground water resources is critical to the future growth and economic viability of rural and small communities, according to NRWA officials.

If ground water becomes contaminated, local communities are faced with finding additional sources, constructing expensive treatment plants or even replacing water lines.

These options all require large expenditures that could prove to be financially devastating to small communities.

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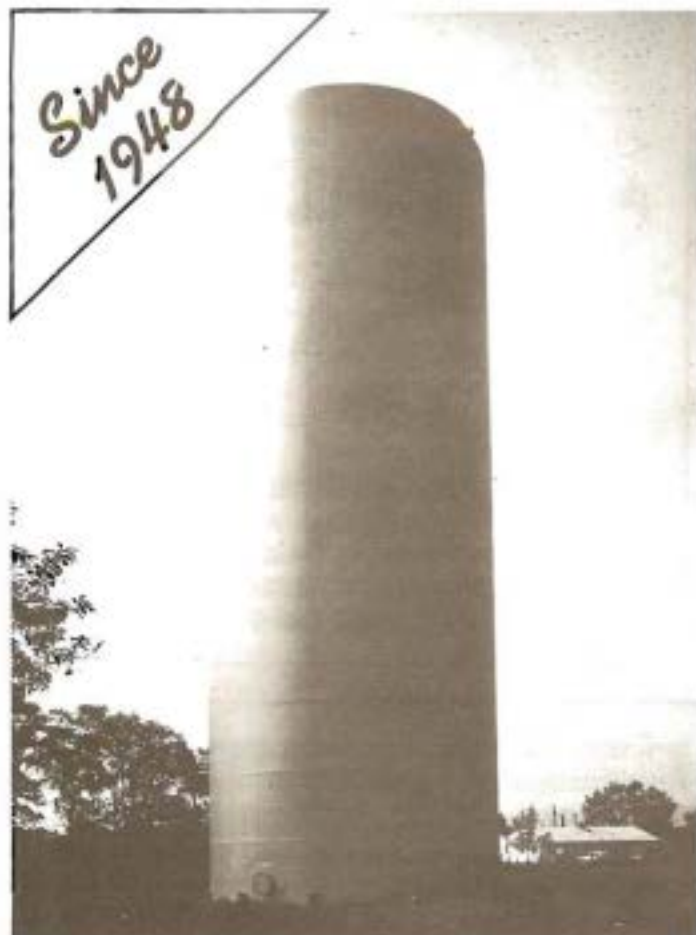
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“ONE MORE THING”

Stephen Krchnavy, Program Manager/CSO

Since taking the Program Manager's position in March of 1992, Pennsylvania Rural Water Association has undergone a series of changes. The move of the office to Bellefonte and installation of the "800" number have helped Pennsylvania Rural Water Association to better serve its members. The list of other new programs and changes could fill this page, but the performance of Pennsylvania Rural Water Association's Staff is the number one item on my list. At the recent National Rural Water Association Conference in Portland, Oregon each PRWA Staff member was nominated for a National Award for Program Performance. Pennsylvania was the only state to have its entire staff nominated. I consider this to be significant because there are 45 state Rural Water Associations. PRWA also was presented two other awards: "Excellence in Accounting" and the most prestigious, "Excellence in Technical Assistance Award." This award is presented to the State that is considered to have performed technical assistance

to water, wastewater and groundwater systems to the highest level and competence. In other words, to whom ever does the best job helping systems solve problems. This award includes the effort of all PRWA board members, office staff and field staff. Running a state wide organization can be complex but with people like Bill, Chris, Judy, Barb, Debra and Donna, the complex and impossible become routine. We appreciate all of your support and look forward to continuing our role as a leader in the water and wastewater industry in Pennsylvania.

- Another "Thank You" goes out to all the associate members who attended the Annual Associate Members Luncheon. Many ideas to help Associate Members and System Members were discussed, this high level of communication was welcomed by all attendees.
- This issue includes the Agenda for the Pennsylvania Rural Water Association's Annual Conference, "Putting the Pieces Together." In addition to our regular informative training agenda and relaxing social events, we have added sessions for Personal Development and special workshops for PUC Regulated Systems which feature a discussion time with PUC commissioners.
- Somewhere I read this quote, "Don't be a Loser, attend the PRWA Annual Conference and Exposition on March 27th, 28th and 29th, 1994 at Nittany Lion Inn, State College."

One More Thing. . .

Take advantage of early registration and save money!

“Down the Line”

by Bill Keller, Wastewater Technician

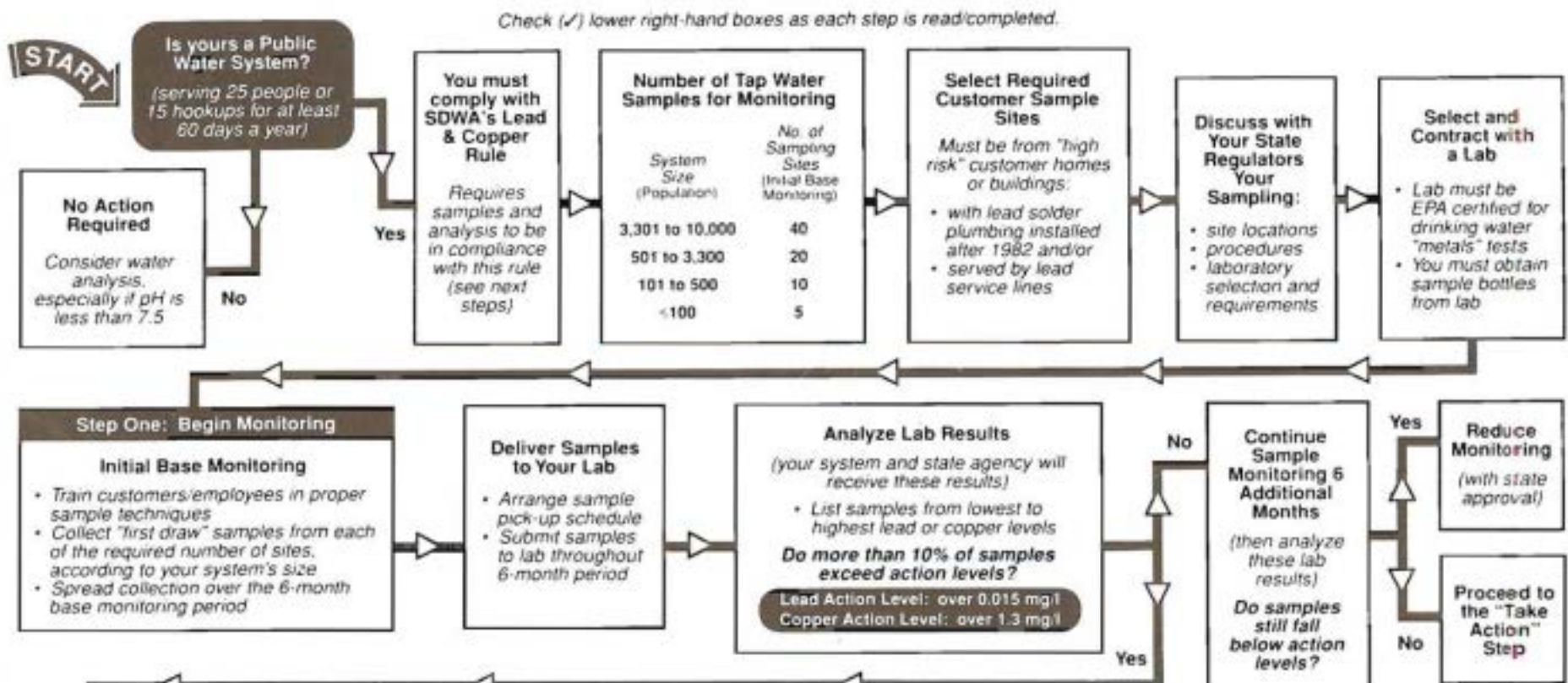
As I look back upon the past year, I have taken a moment to reflect on the accomplishments of Pennsylvania Rural Water Association in 1993. As many are aware, we have gone through many internal changes since February of 1992, some out of necessity, some from desire. As we moved forward into 1993, we as a staff knew the challenges that lay before us. We started the year off with an aggressive training schedule which saw us conduct eight one-day training seminars in 10 weeks, ending in the middle of March. Two weeks later we conducted the most successful Pennsylvania Rural Water Association Technical Conference ever held, at the Nittany Lion Inn, State College, PA where close to 400 people experienced a Smorgasbord of training, exhibits, and social activities. We initiated a Legislative Activities Committee which is charged with voicing our concerns, the concerns of the small systems, to the proper authorities. We enhanced and expanded our membership and technical assistance activities, in order to further promote our goal of serving small water and wastewater systems in Pennsylvania. Throughout the rest of the year we continued our push to provide more training with an additional sixteen one-day seminars, including some focused specifically on wastewater. So, what's in store for '94?

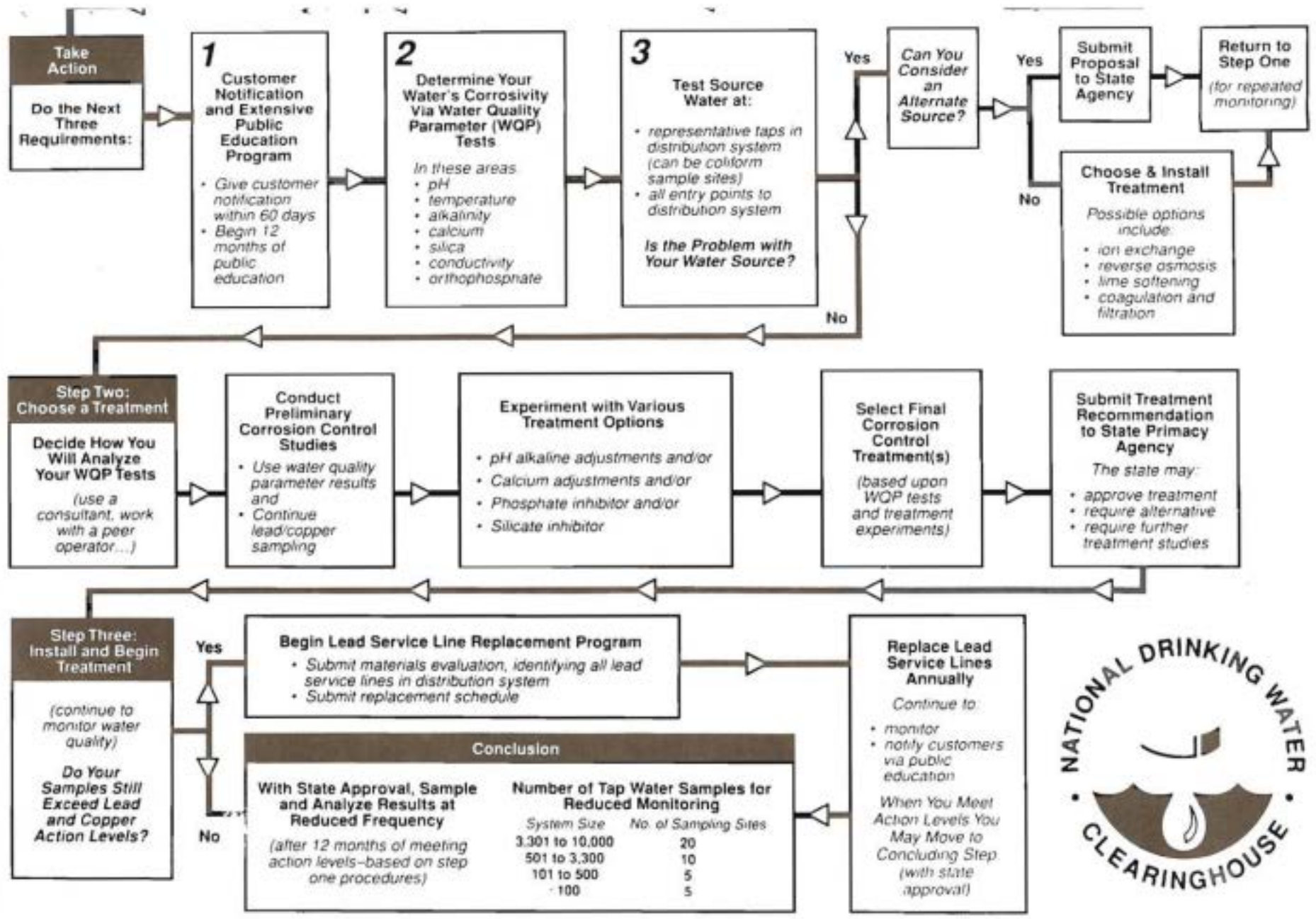
For starters, we will continue to expand Wastewater Training, with a goal of providing at least four Wastewater specific training seminars during the year. Any comments for suggestions in this area would be greatly appreciated. In addition, we are working with the University of Texas A & M to provide twenty hour courses dealing with all facets of Wastewater Collection and Treatment. Look for more information on this in the Spring. Finally, we are planning a bigger and better State Conference than ever before, held March 27-29th, 1994, at the Nittany Lion Inn. The thought of providing all of this is personally exciting and, for our part, we will put forth our best effort as a staff to make all of this a success, but in order for any of this to be truly successful, we need your participation and attendance! So, in closing I hope you had a great holiday (and hunting) season, and I hope to see an awful lot of you in 1994.

Thanks, Bill

LEAD AND COPPER RULE

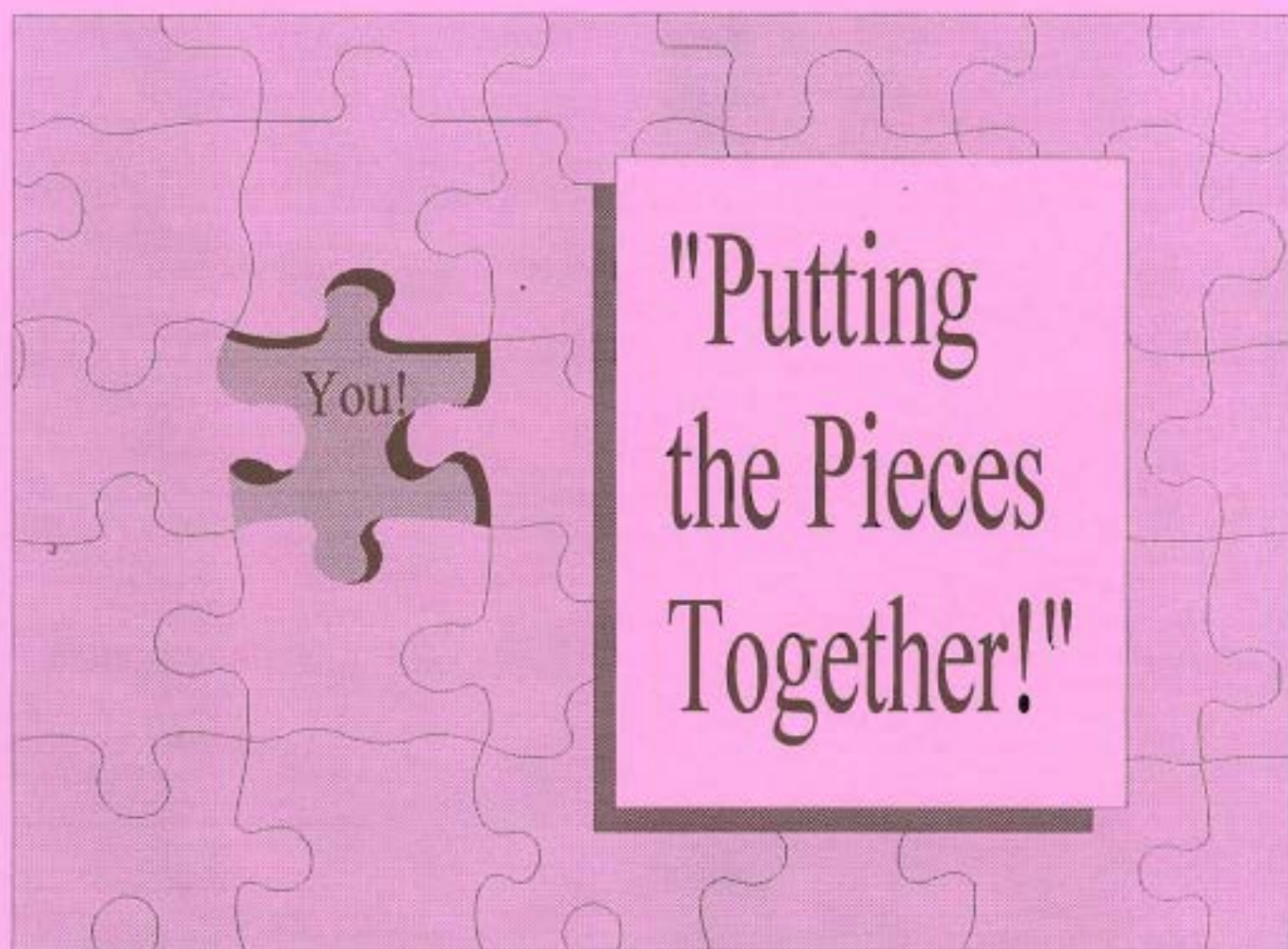
Basic Decision Process for Small Water Utilities





This diagram has been designed and produced by NDWC and supplements a series of On Tap articles. Call 1-800-624-8301 for more information.

Pennsylvania Rural Water Association Sixth Annual Conference & Exposition



March 27-29, 1994
Nittany Lion Inn
State College, PA

Conference Registration and Training Session Information

Pennsylvania Rural Water Association
138 West Bishop St. Bellefonte, PA
Phone: 814-353-9302 Fax: 814-353-9341

PENNSYLVANIA RURAL WATER ASSOCIATION

Sixth Annual Conference & Exposition

138 West Bishop Street
Bellefonte, PA 16823

REGISTRATION FORM (Duplicate form for additional registrations)

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Nickname for Badge _____

System/Company _____

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Phone: (____) _____ FAX: (____) _____

Spouse _____

FULL REGISTRATION*

	Postmarked prior to March 1, 1994	On-Site After March 1
____ PRWA Member	\$85.00	\$100.00
____ Non-Member	\$100.00	\$115.00

DAILY REGISTRATIONS**

____ Sunday	\$45.00	\$50.00
____ Monday	\$45.00	\$50.00
____ Tuesday	\$45.00	\$50.00

SPOUSE REGISTRATION*

____ Spouse includes all sessions, exhibits, activities and banquet.	\$40.00	\$40.00
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EXTRAS

____ Bowling Party Sunday 3:00-5:30 pm includes registration for 2 games	\$10.00	\$10.00
____ Extra Banquet Ticket Tuesday 6:00 pm includes Social Hour 5-6 pm	\$35.00	\$35.00

TOTAL ENCLOSED \$ _____ \$ _____

Check # _____ Please make payable to: PRWA Conference Account

*FULL REGISTRATION and SPOUSE REGISTRATION includes access to All Training Sessions, Lunch each day, Exhibit Hall, Opening Ceremonies, Annual Business Meeting, Door Prize Drawings, Banquet and Awards Ceremony, PRWA Mardi Gras, Exhibition Extravaganza and PRWA Hospitality Rooms.

**DAILY REGISTRATIONS include all Training Sessions for the day, Lunch for the day, Exhibit Hall, Door Prize Drawings and featured events for the day. IT DOES NOT INCLUDE BANQUET.

Cancellation Policy: Fees will be returned if written request is received by March 18, 1994.

Check your main activity in the following sections:

Type of Organization:

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____ PUC Regulated
____ State / Federal Agency
____ Other: _____

Your main job function:

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Are you a Member System?

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Are you an Individual Member?

____ Yes ____ No

Are you a System Delegate?

____ Yes ____ No

Are you a PRWA Committee Member?

____ Yes ____ No

____ Please send Membership Info

Please circle the TRAINING SESSIONS you would like to attend so that appropriate room accommodations can be made for each session:

1 2 3 4 5 6 7
8 9 10 11 12 13 14

See TRAINING SESSION Descriptions on following pages.

REGISTRATION NOTES:

PRWA cannot bill you for PRE-REGISTRATION. All fees must be paid in advance and must accompany the registration forms. PRE-REGISTRATION forms must be POSTMARKED prior to March 1, 1994.

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1994 Annual Conference Training Sessions

1 **Distribution Systems — A Primer**

This presentation will include discussion and the basic application of mathematic principals of hydraulics for distribution systems. The areas to be covered include definitions, hydraulic gradients, storage facilities, water hammer, friction, pressure and volume.

2 **Financing Your System: A Hands On Approach**

"Packaging Infrastructure Financial Programs"— This session will bring together representatives from a variety of different agencies to discuss coordinating the use of program funds to build or improve municipal or authority-owned water, sewer or storm systems. Facilitator will be Penny Eddy, Ex. Director, McKean County Redevelopment Authority with participation by representatives from PennVest, Farmers Home, DCA and Commerce.

3 **Developing an O&M Plan for Your Wastewater System**

This session will provide basic information to help small wastewater systems develop working operation and maintenance plans for your facility.

4 **Public Utility Commission and the Small Systems: An Overview**

PRWA in cooperation with PUC Commissioner Lisa Crutchfield is sponsoring three instructional sessions geared toward the small systems regulated by the Public Utility Commission. The Commissioner will discuss, along with other PUC staff, the new emphasis on assessing "viability"; joint actions with DER; assistance programs; restructuring; satellite management; and mandatory takeovers.

5 **Hydrant Maintenance, Flow Testing and Community Ratings**

Factory Representatives from the major hydrant manufacturers will discuss operation & maintenance procedures and proper installation methods for fire

hydrants. In addition, ISO (Insurance Service Office) will instruct participants on proper hydrant flow testing and its relationship to community ratings.

6 **Personal Development: Team Building for Management and Operators**

Discover what a team effort and team attitude can do for your organization. Explore what it takes to build a team and your vital part in that team. Your personality and self worth have a direct impact on the team's direction.

7 **Meeting Stricter Ammonia/Nitrogen Limits at Your Wastewater Plant**

This session will discuss diagnosing and treatment alternatives, minimizing the source, and how you can meet the stricter regulatory parameters involving ammonia/ nitrogen.

8 **Public Utility Commission: Regulations**

Jim Melia, Tucker Arensberg, P.C., an attorney familiar with small systems, and Dave Lewis, with the PUC's Bureau of Consumer Services, will discuss the key regulations that apply to water companies on a daily basis. These regulations concern termination procedures; service interruptions; handling customer complaints; metering; adequate pressures; and conservation measures, among others.

9 **Where in the Well is Your Water?**

Topics of discussion will include: Groundwater in Pennsylvania, Well Location Techniques and the Development of Public Water Supply Wells. If your system has a well or plans to use wells, this session is definitely one to attend. Bill Gough of Moody and Associates and Paul Evans with Acer Engineers & Consultants, Inc. will conduct this training.

10 **Water Quality Analysis: Lab Test Methods**

Mike Harrington, from LaMotte Company in Chestertown, Maryland, will

describe the various laboratory and field test methods used to test your water. Examples will also be presented.

11 **Troubleshooting O&M in Wastewater Treatment Plants**

Participants will gain an understanding of the process of troubleshooting and how to apply it toward solving problems in their treatment plants.

12 **Public Utility Commission: Requesting Rate Increases**

Gary Shambaugh, AUS Consultants, a consultant who works with small systems, and Judy Carlson, who handles rate cases for the PUC, will discuss how to file a rate increase by using the "short form" rate filing. Also to be explained are: what happens when customers file formal complaints; when to complete the rate process yourself and when consultants can be helpful; how to file tariff revisions; and tips for better accounting procedures.

13 **Protecting Your Well**

Find out about the latest SWIP Monitoring requirements; the Phase II and Phase V Monitoring Requirements and Pennsylvania's Developing Wellhead Protection Program. What does your system need to know and what does it need to do.

14 **"What are we ordering . . . and what is its purpose?"**

Don Kuhns, R.F. Schneider Pipe and Supply will give a "show and tell" presentation for water system personnel that order and approve water system supplies. What are curb stops, meter horns, full circle clamps, etc.??? See the product that goes with the bill!

For Room Reservations, Phone:

The Nittany Lion Inn
800-233-7505

Special Conference Rates:

\$65.00 single \$75.00 double

A block of rooms has been reserved for PRWA, be certain to mention this when calling.

Phone early to guarantee your room!

CONFERENCE HIGHLIGHTS:

"Putting the Pieces Together"

PRWA Training Sessions

Fourteen training sessions have been planned that pertain to Water, Wastewater, Management/Decision Makers and the PUC Regulated Systems. Take this opportunity to improve your skills and knowledge while sharing ideas with others from across the state. Let PRWA help you put the pieces together and solve the puzzle.

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PRWA Mardi Gras

Join in the atmosphere of New Orleans, as we take time to relax....Mardi Gras style! Enjoy the flavors of cajun-style cooking, blended with a Low Country Boil. Take in the music of Bayou country and enjoy the festivities! Don't forget to vote for that Ugly Lunch Box as you travel from 'Bourbon Street to Canal Street' (Nittany Lion Inn style). Laissez les bon temps rouler! (Let the good times roll!) . . . you're gonna like it . . . we guar-an-tee!

Exhibit Hall Extravaganza

Sixty vendors are scheduled to participate once again in the Exhibit Hall Extravaganza. Visit their displays and find out how they can help you 'put the pieces together' as you see the latest in equipment and technology, register for the door prize drawings held during the evening. Visit the PRWA booth as you enter the exhibit hall for another key to solving the puzzle.

PRIDE of Pennsylvania Water Taste Testing

Water System Members are invited to participate in the PRIDE of PA water taste testing being held at the PRWA booth during the Exhibition Extravaganza. Cast your vote for the Best Water in PA, the PRIDE is growing and it SHOWS as we continue to increase the number of entries every year!

Legislative Forum

Tuesday afternoon, Michael Keegan from National Rural Water Association, Washington, D.C. will be present to update everyone on the latest legislative issues and how the systems (and people) of Pennsylvania can let their representatives know the importance of the small systems in Pennsylvania.

Tribute to Excellence Awards Banquet

As the 1994 Conference comes to an end and we all talk about the events of the past few days, join the PRWA staff and board of directors for dinner, entertainment and a Tribute to Excellence! The Annual Awards recognition held to honor systems and employees for all the hard work they have done over the last year! A special way of saying Thank You for a job well done!

PRWA Hospitality Rooms

Take time to visit with friends and catch up on the latest news from other parts of the state during the hospitality rooms being held Sunday and Monday evening from 9:00 to 11:00 pm. Sponsored by the Associate Members of PRWA, the hospitality rooms provide an opportunity for all to relax and unwind at the end of a full day of activities.



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November 18, 1993

Ms. Judy Muehl
Pennsylvania Rural Water Association
138 West Bishop Street
Belleville, PA 16823

Dear Ms. Muehl

Thank you for the excellent presentation on groundwater for Geography Awareness Week here at Indiana Junior High School. The 700 students enjoyed watching the groundwater model and the slide presentations. Many commented that they were unaware of the things they could do personally to affect the quality of groundwater. We appreciate your time and preparation in making this unit a success.

Sincerely,
The Reading and Geography Departments



Stoystown Borough Water Authority

P.O. Box 324
Stoystown, Pennsylvania 15563

November 29, 1993

PA Rural Water Association
138 West Bishop St.
Belleville, PA 16823

Gentlemen:

Enclosed is tape C.GW16 which we borrowed earlier this year. We appreciate your kindness for loaning it to us. All the members of the Authority found it very informative.

Sincerely yours,

Thomas M. Zimmerman

Thomas M. Zimmerman
Chairman



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"Reproductions of actual European manhole covers adapted from photographs by graphic artist David Laufer."



What's On Tap

By Chris L. Shutt, Circuit Rider

The Conference is coming again, and I'd like to say a little on some of the subjects we'll have training for. Of late, I have been getting calls and requests about operation and maintenance, also Hydrant Testing for insurance purposes ISO ratings and purposes. We're getting back to the basics. If you don't come to the Conference, you're missing the experience of your life. Another thing, if you didn't do your Lead and Copper by now, you're going to be sorry. This may sound harsh, but it is the truth.

Well that's all for now. If you need anything, I mean anything, just call. Remember, be proud of what you do and do it well!



DOWN THE WELL —

We just returned from the National Rural Water Training Conference in Oregon. Our luggage was a little heavier on the way back to Pennsylvania. We were bringing back awards won by the staff. Awards are nice, but if we deserve the awards, it's because we are representative of the small system personnel and boards in Pennsylvania.

I couldn't help but think back to our Annual Conference when Rick Wood of New York Rural Water sang "Wind Beneath My Wings" while pictures of the staff and boards of the systems we work with were flashed on the screen. If you were not present, you missed our tribute to you — the small systems.

Being one of the new kids on the block hasn't been easy, but I certainly could match old Rash with his stories.

For instance, if I were to give one award this year it would be "The Pending Crisis Award." This award would have to go to Rouseville Borough. I was told recently by a councilman that they would meet me half way next time because every time I stop, something happens. My arrival at the Borough Building this time coincided with a fire in the Municipal Building kitchen. Subsequent visits included sewer line breaks, major water line breaks, a blizzard, wells going dry, and the tower draining because of a small malfunctioning valve. All this, and I only wanted to protect their groundwater!

This brings me to the point of this article. In September, I was in Rouseville when I choked and stopped breathing — Karen McSparren saved the day (and me) — I was okay when the paramedics arrived.

I now know how important first aid training is to all of us. I wanted to tell this story because Karen is a good example of the quality people we have in small systems.

We appreciate all of you!! (And Karen . . . there is an old Chinese saying that if you save a person's life, you are responsible for them — boy, do you have a big job!) Thanks again!



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By: Judy Muehl,
Groundwater Protection Technician

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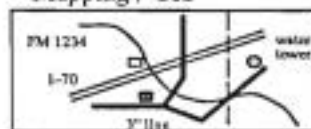
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HOW I SPENT MY SUMMER VACATION, PART II

Bill Keller, Wastewater Circuit Rider

It was still dark on the morning of August 2, 1993 when I and fourteen other half-asleep volunteers from Pittsburgh boarded a plane at Pittsburgh International Airport, headed for El Salvador. We arrived in El Salvador at 12:30 p.m. Mountain Time, where we were greeted by Solida and Virillio, two of the leaders of the committee which runs the village of Nueva Esperanza. Solida (whose name means peace) has been given credit for keeping the people of the community together during the Civil War and Virillio was the first of hundreds of wounded veterans I would meet on my two-week adventure. We loaded our luggage and bodies for the 1½-hour drive from the airport to the town of San Mascos. At San Mascos we left the paved road for the drive down a six-mile-long dirt road. This road is impassible for even four-wheel-drive vehicles when it rains. To our left out the window, we could see where the Volcano chain dissects the Northern and Southern halves of the country. Already, the intense heat, always above 100 degrees F, and humidity hovering around 85%, had caused me to completely sweat through my clothes. In front and behind us, a constant stream of people moved back and forth, either on foot or in ox-drawn carts. Everywhere around us were clusters of tin-roofed, dirt-floored shacks surrounded by cornfields, the sprouting of small communities in the otherwise overgrown abandoned plantations which were the chief cause of the twelve-year Civil War. Fortunately, the weather was dry, and the road was in relatively good condition. Even so, it took well over one hour for our truck to traverse the crater filled road. Finally, over a bridge which crossed a main river in El Salvador, we had arrived at our destination: the Village of Nueva Esperanza. The Village itself consisted of approximately 100 Concrete-Block 20' X 20' buildings, or homes neatly aligned in rows running perpendicular to the 'main street,' (for lack of a better term). It was explained to me that each family in the community has the opportunity to purchase one of these homes, sitting on a half acre of land, for 3000 colons or about \$350.00, which sounded cheap to me until I was told the average salary in the country is 60 colons per week or about seven dollars a week, so a house costs a year's salary. Still, the people are overjoyed by this situation since, before the war, it was illegal for them to own any land at all. We each stayed with a family, in their home, sharing daily chores which included milking cows, gathering eggs, and lugging 5 or 6 five-gallon jugs of water from the one water source to the home, which in my case was about 1/2 mile away. This work began at 5:00 a.m., before sunrise. By 8:30 a.m. we began each day's assignment for the water project, which consisted mostly of digging holes and ditches and hand mixing cement for the footers used to support the water tower we were going to install. The ditches were being dug to lay water line, which consisted of 2 1/4" diameter P.V.C. pipe which was manufactured and purchased in San Salvador, the capitol and only large city in the country.

Although we were not concerned with freezing, we still buried the pipe 42" deep for fear that road washouts from the sometimes intense rain storms would leave pipe exposed if we laid it any shallower. By 1:00 p.m. the heat and humidity would become too intense, and we would break for the day, finding a hammock under a pair of shady trees to lay still in and recuperate from the morning's duties. A warm beer and cigarette were the pleasures we looked forward to before washing up and helping to prepare dinner. Even washing was a chore. We would take a 5 gallon bucket to the well, fill it with water and take it back to our house where a 4-foot x 4-foot wooden stall (built for privacy) was standing in the yard. A bowl was inside the stall, and we would dip water out of the bucket with it, and pour it over ourselves, soap up, and rinse in the same manner. Minutes after dressing, my fresh clothes would already be soaked with sweat, but still I felt refreshed from the cleaning. About 4:30 p.m. we would eat, and by 5:30 p.m. we would be sitting in candlelit darkness, discussing the day's events. By 8:00 p.m. we were fast asleep, or as asleep as one could be with the noise of barking dogs and crowing roosters serenading us through the night. My guess is that they slept all day.

Next Issue "We Face Some Minor Problems."



Jaime Coutts, Scotland, (right) spent 18 months living and working with the villagers of Nueva Esperanza, and Bill Keller, PRWA, (left) look over any possible damage from the rainstorm that hit the village overnight.



One of the young villagers fills up as many vessels as possible from the new water tank as part of the daily chores. The inscription on the tank reads: "Citizens: The water is only for drinking, Not for showering, Not for bathing and Not for the plants." . . . We don't know how precious water can be until we run into this type of situation.



Breakfast is prepared by Barry Silverman (left) and Dan Catanzaro with the help of Bitolino, the woman of the house.

Dan refreshes himself as best he can in the sweltering mid-day heat of Central America. Temperatures and high humidity made it almost unbearable in the afternoons.



Barbara Wein, group chairperson for New Hope Brigade, and Paul Sorokatch work on constructing the ditch.



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THE WASHINGTON REPORT

By John H. Montgomery

National Rural Water Association

Safe Drinking Water Act Update

Senator Max Baucus (D-MT) introduced S. 1547, the Safe Drinking Water Act Reauthorization on October 14, 1993. The current SDWA was reauthorized in 1986 and expired in 1991. It has been kept alive through annual appropriations. Senator Baucus' objective in introducing S. 1547 is to help small communities and ease the federal regulatory burden on state and local governments.

The bill S. 1547 would authorize \$6.6 billion in loans over seven years to help water systems build water treatment projects, plus additional aid if needed to keep water bills low. Baucus' bill closely follows recommendations made last month by Environmental Protection Agency Administrator Carol M. Browner. Browner recommended easing some of the regulations, such as the number of pollutants to be monitored, so states and smaller water companies could comply with the Act.

Senator Baucus, Chairman of the Senate Environment and Public Works Committee, will hold hearings and hopes to report the bill to the Senate this year. The intent of this bill is to combat problems with the SDWA. According to Senator Baucus, the current Act doesn't keep unsanitary water from causing illness and provides no federal aid to help pay for requirements that sometimes overwhelm local financial and technical resources.

In his introductory speech Baucus said there are roughly 900 community water systems in Montana, with some 400 serving fewer than 125 people.

Small systems usually cannot take advantage of the economies of scale in treatment technology. And since there is no financial assistance to go with the regulations, improvements in small systems make household water rates rocket skyward.

The Baucus bill would require states to prepare overall plans to manage drinking water systems that serve fewer than 3,300 people. Each state then would work with the small systems on specific compliance programs to help them develop ways to consolidate with neighboring systems or find better sources of water.

An alternative SDWA reauthorization bill, HR 3392, has been introduced by Congressman Jim Slattery (D-KS). HR 3392 is supported by a coalition of government and water industry groups including: National Rural Water Association, National Governors' Association, Association of State Drinking Water Administrators, American Water Works Association, National Water Resources Association, Association of Metropolitan Water Agencies, National League of Cities, U.S. Conference of Mayors, National Association of State Legislatures and the National Association of Water Compa-

nies. HR 3392 would simplify and clarify the requirements of small systems under the Act.

One of the key points of Slattery's legislation is risk assessment in standard setting. Current standards in the SDWA are set based on the affordability of a system that serves 1,000,000 people. Obviously a small system cannot afford the same treatment as a large metropolitan system. The objective of risk assessment is to set the standards at a level that assures public health protection and is affordable to small communities. Under the current SDWA the cost of complying with standards is enormous and the public health benefit is often negligible. HR 3392 establishes standards (MCLs) based on best technology, risk reduction benefits and cost. The bill requires EPA to establish, in regulation, best available technology (BAT) for systems of less than 1,000 people, for systems serving between 1,001 and 10,000 and systems serving greater than 10,000 people. Watershed protection and pollution prevention are specifically mentioned as appropriate technology. It allows states to establish monitoring requirements that are practical and affordable. Also the bill would allow states to grant a variance from a regulation if a water system cannot afford to install the BAT and if it is not feasible for the water system to find another source of water. If a state determines that a water system is unable to comply with a designated BAT, the system is required to comply with a best available affordable technology (BAAT). EPA, in consultation with the state, is required to identify BAAT.

REA Restructuring Moving in Congress

The House, on September 28, passed a bill that would restructure the lending programs of the Rural Electrification Administration for telephone and electric cooperatives and spur states to modernize rural telephone systems.

The bill, HR 3123, would boost the interest charged on telephone and electric loans. Rural communities that demonstrate some hardship would be eligible for \$250 million in loans in fiscal 1994 at an interest rate of 5 percent, rather than the current 2 percent. Other cooperatives would be able to borrow money at the same rate charged municipalities, but the interest rate would be capped at 7 percent. Electric cooperatives would be eligible for \$600 million in such loans, and telephone cooperatives would be eligible for \$198 million in fiscal 1994. The legislation does not include controversial language restricting the annexation rights of communities looking to incorporate neighboring areas. It would require states to publish plans to modernize rural telephone systems to be eligible for the subsidized loans. This approach will provide an added incentive to rural electric and

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telephone borrowers to upgrade their telecommunications systems. Congressional backers rushed to get the authorizing bill to the Floor before Congress finishes work on the fiscal 1994 Agriculture Appropriations bill (HR 2493), which includes spending for the loan programs that would be jeopardized if the programs are not first authorized.

President's Pesticide Policy

For nearly six years, environmentalists, consumer groups and agricultural interests have called on Congress to iron out the myriad competing rules governing the use of pesticides on the nation's food. The Clinton Administration announced its recommendation for combining the two statutes governing pesticide use and food safety, and for grounding those laws in public health, rather than economic concerns - similar to the SDWA reauthorization debate. The two statutes are the 1947 Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), which regulates the sale and use of pesticides, and the 1958 Food, Drug and Cosmetic Act (PL 85-929), which sets health standards for processed food. It is too soon to tell if the package will attract enough support in Congress to break the legislative logjam that has blocked an overhaul of pesticide laws since 1988 when FIFRA was last reauthorized. The Senate Labor and Human Resources Committee and the House Energy and Commerce Health Subcommittee held a joint hearing September 21 on the package. Interested organizations on both sides of the issue of expressed doubts. The package would loosen restrictions on the level of pesticide residues in processed food and tighten limits governing the sale and use of pesticides. The plan would also make food safety standards consistent and expedite removal of unsafe pesticides from the market. Currently, the Food, Drug and Cosmetic Act sets one standard of acceptable pesticide residue in raw food and another in processed food. FIFRA also requires a lengthy bureaucratic procedure to take a chemical off the market. Under today's system of pesticide regulation, there is one standard for grapes and another one for raisins.

Some environmental groups complained that easing the current standards for pesticide residues in processed food would turn the clock back on food safety and environmental safeguards. They also said the Administration had not gone far enough in pushing farmers toward alternative farming practices.

Farm-state lawmakers and the agriculture industry also are expressing concern with the package. During a hearing on the proposal Sept. 22, House Agriculture Committee members argued that the agricultural benefits of an abundant food supply ought to be considered - as they are now - when deciding whether to take farm chemicals off the market. The key element of the President's package would do away with the so called Delaney Clause, a provision added to the Food, Drug and Cosmetic Act in 1958 that had not been enforced until a federal court recently ordered compliance.

Delaney prohibits the use of all cancer-causing pesticides on vegetables and fruits slated to be used in processed food.

A less stringent standard governs raw vegetables and fruits. Since regulators cannot track where vegetables and fruit end up, they have allowed residues of cancer-causing pesticides to be found on both raw and processed foods as long as the residues pose only a negligible risk of causing cancer. The Administration's plan would replace Delaney with language allowing chemical residues to be found on both raw and processed foods if the residues pose a reasonable certainty of no harm. The proposed standard is about as stringent as the current one. Still, the Administration's plan would use the tougher chemical tolerance levels of children - not adults - as the baseline. The proposal comes in response to a June study by the National Academy of Sciences finding that federal food safety laws do not adequately take into account children's unique diets and metabolisms.

Senator Edward Kennedy, (D-MA) and Congressman Henry Waxman, (D-CA) already have introduced bills (S331, HR872) that could serve as a vehicle for the Administration's proposals. Committee action has not been scheduled for either bill. An alternative (HR1627) attracting support from farm-state lawmakers would require the EPA, when determining whether a pesticide should be registered, to take into account its benefits in ensuring a sufficient food supply.

Legislative Profile—Polluter Pays

On May 20, 1993 Congressman Gerry Studds (D-MA) introduced the Polluter Pays Clean Water Funding Act. This legislation proposes a series of environmental taxes on products and activities which generate water pollution and establishes a supercharged State Revolving Fund (SRF) Program to deliver these revenues to the cities and towns with the most pressing clean water needs. The bill is designed to be a new and innovative way of financing water infrastructure improvements. In the House the bill was referred to the House Committee on Public Works and Transportation, the Committee on Merchant Marine and Fisheries, and the Committee on Ways and Means. No hearings have been held on the bill.

Studds introduced the bill to respond to the clean water funding shortages and the sky rocketing of water and sewer bills as the costs of municipal sewage treatment plants and other clean water programs soar. According to a conservative Environmental Protection Agency estimate, there are over \$155 billion in projects needed for compliance with the Clean Water Act. In 1993, the Federal Government provided about \$2.5 billion to help communities meet those needs. Studds is very concerned about the funding shortfall with respect to controlling combined sewer overflows, polluted runoff, stormwater, and toxics, and believes that cities, towns, and ratepayers cannot shoulder this burden. Studds also believes that if funding is not increased the clean water program may unravel and regulation may have to lessen clean water standards. In 15 of the largest U.S. cities, water and sewer rates have increased by at least 50 percent over the last several years. Small and rural towns of less than 2,500 people need \$28 billion just for proper sewage treatment. In 1992, the GAO reported that Utah officials were contemplating condemning entire towns because they could not afford to comply with the Clean Water Act. Due to the lack

Washington Report

of available funds from general revenues, Studds has outlined the steps necessary to create alternative revenue sources and fund clean water projects through a "polluter pays" proposal. It begins to price pollution, allowing for market incentives to help foster pollution prevention; it generates badly needed money for the State revolving funds, thereby relieving household and municipal budgets from rising rates; it reduces the deficit; and it has broad public acceptance as a revenue-raising mechanism.

The legislation will provide \$6 billion annually to fund clean water compliance; \$2 billion will continue to come from the general treasury (taxpayers). The aim of the bill is to have the greatest funding burden shifted to the polluter.

Senator Nickles Presses Senate

Last year during the Senate debate on EPA's annual funding bill, Senators Domenici (R-OK) and Nickles (R-OK) attempted to amend the funding bill with S 2900. The proposal would have placed a moratorium on all rule making under the Safe Drinking Water Act. The Senate defeated S 2900 by a narrow margin and replaced it with the compromise Chafee Lautenberg amendment. The Congressional attention being paid to the SDWA this year is a direct result of the support of S 2900 last September. During debate on this year's EPA funding measure Senator Nickles made the following statement in the Senate:

"Madam President, my comments today mark the fact that a full year has now gone by since we vigorously debated placing a moratorium on the implementation of new regulations under the Safe Drinking Water Act. It is unfortunate that the short-term help we offered to small water systems last year is just about to expire. There have been no hearings on reauthorization of the Safe Drinking Water Act and there is no committee bill, and the Science Advisory Board says the EPA report on radon that we asked for is not a good piece of work and the other EPA report we required was late and failed to answer the most basic questions that were asked.

In the meantime, the mayors and Governors are fed up. They have organized a 'National Unfunded Mandate Day' and are calling for risk assessments and cost-benefit analyses in all legislative mandates. I agree with their approach. They want this for the same reasons that we sought to place a moratorium on implementation of useless and unnecessary drinking water regulations 1 year ago. I wish to make this point very clear. The 1-year break we gave the small water systems is about to end with absolutely no solution in sight. These communities are now going to start paying over \$12,000 per well to meet Federal testing regulations that make no sense at all and do nothing in themselves to improve the quality of drinking water. Let me give you one example to show you how broken this law is and will continue to be, and let me put it into proper legislative setting. As we begin our debate on health-care legislation, we all know that one of the most difficult issues to confront will be which health remedies we will choose not to pay for. We are going to have to make some hard decisions on what is too expensive for

benefits derived. I can promise you one thing without any fear of contradiction. We will never authorize a treatment for cancer that costs \$10 billion per case. But under the Safe Drinking Water Act we are doing just that. There simply is not a single health provider, public or private, that would even contemplate spending that kind of money on a single case of cancer. Ten months ago, I asked EPA to provide me with the cost per case of cancer associated with its rules. To be polite, they didn't hand over the information. Instead, they gave me a stack of reports and said it was buried in those reports somewhere, or could be calculated from the data. The Safe Drinking Water Act contains some regulations that are a good buy at any price. Standards for surface water filtration and nitrates, for example, are the kind of investments any sane and caring person would want to make. On the other hand, no competent health-care manager, whether in the White House or in your house, would ever be willing to pay for the dozens of high-cost rules under the act. The numbers are staggering. For example, rules regulating pentachlorophenol cost \$711 million per case of cancer avoided, and the worst one of all, alachlor, an important agricultural chemical that is very safe to use, could cost as much as \$80 billion per cancer case avoided.

It is not hard to understand why EPA did not want to give us data on the incremental costs and benefits of their drinking water rules. Mr. President, some have proposed that the Federal Government pay for these rules through use of a new State-revolving fund. Even, if we were flush with money, we would not pay for this kind of waste. If the States had to pay for it, they would not pay for this kind of waste. And the citizens of this Nation certainly do not want to pay for this kind of waste. The facts are clear - when it comes to the safe Drinking Water Act, we need to extend relief to small communities, just as we did last year. We need to continue to extend them reasonable relief as long as we, ourselves, are unable to fix this desperately broken Federal mandate.

I take no joy in calling this to the attention of the Senate. I hope that the authorizing committee will give serious attention to those elements of my bill dealing with local choice, risk-cost-benefit assessment, and recognition of the fact that some risks are so small as to be unimportant. At a time when we are reassessing how best to offer economical health care to the Nation, we must ensure that all aspects of our health-care system, including safe drinking water, are given the same degree of thoughtful attention."

EPA's Science Advisory Board on Radon

Senator John Chafee (R-RI) has told the EPA's Science Advisory Board not to get deeply involved in public policy issues in its review of the Agency's report on radon in drinking water. Senator Chafee, the ranking Republican on the Senate Environment and Public Works Committee, required EPA to conduct a multimedia risk assessment of radon in drinking water as part of the Chafee/Lautenberg amendment.

Senator Chafee opposed the SAB's focus on the cost of the proposed radon rule and the relative cost effectiveness of

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Washington Report

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the rule compared to other measures to protect public health from radon. The SAB claims that their mission was to report on the relative risks and costs associated with radon in drinking water. The primary points discussed in the SAB's report on radon dealt with issues of uncertainty and relative risk from the various sources of radon and with the impact of those uncertainties on the costs of mitigating radon in drinking water and indoor air. The SAB did not compare the cost-benefit ratios of radon in drinking water to other chemicals because it felt that the report should be limited to radon. This year, Congress postponed promulgation of the 300 picuries per liter of water Radon Rule because it cost consumers too much and the health benefits of a Rule set at 300 picuries per liter of water are questionable.

Clean Water Act Update

Senators Baucus (D-MI) and Chafee (R-RI) introduced S. 1114 in June and held 6 hearings on the bill this summer. In addition, Baucus and Chafee introduced and held hearings on legislation addressing protection of wetlands (S.1304) in late July. It is expected that the committee will report comprehensive legislation to reauthorize the Clean Water Act, including wetlands legislation, later this fall. The House will have to approve its own bill and the differences between the House and Senate bills will be worked out in Conference, which may not happen for months.

Baucus and Chafee were guided by broad goals in developing their bill: prevent pollution before it starts; use good science to set priorities; and build support for clean water from the bottom up by involving local governments, farmers, businesses, and groups such as rural water with a direct interest in and knowledge of water quality. Throughout the hearing process the committee heard from a variety of industries, the states, cities, local governments, scientists and the EPA. Criticism of the bill has centered on the new provisions which increase EPA oversight over the traditional areas of water rights and land use.

Baucus and Chafee want the bill to continue the attack, begun in 1972, on toxic pollution of our waters. The bill expands the use and reach of water quality criteria. It tells EPA to eventually eliminate the most dangerous pollutants regardless of source. It requires better data about new pesticides and chemicals that might reach our waters. The bill requires companies that discharge the most toxic pollutants to develop pollution prevention plans. These plans are designed to help companies think about how they can use fewer toxic chemicals and produce less pollution in the first place. The bill claims that pollution prevention provisions will save industry money and, at the same time, protect the environment. It aims to improve water quality monitoring to address the most critical pollution problems such as nonpoint source pollution (rainwater falling on city streets, farms, construction sites, and other areas that pick up pollutants and run into water bodies). EPA estimates that, taken altogether, nonpoint sources cause about half of America's water pollution problems. The bill would strengthen monitor-

ing to identify waters polluted by nonpoint sources and focus pollution control programs on these waters. Efforts are targeted to problem areas to get the most out of water quality programs while avoiding spending too much of money on low priority problems.

The bill is specifically designed to give States incentives to take the lead in identifying cleanup waters or others that have special value, and in developing plans to manage their watersheds. The watershed planning effort puts the states and the local governments together with citizen groups, with businesses, and with farmers to assess the problems in a watershed and to come up with a plan to control point and nonpoint source pollution.

Resources

Case Studies in Wellhead Protection: Ten Examples of Innovative Wellhead Protection Programs, produced by EPA's Offices of Drinking Water, shows how some local communities have implemented successful wellhead protection programs despite strapped budgets. For more information, contact Jannette Hansen at (202) 260-8146

Drinking Water: Stronger Efforts Needed to Protect Areas Around Public Wells from Contamination, examines the barriers to developing and implementing state wellhead protection plans and recommends options to deal with these barriers. For a free copy, contact the Government Accounting Office, PO Box 6015, Gaithersburg, MD 20877 or (202) 275-6241. Request Document No. GAO-RCED-93-96.

The Groundwater Atlas of the U.S., Segment 9 — Iowa, Michigan, Minnesota and Wisconsin, published by the U.S. Geological Survey, is a full-color, 31-page atlas providing comprehensive information, written in non-technical language, on groundwater resources. It explains groundwater flow and the chemical quality and quantity of groundwater pumped from the largest aquifers in four states. The atlas is the second in a series, the first covered the Southeast. Copies are available for \$12. Write to Branch of Distribution, USGS, Box 25286, Denver, CO 80225 or call (303) 236-7977.

Alternative Disinfection Technology for Small Systems. This document provides information on small system disinfection alternatives, selection, and designs. Contact: AWWA Member Services at (800) 926-7337.

The Washington Report is available on the NRWA Electronic Bulletin Board, titled "WASHREP.TXT"
NRWA Washington Office (202) 298-5596

Washington Report Supplement

October 1993
103rd Congress
Summary of Federal bills

DRINKING WATER

HR 3392 **Congressman Slattery**
COMMITTEE **Energy and Commerce**
A bill to amend the Safe Drinking Water Act to assure the safety of public water systems.

S 1547 **Senator Baucus**
COMMITTEE **Environment and Public Works**
A bill to reauthorize and amend title XIV of the Public Health Service Act, commonly known as the Safe Drinking Water Act, and for other purposes; to the Committee on Environment and Public Works.

HR 650 **Congressman Gonzalez**
COMMITTEE **Energy and Commerce**
A bill to amend title XIV of the Public Health Service Act (the Safe Drinking Water Act) to clarify that review by the Administrator of the Environmental Protection Agency under section 1424(e) is mandatory, to improve interagency coordination in the protection of sole or principal drinking water source aquifers, and for other purposes.

HR 376 **Congressman Solomon**
COMMITTEE **Energy and Commerce**
A bill to establish a moratorium on the promulgation and implementation of certain drinking water regulations promulgated under the Safe Drinking Water Act, to modify the definition of public water system, and for other purposes.

HR 1544 **Congressman Rahall**
COMMITTEE **Public Works & Transportation**
A bill to amend the Federal Water Pollution Control Act to reauthorize the State water pollution control revolving loan program, to provide assistance to economically distressed rural communities in the construction of wastewater treatment works and public water systems, and for other purposes.

HR 2344 **Congressman Walsh**
COMMITTEE **Energy and Commerce**
A bill to amend title XIV of the Public Health Service Act (the "Safe Drinking Water Act") to redirect and extend Federal and State activities to protect public water supplies in the United States, and for other purposes.

HR 1283 **Congressman Gallo**
COMMITTEE **Energy and Commerce and Public Works and Transportation**
A bill to amend the Federal Water Pollution Control Act and the Safe Drinking Water Act to provide protection for sole source aquifers.

HR 1701 **Congressman Waxman**
COMMITTEE **Energy and Commerce**
A bill to amend title XVI of the Public Health Service Act (the Safe Drinking Water Act) to establish State revolving funds to provide for drinking water treatment facilities, and for other purposes.

S 767 **Senator Nickles**
COMMITTEE **Environment and Public Works**
A bill to amend title XIV of the Public Health Service Act (commonly known as the Safe Drinking Water Act) to redirect and extend Federal and State activities to protect public water supplies in the United States, and for other purposes.

WASTE WATER

HR 1033 **Congressman Hayes**
COMMITTEE **Public Works & Transportation**
A bill to amend the Federal Water Pollution Control Act to establish a grant program for construction of publicly owned treatment works in economically distressed rural communities.

S 815 **Senator Lieberman**
COMMITTEE **Environment and Public Works**
A bill to amend the Federal Water Pollution Control Act to provide special funding to states for implementation of national estuary conservation and management plans, and for other purposes.

HR 2199 **Congressman Studds**
COMMITTEE **Merchant Marine and Fisheries**
A bill to amend the Federal Water Pollution Control Act to reauthorize and modify the State water pollution control revolving loan program, and for other purposes.

HR 1980 **Congresswoman Long**
COMMITTEE **Public Works & Transportation**
A bill to amend the Federal Water Pollution Control Act to provide additional assistance to economically distressed rural communities under the State water pollution control revolving loan fund program.

S 1304 **Senator Baucus**
COMMITTEE **Environment and Public Works**
A bill to amend the Federal Water Pollution Control Act to improve the conservation of wetlands and thereby restore and maintain the physical, chemical and biological integrity of the Nation's waters, and for other purposes.

S 1114 **Senator Baucus**
COMMITTEE **Environment and Public Works**
A bill to amend and reauthorize the Federal Water Pollution Control Act, and for other purposes.

HR 340 **Congressman Schaefer**
COMMITTEE **Public Works & Transportation**
A bill to amend the Federal Water Pollution Control Act relating to Federal facilities pollution control.

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Washington Report Supplement

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HR 1116 **Congresswoman Morella**
COMMITTEE Public Works & Transportation and
Science, Space, and Tech

A bill amending the Federal Water Pollution Control Act with respect to research and development activities.

HR 2255 **Congressman Mineta**
COMMITTEE Public Works and Transportation
and Ways and Means

A bill to amend the Federal Water Pollution Control Act to reauthorize and modify the State water pollution control revolving loan program, and for other purposes.

HR 2898 **Congressman Richardson**
COMMITTEE Public Works & Transportation

A bill to amend the Clean Water Act to eliminate certain discharges of chlorine compounds into navigable waters, and for other purposes.

HR 1801 **Congressman Visclosky**
COMMITTEE Public Works & Transportation

A bill to amend the Federal Water Pollution Control Act to establish a National Clean Water Trust Fund and to authorize the Administrator of the Environmental Protection Agency to use amounts in that Fund to carry out projects to restore and recover waters of the United States from damages resulting from violations of that Act, and for other purposes.

HR 2580 **Congressman DeFazio**
COMMITTEE Public Works & Transportation

A bill to amend the Federal Water Pollution Control Act relating to Federal facilities pollution control.

HR 2727 **Congressman Pallone**
COMMITTEE Merchant Marine and Fisheries

A bill to amend the Federal Water Pollution Control Act to improve the enforcement and compliance programs.

HR 775 **Congresswoman DeLauro**
COMMITTEE Public Works & Transportation
A bill to amend title VI of the Federal Water Pollution Control Act to establish a

S 309 **Senator Leahy**
COMMITTEE Appropriations
A bill to make emergency supplemental appropriations to provide a short term economic stimulus to rural economies.

ENVIRONMENTAL RISK

S 110 **Senator Moynihan**
COMMITTEE Environment and Public Works
A bill to require the Administrator of the Environmental Protection Agency to seek advice concerning environmental risks, and for other purposes.

S 729 **Senator Reid**
COMMITTEE Environment and Public Works
A bill to amend the Toxic Substances Control Act to reduce the levels of lead in the environment, and for other purposes.

HR 3111 **Congressman Zimmer**
COMMITTEE Agriculture, Energy and Commerce,
Merchant Marine and Fisheries,
Public Works and Transportation,
Science, Space, and Technology

A bill to require the Administrator of the Environmental Protection Agency to seek advice concerning environmental risks, and for other purposes.

EPA

S 171 **Senator Glenn**
COMMITTEE Governmental Affairs, Environment
and Public Works

An act to establish the Department of Environmental Protection, provide for a Bureau of Environmental Statistics and a Presidential Commission on Improving Environmental Protection, and for other purposes.

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Daily Reading	Used Daily	Record of Daily Activities
1		1
2		2
3		3
4		4
5		5
6		6
7		7
Weekly Total		
8		8
9		9
10		10
11		11
12		12
13		13
14		14
Weekly Total		
15		15
16		16
17		17
18		18
19		19
20		20
21		21
Weekly Total		
22		22
23		23
24		24
25		25
26		26
27		27
28		28
Weekly Total		
29		29
30		30
31		31
Extra Days Total		
MONTHLY TOTAL		

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DRIPS & DROPS

Technical Advisory from NRWA



Vol. 5, No. 10

October 1993

EPA's Report to Congress on the SDWA

The report points out that "the continuing stream of regulations will add considerably to the regulatory burden of states and drinking water systems."

Comment

This report and EPA's specific SDWA recommendations will be a major focus of Congress as it deliberates SDWA reauthorization. Water systems must remain informed and be active participants in this process to assure that the SDWA provides equal public health protection through reasonable, practical and affordable regulation of public drinking supplies for all sizes of systems.

Background

The Chafee-Lautenberg Amendment to EPA's fiscal year 1993 appropriation bill contained three provisions. First, it placed a moratorium on regulating radon; second, it provided for a one year period to reduce monitoring costs for Phase II contaminants; and third, it required EPA to report to Congress on recommendations concerning the reauthorization of the Safe Drinking Water Act. In this report, Congress required EPA to address seven specific areas: 1) Adverse health effects of contaminants, 2) How contaminants are selected for control, 3) Regulation development schedule, 4) Capacity of water systems to monitor, and 5) To install treatment, 6) The capacity of states to implement the SDWA, and 7) Innovative alternatives to increase water system and state capacity.

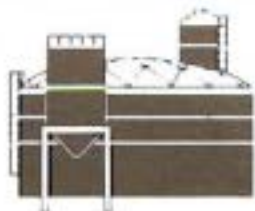
Report Findings

The final report, entitled *Technical and Economic Capacity of States and Public Water Systems to Implement Drinking Water Regulations Report to Congress*, dated September 1993, is now complete and has been sent to Congress. A major theme of the report is that fundamental reform of the SDWA is needed to focus on priority public health areas. The report points out that "the continuing stream of regulations will add considerably to the regulatory burden of states and drinking water systems (especially small systems) and detract from implementation of priority contaminants." Specifically, the report concluded that the "SDWA's requirement that EPA regulate an additional 25 contaminants every three years is a statutory obstacle to realizing the full health protection benefits of existing standards."

In the area of state primacy, the report estimates that there is a current annual shortfall of \$162 million in funding state programs. EPA points out that the first victim of failed primacy is public health protection because EPA is not staffed to run effective programs at the state level. The report listed a number of options for closing the gap which includes increased federal or state funding, and water usage or connection fees. The report also pointed out that reducing regulatory requirements, allowing additional time for adopting regulations and privatizing some state functions were also realistic options.

The financial impact on public water systems to comply with the 84 contaminants regulated to date was estimated at \$1.4 billion per year. On a per household basis, costs ranged up to several hundred dollars per year in small systems. The report acknowledged that this may be a significant underestimate since monitoring costs alone in small systems can be as high as \$171 per household per year. Potential solutions suggested in the report include restructuring, new technology, technical and financial assistance including a drinking water state revolving fund, and pollution prevention.

There are a number of other sections of interest in the report, covering risk assessment, the compliance status of water systems with all EPA regulations, and a variety of costs associated with monitoring and treatment. The full report is available free of charge from the SDWA hotline at 1-800-426-4791.



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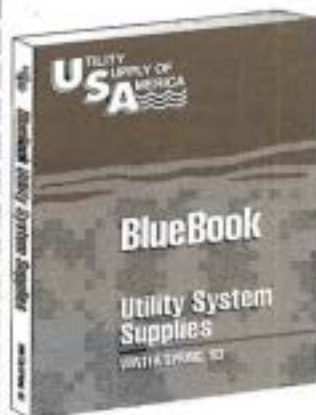
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DRIPS & DROPS

Technical Advisory from NRWA



Vol. 5, No. 8

August 1993

Background

Since the 1986 Amendments to the Safe Drinking Water Act, EPA has promulgated 6 major rules. They include total coliforms, surface water treatment, lead and copper, and phase I, II, and V which cover an array of organic and inorganic contaminants. In addition to this original list of 83 contaminants to be regulated as specified by the SDWA. EPA is also required by the SDWA to promulgate regulations for 25 new contaminants every three years. Although behind schedule, EPA is continuing to work on proposing and promulgating a number of new regulations. In addition, the Chafee-Lautenberg Amendment to EPA's FY93 appropriation required EPA to report to Congress on a multi-media risk and cost assessment for controlling radon. EPA was also required to report on the technical and economic capacity of states and public water systems to implement drinking water regulations. Both reports were due in the summer of 1993.

Comment

There are a number of new rules being developed by EPA that will have significant impacts on public water systems. All new rules are subject to a public comment period. Water systems are in the best position to determine the occurrence of new contaminants and the impact on monitoring and treatment costs. Systems are urged to provide comments to EPA during the rule development process by obtaining copies of proposed rules from the SDWA hotline (1-800-426-4791) and commenting directly to EPA.

Update on Future EPA Drinking Water Regulations

Regulations in Development

Radionuclides (Phase III). EPA proposed MCLs for radon (300 pCi/l), uranium (20 µg/l), radium 226 (20 pCi/l), radium 228 (20 pCi/l), gross alpha (15 pCi/l) and beta (4 mrem/yr) in the *Federal Register* of July 18, 1991. The Chafee-Lautenberg Amendment authorized EPA to seek an extension of a court ordered deadline for promulgation to Oct. 1, 1993 to which the court has agreed. The purpose of the extension is to reevaluate radon risk.

Sulfate. MCLs of 400 and 500 mg/l were proposed in the phase V rule by EPA on July 25, 1990. EPA is under a court ordered deadline to repropose by Oct. 1993 and promulgate by Dec. 1994.

Arsenic. The current MCL for arsenic is 0.05 mg/l. EPA is again under a court ordered deadline to propose a rule by Sept. 1994 and promulgate by Sept. 1996. The issue is whether arsenic is a carcinogen which could result in a much lower MCL.

Aldicarb. EPA promulgated MCLs for aldicarb, aldicarb sulfoxide, and aldicarb sulfone as part of phase II. However MCLs were postponed by the *Federal Register* of May 27, 1992 because of new information on health effects and risk. EPA is planning to repropose regulations by Dec. 1993.

Ground Water Disinfection Rule. A notice of availability of the draft rule was published in the *Federal Register* of July 31, 1992. EPA is under a court ordered deadline to propose the rule by Aug. 1994 and promulgate by Aug. 1996.

Disinfection By-products. The only DBP currently regulated is total trihalomethanes which has an MCL of 0.10 mg/l and only applies to systems serving more than 10,000. The new rule is currently in a process called regulatory negotiation and is expected to be proposed by Dec. 1993 and would apply to all size systems.

Microbial and Disinfection By-product Monitoring. This information collection rule would establish monitoring requirements for public water systems to determine microbial and disinfectant by-product levels in their systems. This data would be used to develop and implement new rules for controlling DBPs and enhanced surface water treatment.

Phase VI B. This rule would set MCLs for a group of as yet unregulated organic and inorganic contaminants from EPA's priority list. The date for proposing this rule has not yet been determined.



DRIPS & DROPS

Technical Advisory from NRWA



Vol. 5, No. 9

September 1993

Biofilms

The most common problem facing water systems with biofilms is the persistent occurrence of coliforms in treated drinking water.

Comment

Biofilm problems have been identified in a number of large water systems. Small systems should be alert to the potential for coliforms originating in biofilms and utilize appropriate operation and maintenance procedures to minimize them if they occur. Small systems should also be aware that regulatory relief from the total coliform MCL may be available if it can be demonstrated that violations are due to biofilms.

Background

Biofilms are organic surface deposits on the interior walls of pipelines and consist of microorganisms, microbial products, and debris from sediment and corrosion. Biofilms can provide an environment for the regrowth of bacteria, including coliforms, and can harbor potentially disease-causing bacteria. The growth of bacteria in water distribution systems can interfere with monitoring for coliforms and can hide significant bacterial contamination from inadequate treatment, cross-connections, and pipe breaks.

Bacteria, particularly heterotrophic plate count bacteria, are the largest group in the biofilm population. Some of these bacteria may be opportunistic pathogens that can pose a disease threat to individuals with a compromised immune system. Other organisms that can be present include fungi, which can cause taste and odor problems, protozoa, and invertebrates. The most common problem facing water systems with biofilms is the persistent occurrence of coliforms in treated drinking water from being sloughed off pipe walls. This may occur despite proper water treatment and O & M practices such as flushing and disinfecting new and repaired mains. Coliforms originating in biofilms may persist for prolonged periods even with relatively high chlorine residuals.

Biofilms and the Coliform MCL

If the persistent growth of coliforms in a distribution system from biofilm results in a violation of the MCL for total coliforms, a water system can seek a variance from the MCL. EPA regulations allow primacy states to grant a variance "for systems that demonstrate to the state that the violation of the total coliform MCL is due to persistent growth of total coliforms in the distribution system rather than fecal or pathogenic contamination, a treatment lapse or deficiency, or a problem in the operation or maintenance of the distribution system."

In addition to demonstrating to the state that the problem is due to biofilms, the system must also be using best available technology (BAT) to achieve compliance with the MCL. BAT includes protection of wells from contamination, maintenance of a disinfectant and flushing of new and repaired pipe, main flushing programs, proper operation and maintenance of storage tanks, positive system pressures, and compliance with the surface water treatment rule or with wellhead protection requirements.

Control of Biofilms

In addition to the measures listed as BAT for coliforms there are other strategies that a water system can take to minimize biofilms. These include cleaning and lining old water mains, using non-porous pipe joining materials, and protecting new pipe sections from contamination while being stored. Also, treated water storage reservoirs should preclude contamination by animals, birds, insects, air pollution, and surface runoff. Corrosion control treatment has been shown to reduce biofilm problems by reducing the potential for microbial habitats on corroded pipe walls. In addition, controlling nutrient levels in water by removing organic matter through the use of granular activated carbon may be helpful.

State Board Certifies Water and Sewage Plant Operators

The State Board for Certification of Sewage Treatment Plant and Waterworks Operators announced today that 289 Pennsylvanians passed the latest exam to be certified as operators of sewage treatment or waterworks plants.

Under state law, each plant must have a certified operator who is directly responsible for the operation of the treatment plant or distribution system, and a certified back-up operator.

Since 1988, the Certification Board has used Association of Boards of Certification (ABC) standardized examinations. A score of 70 percent is generally necessary to pass the exam.

The tests are given twice a year, in January and June at seven locations across the state.

Information regarding courses to prepare for the exams are available through the Department of Community Affairs, Bureau of Local Government Services, Municipal Training Division, P.O. Box 155, Harrisburg, PA, 17120 or call (717) 787-5177.

For application forms or information about certification, contact the Department of Environmental Resources, P.O. Box 8454, Harrisburg, PA 17105-8454 or call (717) 787-5236.

The following operators passed the June 1993 exam for waterworks and sewage treatment plant operator certification:

Adams County

Waterworks — Lewis G. Kuhn, Bendersville and Rodger K. Walter, Fairfield. Sewage — Diane Z. Campbell, Biglerville; Michael L. White, Gettysburg; Timothy L. Mayers, Littlestown; David F. Orndorff, Littlestown; James D. Conklin, McKnightstown.

Allegheny County

Waterworks — Raymond Fernandez, Baden; Roger Milliron, New Kensington; Barbara A. McCabe, Pittsburgh; Donald F. Kendrick, Pittsburgh; John J. Ebbert, Jr., Pittsburgh; Gerald J. Wagner, Pittsburgh. Sewage — Gary M. Stetar, Elizabeth; Joseph A. Dmarch, Elizabeth; Patrick J. Canavan, West Mifflin; Samuel M. Galvach, Verona; Richard P. Underwood, Pittsburgh; Thomas D. Kupiec, Pittsburgh; Randal W. Collins, Pittsburgh; Paul D. Galbraith, Jr., Pittsburgh.

Beaver County

Sewage — Roland V. Henry, Aliquippa; Ronald A. Ross, Aliquippa; Ernest Zupsic, Aliquippa; Roger D. Freed, Beaver Falls; Matthew W. Haffey; Andrew R. Kullen, Monaca; Richard A. Onuska, Rochester.

Bedford County

Sewage — Patrick W. Murphy, Breezewood.

Berks County

Waterworks — Charles L. Reppert, Jr., Birdsboro and Wayne L. Bawks, Rebersburg; Sewage — Gene A. Wharton, Hereford; David M. Wheeler, Birdsboro; Ronald A. Fillis, Kempton; Wayne L. Bawks, Rebersburg; Allen T. Hartranft,

Robesonia; Peter B. Juzyk, Reading; Kevin J. Edmonds, Mount Penn; David G. Hodgkins, Kenhorst; David M. Scholl, Reading.

Blair County

Sewage — Matthew A. Villani, Jr., Altoona; Tyke E. Glass, Claysburg; William R. Seskey, Hollidaysburg; Ronald D. Musselman, Tyrone.

Bradford County

Waterworks — Richard A. Rimbey, Gillet; Lester E. Hilfiger, Canton; Alton R. Hess, Canton; Frederick B. Johnson, Jr., Towanda; Sewage — Lee A. Henry, Sayre.

Bucks County

Waterworks — Mark S. Bruder, Sellersville; Robert Urban, Sellersville; Graham W. Orton, Wycombe; Paul S. Monte, Bristol Boro; William V. Mayberry, Bensalem; Francis A. Formichelli, Trevoise; Christopher T. Harris, Morrisville; Greg A. Johnson, Nottingham; Sewage — Richard W. Miller, Doylestown; Michele A. McElderry, Doylestown; Stefan R. Green, Quakertown; Charles J. Fealy, Silverdale; Robert D. Shiffler, Warminster; John T. Walker, Langhorne.

Butler County

Waterworks — Clifford P. Boyer, Butler; Frank L. Bonetti, Harrisville; Sewage — David E. Snyder, Jr., Butler; Richard A. DiBiase, Boyers; Robert N. Kossack, Mars.

Cambria County

Waterworks — Ronald J. Baumgardner, Johnstown; Philip A. Fryzlewicz, Portage; Robert A. Myers, South Fork; Edward P. Goral, Wilmore; Stephen Fisanick III, Patton; Sewage — Joseph G. Klochak, Johnstown; John F. Vrabel, Jr., Johnstown; Steve E. Krisko, Portage; Ronald P. Mazur, Cresson.

Carbon County

Waterworks — Brian R. Lutton, Jim Thorpe; Armando Galasso, Lehighton.

Centre County

Sewage — Thomas W. Lehman, State College; Rodney D. McCulley, Bellefonte; Roy A. Rupert, Millheim.

Chester County

Sewage — Doris E. Howell, Avondale; William H. Fowlkes, Jr., Downingtown; Larry D. Taylor, Lincoln University; Michael A. Farkas, Oxford; David O. Rice, Oxford; Charles M. Harris III, West Chester; Donna K. Albany, Phoenixville; Scott A. Dellaquila, Phoenixville; Hal D. Rathbun, Spring City.

Clarion County

Waterworks — Jeffrey L. McCleary, Knox; Sewage — Kevin P. Hoffman, New Bethlehem; Sewage — Steve D. Boyle, East Brady.

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State Board Operators

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Clinton County

Waterworks — Martin O. Tressler, Loganton.

Columbia County

Waterworks — Ron C. Artley, Bloomsburg; Sewage — Alise C. Szymczak, Bloomsburg; Stephen E. Richendorfer, Catawissa; Larry J. Stank, Catawissa.

Crawford County

Waterworks — Phillip A. Smith, Springboro; Sewage — Thomas E. Beichner, Titusville; George W. Gifford, Titusville; Alfred C. Reibel, Cambridge Springs.

Cumberland County

Waterworks — Phil J. Consonery, Camp Hill; John E. Brutz, Carlisle; Sewage — Travis J. Strayer, Carlisle; Martin F. Hovis, Mount Holly Springs.

Dauphin County

Waterworks — Robert B. White, Lykens; Timothy W. Reed, Millerburg; Tami L. Wilson, Harrisburg; Kenneth M. Speck, Harrisburg; Sewage — Frank L. Homes, Middletown; Jennifer K. Paul, Harrisburg; Curtis C. Wilbern, Harrisburg.

Delaware County

Waterworks — Bryon D. Moat, Chester; Kenneth S. Woodward, Media; Sewage — Keith O. Mooney, Newton Square.

Elk County

Waterworks — Richard A. McKnight, Ridgway; Jude A. Zimmet, St. Marys; Sewage — Edward L. Gleixner, Jr., Kersey; Michael P. Kraus, St. Marys.

Erie County

Sewage — James P. Demenik, Lake City; James K. Leube, McKean; William R. Peters, Waterford; Steven J. Parsons, Sr., Wattsburg; Mark A. Kwitowski, Erie; Ben W. Honeywell, Erie; Kevin S. Brown, Erie; Mark J. Ventrescak, Erie; Donald A. Hill, Erie.

Franklin County

Sewage — Betsy C. Shatzer, Chambersburg; O. Charles Barkman, Chambersburg; Edward M. Games, Mercersburg; Sally E. Brick, St. Thomas.

Greene County

Sewage — Carl M. Smith, Carmichaels.

Huntingdon County

Waterworks — Jeffrey D. Kozora, Alexandria; John W. Keslar, Huntingdon; Sewage — Barry J. Parks, Huntingdon; Richard S. King, Huntingdon; Gerald E. Houck, Petersburg; Herbert M. Hann, Mt. Union.

Indiana County

Sewage — Albert S. Demarines, Black Lick; Andrew L. Geesey, Creekside.

Jefferson County

Waterworks — Robert W. Crosby, Reynoldsville.

Lackawanna County

Waterworks — Stephen J. Sladicka, Jr., Carbondale; Joseph D. Bontrager, Clarks Summit; John P. Hunt, Moscow; Vincent L. Nape, Moscow; Michael J. Zelinsky, Olyphant; Sewage — Michael P. Jordan, Clarks Summit; John M. Mekilo, Taylor; Joseph L. Hauze, Wilkes-Barre.

Lancaster County

Waterworks — Michael G. Kaschak, Ephrata; Paul Miller, Jr., Strasburg; Mary A. Shepler, Lancaster; Sewage — David B. Mayhue, Elizabethtown; David A. Smith, Elizabethtown; Richard Budesheim, Columbia, Sheldon M. Brubaker, Denver; Troy A. Wenger, Kinzer; Darryl M. Zimmerman, Stevens.

Lawrence County

Sewage — Bradley L. Sheeler, New Castle.

Lebanon County

Sewage — Steven R. Miller, Lebanon; Angel L. Sanchez, Lebanon; Paul C. Snyder, Jr., Lebanon; Walter S. Van Winkle III, Palmyra.

Lehigh County

Waterworks — John G. Gignet, Jr., Center Valley; Robert A. Kennedy, Allentown; Craig T. Sachs, Allentown; Robert R. Iback, Jr., Allentown; Sewage — George P. Lill, Emmaus; Anthony P. Mazziotta, New Tripoli; Eileen M. Brunner, Zionsville; John H. Berger, Allentown; William D. Grattan, Allentown; William L. Neidigh, Allentown.

Luzerne County

Waterworks — David M. Tomancheck, Hazleton; Mark A. Berger, Drums; Richard J. Gedrich, Avoca; Brian J. Breznay, Wilkes-Barre; Charles E. Kovatch, Mountain Top; Loren E. Williams, Shavertown; Sewage — Mark J. Koval, Scranton; William J. Stanvitch, Scranton; Harry J. Freeman, Dallas; Paul E. Chocallo, Dallas; Ronald P. Remsky, Jr., Pittston; Thomas A. McDermott, Dupont; Eric C. Woelfel, Mountain Top.

Lycoming County

Waterworks — Donald L. Bennett, Muncy; Sewage — Richard T. Edmonston, Williamsport.

McKean County

Waterworks — James S. Housel, Bradford.

Mercer County

Waterworks — Larry P. Reed, Mercer; Sewage — Donald J. Fisher, Sandy Lake; Garth E. Whetzel, Sharon; Jonathon D. Tolliver, Sharon; Richard J. Egger, Sharpsville.

Mifflin County

Waterworks — Todd M. Musser, Belleville; Sewage — Lawrence E. Hassinger, Lewistown; William E. Clokey, Lewistown.

Montgomery County

Waterworks — Thomas W. Bradbury, Greenlane; James C. Groff, Telford; Carl R. Meixner, Norristown; Michael Megella, Collegeville; Mark A. Pizzo, Lansdale; Robert H.

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State Board Operators

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McGinnis, Pottstown; Sewage — Dennis T. Rozak, Perkiomenville; Richard J. Gullifer, North Hills; Joan M. Cummings, Hatboro; Harry Cressman, Telford; James L. Hepler, Willow Grove; Joseph F. Skee II, Melrose Park; Thomas D. Mossop, Norristown; Albert G. Eberle III, Bridgeport; Albert J. Denardo, Audubon; Timothy A. Gruber, Pottstown; Gerald M. Trollinger, Jr., Pottstown; Francis R. Marvin, Royersford; Harold R. Binkley, Schwenksville.

Monroe County

Sewage — Scott C. Frantz, Effort; Lloyd V. Hummer, Pocono Pines; Timothy J. Morris, Reeders.

Montour County

Waterworks — Rhonda L. Manning, Danville.

Northampton County

Waterworks — Lee H. Reedy, Bangor; Tom A. Cole, Bethlehem; Sewage — Donald S. Benway, Bethlehem; Philip J. Szvetcz, Jr., Bethlehem; Eugene N. Tirli, Easton; Frank J. Trimmer, Easton; Stephanie A. Olexa, Hellertown; Kimberly A. Zeeman, Nazareth.

Northumberland County

Waterworks — Robert J. Herman, Jr., Sunbury; William Doohan, Jr., Sunbury; Leonard G. Young, Jr., Milton; Joseph A. Gula, Mount Carmel; Sewage — Michael A. Kerstetter, Sunbury; William Doohan, Jr., Sunbury.

Perry County

Sewage — Andrew P. Pontius, Loysville.

Philadelphia County

Waterworks — Albert H. Murray; Jerry G. Kuziw; Sewage — John C. Oates, Travis R. Scott.

Schuylkill County

Waterworks — Michael E. Tutko, Pottsville; John J. Turner, Pottsville; William W. Miller, Sr., Ashland; Calvin D. Shellhammer, Jr., Mary-D; John J. Nortavage, Mary-D; John E. Sabol, Minersville; David A. Dinicola, Minersville; James M. Paulaconis, Shenandoah; Joseph A. Ronitz, Tamaqua; Sewage — Richard M. Painter, Pottsville; John C. Zimmerman; Hegins; Christopher C. Rickard, Lavelle.

Snyder County

Waterworks — Dan A. Kiesinger, Selinsgrove; Sewage — Thomas A. Wagner, Beavertown; Steven D. Aumiller, McClure.

Somerset County

Waterworks — Tom D. Jury, Somerset.

Sullivan County

Scot C. Sample, Dushore.

Susquehanna County

Sewage — Leslie J. Hawley, Montrose; Mark E. Gregory, Montrose; Michael K. Turner, Hop Bottom.

Tioga County

Waterworks — Ronald E. Weed, Blossburg.

Venango County

Waterworks — Alan S. Hartzell, Seneca; William K. Whitman; Sewage — David L. Zuck, Oil City.

Washington County

Sewage — David P. Stablein, Charleroi; Adam J. Ferragonio III, Cecil.

Warren County

Sewage — Clyde S. Hilyer, Clarendon; Geraldine L. Fox, Clarendon; Thomas A. Pastrick, Sheffield; Sally L. Yeagle, Warren.

Wayne County

Waterworks — Keith A. Springman, Hawley.

Westmoreland County

Waterworks — Susanne G. Leo, Oakford; Sewage — Earl G. Highberger, Greensburg; Robert E. Parker, South Greensburg; Paul A. Baughman, Claridge; Ernest R. Jones, Irwin; John S. Stairs, Mt. Pleasant; Carl A. Trusiak, Jr., Vandergrift.

Wyoming County

Waterworks — Richard K. Dixon, Factoryville; Thomas J. Ruda, Nicholson; Edward G. Rought; Sewage — James A. MacGeorge, Tunkhannock.

York County

Waterworks — Stuart A. Ferree, York; Cletus H. Stone, Jr., New Holland; Sewage — Kevin L. Fowler, Eppers; Steve N. Zeller, Felton.



A Day in the Life of Your Friendly Meter Reader

By: Jearl Ramsey

I wonder how many managers have thought about the importance of the meter readers' job. This person is in essence your system's cash register but is usually the lowest paid person on the job. They do the day-to-day trudging from house to house, braving the elements, dogs and other pets, to bring in the water usage count. And people think mailmen are heroic.

The day on the calendar finally arrives, marked ostentatiously with a big red X, it's meter reading day. The weather forecast calls for 40 percent chance of rain or sleet with a "slight" (read here if pigs fly) chance of sunshine. These weather conditions, therefore, call for special preparation that the meter readers have turned into an art form in itself. First the boots, preferably strong and sturdy but not too heavy for all the walking one must do. Second, add a rain coat, old milk jug cut off at top and adjusted for dipping water, a metal lid wrench and special tools to ward off unfriendly versions of Lassie and Spot.

As the sun rises above the mist, the first few meters whiz by in easy efficiency, excepting that my boots, at one time strong and sturdy, have now a thin place at the toe from too many meter reading days. My big toe has chosen this morning to make its break for freedom. On down the street I pass my good friend "Ebenezer" Jones' house. Being the friendly good hearted soul that he is, a rock has been placed on the meter lid to test whether or not I read his meter. My back has not gone the way of my boots yet, so with a grunt I manage to raise the rock. After checking his meter I give a little wave to my friend Jones who is peaking out from his living room curtains.

It seemed as if pigs would fly this morning, as the sky was clear blue with a few rays of sunshine, perfect meter reading weather. As I darted around the alley, out of the corner of my eye I see a sight that will mar any meter reader's day — the biggest, ugliest, meanest-looking dog with his fur bristling and deep growls emanating from him toward me. Panic sets in for the first time, and I reach for my "have gun will travel" solution. It was not long till my dog was slinking its way back home. Try that Cliff Clavin.

The rest of the day was uneventful, just the usual dipping water from around 50% of the meter wells, giving directions to anyone who comes into town because, like the UPS man, we know everyone's address in town. Add to this marking what maintenance is needed and giving people estimates of their water usage. It all adds up to an average day in a meter reader's life.

HUNT ENGINEERS, INC. of Williamsport Changes Name to Larson Design Group

Hunt Engineers, Inc. of Williamsport has announced that effective January 1, 1994, it will officially change its name to the Larson Design Group, Inc. As the Larson Design Group, the firm will continue to offer the same economical, innovative, and quality engineering, architectural, and surveying services upon which it has built its reputation. Its Architectural Division will be formally known as the "Larson Architectural Group, Inc."

Earlier this year, the employees of Hunt Engineers in Williamsport, through a 100% stock buyout, acquired ownership of the Williamsport offices from its parent company, Hunt Engineers and Architects, P.O. of Corning, N.Y.

In February, a new local slate of officers for the firm was elected. This new leadership group subsequently decided that a new name for the firm would better reflect its local ownership and independence.

Larson Design is one of the larger engineering/architectural firms in the North Central Pennsylvania area. Now an employee-owned company, Larson Design Group employs 74 engineers, architects, surveyors, and technicians. Many of these employees participated in the buyout of the Corning corporation's Williamsport office.

Larson Design Group includes an architectural division, a bridge and highway division, a site-development/survey division, and an environmental division.

For additional information, contact: Fred LaVancher, (717) 323-6603.

NUTRITION

Water: Drink To Your Health

(NU) - Americans drink oceans of soda pop, milk, beer, juice, coffee and tea each year, but the nation's healthiest beverage is water.

Public tap water contains no calories, fat, cholesterol or artificial sweeteners. Its quality is strictly controlled by the Safe Drinking Water Act (SDWA), and the price is right.

Americans pay only fractions of a penny per glass for a quality product delivered directly to their homes 24 hours a day.

Water lubricates the organs, joints and lungs. It carries food and oxygen to cells, cleans up waste products through sweat and urine. And it keeps us cool.

Yet millions are falling short of their daily recommended water intake, risking borderline dehydration — a common culprit of headaches and fatigue.

Particularly prone to dehydration are infants, the elderly and nursing mothers, who need to replace fluids lost through breast-feeding. Pregnant women should drink up to ten glasses of water a day to help cleanse their bodies of extra waste.

Public water supplies are safe throughout the country, according to the National Rural Water Association, because they must meet stringent quality standards mandated by SDWA, and SDWA must notify the public if the water does not meet those standards.

It's not just tap water — it's healthy, inexpensive and readily available.

1st Quarter Training — 1994

February 8, 1994 — Gas Chlorinators — Williamsport
Ed Akus, speaker

February 10, 1994 — Gas Chlorinators — Brookville
Ed Akus, speaker

February 16, 1994 — Administrative/Management Workshop — Nittany Lion Inn, State College



Conference 1994 March 27-29, 1994 "Putting the Pieces Together"



SUNDAY, MARCH 27, 1994

12:00 Noon - 4:00 pm Welcome Center	NITTANY LION INN — Registration
3:00 pm - 5:30 pm	"PRWA BOWLING PARTY" — Food, Fun & Bowling — Last year was the first, this year it's getting "serious"
7:00 pm - 8:00 pm	"PRWA Committee Meetings"
9:00 pm - 11:00 pm	"PRWA Hospitality Room" sponsored by the Associate Members

MONDAY, MARCH 28, 1994

7:30 am	REGISTRATION — Continental Breakfast			
8:30 am - 10:00 am	<p>1 Hydraulics of a Distribution System - George Hart, Bankson Engineers, Inc.</p>	<p>2 Financing Your System: A Hands On Approach - Penny Eddy, McKean County Rural Development Authority</p>	<p>3 Developing an O & M Plan for Your Wastewater System - John DeVine, BCM Engineers, Inc.</p>	<p>4 Public Utilities Commission and the Small Systems: An Overview -PUC Commissioner, Lisa Crutchfield & A Panel of Commissioners</p>
10:00 am - 10:15 am	BREAK			
10:15 am - 12:00 noon	OPENING CEREMONIES: Welcome by PRWA Board President Featured Speaker: Dr. Michael G. Skinner, Ph.D. and Consultant "STRESS MANAGEMENT: TAKING CONTROL OF YOUR PERSONAL LIFE"			
12:00 noon - 1:00 pm	LUNCH			
1:00 pm - 2:15 pm	<p>5 Hydrant Maintenance: -Flow Testing; - Fire Protection Rating; - ISO: Mueller, American Waterous, Kennedy</p>	<p>6 Personal Development - Helen Ferri Mallin, H.M. Industries</p>	<p>7 Meeting Stricter Ammonia/Nitrogen Limits at Your Wastewater Plant - Geri Ramsier, Instructor, Texas A&M</p>	<p>8 Public Utilities Commission: Regulations - Jim Melia, Tucker Arensberg, P.C.</p>
2:15 pm - 2:30 pm	BREAK			
2:30 pm - 3:30 pm	<p>5a Hydrant Maintenance: ISO; Hydrastop continued</p>	<p>6a Personal Development continued</p>	<p>7a Wastewater Session continued</p>	<p>8a PUC: Regulations continued</p>

MONDAY, MARCH 28, 1994 continued

3:30 pm	ANNUAL ASSOCIATION BUSINESS MEETING
4:00 pm - 6:00 pm	"MARDI GRAS: Celebrate New Orleans Style!" - Dr. Quawzi and his Steel Drum band, The Islanders - Tarnished 6 - Dixieland & Jazz Assembly Room & Fireside Lobby - Food, Entertainment and Fun . . . we guar-an-tee! - Ugly Lunch Box Contest
7:00 pm - 9:00 pm	"EXHIBIT HALL EXTRAVAGANZA" <i>"Putting the Pieces Together"</i> Ballroom A, B & C - Exhibit Hall Opens with 60 Exhibitors, Door Prize Drawings, Refreshments sponsored by the PRWA Associate Members "Pride of PA" Water Testing - At the PRWA Booth
9:00 pm - 11:00 pm	"PRWA Hospitality Room" sponsored by PRWA Associate Members

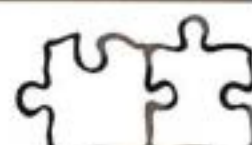
TUESDAY, MARCH 29, 1994

8:00 am	REGISTRATION - Continental Breakfast			
8:00 am - 9:00 am	EXHIBIT HALL OPENS - Door Prizes			
9:00 am - 10:00 am	<p align="center">9</p> <p align="center">Where in the Well Is Your Water?</p> <p align="center">- Bill Gough Moody & Associates</p>	<p align="center">10</p> <p align="center">Water Quality Analysis - Lab Test Methods</p> <p align="center">- Mike Harrington LaMotte Company</p>	<p align="center">11</p> <p align="center">Trouble Shooting Wastewater Systems</p> <p align="center">- Dr. David Long, PSU</p>	<p align="center">12</p> <p align="center">Requesting Rate Increases</p> <p align="center">- Gary Shambaugh, AUS Consultants</p>
10:00 am - 11:00 am	BREAK - EXHIBIT HALL OPEN - Door Prizes			
11:00 am - 12:00 noon	<p align="center">13</p> <p align="center">Protecting Your Well</p> <p align="center">- Paul Evans, Acer Engineers & Consultants, Inc.</p>	<p align="center">14</p> <p align="center">'What are we ordering . . . and what is its purpose?'</p> <p align="center">- Don Kuhns, R.F. Schneider Pipe & Supply Co., Inc.</p>	<p align="center">11a</p> <p align="center">Trouble Shooting Wastewater Systems . . . continued</p>	<p align="center">12a</p> <p align="center">Requesting Rate Increase . . . continued</p>
12:00 noon - 1:15 pm	LUNCH			
1:15 pm - 2:00 pm	EXHIBIT HALL FINALE - Door Prizes			
2:00 pm - 3:30 pm	"LEGISLATIVE INITIATIVE" - Open Forum - Rob Johnson, CEO, National Rural Water Association - Mike Keegan, Legislative Committee, National Rural Water Association, Washington, D.C.			
5:00 pm - 6:00 pm	SOCIAL HOUR - sponsored by Associate Members			
6:00 pm - 9:00 pm	BANQUET and AWARDS Dinner Music by Lynn R. Harris - Banquet Dinner - Tribute to Excellence Award Presentation - Door Prize Drawings will follow Entertainment			

THE NITTANY LION INN is located at 200 West Park Avenue, State College, PA 16823
Phone: 1-800-233-7505 for reservations Fax: 1-814-231-7502



Conference 1994
March 27-29, 1994
"Putting the Pieces Together"



Call PRWA today for your registration packet or more information, 1-800-653-PRWA.



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- INTERNAL PIPELINE GROUTING
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- HYDROSTATIC AND AIR TESTING EQUIPMENT
- FLOW METERING AND SAMPLING EQUIPMENT
- TANK CLEANING AND TESTING SERVICES
- INFILTRATION / INFLOW ANALYSIS AND SURVEYS
- INTERNAL PIPELINE TELEVISION INSPECTION
- HYDRAULIC AND MECHANICAL PIPELINE CLEANING
- MANHOLE AND WETWELL REHABILITATION
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HARRISBURG, PA 17106-7100
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Give yourself a boost . . .

- On-Site Assistance regarding problems with your water/wastewater system,
- Keeping water/wastewater system operators informed on water and wastewater related subjects;
- Support of projects to funding agencies;
- Information and Technical Assistance in setting up maintenance programs, budgets, billing rates, finding needed supplies, access to the PRWA Library, etc.,
- Offering training for operators, managers, and local officials throughout the year;
- Presenting unbiased information to your council or board, by our staff, at your meetings.
- Mailing of our quarterly magazine, "The Keystone Tap,"

PRWA and YOU  Joining HANDS TOGETHER

to do things we cannot do alone.

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Please print or type

SYSTEM/COMPANY NAME _____

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CITY _____ STATE _____ ZIP _____

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PHONE NUMBER _____ COUNTY _____

NUMBER OF METERS IN SERVICE _____ DATE _____

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138 West Bishop Street, Bellefonte, PA 16823

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Pennsylvania Rural Water Association

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THIRD CLASS

ATTENTION: WATER/W.W. DEPT.

When finished reading, please route to:

- Operators/Managers
- Clerk/Treasurer
- Board