June 1994

Pipeline

Philadelphia Water Department

Produced by the Public Affairs staff of the Philadelphia Water Department. For more information, please contact Editor Joan Anne Przybylowicz at 592-4900.

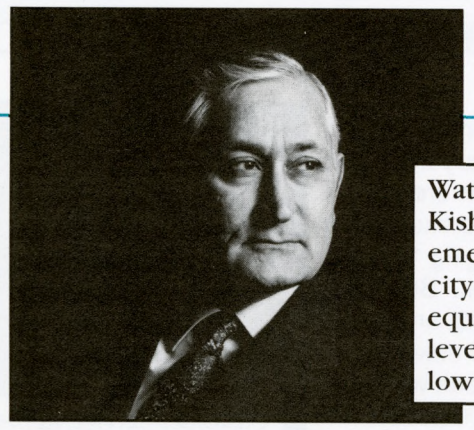


Photo: Walter Smtih

Water Commissioner Kumar Kishinchand declared a "water emergency" to ensure that the city's water supply was adequately protected as storage levels dropped to dangerously low levels in January.

WATER EMERGENCY DECLARED

On Sunday, January 23, Commissioner Kumar Kishinchand declared a "water emergency" when the city's overall water storage level dropped to only 33 percent of the 1 billion gallons that the Water Department stores for water treatment and distribution. Five days later, the Commissioner downgraded the emergency to a "water watch", when storage levels rose to 62 percent of total capacity. However, Commissioner Kishinchand cautioned, "Philadelphia's water supply is not out of the woods yet. Only when our storage levels, water pressure, and pumping capacity are restored to normal will we be able to efficiently meet the water demands of the city."

A number of factors, working in combination, caused the low water storage levels which prompted Commissioner Kishinchand to declare the emergency:

The dramatic change in temperatures over Christmas weekend, and the duration of below-freezing conditions, contributed to a record number of broken mains occurring since December 27.

(continued on reverse)

THE YEAR OF THE BIG CHILL

What Happened to Philadelphia's Water Main System?

Is Philadelphia's water main system breaking apart? Why did the winter of 1994 have such a detrimental impact upon our water mains? Can we expect to be flooded with as many main breaks in winters to come? John Durrant, manager of our Materials Engineering Laboratory, explained that several factors including increased frost loads and thermal contraction stresses, combined with existing loads acting on water mains, contributed to main failures. If mains have deteriorated from corrosion over time, these additional loads may be enough to cause mains to fail.

The extreme temperatures and the duration of the cold in January were very unusual weather for Philadelphia. We saw a higher number of main breaks because of it. In 1994, we probably experienced main breaks that did not occur during recent mild winters, as well as those that would probably occur next year or even the year after that.

-------John Durrant

If you're interested in knowing more about the factors that contribute to main breaks, John recommends a 1985 study, *Philadelphia: Water Supply Infrastructure,* jointly conducted by the City of Philadelphia and the Army Corps of Engineers. The study is an assessment and analysis of Philadelphia's water distribution system.

Protecting Philadelphia's Water, 1793-1993 Conference at Fairmount Water Works

On Wednesday, January 26, cast members from the Walnut Street Theatre play, *The Vortex,* met at the Fairmount Water Works for an informal discussion on protecting Philadelphia's water. Susan Clark, one of the cast members, is known for her active work on environmental and social justice issues. The conference was preceded by a tour of the Water Works led by Ed Grusheski, Director of the Interpretive Center. The Water Works was chosen as the site of the conference because of the role it plays in the Water Department's public education efforts which help to explain how clean water is provided to the citizens of Philadelphia.

PWD Quickly Responds to Emergency

From left to right: Dean Mazzoni, Donald Potter and Andy Nells of our Pumping Unit helped break up the ice at the intakes to the Queen Lane Water Treatment Plant.

After assessing the city's water storage levels, the Water Department implemented a strategic plan to get our water treatment and distribution operations back to normal:

Our Load Control Center reduced water pressure throughout the city by 33 percent to decrease the amount of water lost through broken water mains. Due to the diligent efforts of our repair crews and the progress they made in fixing a record number of broken water mains, Load Control was able to restore water pressure to normal three days after the emergency was declared.

Our water main repair crews were temporarily assisted by 14 additional crews. A total of 27 emergency crews repaired broken mains, leaking hydrant lines, frozen hydrants, and investigated reports of serious leaks on residential water service lines during the emergency.

Our crews shut down broken mains as quickly as possible after they were reported, even if repairs could not be made immediately. Normally, we wait to shut down mains until crews can be dispatched to make repairs. By waiting, we minimize the number of customers without water until broken mains can be repaired.

Baxter Water Treatment Plant and Pumping crews worked round-the-clock to break up ice that blocked the water intakes at our plants.

Photos: Joan Przybylowicz

From front to back: Bob Hayes, Ed Lewandowski, John DePero and Stacy Hopkins were part of the ice crew (alias: the Iron Man Shift) at the Baxter Plant.

The volume of water we normally withdraw from the Delaware and Schuylkill rivers was reduced by as much as 25 percent due to ice blocking the intakes at our water treatment plants.

Our Customer Information Unit expanded its hours of operation until 1:00 a.m. during the week. The unit also remained open on weekends.

Customers were asked to voluntarily conserve water.

Washington D.C.'s Boil Water Episode

On December 8, 1993, after two days of unusually heavy rain, customers of the Dalecarlia Water Treatment Plant serving parts of Washington, D.C. and Virginia, were told to boil their water before drinking it.

The boil water order was issued by the EPA because unusually high levels of turbidity were found in the water. Turbidity is one of seven physical characteristics of water whose values determine the quality of the water. Turbidity is a measure of the amount of suspended particles in the water. Suspended particles are removed during the water treatment process. While turbidity itself is not a problem, it may be an indication of contamination by Cryptosporidium. This parasite was the organism responsible for the outbreak in Milwaukee which may have hastened the deaths of 40 people who were already ill. Cryptosporidium is present in most untreated water. The only effective treatment is filtration.

When healthy people ingest Cryptosporidium, they experience nausea, diarrhea and cramps that can last up to several weeks. While there is no cure for the disease, it usually subsides on its own. People with compromised immune systems may acquire chronic cryptosporidiosis which may persist for months. No cases of the disease were identified in D.C. during this time period.

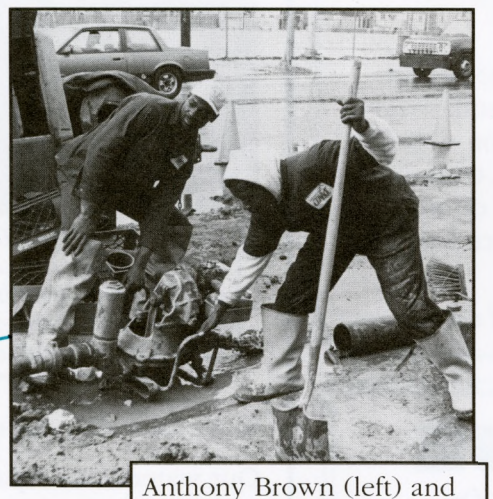
The boil water order was a proactive measure. On Tuesday, December 7, turbidity levels in finished water from the Dalecarlia Plant exceeded 5 nephelometric turbidity units (NTU). Turbidity is measured with an instrument called a nephelometer. The EPA issued the boil water order until Dalecarlia could show two consecutive days of parasite-free water. No Cryptosporidium were ever found and the boil water order was rescinded on December 12. According to Pennsylvania's drinking water regulation, which was adopted from the EPA's primary drinking regulation, treated and filtered water leaving a water treatment plant must not exceed 2.0 NTU's at any time and 95% of any month's water samples must not exceed 0.5NTU. Philadelphia's drinking water treatment plants average between 0.18 and 0.24 NTU.

While the turbidity was brought on by heavy rain, human error contributed to the D.C. emergency. Dalecarlia is an old plant run by the Army Corps of Engineers. Its water is taken from a reservoir fed by the Potomac River. The treatment plant uses alum as a coagulant and has rapid sand filters. The plant lacks filter-to-waste capabilities after backwashing and backwashes filters on a 96 hour interval rather than based on head loss or filter turbidity measures. The Corps of Engineers' other plant that serves the area was shut for repairs and Dalecarlia was treating all the water for about one million residents.

Braille And Large Print Bills Now Available

Visually-impaired water and sewer customers can now receive their bills printed in Braille and large print. These bills will be mailed with the regular monthly water and sewer statements. If you know someone who can benefit from this service, please call the Water Revenue Bureau at 686-6880.

Photos: Mike Trobich, Office of the City Representative, City of Philadelphia



Anthony Brown (left) and Greg Pace (right) of Distribution gather up their equipment after completing an emergency repair to a hydrant line.

To Water Distribution Unit and Fellow Employees:

On behalf of the Water Department, I would like to commend the employees of the Distribution Unit for their dedication and service during the winter water emergency. You have displayed exceptional pride in and commitment to your job and the City of Philadelphia. Despite the bitter cold and long hours this past winter, you diligently worked to restore water service to our customers. Your efforts are gratefully appreciated.

I would also like to acknowledge all the employees who work in other units, from those who worked side-by-side with us in the field, to those who responded to our requests, and to those who answered the many phone calls from our customers. We could not have managed without your assistance.

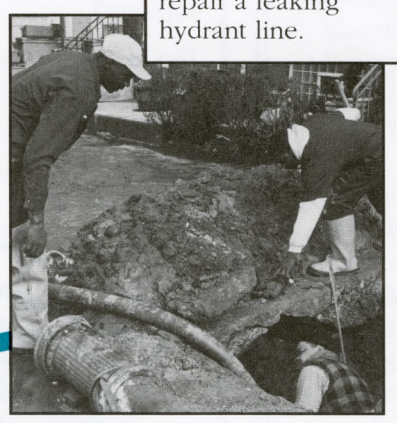
Many thanks, also, to Mr. Pete Matthews, Business Agent for Local 394 and the Local members, for your spirit of partnership during this emergency.

With heartfelt thanks,

William Cook

William Cook
Superintendent, Distribution Unit

Distibution employees Anthony Brown (left), William Miller (in excavation), and Greg Pace (right) repair a leaking hydrant line.



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Espanol

On occasion, our Customer Information Service Representatives deal with hearing-impaired customers and customers who speak foreign languages. If you know sign language or speak a foreign language, we could use your help. If you're interested, please fill out this form and return it to Barbara Kennedy, Customer Information Supervisor, Public Affairs Division, ARA Tower, 3rd Floor, 1101 Market Street, Inter-Office Mail.

Name_____

Unit_____

Work Phone #_____

I speak fluent_____

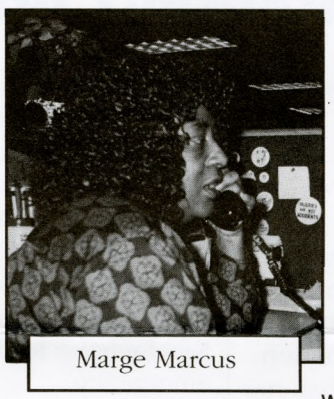
_____ Yes, I know sign language.

WATER EMERGENCY FACTS

From December 27, 1993 to January 27, 1994, our water main crews repaired 432 broken water mains, averaging 108 repairs a week. Between 1985 and 1993, an average of 14 emergency repairs per week were necessary. 100 million gallons, approximately one-third of the 350 million gallons of drinking water we distribute daily, were leaking through broken mains each day.

Photos: Joan Przybylowicz

Customer Service Representatives Edith Phelps (shown here) and Marge Marcus (below) helping customers who called PWD's hotline during the emergency.



Marge Marcus

On the day the emergency was declared, more than 22,000 customers called PWDs hotline, 592-6300. The unit normally receives 2,000 calls a week.

In January, our Customer Information Service Representatives handled more than 465 calls regarding broken pipes in abandoned homes; 900 broken pipes in occupied homes; 1,000 leaks in streets, at the curb, and hydrant lines; and 2,200 "no water" complaints due to frozen pipes. This is just a partial list of the number of calls phoned to the Hotline.

More than 300 leaking or frozen meters were replaced by our Meter Shop employees in January. This is eight times the number of meters replaced in Fiscal Year 1993.

(Water Emergency Declared *continued from front)*

Ice blocked the raw water intakes at our water treatment plants, preventing the plants from withdrawing adequate quantities of water from the Delaware and Schuylkill rivers. We could not replenish the amount of water needed for treatment and distribution as fast as it was being lost through the record number of broken mains in the city's 3,200 mile water main system.

Our ability to redirect drinking water within the water main system was restricted due to scheduled shutdowns of mains for rehabilitation work during the winter off-peak season.

We reduced our pumping operations to comply with PECO Energy's request for energy conservation during its state of emergency announced on January 19.

The extreme cold, snow and icing conditions hampered the ability of our water main repair crews to drive vehicles to job sites, operate heavy equipment, find the sources of leaks, and locate valves necessary to shut down broken mains. The numbing cold and long hours also took a physical toll on our repair crews.