# Policy for Boil Water Notices

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**Policy for Boil Water Notices**
**Engineering Section – Arkansas Department of Health**

## I. Introduction

A boil water notice (BWN) is intended to prevent the spread of communicable diseases caused by waterborne pathogens. Such a notice has serious implications for a community and should not be issued for trivial reasons. The decision to issue a notice must frequently be made within a relatively short period of time and be based on either incomplete or inconclusive information. Therefore, knowledge of the circumstances involved, the water system's infrastructure, and communicable disease prevention are essential in evaluating the situation and taking the proper steps to protect public health without unduly alarming the public.

This policy is intended to provide guidance to ADH staff and water utility officials on issuing a notice, the manner and method of notification, corrective steps to take, and repealing a notice.

Although microbial contamination is the most common type of contamination problem, it is not the only one. Occasionally, public water systems experience contamination of the water supply as the result of chemical spills or cross connections. In such a case, the specific action to be taken will be determined on a case-by-case basis, but would normally involve a "Do Not Drink" notice to the customers. The method of notifying customers would be similar to a BWN. Contact the ADH – Engineering Section immediately for more information or if such an incident should occur.

Past public health practices have suggested the use of household bleach as a means of disinfecting small quantities of water for drinking or cooking. However, since some pathogenic cysts are unaffected by chlorine, unless the source of contamination is known to not include such cysts, the presumption should be made these cysts are present and that only boiling the water will be effective in making it safe for consumption.

Local health and water utility officials are encouraged to seek advice from the ADH if in doubt about a potential contamination incident of the water supply by phoning the Engineering Section at 800-554-5738 during business hours or 501-661-2136 at other times.

## II. Causes of Boil Water Notices

Boil water notices are issued for two principal reasons with the difference between the two based on what evidence is available that the water is contaminated.

**A. Precautionary Boil Water Notice** – issued by the ADH or the water utility when a presumption is made that the water may be contaminated and the notice is for precautionary reasons.

Instances where such a notice can be warranted include:

1. **Zero distribution pressure.** Zero distribution pressure due to main breaks, power failures, equipment failure, etc. for a sustained period of time or over a wide area. The criteria to avoid a boil water advisory for a pressure loss are outlined later in this policy.
2. **Treatment process failure/interruption.** Persistent failure or significant interruption of key water treatment processes such as loss of one or more treatment barriers or turbidity spike in the effluent quality.
3. **Surface Water Treatment Rule treatment techniques violations.** Persistent failure to meet Surface Water Treatment Rule treatment techniques such as turbidity, CT or effluent disinfection requirements.
4. **Contamination.** An unusual and significant challenge to a drinking water source from a spill, discharge, natural occurrence, or other circumstance occurs.

In considering whether to issue a BWN for circumstances 2-3, the following are to be taken into account.

- Vulnerability of the source to contamination: whether the source water supply or its watershed has significant upstream sewage or storm sewer discharges and the degree of treatment of those discharges, confined animal operations (chicken, turkey, hog), livestock operations (cattle and dairy farms), heavy recreational use, or any other activity which could contribute significant pathogens to the source water.
- Treatment effectiveness and operational history: the unit processes employed in treating the water and whether they are properly operating, the water quality record of the plant, the skill level of those operating the plant, and knowledge of past similar occurrences.

**B. Contaminated Boil Water Notice** – issued by the ADH or the water utility when the presumption is made that the water is contaminated based on supporting operational, water quality, or epidemiological evidence.

Instances where this type of notice is warranted include:

1. **Acute maximum contaminant violations** of the Total Coliform Rule or confirmed presence of E. coli in compliance or special samples.
2. **Persistent presence of Total coliform** in compliance or special samples.
3. **A cross-connection incident** involving a microbiological contaminant.
4. **Evidence of a disease outbreak** where available data suggests drinking water may be the source.
5. **Natural disasters** (floods, tornado, or earthquake) likely to have adversely affected water quality in the treatment plant or distribution system other than a loss of pressure.
6. **Positive tests for pathogens** when consideration is given to the source and timeliness of the analyses, appropriateness of the collection and test methods utilized, and the limitation of the test method and results.

With the exception of II.A.1 – Zero distribution pressure, the decision to issue a BWN is to be made with the concurrence of the Engineer Supervisor who oversees the respective water system or a member of the Engineering Section management - Director, Asst. Director, or Chief Engineer.

## III. Format

Water utilities can issue BWNs on their own authority. The issuance of a BWN by a water utility carries with it the implicit approval by the ADH. See *Appendix B – Boil Water Notice/Rescission Sample* for sample notice examples. ADH regulations (Section XVII) require that the Department be notified within four hours of any emergency condition and the issuance of a BWN by a water system qualifies as an emergency condition.

If the utility provides its own notice, a copy is to be faxed to the ADH – Engineering Section or the Communications Center notified by phone. The ADH will, by letter to the utility, confirm the BWN and, if necessary, provide notice to the state news service through a press release. If each affected customer is individually notified of the BWN by the water utility, a press release to the media is not necessary; however, notification of the ADH is still required.

All notices should contain, at a minimum, the following information:

1. Title of the notice;
2. Name of the public water system;
3. Who is issuing the notice;
4. Date of the BWN;
5. Geographical area affected;
6. Reason for the notice and whether the water may be contaminated (precautionary notice) or is presumed to be contaminated (contaminated water notice);
7. The corrective action required by the customer; and
8. The name and phone number of a person to contact for questions.

## IV. Distribution

Prompt notification to customers of a BWN is critical if the notice is to be effective. A written or verbal notice to the individual customer is the most effective means of notification. Door hangers, phone calls, and posted notices in frequented places such as post offices, convenience stores, etc. work well. Notices should not be placed in a mailbox since the occupant may not see it for a day or more.

If the area impacted is large, a notice should be provided to the electronic and print media - radio, TV, and newspapers. Media notification is not required if all affected customers have been directly contacted. If the event demonstrates evidence of a disease outbreak, any notice should be coordinated with the ADH.

## V. Corrective Action

For the customer's part, the principal action will be to boil the water. Water used for drinking and cooking should be heated to a rolling boil for at least one minute. Ice cubes formed in the time period for which the boil notice is in effect should be discarded and only boiled water used for making ice. Water used for bathing should not be a problem; however, small children should be supervised to ensure that they don't ingest the water. In addition to or in lieu of boiling the water, the customer may want to utilize bottled water from a reputable source.

For water systems, common corrective measures for boil notices due to distribution problems include establishing and maintaining higher chlorine residuals, flushing of lines and varying tank levels to eliminate stagnant water, and conducting a cross-connection survey. For BWNs due to a treatment failure, corrective measures include optimizing all treatment

processes, establishing and maintaining higher chlorine levels, collection of bacteriological samples during and following the treatment failure, and the use of alternate approved sources of water. Proactively employing these measures, if, for example, it is known that a turbidity spike will occur, may be a mitigating factor in the decision by the ADH to issue a boil notice.

The required corrective measures will be dependent on the particular reason for the BWN and must be determined on a case-by-case basis.

## VI. Repeal of Boil Water Notice

In order to repeal a BWN, the principal incident or reason for the issuance of the notice must have been corrected. This could require onsite verification by ADH personnel. Additionally, bacteriological samples taken on two consecutive days from the affected area must be coliform absent, except for notices issued for a pressure loss. In those cases, a single set of bacteriological samples from the affected area must be coliform absent.

The number of samples, per day, must be sufficient to be representative of the affected area with the minimum number as outlined below:

**Table 1. Number of Samples Sufficient to be Representative**

| Number of Services Affected | Population Affected | Minimum Number of Samples |
|---|---|---|
| 1 – 50 | ≤ 125 | 1 |
| 51 – 100 | 126 – 250 | 2 |
| 101 – 500 | 251 – 1,250 | 3 |
| 501 – 1,000 | 1,251 – 2,500 | 4 |
| 1,001 – 2,000 | 2,501 – 5,000 | 5 |
| > 2,000 | > 5,000 | Number Required by Total Coliform Rule |

If the boil notice is due to a main break or repair, a cross connection, or a treatment failure, at least one of the samples must be taken in the immediate vicinity of the repair, cross-connection, or from the treatment plant effluent. If a BWN has not been issued and a bacteriological sample is *E.coli* positive, the ADH is to be notified immediately or a BWN issued. If total coliform positive, collect resamples and obtain two consecutive sets of daily sample which are coliform absent.

The information contained in the repeal notice is to be similar to that of the original notice:

**1.** Title of the repeal notice;
**2.** Name of the public water system;
**3.** Who is issuing the repeal notice;
**4.** Date of the BWN;
**5.** Geographical area affected;
**6.** Explanation that action (boiling) is no longer required by the customer;
**7.** Why the notice is being lifted (i.e., the correction of the deficiency originating the notice and the results of bacteriological samples); and
**8.** The name and phone number of a person to contact for questions.

The manner of distribution is to be the same as the original boil notice.

## VII. Avoiding a Boil Water Notice Due to a Loss of Distribution Pressure

In order to avoid issuing a BWN due to a loss of distribution pressure, the following criteria must be met. See *Appendix A – Boil Water Notice Flow Chart – Pressure Outages* for flow chart summary.

1. **Limited area**. The water utility knows exactly the areas affected, the area is manageable from both a size and number of customers standpoint, not more than 150 connections, and representative samples can be collected from the affected area immediately after the resumption of service.
2. **Time at zero pressure limited.** The time for zero pressure is limited: see column A below; if the water system has a cross-connection control program and its unaccounted for water is 15% or less, see column B below. The same area is not subject to outages multiple times on the same day or on consecutive days.

| Table 2. Length of Outage Limitations | | |
|---|---|---|
| **Number of Services Affected[1]** | **A.** | **B.** |
| | **No *CCCP or †UAW > 15% or Unknown** | ***CCCP and †UAW ≤ 15 %** |
| 1 – 25 | 4 Hours | 8 Hours |
| 26 – 75 | 3 Hours | 6 Hours |
| 76 – 150 | 2 Hours | 4 Hours |
| *** CCCP** = Cross-Connection Control Program<br>**† UAW** = Unaccounted for water for the most recent calendar or fiscal year. | | |

3. **Backflow or backsiphonage.** There was no known backflow or backsiphonage in the affected area.
4. **Dewater.** Any excavation for repair is dewatered prior to pressure in the main being taken to zero. If this is not possible, all affected services must be shut off.
5. **Disinfection of repair parts.** All repair parts are disinfected per AWWA C651[2], or, if services are shut off, the main is disinfected utilizing slug disinfection.
6. **Background chlorine levels.** Any area of repair is flushed thoroughly and background chlorine levels are re-established.
7. **Bacteriological samples.** Bacteriological samples are collected from the affected area. If sample results are coliform positive, notify the ADH. In order for samples not to be taken, all of the following criteria must be met in addition to items 1 through 6:
   - The PWS must have had no bacteriological monitoring or maximum contaminant level violations in the past year.
   - The repair/maintenance must be supervised by a licensed operator.
   - The crew must utilize written operating procedures in conformance with AWWA C651, and a copy must be carried by the crew. The procedures are subject to review by the ADH upon request.
   - A background chlorine residual of at least 0.2 mg/l must be established within 30 minutes in the affected area after the resumption of service.
   - The length of the outage cannot exceed the time indicated in column A of *Table 2 – Length of Outage Limitations* for the respective number of customers.

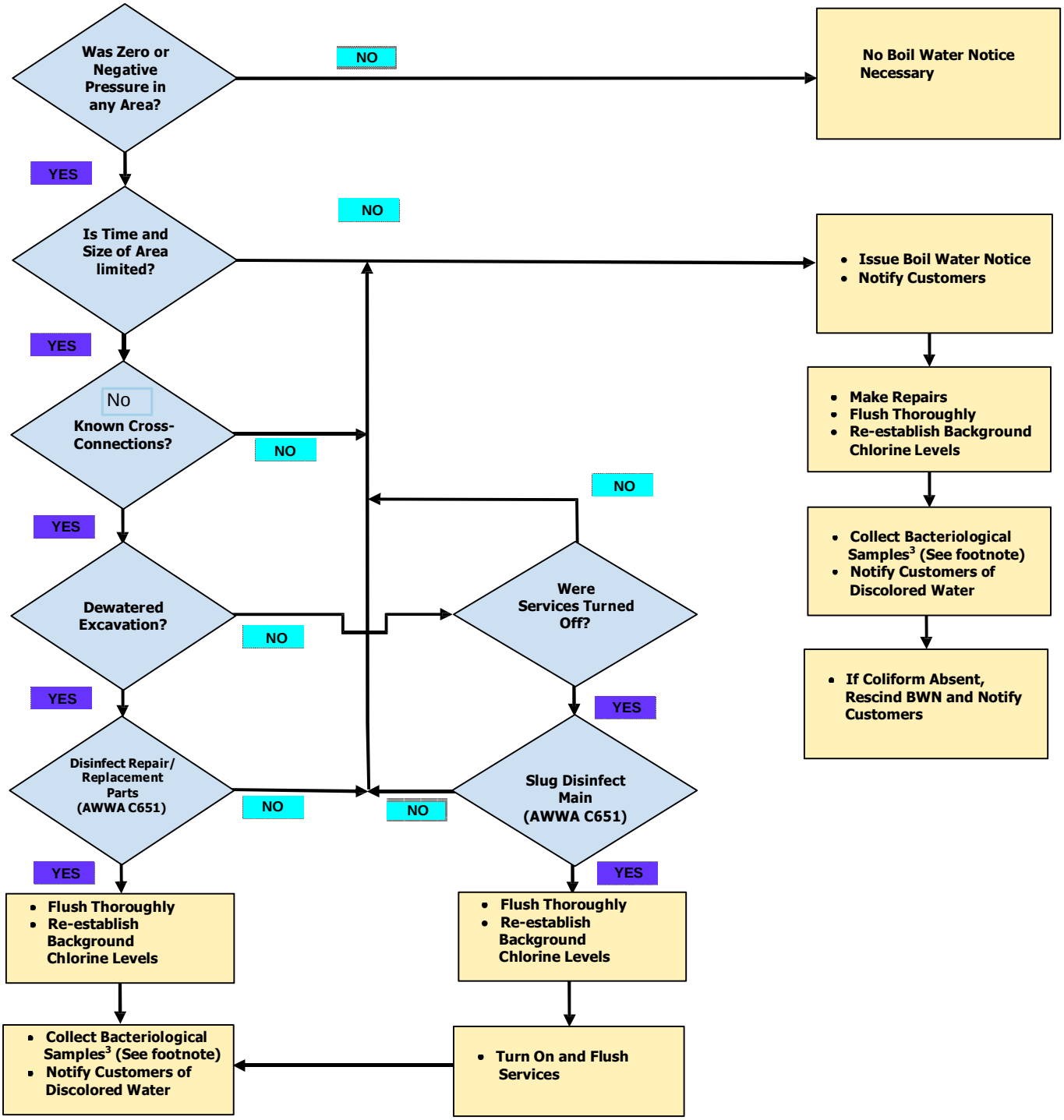
For scheduled maintenance, prior notification of affected customers should be made. For emergency repairs, notice of customers by the most practicable method should be attempted. In either case, the notice should state that water service is to be (or has been) interrupted, that discolored water may occur, and that flushing of faucets should improve any discoloration. The notice should include a contact name and phone number.

**1** If the pipeline has no individual services in the affected area but has services downstream, the length of outage is not to exceed the respective values for 1-25 services regardless of the number of services downstream provided that pressure for the downstream services is maintained by another supply or storage. Bacteriological sample(s) are required upon the resumption of service if the number of downstream services exceed 150 even if the criteria in (7) above are met.

**2** Summary: trench is dewatered and hypochlorite is liberally applied to the area; all repair pipe and fittings are swabbed or sprayed with a 1 percent hypochlorite solution before installation; thorough flushing toward the work area, from both directions if possible, is started as soon as repairs are completed and continued until the discolored water is eliminated. See AWWA C651 for complete description.

# APPENDICES

## Appendix A – Boil Water Notice Flow Chart – Pressure Outages.




3 Dependent on number of services, length of outage, Cross-Connection Control Program implementation, and unaccounted for water. For more information see Section VI (Table 1), Section VII (2; and Table 2) and their accompanying policy.

If the pipeline has no individual services in the affected area but has services downstream, the length of outage for the pipeline is not to exceed the respective values for 1-25 services regardless of the number of services downstream provided that pressure for the downstream services is maintained by another supply or storage. Bacteriological sample(s) are required upon the resumption of service if the number of downstream services exceed 150. See policy for details.

Immediately notify the ADH if E. coli positive or issue a boil water notice. If total coliform positive, resample to obtain two consecutive sets of daily samples which are coliform negative.

**Example A – Precautionary Boil Water Notice**

## (Public Water System Name)

# PRECAUTIONARY BOIL WATER NOTICE

**(DATE)**

A "PRECAUTIONARY BOIL WATER NOTICE HAS BEEN ISSUED FOR RESIDENTS OF (**NAME OF CITY, TOWN, TRAILER PARK, SUBDIVISION OR COUNTY**) LIVING IN THE AREA BOUNDED BY (**STREET, AVENUE, CANAL OR OTHER DESCRIPTIIVE BOUNDARY**).

(**BRIEF DESCRIPTON OF EVENT SUCH AS: BACTERIOLOGICAL ANALYSES OF SAMPLES OBTAINED FROM THE WATER DISTRIBUTION SYSTEM HAVE SHOWN POSSIBLE CONTAMINATION OF THE WATER, OR A WATER MAIN BREAK HAS OCCURRED AT - _____, OR A LOSS OF WATER PRESSURE HAS BEEN EXPERIENCED DUE TO _____**).

THEREFORE, AS A PRECAUTION, ALL AFFECTED CUSTOMERS ARE ADVISED THAT THE WATER MAY BE UNSAFE FOR HUMAN CONSUMPTION, AND WATER USED FOR DRINKING, COOKING, MAKING ICE, BRUSHING TEETH, OR WASHING DISHES BE BOILED BRISKLY FOR ONE (1) MINUTE PRIOR TO USE. ALL ICE CUBES SHOULD BE DISCARDED AND ONLY BOILED WATER BE USED FOR MAKING ICE. AS AN ALTERNATIVE BOTTLED WATER MAY BE USED.

THIS "PRECAUTIONARY BOIL WATER NOTICE" WILL REMAIN IN EFFECT UNTIL THE PROBLEM HAS BEEN CORRECTED, AN ADEQUATE DISINFECTANT LEVEL IS ESTABLISHED THROUGHOUT THE DISTRIBUTION SYSTEM AND A BACTERIOLOGICAL SURVEY SHOWS THAT THE WATER IS SAFE TO DRINK.

IF YOU HAVE ANY QUESTIONS YOU MAY CONTACT (**NAME OF PERSON, AGENCY/PUBLIC WATER SYSTEM**) AT (**PHONE NUMBER).**

(**SIGNATURE**)
(**NAME, TITLE AND AGENCY/PUBLIC WATER SYSTEM OF OFFICIAL ISSUING THE NOTICE**)

***Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses).***

**Example B – Rescission of Precautionary Boil Water Notice**

## (Public Water System Name)

# RESCISSION OF PRECAUTIONARY BOIL WATER NOTICE

**(DATE)**

TO: CUSTOMERS/RESIDENTS OF (**NAME OF CITY, TOWN, TRAILER PARK, SUBDIVISION OR COUNTY**) LIVING IN THE AREA BOUNDED BY (**STREET, AVENUE, CANAL OR OTHER DESCRIPTIIVE BOUNDARY**).

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THE (**DATE**) "PRECAUTIONARY BOIL WATER NOTICE" IS HEREBY RESCINDED FOLLOWING THE (**ACTION TAKEN TO CORRECT THE PROBLEM**), AN ADEQUATE DISINFECTANT LEVEL HAS BEEN ESTABLISHED THROUGHOUT THE DISTRIBUTION SYSTEM AND THE SATISFACTORY COMPLETION OF THE BACTERIOLOGICAL SURVEY SHOWS THAT THE WATER IS SAFE TO DRINK.

IF YOU HAVE ANY QUESTIONS YOU MAY CONTACT (**NAME OF PERSON, AGENCY/PUBLIC WATER SYSTEM**) AT (**PHONE NUMBER**).

(**SIGNATURE**)
(**NAME, TITLE AND AGENCY/PUBLIC WATER SYSTEM OF OFFICIAL RESCINDING THE NOTICE**)

***Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses).***

## (Public Water System Name)

# NEWS RELEASE

FOR IMMEDIATE RELEASE

## PRECAUTIONARY BOIL WATER NOTICE

(DATE)

A "PRECAUTIONARY BOIL WATER NOTICE HAS BEEN ISSUED FOR RESIDENTS OF (**NAME OF CITY, TOWN, TRAILER PARK, SUBDIVISION OR COUNTY**) LIVING IN THE AREA BOUNDED BY (**STREET, AVENUE, CANAL OR OTHER DESCRIPTIIVE BOUNDARY**).

(**BRIEF DESCRIPTON OF EVENT SUCH AS: BACTERIOLOGICAL ANALYSES OF SAMPLES OBTAINED FROM THE WATER DISTRIBUTION SYSTEM HAVE SHOWN POSSIBLE CONTAMINATION OF THE WATER, OR A WATER MAIN BREAK HAS OCCURRED AT - _____, OR A LOSS OF WATER PRESSURE HAS BEEN EXPERIENCED DUE TO _____**).

THEREFORE, AS A PRECAUTION, ALL AFFECTED CUSTOMERS ARE ADVISED THAT THE WATER MAY BE UNSAFE FOR HUMAN CONSUMPTION, AND WATER USED FOR DRINKING, COOKING, MAKING ICE, BRUSHING TEETH, OR WASHING DISHES BE BOILED BRISKLY FOR ONE (1) MINUTE PRIOR TO USE. ALL ICE CUBES SHOULD BE DISCARDED AND ONLY BOILED WATER BE USED FOR MAKING ICE. AS AN ALTERNATIVE BOTTLED WATER MAY BE USED.

THIS "PRECAUTIONARY BOIL WATER NOTICE" WILL REMAIN IN EFFECT UNTIL THE PROBLEM HAS BEEN CORRECTED, AN ADEQUATE DISINFECTANT LEVEL IS ESTABLISHED THROUGHOUT THE DISTRIBUTION SYSTEM AND A BACTERIOLOGICAL SURVEY SHOWS THAT THE WATER IS SAFE TO DRINK.

IF YOU HAVE ANY QUESTIONS YOU MAY CONTACT (**NAME OF PERSON, AGENCY/PUBLIC WATER SYSTEM**) AT (**PHONE NUMBER**).

(**_____SIGNATURE_____**)
(**NAME, TITLE AND AGENCY/PUBLIC WATER SYSTEM OF OFFICIAL ISSUING THE NOTICE**)