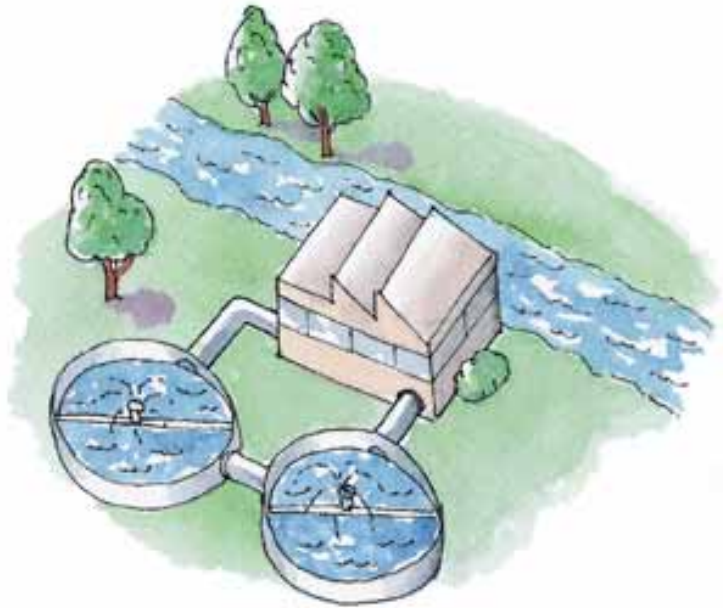


Preparing for a Sanitary Survey: *Information to Help Small Water Systems*

December 2005



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Introduction

A safe and reliable drinking water supply is important to our health and well-being. You can ensure the water you serve to the public is safe by properly operating and maintaining your water system.



A sanitary survey can help

A sanitary survey is a periodic water system inspection used to identify conditions that may present a sanitary or public health risk. State rules require a sanitary survey every three or five years (see page 2).

This booklet is not an in-depth technical manual; but, it covers a broad range of topics, including the basics of a routine sanitary survey. It will help you prepare your water system for a sanitary survey.

It includes sections on:

- ◆ Sanitary survey inspection process
- ◆ Minimum components of a routine sanitary survey
- ◆ Self-inspection checklist
- ◆ Common deficiencies surveyors hope NOT to find
- ◆ Basic water system operations and maintenance

This information mirrors the major elements of a sanitary survey. These elements are in Washington Administrative Code (WAC 246-290) and the federal Safe Drinking Water Act.



Please consult these rules and other Department of Health (DOH) publications for more information.

Sanitary Survey Inspection Process

Regulatory requirement

As required by the federal Safe Drinking Water Act, Washington State rules (WAC 246-290-416) call for a routine sanitary survey of all Group A public drinking water systems once every five years, except for community surface water systems, which are to be surveyed once every three years.

A routine sanitary survey

A routine sanitary survey is a periodic inspection of a water system's facilities, operations, and records. The inspections identify conditions that may present a sanitary or public health risk.

Notification and inspection

How will I be notified?

DOH staff will notify you when a sanitary survey is required.

The surveyor will then contact you to arrange a time to

conduct the survey. The surveyor will try to meet your scheduling needs, if possible. Water systems that don't schedule a survey will receive another notice with a required time frame for obtaining an inspection.



Who will conduct the survey?

Sanitary surveys are conducted by DOH staff or a person selected by DOH, called a “third party qualified sanitary surveyor.” Some qualified sanitary surveyors are staff at local health jurisdictions (LHJ), while others are independent contractors.

Fees

Sanitary survey fees are collected by DOH or your LHJ. If DOH collects the fee, you will get a bill with your final inspection report. If the LHJ collects the fee, it is payable either at the time you schedule a survey or when you get your final inspection report.



Next steps

What happens after the survey?

When the survey is done, the surveyor will give you a completed survey checklist and summary report of findings. Read the report carefully; it describes deficiencies observed during the inspection. You are responsible for correcting these deficiencies promptly. A copy of the survey will also be sent to the DOH regional office for review. DOH will notify you in writing if any immediate follow-up action is required.

Potential enforcement actions

What happens if I don't follow the requirements?

The requirements are designed to ensure the water you serve is safe to drink. Failing to meet your legal responsibility to correct deficiencies promptly may result in:

- Increased monthly coliform monitoring to five samples per month.
- A red operating permit.
- State significant non-complier status and possible civil penalties.

These results could have the potential for:

- Denial of other licenses or permits, such as restaurant permits or liquor licenses; loans from lending institutions for buying, refinancing or remodeling facilities the system serves; or building permits.
- Lawsuits filed by water users against the owner.

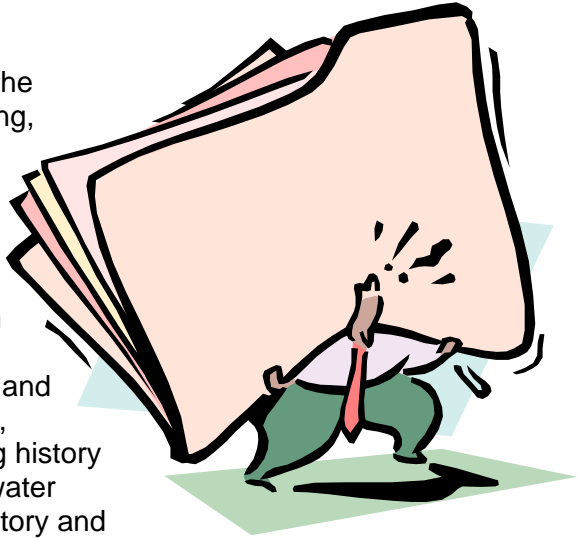
Minimum Components of a Routine Sanitary Survey

Discussion and review of records

The first thing the surveyor will do is go over the water system records with you.

You can prepare for the inspection by gathering, reviewing and organizing the:

- 1) water facilities inventory (WFI) record,
- 2) distribution system plans and maps,
- 3) routine operations and maintenance records,
- 4) coliform monitoring history and plan,
- 5) source water quality monitoring history and waiver status, and
- 6) other documents.



The surveyor will:

1. Review the WFI record to ensure the information listed for your water system is correct. This includes primary contacts, population served, number of connections, and storage capacity. The surveyor will note changes on the form and return it to DOH so computer records can be updated. An accurate WFI is critical to properly classify a water system and provide DOH with emergency contact information.
2. Look at distribution system plans and maps to see how often the maps are updated and if locations of the lines, valves, meters, tanks, sources, and treatment facility are accurate. Good things to have on a map are the size of the main line, the type of pipe installed, depth of bury, and even when the pipe was installed.

3. Review routine operations and maintenance records for the practices needed to ensure the system is able to supply safe and reliable water. Tips on developing an operations and maintenance manual, and recommended maintenance schedules, are in the Water System Operations chapter (see page 15).
4. Look at your coliform monitoring history and plan, sampling procedures and the latest results of any bacteria samples taken within the last two years.
5. Review the source water quality monitoring history and waiver status, sampling procedures and latest results of any samples taken within the last two years, such as bacteria, inorganic or organic chemicals, radionuclides, trihalomethanes and turbidity.
6. Depending on the complexity of the water system, the surveyor may ask about the status of other documents, such as additional management, operations and maintenance records.

These could include:

- Small water system management program (SWSMP).
- Water supply security and emergency response measures.
- Cross-connection control program and test histories of any backflow prevention assemblies.
- Operator certification status.

If you don't have a SWSMP, water supply security and emergency response measures, or a cross-connection control program, DOH has handbooks to help you develop them.

Information on these topics is in the Water System Operations chapter (see page 15).

Water system inspection

After discussing and reviewing the water system records, the surveyor will tour the water system.

The tour will include an inspection of the

1) drinking water source and sanitary control area; 2) treatment

equipment; 3) pumps, pumping facilities and controls;

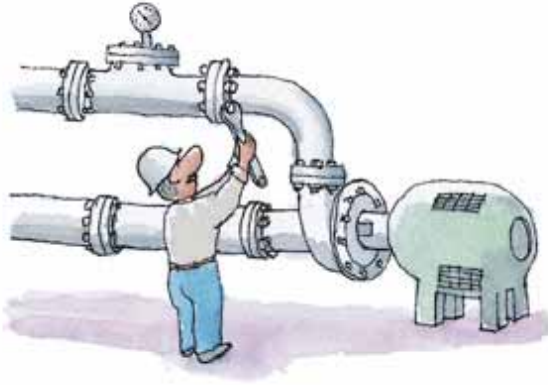
4) finished water storage; and 5) distribution system. Be sure to arrange for system personnel to be present the day of the survey so they can show the surveyor around.



The surveyor will:

1. Look at each drinking water source and sanitary control area, including emergency or seasonal sources, to see if they are properly secured and protected from possible chemical or biological contamination. On the wellhead, the surveyor will check to see if:
 - The top of the well casing is 6 to 18 inches above the floor or pad.
 - A sanitary seal, inverted screened vent and source sampling tap are present.
 - There are visible holes that could allow mice or bugs to crawl or fall into the well and contaminate the water.
2. Check the treatment equipment, including chlorination. The surveyor will see if your equipment is working properly, check dosage rate calculations and go over required chlorination reporting, including the daily residual readings and how they are taken and recorded.

3. Look at pumps, pumping facilities and controls to make sure they are clean and in good working order.



4. Inspect each finished water storage tank for structural soundness (interior and exterior damage or rust), and to ensure access hatch lids are properly gasketed and secured, vents are adequately screened, the overflow and drain pipes are screened and have proper air gaps, and the area is properly secured. If these are not protected, birds, bats, insects, rainwater and dust can enter and contaminate the stored water.
5. Tour the distribution system to better understand the system layout, pressure zones, elevations, dead ends, and check for potential high health-hazard facilities that need cross-connection protection.



Safe inspections

What if the surveyor can't safely inspect my water system?

A situation in the field may prevent a surveyor from proceeding with part or all of an inspection due to unsafe work conditions. The surveyor will tell you what the problem is, and either point out what is needed before the survey can safely proceed, or ask you to get the information for the surveyor.

Unsafe to survey

If too many of the system's facilities are unavailable for inspection due to safety issues, the surveyor may decide the system is not available to survey. In this case, the water system will receive written notice that it cannot be surveyed and will not receive credit for a survey. Sanctions may be imposed on systems refusing or not available for survey.

Things to remember:

- Have keys to open buildings, gates, well enclosures or hatches.
- Have tools to open manholes or heavy lids.
- Clear brush or other vegetation around wells or buildings.
- Have documentation of the last time storage-tank hatches, vents and overflow screens and gaskets were checked, so the surveyor can verify there are no unprotected openings.



Self-Inspection Checklist

Use this checklist to track important events and tasks during the process.

| Check when done | Task/Event | Date |
|--------------------------|---|------|
| <input type="checkbox"/> | System contacted and survey scheduled | |
| <input type="checkbox"/> | Arrangements made for system staff to be present on day of survey | |
| <input type="checkbox"/> | System records organized and available | |
| <input type="checkbox"/> | Final preparation for survey completed | |
| <input type="checkbox"/> | Survey conducted | |
| <input type="checkbox"/> | Survey follow-up letter received and filed | |
| <input type="checkbox"/> | Needed corrections scheduled for completion (if applicable) | |
| <input type="checkbox"/> | Any additional follow-up correspondence filed | |



Common Deficiencies Surveyors Hope NOT to Find

Inspections reveal poor housekeeping

Sanitary surveys are a key part of protecting drinking water from contamination. Many deficiencies commonly found during a survey result from poor housekeeping or maintenance. You can easily eliminate this possible route of contamination with simple improvements in housekeeping and maintenance practices.

Here are common deficiencies surveyors hope not to find:

- No screened vent or holes in the well casing.
- No screen or a damaged screen on storage tank vents.
- Storage tank overflows without screens or flap valves.
- Old piping and tanks are “valved off,” not eliminated.
- Did not use proper flushing and disinfection techniques after construction or repairs.
- Poor choice of water sampling tap.
- Poor control of sanitary control area around drinking water source.
- Deficiencies noted on a previous survey have not been corrected.
- No watertight cap on a well with a pitless adapter.
- No source water meter.

The photos on the next few pages show poor housekeeping habits or maintenance practices sanitary surveyors will look for when they visit your water system.



Opening in well casing and no screened vent



Well house used to store chemicals



**Poorly maintained storage tank
with ferns sprouting from top**



No gasket seal on the storage hatch cover



Unscreened reservoir overflow



Poor housekeeping of the well house



Unscreened storage tank vent



**Hose-end immersed in water with no air gap
creating a cross-connection hazard**

Water System Operations

Reliability

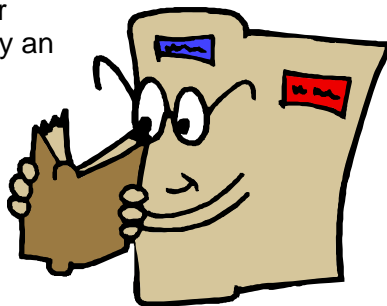
What are my responsibilities?

As the owner or manager of a public water system, you're responsible for providing a reliable quantity and quality of water to customers at all times. One way to be sure you can do this is by keeping and using an operations and maintenance (O&M) manual.

Operations and maintenance manual

What is the purpose of an O&M manual?

It is designed to help ensure your system has the capacity to supply an adequate quantity and quality of water at all times. Set the manual up so all the information you need to operate and maintain your system is in one place. (Use a three-ring binder for easy updates.)



What information should be in the O&M manual?

It should include sections on 1) system components, 2) a preventive maintenance schedule, 3) management or ownership, 4) financial arrangements, 5) water quality monitoring and 6) emergency response plan and procedures.

1. The first section of the O&M manual should be an inventory of system components. This could include as-built drawings; piping lengths, diameters and materials; valves; blow-offs; pressure tank types and sizes; storage tank capacity; pumps and so on. Also include the age and condition of all system components, an estimate of their useful life and replacement dates. This is a good place to keep a copy of invoices, manufacturer's literature and warranties on your pumping equipment, pressure tanks and other equipment.

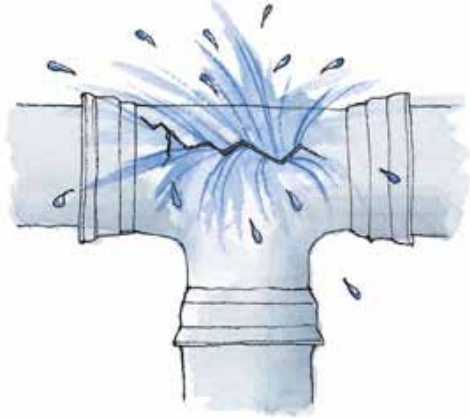
2. The manual should include a predetermined preventive maintenance schedule. The purpose of this section is to help ensure inspections, repairs, cleanings and other maintenance are performed regularly.
3. A section on system management is also critical. This section should describe who owns and operates your system. It is also wise to list an emergency contact with a 24-hour phone number so your customers, DOH, or the LHJ can reach you if there are water service complaints, customer concerns or an emergency. If an approved satellite management agency (SMA) owns or operates your system, include the SMA's emergency phone numbers in your O&M manual.
4. This section should be about finances and your water system. Revenues should be sufficient to meet or exceed system expenses. To monitor revenues and expenses, you should develop and use an operating



budget and include the budget in the O&M manual. All systems operating in Washington must be financially sound.

For help see the financial viability workbook (PUB. 331-104) available from DOH.

5. There should be a water quality monitoring section that includes a schedule for all the water quality testing required for your system (i.e., a copy of your annual water quality monitoring report). If your water system requires monitoring for special treatment or disinfection, this additional testing should be in the monitoring schedule, too.



6. The emergency response plan and procedures section should identify how you will handle emergencies, such as power failures, treatment process or equipment break downs, or structural damage, and describe how you will safeguard your system's components and protect against vandalism.

This section will help you and your employees resolve problems. If you can resolve problems quickly, you will have fewer business interruptions or closures due to water quantity or quality concerns.

Operations and maintenance schedule

What is the recommended O&M schedule to keep my water system in good working condition?

| Well house | |
|---------------|--|
| <i>Daily</i> | Check Overall Function |
| | Check Sound of Motors |
| | Check System Pressure |
| | Read Source Meter |
| | Check Pressure Tanks (charge with air as necessary) |
| | <i>If Treatment:</i> Treatment Equipment Inspection |
| | Treatment Chemical Monitoring as directed by DOH |
| <i>Weekly</i> | Measure Flow Rate (weekly preferred, no less than monthly) |
| | Check Pressure at Flow Rate |
| <i>Yearly</i> | Measure water level in the well |

| Storage tank | |
|------------------------|---|
| <i>Daily</i> | Check Tank Level |
| | Conduct Site Inspection and Security Check |
| <i>Quarterly</i> | Inspect Reservoir Appurtenances (such as vents, hatches, overflows) |
| <i>Yearly</i> | Test low water level alarms |
| <i>Every 3-5 Years</i> | Reservoir Cleaning |

| Distribution system | |
|---------------------|---|
| <i>As Needed</i> | Flushing |
| | Repair Leaks |
| <i>Monthly</i> | Flush Dead End Mains |
| | Read and Inspect Service Meters |
| | Test Run Emergency Generator |
| <i>Yearly</i> | Exercise Valves and Fire Hydrants |
| | Yearly Flushing |
| | Determine Percentage of Unaccounted for Water |
| | Perform Meter Maintenance |

Seasonal water systems

What steps do you recommend before opening and shutting down my seasonal water system?

When you start-up or shut-down your system, follow the steps below to help ensure safe and reliable drinking water for your customers. For more information, see *Start-up and Shut-down Assistance for Seasonal Non-Community Water Systems* (PUB. 331-314) available from DOH.

Start-up procedures:

- 1) A month before opening, thoroughly flush the drained system. By starting a month before opening, you will have time to correct problems before you begin providing water to your customers.
- 2) Disinfect the entire system following DOH-approved procedures.
- 3) Collect coliform samples for analysis. Mark the lab slip "other" for type of sample and specify "investigative sample" on the form.
- 4) Make sure testing results are OK before you provide water to your customers.

Shut-down procedures:

- 1) Close the valve controlling the water source to the facility.
- 2) Open vents at the high points of the facility to be drained. These can be hose bibs, shower controls, lavatory faucets, and so on.
- 3) Open the facility's drain valves. There may be more than one.
- 4) Make sure the entire system has drained completely.
- 5) Close drain valves and vent points. Do not leave the system valves and vents open while the system is shut down.

Cross-connection control

What is a cross connection?

A cross connection is an actual or potential connection between the distribution piping of a public water system and customer plumbing or on-site piping that may contain liquid or gas.

Reversal of normal flow in the water system through a cross connection can allow

contaminants into drinking water either through back pressure or back siphonage. An example of a cross connection is a hose with one end attached to a water line and the other end lying in a sewer drain. Other high health-risk cross connections can potentially occur in automatic dishwashers, ice makers, commercial coffee urns and post-mix beverage dispensers using carbon dioxide (CO₂).



What is a cross-connection control program?

A cross-connection control program is a system put in place to protect drinking water from contamination. All water systems are required to develop a cross-connection control program.

The complexity of your cross-connection control program will vary depending on the size of your system and the potential risk. A good place to keep your cross-connection program is with your O&M manual. DOH has handbooks and other resources to help you develop your program online at <http://www.doh.wa.gov/ehp/dw/default.htm>

Record keeping and reporting

What records do I need to keep and for how long?

As a water system owner, you should keep records of operation and water quality analyses in a three-ring binder with other water system records.

Keep these records for the length of time listed in the box on page 21. You must submit records, upon request, to your LHJ or DOH regional office.

| Type of Record | Length of Time |
|---|----------------|
| Copies of project reports, construction documents, drawings, inspection reports and DOH correspondence (such as approval letters, operating permit and so on) | Life of system |
| Chemical analysis | Life of system |
| Copies of any reports or communication relating to LHJ/DOH inspections performed | 10 years |
| Daily source meter readings | 10 years |
| Records of daily operation, including chlorine residual, fluoride levels, iron and manganese levels, water treatment plant performance as applicable (such as types of chemicals used and quantity, amount of water treated) and backflow prevention assembly testing | 5 years |
| Bacteriological laboratory reports | 5 years |
| Records of public notification for violations of primary drinking water standards | 3 years |



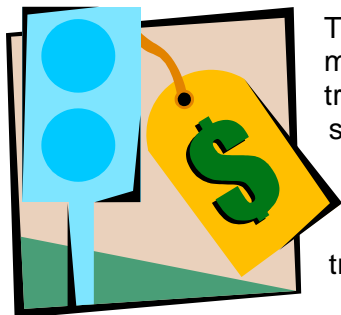
What should I report to DOH?

Unless you are instructed otherwise, the only information you should routinely report to DOH is updates to your water facilities inventory (WFI) form, water quality analysis and treatment plant reports. The WFI form summarizes the characteristics of your water system and provides current names, addresses and telephone numbers of the owners, operators and emergency contacts. Check your WFI annually, and inform your DOH regional office whenever changes in name, phone number, connections, category, management or ownership occur.

Continuity of service

What if I sell the water system?

System owners must inform DOH before transferring the system to a new owner. A one-year notice is preferred.



The person transferring ownership must ensure the new owner has training on the operation of the utility so that water quality and service are not compromised during the transfer. The owners must also inform customers of any ownership transfer.

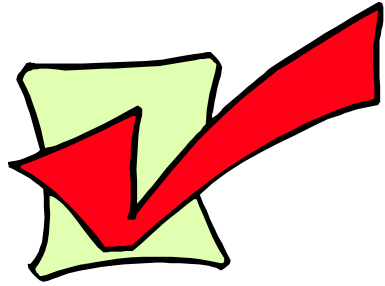
Ask your DOH regional office for a “transfer of ownership” package.

Water System Approval

System approval status

How do I know if my water system has received DOH or LHJ approval?

Your system is approved if there is an approval letter on file at your DOH regional office, LHJ or your water system. If in doubt, call your DOH regional office.



Approval process

What if my water system has never been approved?

Group A Systems

If you plan to construct a new Group A water system, a professional engineer (PE) licensed in Washington State must complete the required documentation and submit it to your DOH regional office for written approval. Ask your DOH regional office for guidance on the approval process for new Group A water systems and requirements for a PE.

If you have an existing Group A water system but no written approval from your DOH regional office or LHJ, your system designer or PE must complete the required documentation and submit it to your DOH regional office for written approval. Ask your DOH regional office for guidance on the approval process for existing Group A water systems and requirements for a PE.

Group B Systems

If you plan to construct a new Group B water system, your system designer or PE must submit a completed approval package to your LHJ. Your DOH regional office or LHJ will review and approve the proposal, depending on the agreement between DOH and the LHJ. The Group B approval package for new systems, and guidance on the requirement for a PE, are available from your LHJ.

If you have an existing Group B water system but no written approval from your DOH regional office or LHJ, your system designer or PE must complete an approval package and submit it to your LHJ. Your DOH regional office or LHJ will review and approve the proposal, depending on the agreement between DOH and the LHJ. The Group B approval package for existing systems, and guidance on the requirement for a PE, are available from your LHJ.

Satellite management agency requirement

If your Group A or Group B water system was created after July 23, 1995, the satellite management agency (SMA) requirement applies. Under this requirement, all new water systems must be owned, or managed and operated by an approved SMA if one is available in the area.

An SMA is an individual, purveyor or entity approved to own or operate more than one public water system on a regional or countywide basis. There does not need to be a physical connection between such systems. If an approved SMA is available in your area, you must contact it about the ownership or operation of the system as part of the system approval process.

Construction documentation

After I receive written approval for construction, what must I do to get my new water system into operation?

Step 1. Upon approval, construct the water system according to approved construction documents.



Step 2. Have your system designer or PE inspect the construction and certify that it complies with the approved construction documents. Send as-built drawings to your DOH regional office. If disinfection was installed, your system designer or PE must confirm it was built according to DOH guidelines and provide evidence of a satisfactory bacteriological analysis.

Step 3. Send a construction report form, signed and dated by your system designer or PE, to your DOH regional office.



Definitions

Public water system

A public water system provides water for human consumption. Group B systems are small water systems primarily regulated by state law. Group A systems are larger systems regulated by both state law and the federal Safe Drinking Water Act.

Human consumption

Drinking water should be suitable for human consumption. This applies to all water intended for human uses, such as drinking, handwashing, food preparation, and cleaning equipment used to prepare food or beverages.

The Washington State Department of Agriculture or the federal Food and Drug Administration regulate water used for food processing, or water added to food products intended for human consumption.



Water system classification

What does water system classification mean to me?

The classification is used to determine the rules that apply to your system. Your classification depends on whether your system is a Group A or Group B public water system.

Group A systems can be community or non-community water systems.

Community water systems regularly serve one of the following:

- 15 or more year-round residential connections
- 25 or more year-round residents 180 or more days a year

Non-community water systems are further defined as non-transient or transient water systems.

Non-transient non-community (NTNC) water systems serve 25 or more of the same nonresidential people for 180 or more days a year.

Transient non-community (TNC) water systems serve one of the following:

- 25 or more different people each day for 60 or more days a year and not primarily a residential community.
- 25 or more of the same people each day for 60 or more days, but less than 180 days a year.
- 1,000 or more people for two or more consecutive days a year.

Group B water systems serve one of the following:

- Less than 15 residential connections and fewer than 25 people per day.
- 25 or more people per day for fewer than 60 days per year and not primarily a residential community.

Operating permit

What does the color of an operating permit mean?

Group A water systems receive an annual DOH operating permit. Group B water systems do not receive an operating permit from DOH. The permit color indicates the adequacy status of your system:

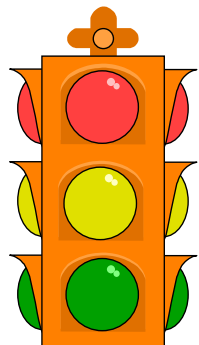
Green = adequate

Yellow = conditional

Red = inadequate

Blue = adequate for existing uses, but not adequate for more connections

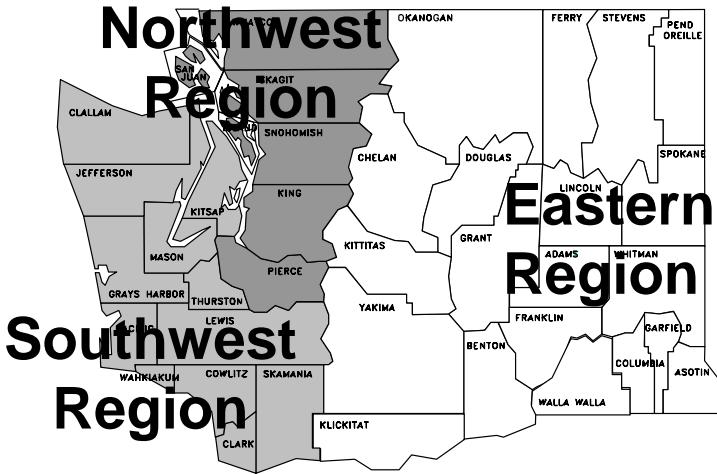
If you can't find a copy of your operating permit, contact your DOH regional office.



DOH Regional Contacts

Who should I contact if I have questions?

Staff at DOH regional offices can answer questions on engineering design and approval, and water quality monitoring requirements for water systems. Please contact the DOH regional office that serves your county:



Northwest Regional Office – Kent (253) 395-6750

Southwest Regional Office – Olympia (360) 664-0768

Eastern Regional Office – Spokane (509) 456-3115

Additional resources and links to useful information are online at <http://www.doh.wa.gov/ehp/dw/>

Your LHJ may perform some activities for DOH. As a result, some information may be more readily available from your LHJ. Your LHJ is also a good source of information on permits and licenses, land-use planning, and water quality testing.

Most LHJs are listed in the “county government” section of the local telephone directory.