



# Yucaipa Valley Water District

12770 Second Street, Yucaipa, California 92399

Phone: (909) 797-5117

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## Notice and Agenda of a Meeting of the Board of Directors

Tuesday, May 5, 2020 at 4:00 p.m.

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Due to the spread of COVID-19 and in accordance with the Governor's Executive Order N-29-20 (a copy of which is attached to this agenda), the Yucaipa Valley Water District will be conducting this meeting by teleconference only. Public comments on matters listed on the agenda or on any matter within the District's jurisdiction will be received during Public Comments, Agenda Item No. III.

**This meeting is available by calling  
(888) 475-4499 using passcode 676-950-731#** NEW

**View live presentation material at**  
<https://zoom.us/j/676950731> ([Click here](#)) NEW

**There will be no public physical location for attending this meeting in person. The District's Board meeting room will be closed to the public until further notice.**

If you are unable to participate by telephone, you may submit comments and/or questions in writing for the Board's consideration by sending them to [inquiry@yvwd.us](mailto:inquiry@yvwd.us). Submit your written inquiry prior to the start of the meeting. All public comments received prior to the start of the meeting will be provided to the Board and may be read into the record or compiled as part of the record.

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- I. CALL TO ORDER**
- II. ROLL CALL**
- III. PUBLIC COMMENTS** - At this time, members of the public may briefly address the Board of Directors on matters within its jurisdiction or on any matter listed on this agenda.

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Any person who requires accommodation to participate in this meeting should contact the District office at (909) 797-5117, at least 48 hours prior to the meeting to request a disability-related modification or accommodation.

Materials that are provided to the Board of Directors after the meeting packet is compiled and distributed will be made available for public review during normal business hours at the District office located at 12770 Second Street, Yucaipa. Meeting materials are also available on the District's website at [www.yvwd.dst.ca.us](http://www.yvwd.dst.ca.us)

- IV. CONSENT CALENDAR** - All consent calendar matters are routine and will be acted upon in one motion. There will be no discussion of these items unless board members, administrative staff, or members of the public request specific items to be discussed and/or removed prior to the vote for approval.
- A. Minutes of Meetings
1. Board Meeting - April 28, 2020
- V. STAFF REPORT**
- VI. DISCUSSION ITEMS**
- A. Status Report Regarding the Proclamation of a Local Emergency Related to the Coronavirus and COVID-19 in the Yucaipa Valley Water District Service Area within the Counties of Riverside and San Bernardino [[Director Memorandum No. 20-064 - Page 17 of 79](#)]
- RECOMMENDED ACTION: Pending
- B. Status Report of the Replacement of the Drinking Water Reservoir R-16.6 - Calimesa [[Director Memorandum No. 20-065 - Page 58 of 79](#)]
- RECOMMENDED ACTION: Staff Presentation - No Action Required.
- C. Selection of a Special District Representative for the San Bernardino County Local Agency Formation Commission [[Director Memorandum No. 20-066 - Page 62 of 79](#)]
- RECOMMENDED ACTION: That the Board select special district representative and direct District staff to submit the completed ballot.
- VII. BOARD REPORTS & DIRECTOR COMMENTS**
- VIII. ANNOUNCEMENTS**
- A. May 12, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- B. May 19, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- C. May 26, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- D. June 2, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- E. June 9, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- F. June 16, 2020 at 4:00 p.m. - Board Meeting - **Teleconference Only**
- IX. CLOSED SESSION**
- A. Conference with Real Property Negotiator(s) - Government Code 54956.8  
Property: Assessor's Parcel Number: 0319-121-38  
Agency Negotiator: Joseph Zoba, General Manager  
Negotiating Parties: Harry Holdorff  
Under Negotiation: Terms of Payment and Price
- B. Conference with Real Property Negotiator(s) - Government Code 54956.8  
Property: Overlying Water Rights in the Beaumont Basin  
Agency Negotiator: Joseph Zoba, General Manager  
Negotiating Parties: Oak Valley Development Company  
Under Negotiation: Terms of Payment and Price
- C. Conference with Legal Counsel - Anticipated Litigation (Government Code 54956.9(d)(2) & (4)) - One Case
- X. ADJOURNMENT**

**EXECUTIVE DEPARTMENT  
STATE OF CALIFORNIA**

**EXECUTIVE ORDER N-29-20**

**WHEREAS** on March 4, 2020, I proclaimed a State of Emergency to exist in California as a result of the threat of COVID-19; and

**WHEREAS** despite sustained efforts, the virus continues to spread and is impacting nearly all sectors of California; and

**WHEREAS** the threat of COVID-19 has resulted in serious and ongoing economic harms, in particular to some of the most vulnerable Californians; and

**WHEREAS** time bound eligibility redeterminations are required for Medi-Cal, CalFresh, CalWORKs, Cash Assistance Program for Immigrants, California Food Assistance Program, and In Home Supportive Services beneficiaries to continue their benefits, in accordance with processes established by the Department of Social Services, the Department of Health Care Services, and the Federal Government; and

**WHEREAS** social distancing recommendations or Orders as well as a statewide imperative for critical employees to focus on health needs may prevent Medi-Cal, CalFresh, CalWORKs, Cash Assistance Program for Immigrants, California Food Assistance Program, and In Home Supportive Services beneficiaries from obtaining in-person eligibility redeterminations; and

**WHEREAS** under the provisions of Government Code section 8571, I find that strict compliance with various statutes and regulations specified in this order would prevent, hinder, or delay appropriate actions to prevent and mitigate the effects of the COVID-19 pandemic.

**NOW, THEREFORE, I, GAVIN NEWSOM**, Governor of the State of California, in accordance with the authority vested in me by the State Constitution and statutes of the State of California, and in particular, Government Code sections 8567 and 8571, do hereby issue the following order to become effective immediately:

**IT IS HEREBY ORDERED THAT:**

1. As to individuals currently eligible for benefits under Medi-Cal, CalFresh, CalWORKs, the Cash Assistance Program for Immigrants, the California Food Assistance Program, or In Home Supportive Services benefits, and to the extent necessary to allow such individuals to maintain eligibility for such benefits, any state law, including but not limited to California Code of Regulations, Title 22, section 50189(a) and Welfare and Institutions Code sections 18940 and 11265, that would require redetermination of such benefits is suspended for a period of 90 days from the date of this Order. This Order shall be construed to be consistent with applicable federal laws, including but not limited to Code of Federal Regulations, Title 42, section 435.912, subdivision (e), as interpreted by the Centers for Medicare and Medicaid Services (in guidance issued on January 30, 2018) to permit the extension of

otherwise-applicable Medicaid time limits in emergency situations.

2. Through June 17, 2020, any month or partial month in which California Work Opportunity and Responsibility to Kids (CalWORKs) aid or services are received pursuant to Welfare and Institutions Code Section 11200 et seq. shall not be counted for purposes of the 48-month time limit set forth in Welfare and Institutions Code Section 11454. Any waiver of this time limit shall not be applied if it will exceed the federal time limits set forth in Code of Federal Regulations, Title 45, section 264.1.
3. Paragraph 11 of Executive Order N-25-20 (March 12, 2020) is withdrawn and superseded by the following text:

Notwithstanding any other provision of state or local law (including, but not limited to, the Bagley-Keene Act or the Brown Act), and subject to the notice and accessibility requirements set forth below, a local legislative body or state body is authorized to hold public meetings via teleconferencing and to make public meetings accessible telephonically or otherwise electronically to all members of the public seeking to observe and to address the local legislative body or state body. All requirements in both the Bagley-Keene Act and the Brown Act expressly or impliedly requiring the physical presence of members, the clerk or other personnel of the body, or of the public as a condition of participation in or quorum for a public meeting are hereby waived.

In particular, any otherwise-applicable requirements that

- (i) state and local bodies notice each teleconference location from which a member will be participating in a public meeting;
- (ii) each teleconference location be accessible to the public;
- (iii) members of the public may address the body at each teleconference conference location;
- (iv) state and local bodies post agendas at all teleconference locations;
- (v) at least one member of the state body be physically present at the location specified in the notice of the meeting; and
- (vi) during teleconference meetings, a least a quorum of the members of the local body participate from locations within the boundaries of the territory over which the local body exercises jurisdiction

are hereby suspended.

A local legislative body or state body that holds a meeting via teleconferencing and allows members of the public to observe and address the meeting telephonically or otherwise electronically, consistent with the notice and accessibility requirements set forth below, shall have satisfied any requirement that the body allow



members of the public to attend the meeting and offer public comment. Such a body need not make available any physical location from which members of the public may observe the meeting and offer public comment.

Accessibility Requirements: If a local legislative body or state body holds a meeting via teleconferencing and allows members of the public to observe and address the meeting telephonically or otherwise electronically, the body shall also:

- (i) Implement a procedure for receiving and swiftly resolving requests for reasonable modification or accommodation from individuals with disabilities, consistent with the Americans with Disabilities Act and resolving any doubt whatsoever in favor of accessibility; and
- (ii) Advertise that procedure each time notice is given of the means by which members of the public may observe the meeting and offer public comment, pursuant to subparagraph (ii) of the Notice Requirements below.

Notice Requirements: Except to the extent this Order expressly provides otherwise, each local legislative body and state body shall:

- (i) Give advance notice of the time of, and post the agenda for, each public meeting according to the timeframes otherwise prescribed by the Bagley-Keene Act or the Brown Act, and using the means otherwise prescribed by the Bagley-Keene Act or the Brown Act, as applicable; and
- (ii) In each instance in which notice of the time of the meeting is otherwise given or the agenda for the meeting is otherwise posted, also give notice of the means by which members of the public may observe the meeting and offer public comment. As to any instance in which there is a change in such means of public observation and comment, or any instance prior to the issuance of this Order in which the time of the meeting has been noticed or the agenda for the meeting has been posted without also including notice of such means, a body may satisfy this requirement by advertising such means using "the most rapid means of communication available at the time" within the meaning of Government Code, section 54954, subdivision (e); this shall include, but need not be limited to, posting such means on the body's Internet website.

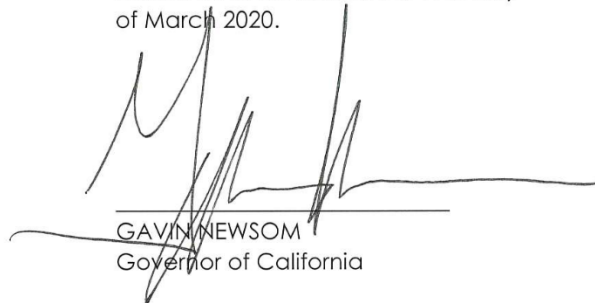
All of the foregoing provisions concerning the conduct of public meetings shall apply only during the period in which state or local public health officials have imposed or recommended social distancing measures.

All state and local bodies are urged to use sound discretion and to make reasonable efforts to adhere as closely as reasonably possible to the provisions of the Bagley-Keene Act and the Brown Act, and other applicable local laws regulating the conduct of public meetings, in order to maximize transparency and provide the public access to their meetings.

**IT IS FURTHER ORDERED** that as soon as hereafter possible, this Order be filed in the Office of the Secretary of State and that widespread publicity and notice be given of this Order.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

**IN WITNESS WHEREOF** I have  
hereunto set my hand and caused  
the Great Seal of the State of  
California to be affixed this 17th day  
of March 2020.



GAVIN NEWSOM  
Governor of California

# Consent Calendar



Yucaipa Valley Water District

# MINUTES OF A BOARD MEETING - TELECONFERENCE

April 28, 2020 at 4:00 P.M.

## Directors Present:

Chris Mann, President  
Bruce Granlund, Vice President  
Jay Bogh, Director  
Lonni Granlund, Director  
Joyce McIntire, Director

## Staff Present:

Jennifer Ares, Water Resource Manager  
Madeline Blua, Water Resource Specialist  
Allison Edmisten, Chief Financial Officer  
Chelsie Fogus, Administrative Assistant I  
Ashley Gibson, Regulatory Compliance Manager  
Kathryn Hallberg, Implementation Manager  
Dustin Hochreiter, Senior Engineering Technician  
Mike Kostecky, Operations Manager  
Tim Mackamul, Operations Manager  
Matthew Porras, Implementation Manager  
Charles Thomas, Operations Manager  
John Wrobel, Public Works Manager  
Joseph Zoba, General Manager

## Directors Absent:

None

## Consulting Staff Present:

David Wysocki, Legal Counsel

## Registered Guests and Others Present:

Ronica Hochreiter

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Due to the spread of COVID-19 and in accordance with the Governor's Executive Order N-29-20 (a copy of which was attached to the meeting agenda), the Yucaipa Valley Water District conducted this meeting by teleconference.

The meeting was available to the public by calling (888) 475-4499 using passcode 676-950-731 and live presentation material was available at <https://zoom.us/j/676950731>.

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## CALL TO ORDER

The regular meeting of the Board of Directors of the Yucaipa Valley Water District was called to order by Chris Mann at 4:00 p.m.

## ROLL CALL

The roll was called and Director Jay Bogh, Director Bruce Granlund, Director Lonni Granlund, Director Chris Mann, and Director Joyce McIntire were present.

## PUBLIC COMMENTS

None



## CONSENT CALENDAR

Director Lonni Granlund moved to approve the consent calendar and Director Joyce McIntire seconded the motion.

### A. Minutes of Meetings

1. Board Meeting - April 21, 2020

The motion was approved by the following vote:

Director Jay Bogh - Yes  
Director Bruce Granlund - Yes  
Director Lonni Granlund - Yes  
Director Chris Mann - Yes  
Director Joyce McIntire - Yes

## STAFF REPORT

General Manager Joseph Zoba provided information on the following item(s):

- The Yucaipa Valley Regional Water Filtration Facility is online and operating at 8 cubic feet per second. Flows will be increased to 10 cubic feet per second this week.
- The District has posted a display ad in the News Mirror for the vacancy in Division 2. The display ad will be published during the week of April 27, 2020 and May 4, 2020.

Chief Financial Officer Allison Edmisten provided information on the following item(s):

- On April 21, 2020, Xpress Bill Pay has completed upgrades to their computer systems which stabilized and enhanced the bill payment process for online customers.
- Since January 2020, about 200+ online accounts were created each month with 5,184 active online accounts at this time.
- There are 3,376 customers using auto pay and 1,558 customers using the paperless billing services.

## DISCUSSION ITEMS:

### DM 20-060

STATUS REPORT  
REGARDING THE  
PROCLAMATION OF A  
LOCAL EMERGENCY  
RELATED TO THE  
CORONAVIRUS AND  
COVID-19 IN THE  
YUCAIPA VALLEY  
WATER DISTRICT  
SERVICE AREA WITHIN  
THE COUNTIES OF  
RIVERSIDE AND SAN  
BERNARDINO

General Manager Joseph Zoba provided an overview of the current coronavirus and COVID-19 situation. As of April 28, 2020, there are currently 168 confirmed COVID-19 cases with 21 related deaths in the City of Yucaipa, and 15 confirmed cases in the City of Calimesa with 1 confirmed death, a change over the past week from 162 and 16 confirmed cases, respectively.

The District instituted a “hard closure” of the District office and stay at home orders for District staff effective on April 1, 2020 as a result of the COVID-19 cases in Yucaipa. The District transitioned to a “soft closure” of the District office with most of the employees back at work as of Monday, April 20, 2020.

### DM 20-061

PRESENTATION OF  
EXISTING AND FUTURE  
ELECTRICAL POWER  
COSTS FOR DRINKING  
WATER, SEWER, AND  
RECYCLED WATER  
OPERATIONS

Implementation Manager Kathryn Hallberg provided an overview of recent electrical power rate increases by Southern California Edison. The approved electrical power rate changes will increase the District’s electrical costs beyond the estimated forecast provided in the January 2020 water/sewer rate study.

The District will be implementing new solar, renewable gas, and energy storage programs to reduce the impact of the increased electrical costs.

### DM 20-062

CONSIDERATION OF  
RESOLUTION NO. 2020-  
24 AUTHORIZING THE  
PURCHASE OF  
PROPERTY AT 12834  
SECOND STREET,  
YUCAIPA

General Manager Joseph Zoba provided a summary of Resolution No. 2020-24 which authorized the purchase of property at 12834 Second Street, Yucaipa.

Director Jay Bogh moved that the Board adopt Resolution No. 2020-24.

Director Lonni Granlund seconded the motion.

The motion was approved by the following vote:

Director Jay Bogh - Yes  
Director Bruce Granlund - Yes  
Director Lonni Granlund - Yes  
Director Chris Mann - Yes  
Director Joyce McIntire - Yes

DM 20-063

SELECTION OF A  
SPECIAL DISTRICT  
REPRESENTATIVE FOR  
THE RIVERSIDE  
COUNTY LOCAL  
AGENCY FORMATION  
COMMISSION

General Manager Joseph Zoba provided an overview of the Local Agency Formation Commission representation for special districts. Based on information received from the Riverside County Local Agency Formation Commission, the Board of Directors took the following actions:

Director Lonni Granlund moved that the Board rank the Regular Special District Member of the Local Agency Formation Commission in the following order:

1. Nancy Wright, Mission Springs Water District
2. Karen Borja, Desert Healthcare District
3. Debra Canero, Valley Sanitary District

Director Bruce Granlund seconded the motion.

The motion was approved by the following vote:

Director Jay Bogh - Yes  
Director Bruce Granlund - Yes  
Director Lonni Granlund - Yes  
Director Chris Mann - Yes  
Director Joyce McIntire - Yes

Director Lonni Granlund moved that the Board rank the Alternate Special District Member of the Local Agency Formation Commission in the following order:

1. Robert Stockton, Western Municipal Water District
2. Steve Pastor, Lake Hemet Municipal Water District
3. Arthur Shorr, Desert Healthcare District
4. Danny J. Martin, Rancho California Water District
5. Karen Alexander, Northwest Mosquito & Vector District
6. Scott Sear, Valley Sanitary District
7. Dale Qualm, Temecula Public Cemetery District

Director Bruce Granlund seconded the motion.

The motion was approved by the following vote:

Director Jay Bogh - Yes  
Director Bruce Granlund - Yes  
Director Lonni Granlund - Yes  
Director Chris Mann - Yes  
Director Joyce McIntire - Yes

BOARD REPORTS AND  
DIRECTOR COMMENTS

Director Joyce McIntire and Director Chris Mann reported on the San Bernardino Valley Municipal Water District Strategic Planning workshop held on April 23, 2020.

Director Joyce McIntire, Director Lonni Granlund and Director Bruce Granlund reported on the Beaumont Cherry Valley Water District board meeting held on April 23, 2020.

ANNOUNCEMENTS

Director Chris Mann called attention to the announcements listed on the agenda.

CLOSED SESSION

Director Jay Bogh, Director Bruce Granlund, Director Lonni Granlund, Director Chris Mann, and Director Joyce McIntire were present in closed session with Legal Counsel David Wysocki, Chief Financial Officer Allison Edmisten, and General Manager Joseph Zoba to discuss the following items.

- C. Conference with Legal Counsel - Anticipated Litigation (Government Code 54956.9(d)(2) & (4)) - One Case

After reconvening out of closed session, Legal Counsel David Wysocki reported that direction was provided and that there were no other reportable actions taken.

ADJOURNMENT

The meeting was adjourned at 4:45 p.m.

Respectfully submitted,

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Joseph B. Zoba, Secretary

(Seal)



# Staff Report



Yucaipa Valley Water District



STATE WATER  
CONTRACTORS  
FOUNDED 1982

**FOR IMMEDIATE RELEASE:**

April 29, 2020

**CONTACT:**

Ian Anderson  
(818)760-2121

[landerson@fionahuttonassoc.com](mailto:landerson@fionahuttonassoc.com)

## **SWC Sues State of California Over Updated Permit Conditions for the Long-Term Operation of the State Water Project**

**Sacramento, CA** – Today, the State Water Contractors (SWC) [filed a lawsuit](#) against the California Department of Water Resources (DWR) and California Department of Fish and Wildlife (CDFW) over the [March 31 Incidental Take Permit \(ITP\)](#) for the long-term operation of the State Water Project (SWP). The ITP is a permit required under the California Endangered Species Act (CESA) to protect endangered and threatened fish species. The SWC object to the revised permit because it imposes significant new conditions that far exceed CESA requirements and legal standards and is not based on the best available science. The ITP was approved without adequate consideration of the objections posed to the Department of Water Resources (DWR) throughout the consultation period as reflected in the [SWC's January 6 letter to DWR](#).

The current ITP:

- Limits water supplies for 27 million Californians without adequate legal or scientific justification
- Increases costs to California ratepayers
- Fails to incorporate the latest and best available science
- Implements overly burdensome and illegal actions for impacts unrelated to SWP operations and geographic range
- Will make climate change adaption and Sustainable Groundwater Management Act (SGMA) implementation substantially more difficult
- Creates operational conflicts between the Central Valley Project (CVP) and the SWP
- Allows CDFW – rather than DWR – to make wholesale flow decisions over and above the prescriptive criteria included in the permit

**SWC General Manager Jennifer Pierre** issued the following statement on the matter:

“In maintaining overly restrictive criteria specific to the SWP despite the best available science, and over the objections of the State Water Contractors and other public water agencies – increasing SWP costs by \$22 million annually – the ITP’s approval has left us with no other choice than to file litigation that could and should have been avoided.”

“Even more disappointing, the ITP effectively ends the historic Voluntary Agreement process that brought together water agencies, regulators and conservation groups to tackle decades-old water resource problems. Despite this, the SWC remain committed to working with state and

federal partners to resume the Voluntary Agreement process. We must gain alignment between the SWP and CVP operations and increase regulatory flexibility that meets the needs of California's people and the environment."

**###**

*The State Water Contractors is a statewide, non-profit association of 27 public agencies from Northern, Central and Southern California that purchase water under contract from the California State Water Project. Collectively the State Water Contractors deliver water to more than 27 million residents throughout the state and more than 750,000 acres of agricultural land. For more information on the State Water Contractors, please visit [www.swc.org](http://www.swc.org).*

# Discussion Items



Yucaipa Valley Water District





**Date:** May 5, 2020

**Prepared By:** Joseph B. Zoba, General Manager

**Subject:** Status Report Regarding the Proclamation of a Local Emergency Related to the Coronavirus and COVID-19 in the Yucaipa Valley Water District Service Area within the Counties of Riverside and San Bernardino

**Recommendation:** Pending

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The Centers for Disease Control and Prevention (CDC) is responding to an outbreak of respiratory disease caused by a novel (new) coronavirus that was first detected in China and has now been detected in countries throughout the world<sup>1</sup>, including in the United States. The virus has been named “SARS-CoV-2” and the disease it causes has been named “coronavirus disease 2019” (abbreviated “COVID-19”).

In light of rising public concern over the coronavirus disease 2019 (COVID-19), the drinking water supplied by the Yucaipa Valley Water District is clean, safe, and reliable. The SARS-CoV-2 virus has no impact on the quality or supply of tap water. The use of high pressure membranes at the Yucaipa Valley Regional Water Filtration Facility and the Wochholz Regional Water Recycling Facility have been proven to be an effective additional barrier to viruses and various undesirable chemical molecules. Additionally, the Yucaipa Valley Water District uses chlorine to disinfect the water before it enters the distribution system to protect against microorganisms such as bacteria, viruses, fungus, and other micro-organisms. This ensures safe drinking water for all our customers.

The District staff constantly monitors our distribution system to ensure that there is sufficient chlorine residual and there are no bacteriological issues. We conduct thousands of water quality tests annually to ensure our drinking water meets rigorous drinking water standards. Highly-skilled District staff constantly perform analyses both on-site and send other samples to state-certified laboratories for independent validation.

In addition, the Yucaipa Valley Water District has an extensive backflow prevention program where water cannot flow back into the drinking water system from properties that may pose a contamination risk.

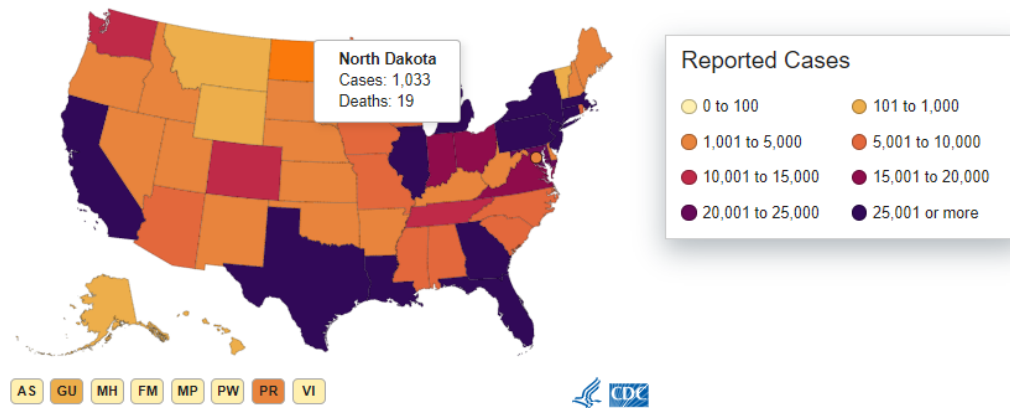
The Yucaipa Valley Water District has installed microfiltration and reverse osmosis systems that further protect drinking water and recycled water from bacteriological impacts. The recycled water supply is further protected with the use of ultraviolet disinfection and reverse osmosis membranes that are able to provide additional protections against microorganisms.

The District staff will provide an update about the current steps taken by the District to protect the safety of employees and the community we serve.

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<sup>1</sup> Novel Coronavirus (COVID-19) Situation Summary <https://covid19.who.int/>

19 states report more than 10,000 cases of COVID-19.



2

### COVID-19 in California by the Numbers

**Note:** The following numbers reflect information received by local health jurisdictions as of 2 p.m. PDT March 23. More current numbers may be available from [local health jurisdictions](#).

2,102 – Positive cases

40 – Deaths (including one non-California resident)

\*Increase occurred over period of two days.

- 531 – Community-acquired cases
- 1,571 – Cases acquired through person-to-person transmission, travel (including cruise ship passengers), repatriation, or under investigation.
  - This includes 31 health care workers.

#### Ages of all confirmed positive cases:

- Age 0-17: 28 cases
- Age 18-49: 970 cases
- Age 50-64: 493 cases
- Age 65+: 449 cases
- Unknown: 162 cases

#### Gender of all confirmed positive cases:

- Female: 843 cases
- Male: 1,081 cases
- Unknown: 178 cases

22 – [State and county health labs](#) currently testing

3

<sup>2</sup> States Reporting Cases of COVID-19 to the CDC <https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/cases-in-us.html>

<sup>3</sup> <https://www.cdph.ca.gov/Programs/OPA/Pages/NR20-32.aspx>



## Coronavirus Disease 2019 (COVID-19)

# Guidance for Building Water Systems

Ensure the safety of your building water system and devices after a prolonged shutdown

Updated April 22, 2020




### Summary of Changes

- Updated hot tub/spa disinfection guidance (Step 5c)

Stagnant, or standing water can cause conditions that increase the risk for growth and spread of *Legionella* and other biofilm-associated bacteria. When water is stagnant, hot water temperatures can decrease to the *Legionella* growth range (77–108°F, 25–42°C). Stagnant water can also lead to low or undetectable levels of disinfectant, such as chlorine. Ensure that your water system is safe to use after a prolonged shutdown to minimize the risk of Legionnaires' disease and other diseases associated with water.

### 8 Steps to take before your business or building reopens

1. Develop a comprehensive water management program (WMP) for your water system and all devices that use water. Guidance to help with this process is available from CDC and others.
  - a. Water Management Program Toolkit:  
This toolkit is designed to help people understand which buildings and devices need a *Legionella* water management program to reduce the risk of Legionnaires' disease, what makes a good program, and how to develop it.  
<https://www.cdc.gov/legionella/wmp/toolkit/index.html>
  - b. Preventing Legionnaires' Disease: A Training on *Legionella* Water Management Programs (PreventLD Training)  
Take this training from CDC and partners on creating a water management program to reduce risk of Legionnaires' disease. PreventLD Training aligns with industry standards on managing risk of *Legionella* bacteria.  
<https://www.cdc.gov/nceh/ehs/elearn/prevent-LD-training.html>
  - c. Hotel Guidance:  
Considerations for Hotel Owners and Managers: How to Prevent Legionnaires' Disease  
<https://www.cdc.gov/legionella/wmp/hotel-owners-managers.html>
  - d. Operating Public Hot Tubs for pool staff and owners  
<https://www.cdc.gov/healthywater/swimming/aquatics-professionals/operating-public-hot-tubs.html>
  - e. From Plumbing to Patients  
Water management programs in healthcare facilities are an important way to help protect vulnerable patient populations as well as staff and visitors.  
<https://www.cdc.gov/hai/prevent/environment/water.html>
  - f. Preventing Occupational Exposure to *Legionella*  
<https://www.cdc.gov/niosh/docs/wp-solutions/2019-131/default.html>
2. Ensure your water heater is properly maintained and the temperature is correctly set
  - a. Determine if your manufacturer recommends draining the water heater after a prolonged period of disuse. Ensure that all maintenance activities are carried out according to the manufacturer's instructions or by professionals.
  - b. Make sure that your water heater is set to at least 120°F
  - c. Higher temperatures can further reduce the risk of *Legionella* growth, but ensure that you take measures to prevent scalding if your water heater is set to >130°F

3. Flush your water system
  - a. Flush hot and cold water through all points of use (e.g., showers, sink faucets)
    - i. Flushing may need to occur in segments (e.g., floors or individual rooms) due to facility size and water pressure. The purpose of building flushing is to replace all water inside building piping with fresh water.
  - b. Flush until the hot water reaches its maximum temperature
4. Clean all decorative water features, such as fountains.
  - a. Be sure to follow any recommended manufacturer guidelines for cleaning
  - b. Ensure that decorative water features are free of visible slime or biofilm
  - c. After the water feature has been re-filled, measure disinfectant levels to ensure that the water is safe for use
5. Ensure hot tubs/spas are safe for use
  - a. Check for existing guidelines from your local or state regulatory agency before use
  - b. Ensure that hot tubs/spas are free of visible slime or biofilm before filling with water
  - c. Perform a hot tub/spa disinfection procedure before use
    - i. CDC Guidance (follow Steps 4–9 and 12–13): <https://www.cdc.gov/legionella/downloads/hot-tub-disinfection.pdf> 
    - ii. Facilities may decide to test the hot tub/spa for *Legionella* before returning to service if previous device maintenance logs, bacterial testing results, or associated cases of Legionnaires' disease indicate an elevated level of risk to occupants. All *Legionella* testing decisions should be made in consultation with facility water management program staff along with relevant public health authorities.
6. Ensure cooling towers are clean and well-maintained
  - a. Ensure that cooling towers are maintained (including start-up and shut-down procedures) per manufacturer's guidelines and industry best practices
  - b. Ensure that the tower and basin are free of visible slime or biofilm before use
    - i. If the tower appears well-maintained, perform an online disinfection procedure
      - Guidance on disinfection procedures from the Cooling Technology Institute: <http://www.cti.org/downloads/WTP-148.pdf>  
7. Ensure safety equipment including fire sprinkler systems, eye wash stations, and safety showers are clean and well-maintained
  - a. Regularly flush, clean, and disinfect these systems according to manufacturers' specifications.
8. Maintain your water system
  - a. Consider contacting your local water utility to learn about any recent disruptions in the water supply. This could include working with the local water utility to ensure that standard checkpoints near the building or at the meter to the building have recently been checked or request that disinfectant residual entering the building meets expected standards.
  - b. After your water system has returned to normal, ensure that the risk of *Legionella* growth is minimized by regularly checking water quality parameters such as temperature, pH, and disinfectant levels.
  - c. Follow your water management program, document activities, and promptly intervene when problems arise.

## **RESOLUTION NO. 2020-15**

### **A RESOLUTION OF THE YUCAIPA VALLEY WATER DISTRICT PROCLAIMING A LOCAL EMERGENCY RELATED TO THE CORONAVIRUS AND COVID-19 IN THE YUCAIPA VALLEY WATER DISTRICT SERVICE AREA WITHIN THE COUNTIES OF RIVERSIDE AND SAN BERNARDINO**

WHEREAS, the Yucaipa Valley Water District (the "District") is a public agency of the State of California organized and existing pursuant to the provisions of the County Water District Law of this State (Section 30000, et seq. of the Water Code); and

WHEREAS, the governing body of the Yucaipa Valley Water District has the authority to proclaim a local emergency; and

WHEREAS, California Government Code Section 3100 states that all public employees are declared to be disaster service workers subject to such disaster service activities as may be assigned to them by their superiors or by law, and the Yucaipa Valley Water District needs to provide drinking water, recycled water and sewer services deemed as an essential public service; and

WHEREAS, any actions that the Yucaipa Valley Water District may take to ensure the continuation of critical services to protect the safety of customers and to provide for immunities that will protect the Yucaipa Valley Water District for actions taken, as covered under the California Emergency Services Act; and

WHEREAS, working with the County of Riverside and the County of San Bernardino, this proclamation authorizes the undertaking of powers and invoking and disseminating emergency orders (e.g., emergency orders, emergency spending authorities, emergency or pre-established contracting, order necessary Personal Protective Equipment, recovery, etc.) and regulations necessary to provide for the protection of life, property, and the environment; and

WHEREAS, this proclamation establishes that an emergency exists, and that if mutual aid of in-county resources are needed to assist the District, as covered under the California Master Mutual Aid Agreement and any local agreements to provide mutual aid should be sufficient to establish, and that the Emergency Services Act applies; and

WHEREAS, this proclamation establishes that an emergency exists, and if out-of-county assistance is needed, requests for mutual aid should follow procedures set forth by the Standardized Emergency Management System (SEMS) and the Governor's Office of Emergency Services (CalOES), including obtaining mission numbers through the County of Riverside Emergency Management Department from CalOES for responding agencies. This is particularly important for possible reimbursement of extraordinary expenses in the event of a proclaimed "State of Emergency" or in the event of a presidential declaration of disaster when state or federal disaster relief funds become available; and

WHEREAS, conditions of disaster or of extreme peril to the health and safety of persons and property have arisen both internationally and within the United States as a result of the introduction of the novel coronavirus (COVID-19), a novel communicable disease which led to

California Governor Gavin Newsom, to proclaim a State of Emergency for California on March 4, 2020; and

WHEREAS, currently COVID-19 has spread globally and as of March 19, 2020 has impacted 168 countries, infecting more than 209,839 persons and causing more than 8,778 fatalities worldwide (Source: WHO Novel Coronavirus (COVID-19) Situation - <https://experience.arcgis.com/experience/685d0ace521648f8a5beeeee1b9125cd>). Due to the expanding list of countries with widespread transmission of COVID-19, and increasing travel alerts and warnings for countries experiencing sustained or uncontrolled community transmission issued by the Centers for Disease Control and Prevention (CDC), COVID-19 has created conditions that are likely to be beyond the control of local resources and require the combined forces of other political subdivisions to combat this virus; and

WHEREAS, a Local Health Emergency was proclaimed by the County of Riverside Public Health Officer on March 8, 2020, and ratified by the Board of Supervisors on March 10, 2020; and

WHEREAS, the County of San Bernardino Public Health Officer on March 17, 2020, ordered a cancellation of all gatherings; and

WHEREAS, a Local Emergency was proclaimed by the County of Riverside Board of Supervisors on March 10, 2020; and

WHEREAS, the CDC confirmed person-to-person transmission of COVID-19 in the United States, raising the possibility of community transmission occurring in the general public. This has resulted in a Federal Declaration of National Emergency as declared by President Donald Trump on March 13, 2020; and

WHEREAS, the Yucaipa Valley Water District's ability to mobilize local resources, coordinate interagency response, accelerate procurement of vital supplies, use mutual aid, and seek future reimbursement by State and Federal governments will be critical to successfully responding to COVID-19; and

WHEREAS, these conditions warrant and necessitate that the Yucaipa Valley Water District proclaim the existence of a local emergency; now, therefore,

BE IT RESOLVED that the Board of Directors of the Yucaipa Valley Water District hereby proclaims the existence of a local emergency and directs the General Manager (or his designee) to take the necessary steps for the protection of life, health and safety of the employees and residents of our community.

IT IS FURTHER RESOLVED that during the existence of said local emergency, the powers, functions, and duties of the Yucaipa Valley Water District shall be those prescribed by state law and by ordinances and resolutions of the Board of Directors at the discretion and direction of the General Manager.

IT IS FURTHER RESOLVED that all departments of the Yucaipa Valley Water District shall review and revise their department emergency and contingency plans to address the risks COVID-19 poses to the ongoing performance of their critical functions.



IT IS FURTHER RESOLVED that all District departments and employees shall track costs for staffing, supplies, and equipment related to COVID-19 preparation and prevention and forward that information to the Chief Financial Officer; and complete an Initial Damage Estimate (IDE) Category B, and forward that information to the Riverside County Emergency Management Department and the San Bernardino County Office of Emergency Services.

IT IS FURTHER RESOLVED that the District's departments shall coordinate District-wide planning, preparedness and response efforts regarding COVID-19 with the Riverside County EMD and San Bernardino County OES.

IT IS FURTHER RESOLVED that this Resolution shall take effect immediately and that widespread publicity and notice shall be given said Proclamation through the most feasible and adequate means of disseminating such notice throughout the District.

BE IT FURTHER RESOLVED AND ORDERED that a copy of this Resolution be forwarded to the Riverside County EMD and San Bernardino County OES to be forwarded to the Director of the California Governor's Office of Emergency Services.

PASSED, APPROVED and ADOPTED this 24<sup>th</sup> day of March 2020.

YUCAIPA VALLEY WATER DISTRICT

ATTEST:

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Chris Mann, President Board of Directors

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Joseph B. Zoba, General Manager

June 5, 2017

Version 1.1



# Developing a Water Management Program to Reduce *Legionella* Growth & Spread in Buildings

## A PRACTICAL GUIDE TO IMPLEMENTING INDUSTRY STANDARDS



Source: <https://www.cdc.gov/legionella/downloads/toolkit.pdf>



## Foreword

Legionnaires' disease is a serious type of pneumonia caused by bacteria, called *Legionella*, that live in water. *Legionella* can make people sick when they inhale contaminated water from building water systems that are not adequately maintained. Unfortunately, Legionnaires' disease is on the rise in the United States. To reverse this trend, we are asking for your help to manage the risk of exposure to *Legionella* from water in your building.

Your building may need a water management program to reduce the risk for Legionnaires' disease associated with your building water system and devices. This water management program should identify areas or devices in your building where *Legionella* might grow or spread to people so that you can reduce that risk. *Legionella* water management programs are now an industry standard for large buildings in the United States (ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta).

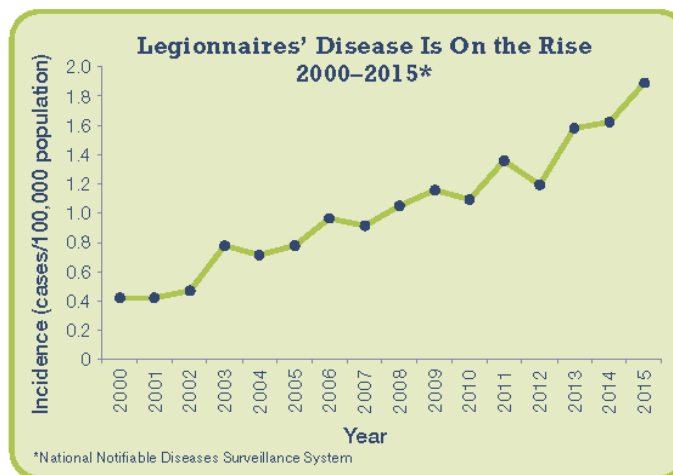
This toolkit will help you develop and implement a water management program to reduce your building's risk for growing and spreading *Legionella*. If you already have a program, this toolkit will help you assess and strengthen it. Included are practical resources to help you ensure that your water management program is comprehensive, effective, and in line with industry standards. This toolkit also highlights special considerations for healthcare facilities.

Because building water systems vary in their design and complexity, examples in this toolkit are only meant to help you understand the process. You should develop a water management program to reduce *Legionella* growth and spread that is specific to your building.

We welcome your feedback on this toolkit by emailing [RDB@cdc.gov](mailto:RDB@cdc.gov).

For additional information about Legionnaires' disease, visit [www.cdc.gov/legionella](http://www.cdc.gov/legionella).

This toolkit can also be found online at [www.cdc.gov/legionella/WMPtoolkit](http://www.cdc.gov/legionella/WMPtoolkit).



In the United States, reported cases of Legionnaires' disease have increased by nearly four and a half times since 2000. More illness occurs in the summer and early fall but can happen any time of year.

### Nancy Messonnier, MD, CAPT USPHS

Director, National Center for Immunization and Respiratory Diseases  
U.S. Centers for Disease Control and Prevention

### Patrick Breyse, PhD

Director, National Center for Environmental Health/Agency for Toxic Substances and Disease Registry  
U.S. Centers for Disease Control and Prevention

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# How to Use This Toolkit

If you've never developed a *Legionella* water management program (a plan to reduce the risk of *Legionella* growth and spread), you might not be sure where or how to start. This toolkit will provide guidance to help you develop, implement, and evaluate a *Legionella* water management program for your building. You do not have to have training or certification in any specific hazard analysis, risk assessment, or risk management methodologies to use this toolkit. However, you may need to seek help from an expert in some cases. Be sure to follow all relevant federal, state, and local laws, regulations, and ordinances. If anything in this toolkit conflicts with these policies, always adhere to the policies.

## Where do we start?

The first step is to determine if you even need a program. You can use the worksheet on page 2 to find out if your entire building or parts of it are at increased risk for *Legionella* growth and spread. If you learn that you need to develop a program, this toolkit will explain what steps you should take and give several examples to clarify the process.

## Do we really need a water management program to prevent *Legionella* growth and spread?

If you answer **YES** to any of the questions on page 2, then yes! Developing and implementing a program means that you are helping to protect people from getting Legionnaires' disease, a serious type of pneumonia (see Appendix A for more information on this disease).

## Is this toolkit full of scientific terms?

You might come across some technical terms that are unfamiliar. The glossary on page 3 and the introduction to *Legionella* ecology on pages 4–5 should help you with these terms.

## Will this toolkit tell us everything that we need to do?

No. Because every building is unique, only you have access to all the information that is needed to develop and implement a program specific to your building. An example of a building is included to help illustrate some of the steps. It's

important to know that these examples are not comprehensive and you will need to create a program specific to your building water system and devices.

## This toolkit looks really long. What's the bottom line?

You need to actively identify and manage hazardous conditions that support growth and spread of *Legionella*. As you work through the toolkit, you'll learn about the importance of identifying and controlling hazardous conditions that increase the chance of *Legionella* growth and spread. The bottom line is that you need to:

- ◆ Identify building water systems for which *Legionella* control measures are needed
- ◆ Assess how much risk the hazardous conditions in those water systems pose
- ◆ Apply control measures to reduce the hazardous conditions, whenever possible, to prevent *Legionella* growth and spread
- ◆ Make sure the program is running as designed and is effective

## Is there anyone who can help us develop our program?

Yes. As you'll learn in the toolkit, it's recommended that you form a water management team. Your team should include a variety of people who bring different skills to the table (learn more on page 7). You might already have all the expertise you need on staff, but sometimes you will need to get outside help. In some cases, you may need to train your in-house personnel or hire professionals with specific experience in *Legionella* bacteria in building water systems, such as a certified industrial hygienist, a microbiologist, or an environmental health specialist. Blueprints could come in handy, too.

## What do all of the gray boxes mean?

The gray boxes throughout the document highlight program elements that are especially relevant for healthcare facilities. The content found outside of the gray boxes is also applicable to these types of facilities.

## Identifying Buildings at Increased Risk

Survey your building (or property) to determine if you need a water management program to reduce the risk of *Legionella* growth and spread.

**If you answer **YES** to any of questions 1 through 4, you should have a water management program for *that building's* hot and cold water distribution system.**

### Healthcare Facilities

Yes \_\_\_\_ No \_\_\_\_ 1. Is your building a healthcare facility where patients stay overnight or does your building house or treat people who have chronic and acute medical problems† or weakened immune systems?

Yes \_\_\_\_ No \_\_\_\_ 2. Does your building primarily house people older than 65 years (like a retirement home or assisted-living facility)?

Yes \_\_\_\_ No \_\_\_\_ 3. Does your building have multiple housing units and a centralized hot water system (like a hotel or high-rise apartment complex)?

Yes \_\_\_\_ No \_\_\_\_ 4. Does your building have more than 10 stories (including basement levels)?

**Devices in buildings that can spread contaminated water droplets should have a water management program even if the building itself does not. If you answer **NO** to all of questions 1 through 4 but **YES** to any of questions 5 through 8, you should have a water management program for *that device*.**

Yes \_\_\_\_ No \_\_\_\_ 5. Does your building have a cooling tower\*?

Yes \_\_\_\_ No \_\_\_\_ 6. Does your building have a hot tub (also known as a spa) that is not drained between each use?

Yes \_\_\_\_ No \_\_\_\_ 7. Does your building have a decorative fountain?

Yes \_\_\_\_ No \_\_\_\_ 8. Does your building have a centrally-installed mister, atomizer, air washer, or humidifier?

**If you answer **NO** to questions 1 through 8, you should still maintain water systems according to manufacturer recommendations.**

On properties with multiple buildings, prioritize buildings that house or treat people who are at increased risk for Legionnaires' disease (see Appendix A to learn who is at increased risk).

**The building standards discussed in this toolkit do not apply to single-family or small multiple-family residences (e.g., duplexes), even those with the devices in questions 6 through 8, but residents do need to take steps to protect themselves from waterborne diseases.**

Homeowners should follow local and state guidelines for household water use, and owners of the devices in questions 6 through 8 should follow the manufacturer's instructions regarding cleaning, disinfecting, and maintenance.

# Glossary

---

**Biofilm (slime):** Germs and the slime they secrete that stick to and grow on any continually moist surface; provides housing, food, and security for many different types of germs, including *Legionella*

**Building water systems:** Includes hot and cold water distribution and all devices that use water people can be exposed to, such as hot tubs, decorative fountains, and cooling towers

**Control:** To manage the conditions within your building according to your water management program

**Control measures:** Things you do in your building water systems to limit growth and spread of *Legionella*, such as heating, adding disinfectant, or cleaning

**Control limits:** The maximum value, minimum value, or range of values that are acceptable for the control measures that you are monitoring to reduce the risk for *Legionella* growth and spread

**Control points:** Locations in the water systems where a control measure can be applied

**Contingency response:** Reaction to control measures that are persistently outside of control limits or events that pose an immediate risk to control of your building water systems; required for all instances when Legionnaires' disease occurs, but may also be appropriate for unexpected events such as equipment failure or acts of nature that disrupt the water system

**Corrective action:** Actions taken to reestablish control when monitoring or measurement values are outside control limits

**Dead legs:** Piping that is subject to low or no flow due to design or decreased water use such as capped pipes or unused faucets

**Disinfectant:** Chemical or physical treatment used to kill germs, such as chlorine, monochloramine, chlorine dioxide, copper-silver ionization, ultraviolet light, or ozone

**Hazardous conditions:** Anything that, if not controlled, can contribute to the growth and spread of *Legionella* to a person

**Healthcare facility:** A place where patients stay overnight for medical care or where people with chronic or acute medical problems\* are treated; this may include inpatient or outpatient care areas

**Heterotrophic plate counts:** A measure of the number and variety of bacteria that are common in water; a high count may indicate a high microbial load and the need for corrective action, but cannot be substituted for *Legionella* testing

**Legionella:** Bacteria that can cause Legionnaires' disease

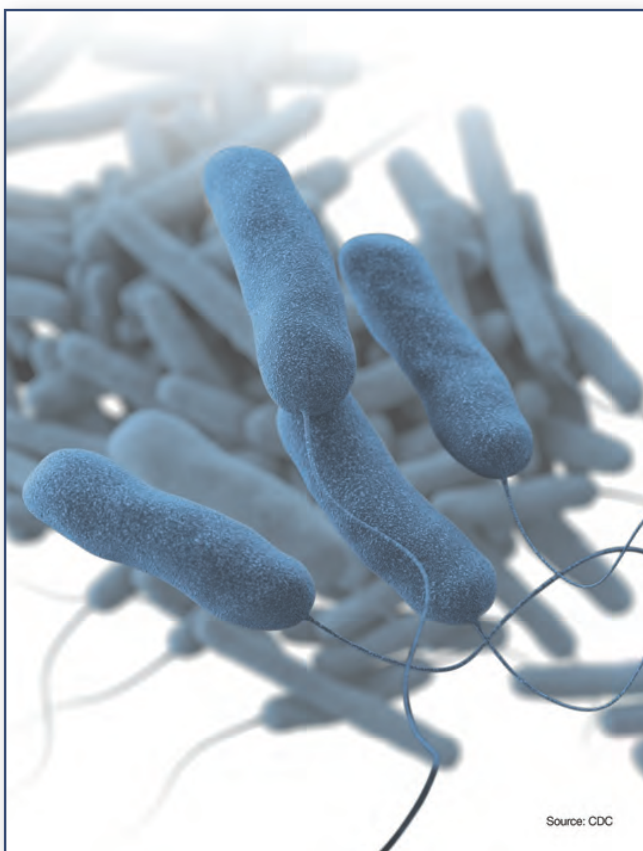
**Legionnaires' disease:** A serious type of pneumonia caused by *Legionella*

**Residual:** The amount of disinfectant available in water to kill germs

**Scale and sediment:** The mineral build-up in a water system that uses up disinfectant and supports germ growth and/or survival

**Stagnation:** When water does not flow well; areas of stagnant water encourage biofilm growth and reduce temperature and level of disinfectant

# Introduction to *Legionella* Ecology



*Legionella pneumophila*

*Legionella* is found naturally in freshwater environments, like lakes and streams, but generally the low amounts in freshwater do not lead to disease. *Legionella* can become a health problem in building water systems. To pose a health risk, *Legionella* first has to **grow** (increase in numbers). Then it has to be **aerosolized** so people can breathe in small, contaminated water droplets.

## Where can *Legionella* grow and/or spread?

*Legionella* can grow in many parts of building water systems that are continually wet, and certain devices can then spread contaminated water droplets. Examples include:

- Hot and cold water storage tanks
- Water heaters
- Water-hammer arrestors
- Expansion tanks
- Water filters
- Electronic and manual faucets\*
- Aerators
- Faucet flow restrictors
- Showerheads\* and hoses
- Pipes, valves, and fittings
- Centrally-installed misters\*, atomizers\*, air washers\*, and humidifiers\*
- Nonsteam aerosol-generating humidifiers\*
- Infrequently used equipment, including eyewash stations\*
- Ice machines\*
- Hot tubs\*
- Decorative fountains\*
- Cooling towers\*
- Medical devices\* (such as CPAP machines, hydrotherapy equipment, bronchoscopes)

\*These devices can spread *Legionella* through aerosols or aspiration

## Factors external to buildings that can lead to *Legionella* growth

- ◆ **Construction:** Vibrations and changes in water pressure can dislodge biofilm and free *Legionella* into the water entering your building.
- ◆ **Water main breaks:** Changes in water pressure can dislodge biofilm and free *Legionella* into the water, while dirt and other materials can be introduced into the water and use up disinfectant.
- ◆ **Changes in municipal water quality:** Changes in water quality can increase sediment, lower disinfectant levels, increase turbidity, or cause pH to be outside recommended ranges. Changes in disinfectant type can impact how you should monitor your program.



## Factors internal to buildings that can lead to *Legionella* growth

- ◆ **Biofilm:** Protects *Legionella* from heat and disinfectant; provides food and shelter to germs; grows on any surface that is constantly moist and can last for decades
- ◆ **Scale and sediment:** Uses up disinfectant and creates a protected home for *Legionella* and other germs
- ◆ **Water temperature fluctuations:** Provide conditions where *Legionella* grows best (77°F–108°F); *Legionella* can still grow outside this range
- ◆ **Water pressure changes:** Can cause biofilm to dislodge, colonizing downstream devices
- ◆ **pH:** Disinfectants are most effective within a narrow range (approximately 6.5 to 8.5)

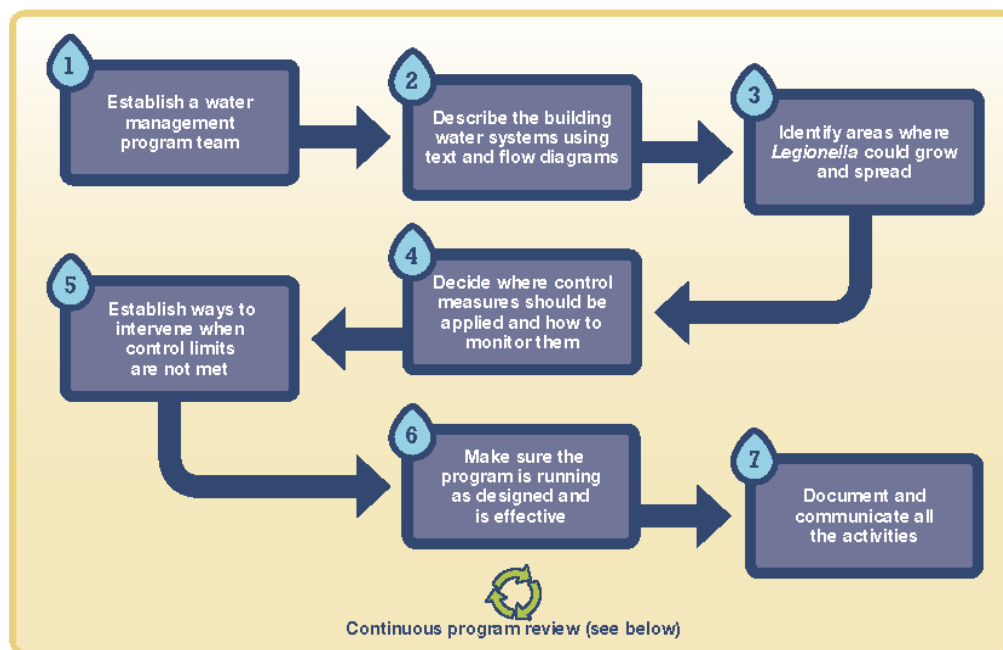
Many things can cause the hot water temperature to drop into the range where *Legionella* can grow, including low settings on water heaters, heat loss as water travels through long pipes away from the heat source, mixing cold and hot water within the plumbing system, heat transfer (when cold and hot water pipes are too close together), or heat loss due to water stagnation. In hot weather, cold water in pipes can heat up into this range.

- ◆ **Inadequate disinfectant:** Does not kill or inactivate *Legionella*.  
Even if the water entering your building is of high quality, it may contain *Legionella*. In some buildings, processes such as heating, storing, and filtering can degrade the quality of the water. These processes use up the disinfectant the water entered with, allowing the few *Legionella* that entered to grow into a large number if not controlled.
- ◆ **Water stagnation:** Encourages biofilm growth and reduces temperature and levels of disinfectant. Common issues that contribute to water stagnation include renovations that lead to 'dead legs' and reduced building occupancy, which can occur in hotels during off-peak seasons, for example. Stagnation can also occur when fixtures go unused, like a rarely used shower in a hospital room.



# Elements of a Water Management Program

Developing and maintaining a water management program is a multi-step, continuous process. The key steps, listed here, are explained in more detail throughout the toolkit with the associated step number appearing on the page where the specific step is discussed.



## Program Review

You need to **review** the elements of your program at least once per year. Make sure you also review and revise your program when any of the following events occur:

- ◆ Data review shows control measures are persistently outside of control limits
- ◆ A major maintenance or water service change occurs, such as:
  - New construction
  - Equipment changes (e.g., new hot tub chlorinator pump)
  - Changes in treatment products (e.g., disinfectants)
  - Changes in water usage (e.g., high and low season for hotel)
  - Changes in the municipal water supply
- ◆ One or more cases of disease are thought to be associated with your system(s)
- ◆ Changes occur in applicable laws, regulations, standards, or guidelines

If an event triggers you to review and update your water management program, remember to:

- ◆ Update the process flow diagram, associated control points, control limits, and corrective actions
- ◆ Update the written description of your building water systems
- ◆ Train those responsible for implementing and monitoring the updated program



# Establish a Water Management Program Team

1

Certain skills, described in the diagram below, are needed to develop and implement your water management program. These skills would typically be provided by a combination of people, some of whom may have multiple skills (examples shown below).



Consider who among your employees, partners, and outside experts can provide these skills so that you can develop the most effective program possible. Those who might be part of your water management program team include:

- ◆ Building owner
- ◆ Building manager/administrator
- ◆ Maintenance or engineering employees
- ◆ Safety officers
- ◆ Equipment or chemical suppliers
- ◆ Contractors/consultants (e.g., water treatment professionals)
- ◆ Certified industrial hygienists
- ◆ Microbiologists
- ◆ Environmental health specialists
- ◆ State and local health officials

## Healthcare Facilities

The team should also include:

- ◆ Someone who understands accreditation standards and licensing requirements
- ◆ Someone with expertise in infection prevention
- ◆ A clinician with expertise in infectious diseases
- ◆ Risk and quality management staff

In some cases, you may need to train your in-house personnel or hire professionals with specific experience in *Legionella* bacteria in building water systems.





## Describe Your Building Water Systems Using Text

### EXAMPLE: BUILDING A

You will need to write a simple description of your building water system and devices you answered YES to on page 2. This description should include details like where the building connects to the municipal water supply, how water is distributed, and where pools, hot tubs, cooling towers, and water heaters or boilers are located. An existing as-built diagram of the plumbing system and fixtures may be useful in developing this description. Below is a description of the water systems\* for an example building (Building A). You will see how this text gets turned into a diagram in the next section (page 10).

1. **Water enters** the basement of the property via a 4-inch main from the municipal water line at Maple Street. Water is immediately drawn off to charge the fire suppression system. The rest of the water is sent through cold water distribution. There is backflow prevention throughout the system, including between the cold water distribution and the city water main and between the cold water distribution and the fire suppression system.

**Note:** Problems with entering water are usually beyond the building manager's control, such as main breaks or construction that disrupts water service. However, an essential part of a water management program is monitoring water and responding to changes coming in from the municipal water line. You can contact your drinking water provider to report any changes you notice in the quality of water being delivered to your building.

2. **Cold water is distributed** directly to the lit decorative fountain in the lobby, the cooling tower on the roof, the hot tub and pool on the first floor, ice machines on floors 2, 4, 6, 8, and 10, and shower and faucet fixtures in rooms on all 12 floors. All internal plumbing consists of 2-inch copper and polyvinyl chloride (PVC) piping. There is backflow prevention between cold water distribution and the utility lines that serve the cooling tower and hot tub/pool room.

**Note:** In warm climates, water in pipes that typically carry cold water may reach a temperature that allows for growth of *Legionella*. Detectable residual disinfectant added by your water provider helps to limit growth of *Legionella* and other germs. Additionally, decorative fountains with submerged lighting and devices such as cooling towers and ice machines may contain areas where cold water can be heated to temperatures that allow *Legionella* to grow. Swimming pools do not usually generate hazardous conditions because they rarely reach adequate temperature for growth or generate water droplets small enough to be inhaled.

3. **Cold water is heated** to 140°F by two joined 120-gallon water heaters. The heaters supply a 500-gallon storage tank. Cold water is also delivered to an 80-gallon water heater in the basement that serves the kitchen and staff break room.

**Note:** Even water heaters set to the correct temperature may contain zones of lower temperature water where cold and hot water mix or where excessive sediment blocks heating elements. Most residual disinfectants are reduced by heating the water.

#### Healthcare Facilities

Be sure to include descriptions of water sources relevant to:

- Patient care areas
- Clinical support areas
- Components and devices that can expose patients to contaminated water

You should also develop an ongoing dialogue with your drinking water provider so that you are aware of changes that may affect your building's water supply.



4. **Hot water is distributed** to plumbing fixtures in the basement through floor 5 from the joined water heaters in the basement on a direct (non-recirculating) line. Hot water is distributed to floors 6 through 11 from the storage tank with a recirculating line designed to return to the joined water heaters in the basement. Note that hot water is tempered (mixed with cold water) at the fixtures by thermostatic mixing valves.

**Note:** *Water in direct hot and cold water pipes can pose multiple hazardous conditions. First, the process of heating the water can reduce disinfectant levels. Second, if hot water is allowed to sit in the pipes (stagnation), it might reach a temperature where Legionella can grow and could encourage sediment to accumulate or biofilm to form. With recirculating hot water pipes, the greatest risk is that returning water with reduced or no disinfectant cools to a temperature where Legionella can grow. If this happens, Legionella in the return line can travel to central distribution points and contaminate the entire plumbing system of the building.*

5. **Hot, cold, and tempered waste water is discarded** through the sanitary sewer line.

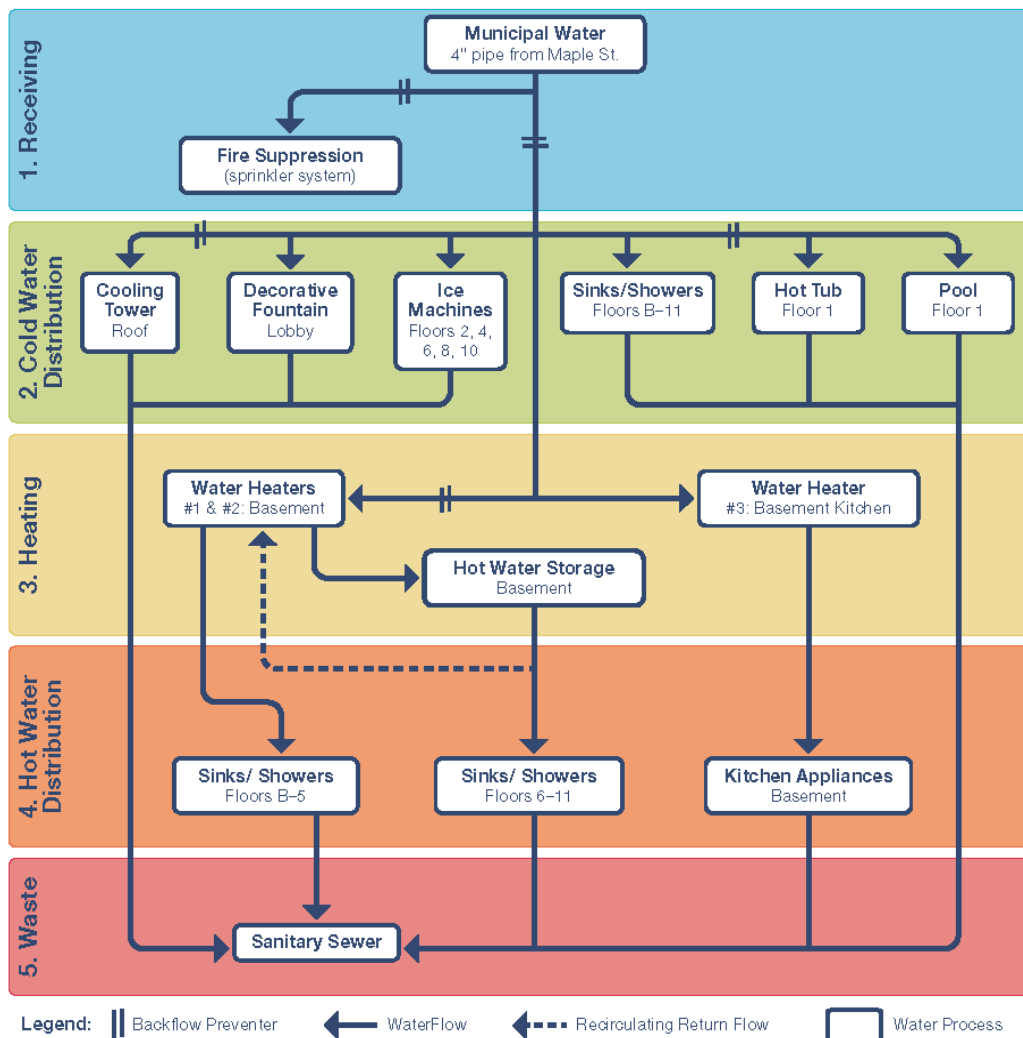
**Note:** *It is not known at this time if Legionella can grow and spread in sources such as harvested rainwater or reclaimed graywater (i.e., bath, laundry).*



## 2 Describe Your Building Water Systems Using a Flow Diagram

### EXAMPLE: BUILDING A

In addition to developing a written description of your building water systems, you should develop a process flow diagram. Below is an example of a process flow diagram for Building A. Note that this diagram does not need to be as detailed as your building plans. In fact, it's best if the process flow diagram can be understood easily by all members of your team.

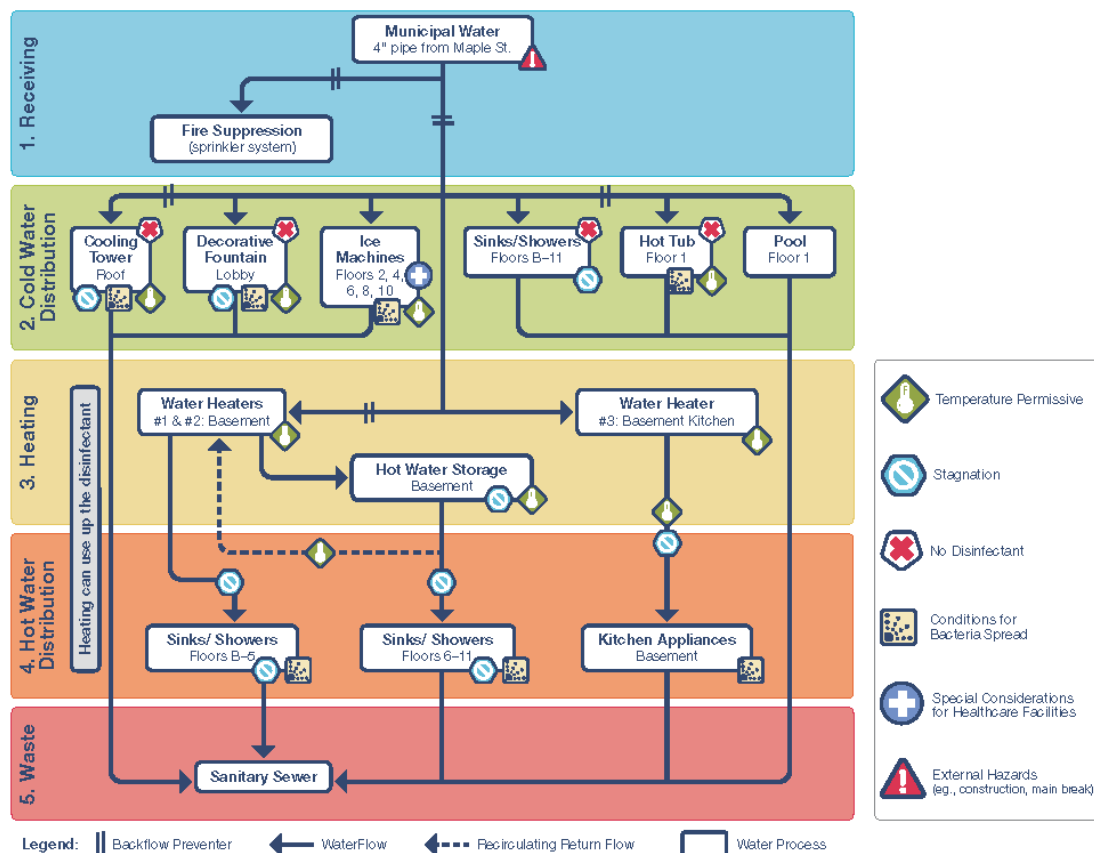


# Identify Areas Where *Legionella* Could Grow & Spread

3

## EXAMPLE: BUILDING A

Once you have developed your process flow diagram, identify where potentially hazardous conditions could occur in your building water systems. The below diagram points out locations and types of hazardous conditions you could expect in Building A. Each potentially hazardous condition should be addressed individually with a control point, measure, and limit.



### Healthcare Facilities

Think about:

- Areas where medical procedures may expose patients to water droplets, such as hydrotherapy
- Areas where patients are more vulnerable to infection, such as bone marrow transplant units, oncology floors, or intensive care units

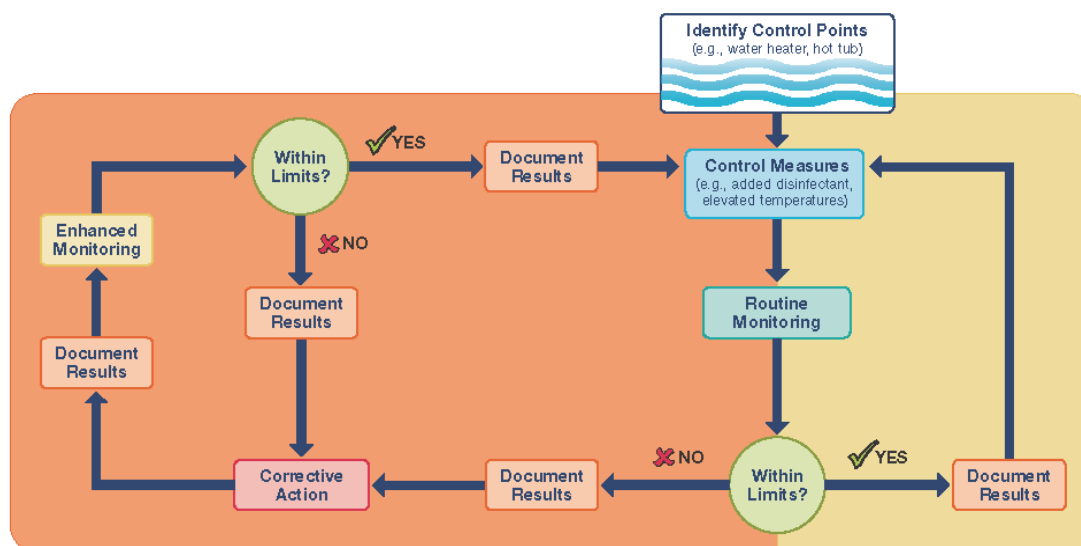
In Building A, the ice machine is included to illustrate that patients with problems swallowing may be at increased risk for *Legionella* spread by aspiration.

**Disclaimer:** Example content is provided for illustrative purposes only and is not intended to be relevant to all buildings.

Reference: ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta. [www.ashrae.org](http://www.ashrae.org)

### 3 Control Measures & Corrective Actions: The Basics

The diagram below shows the process of implementing and monitoring control measures. If you find that a control limit (i.e., temperature levels, disinfectant levels) is not being met, you need to take corrective actions to get conditions back to within an acceptable range. The right side, in yellow, illustrates the routine process of monitoring control measures to make sure they are within limits. The left side, in orange, shows the process of what to do if control measures are found to be outside of their limits.



Remember, any time there is a suspected case of Legionnaires' disease associated with your building you should:

- Contact your local and/or state health department or work with them if they contact you
- Notify anyone who could be affected by the growth and spread of *Legionella* in your building if the health department asks you to
- Decontaminate the building water systems if necessary (you may need to get additional help from outside experts)
- Review the water management program and revise it, if necessary

#### Healthcare Facilities

In addition to the steps listed above that you would take in all buildings, if a case of healthcare-associated Legionnaires' disease is discovered in a healthcare facility:

- Make sure the person with expertise in infection prevention on your team is aware
- **Important:** Tell clinicians so they can test patients with healthcare-associated pneumonia for Legionnaires' disease with both culture of lower respiratory secretions and the *Legionella* urinary antigen test
- Report the case to your local and/or state health department; a full investigation may be needed

For more details on identifying and investigating Legionnaires' disease cases in healthcare facilities, see page 24.

## Decide Where Control Measures Should Be Applied



Control measures and limits should be established for each control point. See the diagram on the next page for the types of monitoring that could occur in Building A. You will need to monitor to ensure your control measures are performing as designed. Control limits, in which a chemical or physical parameter must be maintained, should include a minimum and a maximum value.

Examples of chemical and physical control measures and limits to reduce the risk of *Legionella* growth:

- ◆ Water quality should be measured throughout the system to ensure that changes that may lead to *Legionella* growth (such as a drop in chlorine levels) are not occurring.
- ◆ Water heaters should be maintained at appropriate temperatures.
- ◆ Decorative fountains should be kept free of debris and visible biofilm.
- ◆ Disinfectant and other chemical levels in cooling towers and hot tubs should be continuously maintained and regularly monitored. Surfaces with any visible biofilm (i.e., slime) should be cleaned.

### Healthcare Facilities

Clinicians should test patients with healthcare-associated pneumonia (pneumonia with onset  $\geq 48$  hours after admission) for Legionnaires' disease. This is especially important among patients at increased risk for developing Legionnaires' disease (see Appendix B), among patients with severe pneumonia (particularly those requiring intensive care), or if any of the following are identified in your facility:

- Other patients with healthcare-associated Legionnaires' disease diagnosed in the past 12 months
- Positive environmental tests for *Legionella* in the past 2 months
- Current changes in water quality that may lead to *Legionella* growth (such as low chlorine levels)

The preferred diagnostic tests for Legionnaires' disease are culture of lower respiratory secretions on selective media and the *Legionella* urinary antigen test.

Additionally, certain commonly-encountered changes in building water system design or management might require increasing the extent and frequency of monitoring. It's a good idea to anticipate additional hazardous conditions that could be associated with scheduled or unanticipated changes in water quality, such as:

- ◆ System start up
- ◆ System shut down
- ◆ Regularly scheduled maintenance
- ◆ Renovations, construction, and installation of new equipment on your property
- ◆ Equipment failure
- ◆ Water main break or other service interruptions

### Anti-scald Regulation

You should follow local and state anti-scald regulations. However, maximum temperatures allowed by your state may be too low to limit *Legionella* growth. Engineering controls that mix hot and cold water together at or near the point of use can reduce the risk of scalding while allowing water in pipes to remain hot enough to limit *Legionella* growth.

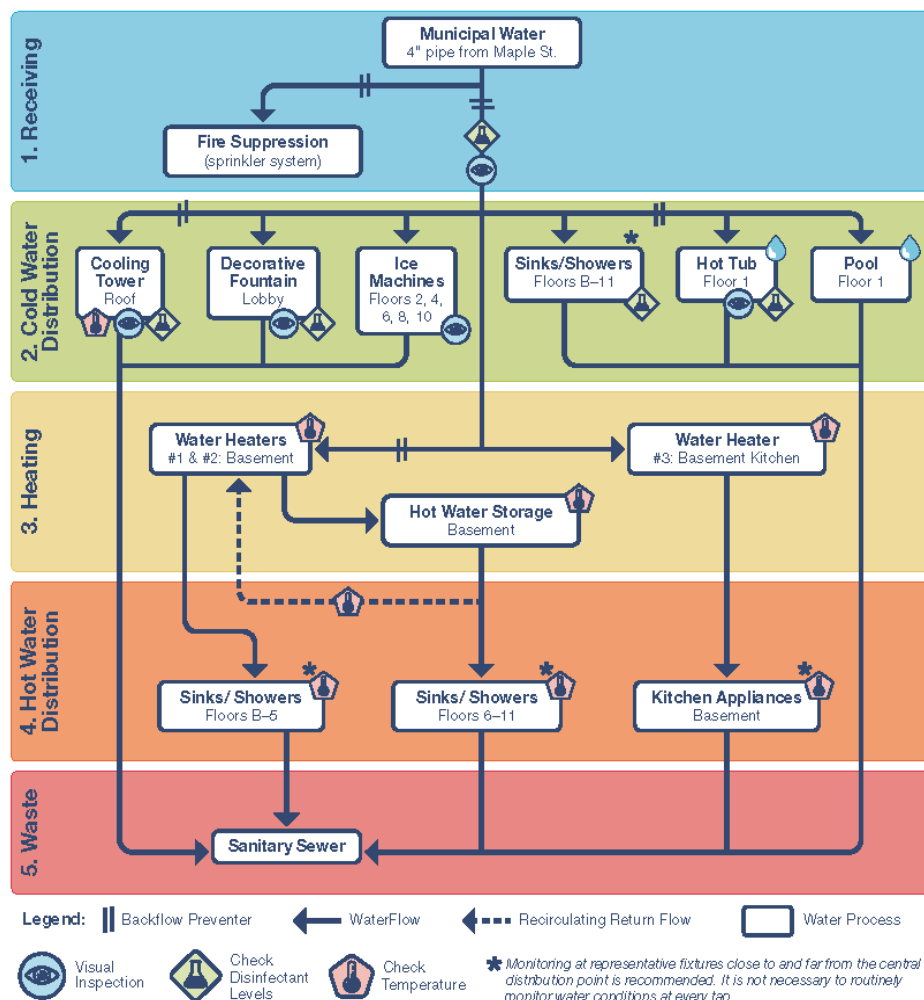


## 4

## Decide How to Monitor Your Control Measures

### EXAMPLE: BUILDING A

The diagram below shows which types of monitoring could occur at different locations within Building A's water system to reduce the risk of growth and spread of *Legionella*.



**Disclaimer:** Example content is provided for illustrative purposes only and is not intended to be relevant to all buildings.

Reference: ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta. [www.ashrae.org](http://www.ashrae.org)



**Note:** In addition to whatever you do to prevent *Legionella*, state and local regulations may exist that govern the design, construction, operation, and maintenance of public aquatic facilities (e.g., pools and hot tubs). See CDC's Model Aquatic Health Code at [www.cdc.gov/mahc/index.html](http://www.cdc.gov/mahc/index.html) for helpful information, but this document is not a substitute for state and local regulations.



**Note:** Heterotrophic plate counts can aid in your monitoring program as an indicator of water quality, but should not be used as a control measure.



# Establish Ways to Intervene When Control Limits Are Not Met



## CORRECTIVE ACTION EXAMPLES

Building water systems are dynamic. You should plan for your monitoring results to vary over time and be prepared to apply corrective actions. **Corrective actions** are taken in response to systems performing outside of control limits. The following are examples of corrective actions.

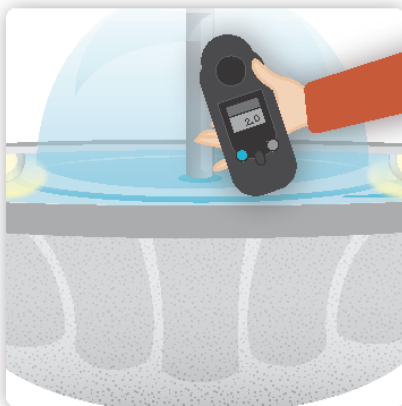
### Example 1—Biofilm growth in the decorative fountain



1. During her weekly inspection of the fountain in the first floor lobby, Michelle Patterson notes that the fountain walls have accumulated a slimy growth.



2. As dictated by her water management program, Michelle immediately shuts off the fountain, drains it to the sanitary sewer, and scrubs it with a detergent recommended by the manufacturer.



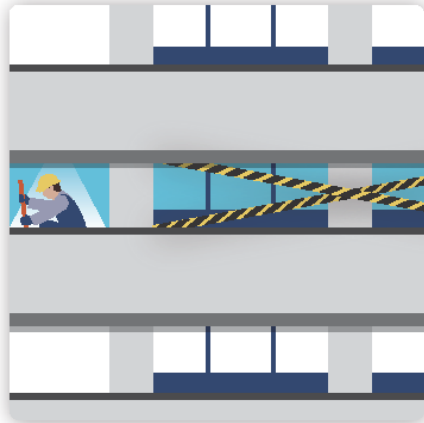
3. She then follows the program's start up procedure to refill the fountain with water and checks the residual disinfectant levels to make sure that they are within control limits.



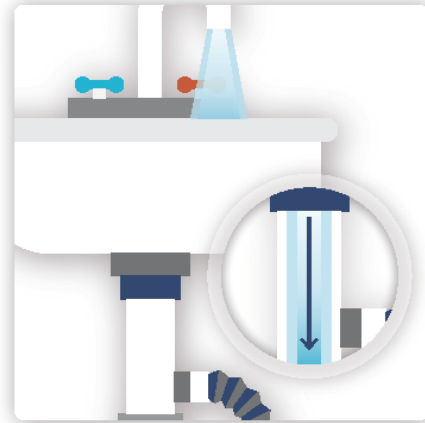
4. Michelle documents her observations and the performance of interim cleaning in her log book. She informs her supervisor.



5

**Example 2—Unoccupied floor**

1. The eighth floor of the building is being renovated and is closed to the public. Jason Hernandez understands that this may cause a temporary hazardous condition because water usage will decrease, which means that stagnation is possible.



2. After discussing the issue with his supervisor, Jason counteracts the potential for stagnation by daily flushing of the sinks and fixtures with hot and cold water in several rooms including those at the end of the hall, which are farthest from the vertical pipe serving that floor (riser).



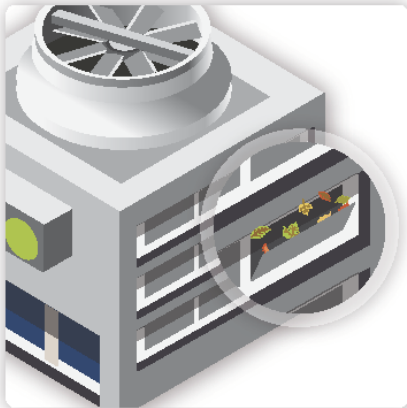
3. Jason also increases the frequency of measuring temperature and chlorine levels on the eighth floor from weekly to daily for the duration of the renovation.



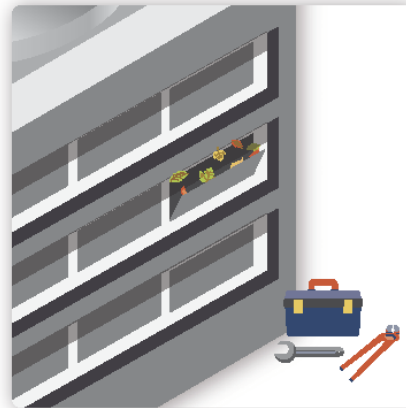
4. He documents the method and duration of flushing and records his daily temperature and chlorine readings in his log book. He reviews his documentation with his supervisor.

**Example 3—Debris in the cooling tower**

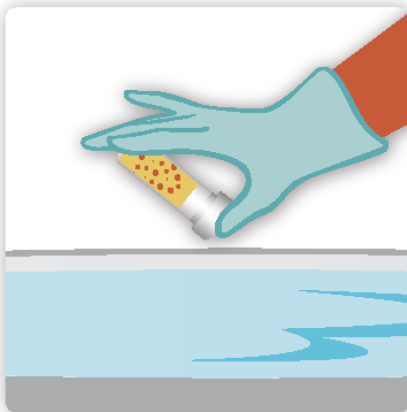
5



1. During weekly inspection of the cooling tower, Michelle discovers that leaf litter has accumulated in the reservoir.



2. Upon further investigation, she finds that a panel has become dislodged, allowing windblown debris to enter.



3. After replacing the panel and skimming out the debris, Michelle checks the disinfectant levels and performs a heterotrophic plate count as an indicator of water quality.



4. She documents her actions in her log book. She also makes a note to check the disinfectant levels daily for a week to make sure that the cooling tower remains within control limits. She reviews her actions and documentation with her supervisor.

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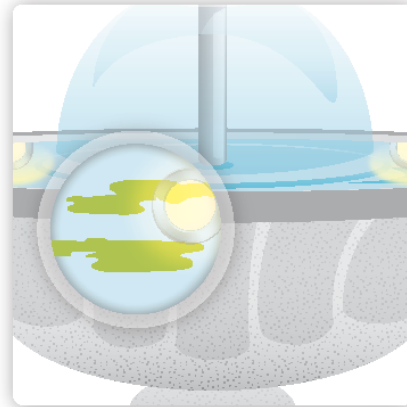
## CONTINGENCY RESPONSE EXAMPLES

Even the most closely monitored systems will sometimes require adjustments, as shown in the following examples. You should be prepared to respond, even to unexpected problems, based on your knowledge of the building water systems and how *Legionella* grows and spreads. You may need to initiate a customized contingency response to gain control of a building water system. **Contingency responses** may involve several steps and often require follow up. A contingency response is always required when a case of Legionnaires' disease has been linked to a building and is also appropriate in other situations.

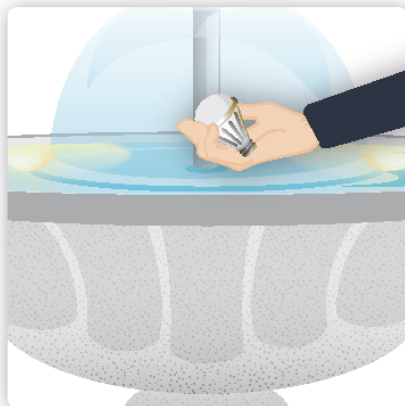
### Example 1—Biofilm growth in the fountain



1. During the annual review of the water management program, supervisor Anson Cho notes that Michelle and Jason performed six interim cleanings of the lobby fountain due to excessive biofilm growth in the past year.



2. Upon further review of the logs, he discovers that the biofilm growth was observed near the inner wall where incandescent lighting illuminates the water.



3. Anson decides to replace the incandescent bulbs with LED bulbs to prevent the lights from heating the water to a temperature that allows biofilm to grow.



4. After three months of routine inspections show that this corrective action reduces biofilm growth and eliminates the need for interim cleaning, Anson amends the water management program to specify use of only LED bulbs in the fountain and he informs the owner.

**Disclaimer:** Example content is provided for illustrative purposes only and is not intended to be relevant to all buildings.

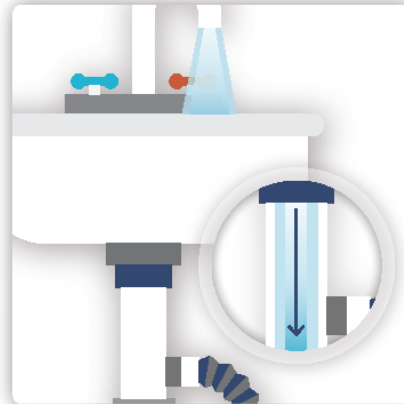
Reference: ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta. [www.ashrae.org](http://www.ashrae.org)

**Example 2—Water main break**

5



1. Jason receives several complaints from building occupants of foul-tasting water. He also notes a brownish tint to the water entering the building during his daily visual inspection. Jason immediately contacts the water provider and discovers that there was a water main break nearby but that a boil water advisory was not issued. He sends a notice to building occupants about the main break and that they should limit water usage for the next 4 hours while facilities clear the line.



2. To improve building water quality, Jason flushes the water at multiple sinks and fixtures near the entry until the water runs clear and falls within established water quality parameter control limits. He also flushes fixtures in areas where he received taste and odor complaints and at pre-determined flushing locations per the water management program.



3. Jason increases the frequency of measuring chlorine levels at the taps from weekly to daily to ensure that adequate residual disinfectant is moving through the system.



4. Jason informs his supervisor, documents his actions, and records chlorine readings in his log book.

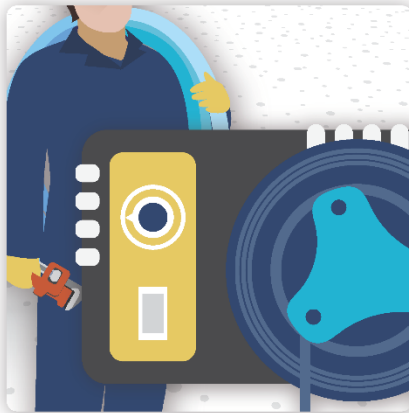
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**Example 3—Broken chlorinator in the hot tub**

1. Michelle notes chlorine levels of zero within the hot tub during her daily inspection. On further inspection she notices that disinfectant in the automatic delivery system reservoir is full.



2. Michelle immediately closes the hot tub and calls the pool contractor.



3. The contractor arrives the next day to discover that the chlorinator pump has malfunctioned and replaces the unit.



4. Michelle documents the action and follows the water management program's protocol for start up, which includes cleaning the hot tub, shocking it with a high dose of disinfectant, and back-flushing the filter. Michelle also recommends that the supervisor amend the water management program to include a daily check of equipment operation and disinfectant levels in the reservoir, in addition to the daily visual inspection and chlorine measurements, so that such equipment failures may be detected more quickly in the future.

# Make Sure the Program Is Running as Designed & Is Effective



## Verification: Are we doing what we said we would do?

Your program team should establish procedures to confirm, both initially and on an ongoing basis, that the water management program is being implemented as designed. This step is called "verification." For example, if you said you would test the hot tub daily for chlorine and record and communicate those results, have you been doing that? If you found a problem, did you take the action included in your program?

People should not verify the program activity for which they are responsible. For example, if one person is responsible for maintaining the hot tub and another is responsible for the cooling tower, they could verify each other's work, not their own.

## Validation: Is our program actually working?

Now that you have a water management program, you need to be sure that it is effective. Your program team should establish procedures to confirm, both initially and on an ongoing basis, that the water management program effectively controls the hazardous conditions throughout the building water systems. This step is called "validation."

Environmental testing for *Legionella* is useful to validate the effectiveness of control measures. The program team should determine if environmental testing for *Legionella* should be performed and, if so, how test results will be used to validate the program. Factors that might make testing for *Legionella* more important include:

- ◆ Having difficulty maintaining the building water systems within control limits
- ◆ Having a prior history of Legionnaires' disease associated with the building water systems
- ◆ Being a healthcare facility that provides inpatient services to people who are at increased risk for Legionnaires' disease (see Appendix B)

If the program team decides to test for *Legionella*, then the testing protocol should be specified and documented in advance. You should also be familiar with and adhere to local and state regulations and accreditation standards for this testing.

### Healthcare Facilities

Water management program teams that include infection control staff may also choose to use their facility's routine surveillance for healthcare-associated Legionnaires' disease to validate their program. To look for healthcare-associated cases, histories for all patients with diagnosed Legionnaires' disease should be reviewed for possible healthcare exposures and certain patients with healthcare-associated pneumonia (see gray box on page 13) should be tested for Legionnaires' disease.



## **Document & Communicate All the Activities of Your Water Management Program**

---

### **Documentation**

Now that you have done all of the work required to create your water management program, write it down. This information will be important to improve your program and if you or others want to review your records. Your written program should include at least the following:

- ◆ Program team, including names, titles, contact information, and roles on the team
- ◆ Building description, including location, age, uses, and occupants and visitors
- ◆ Water system description, including general summary, uses of water, aerosol-generating devices (e.g., hot tubs, decorative fountains, cooling towers), and process flow diagrams
- ◆ Control measures, including points in the system where critical limits can be monitored and where control can be applied
- ◆ Confirmatory procedures, including verification steps to show that the program is being followed as written and validation to show that the program is effective
- ◆ Document collection and transport methods and which lab will perform the testing if environmental testing is conducted

### **Communication**

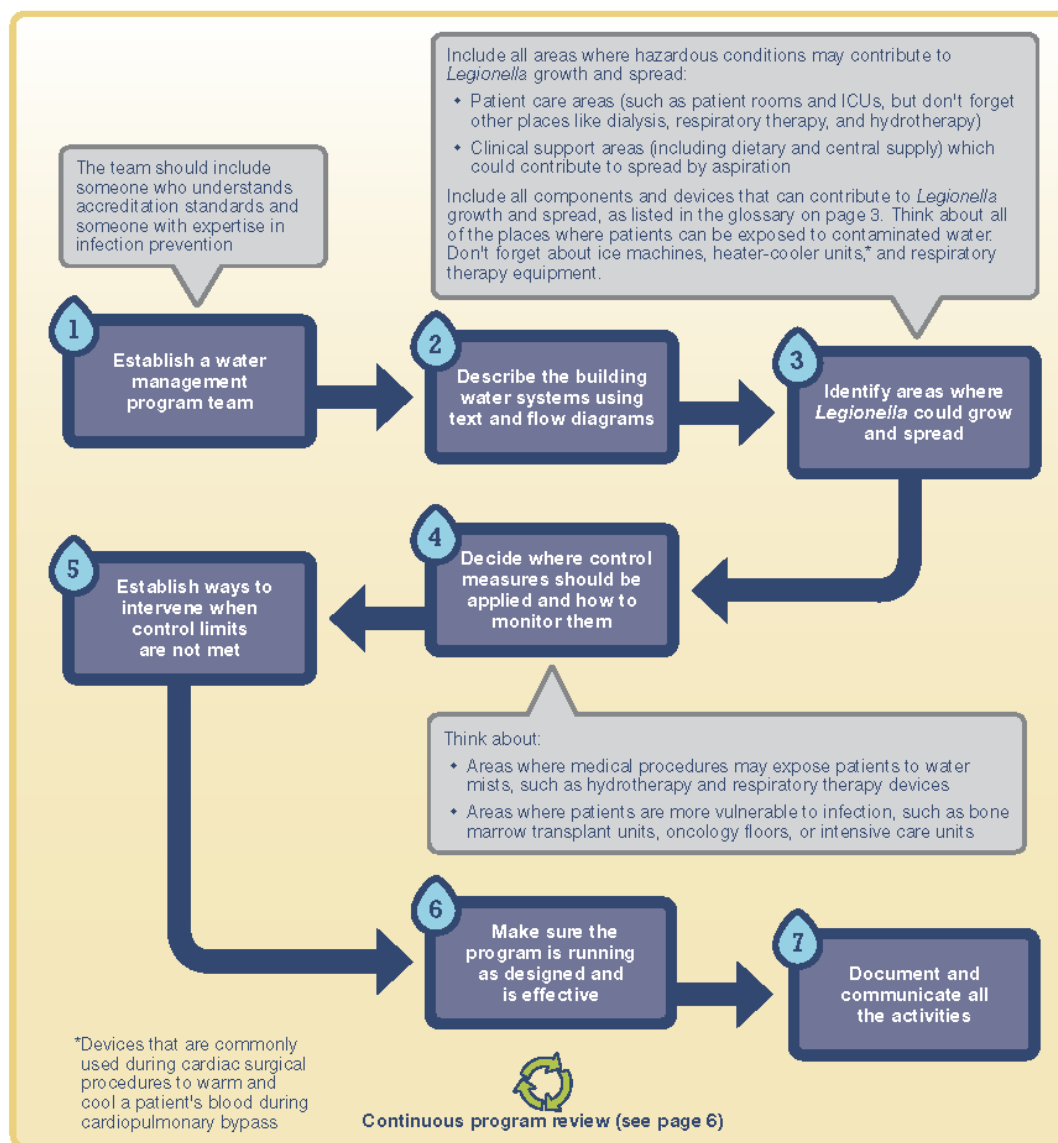
You have worked hard to develop your water management program and you have carefully documented all aspects of it. Resist the temptation to put it on a shelf and walk away. Consider notifying building occupants that you have a plan in place to keep the building water systems safe, just as you would for an elevator inspection. Be sure to communicate with your employees and colleagues about your program on a regular basis and train those responsible for implementing and monitoring the program. Use this communication as an opportunity to identify strategies for improving the management and efficiency of your water systems.



# Special Considerations for Healthcare Facilities

## ELEMENTS OF A WATER MANAGEMENT PROGRAM

Developing and maintaining a water management program in healthcare facilities requires a few more considerations than the ones explained on page 6. All healthcare facilities should have a *Legionella* water management program.



Reference: ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta. [www.ashrae.org](http://www.ashrae.org)

**Note:** ASHRAE 188 Normative Annex A applies to accredited healthcare facilities that have a Certification Board of Infection Control and Epidemiology (CBIC) certified infection preventionist or a master's-level epidemiologist.

## IDENTIFYING & INVESTIGATING LEGIONNAIRES' DISEASE CASES

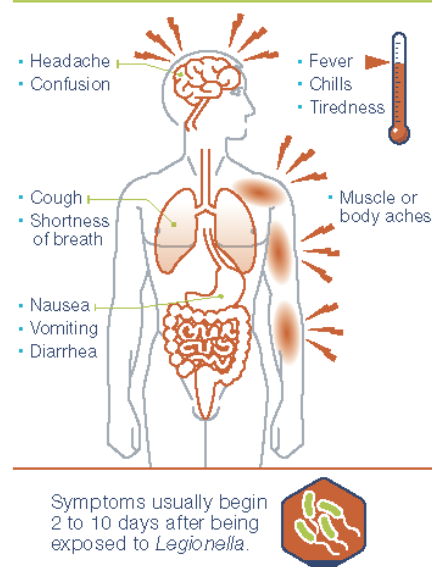
Healthcare facilities are often uniquely positioned to identify and respond to cases of Legionnaires' disease. A healthcare facility's water management program to limit *Legionella* growth and spread should include the actions to take when a patient is diagnosed with Legionnaires' disease or environmental triggers occur. If you decide to conduct a full investigation of the source of an infection, key elements should be included, as noted on the next page. A full investigation following a diagnosis of Legionnaires' disease can help determine whether the infection was acquired in the facility or the community.

Clinicians should test patients with healthcare-associated pneumonia (pneumonia with onset  $\geq 48$  hours after admission) for Legionnaires' disease. This is especially important among patients at increased risk for developing Legionnaires' disease (see Appendix B), among patients with severe pneumonia (particularly those requiring intensive care), or if any of the following are identified in your facility:

- ◆ Other patients with healthcare-associated Legionnaires' disease diagnosed in the past 12 months
- ◆ Positive environmental tests for *Legionella* in the past 2 months
- ◆ Current changes in water quality that may lead to *Legionella* growth (e.g., low residual disinfectant levels, temperatures permissive to *Legionella* growth, nearby construction, areas of stagnation)

Other patients, besides those with healthcare-associated pneumonia, should also be tested for Legionnaires' disease (see Appendix B). The preferred diagnostic tests for Legionnaires' disease are culture of lower respiratory secretions on selective media and the *Legionella* urinary antigen test.

### Legionnaires' disease symptoms



**Perform a full investigation for the source of *Legionella* when:**

- ◆ ≥1 case of **definite** healthcare-associated Legionnaires' disease (a case in a patient who spent the entire 10 days prior to onset of illness in the facility) is identified at any time
- ◆ ≥2 cases of **possible** healthcare-associated Legionnaires' disease (cases in patients who spent part of the 10 days before symptoms began at the same facility) are identified within 12 months of each other (note that under certain circumstances, during a cooling tower outbreak for example, the interval may be shorter)

**Key elements of a full public health investigation include:**

- ◆ Working with healthcare facility leaders\*
- ◆ Performing a retrospective review of cases in the health department surveillance database to identify earlier cases with possible exposures to the healthcare facility
- ◆ Developing a line list of possible and definite cases associated with the healthcare facility
- ◆ Working with infection control and clinical staff to actively identify all new and recent patients with healthcare-associated pneumonia and test them for *Legionella* using both culture of lower respiratory secretions on selective media and the *Legionella* urinary antigen test
- ◆ Obtaining postmortem specimens, when applicable
- ◆ Considering recommendations for restricting water in the facility or other immediate control measures
- ◆ Performing an environmental assessment to evaluate possible environmental exposures
- ◆ Performing environmental sampling, as indicated by the environmental assessment
- ◆ Decontaminating possible environmental source(s)
- ◆ Subtyping and comparing clinical and environmental isolates, if available
- ◆ Working with healthcare facility leaders to determine how long heightened disease surveillance and environmental sampling should continue to ensure the outbreak is over
- ◆ Working with healthcare facility leaders to review and possibly revise the water management program, if indicated



\* Leaders may include infection control practitioners, facility managers, hospital administrators, quality assurance staff, or others.

Reference: ASHRAE 188: *Legionellosis: Risk Management for Building Water Systems* June 26, 2015. ASHRAE: Atlanta. [www.ashrae.org](http://www.ashrae.org)

**Note:** ASHRAE 188 Normative Annex A applies to accredited healthcare facilities that have a Certification Board of Infection Control and Epidemiology (CBIC) certified infection preventionist or a master's-level epidemiologist.

# References & Resources

There are many references and resources that can help you develop and implement your *Legionella* water management program, some of which are listed below.

## Standard



### **Standard 188—Legionellosis: Risk Management for Building Water Systems (ANSI Approved)**

ASHRAE

Published 2015

[www.techstreet.com/ashrae/products/1897561](http://www.techstreet.com/ashrae/products/1897561)

## Guidelines



### **Guideline 12—Minimizing the Risk of Legionellosis Associated with Building Water Systems**

ASHRAE

Published 2000

[www.techstreet.com/ashrae/products/232891](http://www.techstreet.com/ashrae/products/232891)

(currently under revision)

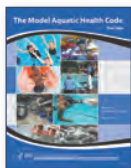


### **Legionellosis Guideline: Best Practices for Control of *Legionella***

Cooling Technology Institute

Published 2008

[www.cti.org/downloads/WTP-148.pdf](http://www.cti.org/downloads/WTP-148.pdf)



### **Model Aquatic Health Code Guidance**

Centers for Disease Control and Prevention

Published 2014

[www.cdc.gov/mahc/index.html](http://www.cdc.gov/mahc/index.html)

## Laboratory Resources



### **ELITE Program**

Centers for Disease Control and Prevention and Wisconsin State Laboratory of Hygiene

[wwwn.cdc.gov/ELITE/Public/EliteHome.aspx](http://wwwn.cdc.gov/ELITE/Public/EliteHome.aspx)

## Planning Guides & Toolkits



### Emergency Water Supply Planning Guide for Hospitals and Healthcare Facilities

Centers for Disease Control and Prevention, American Water Works Association  
Published 2012

[www.cdc.gov/healthywater/pdf/emergency/emergency-water-supply-planning-guide.pdf](http://www.cdc.gov/healthywater/pdf/emergency/emergency-water-supply-planning-guide.pdf)



### Drinking Water Advisory Communication Toolbox

US Department of Health & Human Services, Centers for Disease Control and Prevention, Environmental Protection Agency, American Water Works Association  
Published 2013

[www.cdc.gov/healthywater/pdf/emergency/drinking-water-advisory-communication-toolbox.pdf](http://www.cdc.gov/healthywater/pdf/emergency/drinking-water-advisory-communication-toolbox.pdf)



### Investigation Tools for Clusters and Outbreaks of Legionnaires' Disease

Centers for Disease Control and Prevention

[www.cdc.gov/legionella/outbreak-toolkit](http://www.cdc.gov/legionella/outbreak-toolkit)

## Healthcare Resources



Sehulster LM, Chinn RYW, Arduino MJ, Carpenter J, Donlan R, Ashford D, et al. **Guidelines for Environmental Infection Control in Health-care Facilities. Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC).** *MMWR*. 2003;52(RR-10): 1-42.

[www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5210a1.htm)



Kohn WG, Collins AS, Cleveland JL, Harte JA, Eklund KJ, Malvitz DM. **Guidelines for Infection Control in Dental Health-Care Settings—2003.** *MMWR*. 2003;52(RR-17):1-61.

[www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5217a1.htm)



Tablan OC, Anderson LJ, Besser R, Bridges MD, Hajjeh R. **Guidelines for Preventing Health-care-associated Pneumonia, 2003: Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee.** *MMWR*. 2004;53(RR-3):1-36.

[www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm](http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5303a1.htm)



### Prevention of Healthcare-associated *Legionella* Disease and Scald Injury from Potable Water Distribution Systems

Veterans Health Administration

Published 2014

[www.va.gov/vhapublications/ViewPublication.asp?pub\\_ID=3033](http://www.va.gov/vhapublications/ViewPublication.asp?pub_ID=3033)

## Legionnaires' Disease Information



### Legionnaires' Disease Website

Centers for Disease Control and Prevention

[www.cdc.gov/legionella](http://www.cdc.gov/legionella)

## Laws



### Safe Drinking Water Act

Environmental Protection Agency

[www.epa.gov/sdwa](http://www.epa.gov/sdwa)

## Literature Reviews



### Technologies for *Legionella* Control in Premise Plumbing Systems

Environmental Protection Agency

[www.epa.gov/ground-water-and-drinking-water/technologies-legionella-control-premise-plumbing-systems](http://www.epa.gov/ground-water-and-drinking-water/technologies-legionella-control-premise-plumbing-systems)



# Appendix A

## LEGIONNAIRES' DISEASE

Legionnaires' (LEE-juh-nares) disease is a very serious type of pneumonia (lung infection) caused by bacteria called *Legionella*. If you develop pneumonia symptoms and may have been exposed to *Legionella*, see a doctor right away. Be sure to mention if you have used a hot tub, spent any nights away from home, or stayed in a hospital in the last two weeks.

### Legionnaires' Disease Can Cause Pneumonia Symptoms

Signs and symptoms of Legionnaires' disease can include:

- ▶ Cough
- ▶ Muscle aches
- ▶ High fever
- ▶ Shortness of breath
- ▶ Headache

Doctors use chest x-rays or physical exams to check for pneumonia. Your doctor may also order tests on a sample of urine and sputum (phlegm) to see if your lung infection is caused by *Legionella*.

### Legionnaires' Disease Is Serious, but Can Be Treated with Antibiotics

Legionnaires' disease is treated with antibiotics (drugs that kill bacteria in the body). Most people who get sick need care in a hospital but make a full recovery. However, about 1 out of 10 people who get Legionnaires' disease will die from the infection.

### Certain People Are at Increased Risk for Legionnaires' Disease

Most healthy people do not get Legionnaires' disease after being exposed to *Legionella*. Being 50 years or older or having certain risk factors can increase your chances of getting sick. These risk factors include:

- ▶ Being a current or former smoker
- ▶ Having chronic lung disease, such as emphysema or chronic obstructive pulmonary disease (COPD)
- ▶ Having a weakened immune system from diseases like cancer, diabetes, or kidney failure
- ▶ Taking medication that weakens your immune system

### *Legionella* Are Usually Spread through Water Droplets in the Air

In nature, *Legionella* live in fresh water and rarely cause illness. In man-made settings, *Legionella* can grow if water is not properly maintained. These man-made water sources become a health problem when small droplets of water that contain the bacteria get into the air and people breathe them in. In rare cases, someone breathes in *Legionella* while they are drinking water and it "goes down the wrong pipe" into the lungs. In general, Legionnaires' disease is not spread from one person to another. However, this may be possible in rare cases.



Legionnaires' disease, a type of severe pneumonia, is caused by breathing in small droplets of water that contain *Legionella*.

### Common Sources of Infection

Outbreaks of Legionnaires' disease are often associated with large or complex water systems, like those found in hospitals, hotels, and cruise ships.

The most likely sources of infection include:



Water used for showering (potable water)



Cooling towers (parts of large air conditioning systems)



Decorative fountains



Hot tubs

[cdc.gov/legionella](https://cdc.gov/legionella)

CS260481 03/07/2016



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention



## Appendix B

### What Clinicians Need to Know about

## LEGIONNAIRES' DISEASE

*Legionnaires' disease is a sometimes fatal form of pneumonia that is on the rise in the United States. Unfortunately, this disease is also underrecognized and underdiagnosed. Clinicians are in a unique position to make sure cases are detected, allowing rapid investigation by public health officials and prevention of additional cases.*

### Diagnosis and Testing

Clinical features of Legionnaires' disease include cough, fever, and radiographic pneumonia. Signs and symptoms for Legionnaires' disease are similar to pneumonia caused by other pathogens; the only way to tell if a pneumonia patient has Legionnaires' disease is by getting a specific diagnostic test. Indications that warrant testing include:

- Patients who have failed outpatient antibiotic therapy for community-acquired pneumonia
- Patients with severe pneumonia, in particular those requiring intensive care
- Immunocompromised patients with pneumonia\*
- Patients with a travel history (patients who have traveled away from their home within 10 days before the onset of illness)
- All patients with pneumonia in the setting of a Legionnaires' disease outbreak
- Patients at risk for Legionnaires' disease with healthcare-associated pneumonia (pneumonia with onset  $\geq 48$  hours after admission)

\* Clinicians may also consider testing for Legionnaires' disease in patients with other risk factors for this infection (see page 2).

Testing for healthcare-associated Legionnaires' disease is especially important if any of the following are identified in your facility:

- Other patients with healthcare-associated Legionnaires' disease diagnosed in the past 12 months
- Positive environmental tests for *Legionella* in the past 2 months
- Current changes in water quality that may lead to *Legionella* growth (such as low chlorine levels)

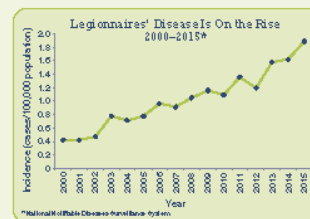
Infection control staff may have more information about these situations in your facility.

**The preferred diagnostic tests for Legionnaires' disease are culture of lower respiratory secretions (e.g., sputum, bronchoalveolar lavage) on selective media and the *Legionella* urinary antigen test.** Serological assays can be nonspecific and are not recommended in most situations. Best practice is to obtain both sputum culture and a urinary antigen test concurrently. Sputum should ideally be obtained prior to antibiotic administration, but antibiotic treatment should not be delayed to facilitate this process. The urinary antigen test can detect *Legionella* infections in some cases for days to weeks after treatment. The urinary antigen test detects *Legionella pneumophila* serogroup 1, the most common cause of Legionnaires' disease; isolation of *Legionella* by culture is important for detection of other species and serogroups and for public health investigation. Molecular techniques can be used to compare clinical isolates to environmental isolates and confirm the outbreak source.



U.S. Department of  
Health and Human Services  
Centers for Disease  
Control and Prevention

**Order both a culture of a lower respiratory specimen and a urinary antigen test when testing patients for *Legionella*.**



In the United States, reported cases of Legionnaires' disease have grown by nearly four and a half times since 2000. More than 6,000 cases of Legionnaires' disease were reported in 2015, but this number is likely an underestimate as the illness is thought to be underdiagnosed.

More illness occurs in the summer and early fall, but Legionnaires' disease can happen any time of year.

## Treatment

If your patient has Legionnaires' disease, see the most recent guidelines for treatment of community-acquired pneumonia (<http://bit.ly/CommunityPneumoniaGuide>) and hospital-acquired pneumonia (<http://bit.ly/HospitalPneumonia>). Macrolides and respiratory fluoroquinolones are currently the preferred agents for treating Legionnaires' disease.

## Reporting

Make sure your infection control department or lab are promptly reporting cases of Legionnaires' disease to your local health department. Timely identification and reporting of cases is important, as this allows public health officials to quickly identify and stop potential clusters and outbreaks by linking new cases to previously reported ones.

## Etiology

Legionnaires' disease is a severe form of pneumonia that often requires hospitalization and is fatal in about 10% of cases overall, and in 25% of healthcare-associated cases. Legionnaires' disease is caused by *Legionella* bacteria. There are at least 60 different species of *Legionella*, and most are considered capable of causing disease. However, most disease is caused by *L. pneumophila*, particularly serogroup 1.

## Transmission

While *Legionella* is found in natural, freshwater environments, it can become a health concern in human-made water systems (e.g., plumbing system of large buildings, cooling towers, certain medical devices, decorative fountains, hot tubs) where conditions allow it to multiply and come in contact with vulnerable persons. People contract *Legionella* by inhaling aerosolized water droplets containing the bacteria, or, less commonly, by aspiration of contaminated drinking water. *Legionella* is usually not transmitted from person to person; however, a single episode of person-to-person transmission has been reported. Fortunately, most people exposed to the bacteria do not become ill.

## Risk Factors

Risk factors for developing Legionnaires' disease include:

- Age ≥50 years
- Smoking (current or historical)
- Chronic lung disease, such as emphysema or COPD
- Immune system disorders due to disease or medication
- Systemic malignancy
- Underlying illness, such as diabetes, renal failure, or hepatic failure

## Prevention

The key to preventing Legionnaires' disease is maintenance of the water systems in which *Legionella* may grow. If *Legionella* is found in a healthcare facility's water system, the facility should work to eliminate the bacteria. CDC encourages all building owners, and especially those in healthcare facilities, to develop comprehensive water management programs to reduce the risk of *Legionella* growth and spread. Learn more about how to develop a water management program at [www.cdc.gov/legionella/WMPtoolkit](http://www.cdc.gov/legionella/WMPtoolkit).

**Timely reporting of Legionnaires' disease cases is important for controlling clusters and outbreaks.**

## Common Sources of Infection

Outbreaks of Legionnaires' disease are most often associated with large or complex water systems, like those found in hospitals, long-term care facilities, hotels, and cruise ships.

The most likely sources of infection include:



Water used for showering  
(potable water)



Cooling towers (parts of large  
air conditioning systems)



Decorative fountains



Hot tubs



**Date:** May 5, 2020

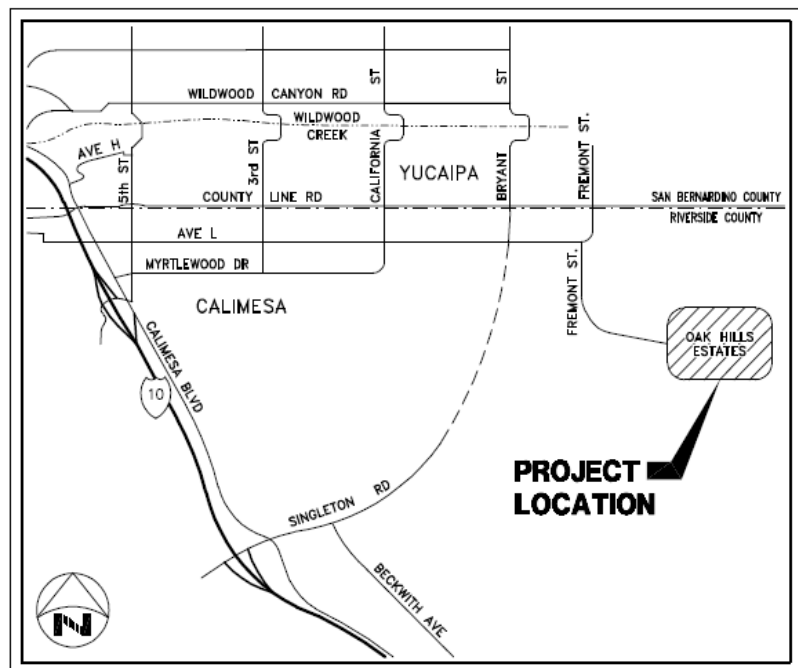
**Prepared By:** Matthew Porras, Implementation Manager

**Subject:** Status Report of the Replacement of the Drinking Water Reservoir R-16.6 - Calimesa

**Recommendation:** Staff Presentation - No Action Required.

The District owns and operates a drinking water storage facility [Asset ID: PW-R-13016.6] that was initially put into service in the early 1980's when the Oak Hills Estates residential area was developed. The R-16.6 reservoir serves drinking water to the 16.6 pressure zone within the residential area.

In the past few years of the reservoir's almost 40-year life, District staff has been observing and monitoring the deteriorating condition. Most recently, numerous leaks on the exterior walls of the tank have developed and have signaled the end of this asset's useful life. The replacement of this tank is recommended before the condition becomes more severe.



## LOCATION MAP

NOT TO SCALE

On December 17, 2019, the Board of Directors awarded a contract to Superior Tank Company for the replacement of Drinking Water Reservoir R-16.6 for a sum not to exceed \$565,668 [Director Memorandum 19-138]. The new tank will comply with current seismic requirements with a concrete ring wall that will provide the tank a solid foundation and secure bolt down installation. Our current tank is 24 feet tall and 37 feet in diameter with approximately 195,000 gallons of useable capacity. Without extensive grading, the new tank can be increased in size to 32 feet tall and 47 feet wide. The additional height of the new tank would provide the freeboard needed to comply with updated construction standards and the additional width would provide the usable capacity of approximately 298,000 gallons, an increase of over 100,000 gallon capacity.

A geotechnical report was completed to ensure the proposed tank is designed and constructed appropriately. The necessary environmental documents have been completed and filed with the



State Clearing House (SCH Number 2019100374) on October 18, 2019 and the required 30 day time period has been fulfilled. District staff installed the temporary tanks and has made the necessary connections to the existing onsite piping. The temporary tank installation and operation are not included in the construction contract.

The existing tank has been demolished and removed from the site. The required over-excavation of the tank site is complete. The forms and rebar for the concrete ring-wall foundation are installed and the concrete has been poured. After the testing of the concrete, a single repair is required. The contractor is removing the failed section of concrete and will re-pour the area. After the concrete work is complete, the tank will be delivered and assembled.

This project will be paid for by the Water Fund, Facility Capacity Charge (FCC) Water Storage Reservoirs Account [G/L Account #02-000-10413]. This project was included in the CIP budget estimated for fiscal year 2021-22 but as a result of the urgency will be moved to the current fiscal year.















**Date:** May 5, 2020

**Prepared By:** Joseph Zoba, General Manager

**Subject:** Selection of a Special District Representative for the San Bernardino County Local Agency Formation Commission

**Recommendation:** That the Board select special district representative and direct District staff to submit the completed ballot.

Local Agency Formation Commissions (LAFCOs) are state-mandated regulatory agencies established by the Legislature in 1963. LAFCOs were created to help implement State policy of encouraging orderly growth and development through the regulation of local public agency boundaries. This task requires each Commission to balance the development required for a growing population with the competing State interests of discouraging urban sprawl, preserving agricultural resources and open space, and extending government services efficiently.

On April 28, 2020, the Board of Directors completed a ballot for the special district representative of the Riverside Local Agency Formation Commission.

After receiving a ballot, completing the ballot and submitting the ballot, the District received notice from the Riverside Local Agency Formation Commission that the Yucaipa Valley Water District is not eligible to participate in the selection of special district candidates on the Riverside Local Agency Formation Commission.

**From:** Rebecca Holtzclaw <[rholtzclaw@lafco.org](mailto:rholtzclaw@lafco.org)>  
**Sent:** Wednesday, April 29, 2020 1:28 PM  
**To:** Allison Edmisten <[aedmisten@yvwd.us](mailto:aedmisten@yvwd.us)>  
**Subject:** RE: Special District Selection Committee 2020 Ballot

Good afternoon Allison,

I am following up on my previous email informing you that your ballot was received and confirmed.

After careful review, I regret to inform you that Yucaipa Valley Water District is not on the Riverside County eligible list (see attached) to vote in this election.

I apologize for any inconvenience this may cause.

If you have any questions or concerns, please contact me.

Thank you,

Rebecca Holtzclaw  
LAFCO Secretary



**Riverside Local Agency Formation Commission**  
6216 Brockton Avenue, Suite 111-B  
Riverside, CA 92506-2208  
951.369.0631  
[www.lafco.org](http://www.lafco.org)



**From:** Allison Edmisten <[aedmisten@yvwd.us](mailto:aedmisten@yvwd.us)>  
**Sent:** Wednesday, April 29, 2020 1:57 PM  
**To:** Rebecca Holtzclaw <[rholtzclaw@lafco.org](mailto:rholtzclaw@lafco.org)>  
**Subject:** RE: Special District Selection Committee 2020 Ballot

Rebecca,  
Can you confirm why that would be when we serve both San Bernardino and Riverside Counties? Our District office does reside in San Bernardino County but our boundary crosses both counties.

Thank you.

Allison M. Edmisten, Chief Financial Officer  
Yucaipa Valley Water District  
Phone: (909) 797-8418  
Email: [aedmisten@yvwd.us](mailto:aedmisten@yvwd.us)

**From:** Rebecca Holtzclaw <[rholtzclaw@lafco.org](mailto:rholtzclaw@lafco.org)>  
**Sent:** Wednesday, April 29, 2020 2:27 PM  
**To:** Allison Edmisten <[aedmisten@yvwd.us](mailto:aedmisten@yvwd.us)>  
**Subject:** RE: Special District Selection Committee 2020 Ballot

Hi Allison,

There are two reasons:

1. Your primary county is San Bernardino.
2. Yucaipa Valley Water District is not part of the Special Districts Selection Committee.

Please contact me with any other questions or concerns.

Thank you,

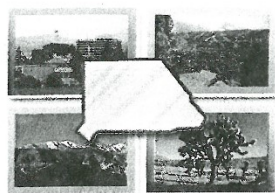
Rebecca Holtzclaw  
LAFCO Secretary



**Riverside Local Agency Formation Commission**  
6216 Brockton Avenue, Suite 111-B  
Riverside, CA 92506-2208  
951.369.0631  
[www.lafco.org](http://www.lafco.org)

On April 29, 2020, the District staff received correspondence from the San Bernardino County Local Agency Formation Commission regarding the election for special district representatives.

The District staff requests your selection of a candidate for the San Bernardino County Local Agency Formation Commission to complete the ballot material.



# LAFCO

## Local Agency Formation Commission for San Bernardino County

1170 West 3rd Street, Unit 150  
San Bernardino, CA 92415-0490  
909.388.0480 | Fax 909.388.0481  
lafco@lafco.sbcounty.gov  
www.sbdlafco.org

### COMMISSIONERS

JIM BAGLEY  
Public Member

DR. KIMBERLY COX  
Special District

JAMES V. CURATALO, Vice Chair  
Special District

ROBERT A. LOVINGOOD  
Board of Supervisors

LARRY McALLON, Chair  
City Member

DAWN ROWE  
Board of Supervisors

ACQUANETTA WARREN  
City Member

### ALTERNATES

LOUISA HOLSTEAD AMIS  
Public Member

RICK DENISON  
City Member

STEVEN FARRELL  
Special District

JANICE RUTHERFORD  
Board of Supervisors

### EXECUTIVE OFFICER

SAMUEL MARTINEZ

### LEGAL COUNSEL

PAULA DE SOUSA

April 27, 2020

**TO: Presidents of the Boards of Directors of the Independent Special Districts in San Bernardino County**

**Subject: Extension of Special Districts Election for Regular Special District LAFCO Member**

Due to the failure to receive 26 ballots required to establish a quorum by the deadline of April 27, 2020, by distribution of this letter, the official voting process for the Regular Special Districts Member of the Local Agency Formation Commission is hereby extended for 60-days as set forth in Government Code Section 56332(f)(6). Eighteen ballots were received by the close of business on April 27, 2020. The extended voting period will end on June 29, 2020, at 5:00 p.m. If you have already submitted your ballot, there is no need to resubmit -- your ballot will be counted.

The voting instructions for this selection are as follows:

1. Each District may vote for one candidate. The vote shall be cast as directed by the Board of Directors of the District through consideration at a Board Hearing and a roll call vote. A copy of the ballot and the information provided by the candidates is included as an attachment to this letter.
2. The signed original ballot, with the name of each voting Board Member outlined, must be received in the LAFCO Office by 5:00 p.m. on June 29, 2020. If a faxed copy of the ballot is provided by the June 29<sup>th</sup> deadline, the original signed copy must be received by 5:00 p.m. on July 6, 2020, or the ballot will be declared invalid.
3. Twenty-six (26) ballots are required to be received for selection of the Special District position.

The completed ballot is to be mailed to:

Samuel Martinez, Executive Officer  
Local Agency Formation Commission  
1170 West Third Street, Unit 150  
San Bernardino, CA 92415 -0490

If you are faxing a copy of the ballot, the LAFCO fax number is (909) 388-0481. As outlined in Item #2 above, if the ballot is faxed to the LAFCO office, the original signed copy of the ballot will need to be mailed to the above address and received by 5:00 p.m. on July 6, 2020 to be considered in the election.

Please let me know if you have any questions concerning the extension of the selection process. You may contact me at the address listed above, by e-mail at [smartinez@lafco.sbcounty.gov](mailto:smartinez@lafco.sbcounty.gov), or by phone at (909) 388-0480.

Sincerely,

  
SAMUEL MARTINEZ  
Executive Officer

Enclosure

RECEIVED  
APR 29 2020  
YUCAIPA VALLEY  
WATER DISTRICT

**BALLOT****REGULAR SPECIAL DISTRICT MEMBER  
OF THE LOCAL AGENCY FORMATION COMMISSION  
FOR SAN BERNARDINO COUNTY**

The \_\_\_\_\_  
(Name of District)

hereby votes for the marked candidate as indicated below:

**REGULAR SPECIAL DISTRICT MEMBER OF LAFCO:**

\_\_\_\_\_ **KIMBERLY COX (Incumbent -- Member of the Board of  
Directors of the Mojave Water Agency)**

\_\_\_\_\_ **T. MILFORD HARRISON (Member of the Board of  
Directors of San Bernardino Valley Municipal Water District)**

I, \_\_\_\_\_, do hereby certify that at its scheduled meeting  
of \_\_\_\_\_, the Board of Directors voted to elect the above-marked  
candidate as the Regular Special District Member of the Local Agency Formation  
Commission for San Bernardino County, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

\_\_\_\_\_  
District President/Authorized Board Member

Dated: \_\_\_\_\_





13846 Conference Center Drive ♦ Apple Valley, California 92307  
Phone (760) 946-7000 ♦ Fax (760) 240-2642 ♦ [www.mojavewater.org](http://www.mojavewater.org)

March 18, 2020

Dear Special District Member:

I have been honored to represent Special Districts as the Regular Member on the San Bernardino County Local Agency Formation Commission (LAFCO) for over 15 years. This is a unique area of service and it is important that special districts have a knowledgeable seat at the table. For that reason, I would respectfully request your support to continue representing you on LAFCO.

My background includes more than 15 years as an elected official on the Mojave Water Agency, more than 20 years of experience working in local government. As the General Manager of a Community Services District (CSD) that provides water, wastewater and park and recreation services, I have extensive knowledge regarding issues faced by special districts throughout the County. Attached to this letter is a copy of my resume. I have dedicated my life to public service, and it is my hope that you believe I have fairly represented you at LAFCO.

Please feel free to contact me at 760-217-2221 should you have any questions regarding this letter of interest and my desire to continue to represent both large and small special districts on the Local Agency Formation Commission for San Bernardino County.

Thank you for your consideration.

Kind regards,

Kimberly Cox, DPA  
Treasurer/Board Member  
Mojave Water Agency

Contact Info:  
760-217-2221  
kcox@heldreth.com

## KIMBERLY COX, DPA

**EDUCATION**    Doctorate, Public Administration, California Baptist University – 2019  
                      Masters, Public Administration, Cal State San Bernardino – 2004  
                      Bachelor of Science, Business Administration, University of Phoenix – 1999

**PUBLIC SERVICE**    **MOJAVE WATER AGENCY**  
                          *November 2003 – Present*

First elected in 2003. Served in numerous board positions including president, vice-president, Watermaster chair and vice-chair.

**LOCAL AGENCY FORMATION COMMISSION (LAFCO)**

*April 2004 – Present*

Appointed to LAFCO by special districts within San Bernardino County.

**LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD**

*September 2013 – Present*

Received three appointments from Governor Jerry Brown (2013, 2014, 2018)

- MEMBERSHIPS/ ACTIVITIES**
- California Special Districts Association (CSDA) – Current Member
  - Participates in expert working groups including Human Resources; LAFCO; Administration; Legislation
  - American Public Works Association – Current Member
  - Association of California Water Agencies – Current Member
  - American Water Works Association – Current Member
  - California Parks and Recreation Society – Current Member
  - International City/County Management Association – Current Member
  - American Society of Public Administration – Current Member
  - Integrated Waste Management Board (2010-2013, 2016-present) – Special District Representative
  - Zone 4 Flood Commission, Director (2010-2013)
  - San Bernardino County Commission on the Status of Women (2005-2007)
  - Measure I Renewal Task Force (2005)
  - Helendale Chamber of Commerce Board (2004-2006)
  - California WaterReuse Association Board (2003-2005)
  - League of California Cities Public Works Committee (2003-2005)

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WORK **GENERAL MANAGER/HELENDAL COMMUNITY SERVICES DISTRICT**  
EXPERIENCE *February 2007 – Present*

Responsible for administrative activities of an organization considered a "junior city" providing many municipal-level services. Duties include budget development, contract negotiations, oversight of day-to-day service delivery including water, wastewater, solid waste management, park and recreation and street lighting. Implements/revises five-year Capital Improvement Plan. Implements vision and direction of the elected board of directors. Informs board of issues and opportunities. Interfaces with community organizations, government entities and individuals on behalf of the organization.

**SENIOR MANAGEMENT ANALYST – CITY OF VICTORVILLE**

*August 2002 – February 2007*

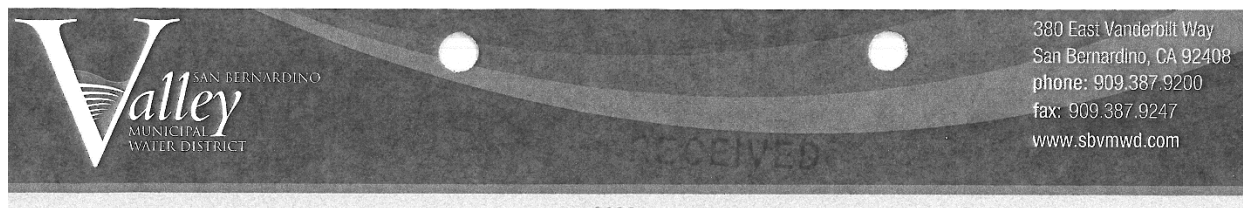
Served in the City Manager's office on special projects (2005-2007) and in Public Works Department (2002-2005) serving as acting director in the director's absence. Provided oversight for 100 staff with operating budget of over \$50 million. Represented the City by attending inter-governmental meetings including the regional wastewater authority, League of California Cities Mountain Desert meetings, San Bernardino Area Governments (renamed SBCTA), and American Public Works Association High Desert Chapter, San Bernardino County Flood Control and local community groups.

**WATER RESOURCE SPECIALIST – CITY OF HESPERIA**

*August 1999 – August 2002*

Represented the City at various organizations such as Mojave Water Agency, Lahontan Regional Water Quality Control Board, Victor Valley Wastewater Reclamation Authority. Monitored regulatory standards, legislation and adjudicatory matters impacting the City's core functions. Developed and implemented public outreach programs with the community and schools providing education and resources. Prepared department budget and participated in inter-governmental work groups.

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March 3, 2020

San Bernardino County Special Districts

Dear Special District Agency Representatives,

Thank you for the privilege of reaching out to you with regard to our Special Districts' representation on the Local Agency Formation Commission (LAFCO). I have received the support of my San Bernardino Valley Municipal Water District (Valley District) Board, to submit my name for your consideration for appointment as Regular Member representing Special Districts on the LAFCO Commission.

LAFCO has a direct impact upon each of our Special Districts as well as other forms of local government. Issues are presented and actions taken which can significantly affect the operations, entitlements and futures of our Districts. Fortunately, Special Districts have the privilege of appointing two of our members to represent us on the Commission and protect our interests.

In addition to my Valley District position I have for the last four years been a Member of our Association of San Bernardino County Special Districts Board (ASBCSD) representing the San Bernardino Valley Water Conservation District and for the last year, Valley District. During this period several of us on the ASBCSD Board have had a growing frustration as to why we receive so few reports from our two LAFCO Special District Commissioners, as to what is occurring each month at LAFCO and how it may affect any or all of our Special Districts.

It is my opinion, and that of a number of other Special District members who have approached me regarding this concern, that our Special District LAFCO representatives should attend each of our Special District monthly membership meetings and report as to what has occurred or is being proposed at LAFCO which may affect any or all of our Districts. In addition, we feel that our representative should reach out to any Special Districts who are directly affected by any LAFCO agenda items. We feel they should also be soliciting the advice of our Members as to what positions the Association recommends on upcoming relevant agenda issues.

I have an extensive background in local government and have been directly involved in several issues upon which LAFCO decisions were critical. My experience includes City, County, regional and Special District positions in the last twenty plus years. I served as a Councilmember and Mayor for the City of Loma Linda, as Executive Director for San Bernardino International Airport and as Chief of Staff for two County Supervisors. My education includes a JD degree from California Southern Law School. I thoroughly enjoy serving on a Special District Board, with our ASBCSD Association and with our State Organization, CSDA, where I serve on the Legislative Committee, as well as Election and By-Laws.

#### Board of Directors and Officers

JUNE HAYES  
Division 1

GIL NAVARRO  
Division 2

SUSAN LONGVILLE  
Division 3

T. MILFORD HARRISON  
Division 4

PAUL R. KIELHOLD  
Division 5

HEATHER DYER  
General Manager



If I am selected by our Association to serve on the LAFCO Commission, I pledge to keep Special Districts informed of LAFCO agendas and initiatives and to represent you to the best of my ability. I will solicit your input on matters affecting any of our individual members and those affecting all Districts.

All of my contact information is listed below and I solicit any advice or input you might provide. I would appreciate your consideration in voting for my appointment to the LAFCO Commission.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'T. Harrison', with a long horizontal flourish extending to the right.

T. Milford Harrison, Board President, San Bernardino Valley Municipal Water District

Cell: 909-645-1731; Email: [milfordharrison@aol.com](mailto:milfordharrison@aol.com);

Personal Mail Address: P.O. Box 966, Linda, CA 92354

# Board Reports and Comments



Yucaipa Valley Water District



## FACTS ABOUT THE YUCAIPA VALLEY WATER DISTRICT

**Service Area Size:** 40 square miles (sphere of influence is 68 square miles)

**Elevation Change:** 3,140 foot elevation change (from 2,044 to 5,184 feet)

**Number of Employees:** 5 elected board members  
72 full time employees

**FY 2019-20 Operating Budget:** Water Division - \$14,455,500  
Sewer Division - \$12,217,712  
Recycled Water Division - \$1,301,447

**Number of Services:** 13,794 drinking water connections serving 19,243 units  
14,104 sewer connections serving 22,774 units  
111 recycled water connections serving 460 units

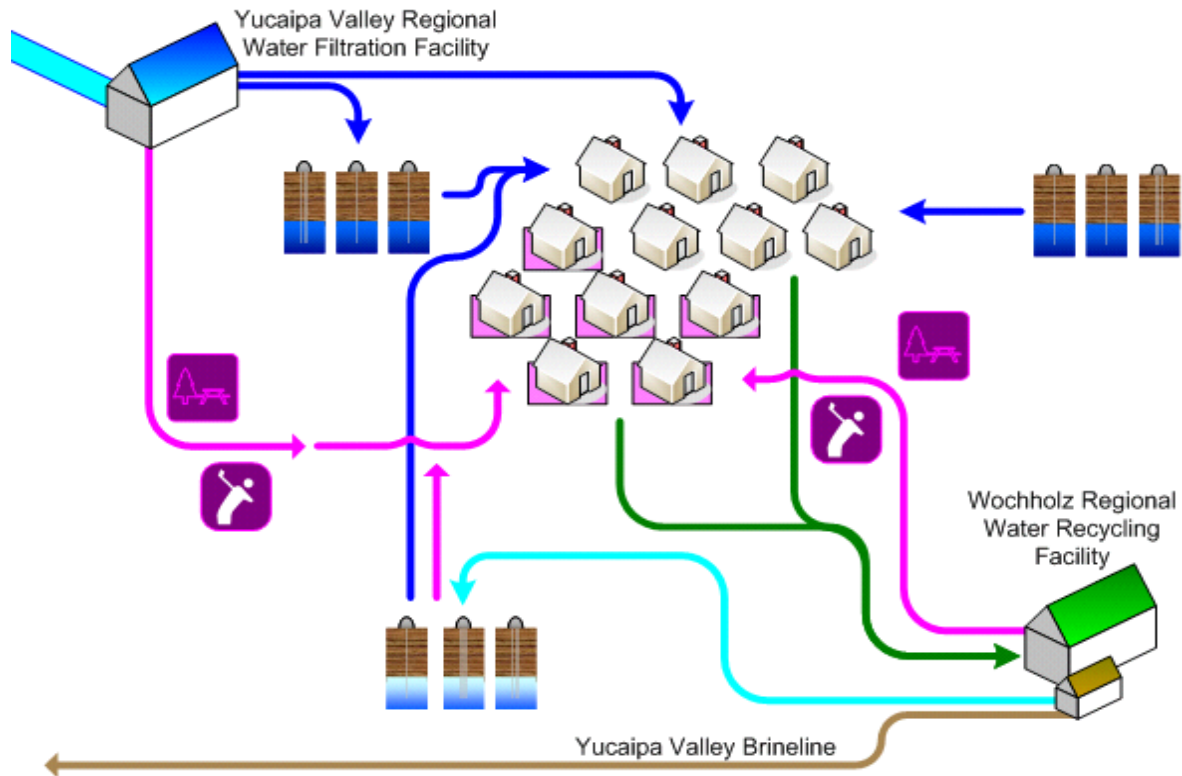
**Water System:** 223 miles of drinking water pipelines  
2,033 fire hydrants  
27 reservoirs - 34 million gallons of storage capacity  
18 pressure zones  
2.958 billion gallon annual drinking water demand  
Two water filtration facilities:  
- 1 mgd at Oak Glen Surface Water Filtration Facility  
- 12 mgd at Yucaipa Valley Regional Water Filtration Facility

**Sewer System:** 8.0 million gallon treatment capacity - current flow at 3.5 mgd  
213 miles of sewer mainlines  
4,504 sewer manholes  
5 sewer lift stations  
1.27 billion gallons of recycled water produced per year

**Recycled Water:** 22 miles of recycled water pipelines  
5 reservoirs - 12 million gallons of storage  
0.681 billion gallon annual recycled water demand

**Brine Disposal:** 2.2 million gallon desalination facility at sewer treatment plant  
1.756 million gallons of Inland Empire Brine Line capacity  
0.595 million gallons of treatment capacity in Orange County

**Sustainability Plan:** A Strategic Plan for a Sustainable Future: The Integration and Preservation of Resources, adopted on August 20, 2008.



### Typical Rates, Fees and Charges:

- **Drinking Water Commodity Charge:**

1,000 gallons to 15,000 gallons	\$1.429 per each 1,000 gallons
16,000 gallons to 60,000 gallons	\$1.919 per each 1,000 gallons
61,000 gallons to 100,000 gallons	\$2.099 per each 1,000 gallons
101,000 gallons or more	\$2.429 per each 1,000 gallons
- **Recycled Water Commodity Charge:**

1,000 gallons or more	\$1.425 per each 1,000 gallons
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- **Water Meter Service Charge (Drinking Water or Recycled Water):**

5/8" x 3/4" Water Meter	\$14.00 per month
1" Water Meter	\$23.38 per month
1-1/2" Water Meter	\$46.62 per month
- **Sewer Collection and Treatment Charge:**

Typical Residential Charge	\$42.43 per month
----------------------------	-------------------

**State Water Contractors:** San Bernardino Valley Municipal Water District  
San Gorgonio Pass Water Agency



	San Bernardino Valley Municipal Water District	San Gorgonio Pass Water Agency
Service Area Size	353 square miles	222 square miles
Table "A" Water Entitlement	102,600 acre feet	17,300 acre feet
Imported Water Rate	\$125.80 / acre foot	\$399 / acre foot
Tax Rates for FY 2019-20	\$0.1425 per \$100	\$0.1775 per \$100
Number of Board Members	Five (5)	Seven (7)
Operating Budget FY 2019-20	\$58,372,000	\$9,551,000

**Imported Water Charges (Pass-through State Water Project Charge)**

- San Bernardino Valley Municipal Water District - Customers in San Bernardino County or City of Yucaipa pay a pass-through amount of \$0.270 per 1,000 gallons.
- San Gorgonio Pass Water Agency - Customers in Riverside County or City of Calimesa pay a pass-through amount of \$0.660 per 1,000 gallons. A proposed rate change to \$0.857 per 1,000 gallons is pending future consideration by YVWD.







## GLOSSARY OF COMMONLY USED TERMS

Every profession has specialized terms which generally evolve to facilitate communication between individuals. The routine use of these terms tends to exclude those who are unfamiliar with the particular specialized language of the group. Sometimes jargon can create communication cause difficulties where professionals in related fields use different terms for the same phenomena.

Below are commonly used water terms and abbreviations with commonly used definitions. If there is any discrepancy in definitions, the District's Regulations Governing Water Service is the final and binding definition.

**Acre Foot of Water** - The volume of water (325,850 gallons, or 43,560 cubic feet) that would cover an area of one acre to a depth of 1 foot.

**Activated-Sludge Process** - A secondary biological wastewater treatment process where bacteria reproduce at a high rate with the introduction of excess air or oxygen and consume dissolved nutrients in the wastewater.

**Annual Water Quality Report** - The document is prepared annually and provides information on water quality, constituents in the water, compliance with drinking water standards and educational material on tap water. It is also referred to as a Consumer Confidence Report (CCR).

**Aquifer** - The natural underground area with layers of porous, water-bearing materials (sand, gravel) capable of yielding a supply of water; see Groundwater basin.

**Backflow** - The reversal of water's normal direction of flow. When water passes through a water meter into a home or business it should not reverse flow back into the water mainline.

**Best Management Practices (BMPs)** - Methods or techniques found to be the most effective and practical means in achieving an objective. Often used in the context of water conservation.

**Biochemical Oxygen Demand (BOD)** - The amount of oxygen used when organic matter undergoes decomposition by microorganisms. Testing for BOD is done to assess the amount of organic matter in water.

**Biosolids** - Biosolids are nutrient rich organic and highly treated solid materials produced by the wastewater treatment process. This high-quality product can be recycled as a soil amendment on farmland or further processed as an earth-like product for commercial and home gardens to improve and maintain fertile soil and stimulate plant growth.

**Capital Improvement Program (CIP)** - Projects for repair, rehabilitation, and replacement of assets. Also includes treatment improvements, additional capacity, and projects for the support facilities.

**Certificate of Participation (COP)** – A type of financing where an investor purchases a share of the lease revenues of a program rather than the bond being secured by those revenues.

**Coliform Bacteria** - A group of bacteria found in the intestines of humans and other animals, but also occasionally found elsewhere used as indicators of sewage pollution. E. coli are the most common bacteria in wastewater.

**Collections System** - In wastewater, it is the system of typically underground pipes that receive and convey sanitary wastewater or storm water.

**Conjunctive Use** - The coordinated management of surface water and groundwater supplies to maximize the yield of the overall water resource. Active conjunctive use uses artificial recharge, where surface water is intentionally percolated or injected into aquifers for later use. Passive conjunctive use is to simply rely on surface water in wet years and use groundwater in dry years.

**Consumer Confidence Report (CCR)** - see Annual Water Quality Report.

**Contaminants of Potential Concern (CPC)** - Pharmaceuticals, hormones, and other organic wastewater contaminants.

**Cross-Connection** - The actual or potential connection between a potable water supply and a non-potable source, where it is possible for a contaminant to enter the drinking water supply.

**Disinfection by-Products (DBPs)** - The category of compounds formed when disinfectants in water systems react with natural organic matter present in the source water supplies. Different disinfectants produce different types or amounts of disinfection byproducts. Disinfection byproducts for which regulations have been established have been identified in drinking water, including trihalomethanes, haloacetic acids, bromate, and chlorite

**Drought** - a period of below average rainfall causing water supply shortages.

**Fire Flow** - The ability to have a sufficient quantity of water available to the distribution system to be delivered through fire hydrants or private fire sprinkler systems.

**Gallons per Capita per Day (GPCD)** - A measurement of the average number of gallons of water use by the number of people served each day in a water system. The calculation is made by dividing the total gallons of water used each day by the total number of people using the water system.

**Groundwater Basin** - An underground body of water or aquifer defined by physical boundaries.

**Groundwater Recharge** - The process of placing water in an aquifer. Can be a naturally occurring process or artificially enhanced.

**Hard Water** - Water having a high concentration of minerals, typically calcium and magnesium ions.

**Hydrologic Cycle** - The process of evaporation of water into the air and its return to earth in the form of precipitation (rain or snow). This process also includes transpiration from plants, percolation into the ground, groundwater movement, and runoff into rivers, streams, and the ocean; see Water cycle.

**Levels of Service (LOS)** - Goals to support environmental and public expectations for performance.

**Mains, Distribution** - A network of pipelines that delivers water (drinking water or recycled water) from transmission mains to residential and commercial properties, usually pipe diameters of 4" to 16".

**Mains, Transmission** - A system of pipelines that deliver water (drinking water or recycled water) from a source of supply the distribution mains, usually pipe diameters of greater than 16".

**Meter** - A device capable of measuring, in either gallons or cubic feet, a quantity of water delivered by the District to a service connection.

**Overdraft** - The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin. This pumping results in a depletion of the groundwater in the basin which has a net effect of lowering the levels of water in the aquifer.

**Pipeline** - Connected piping that carries water, oil, or other liquids. See Mains, Distribution and Mains, Transmission.

**Point of Responsibility, Metered Service** - The connection point at the outlet side of a water meter where a landowner's responsibility for all conditions, maintenance, repairs, use and replacement of water service facilities begins, and the District's responsibility ends.

**Potable Water** - Water that is used for human consumption and regulated by the California Department of Public Health.

**Pressure Reducing Valve** - A device used to reduce the pressure in a domestic water system when the water pressure exceeds desirable levels.

**Pump Station** - A drinking water or recycled water facility where pumps are used to push water up to a higher elevation or different location.

**Reservoir** - A water storage facility where water is stored to be used at a later time for peak demands or emergencies such as fire suppression. Drinking water and recycled water systems will typically use concrete or



steel reservoirs. The State Water Project system considers lakes, such as Shasta Lake and Folsom Lake to be water storage reservoirs.

**Runoff** - Water that travels downward over the earth's surface due to the force of gravity. It includes water running in streams as well as over land.

**Santa Ana River Interceptor (SARI) Line** - A regional brine line designed to convey 30 million gallons per day (MGD) of non-reclaimable wastewater from the upper Santa Ana River basin to Orange County Sanitation District for treatment, use and/or disposal.

**Secondary treatment** - Biological wastewater treatment, particularly the activated-sludge process, where bacteria and other microorganisms consume dissolved nutrients in wastewater.

**Service Connection** - The water piping system connecting a customer's system with a District water main beginning at the outlet side of the point of responsibility, including all plumbing and equipment located on a parcel required for the District's provision of water service to that parcel.

**Sludge** - Untreated solid material created by the treatment of wastewater.

**Smart Irrigation Controller** - A device that automatically adjusts the time and frequency which water is applied to landscaping based on real-time weather such as rainfall, wind, temperature, and humidity.

**South Coast Air Quality Management District (SCAQMD)** - Regional regulatory agency that develops plans and regulations designed to achieve public health standards by reducing emissions from business and industry.

**Special district** - A form of local government created by a local community to meet a specific need. Yucaipa Valley Water District is a County Water District formed pursuant to Section 30000 of the California Water Code

**Supervisory Control and Data Acquisition (SCADA)** - A computerized system which provides the ability to remotely monitor and control water system facilities such as reservoirs, pumps, and other elements of water delivery.

**Surface Water** - Water found in lakes, streams, rivers, oceans, or reservoirs behind dams. In addition to using groundwater, Yucaipa Valley Water District receives surface water from the Oak Glen area.

**Sustainable Groundwater Management Act (SGMA)** - Pursuant to legislation signed by Governor Jerry Brown in 2014, the Sustainable Groundwater Management Act requires water agencies to manage groundwater extractions to not cause undesirable results from over production.

**Transpiration** - The process by which water vapor is released into the atmosphere by living plants.

**Trickling filter** - A biological secondary treatment process in which bacteria and other microorganisms, growing as slime on the surface of rocks or plastic media, consume nutrients in wastewater as it trickles over them.

**Underground Service Alert (USA)** - A free service (<https://www.digalert.org>) that notifies utilities such as water, telephone, cable and sewer companies of pending excavations within the area (dial 8-1-1 at least 2 working days before you dig).

**Urban runoff** - Water from city streets and domestic properties that carry pollutants into the storm drains, rivers, lakes, and oceans.

**Valve** - A device that regulates, directs, or controls the flow of water by opening, closing, or partially obstructing various passageways.

**Wastewater** - Any water that enters the sanitary sewer.

**Water Banking** - The practice of actively storing or exchanging in-lieu surface water supplies in available groundwater basin storage space for later extraction and use by the storing party or for sale or exchange to a third party. Water may be banked as an independent operation or as part of a conjunctive use program.

**Water Cycle** - The continuous movement water from the earth's surface to the atmosphere and back again.

**Water Pressure** - Water pressure is created by the weight and elevation of water and/or generated by pumps that deliver water to customers.

**Water Service Line** - A water service line is used to deliver water from the Yucaipa Valley Water District's mainline distribution system.

**Water table** - the upper surface of the zone of saturation of groundwater in an unconfined aquifer.

**Water transfer** - a transaction, in which a holder of a water right or entitlement voluntarily sells/exchanges to a willing buyer the right to use all or a portion of the water under that water right or entitlement.

**Watershed** - A watershed is the region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

**Water-Wise House Call** - a service which provides a custom evaluation of a customer's indoor and outdoor water use and landscape watering requirements.

**Well** - a hole drilled into the ground to tap an underground aquifer.

**Wetlands** - lands which are fully saturated or under water at least part of the year, like seasonal vernal pools or swamps.





## COMMONLY USED ABBREVIATIONS

AQMD	Air Quality Management District
BOD	Biochemical Oxygen Demand
CARB	California Air Resources Board
CCTV	Closed Circuit Television
CWA	Clean Water Act
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FOG	Fats, Oils, and Grease
GPD	Gallons per day
MGD	Million gallons per day
O & M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
POTW	Publicly Owned Treatment Works
PPM	Parts per million
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana River Inceptor
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District
SCADA	Supervisory Control and Data Acquisition system
SGMA	Sustainable Groundwater Management Act
SSMP	Sanitary Sewer Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WDR	Waste Discharge Requirements
YVWD	Yucaipa Valley Water District