STATE OF ILLINOIS

OFFICE OF THE AUDITOR GENERAL

PERFORMANCE AUDIT
OF

LEGIONNAIRES' DISEASE AT THE QUINCY VETERANS' HOME

MARCH 2019

FRANK J. MAUTINO

AUDITOR GENERAL

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OFFICE OF THE AUDITOR GENERAL
FRANK J. MAUTINO

To the Legislative Audit Commission, the Speaker and Minority Leader of the House of Representatives, the President and Minority Leader of the Senate, the members of the General Assembly, and the Governor:

This is our report of the performance audit of Legionnaires' Disease at the Quincy Veterans' Home, which includes a review of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home.

The audit was conducted pursuant to Senate Resolution Number 1186. This audit was conducted in accordance with generally accepted government auditing standards and the audit standards promulgated by the Office of the Auditor General at 74 Ill. Adm. Code 420.310.

The audit report is transmitted in conformance with Section 3-14 of the Illinois State Auditing Act.

SIGNED ORIGINAL ON FILE

Frank J. Mautino
Auditor General

Springfield, Illinois
March 2019

STATE OF ILLINOIS
OFFICE OF THE
AUDITOR GENERAL
Frank J. Mautino, Auditor General

REPORT DIGEST

PERFORMANCE AUDIT

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EXECUTIVE SUMMARY

Legionnaires' Disease at the Quincy Veterans' Home

On February 15, 2018, Senate Resolution Number 1186 was adopted and directed the Office of the Auditor General to conduct a performance audit of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home (see Appendix A). The audit found:

- In addition to the 57 legionella cases at the Quincy Veterans' Home in 2015, there were numerous residents and staff sick during the first legionella outbreak; in total, 220 residents and staff were sick in August and September 2015.
- Although there was confirmation of a second case of Legionnaires' disease at the Home on August 21, 2015, there was limited notification or specific procedures provided to the nursing staff necessary to protect residents or employees until guidelines for water restrictions were provided on August 27, 2015.
- Auditors determined that the Quincy Veterans' Home did not have documentation to support increased monitoring of residents until after the residents exhibited the onset of the Legionnaires' disease symptoms. Although Home officials stated that skilled care residents were monitored every four hours and independent care residents were monitored twice daily beginning on August 22, 2015, there was no documentation to support that a directive was provided to the nursing staff or whether it was followed.
- The Illinois Department of Public Health (IDPH) did not go on-site at Quincy Veterans' Home until midday on Monday, August 24th. That was nearly three days (approximately 67 hours) after the 2nd case was confirmed late in the afternoon on August 21st. The site visit focused on one building where the two confirmed cases were located.
- On Wednesday, August 26th, five days after the identification of the initial outbreak, IDPH officials met with Quincy Veterans' Home officials and found that the "central hot water tank may be associated with [the] outbreak." It was learned that hot water tank number 2 was out of service since the beginning of July 2015 due to a valve issue and was unheated until it was cycled back into service on August 6, 2015. Following that discovery, IDPH began recommending water restrictions and remediation of the potable water system.
- During the 2015 outbreak, auditors determined that there was limited communication between IDPH and the Quincy Veterans' Home staff. IDPH officials often did not know the seriousness of the problem at the Quincy Veterans' Home.
- As of June 30, 2018, the State has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since the initial outbreak in August 2015.
- In December 2015, the Centers for Disease Control and Prevention (CDC) recommended point-of-use filter installation on **all** fixtures fed from the potable hot-water system. Filters were not installed on **all** fixtures other than the showers until after the February 2018 outbreak, in April 2018.
- The response by IDVA to the February 2018 outbreak was more timely and informative than after the other three outbreaks in 2015, 2016, and 2017.

AUDIT SUMMARY AND RESULTS

Legionnaires' disease is a serious disease especially for the residents at a nursing facility. According to the Centers for Disease Control and Prevention (CDC), 1 in 4 that get the disease in a healthcare facility will die. The disease also is more serious in populations 50 years old or greater. There have been numerous cases of legionellosis at the Illinois Veterans' Home at Quincy since July 2015. According to Illinois Department of Veterans' Affairs' (IDVA) officials, there were no known cases of legionellosis at the Quincy Veterans' Home prior to the 2015 outbreak. Since the 2015 outbreak, 66 residents and 8 employees/volunteers have tested positive for legionellosis and 13 related resident deaths occurred.

Legionnaires' disease is a serious disease especially for the residents at a nursing facility. According to the Centers for Disease Control and Prevention (CDC), 1 in 4 that get the disease in a healthcare facility will die.

In addition to the legionella cases at the Quincy Veterans' Home in 2015, there were numerous residents and staff sick during the first legionella outbreak. According to documentation provided by IDVA, in total, 220 residents and staff, including those with legionellosis, were sick in August and September 2015. Of those who were sick, there were 57 residents and staff who tested positive for legionellosis and 101 who tested negative. The majority of the illnesses, 191 of 220 (87%), were reported between August 21, 2015, and September 10, 2015.

Outbreak Response

Due to the seriousness of the disease, especially with the at-risk population at the Quincy Veterans' Home, auditors identified the following issues with the initial response in 2015 by the Illinois Department of Public Health (IDPH) and IDVA once the 2nd case was confirmed on August 21, 2015:

Until August 27, 2015, there was limited notification or specific procedures provided to the nursing staff at the Quincy Veterans' Home that were necessary to protect residents or employees. This was six days following confirmation of the 2nd case.

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Although Quincy Veterans' Home officials stated that skilled care residents were monitored every four hours and independent care residents were monitored twice daily beginning on August 22, 2015, there was no documentation to support that a directive was provided to the nursing staff or whether it was followed.

- Auditors determined that the Quincy Veterans' Home did not have documentation to support increased monitoring of residents until after the residents exhibited the onset of the Legionnaires' disease symptoms. Although Quincy Veterans' Home officials stated that skilled care residents were monitored every four hours and independent care residents were monitored twice daily beginning on August 22, 2015, there was no documentation to support that a directive was provided to the nursing staff or whether it was followed. Additionally, auditors reviewed the medical records for the 45 residents who had disease onset after August 21, and found that none received increased monitoring prior to the onset of symptoms;
- IDPH did not go on-site at Quincy Veterans' Home until midday on Monday, August 24. That was nearly 3 days (approximately 67 hours) after the 2nd case was confirmed late in the afternoon on August 21st. The site visit focused on one building where the two confirmed cases were located;
- On Wednesday, August 26, the site visit continued again around midday. This was five days after the identification of the initial outbreak. Based

on our review of documents and emails, IDPH met with Quincy Veterans' Home officials and found that the "central hot water tank may be associated with [the] outbreak." It was learned that hot water tank number 2 was out of service and sat unheated since the beginning of July 2015 due to a valve issue. The tank was heated and was cycled back into service on August 6, 2015. Following that discovery, IDPH began recommending water restrictions and remediation of the potable water system;

In December 2015, the CDC recommended point-of-use filter installation on all fixtures fed from the potable hot-water system. Filters were not installed on all fixtures other than the showers until after the February 2018 outbreak, in April 2018.

- Based on our review of communications between IDPH and the Quincy Veterans' Home, auditors determined that there was limited communication between IDPH management and the Quincy Veterans' Home staff. As identified in our timeline in Chapter 2, IDPH officials often did not know the seriousness of the problem at the Quincy Veterans' Home; and
- In December 2015, the CDC recommended point-of-use filter installation on **all** fixtures fed from the potable hot-water system. Filters were not installed on **all** fixtures other than the showers until after the February 2018 outbreak, in April 2018.

The response by IDVA to the February 2018 outbreak was more timely and informative than after the other three outbreaks in 2015, 2016, and 2017.

Timeline of Initial Response

The following are some highlighted key events that occurred in relation to the initial response after the notification of the outbreak in the late afternoon of August 21, 2015:

- **August 21, 2015** -guidance is provided to the Quincy Veterans' Home from IDPH to have a heightened awareness of respiratory deterioration, or fever/cough at this time; turn off the outdoor fountains; keep the windows in the Elmore building closed (the initial two residents both lived in the Elmore building); and use bathing facilities other than the areas that were used by the two residents who tested positive.
- **August 22, 2015** -the Adams County Health Department visits the Home to take pictures of the cooling tower;
- **August 23, 2015** -the Adams County Health Department interviews residents who became ill over the weekend;
- **August 24, 2015** -IDPH arrives on-site at midday to begin its initial site visit;
- **August 26, 2015** -IDPH arrives on-site around midday for a second day and it is determined there was an issue with the campus-wide potable water system;
- **August 27, 2015** -The Quincy Veterans' Home provides nursing staff with guidelines for water restrictions;
- **August 28, 2015** -Contractor begins cleaning of the Quincy Veterans' Home cooling tower;
- **September 1, 2015** -The CDC arrives for site visit;

- **September 9, 2015** -The IDVA contractor begins disinfecting the Quincy Veterans' Home potable water system; and
- **September 18, 2015** -The Quincy Veterans' Home begins installation of point-of-use water filters on showers and tubs.

A more detailed timeline of events can be found in Chapter 2 of this report or can be viewed at: https://www.auditor.illinois.gov/.

Infrastructure Improvements

According to CDC site visit reports, the water system at the Quincy Veterans' Home was very complex. The infrastructure was old and has had several major water utility upgrades and construction projects since it was established in 1886. The reports also identified several reasons/issues associated with legionella growth present at the Quincy Veterans' Home.

IDPH worked in conjunction with the CDC and the Adams County Health Department to respond to the outbreak. On September 29, 2015, the Quincy Veterans' Home requested that the Capital Development Board procure an emergency contract to implement infrastructure changes to prevent the further spread of Legionnaires' disease. As a result, in 2016, two major infrastructure projects were completed. First, the hot water system was decentralized allowing for appropriate hot water temperatures needed to control legionella. Second, the on-site chemical treatment facility was completed to ensure appropriate disinfectant levels were maintained at the Quincy Veterans' Home. The water treatment facility was completed in June 2016.

Legionella Outbreak Costs

As of June 30, 2018, the State has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since the initial outbreak in August 2015.

The remediation efforts related to the outbreak at the Quincy Veterans' Home were paid for through emergency purchase funds utilized by the Illinois Environmental Protection Agency, the Capital Development Board, and IDVA. As of June 30, 2018, the State has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since the initial outbreak in August 2015.

The largest amounts were paid to the plumbing contractor who completed the construction efforts for the infrastructure improvements ($5.70 million) and to the water testing vendor ($1.35 million). In addition to the payments for infrastructure improvements, the Sycamore Nursing Home in Quincy was purchased on June 5, 2018, for $630,000. This vacant nursing home, now named Lester Hammond Hall, was purchased to renovate for additional skilled care as part of the Quincy Veterans' Home.

Monitoring and Training at the Quincy Veterans' Home

The main improvements at the Quincy Veterans' Home consisted of installing decentralized hot water heaters in each building and the installation of a new water treatment facility.

The main improvements at the Quincy Veterans' Home consisted of installing decentralized hot water heaters in each building and the installation of a new water treatment facility. Therefore, auditors determined that monitoring efforts mainly consisted of some form of water monitoring and testing.

Water monitoring and testing after the initial outbreak was conducted by Bainter Environmental and by Phigenics, LLC. Bainter is a licensed water

operator and was also contracted in September 2015 to be in charge of all water operations. This eventually included performing the daily operational duties of the new water treatment plant once it was completed in June 2016. Bi-weekly water testing for legionella began in October 2015, by Phigenics.

According to documentation provided by IDVA, there were no legionella policies in place and there had been no training on legionella prior to the 2015 outbreak at the Quincy Veterans' Home.

According to documentation provided by IDVA, there were no legionella policies in place and there had been no training on legionella prior to the 2015 outbreak at the Quincy Veterans' Home. According to IDVA, there was no State or federal requirement to test for legionella. IDVA stated the first Legionnaires' disease training occurred on August 26, 2015, which was five days after the identification of the outbreak. Prior to training, staff were provided with little information on the disease, other than information discussing handwashing etiquette.

When asked about operating protocols and training provided to the Quincy Veterans' Home staff following the 2015 outbreak, auditors were provided with a Legionella Policy that was developed in August 2016. The Quincy Veterans' Home required annual training for its staff in 2016, 2017, and 2018.

Residential Care Reviews

The Quincy Veterans' Home has undergone several reviews since the initial outbreak in August 2015. IDPH, the U.S. Department of Veterans Affairs, and the CDC have released multiple reports, surveys, and reviews related to the Quincy Veterans' Home.

The CDC was on-site at the Quincy Veterans' Home in 2015, 2016, 2017, and 2018 and released four reports that contained recommendations to remediate the legionella at the Quincy Veterans' Home. It did not appear from the reports that specific resident care reviews were conducted.

Resident care reviews by IDPH were conducted in December 2015 and October 2017. In 2015, there were concerns noted that filters were plugged up causing low water pressure. Shower frequency was also a focus area for surveyors. In 2017, no issues were identified related to legionella.

There were reviews conducted by the U.S. Department of Veterans Affairs in October 2015, 2016, and 2017. Only in 2015 were any issues identified, and none of the areas were directly related to the water system or legionella.

BACKGROUND

Senate Resolution Number 1186 was adopted on February 15, 2018, and directed the Office of the Auditor General to conduct a performance audit of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home. The Resolution contained six determinations directing auditors to review:

1) The responses of IDVA to the outbreaks of Legionnaires' disease in 2015, 2016, and 2017, including the recommendations made in the 2015 study by the Centers for Disease Control and the Department's actions to address those recommendations.

2) The type, cost, and timing of any infrastructure or other building improvements intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence.

3) The nature of changes made by the Department in operating protocols and staff training thereon, intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence.

4) The nature and extent of monitoring conducted by the Department to determine whether the improvements and protocols put in place are effective to ensure the safety of residents and staff at the Quincy Veterans' Home.

5) The amount of State moneys received and the amount of State moneys expended by the Department or any other State agency during State fiscal years 2015, 2016, 2017, and 2018, for infrastructure improvement, monitoring, and other measures taken to address the Legionnaires' disease outbreaks.

6) To the extent information is available, whether the Quincy Veterans' Home has been the subject of any reviews since 2015 to determine its compliance with applicable laws and regulations with regard to the care of its residents and, if so, the results of those reviews.

LEGIONNAIRES' DISEASE AT THE QUINCY VETERANS' HOME

The Veterans' Home in Quincy, Illinois was established in 1886 and is currently the oldest licensed veterans' home in the State of Illinois and is situated on 210 acres with independent utilities, including water, maintained on-site by the Home. At its peak in the early 1900s, over 1,600 people were housed at the facility. Today the facility houses approximately 400 individuals.

Many of the optimal conditions for legionella growth were found at the Quincy Veterans' Home. These include the presence of biofilm, scale, and sediment.

Many of the optimal conditions for legionella growth were found at the Quincy Veterans' Home. These include the presence of biofilm, scale, and sediment. The CDC also determined that the Quincy Veterans' Home had "sub-optimal" hot water holding temperature throughout the entire campus, inadequate disinfectant levels sustained in the facility's potable water system, and dead-end lines and opportunities for water stagnation and irregular flow.

According to the CDC, Legionnaires' disease is a type of pneumonia caused by bacteria called legionella that live in water. The legionella bacteria can make individuals sick when contaminated water vapor is inhaled. Legionnaires' disease cannot be contracted through drinking contaminated water or by person-to-person contact.

According to the CDC, legionella in man-made water systems can amplify and be transmitted by aerosolized water droplets from whirlpool tubs/spas, showerheads, decorative fountains, cooling towers, and "rarely" via aspiration of water.

Legionnaires' Disease

According to the CDC, Legionnaires' disease is a type of pneumonia caused by bacteria called legionella that live in water. The legionella bacteria can make individuals sick when contaminated water vapor is inhaled. Legionnaires' disease cannot be contracted through drinking contaminated water or by person-to-person contact. One issue that may have led to the number of residents sick at the Quincy Veterans' Home was the time it takes for the onset of symptoms. According to the CDC, symptom onset occurs

anywhere from 2 to10 days after exposure. The CDC also notes that in rare cases, onset can be as long as 19 days.

System Disruption at Quincy Veterans' Home in 2015

The CDC reported a system disruption occurred during July 2015. The report noted that one of the two boilers was taken offline for approximately 30 days. The water was not drained and was later heated to 120 degrees Fahrenheit before being released through the closed hot water distribution system on August 6, 2015. Given that 120 degrees Fahrenheit is not hot enough to kill legionella bacteria (140 degrees Fahrenheit minimum is needed to kill legionella in most environments), and the water was released back into the hot water loop, which was the source of **all hot water to all residential buildings**, this appears to be the likely cause of the initial outbreak. Additionally, with the long incubation period for the onset of symptoms (up to 19 days), this is in line with the timeframe for the peak of the outbreak.

Legionella Preparedness

According to IDVA officials, there had been no known cases of legionellosis at the Quincy Veterans' Home prior to the August 2015 outbreak. As a result, there was no routine water testing for legionella. Additionally, there was no water management plan or specific legionella plan in place prior to the 2015 outbreak. Finally, the Quincy Veterans' Home engineering staff had no experience or training with legionella prevention or remediation.

Cases of Legionnaires' Disease at the Quincy Veterans' Home

There have been numerous separate outbreaks of legionellosis at the Quincy Veterans' Home since July 2015. Since the 2015 outbreak, **66 residents and 8 employees/volunteers have tested positive for legionellosis and 13 related resident deaths occurred**. The time periods for onset of the disease were as follows:

Since the 2015 outbreak, 66 residents and 8 employees/volunteers have tested positive for legionellosis and 13 related resident deaths occurred.

1. From July 28, 2015 to September 21, 2015, **51 residents and 6 employees or volunteers** tested positive for the disease during the first outbreak. There were **12 resident deaths** associated with the 2015 outbreak.
2. From March 1, 2016 to April 1, 2016, **2 volunteers** tested positive for the disease. No deaths occurred.
3. From July 14, 2016 to December 10, 2016, **6 residents** tested positive. No deaths occurred.
4. From May 22, 2017 to November 19, 2017, **5 residents** tested positive. There was **one resident death** associated with the 2017 outbreak.
5. From February 8, 2018 to February 15, 2018, **4 residents** tested positive. No deaths resulted from the February 2018 outbreak.

According to IDVA officials, as of December 2018, there have been no cases of legionellosis after the four confirmed cases in February 2018. This was likely due to the installation of point-of-use water filters on every sink,

faucet, drinking fountain, and ice machine throughout the campus following the February 2018 outbreak.

OUTBREAK COSTS

As shown in Digest Exhibit 1, the State so far has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since August 2015. This includes expenditures for various infrastructure projects, consulting, water testing, and other general expenses to help stop the spread of the disease such as bottled water and cleaning supplies. A large portion of these expenses were paid to two contractors for design and construction using Illinois Environmental Protection Agency (IEPA) funds after Emergency Purchase Affidavits were filed by the Capital Development Board.

As of June 30, 2018 (the end of fiscal year 2018), the Capital Development Board and the IEPA expended just over $6.6 million since the outbreak began in August 2015. IDVA costs were significantly lower at $3.02 million.

Digest Exhibit 1
COSTS FOR LEGIONELLA REMEDIATION AT THE QUINCY VETERANS' HOME
For Fiscal Years 2016 through 2018

	FY16	FY17	FY18	Totals
CDB/IEPA	$2,699,326.34	$3,693,604.90	$209,930.30	**$6,602,861.54**
IDVA	$1,181,823.91	$639,878.14	$1,201,154.03	**$3,022,856.08**
Totals[1]	**$3,881,150.25**	**$4,333,483.04**	**$1,411,084.33**	**$9,625,717.62**

Note: [1] Does not include purchase of Sycamore Nursing Home, the federal reimbursement received by the Capital Development Board, or increased water costs at the Quincy Veterans' Home due to its flushing efforts.

Source: Information provided by CDB and IDVA.

The remediation efforts related to the outbreak at the Quincy Veterans' Home were paid for through emergency purchase funds utilized by the Capital Development Board, IEPA, and IDVA. As of June 30, 2018 (the end of fiscal year 2018), the Capital Development Board and the IEPA expended just over $6.6 million since the outbreak began in August 2015. IDVA costs were significantly lower at $3.02 million.

AUDIT RECOMMENDATIONS

The audit report contains four recommendations. Two of the recommendations were directed to both the Department of Veterans' Affairs and the Department of Public Health. One recommendation was directed specifically to the Department of Public Health and one to the Department of Veterans' Affairs. Both Veterans' Affairs and Public Health generally agreed with the recommendations. The complete responses from the agencies are included in this report as Appendix C.

The audit recommends the following:

1. The Illinois Department of Veterans' Affairs and the Illinois Department of Public Health should ensure that once a legionella outbreak is confirmed at a State Veterans' Home, nursing staff and caregivers are given the necessary instructions and guidelines in a timely manner to

limit exposure to aerosolized water in order to protect both the staff and residents from contracting Legionnaires' disease.

2. The Illinois Department of Veterans' Affairs should develop resident monitoring protocols for use during suspected legionella outbreaks at State Veterans' homes to ensure timely diagnosis and treatment of Legionnaires' disease.
3. The Illinois Department of Public Health should:
    - revisit its policies and determine what response timeframe is adequate to conduct on-site monitoring visits in response to a confirmed disease outbreak such as Legionnaires' disease; and
    - increase communication with the facility's staff during future outbreaks to ensure that IDPH is aware of the severity of the outbreak.
4. The Illinois Department of Public Health and the Illinois Department of Veterans' Affairs should ensure the State facilities, such as the Quincy Veterans' Home, implement all recommendations from the Centers for Disease Control following confirmed outbreaks such as Legionnaires' disease.

This performance audit was conducted by the staff of the Office of the Auditor General.

SIGNED ORIGINAL ON FILE

Joe Butcher
Division Assistant Director

This report is transmitted in accordance with Section 3-14 of the Illinois State Auditing Act.

SIGNED ORIGINAL ON FILE

FRANK J. MAUTINO
Auditor General

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GLOSSARY OF TERMS

Backflow Prevention – Plumbing devices or practices which allow the flow of water in only one direction for the purpose of preventing reverse flow or contamination of potable water.

Biofilm – 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.

Cooling Tower – A mechanical apparatus designed to provide evaporation-cooled process water to support building cooling systems. This apparatus utilizes high volume fans to promote evaporation.

Dead end or dead leg water distribution lines – Piping that is subject to low or no flow due to design or decreased water use such as capped pipes or unused fixtures.

Disease Onset – The first day a person begins to show symptoms or when symptoms become more severe.

Domiciliary – A residential setting that requires minimal medical attention.

Hot Water Tank – Water tank used for storing hot water for domestic use.

Legionellosis – The collective term for diseases caused by pathogenic species of Legionella (Legionnaires' disease, Pontiac Fever).

Legionnaires' Disease – A serious type of pneumonia caused by bacteria called Legionella. Legionella occurs naturally in fresh water environments, but can become a health concern when it grows and spreads in building water systems.

Legionnaires' Disease Outbreak – According to the CDC, an outbreak occurs when two or more people are exposed to Legionella in the same place and get sick at about the same time.

PCR Testing – A test used to detect bacterial genetic material.

Point-of-Use Filter – Filters specifically designed for use in preventing the passage of Legionella bacteria fitted to water outlets (e.g. showers or faucets).

Potable Water – Water that meets drinking water quality standards and is suitable for human consumption or culinary use.

Pontiac Fever – Flu-like illness caused by Legionella without pneumonia.

Sediment – Particulate matter that settles out of a liquid and collects in the bottom of a pipe or tank.

GLOSSARY OF TERMS

Skilled Nursing Care – Refers to a specific level of medical care based upon patient need for care or treatment that can only be done by licensed nurses.

Urine Antigen Test – Refers to a rapid diagnostic test used to detect Legionella pneumophila antigens in urine.

Water Tower – A vessel elevated above the highest point in a water distribution system which provides storage and static pressure to a water distribution system.

Chapter One

INTRODUCTION AND BACKGROUND

REPORT CONCLUSIONS

Legionnaires' disease is a serious disease especially for the residents at a nursing facility. According to the Centers for Disease Control and Prevention (CDC), 1 in 4 that get the disease in a healthcare facility will die. The disease also is more serious in populations 50 years old or greater. There have been numerous cases of legionellosis at the Illinois Veterans' Home at Quincy since July 2015. According to Illinois Department of Veterans' Affairs (IDVA) officials, there were no known cases of legionellosis at the Quincy Veterans' Home prior to the 2015 outbreak. Since the 2015 outbreak, 66 residents and 8 employees/volunteers have tested positive for legionellosis and 13 related resident deaths occurred.

In addition to the legionella cases at the Quincy Veterans' Home in 2015, there were numerous residents and staff sick during the first legionella outbreak. According to documentation provided by IDVA; in total, 220 residents and staff, including those with legionellosis, were sick in August and September 2015. Of those who were sick, there were 57 residents and staff who tested positive for legionellosis and 101 who tested negative. The majority of the illnesses, 191 of 220 (87%), were reported between August 21, 2015, and September 10, 2015.

Senate Resolution Number 1186 was adopted on February 15, 2018, and directed the Office of the Auditor General to conduct a performance audit of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home.

Initial Outbreak Response

The following are some highlighted key events that occurred in relation to the initial response after the notification of the outbreak in the late afternoon of August 21, 2015:

- **August 21, 2015** -guidance is provided to the Quincy Veterans' Home from the Illinois Department of Public Health (IDPH) to have a heightened awareness of respiratory deterioration, or fever/cough at this time; turn off the outdoor fountains; keep the windows in the Elmore building closed (the initial two residents both lived in the Elmore building); and use bathing facilities other than the areas that were used by the two residents who tested positive.
- **August 22, 2015** -the Adams County Health Department visits the Home to take pictures of the cooling tower;
- **August 23, 2015** -the Adams County Health Department interviews residents who became ill over the weekend;

- **August 24, 2015** -IDPH arrives on-site at midday to begin its initial site visit;
- **August 26, 2015** -IDPH arrives on-site around midday for a second day and it is determined there was an issue with the campus-wide potable water system;
- **August 27, 2015** -The Quincy Veterans' Home provides nursing staff with guidelines for water restrictions;
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- **September 9, 2015** -The IDVA contractor begins disinfecting the Quincy Veterans' Home potable water system; and
- **September 18, 2015** -The Quincy Veterans' Home begins installation of point-of-use water filters on showers and tubs.

Due to the seriousness of the disease, especially with the at-risk population at the Quincy Veterans' Home, auditors identified the following issues with the initial response in 2015 by IDPH and IDVA:

- On August 21, 2015, IDPH received confirmation of the 2nd case of legionellosis at the Quincy Veterans' Home;

- Until August 27, 2015, there was limited notification or specific procedures provided to the nursing staff at the Quincy Veterans' Home that were necessary to protect residents or employees. This was six days following confirmation of the 2nd case;

- Auditors determined that the Quincy Veterans' Home did not have documentation to support increased monitoring of residents until after the residents exhibited the onset of the Legionnaires' disease symptoms. Although Quincy Veterans' Home officials stated that skilled care residents were monitored every four hours and independent care residents were monitored twice daily beginning on August 22, 2015, no documentation to support the directive was provided. Additionally, auditors reviewed the medical records for the 45 residents who had disease onset after August 21, and found that none received increased monitoring prior to the onset of symptoms;

- IDPH did not go on-site at Quincy Veterans' Home until midday on Monday, August 24. That was nearly 3 days (approximately 67 hours) after the 2nd case was confirmed late in the afternoon on August 21st. The site visit focused on one building where the two confirmed cases were located;

- On Wednesday, August 26, the site visit continued again around midday. This was five days after the identification of the initial outbreak. Based on our review of documents and emails, IDPH met with Quincy Veterans' Home officials and found that the "central hot water tank may be associated with [the] outbreak." It was learned that hot water tank number 2 was out of service and sat unheated since the

beginning of July 2015 due to a valve issue. The tank was heated and cycled back into service on August 6, 2015; and

- Based on our review of communications between IDPH and the Quincy Veterans' Home, auditors determined that there was limited communication between IDPH management and the Quincy Veterans' Home staff. As identified in our timeline, IDPH officials often did not know the seriousness of the problem at the Quincy Veterans' Home.

The response by IDVA to the February 2018 outbreak was more timely and informative than after the other three outbreaks in 2015, 2016, and 2017.

Infrastructure Improvements

According to CDC site visit reports, the water system at the Quincy Veterans' Home was very complex. The infrastructure was old and has had several major water utility upgrades and construction projects since it was established in 1886. The reports also identified several reasons/issues associated with legionella growth present at the Quincy Veterans' Home.

IDPH worked in conjunction with the CDC and the Adams County Health Department to respond to the outbreak. On September 29, 2015, the Quincy Veterans' Home requested that the Capital Development Board procure an emergency contract to implement infrastructure changes to prevent the further spread of Legionnaires' disease. As a result, in 2016, two major infrastructure projects were completed. First, the hot water system was decentralized allowing for appropriate hot water temperatures needed to control legionella. Second, the on-site chemical treatment facility was completed to ensure appropriate disinfectant levels were maintained at the Quincy Veterans' Home. The water treatment facility was completed in June 2016.

Legionella Outbreak Costs

The remediation efforts related to the outbreak at the Quincy Veterans' Home were paid for through emergency purchase funds utilized by the Illinois Environmental Protection Agency, the Capital Development Board, and IDVA. As of June 30, 2018, the State has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since the initial outbreak in August 2015.

The largest amounts were paid to the plumbing contractor who completed the construction efforts for the infrastructure improvements ($5.70 million) and to the water testing vendor ($1.35 million). In addition to the payments for infrastructure improvements, the Sycamore Nursing Home in Quincy was purchased on June 5, 2018, for $630,000. This vacant nursing home, now named Lester Hammond Hall, was purchased to renovate for additional skilled care as part of the Quincy Veterans' Home.

Monitoring and Training at the Quincy Veterans' Home

The main improvements at the Quincy Veterans' Home consisted of installing decentralized hot water heaters in each building and the installation of a new water treatment

facility. Therefore, auditors determined that monitoring efforts mainly consisted of some form of water monitoring and testing.

Water monitoring and testing after the initial outbreak was conducted by Bainter Environmental and by Phigenics, LLC. Bainter is a licensed water operator and was also contracted in September 2015 to be in charge of all water operations. This eventually included performing the daily operational duties of the new water treatment plant once it was completed in June 2016. Bi-weekly water testing for legionella began in October 2015, by Phigenics.

According to documentation provided by IDVA, there were no legionella policies in place and there had been no training on legionella prior to the 2015 outbreak at the Quincy Veterans' Home. According to IDVA, there was no State or federal requirement to test for legionella. IDVA stated the first Legionnaires' disease training occurred on August 26, 2015, which was five days after the identification of the outbreak. Prior to training, staff were provided with little information on the disease, other than information discussing handwashing etiquette.

When asked about operating protocols and training provided to the Quincy Veterans' Home staff following the 2015 outbreak, auditors were provided with a Legionella Policy that was developed in August 2016. The Quincy Veterans' Home required annual training for its staff in 2016, 2017, and 2018.

Residential Care Reviews

The Quincy Veterans' Home has undergone several reviews since the initial outbreak in August 2015. IDPH, the U.S. Department of Veterans Affairs, and the CDC have released multiple reports, surveys, and reviews related to the Quincy Veterans' Home.

The CDC was on-site at the Quincy Veterans' Home in 2015, 2016, 2017, and 2018 and released four reports that contained recommendations to remediate the legionella at the Quincy Veterans' Home. It did not appear from the reports that specific resident care reviews were conducted.

Resident care reviews by IDPH were conducted in December 2015 and October 2017. In 2015, there were concerns noted that filters were plugged up causing low water pressure. Shower frequency was also a focus area for surveyors. In 2017, no issues were identified related to legionella.

There were reviews conducted by the U.S. Department of Veterans Affairs in October 2015, 2016, and 2017. Only in 2015 were any issues identified, and none of the areas were directly related to the water system or legionella.

INTRODUCTION

Senate Resolution Number 1186 was adopted on February 15, 2018, and directed the Office of the Auditor General to conduct a performance audit of the Illinois Department of Veterans' Affairs' management of the Legionnaires' disease outbreaks at the Quincy Veterans' Home. The Resolution contained six determinations directing auditors to review:

1) The responses of IDVA to the outbreaks of Legionnaires' disease in 2015, 2016, and 2017, including the recommendations made in the 2015 study by the Centers for Disease Control and the Department's actions to address those recommendations.

2) The type, cost, and timing of any infrastructure or other building improvements intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence.

3) The nature of changes made by the Department in operating protocols and staff training thereon, intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence.

4) The nature and extent of monitoring conducted by the Department to determine whether the improvements and protocols put in place are effective to ensure the safety of residents and staff at the Quincy Veterans' Home.

5) The amount of State moneys received and the amount of State moneys expended by the Department or any other State agency during State fiscal years 2015, 2016, 2017, and 2018, for infrastructure improvement, monitoring, and other measures taken to address the Legionnaires' disease outbreaks.

6) To the extent information is available, whether the Quincy Veterans' Home has been the subject of any reviews since 2015 to determine its compliance with applicable laws and regulations with regard to the care of its residents and, if so, the results of those reviews.

This performance audit was conducted in accordance with generally accepted government auditing standards and the audit standards promulgated by the Office of the Auditor General at 74 Ill. Adm. Code 420.310.

Audit standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives found in Senate Resolution Number 1186. Appendix B includes the audit scope and methodology used while conducting this audit.

QUINCY VETERANS' HOME

The Veterans' Home in Quincy, Illinois was established in 1886 to function as a facility to house disabled and injured veterans of the Mexican and Civil Wars and their families. It was originally called the Illinois Soldiers' and Sailors' Home until 1973, when the name was changed to the Illinois Veterans' Home at Quincy. The Quincy Veterans' Home is currently the oldest licensed veterans' home in the State of Illinois and is situated on 210 acres with independent utilities, including water, maintained on-site by the Home. Although the facility was established in 1886, several of the operating buildings that are used to house residents were built after 1950. The Fifer infirmary is the newest building and was built in 2002.

The Quincy Veterans' Home has domiciliary, skilled nursing care, and two Alzheimer's units. There are several buildings to rehabilitate and house individuals of different abilities. The Quincy Veterans' Home employs full-time physicians, a nurse practitioner, registered nurses, licensed practical nurses, and veteran nursing assistants-certified who provide 24-hour care. In addition, the Quincy Veterans' Home has other services such as social services, activities, dietary, laundry, housekeeping, security, and maintenance departments.

At its peak in the early 1900s, over 1,600 people were housed at the facility. Today the facility houses approximately 400 individuals. The facility contains over 25 buildings which includes a post office, bank, assembly hall, guest house, mini post exchange, chapel, cemetery, lake, animal park, museum, and several military-related historic sites.

Legionella Preparedness

According to IDVA officials, there had been no known cases of legionellosis at the Quincy Veterans' Home prior to the August 2015 outbreak. As a result, there was no routine water testing for legionella. Additionally, there was no water management plan or specific legionella plan in place prior to the 2015 outbreak. Finally, the Quincy Veterans' Home engineering staff had no experience or training with legionella prevention or remediation.

LEGIONNAIRES' DISEASE

According to the CDC, Legionnaires' disease is a type of pneumonia caused by bacteria called legionella that live in water. The legionella bacteria can make individuals sick when contaminated water vapor is inhaled. Legionnaires' disease cannot be contracted through drinking contaminated water or by person-to-person contact. The legionella bacterium is most often found in large, warm water sources. More commonly, the disease can be traced to man-made water sources.

Population Susceptible to Legionnaires' Disease

Legionnaires' disease is rare in individuals under the age of 20. According to the Illinois Department of Public Health, the disease most often affects individuals over the age of 50. IDPH notes smokers, those individuals with existing lung/respiratory conditions such as chronic obstructive pulmonary disease (COPD) or emphysema, or those with compromised immunity (i.e., kidney illnesses, organ transplant patients, diabetes, AIDS) are at high-risk of contracting the disease.

Disease Onset

One issue that may have led to the number of residents sick at the Illinois Veterans' Home at Quincy was the time it takes for the onset of symptoms. According to the CDC, symptom onset occurs anywhere from 2 to10 days after exposure. The CDC also notes that in rare cases, onset can be as long as 19 days.

Diagnosis of the Disease

It is extremely difficult to diagnose Legionnaires' disease, as the illness cannot be differentiated from pneumonia by symptoms alone. Symptoms of Legionnaires' disease include fever, chills, muscle pain/weakness, headaches, and coughing.

Pneumonia is usually confirmed with a chest exam or x-ray. The most common way to detect Legionnaires' disease is through a Urine Antigen Test (UAT). According to the CDC, incubation of the illness is between 2 to10 days. There is no vaccine to prevent the contraction of legionellosis. Hospitalization may be necessary for certain patients and most cases are treated by antibiotics.

Legionella bacteria can also cause a flu-like condition called **Pontiac Fever**, which is less severe than Legionnaires' disease. Both are contracted by breathing in a mist or vapor that contains the bacteria. Neither Legionnaires' disease nor Pontiac Fever is contagious. For this report, the term "legionellosis" may be used to include individuals with either Legionnaires' disease or Pontiac Fever.

Complications of the Disease

According to the CDC, the possible complications of Legionnaires' disease are lung failure and death. The CDC reports that "About 1 out of every 10 people who get sick with

Legionnaires' disease will die due to complications from their illness. For those who get Legionnaires' disease during a stay in a healthcare facility, about 1 out of every 4 will die."

CONDITIONS FAVORABLE FOR LEGIONELLA AT THE QUINCY VETERANS' HOME

Conditions at the Quincy Veterans' Home back in 2015 were conducive for legionella growth. According to the CDC, legionella in man-made water systems can amplify and be transmitted by aerosolized water droplets from whirlpool tubs/spas, showerheads, decorative fountains, cooling towers, and "rarely" via aspiration of water.

Exhibit 1-1
1" HOT WATER PIPE
Somerville Basement

Source: The Quincy Veterans' Home taken on 8/14/18.

Several conditions can promote legionella growth in building water systems. These include:

- Warm water temperatures (77 -108 degrees Fahrenheit);
- Low disinfectant levels;
- Water stagnation;
- Presence of free-living protozoa;
- Presence of biofilm, scale, and sediment in pipes (see Exhibit 1-1); and
- External factors such as changes in water pressure due to construction, water main breaks, or municipal water quality.

Many of the optimal conditions were found at the Quincy Veterans' Home. These include the presence of biofilm, scale, and sediment. The CDC also determined that the Quincy Veterans' Home had "sub-optimal" hot water holding temperature throughout the entire campus, inadequate disinfectant levels sustained in the facility's potable water system, and dead-end lines and opportunities for water stagnation and irregular flow.

System Disruption at Quincy Veterans' Home in 2015

The CDC reported a system disruption occurred during July 2015. The report noted that one of the two boilers was taken offline for approximately 30 days. The water was not drained and was later heated to 120 degrees Fahrenheit before being released through the closed hot water distribution system on August 6, 2015. Given that 120 degrees Fahrenheit is not hot enough to kill legionella bacteria (140 degrees Fahrenheit minimum is needed to kill legionella in most environments), and the water was released back into the hot water loop, which was the

source of **all hot water to all residential buildings**, this appears to be the likely cause of the initial outbreak. Additionally, with the long incubation period for the onset of symptoms (up to 19 days), this is in line with the timeframe for the peak of the outbreak.

Our review of emails, water testing results, and reports produced by the CDC all support the system disruption of hot water tank number 2 was likely the cause of the outbreak. An IDPH official noted that on August 26, 2015, a Quincy Veterans' Home employee suggested that the central hot water tank may be associated with the outbreak. After being briefed by his employee, the IDPH Director noted that during the disruption 1,600 gallons of water "sat there in optimal growing temperature for 30+ days." The Director also noted that it was a citable offense and referred to the water as a "broth of legionella right water."

Later in the day following the discovery of the system disruption on August 26, 2015, IDPH began recommending water restrictions of the potable water system. The restrictions included:

- immediately increase cooling tower free bromine level to 10 parts per million (ppm) logging every 4 hours;
- isolate Tank #2 from the hot water supply in the power house, empty Tank #2 for swabbing on 8/27/15;
- desist using tap water for any resident care or service, order bottled or packaged water for potable uses; and
- discontinue any potable water use involving point-of-use fixtures where aerosols are likely.

Ultimately, on September 9 and September 10, 2015, IDVA, in concert with its contractors, performed disinfection of both the potable hot and cold water pipes. The plan called for pumping highly chlorinated water through the pipes to "shock" the system to kill the legionella bacteria.

LEGIONNAIRES' DISEASE CASES AT QUINCY VETERANS' HOME

There have been numerous separate outbreaks of legionellosis at the Quincy Veterans' Home since July 2015. According to IDVA officials, there were no known cases of legionellosis at the Quincy Veterans' Home prior to the 2015 outbreak. Since the 2015 outbreak, **66 residents and 8 employees/volunteers have tested positive for legionellosis and 13 related resident deaths occurred**. The time periods for onset of the disease were as follows:

1. From July 28, 2015 to September 21, 2015, **51 residents and 6 employees or volunteers** tested positive for the disease during the first outbreak. There were **12 resident deaths** associated with the 2015 outbreak.

2. From March 1, 2016 to April 1, 2016, **2 volunteers** tested positive for the disease. No deaths occurred.

3. From July 14, 2016 to December 10, 2016, **6 residents** tested positive. No deaths occurred.

4. From May 22, 2017 to November 19, 2017, **5 residents** tested positive. There was **one resident death** associated with the 2017 outbreak.

5. From February 8, 2018 to February 15, 2018, **4 residents** tested positive. No deaths resulted from the February 2018 outbreak.

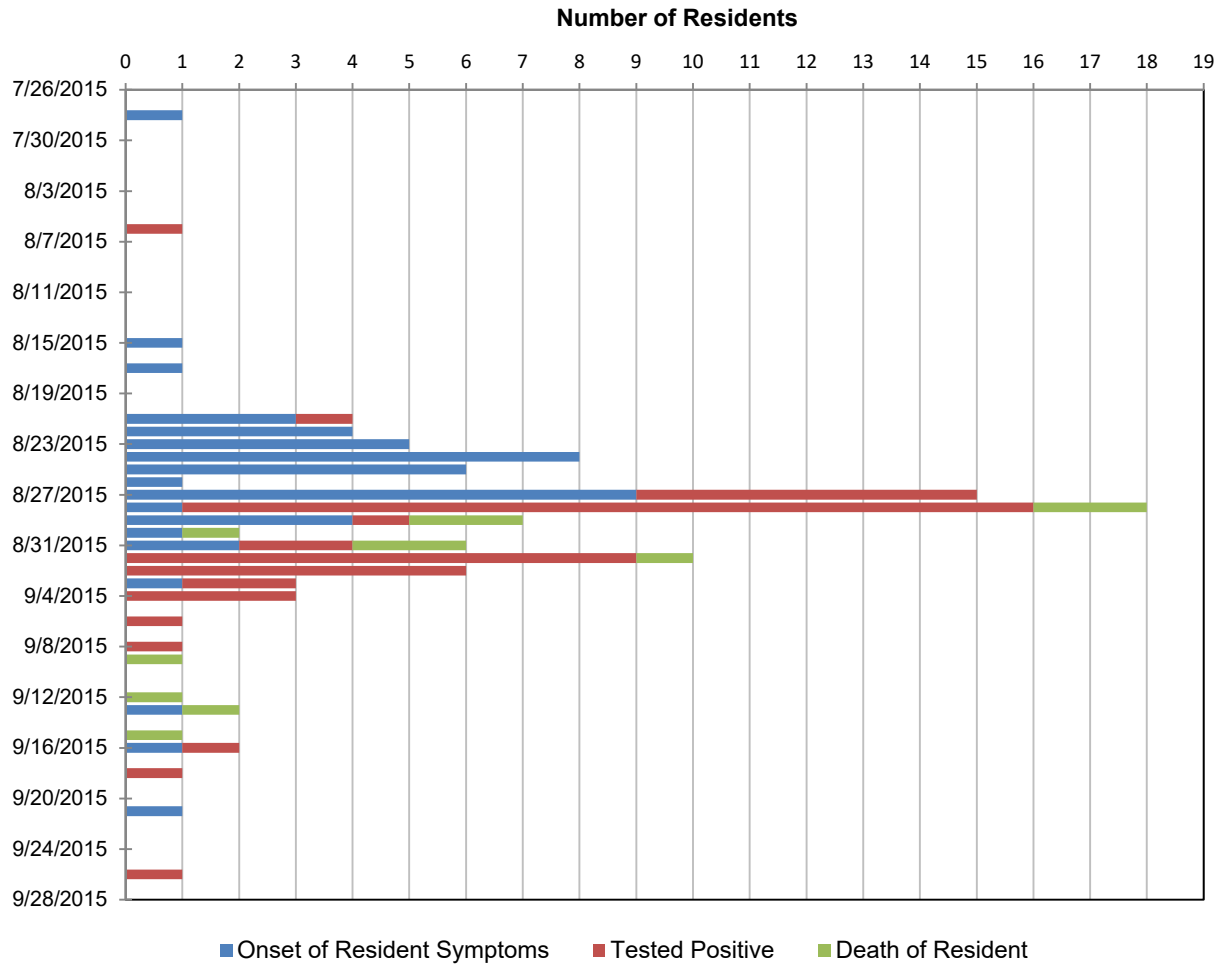
According to IDVA officials, as of December 2018, there have been no cases of legionellosis after the four confirmed cases in February 2018. This was likely due to the installation of point-of-use water filters on every sink, faucet, drinking fountain, and ice machine throughout the campus following the February 2018 outbreak (see Exhibit 1-2).

The majority of all residents (51 of 66 or 77%) who contracted legionellosis during the outbreaks contracted it between July 2015 and September 2015. Exhibit 1-3 shows the dates of symptom onset, confirmed diagnosis of legionellosis, and the 12 related deaths for the 51 residents that contracted legionellosis during 2015.

Exhibit 1-2
POINT-OF-USE WATER FILTER

Source: Photo taken by the OAG at the Quincy Veterans' Home.

Exhibit 1-3
DATES OF SYMPTOM ONSET, POSITIVE LEGIONELLA TESTS, AND RELATED DEATHS
For Residents during the 2015 Outbreak



Source: Information provided by IDVA.

In addition to the 66 residents, 8 employees or volunteers at the Quincy Veterans' Home have contracted legionellosis since 2015. Exhibit 1-4 shows the total number of positive tests and deaths for residents related to legionellosis for the outbreaks at the Quincy Veterans' Home from July 2015 through December 2018.

Auditors reviewed the medical records of all 13 residents who died from Legionnaires' disease. Auditors noted that the average age of these 13 residents was 88 years. Additionally, nursing notes reviewed showed many of these residents had underlying health conditions and several residents were on comfort care (hospice). Nursing notes also showed that several of the residents or their powers of attorney declined treatment or declined emergency room or hospital treatment as they had chosen comfort care only.

Exhibit 1-4
CASES OF LEGIONELLOSIS RELATED TO THE QUINCY VETERANS' HOME OUTBREAKS
July 2015 through December 2018

	IVHQ Residents Testing Positive for Legionellosis	Employees/Volunteers Testing Positive for Legionellosis	Number of IVHQ Related Deaths (All were Residents)
2015	51	6	12
2016	6	2	0
2017	5	0[1]	1
2018	4	0	0
Totals	**66**	**8**	**13**

Note: [1] There was an additional employee that tested positive in 2017, but the exposure was traced to an outbreak in another state.

Source: Information provided by IDVA.

The 2015 outbreak was a campus-wide outbreak. Fifty-one residents living in seven different buildings tested positive for legionellosis. Exhibit 1-5 shows the number of residents who tested positive for legionellosis by calendar year, building, and the year the building was constructed. Thus, it appears the outbreak was caused by a specific event or situation that had not occurred at the home prior to August 2015. Since it was specific to the Quincy Veterans' Home and not the community of Quincy in general, it was likely something specifically occurring within the Quincy Veterans' Home's potable water system.

Exhibit 1-5
RESIDENTS TESTING POSITIVE FOR LEGIONELLOSIS BY BUILDING
Calendar Years 2015 through 2018

Building (Year Constructed)	2015 through 2018
Elmore (1963)	24
Markword (1964)	10
Schapers (1963)	9
Fifer (2002)	7
Somerville (1909)	8
Fletcher (1954)[1]	5
Anderson (1909)	3
Totals	**66**

Note: [1] Fletcher was vacated in June 2017.

Source: Information provided by IDVA.

In addition to the legionella cases at the Quincy Veterans' Home in 2015, there were numerous residents and staff sick during the first legionella outbreak. According to documentation provided by IDVA; in total, 220 residents and staff, including those with legionellosis, were sick in August and September 2015. Of those who were sick, there were 57 residents and staff who tested positive for legionellosis and 101 who tested negative. The majority of the illnesses, 191 of 220 (87%) were reported between August 21, 2015, and September 10, 2015.

As shown in Exhibit 1-6, by the end of September 2015, 51 residents and 6 staff tested positive for legionellosis and 87 residents and 76 staff were sick with symptoms which included pneumonia, cough, fatigue, fever, nausea, vomiting, and gastroenteritis. According to Quincy Veterans' Home officials, the illnesses that were not confirmed to be Legionnaires' disease could have been Pontiac Fever, which is caused by legionella bacteria.

Exhibit 1-6
TOTAL RESIDENTS AND STAFF ILLNESS
August and September 2015

	Legionella	Other Illness
Residents	51	87
Staff	6	76
Totals	**57**	**163**

Source: Information provided by IDVA.

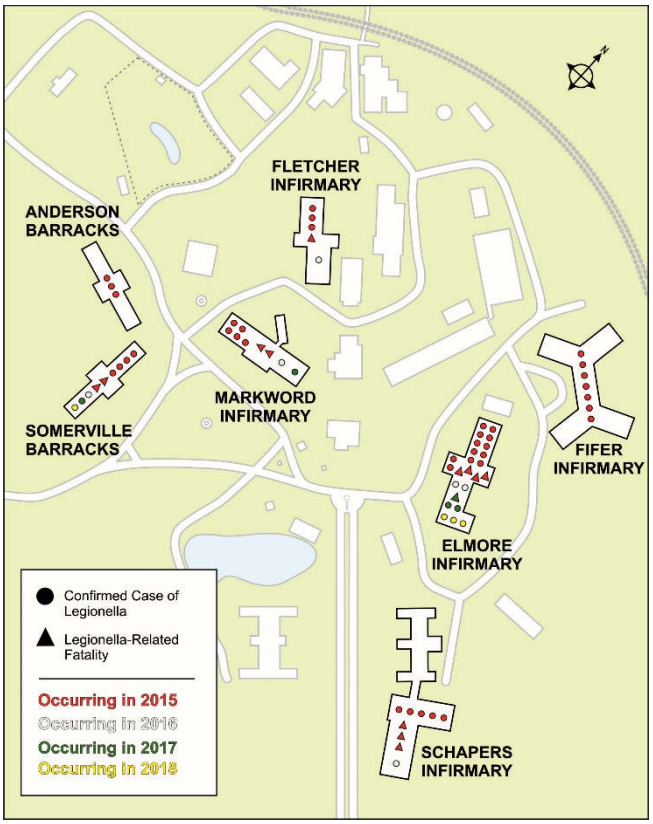
Exhibit 1-7 shows where the confirmed cases and legionella related deaths occurred by year on a map of the Quincy Veterans' Home campus.

ILLINOIS DEPARTMENT OF VETERANS' AFFAIRS

The Illinois Department of Veterans' Affairs is charged with the responsibility for the welfare and needs of Illinois veterans and their dependents. The IDVA assists veterans and their families with understanding benefits and assistance options. Benefits range from housing, education, employment, and mental health services. Often, the assistance veterans, their spouses and dependents are entitled to can be offered at no cost to the veterans or their families. IDVA has facilities serving all 102 counties throughout the State of Illinois with more than 70 full-time and part-time offices.

In Illinois, IDVA houses disabled and elderly veterans at four licensed State Veterans' homes which are located in Anna, LaSalle, Manteno, and Quincy. Each home is regulated by the federal U.S. Department of Veterans Affairs (USDVA) and the Illinois Department of Public Health (IDPH). The homes undergo annual licensure inspections by both agencies regarding resident care, quality, and safety. Individuals apply to live in these facilities and are admitted on a first-come first-serve basis.

Exhibit 1-7
CONFIRMED CASES AND LEGIONELLA RELATED DEATHS
August 2015 through December 2018



Source: Documentation provided by IDVA.

Eligibility

Any honorably discharged veteran is entitled to admission if he or she:

- has served in the U.S. Armed Forces at least one day during a period recognized by the USDVA as a war period or served in a hostile fire environment and was awarded a campaign or expeditionary medal; or
- was retired for a service-connected disability or injury; or
- has served on active duty in the U.S. Armed Forces for 24 months of continuous service or more and enlisted after September 7, 1980; or
- has served as a Reservist or National Guard member, and the service included being called to Federal Active Duty (excluding service for Active Duty Training only) and completed the term or completed 20 years of satisfactory service and is otherwise eligible to receive reserve or active duty retirement benefits; or
- has been discharged for reasons of hardship or released from active duty due to a reduction in the U.S. Armed Forces before the completion of the required period of service;
- entered the service as a resident of Illinois or has been a resident of Illinois for one year immediately preceding the date of application for admission; and
- is disabled by disease, wounds, or otherwise, and because of disability is incapable of earning a living.

Peacetime veterans with one year of honorable military service may also be eligible for admission; other qualifying conditions, as required, must be met. Additionally, admission to an Illinois Veterans' Home is based upon:

- the ability of the Home to provide adequate and appropriate care and services required by the person's medical diagnoses and assessed needs; and
- an available bed in the category required by the veteran's medical conditions and assessed needs.

Resident Cost

Cost to the residents depends on disability level and income. A disability rating is assigned by the U.S. Department of Veterans Affairs. Veterans assigned a disability rating between 70 percent to 100 percent pay nothing. For individuals below 70 percent disability the cost for living in the facility is dependent on income level, but during FY17, the maximum monthly amount that could be charged to a resident was $1,429.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH

According to IDPH, its role related to the outbreak at the Quincy Veterans' Home was to provide recommendations on how to: (1) identify anyone potentially exposed and at risk for illness and (2) implement potential remedial measures. IDPH indicated its first priority was to

alert the facility of the outbreak and provide immediate recommendations to reduce the risk of infection in patients who had not already been exposed. To minimize the risk of disease spread, IDPH noted it issued recommendations to the Quincy Veterans' Home to implement water restrictions, which reduced the risk of further disease spread. For those patients who had been exposed, IDPH indicated that it recommended increased temperature checks to screen for early-stage pneumonia and allow for prompt treatment. IDPH accomplished this within one hour of learning of the second diagnosed case.

IDPH reported that it also focused on investigating potential sources. Working with the CDC, this investigation involved interviewing patients and conducting environmental testing. The ultimate goal was to provide the facility with remediation steps to reduce the risk to health facility residents on an ongoing basis. According to IDPH, these recommendations typically required days of work to interview patients and conduct testing, and within a week, IDPH provided detailed remediation recommendations to the Quincy Veterans' Home.

While IDPH worked closely with the Quincy Veterans' Home, the CDC, and local public health authorities to collect data that drive these recommendations, IDPH noted it does not operate health care facilities such as the Quincy Veterans' Home. IDPH also does not provide direct clinical care or interact with family and/or powers of attorney. Thus, according to IDPH, the responsibility to implement IDPH's recommendations, and to provide direct patient care, falls on the Quincy Veterans' Home staff, under the direction of the Illinois Department of Veterans' Affairs, and physicians at the local hospital. IDPH communicated its recommendations to the Quincy Veterans' Home and IDVA so measures could be put into place to minimize the impact of the outbreak on the Quincy Veterans' Home residents and staff.

According to IDPH, there are three components of IDPH's response to the legionella outbreak at the Quincy Veterans' Home:

- Epidemiological Assessment - identified similarities and common sources of exposure to determine what residents may have been at risk;
- Environmental Health Testing - determined the potential source of the outbreak to understand from where affected patients were infected. The goal was to recommend mitigation steps that the Quincy Veterans' Home could implement to reduce the risk to residents and staff; and
- Infection Control - provided recommendations to the Quincy Veterans' Home, local physicians, and local public health authorities so that direct care providers could increase resident screenings in order to rapidly detect legionella infection in individuals who had already been exposed, and implement controls to minimize further infection among at-risk individuals.

IDPH noted that each of the three components involved a number of tasks and recommendations for the Quincy Veterans' Home staff, local physicians, and local public health officials to undertake. The chart below was provided by IDPH and reports the role of IDPH at Quincy Veterans' Home.

Epidemiological	Environmental	Infection Control
Retrospective disease surveillance	Recommend water restrictions	Recommend increased temperature checks on residents
Prospective disease surveillance	Review water management plan and employee knowledge of water maintenance	Recommend rapid Urine Antigen Test screening by local hospital
Determine facility baseline	Review water system operation and maintenance	
Investigate start, peak, and end of outbreak	Collect water samples after remediation	
Patient interviews for travel and onset dates	Provide specific remediation & decontamination recommendations	

Source: Illinois Department of Public Health.

CAPITAL DEVELOPMENT BOARD

The Capital Development Board (CDB) is responsible for construction management oversight to provide for design, planning, construction, reconstruction, improvement, and installation of capital facilities as enumerated in the Capital Development Board Act (20 ILCS 3105). This responsibility includes major and emergency repairs to State-owned facilities. CDB does not initiate projects, but rather responds to capital improvement needs identified by other State agencies, institutions of higher education, and governmental units as authorized by the Illinois General Assembly and Governor's Office.

In this capacity, IDVA determined that as part of its need to respond to the discovery of legionella bacteria at the Quincy Veterans' Home, it requested the assistance of the CDB. IDVA requested assistance in studying the potential causes of the legionella bacteria and putting together remedial measure options to improve the plumbing and water management systems at the Quincy Veterans' Home to reduce the risk of legionella exposure. In response to their request, CDB selected an engineering firm in September 2015 to study the facility and work with an emergency water management response team, which was comprised of staff from IDVA, Illinois Environmental Protection Agency, IDPH, and a water treatment consultant, to explore improvement options and enhancements to mitigate the proliferation of legionella bacteria at the facility. The engineering firm worked with the response team and water treatment consultant to prepare the Quincy Veterans' Home Legionella Response Plan detailing options and associated considerations for facility improvements.

According to CDB, in conjunction with the contractors, the emergency water management response team, IDVA, and CDB assisted with the implementation of several response measures to mitigate proliferation of legionella bacteria. From September 2015 through June 2017, CDB provided construction management oversight for several capital improvements and enhancements to the Quincy Veterans' Home under an emergency capital project. The scope of this project included repair, replacements, and upgrades to the domestic water system at the Quincy Veterans' Home in order to build redundancy capabilities to treat the

water with chemicals and thermal eradication to kill bacteria, as well as eliminate non-circulating plumbing, commonly referred to as "dead-legs."

CDB noted that the water infrastructure upgrades under this project included:

- construction of a new water treatment facility;
- decentralization of the domestic hot water system to provide 160 degree water to points-of-use via new water heaters for each building;
- limited domestic pipe replacement and upgrades;
- a new domestic water service for the facility along with associated piping; and
- removal of the water tower from service.

Since the completion of the emergency capital project, CDB has worked with IDVA on a number of capital improvement projects at the Quincy Veterans' Home, several of which were initiated from the recommendations put forth by the Combined Veterans' Capital Needs Task Force. The Combined Veterans' Capital Needs Task Force was convened by the Governor as part of the plan to minimize the risk from legionella at the Quincy Veterans' Home.

ILLINOIS DEPARTMENT OF LABOR

In February 2016, IDVA was notified by the Illinois Department of Labor that an investigation had been conducted in September 2015 which identified a "safety concern." The investigation found that Quincy Veterans' Home did not effectively notify all employees of the outbreak or instruct them as to proper precautions to avoid or eliminate exposure in a timely manner.

The letter was sent to the IDVA Director and reported there were two employees infected during the 2015 legionella outbreak at the Quincy Veterans' Home. The violation letter explained that Quincy Veterans' Home failed to notify all staff on how to protect themselves from the illness. The letter noted that although an email was sent that informed staff of "unconfirmed" cases, not all staff had email, so some individuals were potentially vulnerable to contracting legionella.

Auditors were provided with a preliminary draft document titled "violation worksheet" dated 9/21/2015, which the Illinois Department of Labor used to evaluate the Quincy Veterans' Home. The worksheet discussed a potential violation and potential requirement of "abatement documentation" with procedures for notifying employees in an outbreak situation. When auditors requested the aforementioned abatement documentation, the Illinois Department of Labor responded with the following:

> *As far as what you are requesting, the "Violation Worksheet" was a draft document and the recommendations it contained ultimately were not the final determination of the Department. Because the Department did not issue a citation to the IDVA, and thus did not mandate abatement, the follow-up documents*

mentioned in the "Alleged Violation Description" section of the document were not provided.

After review of the information provided by the Illinois Department of Labor, auditors requested that IDVA management provide their response to the letter addressed to the Director. IDVA staff indicated that they did not have the letter or any documentation showing they provided a response to the Department of Labor.

In a follow-up email from auditors to the Illinois Department of Labor asking for clarification as to whether the home was in violation, Illinois Department of Labor officials noted the following:

In February 2016, the Department issued a Hazard Alert Letter, which we use when there is a workplace safety concern but the employer has not violated any specific OSHA standard. In this letter, Illinois OSHA noted "The employer failed to effectively notify all employees of the outbreak or [sic] instructed them as to proper precautions to avoid or eliminate exposure…". This did not change from the draft violation worksheet. However, Illinois OSHA ultimately determined that IDVA did not violate a specific standard, and therefore did not issue a citation.

According to the Illinois Department of Labor, its investigation determined that IDVA was not in violation of the Occupational Safety and Health Act (820 ILCS 219/20(a)) and did not require a response from the Quincy Veterans' Home.

Chapter Two

INITIAL OUTBREAK RESPONSE

CHAPTER CONCLUSIONS

Although notification of the outbreak was identified and reported timely to the Illinois Department of Veterans' Affairs (IDVA) and the Illinois Department of Public Health (IDPH) by the Adams County Health Department, auditors identified the following issues with the initial response in 2015 by IDPH and IDVA:

- On August 21, 2015, IDPH received confirmation of the 2nd case of legionellosis at the Quincy Veterans' Home;

- Until August 27, 2015, there was limited notification or specific procedures provided to the nursing staff at the Quincy Veterans' Home that were necessary to protect residents or employees. This was six days following confirmation of the 2nd case;

- Auditors determined that the Quincy Veterans' Home did not have documentation to support increased monitoring of residents until after the residents exhibited the onset of the Legionnaires' disease symptoms. Although Quincy Veterans' Home officials stated that skilled care residents were monitored every four hours and independent care residents were monitored twice daily beginning on August 22, 2015, there was no documentation to support that a directive was provided to the nursing staff or whether it was followed. Additionally, auditors reviewed the medical records for the 45 residents who had disease onset after August 21, and found that none received increased monitoring prior to the onset of symptoms;

- IDPH did not go on-site at the Quincy Veterans' Home until midday on Monday, August 24. That was nearly three days (approximately 67 hours) after the 2nd case was confirmed late in the afternoon on August 21. The site visit focused on one building where the two confirmed cases were located.

- On Wednesday, August 26, the site visit continued again around midday. This was five days after the identification of the initial outbreak. Based on our review of documents and emails, IDPH met with Quincy Veterans' Home officials and found that the "central hot water tank may be associated with [the] outbreak." It was learned that hot water tank number 2 was out of service and sat unheated since the beginning of July due to a valve issue. The tank was heated and cycled back into service on August 6, 2015.

- Based on our review of communications between IDPH and the Quincy Veterans' Home, auditors determined that there was limited communication between IDPH management and the Quincy Veterans' Home's staff. As identified in our timeline, IDPH officials often did not know the seriousness of the problem at the Quincy Veterans' Home.

The response by IDVA to the February 2018 outbreak was more timely and informative than after the other three outbreaks in 2015, 2016, and 2017.

2015 OUTBREAK RESPONSE BY IDVA AND IDPH

Although notification of the outbreak was identified and reported timely to IDVA and IDPH by the Adams County Health Department, auditors could not identify any notification of a confirmed outbreak, water restrictions (other than bathing restrictions in the bathing facilities where the first two positive cases originated), or procedures implemented to decrease exposure to residents and staff for six days.

Auditors reviewed thousands of emails from the Adams County Health Department, IDVA, and IDPH. Auditors also reviewed numerous reports, studies, invoices, task force meeting minutes, and contracts. The following are some highlighted key events that occurred in relation to the initial response after the notification of the outbreak in the late afternoon of August 21, 2015:

- **August 21, 2015** -Guidance is provided to the Quincy Veterans' Home from IDPH to have a heightened awareness of respiratory deterioration, or fever/cough at this time; turn off the outdoor fountains; keep the windows in the Elmore building closed (the initial two residents both lived in the Elmore building); and use bathing facilities other than the areas that were used by the two residents who tested positive;
- **August 22, 2015** -the Adams County Health Department visits the Home to take pictures of the cooling tower;
- **August 23, 2015** -the Adams County Health Department interviews residents who became ill over the weekend;
- **August 24, 2015** -IDPH arrives on-site at midday to begin its initial site visit;
- **August 26, 2015** -IDPH arrives on-site around midday for a second day and it is determined there was an issue with the campus-wide potable water system;
- **August 27, 2015** -The Quincy Veterans' Home provides nursing staff with guidelines for water restrictions;
- **August 28, 2015** -Contractor begins cleaning of the Quincy Veterans' Home cooling tower;
- **September 1, 2015** -The CDC arrives for site visit;
- **September 9, 2015** -The IDVA contractor begins disinfecting the Quincy Veterans' Home potable water system; and
- **September 18, 2015** -The Quincy Veterans' Home begins installation of point-of-use water filters on showers and tubs.

Exhibit 2-1 is a timeline that highlights many of the events and actions taken by the Quincy Veterans' Home, IDVA, IDPH, and the Adams County Health Department after the

initial outbreak on August 21, 2015, through the end of the initial outbreak in September 2015. The timeline also includes the number of sick, hospitalized, and deceased Quincy Veterans' Home residents and staff.

Exhibit 2-1
2015 LEGIONELLA OUTBREAK TIMELINE

ACHD	-Adams County Health Department	IDVA	-Illinois Department of Veterans' Affairs
CDC	-Centers for Disease Control and Prevention	IEPA	-Illinois Environmental Protection Agency
IDPH	-Illinois Department of Public Health	IVHQ	-Illinois Veterans' Home at Quincy

Thursday, August 6, 2015 (1st Case Identified)	
9:52 AM	1st confirmed case of legionellosis from the Quincy Veterans' Home (IVHQ).
	Hot water tank number 2 has been out of service since the beginning of July due to a valve issue. The tank is unheated and was cycled back into service on this day.
Friday, August 21, 2015 (Day 1 of Confirmed Outbreak)	
3:53 PM	2nd confirmed case of legionellosis from IVHQ.
4:30 PM	Meeting conducted between Adams County Health Department (ACHD), IDPH, IDVA.
5:16 PM	IDPH submits questions to IDVA related to the facility's tubs, showers, bathing rooms, and ice machines along with questions about the history and habits of the two residents who tested positive.
5:24 PM	Guidance is provided by IDPH to IVHQ to have a heightened awareness of respiratory deterioration, or fever/cough at the same time; turn off the outdoor fountains; keep the windows in the Elmore building closed (the initial two residents both lived in the Elmore building); and use bathing facilities other than the areas that were used by the two residents who tested positive.
5:35 PM	IDPH issues internal agency Health Advisory regarding legionella at IVHQ.
5:53 PM	IDPH Director contacts IDVA Director notifying her of the two cases at IVHQ and notes his team is investigating and asks if she or her team needs anything.
6:18 PM	IDVA Director emails senior staff and notes: "We need to take EXTRA precautions to ensure that this does not go beyond these two cases. If we need to get people out there this weekend to test the water and make sure people are safe, then let's do it now. I do not want someone else to get sick."
6:36 PM	The IDVA Director responds to the IDPH Director and notes they are in "immediate response mode and getting it under control."
8:48 PM	IVHQ provides responses to IDPH questions related to the facility's tubs, showers, bathing rooms, and ice machines along with questions about the history and habits of the two residents that tested positive.
10:44 PM	IDVA Director emails senior staff and notes: Still don't have a good feeling about this. What steps are we taking to protect the other residents? Have we tested the water in each of the buildings (or does the tower supply them all)?
Saturday, August 22, 2015 (Day 2)	
8:17 AM	IDPH concludes that the two positive residents did not have a common water exposure.
9:08 AM	An Adams County Health Department official notes she will take pictures of the cooling tower layout later that afternoon.

12:03 PM	IVHQ sends an email to the nursing and other staff at IVHQ noting that "I'm sending this email to answer questions and concerns staff have had regarding **UNCONFIRMED** Legionnaires' Disease at the Elmore building. Please reassure staff that this in is an UNCONFIRMED diagnosis and precautions are being taken per directive. **I want to reassure all staff that if we truly felt there was an issue with Legionella we would not put the Residents or Staff at risk.** I ask that you please not panic and do not discuss this with the residents. The last thing we need is for the residents to get worried and upset. Again this is an UNCONFIRMED diagnosis, as we find out more information we will keep you updated. Please feel free to call me with any questions or concerns. Below is a brief discussion on the disease." [Note: the attached information did not include procedures or precautions for how the staff should protect themselves or the residents.]
3:17 PM	IDPH Director emails the IDVA Director stating: "While this situation is serious because it involves lives, it is not unprecedented or atypical. Legionella is a risk in any situation of this sort. You may have seen that the City of New York has been grappling with a major outbreak. Even in Illinois, we are dealing with another set of cases at a prison facility. Fortunately, Legionella is a disease we know how to diagnose and treat. And from an epidemiology standpoint, we know how to track it down."
Sunday, August 23, 2015 (Day 3)	
12:18 PM	IDPH officials receive photos of the IVHQ campus taken by the Adams County Health Department.
12:36 PM	IDPH internal email notes that there are 3 more residents at the hospital that are positive for legionella.
4:28 PM	IDVA senior staff emails the IDVA Director about 3 additional residents testing positive for legionella. It is also reported that the "Ice machines are being cleaned, showers out of service on two areas, water testing checked and per Adams County, appears okay."
8:38 PM	IDPH reports a cluster of 5 cases of legionella at IVHQ to the CDC.
Monday, August 24, 2015 (Day 4)	
7:32 AM	An Adams County Health Department official reports that as of the day before, the three patients that presented over the weekend have had additional questioning.
8:35 AM	IDVA reports legionella found in 5 Quincy Veteran home residents as a potential concern to the Governor's Office.
10:23 AM	IDPH receives notice of a possible 6th case at the local hospital.
	IDPH and the ACHD conduct on-site visit beginning mid-day, which focuses on one building where 2 confirmed cases were located. Environmental samples are taken from a decorative fountain, a cooling tower, and several bathing areas in the one building.
Tuesday, August 25, 2015 (Day 5)	
10:00 AM	At an IVHQ Resident Care Meeting between IVHQ management and nursing supervisors, it is noted that: "There's a lot of illness going around. Make sure to do infection control, handwashing, etc. There's a lot of respiratory so oral hygiene needs to be honed in on. We're tracking all of these people very closely. IDPH was here yesterday looking at things, testing all of our residents. We have lots of residents in the hospital, a couple tested positive for Legionella. Legionella is not contact spread, it has to be inhaled. There's no isolating for it, you just need to do good infection control. It's probably coincidental that all these people have pneumonia and respiratory issues." It was also noted: "Legionella bacteria is fairly common, the IDPH inspectors said they have to be careful testing because it could show up in anything. Their goal is to find the source. It is not easily transferred and if someone does get it it's treatable with antibiotics. There's also a case in the community not associated with the home. Our housekeeping products have an ingredient that kills the bacteria."
10:26 AM	IDPH internally issues Health Update regarding legionella at IVHQ. It indicates there are two confirmed cases and an additional 3 being tested for legionella, with results expected in 5 days. The update includes recommendations.
10:35 AM	IDVA internal email notes that 10 residents went to the hospital between "yesterday and today" and that all buildings now have someone affected.

10:44 AM	IDVA discusses the need for a public announcement as there are over 10 residents with respiratory issues in the hospital, two of them in the ICU.
11:30 AM	IVHQ discusses a resident's family member's social media post, which noted the resident is in the hospital with legionella.
11:51 AM	IVHQ sends an email to the nursing and other staff that notes: "I'm sending this email to answer any questions and concerns *staff m*ay have had regarding Legionnaires' Disease at IVH. Please reassure staff that precautions are being taken per directive of IDPH. **I want to reassure all staff that if we truly felt there was an issue with Legionella we would not put the Residents or Staff at risk.** I ask that you please not panic and do not discuss this with the residents. The last thing we need is for the residents to get worried and upset. As we find out more information we will keep you updated. Please feel free to call me with any questions or concerns. Below is a brief discussion on the disease."
12:46 PM	IDPH reports to the CDC that 14 persons are being evaluated or admitted to the hospital, 11 were admitted and 3 are in the ICU. IDPH asks CDC for specimen collection requirements and shipping address.
12:48 PM	While discussing what steps to take related to reporting to families, IDVA notes: "Keep in mind that we have 2 confirmed cases. I realize a lot of people are in the hospital for respiratory issues – that does not equal LD. It could be Pontiac (which resolves on its own after a few days), it could be allergies, it could be change in season, it could be pneumonia. What we know at this time is that we have 2 confirmed positive tests for LD."
12:51 PM	Senior IDVA management confirms to the IDVA Director that families were notified that their family member went to the hospital, but they were "not told about suspicions of legionella since that may not be what they have."
12:57 PM	IDVA Director emails senior staff and notes: "I don't have any issues with letting the family members know that there is a possibility that it could be LD, but the issue there is that they will hear the worst and run with it. I don't want to frighten people without reason."
1:22 PM	IDPH Director emails IDVA Director noting there is talk of a joint press release and that he has no objections.
3:03 PM	IDPH determines that Memorial Hospital lab in Springfield can identify legionella from urine antigen testing most likely on the same day if delivered by early afternoon.
3:27 PM	IDPH works on recommendations to send IVHQ to address the outbreak at the Elmore Infirmary. IDPH notes that: "Given the epidemiologic data currently available as well as the initial environmental investigation, it is our opinion that the cooling tower does not present the most plausible exposure source."
4:00 PM	Governor's Office notifies IDPH and IDVA that it does "not think we need to issue a statement to the media. Let's hold and see if we receive any reporter inquiries."
4:20 PM	IDPH sends potential recommendations to the Adams County Health Department for its comment and IDPH notes that "We thought this would be a good start and we'll see how things develop in the coming days."
4:38 PM	ACHD provides IVHQ with the following guidance for Elmore East and West: replace tub spray heads with point-of-use filtration heads capable of filtering legionella bacteria; contact tub manufacturer to discuss way to increase levels of sanitation of the tubs; and document tub sanitation. IVHQ was told tubs could be used once these steps were completed and documented. The email also instructed IVHQ to drain and discontinue the use of outdoor fountains.
5:15 PM	ACHD reports that the hospital is starting to be concerned about staffing and beds.
5:45 PM	IDPH reports seven more residents admitted to hospital today with fever and cough. IDPH decides to start having urine antigen tests driven to Springfield.
7:45 PM	IDPH issues new Health Update which notes that 17 persons (2 staff and 15 residents) were seen in the emergency room in the last four days. Of those 17, 14 have x-ray confirmed pneumonia. Fifteen are currently hospitalized. [Note: auditors reviewed the IVHQ tracking log from the next day and determined that for the 14 with confirmed pneumonia, 5 were from Elmore, 3 were from Somerville, 3 were from Markword, 2 were from Fletcher, and 1 was from Fifer.]

9:19 PM	IDPH Director emails another IDPH official and states, "I honestly didn't realize that so many other residents and employees at the facility are ill."
Wednesday, August 26, 2015 (Day 6)	
10:00 AM 2:00 PM	All Staff Meetings are held and there is no specific confirmation given of Legionnaires' disease at IVHQ and no specific counts of residents or staff with confirmed cases. It is also noted "There has been one confirmed case in the Adams County area."
11:36 AM	IDPH routes draft information release throughout IDPH officials.
11:58 AM	While discussing a "proactive" information release, the IDVA Director reports to IDPH Director that 18 are now admitted to the hospital with "pneumonia-like symptoms."
12:00 PM	IDPH reports to the CDC that it is waiting to get back some of the human test results so they know if legionella is present in only one building or does the source affect multiple buildings.
Specific time unknown	During second day of on-site visit after meeting with IVHQ, IDPH believes the "central hot water tank may be associated with [the] outbreak." It is learned that hot water tank number 2 was out of service since the beginning of July due to a valve issue. The tank was unheated until it was cycled back into service on August 6, 2015.
12:38 PM	Based on new information, IDPH worries that the hot water system may be contributing to the current respiratory outbreak. IDPH notes there may be a need to address the hot water system in the entire facility.
1:14 PM	IDPH notifies the CDC that it is still awaiting lab results, but as a result of new information received on that day, potable water is being tested and IDPH is "anticipating making recommendations around restriction and management of potable water needs in this multiple-building, 400+ resident facility."
2:17 PM	IDPH reports to the CDC "We are concerned about this large facility and what to do until remediation can take place with water plus reviewing the possible problem that arose in the water system in late July."
2:39 PM	IDPH is working on a list focusing on "eliminating aerosolization."
2:46 PM	IVHQ sends respiratory etiquette guidance to staff, which discusses covering your cough, wearing a surgical mask when in close contact with a patient with symptoms, and detailed guidelines on how to wash your hands.
3:00 PM	IDPH participates on a call with the CDC.
3:01 PM	Adams County Health Department receives one positive and one negative test result from Iowa lab.
3:10 PM	Adams County Health Department requests guidance from IDPH for IVHQ on what can be done to immediately slow exposure to patients and staff.
3:25 PM	IDPH reports that after a call with the CDC, the CDC says to not rule out the cooling tower.
4:30 PM	IDPH Health Update states that additional recommendations will be made concerning water restrictions at the facility after discussions with the CDC.
4:30 PM	Meeting held between Adams County Health Department, Blessing Hospital, IDPH, and IDVA.
4:33 PM	IDPH investigator is at the cooling tower and reports there are "High bromine levels not supportive of leg [legionella]. Prevailing wind is directly off campus I can smell the bromine from the car."
6:24 PM	ACHD provides IVHQ **with Draft** "Interim Guidelines for Potable Water Restrictions in Illinois Veterans Home, Quincy Illinois 8.26.15" developed by IDPH. *[Note: This is the first written guidance provided to IVHQ that discusses minimizing use of campus water supply, removing faucet aerators, use of bottled water, shutting off drinking fountains, and avoiding any actions that will cause aerosolization or spray of water.]*
8:57 PM	Adams County Health Department reports that the test results were received and 6 of the 10 urine antigen tests were positive. There are now 8 confirmed cases of legionellosis.
9:46 PM	IDPH investigators issue internal report with the following directions: 1) Immediately increase cooling tower free bromine level to 10ppm logging every 4 hours; 2) Isolate Tank #2 from the hot water supply in the power house, empty Tank #2 for swabbing on 8/27/15; 3) Desist using tap water for any resident care or service, order bottled or packaged water for potable uses; and 4) Discontinue any potable water use involving point-of-use fixtures where aerosols are likely.

Thursday, August 27, 2015 (Day 7)	
	IVHQ provides "Interim Guidelines for STAFF-Legionella." This is the first document auditors identified that provided staff with procedures or guidelines necessary to limit the exposure for both the residents and themselves.
6:52 AM	IDPH official notes in an email to the CDC "I think we are now focused on legionella."
6:53 AM	IDPH responds to a CDC question as to whether the new positive tests are from Elmore or another building. IDPH responds it will let the CDC "know this morning."
9:23 AM	IVHQ in an email reports it rented a chiller and is ordering bath wipes, bottled water, ice, and hand sanitizer.
11:40 AM	IDVA reports that the guest house at IVHQ has been closed until water is confirmed to be okay.
12:47 PM	A joint press release by IDPH and IDVA announces 8 confirmed cases of Legionnaires' disease in residents at IVHQ.
1:25 PM	An email from IVHQ Administrator to IVHQ staff confirms legionella at IVHQ and reports: "Many of the things that we will be coming out with are procedures that are geared towards isolating possible locations that [the] *[sic]* could be the source of the Legionella. Since this bug has been found in locations like cooling towers, showers, faucets, etc., we are directed to stop using those locations that could be a source. Please be assured we're doing everything we can to isolate areas that could be a source and this will also create inconveniences and the need for adjustments in how we do some of the things we normally do, such as bathing and showering."
7:44 PM	IDPH Health Update sent internally notes that there are now 15 confirmed cases and approximately 30 to 40 persons associated with the facility have tests pending. There are individuals with positive tests from six buildings.
Friday, August 28, 2015 (Day 8)	
7:00 AM	Contractor begins cleaning of the cooling tower.
10:00 AM	Bottled water delivered to IVHQ.
11:09 AM	IDPH notifies the CDC that there are now 23 confirmed cases.
12:16 PM	Minutes from the All Staff Meeting are emailed by IVHQ to all staff requiring them to read, sign, and submit to the HR department by close of business on September 16, 2015.
12:35 PM	IDPH reported that as of 12:00 pm, the cooling tower has been cleaned, refilled, and is back online.
12:46 PM	ACHD reports 4 new in-patients are positive for legionella.
3:07 PM	Contractor reports that the cooling tower was cleaned and shocked with chlorine and recommends monthly visits to check water tests and to calibrate equipment.
3:10 PM	A map of the facility completed by IDPH shows 27 confirmed cases (24 residents and 3 staff). There were confirmed cases in 7 buildings. (Elmore=8 (one staff), Fletcher=4, Schapers=4, Fifer=3, Markword=3, Somerville=3, and Nielson Dining=2 (two staff)).
3:19 PM	ACHD reports the **first (1st)** legionella related death from IVHQ to IDPH.
3:30 PM	In response to ACHD question about families with concerns about sending residents back to the home to recover, an IDPH official noted, "I think potential source[s] of legionella have all been remediated."
3:58 PM	ACHD reports a **second (2nd)** legionella related death.
5:50 PM	IVHQ official discusses shower head filter types with IDPH.
5:55 PM	IDPH official responds to IVHQ that the shower heads in question will not work.
6:02 PM	IDVA Director reports to the Governor's Office and to the IDPH Director that 64 persons have been "checked for exposure", 29 persons were positive for legionella (26 residents and 3 staff), 19 persons were negative for legionella, and 17 tests have been ordered and are pending.
6:38 PM	IDPH Director suggests to the IDVA Director there may be value in inviting the CDC on-site but does not "think it's necessary right now."

8:39 PM	IDVA/IDPH press release announcing the deaths of two residents from IVHQ who "had underlying medical conditions" and were among the 23 individuals who had been diagnosed with Legionnaires' disease.
8:51 PM	IDPH Health Update reports 28 laboratory confirmed cases, 4 of the cases are for persons who work at IVHQ. Two resident fatalities were reported and 2 individuals working at IVHQ "are very ill and may not survive."
Saturday, August 29, 2015 (Day 9)	
9:14 AM	IDVA Director informs Governor's Office and IDPH Director of a **third (3rd)** resident death and notes that additional deaths are "possible today."
11:00 AM	Meeting scheduled between IDPH and IDVA Directors and the Governor's Office.
11:48 AM	IDPH Director emails two files to the IDVA Director, 1) "IDPH Actions" and 2) "IDPH Interim Water Use Guidelines Vets Home Aug 27 2015."
11:50 AM	ACHD clarifies that the third death has not had a confirmed urine antigen test. The test is due on Monday, August 31.
2:32 PM	IDPH discusses reaching out to IDVA to see what information has been given to IVHQ resident family members that have stayed on campus.
3:38 PM	IDPH Director summarizes conversation with IDPH on-site engineer in an email noting an issue with hot water tank number 2. He concluded that the 1,600 gallon tank "sat there in optimal growing temperature for 30+ days." He noted that rather than emptying the tank and refilling it, IVHQ just applied steam and "distributed it for normal use throughout the facility." He noted this was a "citable offense." He referred to the water as a "broth of legionella right water." The Director noted that the "topography and prevailing winds do not support this coming from the cooling tower. Tower exhaust would be carried off campus." After this discovery, it was noted there was a need for a consultant, the temperature of the hot water needed raised to kill legionella to 150 degrees Fahrenheit, and there was the need to sanitize the plumbing.
3:46 PM	IDPH Director asks ACHD if the city of Quincy was testing its water supply for legionella.
4:05 PM	ACHD responds and notes the city of Quincy has not tested [for legionella] in the past but will be testing on Monday.
4:10 PM	IVHQ provides IDPH with its current tracking list. According to the IVHQ list, there were 27 residents and 3 staff positive for legionella. The list also showed that test results were pending for 31 residents and 1 staff.
9:39 PM	IDPH Director informs IDVA Director that he wants to involve the CDC on-site and that he plans to inform the Governor's Office.
Sunday, August 30, 2015 (Day 10)	
8:54 AM	IDVA Director notifies IDPH, IVHQ, and ACHD that she is headed to Quincy later in the afternoon.
9:14 AM	Governor's Office asks that a call be scheduled for that day to discuss bringing in the CDC.
9:38 AM	ACHD reports to IDPH there are 4 confirmed community cases and one pending.
9:42 AM	IDVA Director reports to the Governor's Office that a **fourth (4th)** resident with legionella died the night before.
10:51 AM	ACHD reports 2 new admissions to hospital overnight, 19 total at hospital, 45 being cared for at IVHQ with 9 new possible cases presenting overnight, and a visitor staying on-site in IVHQ cottage became ill and is in ICU in Jacksonville.
2:29 PM	IDPH requests technical assistance from the CDC.
2:33 PM	The CDC responds that it will start the process.
3:27 PM	IDPH determines there were no cases of legionella in Adams County in 2011, 2012, and 2014. There was one case in 2013.
4:12 PM	IVHQ reports 27 residents and 3 staff positive for legionella and 49 pending on test results.

Monday, August 31, 2015 (Day 11)	
8:11 AM	IDPH notes in an email, "we need to begin to assess neutralizing of hot tank effects as soon as practical."
9:13 AM	ACHD reports the **fifth (5th)** legionella related death of an IVHQ resident.
10:55 AM	IDPH internally decides to make sure they always ask whether the family has been notified after a death.
11:00 AM	Meeting held between ACHD, IVHQ, IDPH, IDVA, IEPA, CDC, and Blessing Hospital-Quincy to discuss water testing, hot water tank mitigation, disease case tracking, etc.
2:09 PM	IEPA emails IDPH that IEPA will be collecting samples from the public water supply in Quincy that afternoon.
2:30 PM	IDPH on-site engineer reports to IDPH Director that after meeting with the IDVA Director, ACHD, the city of Quincy, IEPA, and a contractor, they all concurred that the sanitizing of the domestic water system was a priority, and the plan was to continue to engage IVHQ and their consultant to get a plan.
3:54 PM	IDPH Health Update reports 29 laboratory confirmed cases, 3 of the cases are for persons that work at IVHQ. There are 40-50 persons with tests pending. It also notes that potable water restrictions were put in place on August 26.
4:39 PM	IDVA reports that 34 residents live in the domiciliary and 366 residents live in the skilled and special needs units at IVHQ.
7:40 PM	IDPH receives test results from ACHD reporting a total 36 positive cases.
9:55 PM	IDPH email shows that about 60 interviews have been completed of confirmed, suspect, and pending cases.
Tuesday, September 1, 2015 (Day 12)	
7:33 AM	ACHD reports the **sixth (6th)** and **seventh (7th)** legionella related deaths from IVHQ. It is also reported that the official count of lab confirmed legionella cases is 37.
8:00 AM	CDC meets at ACHD to begin the on-site visit.
10:57 AM	IDPH reports 39 total confirmed cases of which 35 are residents. There are 7 laboratory confirmed legionella death cases.
11:30 AM	ACHD reports to IDPH that it is getting inquiries from OSHA and AFSCME.
12:04 PM	Press release sent announcing the deaths of a total of seven residents from IVHQ. It also notes they were among the 39 individuals who have been diagnosed with Legionnaires' disease to date.
12:20 PM	IDPH engineer asks for IDPH to research point-of-use water filters.
4:08 PM	IDPH obtains cost and name of distributor for point-of-use water filters.
8:20 PM	IDPH Health Update reports 39 laboratory confirmed cases, 4 of the cases are for persons that work at IVHQ, and 7 fatalities. The update notes that IVHQ is no longer allowing admissions, and that the CDC team started work that morning.
Wednesday, September 2, 2015 (Day 13)	
7:35 AM	IDPH contacts water testing contractor asking about getting results or at least preliminary results.
7:50 AM	The CDC provides contacts to IDPH for obtaining point-of-use water filters to help ease water restrictions.
9:09 AM	ACHD reports 7 more positive cases.
9:45 AM	IDPH on-site engineer reports to IDPH that IVHQ ordered point-of-use water filters.
10:08 AM	IDPH reports 45 total confirmed cases of which 41 are residents. There are 7 laboratory confirmed legionella death cases.
10:58 AM	Water test results from August 26 are received by IDPH that show hot water storage tanks #1 and #2 has legionella present.

12:55 PM	Water tests received by IDPH from the lab show Elmore has legionella present and the cooling tower is negative.
1:27 PM	IDPH staff reports to the Director positives in the plumbing but the cooling tower was negative.
2:04 PM	IDPH Director asks what can be communicated to the Governor's Office about the heating tanks and he is told by his staff that "preliminary results indicate likely contamination of the potable water system."
2:54 PM	IVHQ orders 24 in-line and 24 shower filters.
Thursday, September 3, 2015 (Day 14)	
10:38 AM	IDPH reports 48 total confirmed cases from IVHQ of which 44 are residents. There are 7 laboratory confirmed legionella death cases.
10:38 AM	IVHQ emails that the shower in Schapers A now has a filtered showerhead that can be used to shower residents.
12:15 PM	IEPA Director emails IDPH Director and notes that five samples collected on 9/1/2015 from locations near IVHQ show very low bacteria activity.
Friday, September 4, 2015 (Day 15)	
10:30 AM	IDPH reports 50 total confirmed cases from IVHQ of which 45 are residents. There are 7 laboratory confirmed legionella death cases.
1:20 PM	Water tests received by IDPH from the lab shows positive legionella results in Neilson, the Administration building, Fifer, Somerville, and Schapers.
2:45 PM	IDPH summary of water testing results shows that 30 of 34 tests came back positive for legionella.
3:26 PM	IDPH officials note that water testing results support their efforts with the potable water system.
3:32 PM	A letter is sent from IDVA Director to IVHQ staff thanking them "for your diligence and dedication during this very challenging time."
4:07 PM	Contractor's draft potable water disinfection plan is routed to IDPH and CDC staff. The plan recommends potable water disinfection and flushing to begin on September 9, 2015.
4:43 PM	IDPH official questions whether potable water restrictions were for all buildings on campus.
4:49 PM	IDPH official indicates that the restrictions should have been for all buildings noting: "I'm sure we said the entire system once we discovered the hot water loop."
8:35 PM	IDPH Health Update notes: "The potable water system remediation is very complex and will take time to accomplish correctly. Plans to mitigate the system next week are being developed. Water restrictions currently remain in place." The report also notes that: "PCR positive results indicate the presence of L. pneumophila organisms in the heating tanks, along with a tub and shower head all of which are part of the facility's potable water system. No presence of Legionella was found in the cooling tower via PCR testing."
Saturday, September 5, 2015 (Day 16)	
6:09 AM	Disinfection plan discussion email begins between IDPH, IVHQ, and the contractor.
9:39 AM	IEPA authorizes Quincy to operate at higher monochloramine residuals than normal due to the situation.
3:16 PM	Revised disinfection plan sent to IDPH, IVHQ, and CDC.
5:08 PM	Revised plan sent to IEPA Director.
Sunday, September 6, 2015 (Day 17)	
9:46 AM	ACHD reports to IDPH and IDVA that IVHQ only had two residents with signs and symptoms and that the situation is calm. ACHD also reported that the CDC was still working at its office.
3:23 PM	Water contractor provides disinfection plan to IDVA Director.

Tuesday, September 8, 2015 (Day 19)	
10:47 AM	IDPH reports 52 total confirmed cases from IVHQ of which 47 are residents. There are 7 laboratory confirmed legionella death cases.
	IDVA Director sends letter to residents' families to notify them of the outbreak and notes the efforts to get it fixed will begin on September 9th.
Wednesday, September 9, 2015 (Day 20)	
8:12 AM	IDPH reports to the CDC that the IDVA contractor is "beginning the shock of the system today with sodium hypochlorite."
8:56 AM	IDPH reports 53 total confirmed cases from IVHQ of which 48 are residents.
	The **eighth (8th) and ninth (9th)** deaths are confirmed.
12:30 PM	Hyperchlorination of the water system begins.
1:10 PM	IDVA media update reports that beginning today, potable water disinfection of the domestic cold and hot water systems will be performed.
7:22 PM	IDPH reports that the first flush is finished. Starting the final flush the next day at 9:00 AM. It was notes that "Things went well today and adequate chlorination was pushed through the entire system."
Thursday, September 10, 2015 (Day 21)	
9:00 AM	The IDVA contractor starts final flush of the potable water system.
3:49 PM	IVHQ email instructs staff to continue to use the water the way they have been, cold water for washing hands only, bottled water for drinking and oral care, special showerheads only for bathing unless the packets are used.
9:00 PM	IDPH Health Update notes 53 total confirmed cases from IVHQ of which 48 are residents and there are 9 confirmed deaths.
10:05 PM	IDPH Director reports to the Governor's Office that: "Today marked the first period in which we had no new cases. As our models projected, this coincides with the tail end of the anticipated latency period, which ends tomorrow. Although a trickle of new cases remains a possibility, it becomes less likely as the days pass. The focus now shifts squarely to remediation efforts, which will continue in phases."
Friday, September 11, 2015 (Day 22)	
10:22 AM	Per a conversation with the CDC, the IVHQ Director of Nursing instructs the staff to be more acutely aware and report residents with respiratory symptoms, continue to use bottled water for drinking and oral care, only use showers with special filters, no tub use, if the resident cannot shower use the "bath in a bag" system, use bagged ice from outside, and water from sinks can be utilized for hand washing.
11:33 AM	IDPH reports the current total is now 54 positive cases and 9 resident deaths from IVHQ.
3:20 PM	CDC reviews newly received water testing results and notes "It's pretty clear that there was extensive colonization throughout the water systems."
3:21 PM	IDPH summarizes the water test results and notes that: "Both fountains were negative for legionella. Cooling tower at top was also negative." Locations positive for legionella included both hot water tanks and locations in Markword and Elmore.
Monday, September 14, 2015 (Day 25)	
8:17 AM	ACHD reports the **tenth (10th)** and **eleventh (11th)** legionella related deaths occurred over the weekend.
10:38 AM	IDPH reports the current total is 54 positive cases (48 residents and 6 staff) and 11 resident deaths from IVHQ.
2:45 PM	IVHQ reports it received 82 negative tests.

Tuesday, September 15, 2015 (Day 26)	
7:43 AM	ACHD reports the **twelfth (12th)** death occurred early that morning.
1:47 PM	Water testing results from samples taken on August 24th are received and positive legionella cultures were found.
Wednesday, September 16, 2015 (Day 27)	
10:02 AM	ACHD reports one additional positive resident bringing the total to 55 positive with legionellosis (49 residents and 6 staff) and 12 total deaths.
Thursday, September 17, 2015 (Day 28)	
8:40 AM	IDPH reports to IDVA Director that the water testing contractor's preliminary reports show that the organisms have been killed and the mitigation from the hyper-chlorination and flushing was successful.
9:11 AM	IDVA Director reports to IVHQ that "Preliminary results show that the remediation efforts (flushing the pipes) worked. We can now return to the "new" normal of drinking water and bathing, etc. We can also go back to taking in admissions."
10:29 AM	IDPH reports the current total is 54 positive cases (48 residents and 6 staff) and 12 resident deaths from IVHQ.
2:13 PM	IVHQ reports to the US Department of Veterans' Affairs that: "The results came back today for the water and the water is safe to use. We are still not using the tubs and the ice machines per CDC and IDPH recommendations until the manufacturer can come to us and look at a proper disinfecting of these systems. We are still using the filtered shower heads at present."
2:22 PM	IVHQ is told by ACHD to only test individuals for legionellosis if they have pneumonia.
3:51 PM	Water testing results from samples taken before hyper-chlorination are received and positive legionella cultures were found in showers, sinks, and/or tub hoses in Fifer, Fletcher, and Neilson.
Friday, September 18, 2015 (Day 29)	
	IVHQ begins installation of point-of-use filters on showers and tubs.
11:02 AM	IDPH reports to the CDC that the point-of-use filters are "plugging immediately and are not providing reasonable usage times."
11:10 AM	The CDC responds: "I suspect the sloughing of biofilm due to the use of chlorine dioxide may have something to do with that. In terms of using a pre-filter your options are pretty open just as long as it gets the job done. If I could offer a good option I would but this is new territory for me as well. Let me know what you come-up [sic] with or if you need to discuss."
3:20 PM	Letter from IDVA Director distributed to the residents at IVHQ notifying them of the current situation at the home.
Wednesday, September 23, 2015 (Day 34)	
	IVHQ contracts with a licensed Class A water treatment vendor. Bainter Environmental agrees to be the "Operator in Reasonable Charge." Those duties include supervising operations of the water treatment facility and meeting all IEPA requirements. It also includes collecting water samples in accordance with the Safe Drinking Water Act.
Friday, September 25, 2015 (Day 36)	
1:32 PM	IDVA media update reports 54 individuals from the Illinois Veterans' Home-Quincy have tested positive for Legionnaires' disease, which includes 12 resident deaths. The update also notes: "Test results show *Legionella* bacteria were found in the cooling tower and hot water tanks, as well as sink faucets, showerheads, and tub faucets in buildings throughout the IVH-Quincy campus."

Monday, September 28, 2015 (Day 39)	
	IVHQ tracking logs show 82 staff and 138 residents sick -totaling 220 during the outbreak. There were 57 residents and staff positive for legionella. The other 163 residents and staff had respiratory symptoms including pneumonia/walking pneumonia, cough, fever, body aches, headaches, fatigue, nausea, and vomiting.

Source: OAG analysis of IDVA, IDPH, and ACHD documents.

Initial Employee Notification of the Disease by IDVA

For at least six days, until August 27, there was limited notification or specific procedures provided to the nursing staff at the Quincy Veterans' Home that were necessary to protect residents or employees. Allegations of poor communication with staff regarding the outbreak were the focus of several legislative hearings. It was alleged by one nurse from the Quincy Veterans' Home that she learned of the outbreak via social media. It was also alleged that one of the staff who was eventually diagnosed with Legionnaires' disease was never informed by IDVA or the Quincy Veterans' Home that there was an outbreak and never told to get tested for it.

On August 21, 2015, the Adams County Health Department issued a Health Advisory for Legionella at the Quincy Veterans' Home to its internal staff, which was forwarded to the Quincy Veterans' Home management. Based on our review of documentation and emails provided by IDVA and IDPH, this Advisory was not shared with the Quincy Veterans' Home nursing staff. Auditors reviewed all information provided and constructed the following timeline regarding employee notification.

August 22, 2015

The following day, Saturday, August 22, 2015, at 12:03 PM, the Quincy Veterans' Home sent out an email to all registered nurses and licensed practical nurses noting that the cases of Legionnaires' disease at the Elmore building were UNCONFIRMED. The email also noted the following: "**I want to reassure all staff that if we truly felt there was an issue with Legionella we would not put the Residents or Staff at risk.** I ask that you please not panic and do not discuss this with the residents. The last thing we need is for the residents to get worried and upset. Again this is an UNCONFIRMED diagnosis, as we find out more information we will keep you updated."

Subject: NOT CONFIRMED

Hello,
I'm sending this email to answer questions and concerns staff have had regarding **UNCONFIRMED** Legionnaires' Disease at the Elmore building. Please reassure staff that this in [sic] is an UNCONFIRMED diagnosis and precautions are being taken per directive. **I want to reassure all staff that if we truly felt there was an issue with Legionella we would not put the Residents or Staff at risk.** I ask that you please not panic and do not discuss this with the residents. The last thing we need is for the residents to get worried and upset. Again this is an UNCONFIRMED diagnosis, as we find out more information we will keep you updated. Please feel free to call me with any questions or concerns. Below is a brief discussion on the disease.

Note: The bold, red, and underlined text was included in the original email.

The Quincy Veterans' Home staff member who sent this email was not present the previous day for the meeting discussing the outbreak. According to the staff, she was asked the evening of August 21 to go in on Saturday and send the email. In addition to the nursing staff, the email was sent to the facility doctor, the nurse practitioner, the home administrator, and both the director of nursing and the assistant director of nursing. No revised or clarifying email from management was subsequently sent which confirmed the outbreak.

The email also contained some general information about legionella in the environment and the spread of the disease. It did not include procedures or precautions for how the staff should protect themselves or the residents, other than noting to: "always follow Standard Precautions and **MOST IMPORTANT WASH YOUR HANDS!!!**"

August 25, 2015

Three days after the initial correspondence was sent to the nursing staff, a second email was sent on Tuesday, August 25, 2015. The email did not specifically confirm the presence of Legionnaires' disease at the Quincy Veterans' Home. The email also continues to include: "**I want to reassure all staff that if we truly felt there was an issue with Legionella we would not put the Residents or Staff at risk.** I ask that you please not panic and do not discuss this with the residents. The last thing we need is for the residents to get worried and upset." This email includes more information about the disease such as how it is treated and people at risk. It does not lay out procedures or precautions for how the staff should protect themselves or the residents, other than noting to: "always follow Standard Precautions and **MOST IMPORTANT WASH YOUR HANDS!!!**"

August 26, 2015

On Wednesday, August 26, 2015, an email with the subject line of *Respiratory Etiquette* was sent to the nursing staff. It discusses covering your cough, droplet precautions, and handwashing. There was nothing that specifically discussed on how to prevent being infected with Legionnaires' disease.

Additionally, the Quincy Veterans' Home Administrator held an all staff meeting on August 26th, 2015. The written transcript of that meeting contained no specific confirmation of Legionnaires' disease at the Quincy Veterans' Home and no specific counts of residents or staff with confirmed cases. He did note that "There has been one confirmed case in the Adams County area."

August 27, 2015

On Thursday, August 27, 2015, six days after the confirmation of the outbreak, an email from the Quincy Veterans' Home Administrator was sent to the staff noting: "we are deeply involved in the activity of locating the Legionella source that has shown as a positive on labs." He also noted: "Many of the things that we will be coming out with are procedures that are geared towards isolating possible locations that the [*sic*] could be the source of the Legionella. Since this bug has been found in locations like cooling towers, showers, fa[u]cets, etc., we are directed to stop using those locations that could be a source. Please be assured we're doing everything we can to isolate areas that could be a source and this will also create

inconveniences and the need for adjustments in how we do some of the things we normally do, such as bathing and showering." This appears to be the first formal communication of the outbreak to the staff at the Quincy Veterans' Home.

According to the Quincy Veterans' Home, a document titled "Interim Guidelines for STAFF-Legionella" was also distributed on August 27, 2015. A hand-written date was at the top of the document. No email or other documentation was provided to support how the document was delivered to the staff. This is the first document auditors identified that provided staff with procedures or guidelines necessary to limit the exposure for both the residents and themselves. The document provides the following guidance:

- Avoid any action that will cause aerosolization or spray of water;
- Faucet Aerators have been removed from water faucets and these faucets can be used to wash hands. Avoid using the HOT WATER. Wash hands in COLD WATER;
- Bottled water for drink and oral hygiene;
- Do NOT use water fountains;
- Do NOT use showers or bath tubs;
- Ice Machines have been shut off, cleaned, and should be holding ice that has been brought into the facility in bags;
- Do NOT use coffee machines hooked up to water supply. USE Bottled water;
- Encourage use of alcohol-based hand rub along with hand washing from any sink in which the aerator has been removed with cold water; and
- Use sterile water for NG tube flushes, dilution of medications, respiratory supplies, etc.

NOTIFICATION OF DISEASE OUTBREAK TO QUINCY VETERANS' HOME STAFF	
RECOMMENDATION NUMBER **1**	***The Illinois Department of Veterans' Affairs and the Illinois Department of Public Health should ensure that once a legionella outbreak is confirmed at a State Veterans' Home, nursing staff and caregivers are given the necessary instructions and guidelines in a timely manner to limit exposure to aerosolized water in order to protect both the staff and residents from contracting Legionnaires' disease.***
DEPARTMENT OF VETERANS' AFFAIRS RESPONSE	The Illinois Department of Veterans' Affairs will continue to follow the guidance and recommendations given by the Illinois Department of Public Health, Adams County Health Department, Center for Disease Control, and the Water Management Team, as appropriate, once a legionella outbreak is confirmed. The Illinois Veterans Home at Quincy has developed an "Outbreak" policy to illustrate the definition of 'outbreak' to include the following: *When a commonality of symptoms is evident among residents or staff with common person, place, time, or event (such as an out-trip or party), suspect an outbreak.* Once an outbreak has been confirmed, all residents, POA's, and staff will be provided education on the organism, ways to eliminate or reduce exposure, and guidelines being implemented to prevent further exposure in accord with our policy.
DEPARTMENT OF PUBLIC HEALTH RESPONSE	The Department accepts the recommendation. IDPH has developed practices and materials to provide to facilities to help guide them when informing staff and residents. These materials are shared with local health departments as well, who are the lead public health investigators. IDPH will formalize these practices into written policies and procedures.

Monitoring of the Quincy Veterans' Home Residents

Auditors determined that the Quincy Veterans' Home did not have documentation to support increased monitoring of residents until after the residents exhibited the onset of the Legionnaires' disease symptoms. Although Quincy Veterans' Home officials noted that skilled care residents were monitored every 4 hours and independent care residents were monitored twice daily beginning on August 22, 2015, there was no documentation to support that a directive was provided to the nursing staff or whether it was followed. Additionally, auditors reviewed the medical records for the 45 residents who had disease onset after August 21, and found that none received increased monitoring prior to the onset of symptoms.

Auditors analyzed patient case files to determine a variety of factors regarding patient care in the 2015, 2016, 2017, and 2018 outbreaks. Fields analyzed included time in days it took to receive legionella test results, date of onset of symptoms, date antibiotics began, and multiple other fields. Auditors reviewed medical records for all cases with available information, to determine whether the power of attorneys were contacted to notify if a resident was positive for

Legionnaires' disease. There were 58 instances where the power of attorneys were contacted and only one that did not show documentation of a contact.

IDVA officials reported, on multiple occasions, that after notification of the outbreak, residents in skilled care were consistently monitored every 4 hours and independent living residents twice daily. No evidence of a written directive, email or bulletin to monitor residents every 4 hours was provided to auditors. Email correspondence does not support a protocol was in place which directed increased monitoring.

Based on an analysis of electronic patient files, 45 of the 51 residents who tested positive began exhibiting symptoms after August 21, 2015. Of the 45 patients with symptoms, 7 lived in independent living and the other 38 lived in skilled care. Electronic medical records provided contained both case notes and dates and times of vital signs. Based on the information provided, evidence does not suggest there were consistent checks prior to onset of symptoms. In some cases, vitals and/or notes suggest residents were not checked daily in skilled care. Once patients exhibited fever symptoms, they were consistently monitored every four hours, if not more often.

RESIDENT MONITORING	
RECOMMENDATION NUMBER **2**	***The Illinois Department of Veterans' Affairs should develop resident monitoring protocols for use during suspected legionella outbreaks at State Veterans' homes to ensure timely diagnosis and treatment of Legionnaires' disease.***
DEPARTMENT OF VETERANS' AFFAIRS RESPONSE	With the assistance of IDPH infection control team and the CDC, IVHQ has developed a clinical monitoring policy to provide advanced indications of potential Legionella case. This policy includes strict monitoring of pneumonia like symptoms; chest x-ray; rapid Urine Antigen test; and treatment of symptoms with a broad-spectrum antibiotic. Additionally, the local hospital lab has purchased equipment that shortens legionella diagnosis from 5 days to only hours.

IDPH Response to Legionella Outbreak

The initial 2015 outbreak was confirmed by IDPH in the late afternoon on Friday, August 21, 2015. Within approximately 30 minutes, a meeting was held between officials from IDPH, the Quincy Veterans' Home, and the Adams County Health Department. Questions were asked about the facility and the specific cases; however, only minimal guidance was given to the Quincy Veterans' Home by IDPH. The guidance consisted of:

- having a heightened awareness of respiratory deterioration, or fever/cough at this time;
- turning off the outdoor fountains;

- keeping the windows in the Elmore building closed (the initial two residents both lived in the Elmore building; and
- using bathing facilities other than the areas that were used by the two residents who tested positive.

According to IDPH officials, mitigating the risk of exposure is the main goal early on in the outbreak as there were several questions asked about whirlpool spas and hot tubs, sinks in resident rooms, ice machines on the positive residents' floors, and the number of shower/bathing rooms in Elmore. According to IDPH officials, IDPH asked officials from the Quincy Veterans' Home about any recent disruptions to its water system from the beginning of the outbreak on August 21st. However, Quincy Veterans' Home officials did not report an August 6, 2015 system disruption to IDPH until August 26, 2015. If this would have been reported to IDPH before August 26th, the focus on a potential campus-wide problem and its remediation could have begun earlier.

Initial Site Visit by IDPH at the Quincy Veterans' Home

IDPH did not go on-site at the Quincy Veterans' Home until midday on Monday, August 24th. That was nearly three days (approximately 67 hours) after the 2nd case was confirmed late in the afternoon on August 21st. The site visit focused on one building where the two confirmed cases were located. Environmental samples were taken from a decorative fountain, a cooling tower, and several bathing areas in the Elmore building. It was noted that the results would not be available for up to 14 days.

There was no site visit on Tuesday, August 25th. The site visit continued on Wednesday, August 26th, around midday. This was five days after the identification of the initial outbreak. Based on our review of documents and emails, IDPH met with Quincy Veterans' Home officials and found that the "central hot water tank may be associated with [the] outbreak." It was learned that hot water tank number 2 was out of service and sat unheated since the beginning of July due to a valve issue. The tank was heated and cycled back into service on August 6, 2015.

As discussed in Chapter One, later in the day following the discovery of the system disruption on August 26, 2015, IDPH began recommending water restrictions and remediation of the potable water system. The restrictions included:

- Immediately increase cooling tower free bromine level to 10 parts per million (ppm) logging every 4 hours;
- Isolate Tank #2 from the hot water supply in the power house, empty Tank #2 for swabbing on 8/27/15;
- Desist using tap water for any resident care or service, order bottled or packaged water for potable uses; and
- Discontinue any potable water use involving point-of-use fixtures where aerosols are likely.

Communication Between IDPH and the Quincy Veterans' Home

Based on our review of communications between IDPH and the Quincy Veterans' Home, auditors determined that there was limited communication between IDPH management and the Quincy Veterans' Home's staff. As identified in our time line, IDPH officials often did not know the seriousness of the problem at the Quincy Veterans' Home. For example, on Tuesday, August 25, 2015, the IDPH Director emailed, "I honestly didn't realize that so many other residents and employees at the facility are ill."

Additionally, on the morning of August 27, 2015, an IDPH official corresponding with the CDC did not know that residents had tested positive from several buildings at the Quincy Veterans' Home. Without complete knowledge of the actual situation at the Quincy Veterans' Home regarding the clinical findings, it is not possible for IDPH to make the necessary recommendations to remedy the situation. Additionally, IDPH investigators may have looked for additional causes if they were aware of the high number of sick residents and staff, and that the sick residents were housed in several different buildings.

Violation of the Plumbing Code

As noted in our timeline, the IDPH Director was informed about the issue with the hot water tank on August 29, 2015. At that time, he noted that it was a "citable offense;" however, IDPH chose not to cite the Quincy Veterans' Home. Auditors questioned IDPH about what the citable offense would be and why the Quincy Veterans' Home was not cited. IDPH responded that:

> *The release of the stagnant water at IVHQ, as outlined in the CDC's December 2015 Trip Report, could have created a health risk to the residents and staff. IDPH's Plumbing Code, found at 77 Illinois Administrative Code, Section 890.110(d) states, "Regardless of the age of the building, where a health or safety hazard exists because of an existing plumbing installation or lack thereof, the owner or his or her agent shall install additional plumbing or make corrections as may be necessary to abate the hazard or violation of this Part.*

According to IDPH, the Plumbing Code does not allow IDPH to fine a health care facility. Rather, the Plumbing Code only allows IDPH to require a health care facility to take corrective actions to fix the plumbing problem(s) that has been identified.

IDPH officials noted that "IVHQ staff disclosed this issue to IDPH on or around August 26, 2015. By that time, IVHQ had addressed the situation roughly three weeks beforehand. The corrective actions IDPH would have required as part of a citation would have been the same ones that IVHQ had already implemented. Thus, there would have been no consequence to IVHQ had IDPH cited them, which is one reason that IDPH did not issue a citation. As noted above, the Plumbing Code does not allow for monetary fines on facilities. It would have been duplicative to issue a citation requiring corrective actions that had already been implemented three weeks prior."

IDPH indicated that its focus in August 2015 was providing rapid response to the outbreak. Issuing a citation would not have changed IDPH's response strategy. Nor would it have impacted the course of the outbreak in 2015 or any subsequent clusters in 2016, 2017, or 2018.

MONITORING BY IDPH	
RECOMMENDATION NUMBER **3**	***The Illinois Department of Public Health should:*** • ***revisit its policies and determine what response timeframe is adequate to conduct on-site monitoring visits in response to a confirmed disease outbreak such as Legionnaires' disease; and*** • ***increase communication with the facility's staff during future outbreaks to ensure that IDPH is aware of the severity of the outbreak.***
DEPARTMENT OF PUBLIC HEALTH RESPONSE	The Department accepts the recommendation. IDPH will work to standardize policies and procedures for on-site monitoring visits by local health department epidemiological and environmental investigators, and by IDPH when the local health department requests IDPH on-site assistance.

Response to Positive Water Test Results

IDVA contracted with Phigenics, LLC. to perform water testing on a bi-weekly basis beginning in October 2015. Auditors were provided access to the Action Item Tracker data from the phiMetrics web portal which was used by Phigenics to monitor and report associated water testing results and remediation actions taken.

Auditors selected 10 legionella positive water testing results to sample to determine whether the appropriate remediation actions were taken by the Quincy Veterans' Home. The sample was provided to the Quincy Veterans' Home and on July 16, 2018, auditors requested that the Quincy Veterans' Home provide information to support what remediation actions were taken. After six additional attempts to get this information, the Quincy Veterans' Home did not provide a response until some information was received on March 5, 2019, which was one day after the responses to the audit report were due. As a result, auditors did not review the information provided and relied on a review of the phiMetrics Action Item Tracker data to identify what remediation efforts were taken and were reported to Phigenics.

Action Item Tracker entries from October 2015 generally show how remediation efforts were conducted by the Quincy Veterans' Home. One example was from a positive result from the Elmore building from September 29, 2015. On October 6, 2015, the Action Item Tracker showed a contingency response of both the hot and cold water which included the flushing of each for a minimum of five minutes. This was followed by submersing the faucet stems in a one-to-one solution of bleach and water for a minimum of five minutes. Finally, both the hot and cold water at the faucet was flushed again for a minimum of five minutes. According to the

Quincy Veterans' Home, this was generally the remediation effort until the infrastructure improvements were implemented.

Notice to the Public

The first notice to the public regarding the outbreak at the Quincy Veterans' Home was at 12:47 PM on August 27, 2015. This was the next day after positive test results for six additional residents were received. The results were received at 8:57 PM on August 26, 2015. This brought the total positive resident count to eight.

Auditors searched statutes, rules, policies and procedures, and standards for criteria for the public notification of Legionnaires' disease in a healthcare facility. Auditors also discussed this with IDPH officials. No specific criteria were identified. According to IDPH officials, from 1997 to August 2015, there were only three legionella outbreaks associated with healthcare facilities in Illinois and in all three instances, there was no public notification.

The Administrative Code for Communicable Disease Control and Immunizations (77 Ill. Adm. Code 690) does not provide any guidance on notification to the public on outbreaks in general. However, section 100(c) identifies legionellosis as a "Class II" disease and condition and only requires reporting of a suspected or diagnosed case to the local health department within seven days, which then has an additional seven days to report it to IDPH.

Current Guidance from the Association of State and Territorial Health Officials

According to the Association of State and Territorial Health Officials (ASTHO), it is a "national nonprofit organization representing public health agencies in the United States, the U.S. Territories, and the District of Columbia, and over 100,000 public health professionals these agencies employ. ASTHO members, the chief health officials of these jurisdictions, formulate and influence sound public health policy and ensure excellence in state-based public health practice." IDPH provided auditors with a release by the Association of State and Territorial Health Officials from November 8, 2018, which noted:

> *There is no national standard concerning the timing of public notification to prevent the spread of Legionella. Health officials must instead rely on the facts of the specific outbreak situation, assess the risks and benefits of notification, and consider other factors to determine the appropriate course of action to reduce harm, protect health, and save lives.*

The release also noted that the most urgent priority is identification of those potentially exposed and mitigating the sources of infection. The release suggests that health authorities should provide immediate guidance to the facilities where the outbreak occurred. With specific regard to public notification, it notes:

> *Public notification is, therefore, often not an urgent priority, particularly when there is no ongoing risk to the public and health agencies are actively working with facilities on how to (1) identify and notify anyone potentially exposed and at risk for illness and (2) implement potential remedial measures. The decision to issue public notification also involves carefully considering the potential*

ramifications of acting on preliminary or incomplete information, which could lead to unnecessary and burdensome protective actions being taken and result in erosion of trust in the public health authority.

Decisions regarding public notification of Legionella outbreaks should be thoughtfully made by qualified, experienced public health professionals and should be informed by a solid understanding of the epidemiology of the disease and the particular characteristics of each individual outbreak setting. We strongly assert that public health officials should not be subjected to civil penalties or criminal charges for decisions made in good faith using available information and informed by sound public health science and practice.

RESPONSE TO THE 2016, 2017, AND 2018 OUTBREAKS

The legionella outbreaks at the Quincy Veterans' Home in the three years after the initial outbreak in 2015 were much less severe. In total, there were 17 employees, volunteers, and residents who tested positive for legionella after 2015. Of the 17, 8 (47%) lived in the Elmore building. There was one resident death due to legionella in the years following 2015, which occurred in 2017.

According to Quincy Veterans' Home officials, the responses to these subsequent outbreaks were aimed at taking specific actions at the positive locations at the Quincy Veterans' Home and generally did not result in campus-wide action being taken. These actions included remediation of specific fixtures at positive locations. Additionally, after each of the additional three outbreaks were identified, the CDC was contacted and the CDC came on-site and reviewed the situation.

2016 Outbreak

After the first outbreak ended in mid-September 2015, no one associated with the Quincy Veterans' Home tested positive for legionella until March 2016 when a volunteer tested positive. As shown in Exhibit 2-2, in 2016, two volunteers had onset for legionella in March and April and six residents had onsets between July and December 2016. The 2016 resident outbreak was spread over five months and included residents from five different residential buildings. The Elmore building was the only building with more than one positive resident.

Exhibit 2-2
2016 LEGIONELLA CASES AT THE QUINCY VETERANS' HOME

	Case Type	Onset Date
1	Volunteer	March 2016
2	Volunteer	April 2016
3	Resident	July 2016
4	Resident	July 2016
5	Resident	August 2016
6	Resident	August 2016
7	Resident	September 2016
8	Resident	December 2016

Source: Information provided by the Quincy Veterans' Home.

Based on the information provided by IDVA, several actions were taken.

- July 26, 2016 -IDPH/IDVA press release noted that two residents at the Quincy Veterans' Home had been diagnosed with Legionnaires' disease.
- July 26, 2016 - the Quincy Veterans' Home closed the pool.
- July 26-27, 2016 -Supervisors spoke to staff and residents.
- July 29, 2016 -letters sent to residents and staff from IDVA Director which provided notification of the two positive residents. The staff letter noted that precautions have been taken that included: 2 hour vital sign checks of all residents; stopping of admissions; closure of the pool; closure of the guest house; turning off the lake fountain; stopping use of therapy tubs; and the increasing of flushing of water fixtures.
- August 2016 -Legionella Policy was implemented to prevent outbreaks.
- September 12-26, 2016 -Mandatory training via computer was provided to the nursing staff; however, the training did not include any of the guidelines that were provided during the 2015 outbreak. The training essentially included general information on Legionnaires' disease and treatment.

Our review of the phiMetrics water testing for 2016 showed an increase of positive tests in the second and third quarters of the calendar year. The percent of positive tests increased from 8 percent in the first quarter, to 18 percent in the second quarter and to 16 percent in the third quarter. Based on our review of the Action Item Tracker, the Quincy Veterans' Home focused on faucet-specific remediation efforts for those residents with positive tests in July 2016.

2017 Outbreak

Auditors received very little information from IDVA regarding the 2017 outbreak. As shown in Exhibit 2-3, five residents had onsets between May and November 2017. The 2017 resident outbreak was spread over six months and included residents from three different residential buildings. The Elmore building continued to be the only building with more than one positive resident.

Exhibit 2-3
2017 LEGIONELLA CASES AT THE QUINCY VETERANS' HOME

	Case Type	Onset Date
1	Resident	May 2017
2	Resident	September 2017
3	Resident	October 2017
4	Resident[1]	October 2017
5	Resident	November 2017

Note: [1] Passed away due to legionella.

Source: Information provided by the Quincy Veterans' Home.

The only document provided by IDVA that specifically pertained to its response to the 2017 outbreak was a press release dated November 28, 2017. The release noted that one resident at the Quincy Veterans' Home was diagnosed with Legionnaires' disease.

Action Item Tracker entries from May 30, 2017, show that remediation efforts took place following the first resident's positive confirmation. In this instance, the faucet and mixing valve were removed. The fixtures, along with the adjacent room's fixtures, were swabbed for testing and new fixtures were installed in the

resident's room. Both the resident's room and the adjacent room's faucets were flushed with 154 degree water for five minutes followed by flushing with a hot/cold mixture for five minutes.

Based on our review of the Action Item Tracker, the Quincy Veterans' Home focused on faucet specific remediation efforts for those residents with positive tests in 2017.

2018 Outbreak

Although Senate Resolution Number 1186 does not ask the Office of the Auditor General to report on the response to the 2018 outbreak at the Quincy Veterans' Home, auditors decided to obtain the information and to report on it. As shown in Exhibit 2-4, the 2018 outbreak consisted of a total of four residents all testing positive in February 2018. Three of the four residents lived in the Elmore building. There were no reports of employees or volunteers who tested positive.

Exhibit 2-4
2018 LEGIONELLA CASES AT THE QUINCY VETERANS' HOME

	Case Type	Onset Date
1	Resident	February 2018
2	Resident	February 2018
3	Resident	February 2018
4	Resident	February 2018

Source: Information provided by the Quincy Veterans' Home.

The response by IDVA to the 2018 outbreak was more timely and informative than after the other three outbreaks. For example, according to Quincy Veterans' Home officials, all power of attorneys were called and were informed of the outbreak at the Quincy Veterans' Home on February 12, 2018, which was the same day the results for first two positive residents were received. Documentation provided by IDVA outlined the following water restrictions put in place on February 15, 2018:

- Restrict sinks across campus until laminar flow devices installed;
- Showers can be used because they have PALL (point-of-use) filters installed;
- No tub faucet usage, but can use shower wands because they also have point-of-use water filters;
- Empty ice coolers and professionally sanitize. Purchase ice bags and store in separate portable coolers;
- Ice machines will be out of order. Please place "out of order sign" on the machines;
- Take drinking water fountains out of service;
- Use bottled water for drinking;
- NG/PEG tubes should not be flushed with tap water, but instead with distilled or bottled water;
- Suspend 2am flushings;
- Residents are to have temperatures taken every 2 hours while awake, and full vitals every 4 until further notice; and
- Domiciliary residents will have temperatures taken two times in the 7am – 3pm shift and two times between 3pm - 11pm.

After the 2018 outbreak, the Quincy Veterans' Home decided to comply with the CDC recommendation to put water filters on all sinks and ice machines, not just showers and tubs. According to the Quincy Veterans' Home, this was completed in April 2018. The Quincy Veterans' Home also decided to install point of entry filters (whole building filters). These filters were installed in both the Elmore and Schapers buildings in June 2018. Since the water filters were installed on all sinks and ice machines, no additional cases of Legionnaires' disease have occurred as of December 2018.

CENTERS FOR DISEASE CONTROL

The Centers for Disease Control and Prevention (CDC) was contacted by IDPH following the outbreaks of Legionnaires' disease in 2015, 2016, 2017, and 2018. Exhibit 2-5 shows the dates the CDC began conducting its site visits during each outbreak. During each visit, environmental assessments were conducted to determine how to mitigate risk to employees and staff at the Quincy Veterans' Home. Additionally, the recommendations consistently included disease surveillance and clinical recommendations to ensure patients were tested and monitored adequately when exhibiting symptoms. According to the CDC, despite implementing all recommendations, it may be impossible for the Quincy Veterans' Home to completely eradicate the disease from the facility due to the strain's persistence in the biofilm and plumbing system.

Exhibit 2-5
DATES THE CDC WAS ON-SITE AT THE QUINCY VETERANS' HOME

September 1, 2015
August 8, 2016
December 4, 2017
February 15, 2018

Source: CDC reports provided by IDVA.

CDC 2015 Quincy Veterans' Home Trip Report

The Illinois Department of Public Health contacted the Centers for Disease Control on August 23, 2015, regarding five confirmed cases of Legionnaires' disease. The CDC was contacted by IDPH to assist with its formal investigation and aided officials on-site from September 1 through September 11, 2015. The CDC's objectives were to assist with an environmental assessment, conduct case interviews, and make recommendations to prevent further spread of the disease. The initial environmental assessment focused heavily on the potable hot-water tanks, the cooling tower, and other possible facility-wide exposure areas. Risks were identified for aerosolization in patient sinks, shared shower areas, whirlpool tubs, and sprayers in dietary spaces.

According to CDC officials, "The LD outbreak epi-curve indicated a likely point-source outbreak with a peak on August 23-24, which had largely resolved by August 31." While on-site, CDC officials could not determine the source of the original outbreak, but did note a disruption with the potable water system. The report noted that in July 2015, a boiler was taken offline and remained stagnant for 30 days; it was circulated through the system without being heated to 140°F (the temperature necessary to kill legionella bacteria) on August 6, 2015.

Environmental water sampling was conducted during the CDC visit on September 3, 2015. A total of 75 samples were taken and 47 (63%) were positive for "L. pneumophilia

serogroup 1 (Lp1)," which according to the CDC is the most prevalent disease-causing species and serogroup of legionella. IDPH had also conducted sampling prior to CDC's arrival and found 23 of 39 (59%) were positive for Lp1. The samples were taken at various locations throughout the Quincy Veterans' Home campus.

Although a specific source of the outbreak was not identified in its December 2015 report, the CDC identified factors that contributed to the initial outbreak:

- Aged plumbing system with biofilm buildup;
- IDVA did not meet cooling tower maintenance standard in line with ASHRAE 188 (American Society of Heating, Refrigerating and Air-Conditioning Engineers), which included periods of potential suboptimal biocide treatment and a system that was operating while not clean upon visual inspection;
- Stagnant water in water tower leading to potential contamination;
- Temperature of potable water system below temperature required to kill legionella;
- Lack of backflow prevention;
- Lack of comprehensive water management plan;
- Lack of on-site Urinary Antigen testing; and
- Timeliness and lack of methods for detecting increases in cases of pneumonia.

Following its visit, the CDC provided recommendations to possibly decrease the further spread of Legionnaires' disease. The recommendations focused on cooling tower and potable water improvements, and on patient/clinical surveillance. The cooling tower recommendations included cleaning of the tower and maintaining records. The CDC also recommended potable water system upgrades which included testing and disinfection procedures, upgrades to prevent water stagnation, and ensuring temperatures in excess of 140°F. Patient surveillance recommendations were also addressed in the report which called for continued testing of pneumonia cases, specimen collection, and monitoring.

Most notably, the CDC recommended point-of-use filter installation on all fixtures fed from the potable hot-water system. The Quincy Veterans' Home did not install point-of-use filters on all fixtures, choosing only to install them on showers. It was recommended again in 2017 and 2018 to install point-of-use filters on all fixtures to minimize the risk of exposure to residents, staff, and visitors. The recommendations in 2018 also noted that "IVHQ and similar skilled nursing and long-term care facilities nationwide house populations that are highly susceptible to Legionnaires' disease because of advanced age and underlying health conditions." According to the Quincy Veterans' Home, filters were not installed on fixtures other than the showers until after the February 2018 outbreak, in April 2018. As of December 2018, there have been no additional confirmed cases of Legionnaires' disease at the Quincy Veterans' Home.

RECOMMENDATIONS BY THE CENTERS FOR DISEASE CONTROL	
RECOMMENDATION NUMBER **4**	***The Illinois Department of Public Health and the Illinois Department of Veterans' Affairs should ensure the State facilities, such as the Quincy Veterans' Home, implement all recommendations from the Centers for Disease Control following confirmed outbreaks such as Legionnaires' disease.***
DEPARTMENT OF VETERANS' AFFAIRS RESPONSE	The Illinois Veterans' Home at Quincy implemented all recommendations from the CDC reports to the best of their ability with the knowledge and understanding acquired through expert services up to that time and when deemed prudent by the recommending agencies. Point of use filtration was installed on high risk areas in 2015, which included showers and tubs. The CDC itself referenced in their reports the unknown effect of reduced water flow on bacteria growth with the use of point of use filters being used long term on all points of use. In addition, as referenced earlier, the new water treatment facility came online in June 2016. The results from the water treatment plant showed that positive legionella continually lowered and eventually depleted over time, illustrating the efficacy of the new treatment plant as a reliable engineering control. ***Auditor Comment:*** *The CDC did not discuss the unknown long term effects of facility-wide point-of-use filters until its fourth Quincy report, which was released on January 4, 2018. This was two years after the original CDC recommendation to install point-of -use filters on all faucets and showerheads at the facility. It was also just a few months before the Quincy Veterans' Home made the decision to follow the 2015 CDC recommendation after four confirmed cases of Legionnaires' disease were identified at the Home in February 2018.* *Additionally, after the new water treatment facility came online in June 2016, 15 residents tested positive for Legionnaires' disease, including one death. Consequently, point-of-use filters were installed on all faucets in April 2018, and there have been no new cases of Legionnaires' disease at the Quincy Veterans' Home since that time.*
DEPARTMENT OF PUBLIC HEALTH RESPONSE	The Department accepts the recommendation. IDPH will continue to ensure state facilities are provided, in writing, with CDC recommendations and are provided with the opportunity to address any concerns or issues with the CDC as state facilities address recommendations. The Department does not have a mechanism to force state facilities to implement CDC recommendations as that would require legislative action.

CDC 2016 Quincy Veterans' Home Trip Report

Following the 2016 Legionnaires' disease outbreak, CDC officials arrived on-site August 8 through August 11, 2016. At that point, two residents and two staff had tested positive for Legionnaires' disease in 2016. Officials noted significant changes including a new chemical treatment plant that became operational in June 2016 along with various improvements to the portable water system and cooling tower. According to the CDC, the hot water temperature was increased, sections of unused piping were removed, and the Quincy Veterans' Home completed daily flushing to prevent water stagnation.

During its 2016 site visit, the CDC identified extensive biofilm in the galvanized pipes that distribute potable water to older buildings. Newer buildings, such as Markword and Fifer, with copper piping resulted in mostly negative legionella test results. The residents from the two cases reviewed by the CDC resided in rooms with possible exposure via in-room sinks. Both residents resided in buildings containing older galvanized piping where positive test results continued despite adequate chlorination and hot water temperatures.

Officials with the CDC documented the implementation of the water management program through flushing, cooling tower maintenance, and record-keeping. Environmental water sampling was conducted during the CDC visit from August 9 through August 11, 2016. A total of 42 samples were taken and 1 (2.4%) was positive for Lp1.

The CDC noted in its 2016 report, "Since the 2015 outbreak, significant remediation efforts undertaken by [the Quincy Veterans' Home] have substantially reduced the presence of *Legionella* in the potable water system… In spite of the progress, the potable water system continued to pose a potential risk for *Legionella* growth and transmission."

Recommendations noted in the 2016 report included suggestions for the Adams County Health Department and IDPH. Both were to decrease the time required to receive specimen results from testing facilities. It was recommended that the Adams County Health Department investigate and also train local healthcare providers on testing for Legionnaires' disease. Nursing staff at the Quincy Veterans' Home were advised to continue surveillance and testing of individuals exhibiting respiratory/pneumonia symptoms.

In regards to the water management program, the CDC recommended IDVA officials continue water management meetings, clean and replace hot water mixing valves accordingly, continue the flushing program and ensure training in flushing protocols, maintain documentation in logbooks, and continue operation and maintenance of cooling tower. Additional parameters were suggested for water sampling by considering additional sampling points and maintaining adequate documentation.

CDC 2017 Quincy Veterans' Home Trip Report

In 2017, six cases of Legionnaires' disease were reported to the CDC by IDPH. After the sixth case was confirmed in November, the CDC deployed a team to the Quincy Veterans' Home from December 4 through December 6, 2017, to review procedures and conduct an environmental assessment of exposure areas.

Regarding the implementation of previous CDC recommendations, the CDC noted the following in its 2017 report:

> *Since 2015, IDPH and IVHQ staff have committed considerable time, effort, and resources to implementing a water management program that has reduced both the number of Legionnaires' disease cases associated with IVHQ and the amount of detectable Legionella in the water systems. How much further our recommended changes will reduce risk is unclear. Every approach to risk reduction has benefits but also has challenges and can lead to unintended consequences*.

In terms of disease surveillance, the CDC found that a legionella testing protocol had not been created, which made it difficult to ensure consistent testing of residents at the Quincy Veterans' Home. It was also observed that coordination between Blessing Hospital and the Quincy Veterans' Home could be strengthened to ensure appropriate legionella testing is performed on patients with pneumonia.

CDC officials reviewed flushing procedures as part of their water management program review. Per observations and discussions with staff, flushing took place at night and residents were "typically" in their rooms. The CDC found daily flushing logs lacked details such as what time of day the flushing occurred. The report also noted that based on the CDC observations, daily flushing may not have been conducted consistently as they observed water discoloration, which is an indicator of stagnant water. A lack of documentation of supervisory verification of the flushing was also noted, which according to the CDC is recommended per industry standards.

After two cases occurred in October 2017, Quincy Veterans' Home staff identified inconsistent levels of disinfectant in the water main supplying the Quincy Veterans' Home and some buildings on campus. CDC officials determined IDVA staff addressed disinfectant levels and increased temperatures to prevent bacteria growth, suggesting the strain exists in the biofilm and sediment of the plumbing. The CDC noted in its 2017 report, "Complete eradication of legionella in any large, complex building water system may not be possible."

Environmental water sampling was conducted during the CDC visit from December 5 and December 6, 2017. A total of 48 samples were taken and 1 (2.1%) was positive for Lp1.

Several of the CDC recommendations made in 2017 focused on mitigating risk to staff and residents, although the CDC reported that total elimination of all future cases may not be possible. Recommendations to the Quincy Veterans' Home related to mitigating the risk of exposure included:

- expanding the use of point-of-use filters for the removal of legionella from only showerheads to **all** potable water fixtures;
- decreasing the time to receive test results; should continue testing and monitoring for changes in respiratory conditions; and
- improving communication with Blessing Hospital.

The CDC also recommended that the Quincy Veterans' Home continue to follow its water management plan parameters related to disinfectant levels and water temperature. Most notably, the Quincy Veterans' Home was instructed to modify its flushing protocols to ensure residents were not in their rooms while the flushing occurred.

CDC 2018 Quincy Veterans' Home Trip Report

On February 12, 2018, the CDC was notified by IDPH of two confirmed residents with Legionnaires' disease from the same building at the Quincy Veterans' Home. On February 15 and 16, 2018, the CDC visit focused on patient exposure sites and, specifically, whether flushing had been performed or modified, based on 2017 recommendations. Environmental water sampling was conducted during the CDC visit on February 15, 2018. A total of 22 samples were taken and 1 (4.5%) was positive for Lp1.

IDPH staff interviews revealed that patients were not removed from rooms when flushing was performed, despite being recommended in the 2017 CDC report. The CDC reported residents were not consistently removed from rooms; thus removing residents from rooms during flushing was subsequently recommended again in 2018.

The CDC recommended to immediately remove all residents when flushing fixtures. Additionally, the CDC again recommended that the Quincy Veterans' Home should immediately implement water restrictions or place point-of-use filters on **all** fixtures until further notice. The Quincy Veterans' Home was also instructed to continue to work with the legionella experts to determine the best flushing strategy to minimize transmission and to develop a protocol to ensure clogged filters are replaced to minimize the risk of exposure to residents, staff and visitors.

Auditor Testing of CDC Recommendations Related to the Quincy Veterans' Home's Remediation Efforts

Beginning in 2015, the CDC began recommending that tests for legionella should continue indefinitely with pneumonia cases. In the CDC Report released on May 25, 2018, continued testing was again discussed after the CDC's investigation at the Quincy Veterans' Home.

The Quincy Veterans' Home developed the Legionella Policy in 2016. The policy states testing should take place with immunocompromised residents with pneumonia and all residents with pneumonia in the event of an outbreak. The Quincy Veterans' Home began tracking the number of individuals infected with pneumonia per month, beginning in January 2006. From January 2006 through June 2018 the yearly average of individuals with pneumonia was 120 or 10 residents per month. Notably, a flu outbreak resulted in 43 individuals sick with pneumonia in March 2006. Numbers remain consistent with normal increases over cold and flu season. In August 2015, during the peak of the Legionnaires' disease outbreak, the Quincy Veterans' Home documented 45 individuals were sickened with pneumonia, which was over 12 percent of residents in the home at that time.

Auditors determined there were 376 cases of diagnosed pneumonia at the Quincy Veterans' Home from August 2015 through June 2018. Auditors selected and reviewed the records of 100 residents who had pneumonia during this period to determine whether they were tested for legionella. The sample was judgmentally selected from 8 different months from a list of all patients at the home who were diagnosed with pneumonia. Testing found that out of the 100 sampled, 14 were not tested for Legionnaires' disease. According to Quincy Veterans' Home officials, 3 of the 14 were not checked due to an aspiration pneumonia diagnosis. According to Quincy Veterans' Home officials, the remaining 11 residents were not tested due to being admitted to the hospital. Officials stated that they have no authority over whether a resident is tested once admitted to the hospital.

Chapter Three

INFRASTRUCTURE IMPROVEMENTS

CHAPTER CONCLUSIONS

According to Centers for Disease Control (CDC) site visit reports, the water system at the Quincy Veterans' Home was very complex. The infrastructure was old and has had several major water utility upgrades and construction projects since it was established in 1886. The reports also identified several reasons/issues associated with legionella present at the Quincy Veterans' Home.

IDPH worked in conjunction with the CDC and Adams County Health Department to respond to the outbreak. On September 29, 2015, the Quincy Veterans' Home requested the Capital Development Board (CDB) procure an emergency contract to implement infrastructure changes to prevent the further spread of Legionnaires' disease. As a result, in 2016, two major infrastructure projects were completed. First, the hot water system was decentralized allowing for appropriate hot water temperatures needed to control legionella. Second, the on-site chemical treatment facility was completed to ensure appropriate disinfectant levels were maintained at the Quincy Veterans' Home. The water treatment facility was completed in June 2016.

INFRASTRUCTURE IMPROVEMENTS

Senate Resolution Number 1186 directed the Auditor General to review the type, cost, and timing of any infrastructure or other building improvements intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence. Several infrastructure improvements have been completed at the Quincy Veterans' Home which include: installing a water treatment facility on the Quincy Veterans' Home campus; decentralizing the hot water system; installing filters on all fixtures; and installing chemical injection mechanisms for individual buildings.

Complex Water System

According to CDC site visit reports, the water system at the Quincy Veterans' Home was very complex. The infrastructure was old and has had several major water utility upgrades and construction projects since it was established in 1886. These reports identified several reasons/issues associated with legionella, such as:

- a campus-wide hot water loop with two boilers with sub-optimal hot water temperatures throughout the entire facility;
- a 500,000 gallon water storage tower with unpredictable inflow and outflow which may result in extended water storage;
- inadequate disinfectant levels in the potable water;

- lack of backflow prevention; and
- a distribution system with dead-end lines, opportunities for water stagnation, and irregular water flow.

In summary, the infrastructure present at the Quincy Veterans' Home prior to the 2015 outbreak contained issues known to contribute to legionella amplification.

Emergency Contracts

After IDPH worked in conjunction with the CDC and the Adams County Health Department to respond to the outbreak, on September 29, 2015, the Quincy Veterans' Home requested that the Capital Development Board procure an emergency contract to implement infrastructure changes to prevent the further spread of Legionnaires' disease. On October 1, 2015, a multi-agency meeting between IDVA, the Capital Development Board, IDPH, and BRiC Partnership LLC (BRiC) was held to discuss the emergency upgrades to the potable water system. BRiC was authorized to provide a design and give directives on how to implement the work outlined by IDPH to improve the infrastructure of the domestic water system. Additionally, on October 6, 2015, Doyle Plumbing was authorized to begin work to provide repairs to the domestic water system.

Infrastructure Improvements at the Quincy Veterans' Home

A multi-agency effort began immediately after the outbreak that consisted of several meetings to determine the best course of action for infrastructure improvements at the Quincy Veterans' Home. Meetings began on October 1, 2015, between agencies and included representatives from the Capital Development Board, IDVA, the Chief Procurement Office, IDPH, and BRiC.

During the first meeting, it was noted that the domestic water system was a source of legionella bacteria on campus. Weekly meetings continued to take place as the project team decided the course of action for infrastructure at the Quincy Veterans' Home. During these meetings, it was determined that the following areas needed to be addressed:

- decentralizing the hot water system;
- adding a new water service main from the city of Quincy;
- providing an on-site chemical treatment facility;
- adding backflow protection for cold and hot water piping throughout the campus;
- eliminating dead-end water distribution lines; and
- removing asbestos.

Based on our review of documentation and conversations with officials from IDPH, IDVA, and the Capital Development Board, a comprehensive list of improvements and completion dates was produced (see Exhibit 3-1). It's important to note that many of the infrastructure improvements were implemented in stages. The multi-stage process required an

extended period of time to get projects to completion. For example, mixing valve installation began on October 26, 2015, but was not completed until January 2016. A second example is the project team elected to decentralize the hot water system in November 2015, but due to the several steps required to complete this project, it was not completed until May 2016.

Exhibit 3-1
LIST OF INFRASTRUCTURE IMPROVEMENTS AT THE QUINCY VETERANS' HOME
November 2015 through June 2018

Date Completed	Improvement	Purpose
Nov-2015	New 12" Service Main from city of Quincy	The purpose of the new water main or service in this case was to provide a dedicated 12" service to the entire campus, previously served by three smaller service lines. This service was installed to the newly constructed water treatment plant on campus.
Jan-2016	Check valves installed at building water services for backflow prevention	Prior to this date, each building on the campus connected to the water supply loop was directly connected without any protection of the supply from backflow. This condition did not allow buildings contaminated with legionella to be isolated from the other buildings on campus or the city of Quincy.
Jan-2016	Point-of-use mixing valves installed across campus	Valves were necessary to prevent scalding once the decentralized hot water heaters were installed.
Feb-2016	Underground gas service lines complete	In order to replace the campus-wide hot water supply, each building was required to have its own properly sized supply of natural gas.
Mar-2016	Markword vault modification for Locust St. dead leg elimination is completed	The project team discovered a dead leg or unused water service pipe. Removal of this dead leg was one of many steps to reduce unused piping and eliminate harborage for legionella.
May-2016	Decentralized hot water system; Water heaters installed in all buildings that require hot water	Decentralization of hot water production was essential to maintaining appropriate hot water temperatures to control legionella. This milestone reflects the end of the centralized supply of hot water and the beginning of dedicated building hot water production.
Jun-2016	Automatic flush valves on hydrants at various locations; Water treatment facility building complete; Additional dead legs are removed	Installation of flush valves and elimination of dead legs was accomplished to provide for flushing of the campus water supply loop (main) and to reduce harborage for legionella respectively. Both activities contributed to ensuring appropriate disinfectant levels were maintained.
Sep-2016	New therapy tubs delivered and installed	The initial investigation for legionella discovered that existing jetted bathing tubs were highly colonized with legionella. The installation of redesigned bathing tubs reduced risk and improved maintenance.
Mar-2018	New faucets to accommodate point-of-use filters on sinks	The decision to install microfilters was made to accomplish a primary barrier between the water source and the residents/staff. In order to comply with the plumbing code and retain usability of the hand sinks, new faucets with a raised faucet neck were required.
Apr-2018	Point-of-use filters installed throughout campus on all sinks, showers, and ice machines	Installation of microfiltration began long before this date (September 2015), this date represents completion of the installation of filters on all outlets in residential areas on campus.
Jun-2018	Point of entry filtration installed in Elmore and Schapers buildings	The water management team determined that installation of point of entry filtration would extend the life of the installed microfilters and reduce the amount of free-floating debris that might have been feeding or supporting legionella.

Source: Information provided by the Capital Development Board and IDPH.

Quincy Veterans' Home Facility Tour

Auditors toured the Quincy Veterans' Home facility in March 2018. Auditors specifically entered and walked through both the Fifer infirmary and the Elmore infirmary. Both buildings looked clean and appeared to be well maintained. Auditors did not tour the entirety of all buildings; the tour consisted of a general tour of the first floors and the basement of Fifer.

Additionally, auditors observed one of the tub/shower rooms at Fifer and were shown the tub and shower wand filters (see Image 1). Auditors also observed point-of-use water filters on all faucets (see Image 2) and drinking fountains in both the Fifer infirmary and Elmore infirmary. Under each sink, auditors were shown mixing valves that mix the 165 degree Fahrenheit water with the cold water right below the sink (see Image 3). All filters observed had a replacement date written on them to ensure that the filters were changed at least every 30 days. During the tour at Fifer, auditors were shown the new decentralized hot water heaters that were installed in 2016 to replace the centralized hot water loop (see Image 4). Auditors witnessed that the hot water heaters were set to heat the water to 165 degrees Fahrenheit.

Image 1 **POINT-OF-USE SHOWER/TUB FILTER** Fifer Tub/Shower Room	Image 2 **POINT-OF-USE FAUCET FILTER** Fifer Tub/Shower Room
	
Photograph of point-of-use water filter on tub at Fifer infirmary. Source: Photograph by the OAG.	Photograph of point-of-use water filter on faucet at Fifer infirmary. Source: Photograph by the OAG.

Image 3
HOT WATER MIXING VALVE
Fifer Tub/Shower Room

Photograph of hot water mixing valvue under a sink at Fifer infirmary.

Source: Photograph by the OAG.

Image 4
DECENTRALIZED HOT WATER HEATERS
Basement of Fifer Infirmary

Photograph of new decentralized hot water heaters at Fifer infirmary.

Source: Photograph by the OAG.

Auditors also toured the newly constructed water treatment facility at the Quincy Veterans' Home. While there, auditors observed the water main coming from the city of Quincy, water monitoring panels, chemical application unit, and tubes where necessary chemicals are added.

Image 5
WATER MAIN FROM QUINCY
Water Treatment Facility at the Veterans' Home

The photograph shows the new water main from the city of Quincy. The green pipes indicate the water coming in from the Quincy Municipal Water District, while the blue water pipes contain water treated on-site with sodium hypochlorite and chlorine dioxide.

Source: Photograph by the OAG.

During the tour, photos were taken of the new water treatment facility components that house the main water pipes for the Quincy Veterans' Home campus. Quincy Veterans' Home officials explained the purpose of each component as discussed below:

Image 5 (Quincy water main) - The green pipes indicate the water coming in from the Quincy Municipal Water District, while the blue water pipes contain water treated on-site with sodium hypochlorite and chlorine dioxide. The Quincy water supply flows in from the floor and then horizontally just above the floor into the Quincy Veterans' Home's water treatment area where sodium hypochlorite and chlorine dioxide are injected into the water supply based upon the readings from the water Controller Configuration: after the water is treated by the Quincy Veterans' Home, the water flows through the blue horizontal pipes (unable to be seen in this

picture because they are blocked by the green Quincy pipe) and down the large vertical blue water pipe to the various buildings at the Quincy Veterans' Home.

This picture also contains two additional configurations. First, a water valve has been placed on the horizontal green pipe (near the water bucket) to allow the Quincy Veterans' Home to take water samples as the water initially enters campus from the Quincy Municipal Water District. Second, the blue fire flow bypass valve located on top of the large green horizontal pipe allows the water to be routed directly from the large green vertical pipe to the large blue vertical pipe in a fire situation.

Image 6 (Electronic Analyzers and Master Controller System) - the Quincy Veterans' Home established a Water Treatment Facility licensed by the Illinois Environmental Protection Agency. A key component to the water plant is the electronic analyzers and master controller system that continuously measures and feeds the chemical content of water entering the campus loop that feeds all the buildings on site.

Image 6
ELECTRONIC ANALYZERS AND MASTER CONTROLLER SYSTEM
Water Treatment Facility at the Veterans' Home

The photograph shows the electronic analyzers and master controll system for the newly established Water Treatment Facility at the Quincy Veterans' Home that is licensed by the Illinois Environmental Protection Agency.

Source: Photograph by the OAG.

These measurements are taken from 25 feet outside the building. The controllers monitor the sodium hypochlorite and chlorine dioxide to ensure it is within safe drinking water standards (< 0.2 is too low and > 4.0 is too high). If the readings deviate from the standards, the control system sends an alert to the Chief Engineer and Licensed Water Operator. The system can even shut the chemical injection down temporarily until it sees that the proper levels are back to normal and restart the injection process. In addition, the ultrasonic flow meter initiates the 4 to 20 m/a signal to the smart pumps that actually inject the sodium hypochlorite and the chlorine dioxide per actual real time water flow or gallons per minute. The Master Controller also captures the water readings to generate daily reports with such information as daily average, daily high, and daily low as well as generating weekly readings. These readings are electronically entered into the Phigenics database to track the system's water quality.

Image 7 (Chemical Injection) - the Quincy Veterans' Home's Water Treatment Facility includes chemical injection into the water, based upon flow/gallons per minute (GPM) and readings provided by the water analysis controllers and the master controller. The chemicals injected include sodium hypochlorite and chlorine dioxide. This adds a second and third chemical treatment on top of the ammonia based chloramine treatment used by the Quincy Municipal Water Supply District. In this image, the sodium hypochlorite solution is in a translucent day tank on the left and the chemical injection pump system located on the skid with two separate smart pumps. These two pumps inject chlorine into the system. The pump on the left is operated by the chemical control system listed above and the pump on the right is a backup pump or can be used as a hand or manual operated pump for light to heavy continuous feed if needed.

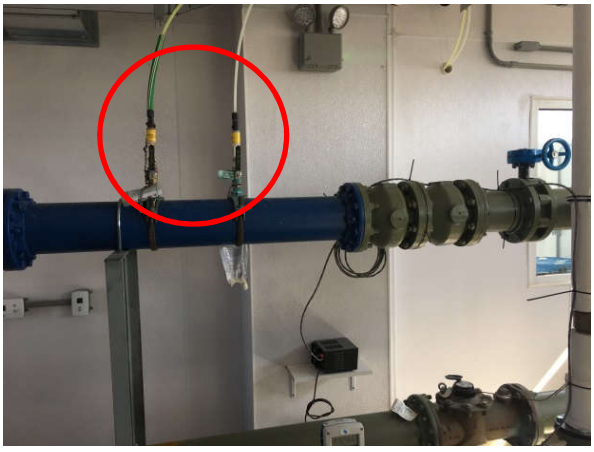
Image 7
CHEMICAL INJECTION SYSTEM
Water Treatment Facility at the Veterans' Home

The photograph shows the chemical injection system at the newly established Water Treatment Facility. Based upon flow/GPM and readings provided by the water analysis controllers and the master controller. The chemicals are injected as needed and include sodium hypochlorite and chlorine dioxide.

Source: Photograph by the OAG.

Image 8 (Chemical Injection Site) - Photographed are the Water Treatment Facility's two separate injection quills that inject chemicals into the potable water supply, hence the blue colored pipe. This is when the city water first sees the added chemicals or secondary water treatment process. The two quills are as follows: the quill on the left with the colored product is the chlorine dioxide injection point. This is coming from the chlorine dioxide generator room. The quill on the right is the sodium hypochlorite injection point. This line comes from a different room where the sodium hypochlorite is pumped. These two separate chemicals mentioned must be in separate rooms due to gassing effects.

Image 8
CHEMICAL INJECTION
Water Treatment Facility at the Veterans' Home



The photograph shows the Water Treatment Facility's two separate injection quills that inject chemicals into the potable water supply, hence the blue colored pipe. This is when the city water first sees the added chemicals or secondary water treatment process.

Source: Photograph by the OAG.

Image 9 (Building Filter System and Filters) - Photographed is the cold water whole building filter system. As cold potable water enters the building it runs through a backflow preventer and then enters a series of new inline filtration. The first is a 5 micron filter tank, which is intended to collect larger particles in the water. The water then enters a 0.2

micron filter tank and then is distributed into the building water supply leading to all points of use.

According to IDVA, there are pressure gauges and test ports pre and post filtration that allow water monitoring of pressures and residual/legionella testing capabilities. This system also has a bypass feature in that water pressure and supply never have to be taken off line to change out filtration. When temporarily on the bypass feature the water is still filtered.

These cold water filtration systems are a new addition to the Elmore and Schapers buildings only and were installed in June 2018. Auditors viewed the first changing of the filters approximately one month after installation of the new system on July 18, 2018. The 5 micron and 0.2 micron filters showed little to no collection of sediment or debris. Quincy Veterans' Home officials decided to change the 5 micron filters and decided not to change the 0.2 micron filters as the filters did not appear to have collected any sediment or debris.

Image 9
BUILDING COLD WATER FILTER SYSTEM
Basement of Elmore Building

The photograph shows the cold water all building filter system which consists of a 5 micron filter tank, and a 0.2 micron filter tank that is used to filter the water before it is distributed into the building's water supply.

Source: Photographs by the OAG.

The photograph is of the 5 micron filters after being installed for approximately one month.

Image 10 (Hot Water Filter System and Filters) - Similar to the building's cold water filter system, the Quincy Veterans' Home also installed a filter system on the hot water recirculation line. This system is equipped with an inline 5 micron filter. These filtration systems are a new addition to the Elmore and Schapers buildings only and were installed in June 2018.

Auditors viewed the first changing of the filters approximately one month after installation of the new system on July 18, 2018. The filter system houses seven 5 micron filters. Image 10 shows a comparison of a new filter alongside a filter that was removed after approximately one month. According to IDPH, the orange color on the hot water filters was simply iron staining, and is very common in water filters to see this and expected here given the amount of iron pipe in the hot water system. IDPH noted that the orange color was not an indicator of bacteria and that water samples showed there was no detection of legionella.

Image 10
HOT WATER FILTER SYSTEM AND NEW VERSUS USED HOT WATER FILTERS
Basement of Elmore Building

The photograph is of the filter system on the hot water recirculation line. This system is equipped with an inline 5 micron filter.

Source: Photographs by the OAG.

The photograph is of a new 5 micron filter for the hot water system compared to a used filter that was installed for approximately one month.

Chapter Four

LEGIONELLA OUTBREAK COSTS

CHAPTER CONCLUSIONS

The remediation efforts related to the outbreak at the Quincy Veterans' Home were paid for through emergency purchase funds utilized by the Illinois Environmental Protection Agency (IEPA), Capital Development Board (CDB), and the Illinois Department of Veterans' Affairs (IDVA). As of June 30, 2018, the State has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since the initial outbreak in August 2015.

The largest amounts were paid to the plumbing contractor who completed the construction efforts for the infrastructure improvements ($5.70 million) and to the water testing vendor ($1.35 million). In addition to the payments for infrastructure improvements, the Sycamore Nursing Home in Quincy was purchased on June 5, 2018, for $630,000. This vacant nursing home, now named Lester Hammond Hall, was purchased to renovate for additional skilled care as part of the Quincy Veterans' Home.

OUTBREAK COSTS

Senate Resolution Number 1186 directed the Auditor General to examine the amount of State monies expended in relation to the 2015, 2016, 2017, and 2018 legionella outbreaks at the Quincy Veterans' Home.

As shown in Exhibit 4-1, the State so far has expended $9,625,718 for legionella remediation at the Quincy Veterans' Home since August 2015. This includes expenditures for various infrastructure projects, consulting, water testing, and other general expenses to help stop the spread of the disease such as bottled water and cleaning supplies. A large portion of these expenses were paid to two contractors for design and construction using IEPA funds after Emergency Purchase Affidavits were filed by the Capital Development Board.

The remediation efforts related to the outbreak at the Quincy Veterans' Home were paid for through emergency purchase funds utilized by the Capital Development Board, IEPA, and IDVA. As of June 30, 2018 (the end of fiscal year 2018), the Capital Development Board and the IEPA expended just over $6.6 million since the outbreak began in August 2015. IDVA costs were significantly lower at $3.02 million.

Exhibit 4-1
COSTS FOR LEGIONELLA REMEDIATION AT THE QUINCY VETERANS' HOME
For Fiscal Years 2016 through 2018

	FY16	FY17	FY18	Totals
CDB/IEPA	$2,699,326.34	$3,693,604.90	$209,930.30	**$6,602,861.54**
IDVA	$1,181,823.91	$639,878.14	$1,201,154.03	**$3,022,856.08**
Totals[1]	**$3,881,150.25**	**$4,333,483.04**	**$1,411,084.33**	**$9,625,717.62**

Note: [1] Does not include purchase of Sycamore Nursing Home, the federal reimbursement received by the Capital Development Board, or increased water costs at the Quincy Veterans' Home due to its flushing efforts.

Source: Information provided by CDB and IDVA.

CDB and IEPA Costs

During fiscal years 2016, 2017, and 2018, as shown in Exhibit 4-2, BRiC Partnership, LLC (BRiC) and Doyle Plumbing & Heating Company (Doyle) were paid $6.46 million. BRiC was paid for the design of a new domestic water system and oversight of the construction. Doyle was paid for the materials and labor for the new domestic water system. BRiC also produced two legionella response plans in 2016 and 2018.

Exhibit 4-2
CDB AND IEPA VENDOR PAYMENTS FOR LEGIONELLA REMEDIATION AT THE QUINCY VETERANS' HOME
For Payments During Fiscal Years 2016 through 2018

Vendor	FY16	FY17	FY18	Totals
Doyle Plumbing & Heating Co.	$2,131,617.56	$3,572,048.61	-	**$5,703,666.17**
BRiC Partnership, LLC	$567,708.78	$108,236.82	$76,569.19	**$752,514.79**
Sparrow Plumbing & Heating	-	-	$81,051.21	**$81,051.21**
Ottsie, LLC	-	-	$19,303.12	**$19,303.12**
HOJOCA Corp.	-	-	$14,825.31	**$14,825.31**
Automatic Fire Sprinkler, LLC	-	$13,319.47	-	**$13,319.47**
Quincy Plumbing	-	-	$12,023.73	**$12,023.73**
Walter Louis Chemicals	-	-	$2,359.89	**$2,359.89**
Fisher Scientific Co.	-	-	$2,026.58	**$2,026.58**
Mideastern Plumbing, Heating and Air Conditioning, Inc.	-	-	$832.96	**$832.96**
Home Depot USA, Inc.	-	-	$444.00	**$444.00**
WW Grainger	-	-	$317.28	**$317.28**
Miracle Supply Co.	-	-	$177.03	**$177.03**
Totals	**$ 2,699,326.34**	**$ 3,693,604.90**	**$209,930.30**	**$6,602,861.54**

Source: Information provided by CDB.

As shown in Exhibit 4-2, a majority of funding was allocated to Doyle Plumbing, who assisted with plumbing renovations and upgrading the potable water system. IDVA officials sought the assistance of BRiC to provide guidance on the upgrade of the current water distribution system and the construction of a new chemical treatment plant. Walter Louis Chemicals was contracted to provide chemicals regularly used to disinfect and flush the system. Sparrow Plumbing & Heating assisted in the repairing and modification of the existing plumbing system. Ottsie, HOJOCA, and Quincy Plumbing provided the materials to replace fixtures necessary to upgrade the plumbing system. Mideastern Plumbing, Home Depot, Grainger, and Miracle Supply were all sources utilized for faucets and replacement fixtures at the Quincy Veterans' Home. Due to upgrades in various buildings, Automatic Fire Sprinkler had to reassess the fire sprinkler system and perform various tests. Fisher Scientific sold IDVA equipment necessary to test water for legionella. Exhibit 4-3 lists each vendor funded by either CDB or IEPA funds along with general description of the services provided.

Exhibit 4-3
DESCRIPTION OF CDB/IEPA FUNDED VENDORS

Vendor	Service/Product
Doyle Plumbing & Heating Co.	Domestic water system repair
BRiC Partnership, LLC	Consult and oversee domestic water system repair
Sparrow Plumbing & Heating	Plumbing upgrades
Ottsie, LLC	Plumbing materials
HOJOCA Corp.	Plumbing fixtures
Automatic Fire Sprinkler, LLC	Reassessment of the fire sprinkler system and various testing
Quincy Plumbing	Plumbing supplies
Walter Louis Chemicals	Water treatment chemicals
Fisher Scientific Co.	Legionella test equipment
Mideastern Plumbing, Heating and Air Conditioning, Inc.	Plumbing replacement supplies
Home Depot USA, Inc.	Miscellaneous materials
WW Grainger	Plumbing upgrade materials
Miracle Supply Co.	Fixture materials

Source: Information provided by CDB

IDVA Costs

Emergency purchase costs incurred by IDVA totaled $3.02 million as of June 30, 2018. These costs were for consulting and design drawings as well as development of a plan for pipe modifications and installation of emergency and permanent disinfectant stations. These stations continually maintain chemical levels in the existing potable (drinking) water system. Costs also include continuous water testing, the purchase of disinfectant for the bath tub surfaces, water filters, and new faucets. As shown in Exhibit 4-4, 71 percent of these costs were paid to three vendors. These vendors included: Phigenics, LLC; Unicor – U.S. Department of Justice; and Garratt Callahan Co. The services that each provided is discussed below.

Exhibit 4-4
IDVA COSTS FOR LEGIONELLA REMEDIATION AT THE QUINCY VETERANS' HOME
For Vendors Paid > $10,000 During Fiscal Years 2016 through 2018

	FY16	FY17	FY18	Totals
Phigenics, LLC	$442,765.50	$430,206.25	$474,970.65	**$1,347,942.40**
Unicor – U.S. Dept. of Justice	-	$32,930.00	$409,351.60	**$442,281.60**
Garratt Callahan Co.	$232,113.61	$17,370.20	$98,033.06	**$347,516.87**
Walter Louis Chemicals	$55,156.88	$56,053.25	$35,554.55	**$146,764.68**
Bainter Environmental	$25,983.00	$51,495.12	$56,090.00	**$133,568.12**
Ecolab, Inc.	$121,124.34	-	$128.00	**$121,252.34**
Klingner & Associates	$76,665.25	-	-	**$76,665.25**
Nalco Co.	$42,227.96	$13,777.52	-	**$56,005.48**
Connor Co.	$1,134.55	-	$52,224.48	**$53,359.03**
Prairie State Plumbing & Heating	-	-	$32,714.88	**$32,714.88**
Sparrow Plumbing and Heating	$29,271.80	-	-	**$29,271.80**
Rupp Masonry & Construction	$24,082.50	$3,912.12	-	**$27,994.62**
EMSL Analytical, Inc.	$21,981.00	-	-	**$21,981.00**
Hinkamper Service Co.	$18,929.37	-	$1,886.40	**$20,815.77**
Kohl Wholesale	$8,703.06	$1,401.12	$9,020.04	**$19,124.22**
Dakl Management Solutions	$16,932.79	-	-	**$16,932.79**
Special Pathogens Laboratory	-	$14,680.55	-	**$14,680.55**
Global Water Technology	-	$1,870.31	$9,278.55	**$11,148.86**
Total for 36 Vendors <$10,000	$64,752.30	$16,181.70	$21,901.82	**$102,835.82**
Totals	**$1,181,823.91**	**$ 639,878.14**	**$1,201,154.03**	**$3,022,856.08**

Source: Information provided by IDVA.

IDVA's emergency purchase funds were distributed to multiple vendors, but most notably, Phigenics was paid the largest sum over the course of the outbreak. Phigenics provided water testing services to determine whether legionella bacteria continue to exist in the water. Before Phigenics was contracted in October 2015, EMSL Analytical provided testing for water samples.

Additionally, it was determined that heightened levels of chlorine and additional chemicals were necessary to provide additional disinfection to eradicate legionella bacteria still living in the pipes. Garratt Callahan Co. was contracted to provide consulting services, chemicals, equipment, and manpower to perform flushing and super chlorinating. Klingner was contracted for consulting on the design of disinfectant stations, while Ecolab provided the Quincy Veterans' Home with household and laundry cleaning products. Chemicals pumped through the water system were provided by Walter Louis Chemicals. Due to the large amount of chemicals needed to flush the system, Rupp Masonry provided a skidsteer for rental to transport chemicals around campus. When a facility adds any agent to its water system it must utilize a licensed water operator, so Bainter Environmental was hired to assist.

Prairie State Plumbing and Heating was utilized to upgrade pipes and install new plumbing fixtures. Supplies were needed to ensure filters would be properly fitted onto showerheads and faucets. Connor Co. provided the plumbing supplies needed to upgrade the plumbing fixtures and install in-line filters. Nalco provided the actual showerhead filters installed on all tubs. Unicor – U.S. Department of Justice provided the shower and sink filters installed campus-wide, per the Centers for Disease Control and Prevention (CDC) recommendation. The filters provide an extra layer of protection from splashing and the aerosolization of water.

The Quincy Veterans' Home implemented water restrictions after each outbreak, and during those times, bottled water was ordered from Kohl Wholesale to assist with bathing, handwashing, and consumption. Ice machines were shut down to protect residents against another possible source of legionella bacteria. Hinkamper Service Company cleaned and sanitized all ice machines and provided the necessary supplies. Dakl Management provided additional medical supplies to accommodate the influx of sick individuals. Special Pathogens Laboratory was contracted to provide subject matter expertise for legal services. Exhibit 4-5 lists each vendor funded by either IDVA funds along with general description of the services provided.

Exhibit 4-5
SUMMARY OF IDVA VENDORS >$10,000

Vendor	Service/Product
Phigenics, LLC	Water testing services
Unicor – U.S. Department of Justice	Water fixture filters
Garratt Callahan Co.	Water treatment chemicals
Walter Louis Chemicals	Chlorine
Bainter Environmental	Licensed water operator
Ecolab, Inc.	Household and laundry cleaning products
Klingner & Associates	Design services
Nalco Co.	Shower head filters
Connor Co.	Replacement fixtures
Prairie State Plumbing & Heating	Filter installation
Sparrow Plumbing and Heating	Plumbing upgrades (labor)
Rupp Masonry Construction Co.	Equipment rental
EMSL Analytical, Inc.	Sample testing
Hinkamper Service Co.	Ice machine maintenance and cleaning
Kohl Wholesale	Bottled water
Dakl Management Solutions	Medical supplies
Special Pathogens Laboratory	Subject matter expertise for legal services
Global Water Technology	Chemicals

Source: Information provided by IDVA.

All other vendors were paid less than $10,000 over the course of three fiscal years. Their services included ice machine servicing, cooling tower cleaning, and general design consulting. Supplies were ordered to aid with water restrictions and for resident care. The Quincy Veterans'

Home ordered items such as medical supplies, pallets of water, ice, bathing substitutes, and supplies to assist with water testing such as papers and shipping containers.

Sycamore Nursing Home

According to records, the Illinois Department of Central Management Services (CMS) secured the procurement of Sycamore Nursing Home in Quincy, Illinois in June 2018. A $630,000 payment for the Sycamore Nursing Home was made on June 5, 2018 to DLZ Capital. Sycamore Nursing Home is a vacant nursing home in Quincy that is being renovated for additional skilled care as part of the Quincy Veterans' Home. It is now named Lester Hammond Hall. The building was originally purchased to renovate and to be used as a "swing space" where residents would stay while their buildings are torn down or upgraded.

Photograph of Sycamore Nursing Home prior to renovation.

Source: Photograph by the OAG.

Federal Reimbursement

According to a news article published February 1, 2017, the State had been awarded $4.1 million by the U.S. Department of Veterans Affairs. On June 27, 2018, auditors inquired with IDVA about federal reimbursements received by the State of Illinois for the remediation efforts at the Quincy Veterans' Home. Quincy Veterans' Home officials reported that final documentation had yet to be filed with U.S. Department of Veterans Affairs for the fund reimbursement. On June 28, 2018, an Associated Press article was published stating that the federal government had awarded the State $4.1 million to support ongoing facility improvements.

The federal reimbursement for remediation costs was officially received by the Illinois Treasurer's Office on August 22, 2018. Capital Development Board officials reported $4,156,722.58 was deposited into the Capital Development Board Contributory Trust Fund on September 28, 2018, via federal grant.

Increased Water Costs

After the 2015 CDC site visit, recommendations were made to move water through the system more frequently to eliminate stagnant water, which amplified legionella growth. This was commonly in the form of flushing. Quincy Veterans' Home officials began routine flushing of the system to eliminate any stagnant water and/or biofilm buildup in the pipes. As a result, there was a large increase in water usage, thus increasing water costs dramatically.

Exhibit 4-6 shows that water costs went from $34,353 in calendar year 2015 to $133,969 in calendar year 2016. Water costs continued to be high in calendar years 2017 and 2018. The costs were $122,096 in 2017 and $135,215 in 2018.

Exhibit 4-6
TOTAL WATER COSTS
Calendar Years 2015 through 2018

Source: Illinois Comptroller data.

Chapter Five

MONITORING AND TRAINING AT THE QUINCY VETERANS' HOME

CHAPTER CONCLUSIONS

The main improvements at the Quincy Veterans' Home consisted of installing decentralized hot water heaters in each building and the installation of a new water treatment facility at the Quincy Veterans' Home. As a result, auditors determined that monitoring efforts mainly consisted of some form of water monitoring and testing.

Water monitoring and testing after the initial outbreak in 2015 was conducted by Bainter Environmental and by Phigenics, LLC. Bainter is a licensed water operator and was also contracted in September 2015 to be in charge of all water operations. This eventually included performing the daily operational duties of the new Water Treatment Plant once it was completed in June 2016. Bi-weekly water testing for legionella began in October 2015, by Phigenics.

According to documentation provided by IDVA, there were no legionella policies in place and there had been no training on legionella prior to the 2015 outbreak at the Quincy Veterans' Home. According to IDVA, there was no State or federal requirement to test for legionella. IDVA stated the first Legionnaires' disease training occurred on August 26, 2015, which was five days after the identification of the outbreak. Prior to training, staff were provided with little information on the disease, other than information discussing handwashing etiquette.

When asked about operating protocols and training provided to the Quincy Veterans' Home staff following the 2015 outbreak, auditors were provided with a Legionella Policy that was developed in August 2016. The Quincy Veterans' Home required annual training for its staff in 2016, 2017, and 2018.

MONITORING OF IMPROVEMENTS AT THE QUINCY VETERANS' HOME

Auditors asked how IDVA and IDPH monitored the legionella situation at the Quincy Veterans' Home once the improvements and protocols were put in place after the 2015 outbreak. The main improvements consisted of installing decentralized hot water heaters in each building and the installation of a new water treatment facility at the Quincy Veterans' Home. From these discussions, auditors determined that monitoring efforts mainly consisted of some form of water monitoring and testing.

Water monitoring and testing was conducted by Bainter Environmental, who was also contracted to be in charge of all water operations in 2015. This eventually included performing the daily operational duties of the new water treatment plant once it was completed in June 2016. Bi-weekly water testing for legionella began in October 2015, by Phigenics. According to IDVA, there is no State or federal requirement to test for legionella. The monitoring efforts of both Bainter and Phigenics are discussed below.

Bainter Environmental

Bainter Environmental is a licensed water operator and was contracted on September 23, 2015, to be the "Operator in Responsible Charge" and to perform duties which include the following:

- Supervise operations of the water treatment facility, which includes meeting all Illinois Environmental Protection Agency requirements and, if necessary, any emergency operation plan;
- Collect all water samples required in accordance with the Safe Drinking Water Act;
- Be responsible for all reports and submittals; and
- Make daily visits as necessary, with a minimum of one observation/visit per week. (Daily visits were required during emergency operation).

The contract was amended on February 1, 2016, which changed the last bullet related to the daily visits to:

- Perform daily and total operations at the Water Treatment Plant, which includes testing all daily requirements for influent and effluent at the Water Treatment Facilities, perform daily chlorite test as necessary, and perform "labor and maintenance and operational on equipment in the Water Treatment Facilities."

The amendment to the contract was necessary due to the installation of the new water treatment plant, which required the services of a licensed Class A water treatment vendor. Bainter was also required to test the water for compliance with the Safe Drinking Water Act, not just related to legionella. There were additional contracts with Bainter for fiscal years 2017 and 2018.

Phigenics LLC.

Phigenics was contracted to produce a Water Safety Remediation Plan and to perform water testing. Phigenics monitors the testing results using an internet-based application called phiMetrics. Auditors met with Phigenics and discussed the water issues and Phigenics provided audit staff with access to phiMetrics which provided access to every test result from the Quincy Veterans' Home since October 2015.

The Water Safety Remediation Plan was completed in September 2015 and outlined how the hyper chlorinated flushing of both the hot and cold water pipes at the Quincy Veterans' Home would be performed. The hyper chlorinated flush was completed by IDPH and the Quincy Veterans' Home on September 9-10, 2015.

Water Sampling at the Quincy Veterans' Home

Initial environmental samples taken by IDPH during the first week of the 2015 outbreak resulted in 54 percent of samples testing positive for legionella. Water samples taken by the Centers for Disease Control and Prevention (CDC) during the first week of September 2015 identified 63 percent positive for legionella. Auditors reviewed the on-line sample testing data and determined there has been a decrease in legionella at the Quincy Veterans' Home since the initial outbreak in 2015. Exhibit 5-1 shows that after a spike of positive tests in the second and third quarters of 2016, the percent of positive tests has decreased significantly. For example, in

the second quarter of 2016, 623 samples were taken and 111 tested positive (18%); however, in the fourth quarter of 2017, 328 samples were taken and 9 tested positive (3%).

Exhibit 5-1
SUMMARY OF WATER TESTING AND RESULTS AT THE QUINCY VETERANS' HOME
By Calendar Year and Quarter

Calendar Year/Quarter	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4
Total Tests	317	631	623	588	380	221	281	232	328
Positive tests	36	48	111	95	10	7	7	2	9
% Positive	**11%**	**8%**	**18%**	**16%**	**3%**	**3%**	**2%**	**1%**	**3%**

Source: Phigenics data summarized by the OAG.

The majority of the 325 positive test results between October 1, 2015 and December 31, 2017, were from six of the buildings at the Quincy Veterans' Home. The Fletcher building had the most positive test results for legionella (86) and was vacated by the Quincy Veterans' Home in June 2017. The building with the second highest total of positive samples was Elmore with 60. Elmore had the most residents testing positive during the outbreaks. Of the 66 residents testing positive for legionella between August 2015 and March 2018, 24 (36%) were from the Elmore building.

Exhibit 5-2 shows that 305 of the 325 (94%) positive water tests for legionella came from six buildings during the four previous outbreaks. These include: Fletcher (86), Elmore (60), Anderson (55), Somerville (35), Smith Hall (35), and Schapers (34). Fletcher, Elmore, Anderson, Somerville, and Schapers are all residential buildings. Smith Hall houses a coffee shop, gift shop, bank, and post office.

Exhibit 5-2
POSITIVE LEGIONELLA TEST RESULTS BY BUILDING
By Calendar Year and Quarter

Location	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q1	2017 Q2	2017 Q3	2017 Q4	Grand Totals
Anderson	0	8	28	17	0	0	0	0	2	**55**
Chemical House	-	-	0	0	0	0	0	0	0	**0**
City Supply	-	-	-	0	0	-	-	-	-	**0**
Cooling Tower			0	2			0	1	0	**3**
Elmore	15	19	12	8	1	0	0	0	5	**60**
Fifer	2	3	2	1	0	0	0	0	0	**8**
Fletcher[1]	9	1	30	43	3	0	0	-	-	**86**
Fountain	-	-	-	-	-	-	0	0	0	**0**
Laundry	0	0	0	0		0	0	0	0	**0**
Lippin Café	-	-	-	-	1	-	-	-	-	**1**
Locust Supply	0	0	-	-	-	-	-	-	-	**0**
Markword	2	1	0	0	0	0	0	0	0	**3**
Nielson	0	1	0	0	0	0	0	0	0	**1**
Physical Therapy	-	-	-	-	-	-	-	-	0	**0**
Pool	-	-	-	-	-	-	-	-	0	**0**
Power House	0	1	1	-	-	-	-	-	-	**2**
Schapers	5	5	7	12	4	0	1	0	0	**34**
Smith Hall	1	9	9	4	0	6	6	0	0	**35**
Somerville	2	0	22	8	1	1	0	1	0	**35**
Therapy Building	-	-	-	-	-	-	-	-	2	**2**
Grand Totals	**36**	**48**	**111**	**95**	**10**	**7**	**7**	**2**	**9**	**325**

Notes:
[1] Fletcher was vacated in June 2017.
[2] Blanks indicate that no tests were taken during that quarter.
Source: Phigenics data summarized by the OAG.

Water Testing Procedure Changes

Following the four residents who tested positive for legionella in February 2018, it was decided to install point-of-use filters on all fixtures at the Quincy Veterans' Home. In addition, changes were made to the water testing procedures at the Quincy Veterans' Home. In a letter on March 29, 2018, to the Illinois Department of Veteran's Affairs Director, Phigenics discussed the changes in the environmental validation sampling process. Beginning with water sampling on February 20, 2018, the Water Management Team requested that Phigenics start implementing "first draw" sampling for some of the testing sites. Up to this point and in accordance with the CDC guidelines, sampling was done via the "post-flush" method. The post-flush method contains the following sampling procedures:

- 20 second flush;
- test free Cl2 and pH;
- stabilize temperature for reading; and

- fill 1 liter bottle.

The new "first draw" method included the same steps without the flushing prior to taking the water sample. On February 20, 2018, the Water Management Team found that several of the "first draw" samples had higher concentrations of legionella.

Fixtures with point-of-use filters began being tested on March 6, 2018. None of the post filter samples from fixtures with the point-of-use filters were positive for legionella. Tests that were done pre filter using the post-flush method found several tests positive for legionella. Although the new filters were stopping legionella from getting through, Phigenics documented increased concern of the point-of-use filters presence' affecting testing results. According to Phigenics, the filters were causing a backup of sediment behind the filters where legionella was able to grow and be protected from the disinfectant in the water. Point-of-use filters were installed on all sinks and fixtures in April of 2018.

LEGIONELLA PROTOCOLS AND TRAINING

According to documentation provided by IDVA, there were no legionella policies in place and there had been no staff training on legionella prior to the 2015 outbreak at the Quincy Veterans' Home. IDVA provided various memos which demonstrate changing policies over the course of the several outbreaks. These protocols and policies address domiciliary care, fever protocols, vitals, and charting. Many policies provided were updated after the 2015 outbreak.

Legionella Policy

In response to the initial Legionnaires' disease outbreaks in 2015 and 2016 the Illinois Veterans' Home at Quincy developed a written policy in August 2016 to "implement measures to prevent an outbreak of Legionella." The policy begins as informational with the following information:

- what is legionella;
- how it is spread;
- signs and symptoms; and
- people at risk.

The policy further explains the procedures when a resident is suspected to have Legionnaires' disease. Individuals are to be tested if they are immunocompromised, diagnosed with pneumonia during a legionella outbreak, have a travel history off campus, have had Legionnaires' disease in the previous 12 months, or changes if there are water quality issues (low chlorine levels or construction). The policy does not explicitly state to perform chest x-rays, but it does say to test residents for Legionnaires' disease who have a chest x-ray positive for pneumonia.

Nursing staff are instructed to obtain urine antigen tests or sputum samples for testing and administer necessary antibiotics timely. The policy states to not to wait for a positive test result. It explains further surveillance is to be implemented along with consulting the Outbreak Policy for further guidance.

Outbreak Policy

The Outbreak Policy was originally developed in August 2014 and was updated in August 2016 after the recent legionella outbreaks at the Quincy Veterans' Home. The Outbreak Policy outlines the nine steps to follow appropriate outbreak procedures:

- outbreak preparedness;
- determine an outbreak exists;
- look for new cases;
- develop a hypothesis;
- institute control and prevention measures;
- educate staff, residents, and visitors;
- begin to document;
- notify local and state health officials;
- test hypothesis;
- outbreak resolution;
- communicate findings; and
- initiate measures to prevent future outbreaks.

The policy detailed determining whether an outbreak exists for different symptoms (i.e. gastrointestinal illness, skin rash, respiratory illness). After reviewing symptoms, staff is instructed to further determine whether more than one case exists. Foregoing procedures are targeted for higher level, managerial staff who are instructed to determine a possible cause, holding an all-staff meeting, implementing necessary restrictions, contacting necessary health officials, and creating a line list of infected employees and staff.

Training

When asked about training provided to the Quincy Veterans' Home staff following the 2015 outbreak, IDVA stated the first Legionnaires' disease training occurred on August 26, 2015, which was five days after the identification of the outbreak. Prior to training, staff were provided with little information on the disease, other than information discussing handwashing etiquette.

At the August 26, 2015, staff meeting, staff were required to attend or sign the minutes stating they read the minutes from the training session. Our review of the meeting minutes determined that the training explained how Legionnaires' disease is contracted and that elderly individuals are more vulnerable. The minutes also note that there had been a confirmed case in Adams County and that "efforts are underway to identify the source of the disease at the facility." Staff were provided a handout that explained legionella and how it is spread and diagnosed.

The following day, on August 27, 2015, a document titled "Interim Guidelines for STAFF-Legionella" was distributed. No email or other documentation was provided to support how the document was delivered to the staff. This is the first document auditors identified that provided staff with procedures or guidelines necessary to limit the exposure for both the residents and themselves. The document provides the following guidance:

- avoid any action that will cause aerosolization of spray of water;
- faucet aerators have been removed from water faucets and these faucets can be used to wash hands. Avoid using the HOT WATER. Wash hands in COLD WATER;
- bottled water for drink and oral hygiene;
- do NOT use water fountains;
- do NOT use showers or bath tubs;
- ice machines have been shut off, cleaned, and should be holding ice that has been brought into the facility in bags;
- do NOT use coffee machines hooked up to water supply. USE bottled water;
- encourage use of alcohol-based hand rub along with hand washing from any sink in which the aerator has been removed with cold water; and
- use sterile water for NG tube flushes, dilution of medications, respiratory supplies, etc.

In 2016, 2017, and 2018 staff were provided with PowerPoint training on legionella and given approximately two weeks to familiarize themselves with the content and sign a sheet indicating they completed the training. The training provided staff with an explanation of exposure, signs and symptoms, diagnosis, and treatment of the disease.

IDVA provided auditors with additional memos that were provided to nursing staff when there was a change in policy. Most of the policies provided were already in place, but policies were updated regularly to reflect improved standards of care. As a result of the Legionnaires' disease outbreak, many policies have been updated to improve care in the event of an outbreak. The updated policies provided included:

- Infection Prevention and Control – Providing sanitary environment to prevent transmission of infection;
- Domiciliary Emergencies, Personal Alarms, and Sick Calls – giving access and reporting emergencies to residents who require immediate healthcare;
- Fever Protocol – Reporting and assessing fever to ensure proper treatment, different symptoms outlined different care scenarios; and
- Flushing – Where and how to flush sinks in residential and non-residential areas at the Quincy Veterans' Home.

Chapter Six

RESIDENT CARE REVIEWS AT THE QUINCY VETERANS' HOME

CHAPTER CONCLUSIONS

The Quincy Veterans' Home has undergone several reviews since the initial outbreak in 2015. The Illinois Department of Public Health (IDPH), the U.S. Department of Veterans Affairs (USDVA), and the Centers for Disease Control and Prevention (CDC) have released multiple reports, surveys, and reviews related to the Quincy Veterans' Home.

The CDC was on-site at the Quincy Veterans' Home in 2015, 2016, 2017, and 2018 and released four reports that contained recommendations to remediate the legionella at the Quincy Veterans' Home. It did not appear from the reports that specific resident care reviews were conducted.

Resident care reviews by IDPH were conducted in December 2015 and October 2017. In 2015, there were concerns noted that filters were plugged up causing low water pressure. Shower frequency was also a focus area for surveyors. In 2017, no issues were identified related to legionella.

There were reviews conducted by the U.S. Department of Veterans Affairs in October 2015, 2016, and 2017. Only in 2015 were any issues identified, and none of the areas were directly related to the water system or legionella.

RESIDENT CARE REVIEWS AT THE QUINCY VETERANS' HOME

Senate Resolution Number 1186 asked the Office of the Auditor General to determine whether the Quincy Veterans' Home has been the subject of any reviews since 2015 with regard to the care of its residents. As a result of four separate outbreaks, the Center for Disease Control has been on-site at the Quincy Veterans' Home on four separate occasions in 2015, 2016, 2017, and 2018. Each visit by the CDC was followed by a written report with recommendations for the Quincy Veterans' Home to help contain the further spread of legionella. The CDC reviews are discussed in detail in Chapter Two. According to the Illinois Department of Veterans' Affairs (IDVA), the Quincy Veterans' Home is subject to surveys by the Illinois Department of Public Health and the U.S. Department of Veterans Affairs. Surveys by IDPH were performed in 2015 and 2017. Surveys by the U.S. Department of Veterans Affairs were performed in 2015, 2016, and 2017.

Illinois Department of Public Health Surveys

The Nursing Home Care Act (210 ILCS 45) establishes that IDPH conduct a Survey annually unless the facility has a two-year license. A two-year license is granted if a facility

does not have any violations within the past 24 months or the issuance of 10 or more administrative warnings in the past 24 months. According to IDPH, during the audit period 2015-2018, the Quincy Veterans' Home had surveys in December 2015 and October 2017. Each of these Surveys covered a two-year licensure period.

Auditors reviewed the Surveys for the Quincy Veterans' Home completed in December 2015 and October 2017. The reviews included the following topics in regards to resident care:

- Ensuring staff have proper background checks
- Proper water temperatures
- Emergency preparedness
- General observations
    - Odors, drug storage, proper furnishings, etc.
- Interviews with residents discussing
    - Medications taken
    - Daily life review
    - Room review
    - Review of Incidents at the Home
        - Typically residents falling, incidents with walkers or wheelchairs, residents getting cuts from objects.
    - Review of Procedures on bathing and lifting residents

December 2015 IDPH Survey

Surveyor concerns noted in the 2015 report included filters being plugged up causing low water pressure. Shower frequency was also a focus area for surveyors.

Generally the Surveys showed favorable care at the home as residents said the rooms are comfortable and the staff is very professional. One resident, when asked about the staff members replied, "Oh the staff treat me good." When asked if there was anything else the resident would like to talk about regarding life at the Quincy Veterans' Home, the resident responded, "If you can't live at home, this is a good place." The 2017 survey asked residents how they feel about staff members at the facility. One resident replied, "No concerns, very helpful." The resident added that staff are all "very attentive to my needs."

The IDPH Survey for 2015 was completed on December 10, 2015. The 2015 Survey did not contain any violations and was determined to be in full compliance with the Illinois Veterans' Home Code (77 Ill. Adm. Code 340).

October 2017 IDPH Survey

The IDPH Survey for 2017 was completed on October 12, 2017. The 2017 survey contained a violation of section 340.1440 in regards to abuse and neglect. A violation occurred pertaining to the following sections of 77 Ill. Adm. Code 340.1440:

- b) a facility employee or agent who becomes aware of abuse or neglect of a resident shall immediately report the matter to the facility; and

- e) employee as perpetrator of abuse. When an investigation of a report of suspected abuse of a resident indicated based upon credible evidence, that an employee of a long-term care facility is the perpetrator of the abuse, then the employee shall immediately be barred from any further contact with residents of the facility, pending the outcome of any further investigation, prosecution or disciplinary action against the employee.

A notice of violation was sent to the Quincy Veterans' Home on November 16, 2017. As a result of the violation, an official Plan of Correction was required to be provided to IDPH by the Quincy Veterans' Home. On November 27, 2017 the Home Administrator at the Quincy Veterans' Home sent a Plan of Correction to IDPH. Auditors reviewed the 2017 Survey that showed employees at the home underwent training at a mandatory in-service. The mandatory training covered residents' rights and elder abuse.

U.S. Department of Veterans Affairs Annual Surveys at the Quincy Veterans' Home

The Quincy Veterans' Home is subject to annual surveys from the U.S. Department of Veterans Affairs. According to 38 CFR 51, the Quincy Veterans' Home undergoes an annual survey to determine compliance with the law. Auditors reviewed Surveys from 2015, 2016, and 2017. The Surveys covered the following areas:

- administration;
- record retention;
- contract and provider agreements;
- resident rights;
- quality of life and care;
- nursing, dietary, and physician services; and
- infection control.

2015 U.S. Department of Veterans Affairs Survey at the Quincy Veterans' Home

The USDVA survey team visited the home after the initial outbreak in 2015. The survey team was on-site October 27-30, 2015, and sent a letter November 25, 2015, notifying the Quincy Veterans' Home that both the domiciliary and skilled nursing home areas were not in

compliance in four areas. None of the areas were directly related to the water system or legionella. The four issues identified were:

1. the home had not purchased a surety bond to assure financial security to residents;
2. staff did not receive adequate training on fire alarm activation or safety;
3. facility did not test emergency generators annually; and
4. paint chipping in resident rooms and nurses station.

The purpose of the Survey is to determine whether facility management established and maintained an infection control program designed to provide a safe, sanitary, and comfortable environment and to help prevent the development and transmission of disease and infection. The survey team determined the home was in full compliance and met all infection control criteria.

After the review, IDVA officials provided staff with proper documentation to show they remedied the issues to become fully compliant with applicable regulations in the areas they were previously cited.

2016 U.S. Department of Veterans Affairs Survey at the Quincy Veterans' Home

The U.S. Department of Veterans Affairs survey team was on-site October 11-14, 2016, and determined the Quincy Veterans' Home met U.S. Department of Veterans Affairs regulations in all areas in both domiciliary and skilled care homes.

2017 U.S. Department of Veterans Affairs Survey at the Quincy Veterans' Home

The U.S. Department of Veterans Affairs survey team was on-site October 30 - November 3, 2017, and determined the Quincy Veterans' Home met U.S. Department of Veterans Affairs regulations in all areas in both domiciliary and skilled care homes.

APPENDICES

APPENDIX A
SENATE RESOLUTION NUMBER 1186

STATE OF ILLINOIS
ONE HUNDREDTH GENERAL ASSEMBLY
SENATE

Senate Resolution No. 1186

Offered by Senators T. Cullerton, McCann, Hastings, Manar, Castro, Bertino-Tarrant, McGuire, Mulroe, Bennett, Murphy, Bush, Collins, Cunningham, Holmes, Koehler, Van Pelt, Stadelman, Harmon, Morrison, Link, Sims and Hutchinson

WHEREAS, The Quincy Veterans' Home, founded in 1886, is the largest and oldest of the Illinois Veteran Homes; and

WHEREAS, The Quincy Home has approximately 400 residents and employs over 500 full-time staff; and

WHEREAS, Legionnaires' disease is a severe, often lethal, form of pneumonia caused by a bacterium found in both potable and nonpotable water systems; and

WHEREAS, In July 2015, the first cases of Legionnaires' disease were discovered at the Quincy Veterans' Home and would shortly claim the lives of twelve residents; and

WHEREAS, In 2016, more than fifty residents and staff contracted Legionnaires' disease, leading to the death of another resident veteran; and

WHEREAS, The Centers for Disease Control conducted a study of the Legionnaires' disease outbreak at the Quincy Veterans' Home in 2015 and had an extensive list of recommendations for the Home; and

WHEREAS, In 2016, the Quincy Veterans' Home followed the recommendations of the CDC and completed renovations of parts of its plumbing system, which included the construction of a

water treatment plant capable of providing higher quality water; and

WHEREAS, In Fall 2017, an additional three residents contracted Legionnaires' disease after infrastructure updates were made; therefore, be it

RESOLVED, BY THE SENATE OF THE ONE HUNDREDTH GENERAL ASSEMBLY OF THE STATE OF ILLINOIS, that the Auditor General is directed to conduct a performance audit of the Illinois Department of Veterans' Affairs' management of Legionnaires' disease outbreaks; and be it further

RESOLVED, That this performance audit include, but not be limited to, the following determinations:

(1) The responses of the Department of Veterans' Affairs to the outbreaks of Legionnaires' disease in 2015, 2016, and 2017, including the recommendations made in the 2015 study by the Centers for Disease Control and the Department's actions to address those recommendations;

(2) The type, cost, and timing of any infrastructure or other building improvements intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence;

(3) The nature of changes made by the Department in operating protocols and staff training thereon, intended to contain the further spread of Legionnaires' disease or prevent its reoccurrence;

(4) The nature and extent of monitoring conducted by the Department to determine whether the improvements and protocols put in place are effective to ensure the safety of residents and staff at the Quincy Veterans' Home;

(5) The amount of State moneys received and the amount of State moneys expended by the Department or any other State agency during State fiscal years 2015, 2016, 2017, and 2018 for infrastructure improvements, monitoring, and other measures taken to address the Legionnaires' disease outbreaks; and

(6) To the extent information is available, whether the Quincy Veterans' Home has been the subject of any reviews since 2015 to determine its compliance with applicable laws and regulations with regard to the care of its residents and, if so, the results of those reviews; and be it further

RESOLVED, That the Illinois Department of Veterans' Affairs and any other State agency or other entity or person that may have information relevant to this audit cooperate fully and promptly with the Auditor General's Office in its audit; and be it further

RESOLVED, That the Auditor General commence this audit as soon as practical and report its findings and recommendations upon completion in accordance with the provisions of Section 3-14 of the Illinois State Auditing Act; and be it further

RESOLVED, That a suitable copy of this resolution be presented to the Auditor General.

Adopted by the Senate, February 15, 2018.

John J. Cullerton

President of the Senate

Secretary of the Senate

APPENDIX B
AUDIT SCOPE AND METHODOLOGY

Appendix B

AUDIT SCOPE AND METHODOLOGY

This performance audit was conducted in accordance with generally accepted government auditing standards and the audit standards promulgated by the Office of the Auditor General at 74 Ill. Adm. Code 420.310.

Audit standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives found in Senate Resolution Number 1186.

The audit objectives were delineated by Senate Resolution Number 1186, which directed the Auditor General to conduct a performance audit of the Illinois Department of Veterans' Affairs' (IDVA) management of Legionnaires' disease outbreaks. The Resolution contained six specific determinations (listed below):

1. The responses of IDVA to the outbreaks of Legionnaires' disease in 2015, 2016, and 2017, including the recommendations made in the 2015 study by the Centers for Disease Control and the Department's actions to address those recommendations.
2. The type, cost, and timing of any infrastructure or other building improvements intended to contain the further spread of Legionnaires' disease or to prevent its reoccurrence.
3. The nature of changes made by the Department in operating protocols and staff training thereon, intended to contain the further spread of Legionnaires' disease or to prevent its reoccurrence.
4. The nature and extent of monitoring conducted by the Department to determine whether the improvements and protocols put in place are effective to ensure the safety of residents and staff at the Quincy Veterans' Home.
5. The amount of State moneys received and the amount of State moneys expended by the Department or any other State agency during State fiscal years 2015, 2016, 2017, and 2018, for infrastructure improvement, monitoring, and other measures taken to address the Legionnaires' disease outbreaks.
6. To the extent information is available, whether the Quincy Veterans' Home has been the subject of any reviews since 2015 to determine its compliance with applicable laws and regulations with regard to the care of its residents and, if so, the results of those reviews.

In conducting this audit, auditors reviewed applicable State statutes and rules. We reviewed policies and procedures relevant to the audit areas. We also reviewed management controls and assessed risk related to the audit's objectives. A risk assessment was conducted to identify areas that needed closer examination. Any significant weaknesses in those controls are included in this report.

In conducting this audit, we requested and reviewed specific documents related to the legionella outbreak from the Illinois Department of Veterans' Affairs, the Illinois Department of

Public Health, the Capital Development Board, and the Illinois Environmental Protection Agency.

We reviewed thousands of emails and communications from the Department of Veterans' Affairs, the Department of Public Health, the Capital Development Board, and the Adams County Health Department. In addition to emails, auditors reviewed all meeting minutes provided discussing the Legionnaires disease outbreaks at the Illinois Veterans' Home at Quincy.

Numerous contracts for the infrastructure improvements at the Quincy Veterans' Home were collected and reviewed. Resident case files, death records, training and education, Centers for Disease Control and Prevention (CDC) reports, lists of infrastructure improvements, federal reimbursements, contracts, water testing data, cost information, and remediation efforts for anything involving the outbreaks in 2015, 2016, and 2017 were also collected and reviewed. Additionally, auditors reviewed resident care surveys that are required from the Illinois Department of Public Health (IDPH) and U.S. Department of Veterans Affairs to be performed on a semiannual and annual basis.

Auditors analyzed and tested files for all 66 individuals that were infected with legionella in 2015, 2016, 2017, and 2018. Fields analyzed included time in days it took to receive testing results, date of onset of symptoms, date antibiotics began, and multiple other fields. In addition, auditors reviewed resident records to determine whether residents received increased monitoring after the initial outbreak was identified.

Auditors reviewed 100 pneumonia cases judgmentally sampled from different months in the years 2015, 2016, 2017, and 2018. From this sample, auditors reviewed data to determine if all residents with pneumonia were being tested as recommended by the CDC. Since this sample was judgmentally selected, it is not projectable to the population.

Auditors selected 10 legionella positive water locations to sample in order to determine whether the appropriate remediation actions were taken by the Quincy Veterans' Home. The sample was provided to the Quincy Veterans' Home on July 16, 2018. Auditors requested that the Quincy Veterans' Home provide information to support what remediation actions were taken. After six additional attempts to get this information, the Quincy Veterans' Home did not provide a response until some information was received on March 5, 2019, which was one day after the responses to the audit report were due. As a result, auditors did not review the information provided and relied on a review of the phiMetrics Action Item Tracker data to identify what remediation efforts were taken and were reported to Phigenics.

During the audit, interviews and phone conferences were conducted with officials from: the Illinois Department of Veterans' Affairs, the Illinois Department of Public Health, the Capital Development Board, the Governor's Office, the Adams County Health Department, and the Centers for Disease Control and Prevention. In addition, auditors contacted the Illinois Environmental Protection Agency, the Illinois Department of Labor, Phigenics (contractor), and Bainter Environmental (contractor). Survey letters were sent to two employees at the Illinois Veterans' Home at Quincy; however, no responses were received.

Numerous walk-throughs and tours were conducted with Quincy Veterans' Home officials. Auditors met on-site with the Quincy Veterans' Home's Infectious Disease Control Nurse, the Home's Chief Stationary Engineer, the Home Administrator, and the IDPH Division of Environmental Health Chief of General Engineering. Auditors reviewed infrastructure

improvements made at the Quincy Veterans' Home as well as new building filters installed in 2018.

The dates of the Exit Conferences, along with the principal attendees are noted below:

February 19, 2019	
Agency	**Name and Title**
Illinois Department of Labor	• Michael Kleinik, Acting Director • Chris Wieneke, Assistant Director
February 21, 2019	
Agency	**Name and Title**
Illinois Department of Public Health	• Dr. Ngozi Ezike, Acting Director • Erik Rayman, Chief of Staff • Justin DeWitt, Chief of General Engineering
February 26, 2019	
Agency	**Name and Title**
Illinois Department of Veterans' Affairs	• Linda Chapa LaVia, Acting Director • Russ Litko, Acting Assistant Director • Mark Sherbeyn, Human Resource Manager • Matt Eddington, Chief General Counsel • Brittany Hawkins, Assistant General Counsel • Dave MacDonna, Public Information Officer • Rusti Cummings, Chief Internal Auditor • James Bakunus, Internal Auditor I • Len Winnicki, Administrator of Veterans' Homes • Gwen Diehl, Home Coordinator • Troy Culbertson, Quincy Home Administrator • Dawn Whitcomb, Quincy Home Adjutant • Dave Clifford, Quincy Chief Stationary Engineer • Lindsey Kelley, Quincy Infectious Disease Control Nurse, R.N.
The Office of the Auditor General was represented at all three meetings by:	• Scott Wahlbrink, Senior Audit Manager • Jared Sagez, Audit Supervisor • Abigail Bailey, Audit Staff

APPENDIX C
AGENCY RESPONSES

STATE OF ILLINOIS

DEPARTMENT OF VETERANS' AFFAIRS

GEORGE DUNNE COOK COUNTY BUILDING, 69 WEST WASHINGTON STREET SUITE 1620
CHICAGO, ILLINOIS 60602
Telephone: (312) 814-2460 * Fax: (312) 814-2764

JB PRITZKER
GOVERNOR

Linda Chapa LaVia
ACTING DIRECTOR

March 5, 2019

Honorable Frank J. Mautino
Auditor General
State of Illinois

Dear Auditor General Mautino:

The Department of Veterans' Affairs appreciates the work performed by your office in conducting the audit pursuant to Senate Resolution Number 1186.

Enclosed with this letter are the detailed responses that address each of the recommendations for the Department of Veterans' Affairs.

If you have any questions or comments about our responses to the recommendations, please contact our Chief Internal Audit office at (217)-557-5682.

Sincerely,

SIGNED ORIGINAL ON FILE

Linda Chapa LaVia
Acting Director

Illinois Department of Veterans' Affairs
Response to Performance Audit per Senate Resolution 1186

IDVA response recommendation #1

The Illinois Department of Veterans' Affairs will continue to follow the guidance and recommendations given by the Illinois Department of Public Health, Adams County Health Department, Center for Disease Control, and the Water Management Team, as appropriate, once a legionella outbreak is confirmed. The Illinois Veterans Home at Quincy has developed an "Outbreak" policy to illustrate the definition of 'outbreak' to include the following: *When a commonality of symptoms is evident among residents or staff with common person, place, time, or event (such as an out-trip or party), suspect an outbreak.* Once an outbreak has been confirmed, all residents, POA's, and staff will be provided education on the organism, ways to eliminate or reduce exposure, and guidelines being implemented to prevent further exposure in accord with our policy.

IDVA response recommendation #2

With the assistance of IDPH infection control team and the CDC, IVHQ has developed a clinical monitoring policy to provide advanced indications of potential Legionella case. This policy includes strict monitoring of pneumonia like symptoms; chest x-ray; rapid Urine Antigen test; and treatment of symptoms with a broad-spectrum antibiotic. Additionally, the local hospital lab has purchased equipment that shortens legionella diagnosis from 5 days to only hours.

IDVA response recommendation #4

The Illinois Veterans' Home at Quincy implemented all recommendations from the CDC reports to the best of their ability with the knowledge and understanding acquired through expert services up to that time and when deemed prudent by the recommending agencies. Point of use filtration was installed on high risk areas in 2015, which included showers and tubs. The CDC itself referenced in their reports the unknown effect of reduced water flow on bacteria growth with the use of point of use filters being used long term on all points of use.
In addition, as referenced earlier, the new water treatment facility came online in June 2016. The results from the water treatment plant showed that positive legionella continually lowered and eventually depleted over time, illustrating the efficacy of the new treatment plant as a reliable engineering control.

IDPH
ILLINOIS DEPARTMENT OF PUBLIC HEALTH

69 West Washington Street, Suite 3500 • Chicago, Illinois 60602-3027 • www.dph.illinois.gov

March 4, 2019

Honorable Frank J. Mautino
Illinois Auditor General
Iles Park Plaza
740 East Ash St.
Springfield, IL 62703-3154

Dear Auditor General Mautino:

The Illinois Department of Public Health (IDPH) appreciates the work performed by your office in conducting the performance audit pursuant to Senate Resolution Number 1186 – the Legionnaires' disease outbreak at the Quincy Veterans' Home.

Enclosed with this letter are detailed responses that address each of the recommendations.

If you have any questions or comments about our responses to the recommendations, please contact my office at 312-814- 5278.

Sincerely,

SIGNED ORIGINAL ON FILE

Ngozi O. Ezike, M.D.
Director

Enclosure

Attachment Response
Report: Covering Legionnaires' disease outbreak at the Quincy Veterans' Home

Recommendation Number 1: Notification of Disease Outbreak to Quincy Veterans' Home Staff
The Illinois Department of Veterans' Affairs and the Illinois Department of Public Health should ensure that once a legionella outbreak is confirmed at a State Veterans' Home, nursing staff and caregivers are given the necessary instructions and guidelines in a timely manner to limit exposure to aerosolized water in order to protect both the staff and residents from contracting Legionnaires' disease.

IDPH Response: *The Department accepts the recommendation. IDPH has developed practices and materials to provide to facilities to help guide them when informing staff and residents. These materials are shared with local health departments as well, who are the lead public health investigators. IDPH will formalize these practices into written policies and procedures.*

Recommendation Number 3: Monitoring by IDPH

The Illinois Department of Public Health should:

- revisit its policies and determine what response timeframe is adequate to conduct on-site monitoring visits in response to a confirmed disease outbreak such as Legionnaires' disease; and
- increase communication with the facility's staff during future outbreaks to ensure that IDPH is aware of the severity of the outbreak.

IDPH Response: *The Department accepts the recommendation. IDPH will work to standardize policies and procedures for on-site monitoring visits by local health department epidemiological and environmental investigators, and by IDPH when the local health department requests IDPH on-site assistance.*

Recommendation Number 4: Recommendations by the Centers for Disease Control
The Illinois Department of Public Health and the Illinois Department of Veterans' Affairs should ensure the State facilities, such as the Quincy Veterans' Home, implement all recommendations from the Centers for Disease Control following confirmed outbreaks such as Legionnaires' disease.

IDPH Response: *The Department accepts the recommendation. IDPH will continue to ensure state facilities are provided, in writing, with CDC recommendations and are provided with the opportunity to address any concerns or issues with the CDC as state facilities address recommendations. The Department does not have a mechanism to force state facilities to implement CDC recommendations as that would require legislative action.*

STATE OF ILLINOIS
JB PRITZKER, GOVERNOR

Amy Romano, Acting Executive Director

Date: February 20, 2019

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Mr. Frank J. Mautino
Illinois Auditor General
Illinois Office of the Auditor General
740 East Ash St.
Springfield, IL 62703

Dear Auditor General Mautino,

Thank you for the opportunity to respond to the draft report to the audit your office conducted of the State's response to the Legionnaires' disease outbreak at the Quincy Veterans' Home. We appreciate the objective and thorough review of the extensive documentation including emails, pictures, expenditure records and other support conducted by Audit Manager Scott Wahlbrink and his staff.

If you have any questions or concerns, you may contact Mr. Tracy Allen at (217)782-8691.

Sincerely,

SIGNED ORIGINAL ON FILE

Amy Romano,
Acting Executive Director

cc: Jaclyn O'Day, Chief of Staff
Tracy Allen, Chief Internal Audit
Internal Audit File

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