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BOARD OF HEALTH

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Legionella Outbreak Associated with St. Columbkille Parish

*Parma, Ohio
July, 2018*

2019 Midwest Conference
March 26, 2019

Response Staff

Internal Responders

Admin

- Terry Allan
- Kevin Brennan
- Tom O'Donnell

EPH

- Rick Novickis
- Denise Romano
- John Sobolewski

ESI

- Amy Anter
- Sheryl Fleury
- Tara Hanchar
- Chris Kippes
- Jackie Napolitano
- Stacey Koltas

External Responders

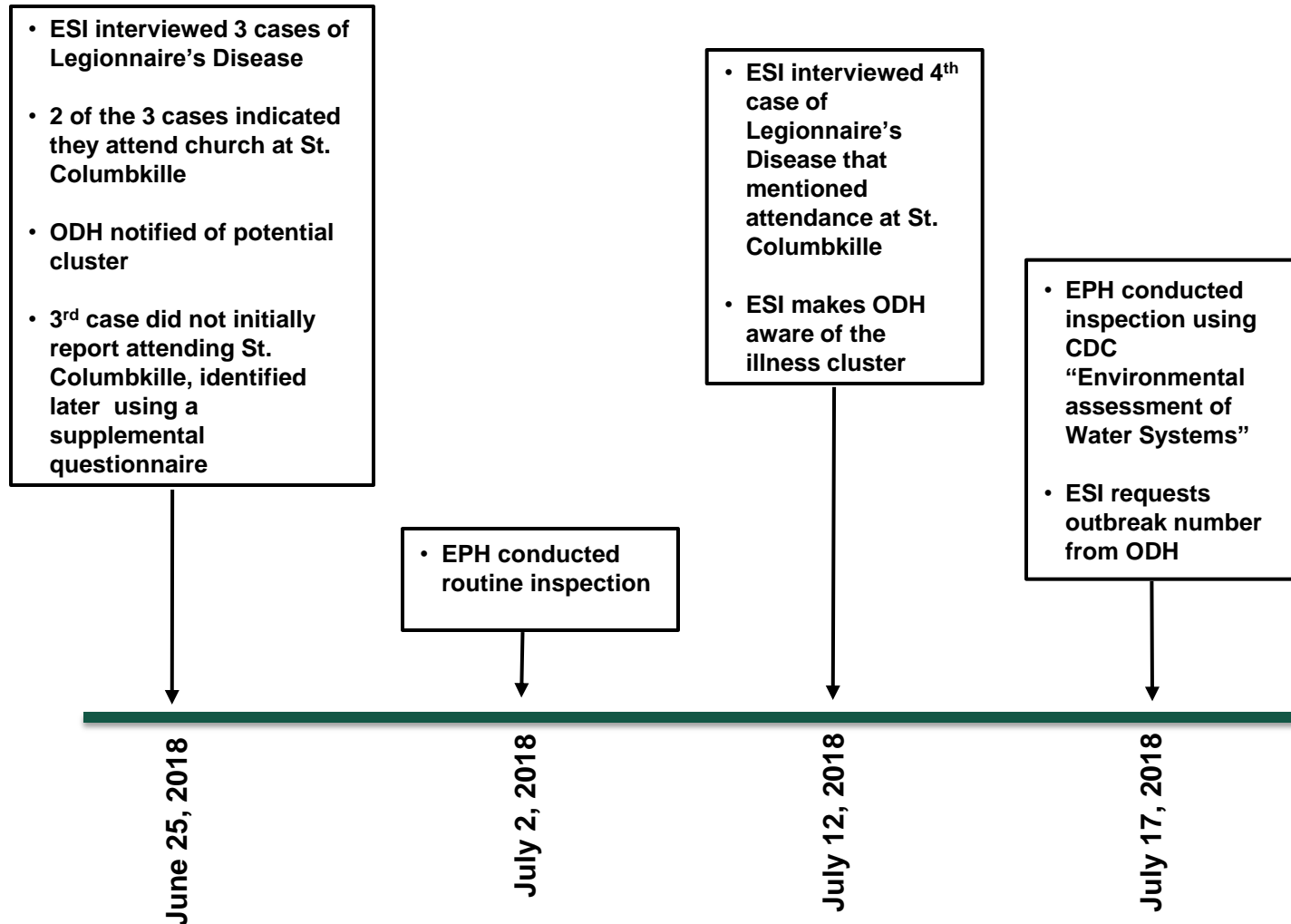
ODH

- Rebecca Fugitt
- Kim Quinn
- Ellen Salehi

CDC

- Jasen Kunz
- Troy Ritter

Initiation of Investigation



Highlights of Epidemiological Investigation

- **Case Finding Strategies**

- Regional health sent using the Ohio Public Health Communication System (OPHCS) to increase awareness among local hospital and public health departments
- Utilization of Geographical Information System (GIS) software and Ohio Disease Reporting System (ODRS)
 - Identify Legionnaire's cases since May that lived within a 10 mile radius of the church
- Parishioner names provided by church staff whom may have been ill with symptoms consistent with Legionnaire's disease
- Review of the weekly online church bulletin to identify deceased parishioners that were cross referenced with preliminary death certificate data obtained on a monthly basis through ODH.
 - Receive further info on if the death may be associated with a Legionella exposure (pneumonia)



Highlights of Epidemiological Investigation –cont'd

Use of Supplemental Questionnaire

– Designed to:

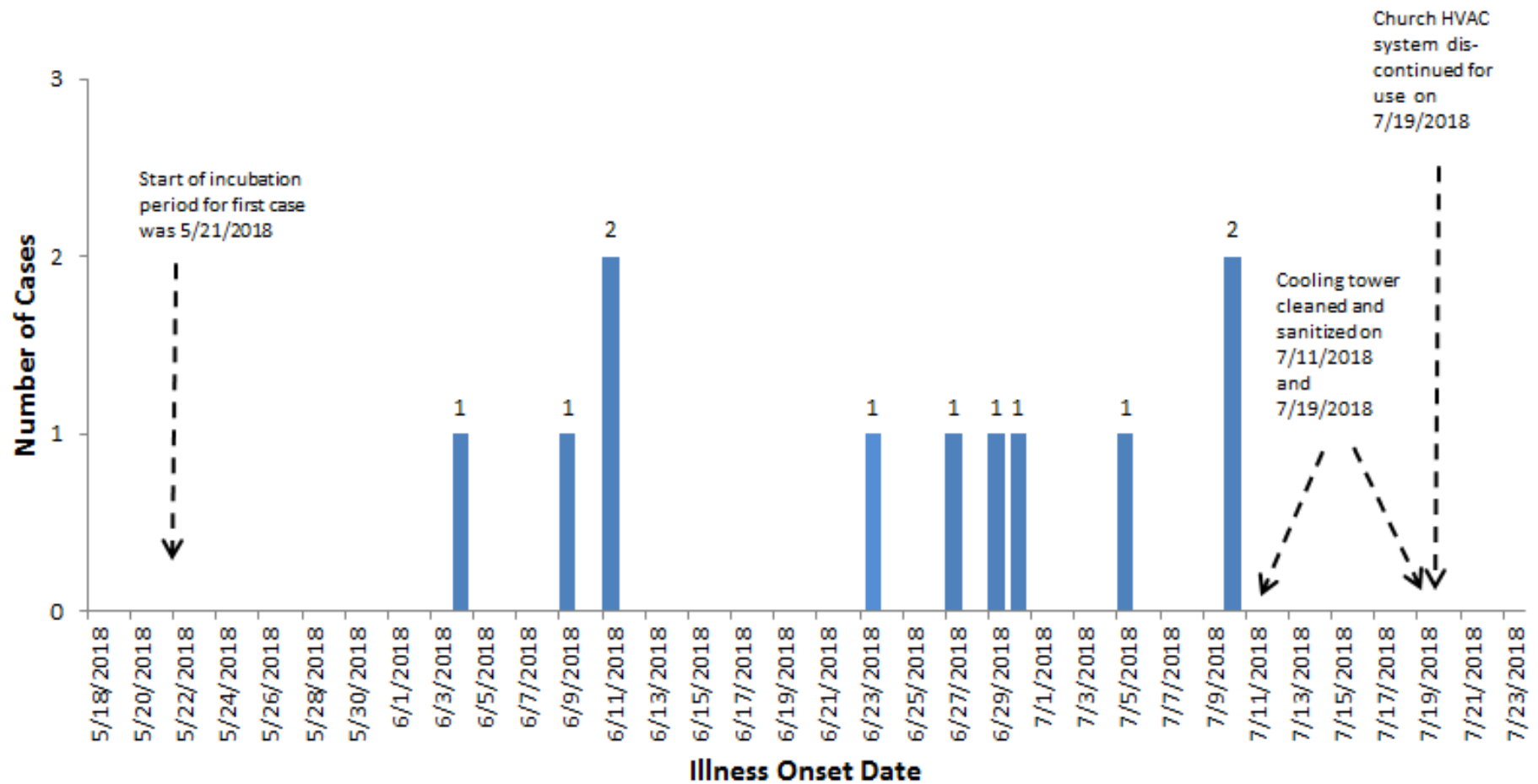
- Determine if Legionnaires' disease cases had attended St. Columbkille Parish during their incubation period
- If they did attend, assessment what areas of the church the cases' visit

Highlights of Epidemiological Investigation –cont'd

Summary of Cases

- 11 cases were associated with the outbreak
- Church attendance was indicated between 5/27 and 7/9
- 73% were female (8 female; 3 male)
- Median age was 78 (range = 74 to 93 years)
- 7 cases lived in Parma, 2 in Seven Hills, 1 in Broadview Heights and 1 in Independence
- There was 1 death
- All were diagnosed by Legionella urine Ag testing by area hospitals

Epi Curve by Onset Date



Environmental Investigation

- ID sources that could potentially support the growth of Legionella bacteria and constitute an exposure risk (77°-108°)
- Included visual observation/ direct measurement of environmental conditions, environmental sampling, service records and interviews
- Focus on the potable water supply and Heating Ventilation Air Conditioning (HVAC) systems.

Environmental Investigation

- Consult with onsite facility maintenance staff and subcontractors.
- Assess use and occupancy characteristics
- ID Potable water fixtures
- Fountains or water fixtures that could serve a potential sources of exposure.
- Spas/whirlpools
- Standing water

Environmental Investigation- Water

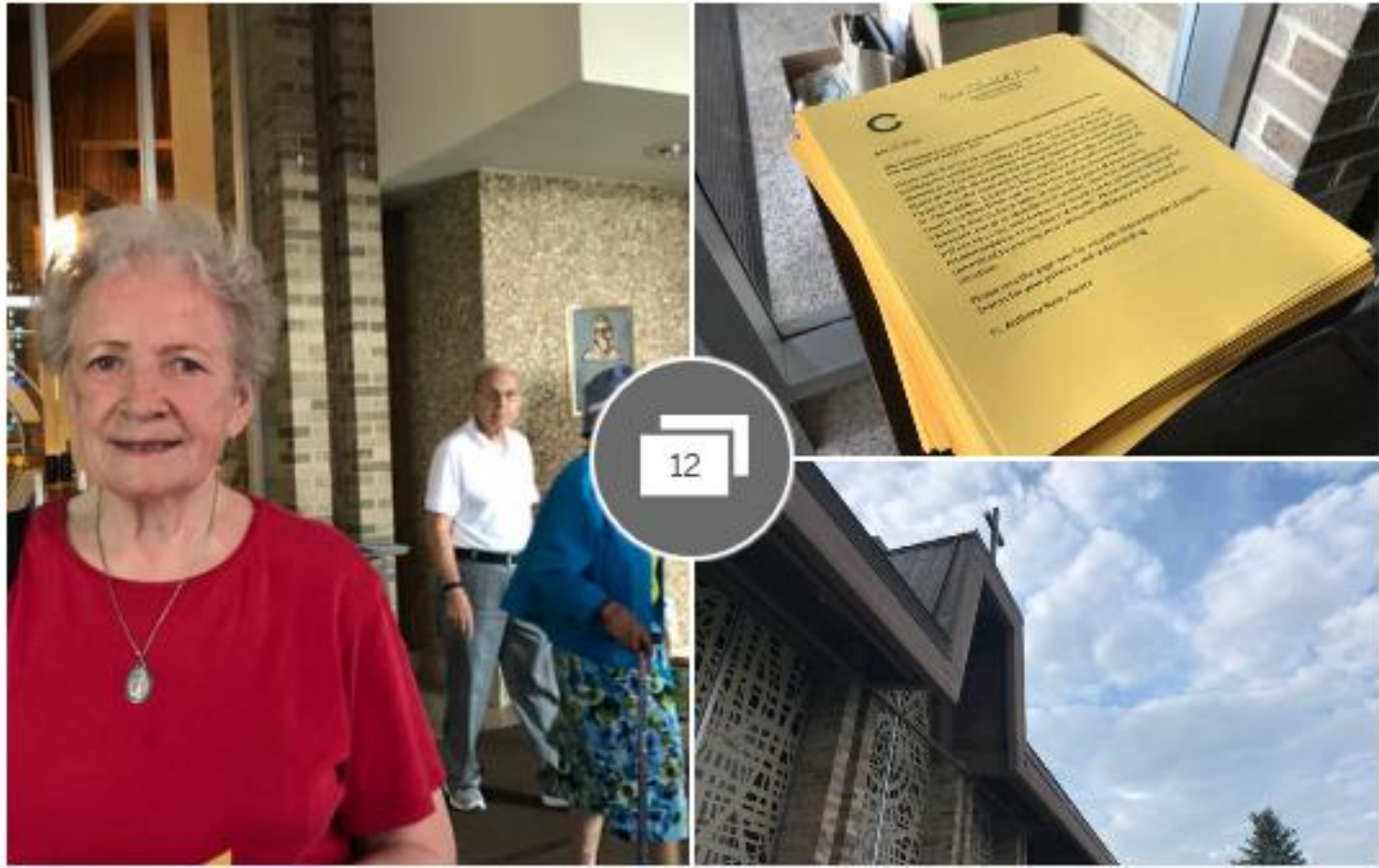
- Review, design and measure temperature of potable water supply. ($>122^{\circ}$ at tap, $>140^{\circ}$ at source)
- Measurement of free chlorine residual
- Review any maintenance and service records
- Legionella Environmental Assessment Form

Heating Ventilation Air Conditioning

- Design and location
- Operation, maintenance, and service records
- Location of fresh air intakes
- Is a cooling tower present?

Parma congregation worships while medical detectives track Legionnaires' disease source

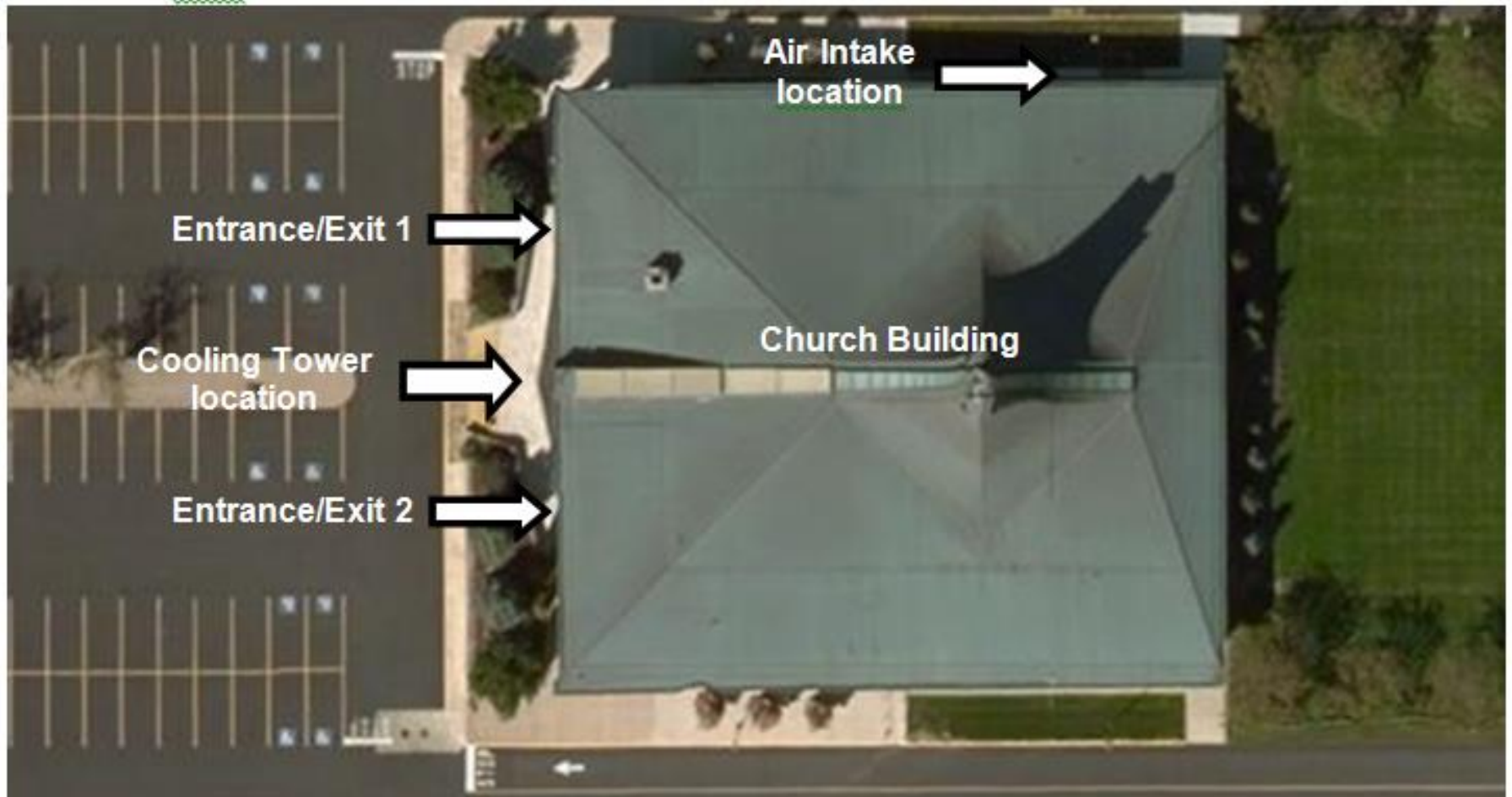
Updated Jul 30, 2018; Posted Jul 30, 2018



St. Columbkille Site Map



St. Columbkille Church Building: Locations of Air Intake, Cooling Tower, and Main Entrances/Exits



North Air Intake



West Side Entrances



West Side Entrances



Environmental Investigation

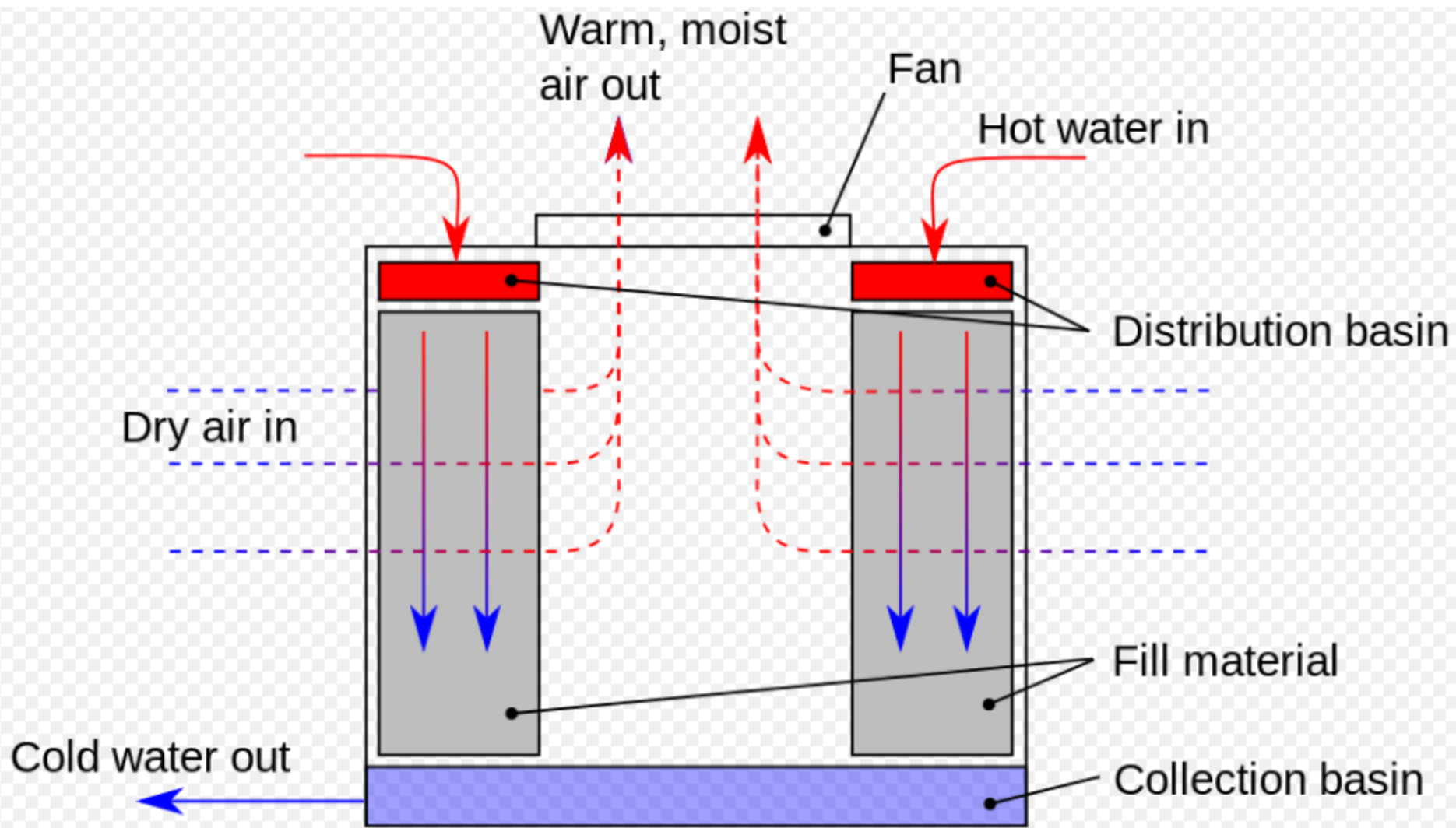
- Onsite investigations were conducted on 7/2, 7/17, 7/19, 7/23, 7/24, and 7/26.
- Each inspection built on what was learned from previous inspections and input from ODH/CDC.
- Discussion with facility maintenance staff, direct observations, and review of service records.

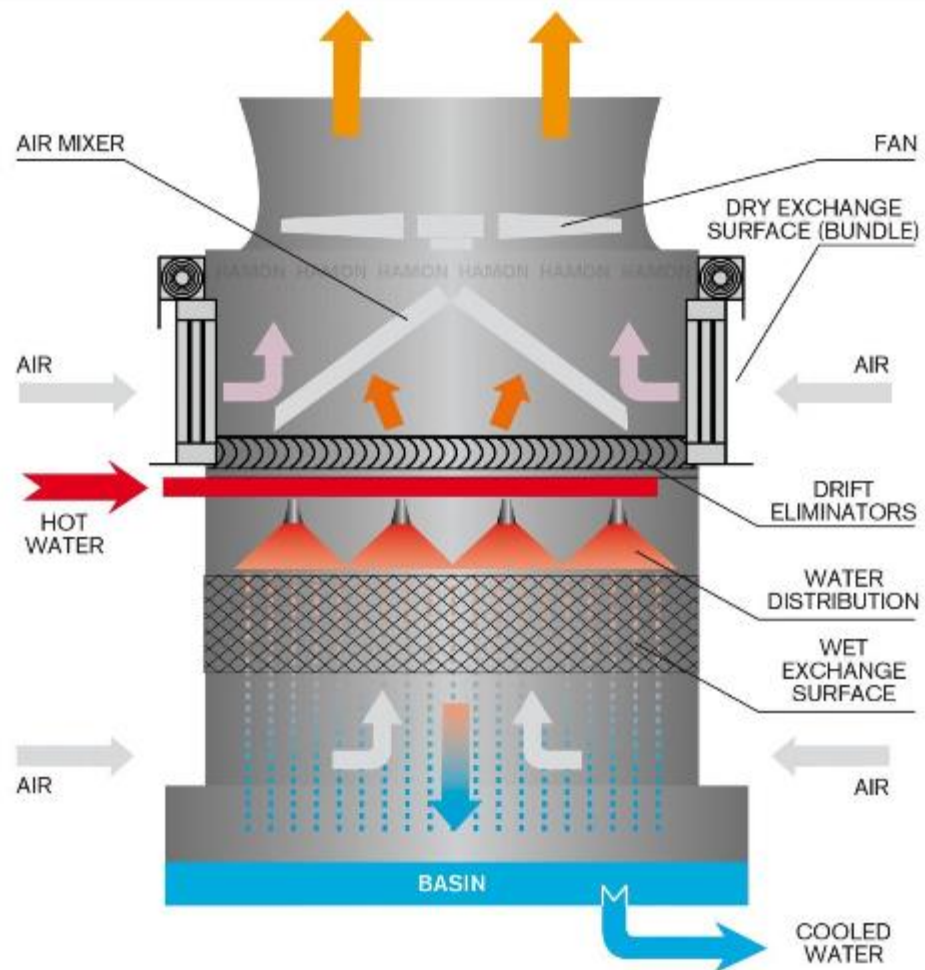
Environmental Investigation_{-cont'd}

- 7/2 EPH inspection based upon the report of the 2 initial cases
- 7/17 EPH inspection using CDC Environmental Assessment of Water Systems upon the report of the 3rd and 4th cases
- 7/19 further investigation to investigate the design and operation of the air cooling system (Baltimore Air Coil cooling tower)
- 7/23 sampling of the cooling tower by the NEORSD
- 7/24 measure potable water free chlorine residual
- 7/26 sampling of potable water and air handlers

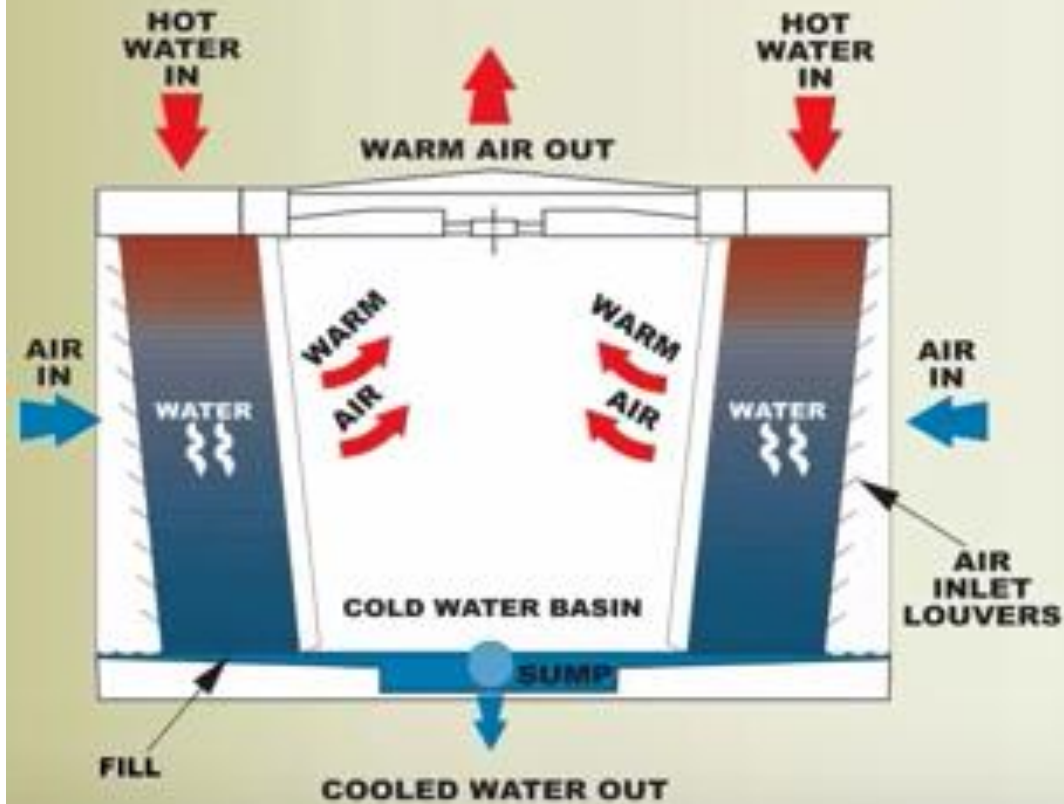
Cooling Tower

- Design, location, maintenance.
- Observe cooling tower operation under “normal” operating conditions (manual/intermittent).
- Evaluate whether “drift” from tower could present an exposure risk.
- Obtain maintenance, service records, and water chemistry reports.



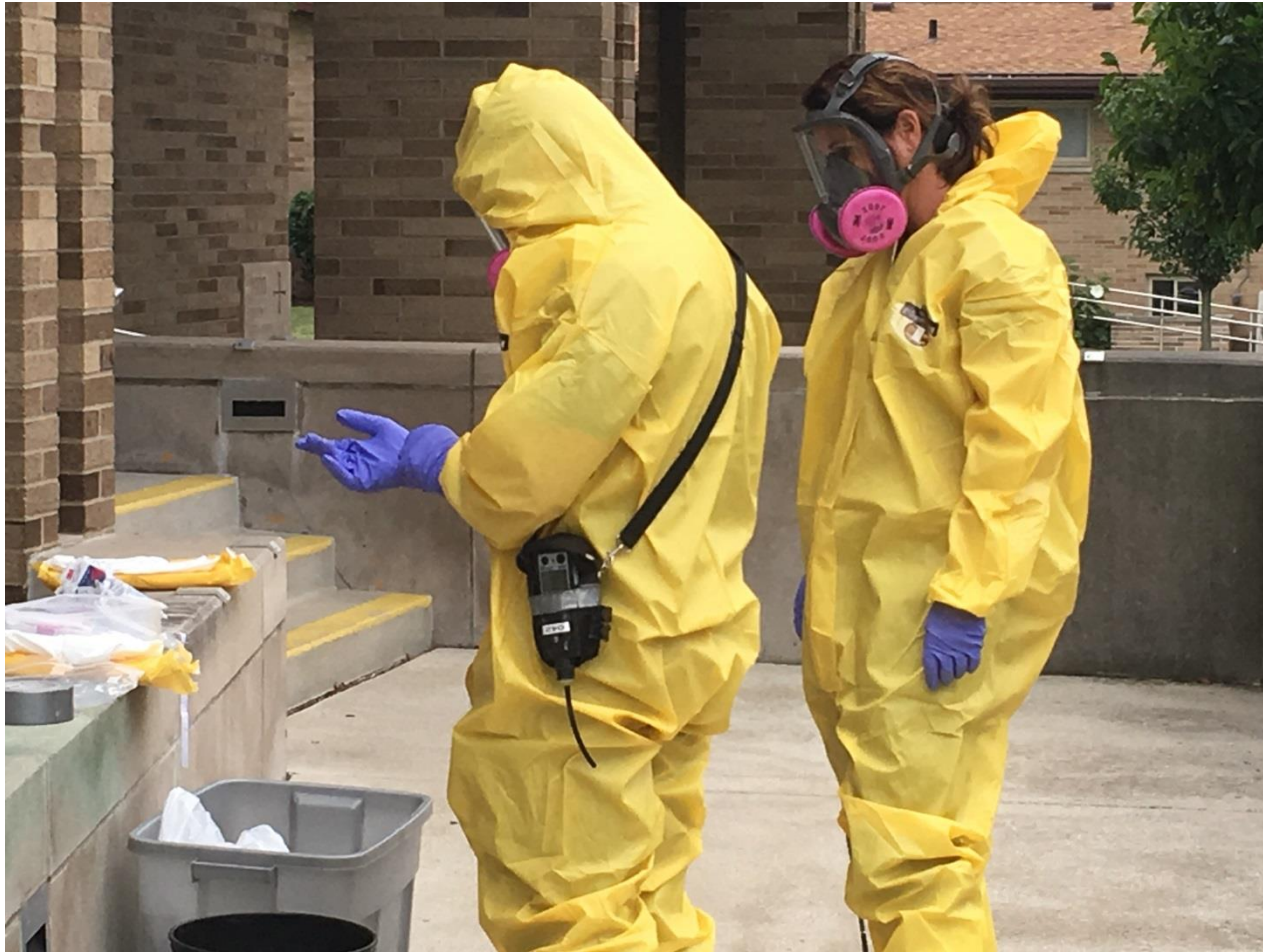


THE COOLING TOWER





NEORSD Sampling



Cooling Tower Reservoir



Discussion/Conclusions

- The design, operation, and location of the current cooling system at St. Columbkille church provided a significant risk and a very likely mode of transmission and pathway for exposure for the Legionnaires' disease cases

Recommendations

- Based on its present location, design, operation and maintenance, the cooling tower should not be operated
- Develop and follow ASHRAE 288-compliant Legionella water management plan for all of the water sources in the parish facilities
- Consult with the qualified Heating, Ventilation and Air conditioning engineer for guidance in addressing the issues and risks related to the location, design, operation and maintenance of the cooling tower
- Develop an ongoing communication plan regarding water management

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St. Columbkille

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