Bureau of Engineering Services

Emergency Response Discussion: Critical Care Facilities

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Overview

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    - Boil Water Advisories
    - Emergency Bulk Water Hauling
- Emergency Potable Water Alternatives
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    - Design and Operation
  - Emergency Well
    - Design Standards
    - Operation
  - Drinking Water Infrastructure
    - Design
    - Compliance

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Primary Programs:

- Safe Drinking Water Program (SDWP)
- Drinking Water Revolving Loan Fund Program (DWRLF)
- Community Sewage Program
- Operator Certification Program

www.ldh.la.gov/engineering

www.ldh.la.gov/safedrinkingwater

www.ldh.la.gov/drinkingwaterwatch

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Emergency Response Role and Responsibility

- Emergency Support Function (ESF) 12 – Utilities
  - Provide support at GOHSEP; staff ESF-12 desk at State EOC
- ESF 8 – Public Health and Medical Services
  - Provide support for water service to medical facilities
  - Provide support (staff) at LDH EOC (COVID, Storms, Vaccines, etc.)
- Assess water system infrastructure and status
  - Issue water outage, boil advisory and cleared system lists
- Coordinate with agencies on WebEOC requests
  - Track/assist with bulk water requests (fill-points and need/prioritizing)
  - Track/assist with other requests (bottled water, generators, etc.)
- Perform investigative sampling to clear systems from storm BWAs and/or chemical contamination, when requested
- Maintain/Initiate Waterworks Warning Network for river spills

Water System Assessments

- Utilize Response Manager
  - Utility status compiled and reported on a daily basis to EPA, GOSHEP and the media
- Default status is OUT for all systems in the impacted area and that are not reachable by phone
  - Boil water advisory (BWA) is issued and the system is listed as *not safe to drink*
- Utility status to include information on:
  - Power loss, generator and fuel status
  - Pressure and/or treatment loss
  - Water service to customers and critical facilities (hospitals)
- Boil advisories lifted once system returns to full pressure/treatment, normal power is restored and stable, and Bacti samples are negative with adequate chlorine residuals

Boil Water Advisories

- Why do systems issue a Boil Advisory?
  - Loss of pressure in distribution system
  - Critical treatment failure
  - Waterborne disease outbreak
  - Potential or known contamination
  - Hurricane affected areas when status is unknown

- Hurricane Laura – At peak measure, 149 PWS (12% of PWS in LA) were on a BWA, 123 were community systems
- 2021 Winter Storms – At peak measure, 392 PWS (31% of PWS in LA) were on a BWA, 363 were community systems

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Hurricane Laura Event Summary

- 1302 total water systems assessed via email/phone (Marco/Laura)
  - ~250 systems were impacted by the storm
    - 103 systems without water (at peak) (damage, no power, no generator or combo)
    - 149 systems with impaired service (i.e. BWA at peak)
      - ~41% of systems in the impacted areas
- 92 field assessments in 8 parishes in 4 days
  - 13 LDH staff teamed with federal and local partners

City of Lake Charles Water System – LA1019029

Date of Visit: 9/1/20 Status: INOP Population: 85,000

Current Status: All plants operational, repairs in progress, disinfection online, but some chemical injections down in certain parts of systems.

9/1/2020

- All 6 wells are running at 50-80% capacity
- Low pressure due to damage throughout distribution system
- Treatment room completely leveled

9/8/2020

- 100% customers served.
- All sites have full treatment including filtration and disinfection.
- Pressure back to normal operations

Cameron Parish WW District #10 (Holly Beach) – LA1023005

Date of Visit: 8/31/20 Status: INOP Population: 1,503

- 100,000 gallon elevated storage tank collapsed
- Last renovated/inspected March 2019
- Control building at production site destroyed
- Control system must be reestablished to produce water

Emergency Bulk Water Hauling

- Two methods:
  - Bottled Water
  - Bulk Water Delivery
    - Potable – Requires coordination with LDH/OPH for fill points
    - Non-potable (toilet flushing, etc.) – Does NOT require LDH/OPH involvement
- Most emergency potable water needs are now handled with bottled water rather than bulk potable water hauling.
  - Advantage of bottled water – fewer resources required to complete missions, less coordination between agencies, no required water quality monitoring and quicker turnaround.
- Bulk potable water requests are becoming less common.
  - Requires careful coordination with the SDWP and surrounding water systems to protect water quality.

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Emergency Bulk Water Hauling Instructions

1. Only a water supply which has been permitted or approved by the Safe Drinking Water Program shall be used as a source to fill tank trucks or trailers during water hauling operations. Only Public Water Systems (PWS) operating under normal conditions may supply tanker truck drinking water. Tapping fire hydrants is not allowed. Water tankers may only fill at designated locations approved by the LDH and the public water system.
2. All transported water must carry a disinfectant (chlorine) residual of at least 1.0 ppm free chlorine or 1.5 ppm total chlorine at the beginning of the haul and at least 0.5 ppm free chlorine or 1.0 ppm total chlorine at the end of the haul.
3. The chlorine residual shall be measured after filling and the truck driver shall be given a completed four-part form (Lab 8 Form) as certification that the truck was properly filled.
    a. One page of the form shall stay with the filler (PWS)
    b. One page with the truck driver
    c. One page will be presented to the recipient of the water
    d. One page will be forwarded to the Safe Drinking Water Program.
4. Any truck not able to unload within 24 hours shall dump the load and proceed to the PWS for re-filling.

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Emergency Potable Water Alternatives

- Construct emergency potable water storage onsite
- Install an emergency potable water well(s) onsite
- Construct drinking water infrastructure
  - Must meet all potable water design standards
  - Regulatory Implications

Potable Water Storage Tanks

- Ground Storage Tanks (GST) – Concrete, welded steel or bolted
  - Requires additional pumping to distribute water
- Elevated Storage Tanks (EST) – Welded or bolted
  - Elevated storage creates 1 psi for every 2.31 ft of elevation relative to elevation of service location.

- Design Considerations:
  - Foundation
  - Coating system
  - Capacity
  - Inlet piping (top)
  - Outlet piping (bottom)
  - Overflow
  - piping
  - Drain line
  - Security
  - Manhole
  - Vent
  - Level Indication
  - Sample Tap
  - SCADA

- Operations
  - All storage tanks must meet NSF standards
  - Flow through tank to keep adequate water quality (fill at top, discharge at bottom)
  - LDH recommends tank Inspections every 3 to 5 years
  - LDH recommends having a written O&M plan in place for actions prior to a storm

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Emergency Well Design

- Cannot exceed 60 days of use per year or will be considered public water system
- Must meet LDH and DNR standards for potable water supply
  - LDH can provide courtesy review of design if desired
- Chemical analysis highly recommended for determining treatment
  - i.e. mineral content, contamination
- Disinfection required for either potable or cooling tower use

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Emergency Well Operation

- The emergency well must be physically disconnected from the hospital water system when not in use.
  - A removable spool piece is recommended
  - Coordination public water system supply is required when using the backup water well system.
- Monthly flushing, equipment exercise and bacteriological testing required.
  - LDH recommends having a location to receive flushing water due to volume
- Bacteriological samples must be analyzed and cleared 24-48 hrs prior to use
  - Preparation in week prior to storm event essential for use during emergency.
  - Reminder that sample analysis takes 18-24 hours.
- LDH recommends having a written O&M policy in place for actions required prior to storm, for monthly and yearly testing, and record keeping.
- Chemical samples required every 3 years. A list of analytes and certified labs is located at https://ldh.la.gov/assets/oph/Center-EH/engineering/SDWP/New_Source_Drinking_Water_Chemical_Testing_Guidance_Aug2020.pdf
- LDH recommends that the hospital consider having staff trained and certified as water operators.

Drinking Water Infrastructure

- EPA Definition: a public water system provides water for human consumption through pipes or other constructed conveyances to at least 15 service connections or serves an average of at least 25 people for at least 60 days a year. A public water system may be publicly or privately owned.
  - Community (CWS): same population year-round.
  - Non-Transient Non-Community (NTNCWS): at least 25 of the same people for six months
    - Schools, factories, offices, hospitals, etc.
  - Transient Non-Community (TNCWS)
- Design Standards for Water Works
- Regulatory Implications

Design Standards

Key Standards to be adopted for permitting new construction of PWS infrastructure:

- Standby power must be provided for community and non-community system serving a hospital;
- Minimum of two sources (interconnections count) for community systems and non-community system serving a hospital;
- MPA testing for new ground water sources that don't meet exclusion criteria;
- Weighing scales must be provided for chlorine gas;
- Minimum of 10-day chemical supply;
- Overfeed protection in lieu of day tanks (except for Fluoride);
- Housing of chlorine gas feed and storage required unless meets exception criteria;
- Pressure tanks shall meet ASME or be LDH-approved alternate;
- Water system minimum pressure increased to 20 psi; and
- Pressure filters filtration rate up to 6 gal/min/sqft.

Regulatory Implications

- Compliance requirements and sampling protocol
  - Stage 1 Disinfectants/Disinfection Byproducts Rule (D/DBPR)
  - Stage 2 D/DBP Rule – TTHM/HAA5
  - Groundwater Rule (GWR)
  - Revised Total Coliform Rule (RTCR)
  - Lead and Copper Rule (LCR)
  - Primary and Secondary Contaminants
  - Final Rule – Minimum Disinfection
- Sanitary Survey (SNSV) Significant Deficiencies
- Certified Operator

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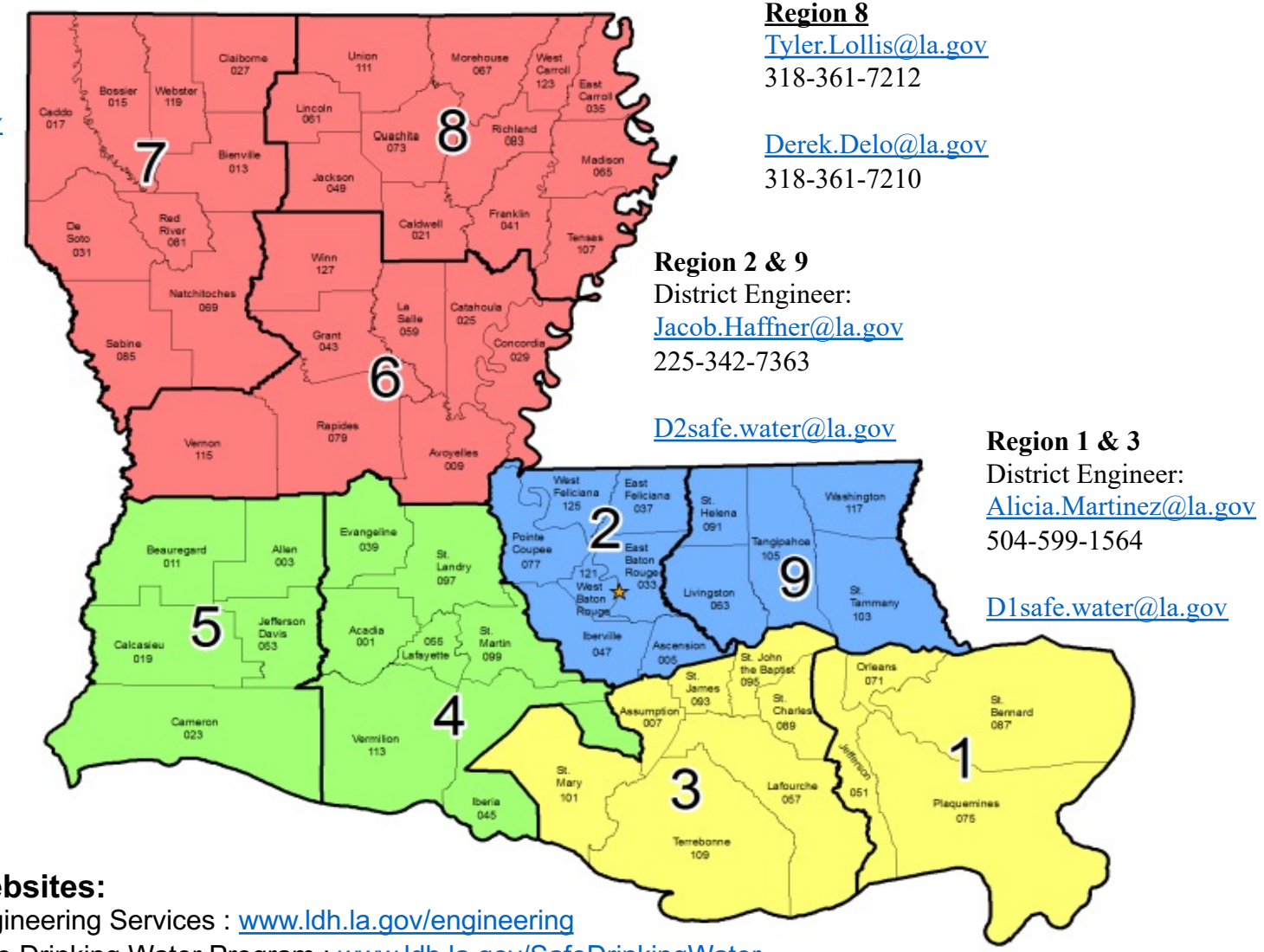

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Safe Drinking Water Program : www.ldh.la.gov/SafeDrinkingWater
Drinking Water Watch: www.ldh.la.gov/drinkingwaterwatch

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Questions

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