Documentation and Reporting

☐ Proper documentation is critical for public and private non-profit utilities in requesting reimbursement. Document all damage assessments, mutual aid requests, emergency repair work, equipment used, purchases made, staff hours worked, and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs (with time and date stamp).

☐ Work with your local EMA on the required paperwork for public assistance requests.

☐ Privately-owned systems should prepare similar documentation for actions from any regulating agencies (i.e., Public Utilities Commission).

☐ Insurance companies may request specific documentation. Work with the provider to determine appropriate documenting and reporting.

Personnel

☐ Remind personnel that their personal safety is paramount.

☐ Account for all personnel and provide emergency care, if needed.

☐ If personnel are in the field, communicate with the National Weather Service (NWS) on local wind conditions in the fire area so staff are aware of how quickly winds are shifting and if evacuation from facilities is required.

☐ Deploy emergency operations and clean-up crews.

- Identify key access points and roads for employees to enter the utility and critical infrastructure

- Coordinate the need for debris clearing with local emergency management or prioritize it for employee operations.

Power, Energy and Fuel

☐ Use backup generators, as needed, to supply power to system components. Prioritize critical facilities first.

- Backup generators are designed for normal service. Consider requesting additional generators through WARN, technical assistance providers or emergency management.

☐ Monitor fuel needs and coordinate fuel deliveries to generators.

☐ Maintain contact with the local electric provider for power outage duration estimates.

☐ Coordinate priority power restoration for critical water production facilities.

Notes:

Actions to Recover from a Wildfire

Coordination

☐ Coordinate through your local EMA with debris management teams. Availability of water may be scarce post-wildfire.

- Water will be necessary for clean-up and dust suppression.

- Water may also be needed for water system flushing.

- Wastewater may be created from clean-up activities that will require proper disposal.

☐ Coordinate with local, state, or federal remediation teams (depending on the size and location of the fire) that will work to implement any necessary emergency stabilization of the landscape (e.g., soil and vegetation) post-fire. This stabilization is critical for surface water systems whose source water quality can be impacted by increased sediment load and debris flows.

☐ Continue work with response partners to obtain funding, equipment, etc.

- If a Presidential Disaster Declaration is declared for the incident, funding may be available from the Federal Emergency Management Agency for public and private non-profit water and wastewater systems for repairs and sample and analysis.

- Your state WARN program does not require a Presidential Declaration and WARN members could be available to provide assistance such as cutting burned service connections, sampling, etc.

☐ Coordinate with landowners and other partners to restore and treat burned areas.

☐ Coordinate with your back-up water sources to ensure water remains available if needed.

Communication with Customers

☐ Have your designated utility spokesperson continue to communicate with customers concerning actions being taken by the utility, a timeline for recovery, and other pertinent information.

- Plan for multiple types of communication with customers (e.g. website, local news, social media, direct).

☐ Continue communication and updates on any water use advisories issued as well as information on flushing for residents who stayed or are returning.

☐ Make wildfire-related water system sample results available to the public via a website, if possible. This is critical if VOCs were detected in the distribution system.

- Ask the city or county to assist with posting the data on their website if a water utility website is unavailable.

- Continue posting sample data until the utility returns to normal operations.

Documentation and Reporting

☐ Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs: https://www.epa.gov/fedfunds. In addition, EPA's fact sheet on Addressing Contamination of Drinking Water Distribution Systems from Volatile Organic Compounds (VOCs) After Wildfires has information on various funding options after the fire.

☐ Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your risk and resilience assessment and ERP. Work with local

fire officials to update their fire models and fire management plans with any water or wastewater system-specific lessons learned.

☐ Revise budget and asset management plans to address increased costs from response-related activities.

Facility and Service Area ──────

☐ Complete damage assessments and additional documentation for potential reimbursement.

☐ If contamination is present in distribution lines, continue to repeatedly flush and sample in accordance with your post-fire and/or VOC-specific sampling plan and re-assess after each flush and sample cycle. Note: The absence of visual fire damage does not mean damage to piping or appurtenances has not occurred.

☐ Conduct sediment removal activities such as installing permanent or temporary debris basins.

☐ Consider specialized assessments and material testing. For example, consider taking destructive (representative) samples of sections of water main or consider rebuilding fire hydrants to determine the extent to which heat may have damaged components.

☐ Complete permanent repairs, replace depleted supplies, and return to service.

☐ Establish fill stations for clean-up and construction crews.

Watershed/Source

☐ Identify mitigation and long-term adaptation measures that can prevent damage and increase utility resilience. Consider impacts related to future climate conditions and the increased frequency of wildfires (e.g., installing buffer strips, removing hazardous fuels, laying steel or ductile iron raw water lines, building concrete buildings for pumping stations).

☐ Consider implementing the following mitigation measures to prepare for possible flash flooding or mudslide events following a wildfire:

- Monitor the watershed, as conditions may be different post-fire. Identify potential failure points within your service area: ensure culverts can handle increased flow and determine runoff points and areas where water will now collect.

- Install a rain gauge upstream of raw water intakes for early warning of heavy precipitation that could lead to high turbidity water and sensors to monitor the amount of debris and sediment coming downstream.

- Consider instituting erosion control measures to protect against runoff and sediment concerns that occur during suppression and precipitation.

Treatment and Distribution

☐ Consider incorporating resilience and mitigation when designing and reconstructing infrastructure. Consider impacts related to future climate conditions and the increased frequency of wildfires. Some mitigation measures include:

- Removing any above-ground and shallow-buried plastic components and replace with more fire-resistant materials, like metals.

- Installing concrete meter boxes.

- Installing metal meters.

- Constructing steel tanks.

- Burying service lines deeper.

- Building concrete structures, rather than wood frame, especially for critical facilities.

- Purchasing additional generators that can be used to handle the extreme load caused by wildfires.

My Contacts and Resource

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
Marsha Hardy	Local EMA	325-372-8570
TDEM	State EMA	512-424-2138
Jay Hall TDEM Region 6	State Primacy Agency	210-531-4336
	WARN Chair	
City of San Saba	Power Utility	325-372-5144

Fire Mapping and Outlooks

- Active Fire Mapping Program (U.S. Forest Service [USFS])
- National Significant Wildland Fire Potential Outlooks (National Interagency Coordination Center NICC)
- National Weather Service – Fire Weather (National Oceanic and Atmospheric Administration [NOAA])
- Fire Weather Outlooks and Forecasting Tools (National Weather Service [NWS])
- Incident Information System (InciWeb)
- National Fire Situational Awareness Map (National Wildfire Coordinating Group [NWCG])
- Wildfire Assessment System (USFS)
- National Interagency Fire Center (NIFC)
- Firewise Communities (National Fire Protection Association [NFPA])
- U.S. Drought Portal (National Integrated Drought Information System [NIDIS])

Training and Preparedness

- All-Hazard Consequence Management Planning for the Water Sector (Preparedness, Emergency Response, and Recovery Critical Infrastructure Partnership Advisory Council (CIPAC) Workgroup)
- Ready.gov Wildfire Preparedness (Federal Emergency Management Agency [FEMA])
- Creating Resilient Water Utilities (EPA)
- Tabletop Exercise Tool for Water and Wastewater Utilities (EPA)

Coordination

- Water/Wastewater Agency Response Network (EPA)
- Community Based Water Resiliency (EPA)

Communication with Customers

- Oregon Health Authority public notice resources and templates
- California Water Boards templates for public notification
- Washington State Department of Health water advisory template
- EPA public notification templates

Facility and Service Area

- Post Fire Recovery (NIFC)
- Water Quality After Wildfire (USGS)
- Defensible Space Guidance (CAL FIRE)
- Private Wells after the Fire: A private well owner's guide to protecting your drinking water source (Arizona Department of Environmental Quality [ADEQ])
- Water Quality Concerns Fact Sheet (ADEQ)
- Evaluating the Effectiveness of Post Fire Rehabilitation Treatments (USDA)
- Water Supply Systems for Fire Protection (USFA)
- Wildfire Impacts on Water Quality (Southwest Treatment Catalog (USFS)
- Post Fire Rehabilitation Techniques (Colorado State University)

- Post-Wildfire Monitoring Guidance for Drinking Water Systems (Oregon Health Authority [OHA])
- Addressing Contamination of Drinking Water Distribution Systems from Volatile Organic Compounds (VOCs) After Wildfires (EPA)
- Post-Wildfire VOC Sampling Guidance for Public Water Systems (OHA)

Power, Energy and Fuel

- Power Resilience Guide (EPA)
- Power Outage Incident Action Checklist (EPA)
- EPA Region 1 Water/Wastewater System Generator Preparedness Brochure (EPA)
- Public Safety Power Shutof f Standard Oper Procedure Template (EPA)

Documentation and Reporting

- Federal Funding for Utilities in National Disasters (EPA)

Mitigation

- Burned Area Emergency Response (BAER) Treatment Catalog (USFS)
- Plants for Wildfire Protection and Restoration (USDA)
- Climate Resilience Evaluation and Awareness Tool (EPA)
- Resilient Strategies Guide (EPA)
- Hazard Mitigation for Natural Disasters (EPA)
- Effects of Wildfire on Drinking Water Utilities and Best Practices for Wildfire Risk Reduction and Mitigation (EPA and Water Research Foundation)
- Wildfire Hazard Mitigation Handbook for Public Utilities (FEMA)

Notes:

Power Outage

Generators

Incident Action Checklist – Power Outages

For on-the-go convenience, the actions in this checklist are divided into three "rip & run" sections and are examples of activities that utilities can take to prepare for, respond to and recover from power outages. You can also populate the "My Contacts" section with critical information that your utility may need during a power outage.

Power Outages and Utilities

The loss of electric power can have profound impacts on utilities. Sometimes the loss of power can be caused by events that can be predicted in advance such as hurricanes or ice storms. Other power outages, such as those caused by earthquakes, cyber incidents or space weather may occur with little or no notice. In California, the Public Safety Power Shutoff program allows electric companies to proactively shut off grid power to customers, including water utilities, to reduce fire ignition potential in high risk areas when extreme conditions present a clear and imminent danger to public safety.

The impacts of losing grid power at utilities may include pressure losses and boil water advisories, a reduction or cessation of water treatment, sewage back up and the discharge of untreated sewage into public right of ways, rivers and streams. The consequences of these impacts on the community could be devastating:

- Firefighters would not be able to access waterfrom hydrants.
- Local healthcare facilities and hospitals may have to evacuate patients or close.
- Restaurants and businesses may have to close, resulting in economic losses.
- Homes, businesses and healthcare facilitiesmay become unsanitary and uninhabitable.
- Environmental damage could occur.

There are many steps drinking water and wastewater utilities can take to obtain backup power and ensure that their lifeline services continue as long as possible during grid power outages.

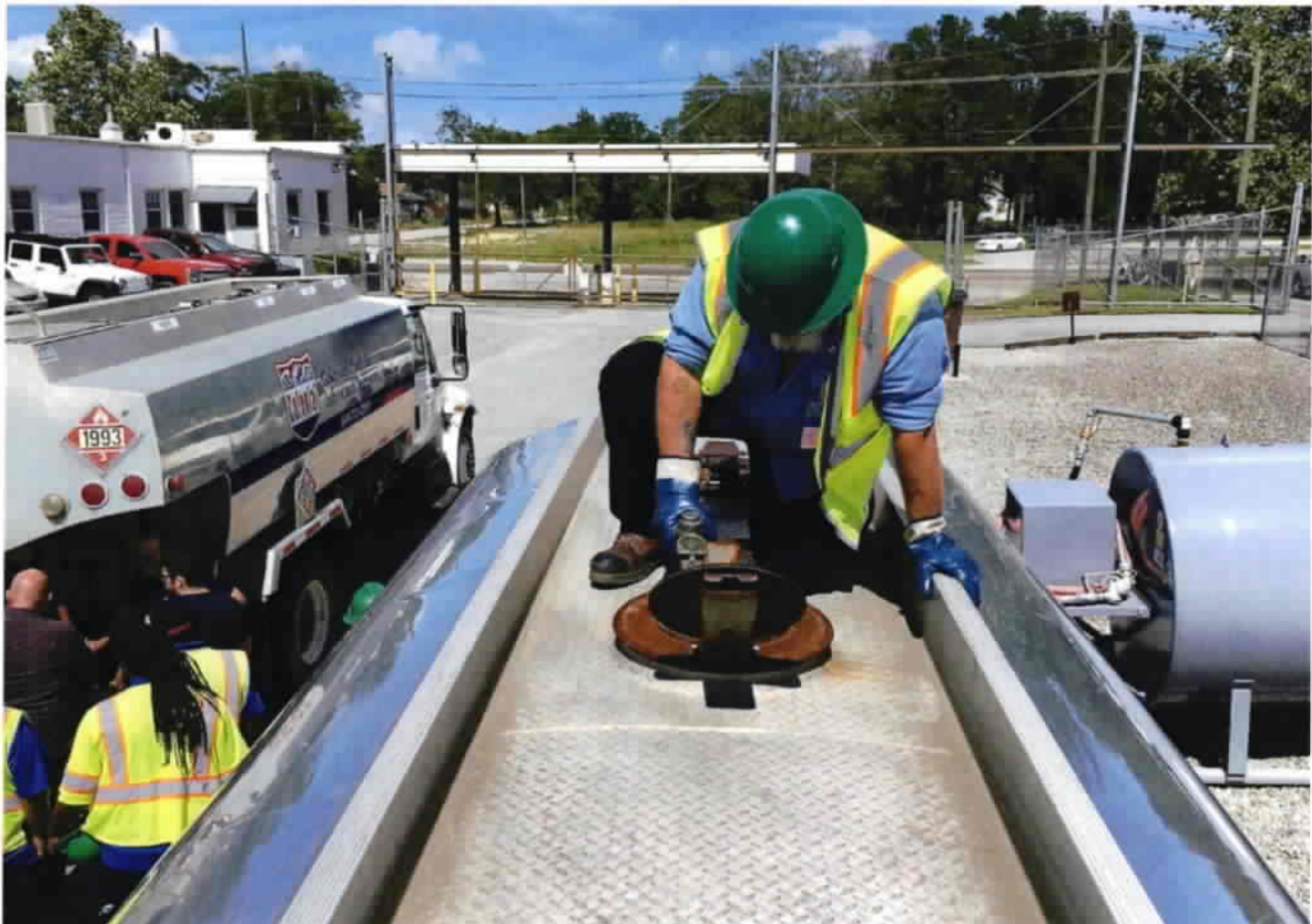# Preparing for the Loss of Power During Hurricanes
New Hanover County, North Carolina

When Hurricane Florence struck New Hanover County in September 2018, Cape Fear Public Utility Authority (CFPUA) was ready: facility and vehicle fuel tanks were topped off (a standard practice for CFPUA, especially in advance of a hurricane); generator run times and fuel capacities were calculated to help ensure continuity of operations under back-up power; and existing emergency fuel supply contracts were implemented.

With four major treatment plants, 150 pump stations and dozens of groundwater well sites, all facilities were preemptively running on emergency generator power when tropical storm force winds made landfall. When the full force of the hurricane struck, ninety percent of the county and all CFPUA facilities lost grid power. The emergency generators did their job of maintaining power to all critical facilities and equipment.

Still, these preparations were almost not enough when the fuel supplier was unable to fulfill its contract. During the hurricane, the supplier lost grid power and had no redundancy. Business employees had evacuated and there were not enough drivers to dedicate themselves to supplying fuel to CFPUA.

Working with the County Emergency Operations Center (EOC), CFPUA was able to obtain fuel from a terminal at the North Carolina State Port. Determining a vendor's ability to maintain business continuity was identified as a planning gap in the utility's after-action report. In the aftermath of Florence, CFPUA increased fuel storage capacity by contracting for seasonal fuel tanks, purchasing additional saddle tanks for vehicles and requiring emergency fuel vendors to have backup power on-site. The utility also purchased its own 2,800-gallon fuel truck to ensure it can pick up and deliver fuel at any time.

Planning

☐ Create and maintain an emergency response plan and a business continuity plan for all critical system components.

☐ Develop plans that specifically address actions to be taken during power outages; plans should address both short-duration and long-duration outages.

☐ Develop and issue standard operating procedures to manage power outages.

☐ Know your system; have a plan for stationary and portable generators. Make sure, if possible, that generators are pre-staged at locations when an event can be expected to potentially affect one or more of your stations.

☐ Develop roles and responsibilities for staff before, during and after a power outage, including appropriate communication protocols.

Coordination

☐ Get to know key staff at your electric utility, especially your designated account representative, if assigned one. Learn if circuits (e.g., power transmission lines or electric service area zone) serving your utility are in high risk fire areas, such as in the western states.

☐ Obtain 24/7 emergency contact information for your electric utility and local emergency management agency and plan together for power outage events.

☐ For a Public Safety Power Shutoff, confirm with your electric provider and local emergency management agency the communication method and timing (e.g., 72 hours before the shutoff) by which you will be notified of a planned outage.

☐ Determine where your treatment facility and key pumping stations rank on the prioritization list for power restoration. Try to get as high on the list as possible by making sure the list manager understands the reliance of the community (e.g., fire protection, hospitals, shelters and sensitive populations) on drinking water and wastewater services.

☐ Make sure your electric utility has the actual street addresses and locations of your treatment facilities and pumping stations. In case street signs are damaged or lost, also include latitude and longitude positions. Decimal latitude/longitude positions should be recorded with a value six digits to the right of the decimal point.

☐ Learn what alternative communication methods (e.g., 2-way radios, ham radio operators, satellite phones) are available in your community.

☐ Join your state's Water and Wastewater Agency Response Network (WARN).

☐ Develop an approved notification procedure for communicating boil water advisories, water use restrictions and other information to customers during a power outage (e.g., precautionary boil water notices, reverse 911).

☐ Develop standard written notification templates to quickly send alerts in emergencies. Ensure customer information is regularly updated.

☐ Participate in local, state and federal emergency preparedness exercises.

Generators and Bypass Pumps

☐ Conduct a power assessment to determine your utility's critical facility backup power requirements. The assessment should provide the kilowatt, voltage, and phase(s) of any required generators. It should also include a basic order of connection materials needed (e.g., number and length of cables to connect generator, number and size of lugs to connect cable runs) and to what location within each facility's electrical system the generator needs to be connected.

☐ Ensure generators and associated electrical connection points are always accessible to qualified personnel.

☐ Determine lift station bypass capabilities and needed pump sizes, hoses and connections.

☐ Install transfer switches (automatic or manual depending on mode of operation) and quick-connect plugs to connect your facility's electrical equipment to generators.

☐ Purchase generators and bypass pumps or develop plans to obtain them through a contractor or mutual aid agreement to be utilized during a power outage. Be sure any contract includes wording that you are a priority customer. Consider renting generators in advance of hurricane or fire season.

☐ Maintain your generator(s) according to the manufacturer's recommendations and annually exercise generators under full load. Identify maintenance requirements and arrange for specialized support as necessary.

☐ Keep basic maintenance supplies on hand (e.g., Diesel Emissions Fluid (DEF), coolant, belts, oil, fuel filters).

☐ Keep small generators and variable frequency drives (VFDs) on trailers for easy transport during emergencies and maintain the trailers, especially the tires.

☐ Develop transportation routes and a rotation plan for facilities if there are not enough generators or bypass pumps available for each facility.

Fuel

☐ Know the pros and cons of the various fuel types.

☐ Calculate how much fuel is needed to operate each generator and bypass pump for one day and determine your total on-site fuel storage. Be sure to include DEF requirements, asapplicable. The U.S. Army Corps of Engineers uses the following formula to determine the approximate generator fuel consumption for a 24-hour period: Generator kW size x 0.07 gallons/hour/kW x 24 hours.

☐ Develop a fuel management plan that includes fuel polishing and fuel additives(e.g., algaecides). Because of potential fuel quality issues, consider stocking extra fuel filters.

☐ Have contracts with multiple fuel vendors and check their ability to pump and move fuel during a power outage. Be sure these contracts include wording that you are a priority customer.

☐ Have multiple options to move fuel during an emergency, possibly including tanks mounted on utility owned vehicles.

☐ Monitor fuel tank levels and refill when they fall below a defined level so that tanks are as full as possible for a no-notice power outage.

☐ If a storm or other emergency situation is predicted, fill vehicle, equipment and fuel storage tanks to capacity. Have an alternate plan for pumping from fuel storage tanks if their pumps operate on grid power only.

☐ Work with your city, county and state to develop an area wide emergency operations fuel acquisition and distribution plan.

☐ If applicable, establish contacts at your natural gas utility and learn about their response and recovery plans.

Notes:

Actions to Respond to a Power Outage

Notifications

☐ Immediately notify your electric utility and local emergency management agency of power outages impacting your facilities. Inform them of:

- how long you can sustain operations without grid power

- the consequences to the community of the loss or reduction of water and wastewater services (e.g., a possible reduction in fire protection)

Know water storage and wet well capacities for determining when storage will be exhausted.

☐ Maintain contact with your electric utility provider to obtain power outage duration estimates.

☐ Notify your regulatory or primacy agency if operations and/or water quality or quantity are affected by a power outage, if your utility is running on generator power and what your fuel status is.

☐ Notify the public of any boil water notices or water use restrictions.

☐ As needed, request generators and fuel through your WARN, other mutual aid networks and/or the local emergency operations center (EOC). Once your need is met, be sure to cancel any outstanding requests.

☐ Implement pre-developed emergency response and communications plans.

Generators

☐ Monitor power quality and proactively switch to generators if there is poor power quality, which can damage equipment.

☐ Ensure that generators are connected by qualified personnel.

☐ Use backup generators, as needed, to supply power to critical facilities.

☐ Transport small generators on trailers and address operations, security and logistics (e.g., maintenance, fuel, parts) for mobile generators.

☐ Establish a schedule for maintenance, fuel checks and refueling for each generator, and ensure scheduled maintenance is regularly completed. The standard service interval is 240 operational hours or after every 10 days of continuous operations. Be sure to plan for redundancy as in most events there is over 10% failure of backup equipment.

☐ Consult with air quality agencies as necessary for emergency waivers for prolonged use of certain kinds of generators.

☐ Ensure sufficient personnel are available and cross-trained to serve as generator operators. Smaller utilities may need pre-arranged emergency service contracts with qualified electricians or to work with their WARN.

Notes:

Fuel

☐ Constantly monitor fuel quality and needs and coordinate fuel deliveries to generators. If possible, shut down generator during refueling.

☐ Shut down generators based on operational conditions to conserve fuel.

☐ Consider cancelling any non-essential trips in utility administrative vehicles to prolong your fuel reserves.

☐ Adjust climate control systems and any other large electrical uses at critical facilities to prolong generator run times.

☐ Implement staff carpooling to and from work where possible.

Operations

☐ Plan for and be prepared to reduce levels of service across the system or in pressure zones incrementally; plans should include actions taken to restore operations to normal levels.

☐ Be prepared to operate components of your utility manually without the aid of computerized systems.

☐ Implement plans, procedures or agreements to provide alternate drinking water as necessary.

☐ If possible, switch to source water with less power intensive requirements.

☐ Consider use of interties and emergency connections with neighboring utilities unaffected by the power disruption.

Documentation

☐ Document all damage assessments, mutual aid requests, emergency repair work, fuel and equipment used, purchases made, staff hours worked and contractors used during the response to assist in requesting reimbursement and applying for federal disaster funds. When possible, take photographs of damage at each work site (with time and date stamp). Proper documentation is critical to requesting reimbursement.

Notes:

Actions to Recover from a PowerOutage

Coordination

☐ Check with your electric utility to make sure that all three phases of power are available before switching back to grid power. When power is restored, not all three phases may be initially available, which can damage three-phase equipment.

☐ Follow set procedures for taking your facilities off generator power and back onto grid power.

☐ Conduct an after-action discussion with utility staff to identify portions of the response that went well and areas for improvement.

☐ Share key after-action items and lessons learned with your electric utility provider, emergency management agency and other response partners (e.g., fuel vendors).

Notifications

☐ Revise or lift (as applicable) any water use advisories that were put in place during the outage.

☐ Update your status with your regulatory or primacy agency and your local emergency management agency.

☐ Notify utility staff that any energy consumption restrictions that may have been put into place are now lifted.

Generators

☐ Perform any necessary maintenance or repairs on generators.

☐ Consider testing your generator oil for signs of metal, which could indicate engine wear and the need for repairs.

☐ If a generator is serviced or repaired, be sure to test it under load after work is complete.

Fuel

☐ Clean tanks as necessary and polish on-hand fuel supply as time allows.

☐ Refill tanks as necessary. Stabilize fuel.

☐ Establish new fuel vendor contracts as applicable.

☐ Assess your on-site fuel storage and adjust as necessary.

Documentation

☐ Compile damage assessment forms and cost documentation into a single report to facilitate the sharing of information and the completion of state and federal funding applications. Visit EPA's web-based tool, Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS), for tailored information and application forms for various federal disaster funding programs.

☐ Develop a lessons learned document and/or an after action report (AAR) to keep a record of your response activities. Update your risk assessment, emergency response plans and contingency plans.

Notes:

My Contacts and Resource

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
City of San Saba	Electric Utility	325-372-5144
Marsha Hardy	City emergency management	325-372-8750
Marsha Hardy	County emergency management	325-372-8750
Agro Fuel	Fuel provider	325-372-5713
Clifford Power	Generator service provider	800-324-0066
Isham Electric	Licensed electrician	325-372-3761
	WARN Chair	
Public Health Dept. Lampasas, TX	Local Health Department	512-556-5421
Jay Hall- TDEM Region 6	State Primacy Agency	210-531-4336
TDEM	State emergency management	512-424-2138

Resources

- Public Safety Power Shutoff (PSPS) Standard Operating Procedures (EPA)
  Provides a more detailed list of actions than this Incident Action Checklist to prepare for, respond to and recover from power outages. Although this resource was developed for PSPS events in California, it is applicable to most power outages across the country.
- Power Resilience Guide for Water and Wastewater Utilities (EPA)
- Connecting Water Utilities and Emergency Management Agencies (EPA)
- Water and Wastewater Agency Response Network (EPA)
- Federal Funding for Utilities—Water/Wastewater—in National Disasters (Fed FUNDS)(EPA)

Existing Generator Information Sheet

1. Facility Information

Site name:City of San Saba Water Plant

Address: 900blk E Storey

Lat.31.192019 N

'Long.98.719345 W

2. Generator information

Power(kw):200

Voltage(v): 277/480

Phases:3

Transfer Switch: Auto

Generator Location: Outside

Generator Type: Stationary

3. Engine Information

Engine Make: Generac FPT

F2CED685A*E002

Fuel Type: Diesel

Gallons per hour:14.4

Existing Generator Information Sheet

1.Facility Information

Site name:Sewer Plant

Address: CR 102

Lat.:31 12 2

Long.:98 41 30

2. Generator Information

Power(kw) 60

Voltage(v): 277/480

Phase: 3

Transfer Switch: Manual

Generator Location: outside

Generator Type: Stationary

3.Engine Information

Engine Make: Cummins

Model:4BTA3.9-65

Fuel type: Diesel

Gallns per hour:4.8

Existing Generator Information

1. Site Name: Portable Generator x2

Wherever needed

2. Generator Information

Power(KW): 20

Voltage(V): 120/240   277/480

Phase(S): 1 or 3

Transfer Switch: Manual

Generator Type: Portable

3. Engine Information

Engine Make: Isuzu

Engine Model: BZ-4LEZT

Fuel Type: Diesel

Gallons per hour: 1.6

Existing Generator Information Sheet

1. Facility Information

Site Name: Upper Wells Field

Address: E Mound st.

Lat.: 31 11 15 N

Long.: 98 42 43

2. Generator Information

Power(KW): 60

Voltage (V) 277/480

Phase:3

Transfer Switch: Auto

Generator Location: outside

Generator Type: Stationary

3. Engine Information

Engine Make: Generac FPT

Engine Model: F4GE9455A*J

Fuel Type: Diesel

Gallons per hour: 4.8

Facility Information

Site Name: site name for stationary generator or write "portable" for portable generator

Address: physical location for stationary generator; storage location for portable generator

Latitude and Longitude: provide six places to the right of the decimal point for latitude and longitude to indicate a more precise location. If presented in degrees-minutes-seconds, the seconds should be listed four decimal places to the right of the whole number of seconds for equivalent accuracy.

Major motors: provide the horsepower, quantity, volts, and phases of the major motors that will be powered by the generator, in starting order, and whether they are soft start or across the line start

Generator Information

Power: the power output of the generator in kilowatts (kW)

Voltage: voltage is a measure of pressure

Phase(s): generators can be single or three-phase

Configuration: 3-phased power can be in a wye configuration in the shape of a "Y" or a delta configuration in the shape of a triangle

Transfer switch: does the generator start up automatically or require a manual switch?

Generator Location: is the generator located inside or outside?

Generator Type: a portable generator can be moved between locations and a stationary one is at a fixed location

Cable Length: length of cable between generator and load

Cable Size: size of cable in Thousand Circular Mils (MCM) or American Wire Gauge (AWG)

Engine Information

Engine Make and Model: the manufacturer of the engine and the engine model number

Engine serial number: the serial number on the engine

Battery voltage: the size and number of batteries the engine requires

Filters: the type of filters each system requires; note – some engines do not have a secondary fuel filter

Oil: the type and capacity of oil

Fuel: the type and capacity of fuel (e.g., diesel)

Gallons per hour: the number of gallons of fuel needed per hour

*Max run hours: for fuel planning only, the maximum number of hours the engine can run before refueling assuming 100% load (generators should run closer to 70% or 80% load)

Diesel Emissions Fluid (DEF) Tank Capacity: the capacity of DEF tank

Facility Information

Site Name and Address: location and address for requested generator

Latitude and Longitude: provide six places to the right of the decimal point for latitude and longitude to indicate a more precise location. If presented in degrees-minutes-seconds, the seconds should be listed four decimal places to the right of the whole number of seconds for equivalent accuracy.

Contact: name, email and phone number for a point of contact for the generator

Major motors: provide the horsepower, quantity, volts, and phases of the major motors that will be powered by the generator, in starting order, and whether they are soft start or across the line start

Needed Generator

Power: the power output of the generator in kilowatts (kW)

Voltage: voltage is a measure of pressure

Phase(s): generators can be single or three-phase

Configuration: 3-phased power can be in a wye configuration in the shape of a "Y" or a delta configuration in the shape of a triangle

Cable Length: length of cable needed to connect generator to load in feet

Cable Size: size of cable in Thousand Circular Mils (MCM) or American Wire Gauge (AWG)

On-site cable configuration: onsite cable connection for a generator (e.g, appleton, camlock, etc.)

Preferred Fuel Type: type of fuel (e.g., diesel) that is preferred

Assessment Details

Main Breaker Current: size of the circuit breaker in amps that controls all electric current in the building

Service Drop Type: are the electrical lines overhead or underground?

Transformer Mount Type: is the transformer mounted on a pad or a pole?

Anticipated On-site location: describe where the generator will be placed

Hitching Requirements

Trailer Hitch: type of hitch

Trailer Height: height of the trailer/hitch

Electrical connections: describe electrical connections needed for trailer

Generator and Trailer Weight: combined weight of generator and trailer

GENERATOR FUEL READINESS AND OPERATIONS

☐ Store readily available fuel in area with secondary containment (temporary or permanent).

☐ Know and continually update your fuel demands – how much fuel do you need to run your generators for 24 hours? One week? One month? Do some generators burn through fuel faster than others? Allocate sufficient fuel to provide power during the established incident. See Fuel Consumption Table

☐ For all rental contracts, write refueling requirements into generator rental contracts. As such, the generator must be delivered with a 24- hour fuel supply.

☐ Fuel management must be a part of the generator maintenance schedule and monthly evaluation. This ensures availability of clean, reliable fuel.

☐ Clean all fuel tanks at least every five years to avoid sludge buildup.

☐ Use gel and fuel additives (e.g., algaecides, cold start) to reduce biological activity that produces fuel sludge – **Critical in times of freezing weather to prevent solidification/gelling of fuel.**

☐ Circulate fuel with a filter unit or use a portable fuel polishing unit to avoid contamination and to ensure fuel is always ready to use.

☐ Refill fuel tanks before they are empty to avoid drawing up any fuel sludge accumulation.

☐ Fuel service provider can remotely monitor your fuel tank levels and automatically dispatch a truck to fill them when they fall below an agreed upon level This ensures your tanks are as full as possible in the event of a no- notice incident such as an earthquake.

☐ Use multiple vendors from different supplier regions under contract so that you can maintain your fuel supplies if one vendor cannot deliver.

☐ Provide retail purchase option for use at all fuel providers and note details such as the types of fuel they sell and their backup power options (e.g , do they have their own generator or would they need you to hookup one of your portable generators in order to pump fuel?).

☐ Have the fuel vendor allocate additional fuel for your utility during storm months.

☐ Ask TxWARN and Tarrant EOC/TDEM to help provide fuel for your utility's generators during an emergency.

☐ Coordinate your fuel needs with other critical infrastructure in your area (e.g., hospitals, police stations, schools), as it may be possible to have multiple deliveries from one fuel truck and realize economies of scale when establishing contracts.

- ☐ Be aware of limits on who can refuel leased fuel storage tanks. You can purchase your own tanks if necessary.

- ☐ Have fuel filters (at least one complete filter set per generator) on hand because they will not be readily available during an emergency.

- ☐ Be prepared to move your own fuel without contractors Trucks with mounted 100-gallon fuel tanks do not need HazMat placards. Generally, any tank over 119 gallons requires hazardous materials placarding and licensing.

- ☐ Reduce your energy consumption while using generators using pre-planned protocols to make the most of the available fuel.

- ☐ Consider green power options that could supply some of your equipment during an outage and offset the need for a generator and fuel supply

- ☐ Consider establishing a local and regional emergency fuel plan to increase the availability through emergency channels during a disaster.

Approximate Fuel Consumption Chart

This chart approximates the fuel consumption of a diesel generator based on the size of the generator and the load at which the generator is operating. Please note that this table is intended to be used as an estimate of how much fuel a generator uses during operation and is not an exact representation due to various factors that can increase or decrease the amount of fuel consumed.

Generator Size (kW)	1/4 Load (gal/hr)	1/2 Load (gal/hr)	3/4 Load (gal/hr)	Full Load (gal/hr)
20	0.6	0.9	1.3	1.6
30	1.3	1.8	2.4	2.9
40	1.6	2.3	3.2	4
60	1.8	2.9	3.8	4.8
75	2.4	3.4	4.6	6.1
100	2.6	4.1	5.8	7.4
125	3.1	5	7.1	9.1
135	3.3	5.4	7.6	9.8
150	3.6	5.9	8.4	10.9
175	4.1	6.8	9.7	12.7
200	4.7	7.7	11	14.4
230	5.3	8.8	12.5	16.6
250	5.7	9.5	13.6	18
300	6.8	11.3	16.1	21.5
350	7.9	13.1	18.7	25.1
400	8.9	14.9	21.3	28.6
500	11	18.5	26.4	35.7
600	13.2	22	31.5	42.8
750	16.3	27.4	39.3	53.4
1000	21.6	36.4	52.1	71.1
1250	26.9	45.3	65	88.8
1500	32.2	54.3	77.8	106.5
1750	37.5	63.2	90.7	124.2
2000	42.8	72.2	103.5	141.9
2250	48.1	81.1	116.4	159.6

Pandemic

Incident Action Checklist – Pandemic Incidents

The actions in this checklist are divided up into three "rip & run" sections and are examples of activities the systems can take to prepare for, respond to and recover from a pandemic. You can also populate the "My Contacts" sections with critical information that your utility may need during a pandemic.

Coronavirus Pandemic and Utilities

For general information from EPA about COVID-19 and water, see www.epa.gov/coronavirus. The risk of transmission of COVID-19 via drinking water and wastewater is low. However, there are other impacts to utilities, which may include, but are not limited to:

- Staff shortages due to absenteeism;
- Supply chain disruptions (chemicals, materials, personal protective equipment);
- Field operations interruptions (repairs, meter reading, sampling); and
- Inability to maintain all operations.

Many water and wastewater utilities have created pandemic resilience plans based on best practices and experiences from past global outbreaks such as the avian flu in 2003 and swine flu in 2009. Utilities should review and update those plans and stay in close contact with their local health department and regulatory agency as the COVID-19 situation is dynamic and evolving rapidly. Water and wastewater systems need the most up-to-date information in order to make decisions that are right for their utility based on the pandemic impacts to their specific community.

Sign up for any COVID-19 alerts or notifications available from your regulatory agency and local emergency management agencies and health departments to stay up to date.
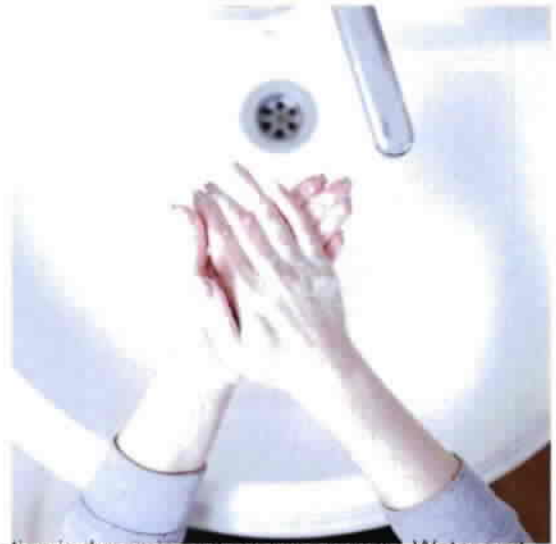
General COVID-19 Information

- U.S. Coronavirus Website
- U.S. Centers for Disease Control and Prevention Drinking Water and Wastewater COVID-19 (CDC)
- World Health Organization COVID-19 (WHO)
- Association of State Drinking Water Administrators COVID-19 (ASDWA)
- Water Information Sharing and Analysis Center COVID-19 (Water ISAC)
- Water Environment Federation COVID-19 (WEF)
- American Water Works Association COVID-19 (AWWA)
- Coronavirus Research Update (WRF)

Information on Hygiene and Water Safety

- OSHA Guidance for Wastewater Workers COVID-19 (OSHA)
- Water, Sanitation, Hygiene and Waste Management for COVID-19 (WHO, UNICEF)
- Memorandum on Identification of Essential Critical Infrastructure Workers During COVID-19 Response (DHS)

Actions to Prepare for a Pandemic

Planning

☐ Identify a lead, back-up, and team of individuals to serve as the Pandemic Response Team.

- Develop a process for maintaining situational awareness of the current and future spread of the virus, as well as community impacts.

- Develop strategies for managing the pandemic such as identifying response actions based on current information and the system's emergency response plan and continuity of operations plan.

☐ Update your drinking water emergency response plan (ERP) and wastewater ERP to ensure all contacts (24/7 availability), system diagrams and standard operating procedures for system operations are up to date.

☐ Develop or update a Continuity of Operations Plan (COOP) that specifically addresses the challenges of a pandemic and plans for significant staff shortages. Resources to help in the development of the plan include the Pandemic Continuity of Operations Template and Business Continuity Planning for Water Utilities: Guidance Document. The COOP should include, at a minimum, plans for the following:

- Defining Roles and Responsibilities During the Pandemic

- Protecting Employee Health

- Maintaining Essential Operations and Critical Positions

- Maintaining Essential Equipment, Materials and Supplies

- Communications

- Addressing Community Mitigation Impacts – Impacts of required social distancing, quarantine, school, and business closures, etc.

- Identifying Delegations of Authority – Including orders of succession

- Training – Cross-training and pandemic plan training

☐ Join your state's Water and Wastewater Agency Response Network (WARN) or other local mutual aid network. In addition, check to see if you are included in a statewide mutual aid law. WARNs may be able to provide assistance in the form of personnel, equipment, materials and technical assistance.

- In addition, the Rural Community Assistance Partnership (RCAP), National Rural Water Association (NRWA), Rural Utilities Service (RUS), Indian Health Service (IHS), the Inter Tribal Council of Arizona (ITCA) and the United South and Eastern Tribes (USET), among others, may be able to provide licensed operators or technical assistance.

☐ Assess your system's Information Technology (IT) capability to ensure it can accommodate remote work arrangements without compromising security.

☐ Work with local law enforcement and health departments to ensure water sector staff are considered first responders, as specified in the Department of Homeland Security's (DHS) Crisis Emergency Response and Recovery Access (CERRA) Framework, and will have the ability to conduct field work when necessary if quarantines are placed on a community.

- DHS developed a memorandum that identifies drinking water and wastewater personnel as essential workers during the COVID-19 response

☐ Share your COOP, and any specific pandemic issues, with your local emergency management agency (EMA) and health departments, regulatory agency, and any consecutive systems.

☐ Conduct internal and external (e.g. EMA, health department, regulatory agency) pandemic specific tabletop exercises regularly. Be sure to conduct remote exercises to ensure capability during a pandemic.

Protecting Employee Health ———

☐ Reinforce good personal hygiene practices with all staff.

- Post proper hand washing techniques, with pictures, at all sinks.

- Share preventative measures (washing hands, covering cough, not touching face, etc.) provided by the CDC to minimize risk.

☐ Ensure availability of adequate proper personal protective equipment (PPE), infection control (hand sanitizer, tissues, disinfecting wipes, electronic cleaners), and cleaning supplies. The disinfection of electronics may require specific supplies.

☐ Set up a pandemic policy for screening employees for symptoms, setting up extended sick leave and telework, keeping critical staff on-site for an extended period of time (with access to beds, food, water, medical supplies, communications), and social distancing in the office (no meetings, keeping 6 feet apart, etc.).

☐ Establish pandemic-specific health and safety protocols for field sampling conducted by staff or others providing sampling assistance in the event of staff shortages.

☐ Work with staff to develop their own family response plans so their families are taken care of during a pandemic while they are working.

Notes:

Maintaining Essential Operations ———

☐ Identify critical positions (plant operator, sampler, in-house and contract laboratory personnel, etc.) and skills, along with back-ups for each of those positions.

☐ Identify critical functions (disinfection, pumping, sampling and analysis, aeration, purchasing chemicals and supplies, etc.) and the minimum staff required to keep those functions operating.

☐ Develop a list of critical customers who need a continuous source of potable drinking water (e.g., hospitals, nursing homes, dialysis clinics, manufacturers).

☐ Assess staffing alternatives:

- Determine the process to use for your state's WARN to request personnel during a pandemic. Reach out to your state or tribe's assistance providers such as RCAP, NRWA, RUS, IHS, ITCA, and USET to determine their ability to provide personnel if your staff cannot report to work due to illness, caring for an ill family member, or being quarantined themselves.

- Cross-train staff to handle multiple positions and critical operations.

- Ensure redundancy in laboratory personnel and, when possible, have contracts with multiple commercial laboratories as a contingency measure in cases of laboratory staff shortages.

- Assess your remote operations capabilities (i.e., SCADA).

☐ Communicate with the laboratory that does your analytical work to ensure that they have a pandemic plan in place and are available to receive and analyze your samples. Also, make sure they have a back-up laboratory option in place.

- The Water Laboratory Alliance (WLA) is a nationwide network of laboratories that serves the water sector. The WLA is part of the national Environmental Response Laboratory Network. Encourage your laboratory to become a member of the WLA to ensure national capabilities during a pandemic.

Maintaining Essential Facilities, Equipment, and Supplies

☐ Identify critical facilities (booster pump, chlorinator, aerator, etc.) and supplies (chlorine, other treatment chemicals, fuel, electricity, etc.) that must stay operational and available.

☐ Create an inventory of all critical materials, chemicals, supplies and equipment.

☐ Contact all vendors and manufacturers to ensure they have a pandemic plan in place and can deliver needed supplies.

- Stock up on treatment chemicals and critical materials and equipment, as space, costs, and expiration dates allow.

☐ If possible, source materials and chemicals from two or more suppliers from different regions to mitigate supply chain disruptions.

- Work with your vendors and require them to identify who their second-tier sources are to make sure the vendors you are using are not using the same source (which would equate to a sole source supply).

Communication

☐ Develop communication templates so you can communicate with your customers quickly.

☐ Identify appropriate distribution mechanisms such as via the website, social media, localnews, reverse 911, etc.

☐ Identify emergency contacts with your local health department, regulatory agency, and EMA to communicate throughout the pandemic.
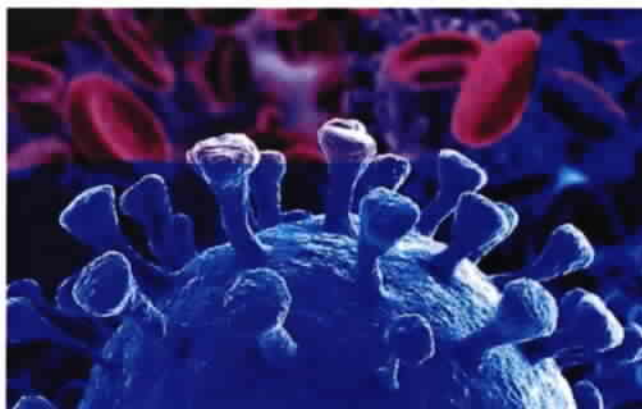
Actions to Prepare for a Pandemic *(continued)*

Actions to Respond to a Pandemic

Initial Actions

☐ Activate your Pandemic Response Team

☐ Execute your pandemic COOP and Emergency Response Plan

  - Activate defined emergencyroles and responsibilities

☐ **Stay in close contact with your regulatory agency** to coordinate on any issues that arise (lack of certified operators, laboratory capacity, or access to sample locations).

Protecting Employee Health

☐ Inform all staff on the latest CDCrecommendations to limit the further transmission of the virus.

☐ Close all offices to the public.

  - Communicate with customers via phone,email, social media, and websites.

  - Offer payment options online, via mail, or through drop boxes.

☐ Temporarily suspend any in-home non-sampling appointments by staff such as water efficiency visits. Compliance sampling activities must continue. Work with homeowners concerning any health and safety issues with compliance sampling and follow established pandemic-specific health and safety protocols.

☐ Consider temporarily suspending drinking water shut-offs due to non-payment in order to protect staff and maintain essential water services to individuals.

☐ Limit or cease all in-person meetings, gathering of people in the same location, and travel.

☐ Ensure that workers and those with overlapping expertise are generally separated to minimize the risk of co-transmission.

☐ Increase the frequency of cleaning and disinfecting all surfaces and equipment, including control rooms, vehicles, computers, phones, tablets, break rooms, and conference rooms.

☐ Implement telework for as many staff as is feasible to maintain operations.

☐ Assess all construction and maintenance activities and limit to only critical projects.

Maintaining Essential Operations

☐ Implement minimum staffing plans and set up shift rotations.

☐ If you begin or anticipate experiencing critical staffing shortages:

  - Keep your regulatory agency up to dateon your situation.

  - Reach out to your WARN. WARN members may be able to assist with personnel, equipment, supplies, and technical assistance.

  - If you are not a WARN member or yourWARN is unable to assist, reach out to neighboring utilities and develop mutual aidagreements, if possible.

  - Reach out to your local assistance providers such as RCAP, NRWA, RUS, IHS, ITCA, and USET about their ability to provide licensed operators or technical assistance.

  - If the above resources are not available, contact your local EMA. Make sure to be specific about the type of personnel youneed and for the type of water system (license level, plant rating, treatment, drinking water, wastewater, etc.).

☐ Make immediate preparations to house critical staff on-site (with access to beds, food, water, medical supplies, communications, etc.).

☐ Communicate often with the laboratory that does your analytical work to ensure that they are available to receive and analyze your samples and make sure they have a back-up laboratory option in place.

☐ Remind all staff to anticipate cyber threats including social engineering, phishing, and other opportunistic cyber-attack tactics preying on fear and the need for information that could disrupt billing or supervisory control and data acquisition (SCADA) operations.

- Remind staff not to click on any links that could execute a hostile program

- Back-up all critical files and ensure security systems (firewalls, anti-virus) are functioning on all remote equipment.

Maintaining Essential Facilities, Equipment, and Supplies

☐ Secure all facilities in preparation for limited access and surveillance.

☐ Stay in close contact with your suppliers of equipment, materials, treatment chemical, and other supplies, especially if you were not able to stockpile chemicals or materials. If you anticipate an impending shortfall of chemicals, contact your WARN to see if other utilities can assist, your assistance providers (RCAP, NRWA, RUS, IHS, ITCA, USET) to see if they have resources, and your local emergency management agency who can request chemicals through state or tribal emergency authorities or make requests to the federal level.

Communication

☐ Drinking Water - Communicate with your customers as soon as possible and often about the safety of their water supply using guidance provided by the EPA and CDC.

- If there is a temporary loss of water (line break, pump failure), remind customers to use the CDC-recommended alternative to hand washing, which is hand sanitizer with at least 60 percent alcohol content.

☐ Wastewater - Communicate with your customers (local news, social media, or webpage) about wet wipes and the consequences of flushing them down the toilet (e.g., sewage backups).

☐ Stay in close contact with your regulatory agency, local health department, and local EMA.

Documentation

☐ Document all events, timeframes, and resulting impacts, so this information can be used as part of the post-incident investigation.

- Be sure to document all hours (regular and overtime) and keep invoices for all equipment, supplies, contracts, vendors, etc.

Notes:

Actions to Recover from a Pandemic

☐ Assign a utility representative to continue providing updates to customers regarding current mitigation actions, as well as preparation for future incidents.

☐ Revise budget and asset management plans to address increased costs from response-related activities and follow-up actions.

☐

☐ Work with vendors and internal departments to return to normal service.

Identify mitigation measures that can help increase utility resilience for future pandemics.

☐ Develop a lessons-learned document and an after-action report (AAR) to document your response activities, including what went well and what did not go well. Create an improvement plan (IP) based on your AAR and use the IP to update your vulnerability assessment, ERP and COOP.

☐ Conduct annual utility-specific pandemic awareness training with all employees.

Actions to Recover from a Pandemic

My Contacts and Resource

CONTACT NAME	UTILITY/ORGANIZATION NAME	PHONE NUMBER
Jay Hall- TDEM Region 6	Primacy Agency	210-531-4336
Public Health Dept. Lampasas, TX	Local Health Department	512-556-5421
Marsha Hardy	Local EMA	325-372-8750
	WARN Chair	
Bio- Chem (West, TX)	Local Laboratory	254-749-4320
TDEM	State EMA	512-424-2138

Resources

Mutual Aid Programs

- Water/WastewaterAgency Response Network (EPA)

Emergency Response and Continuity of Operations Planning

- Drinking Water Emergency Response Plans(EPA)
- Wastewater Emergency Response PlanTemplate (RCAP)
- Pandemic Continuity of Operations Template (GLCAP)
- Business Continuity Planning for Water Utilities: Guidance Document (WRF, AWWA, EPA)
- Business Continuity Planning in the Event of an Influenza: A Reference Guide (AMWA, WaterISAC)
- Tabletop Exercise Tool, Pandemic Scenario (EPA)

Other Tools and Resources

- Water Laboratory Alliance – Drinking Water and Wastewater (EPA)
- Crisis Emergency Response and Recovery Access (CERRA) Framework (DHS)
- Water Utility Communication During Emergency Response (EPA)
- Water Utility Response On-The-Go (EPA)
- Resources for Small Public Water System Operators (EPA)

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