Lessons Learned and Suggestions from Utilities for Hurricane/Storm/Emergency Response Preparedness Compiled during the 2018 FlaWARN Statewide Regional Meetings

Wellington, St. Augustine, Largo, Orlando and Miramar Beach/South Walton County, Florida

I. Administrative

1. When updating FDEP Stormtracker, there is a box to check indicating a boil water notice in effect and date initiated. In the "additional comments" section, be specific about areas or sections of your system that are under a precautionary or mandatory boil water notice. If it is system wide, say so. If only certain areas are effected, list the locations. Think of the media reading this, provide accurate, specific locations.

2. You may need assistance with collecting samples after the disaster to obtain water main clearances or area environmental quality clearance. Sanitary sewer overflows (SSOs) create contaminated waterways that must be sampled for coliform group bacteria. Have people trained and ready to collect and deliver samples to labs. If you need assistance with sampling activity, be sure to request help through FDEP Stormtracker or County Dept. of Health.

3. Utility crews who are being deployed need pre-made packets of all the required mutual aid documentation forms. Include:
    a. Maps and directions to the work site, names and contact information for the people at the receiving utility.
    b. If possible, include staging areas where the crews can get fuel and supplies along the way.
    c. Blank copies of receipt tracking forms, envelopes or zip-loc bags for receipts, day-to-day work tracking forms. Include pens and pencils.
    d. Mutual aid authorization forms/documentation with mission number.

4. Office staff that might normally be home during the event due to "non-essential" status, can be utilized as support staff to help supply crews with required documentation, food and water supplies, first-aid kits, etc.

5. Include training on the completion of FEMA forms including #214 and Requisition-A (Req-A) forms as part of the mock drills for emergency preparedness and planning.

6. Have the discussion about, and set policies on what constitutes a "non-essential" employee and if that term and status should even be utilized within the City. During an emergency/crisis there is much work to be done and all staff members should contribute to the recovery in some fashion. Special exemptions may be allowed on a case-by-case basis and reviewed annually.

7. Communicate with local power companies! Open lines of communication with them to learn about power outages that **may occur after they restore power** to your infrastructure. **They will cut power as needed** to repair downed power lines and damaged transformers.

8. If you have a utility person at the County EOC, have that person go meet the power company officials at their ESF desk (ESF 12, Energy) and establish face-to-face dialog with them early.

9. If using a work-order system, the system will be quickly inundated with new tasks. Have a team of people dedicated to prioritizing and assigning the work-orders.

10. As power is restored to the community, the routes needed to pump down lift stations will be changing and shrinking. Continuously re-evaluate the routes used by responding teams for lift station pumping.

11. Establish fuel supply locations along these lift station pump down routes for generators and portable pumps. In rural areas, fuel from local farmers may be an alternate supply.

12. Incorporate multiple radio channels (2-way radios) for inter-utility communication, separate from using cell phone technology. Practice this method of communicating during routine drills.

II. Water Treatment Facilities

1. Be sure to designate the lead drinking water treatment plant operator during the crisis. If the ordinary lead operator is away or tasked with other emergency response duties during the crisis, be sure all staff know who is in charge of the facility with decision making authority.

2. Ensure all emergency response plans are up-to-date and available to all staff. In addition, update all contact information with newest cell numbers and assigned radio numbers.

3. Top-off all chemicals and fuel supplies, have contract with vendor to re-stock these items during the crisis. Designate staff members to see that this is accomplished.

4. Ensure key staff members are trained in running the plant in 'manual mode' rather than with an automated system or with SCADA system.

III. Water Distribution System

1. It will be difficult to restore normal working pressure to the distribution system due to leaks and breaks. Many of these leaks and breaks are on the resident side (after your water meter). If your system feeds areas with marinas or where homes are built on waterways and lagoons, the water lines along the docks and bulkheads may be damaged. Shut off water at the meters to restore pressure. Inform residents of needed repairs to their lines.

2. Does your water distribution system include submerged water crossings where water mains are under water? Consider and investigate the possibility of an underwater main break when pressure will not build.

3. Have crews observe bridge crossing water mains for leaks or breaks. Floating, fast moving debris/loose boats hitting low bridges can severely damage water mains.

IV. Wastewater Collection System

1. Ensure that schools used as emergency shelters have power to the nearest on-site sewage lift-station or to its own wastewater treatment plant. Some schools maintain these on their own through private contract operation services, but rely on the County or City during emergencies.

2. Have pre-signed contracts with several (more than one or two) septic tank pump truck contractors in the area to pump out lift stations and convey waste to WWTP. Reiterate these contracts with company owners before landfall.

3. Be aware of language or terms used to describe high priority and low priority lift stations. Power companies may only focus on restoring power to areas with high priority lift stations when actually all lift stations are high priority. Residential-only areas with 'low priority lift stations' may not get power restored as quick, but water pressure may be restored causing many SSOs.

4. Organize and plan the best route for portable gen-set or portable pumps in your town or area to maximize the effect of pumping these stations. Have the plan in writing (on paper, maps help) with directions to each station for people who may not know the area as well as your own staff does.
    - In addition, include the locations for getting fuel for generators and pumps.

5. Standardize lift station generator electrical connection hookups. Standardize the quick connect points on the lift station discharge piping for portable pump hook-ups. Make sure all associated valves work properly and smoothly.

6. Develop SSO teams before storm season with dedicated areas/locations for clean-up and recovery.

7. Decide when and if the lift station pumps in low-lying or coastal locations will be shut off before landfall, or storm-surge event. Recovery of the station may be faster if the electrical system is intact after the flooding event. Stations that are continuously trying to operate during a flood may short out and damage critical electrical components requiring much rewiring and replacement of electrical starters and switches.

8. As power is restored to the community, the routes needed to pump down lift stations will be changing and shrinking. Continuously re-evaluate the routes used by responding teams for lift station pumping.

9. Establish fuel supply locations along these lift station pump down routes for generators and portable pumps.

10. If your utility uses any of the following:

- Low pressure sewer system (residential grinder pumps)
- Vacuum sewer systems (residential vacuum valves in pits)
- PEP (Pretreatment Effluent Pump) System (residential septic tank effluent pump systems)

Be prepared to get power to these small homeowner stations to avoid SSOs. Since they are mainly in residential neighborhoods, they may not get power restored as quickly as priority zones. The residents may have drinking water pressure restored and be using the water for toilet flushing, but the small sewage pump stations at their homes will still not have power.

Vacuum type tanker trucks equipped with long hoses can be used to suck the stations out. Avoid Vac trucks with short, nose mounted suction hoses that would require driving up to the resident's station – the ground is soft and will damage property. Keep the trucks on the street, use long extension suction hoses.

An alternative solution is to use a small portable single-phase generator with a long extension cord mounted on a utility truck that can be plugged into the residential control panel to get the station pumped down. It's easier and faster to move an extension cord from home-to-home than a heavy vacuum hose.

V. Wastewater Treatment Facilities

1. Be sure to designate the lead wastewater treatment plant operator during the crisis. If the ordinary lead operator is away or tasked with other duties during the crisis, be sure all staff know who is in charge of the facility with decision making authority.

2. Ensure all emergency response plans are up-to-date and available to all staff. In addition, update all contact information with newest cell numbers and assigned radio numbers.

3. Top-off all chemicals and fuel supplies, have contract with vendor to re-stock these items during the crisis. Designate staff members to see that this is accomplished.

4. Ensure key staff members are trained in running the plant in 'manual mode' rather than with an automated system or with SCADA system.

5. Decide when and if the aeration systems will be shut down to allow MLSS to settle in the aeration basins rather than wash out of the entire plant or blind effluent filters. Faster recovery of the treatment system can happen if the biomass is intact.

VI. Regarding All Utility Infrastructure (DW, WW, DS, CS)

1. **Be aware power companies can and will cut power after it has been restored to your facilities while they are making necessary line and transformer repairs.** Even if normal line power has been restored to your facility, consider running your generators longer and remain on backup power while these repairs are on-going. Power surges and out-of-phase power can severely damage fragile VFDs, PLCs and power switchgear. Plan your fuel supplies accordingly.

2. Incorporate multiple radio channels for inter-utility communication, separate from using cell phone technology. Practice this method of communicating during routine drills.

3. If the use of variable frequency drives (VFDs) are used within the water treatment, water distribution, wastewater treatment or sewage collection system, especially at off-site locations like well-houses, booster pump stations or large sewage pump stations: Consider enclosing or covering the VFDs before the storm arrives. Roofs that are blown off during the storm will expose the VFDs and electrical system to rain and potential flooding. These units are delicate and expensive and may take a long time to replace if damaged. Protect these components from storm damage.

VII. Regarding Emergency Response Equipment: Portable Trailer Mounted Gen-Sets, Pumps, Utility Trailers, Etc.

1. Check out all parts of the equipment BEFORE heading down the road. Check condition of tires, wheels, safety chains, electrical connections. Make sure all equipment works properly and has all accessories included (extra electrical hook-up pig-tails, hoses, gaskets, oil, etc.).
2. Be sure tires on trailers are road-worthy for high speed towing. They may work fine at 25-40 MPH for a few miles around your town, but will they hold up at 50+ MPH on the highway?
3. Make sure to have good spare tires for vehicles and trailer mounted equipment. Bring fix-a-flat, tire plugs, tank of compressed air, jack, and lug wrenches.
4. When was the last time coolant system hoses were changed? Water pumps and radiator hoses have failed during heavy usage. Replace belts and hoses before hurricane season!

VIII. For Utilities Deploying Crews to Provide Mutual Aid to Another Utility

1. Find out the soil conditions you will be working in before deploying.
    - When bringing a backhoe, bring assortment of buckets. Buckets with teeth, smooth blade, narrow and wider widths.
    - Do you need a trenching machine for hard soils, coral rock locales?

2. It may take a day or two for the workers of the damaged utility to be accepting of your assistance when you arrive. The managers may have asked for the help, but the utility's employees are who you will be working with. They may be in state of shock, lost their homes, etc. They may be hesitant to trust an outsider to work on their utility infrastructure. Do not take this personally, try to put yourself in their shoes and have some empathy.
   Find some tasks right away that you can begin doing to help and make yourself useful. You may have to find things to do on your own, without their direction at first. You are there to help their utility recover, and you know that is the case, but it may take them a day or two to come to that realization on their own.

3. Be prepared for a long journey to the disaster site. It will take twice as long as you'd expect to arrive. Traffic, check points, fuel stops, flat tires will slow down the trip. Bring snacks, drinks and stuff to read along the way.

4. Send along a utility fleet mechanic to assist with flat tires, generator or pump problems, etc.

5. Send along a qualified electrician to help with generator hookups and any issues with non-standard electrical connections.

6. Take the time to pre-set the food and fuel stops along the way. It may be necessary to travel outside the planned route to find the fuel depot for responding crews.

7. Pre-establish (increase) the spending limits on purchasing cards (P-cards) for responding crews and crew leaders. You'll spend a lot more than you think. Increase daily spending limits on P-Cards.

8. Be prepared for the possibility of the on-site utility employees to be unionized and continue to follow union rules regarding over-time and assigned duties.

IX. For Utilities Requesting Help and Receiving Crews from Outside Utilities (Mutual Aid)

1. It may take a day or two for you to realize that the workers of responding mutual aid utilities are there to help your utility recover from the disaster. Your Managers may have asked for the outside assistance, but you are the people these responders will be working with. Do not take this personally. You may be hesitant to trust an outsider to work on your utility infrastructure, but realize they are like you and know how the infrastructure works.

2. Provide as many details about your specific needs in the mutual aid request. Provide details about the conditions the arriving crews will be working in.

3. If requesting a backhoe, detail the best type of buckets. Buckets with teeth, smooth blade, narrow or wide width?

4. Should they bring a trenching machine for hard soils or coral rock locales?

5. Be aware that when you are requesting mutual aid through FlaWARN, FDEP Stormtracker, or FRWA, that you may not get exactly what you requested from the responding utilities. "You get what you get". You might request portable pumps, but the responding crews bring gen-sets.

6. Designate a "Utility Mutual Aid Coordinator" within your staff to meet the incoming crews and direct to staging areas or work sites.

7. Critical to include a cell phone number on your contact information, not your regular office phone number. Arriving crews will need to reach utility contact managers and will need any and all available contact info including multiple alternates.

8. Cross train your staff on the procedures for hooking up bypass pumps. This includes water distribution system staff, DW and WW operations staff and collection system personnel.

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