CORONAVIRUS COMPENDIUM

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KEY CONSIDERATIONS
FOR WATER AND WASTEWATER UTILITIES
RESPONDING TO THE
CORONAVIRUS

MOONSHOT
MISSIONS

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EXECUTIVE SUMMARY AND USER GUIDE

Water and wastewater services are essential to deliver clean drinking water and ensure safe waterways during the response to the Coronavirus. Water utilities are committed to providing these services, even as the Coronavirus has direct impacts to operations, staffing and finances. Utilities must ensure these essential services are delivered, while protecting the people who make it happen, as well as the facilities, equipment and of course, the customer.

Moonshot Missions, a non-profit organization founded by George Hawkins, the former General Manager of DC Water in Washington DC, has put together a compendium of best practices being implemented by water utilities in the face of this unprecedented challenge. Moonshot staff has compiled this checklist by reviewing resources from water associations, list-serves and dozens of utility response and continuity of operations plans.

We plan for this to be a "living document" that evolves as new practices are implemented. Please email info@moonshotmissions.org if you have suggestions or feedback. We seek only to organize the wisdom you are gaining from your efforts to maintain critical water operations – and welcome your insights so we can make them available to a wide audience.

We suggest scanning the Compendium to compare its suggestions with your current actions to assess whether any of the ideas might be helpful in your Coronavirus response. In summary, Moonshot believes that the following steps are critical for water utilities to protect their staff thereby preserving critical staffing knowledge and their capacity needed to sustain operations:

- Minimize contact with the public to the maximal extent possible.
- Send non-essential personnel to work from home if possible.
- Utilize minimum staffing for critical operations on a rotating basis in order to reduce the probability of infection and husband staffing resources for as long as possible.
- Create virtual control rooms via placement of cameras, use apps like FaceTime and similar services so that some operators can work remotely and provide guidance and support to the reduced staff on-site.
- Ensure that inventory and spare parts of mission critical equipment are fully stocked.
- Identify mission critical supply chains, such as fuel, chemicals and disposal chains such as biosolids, and ensure that they are kept intact with standbys available for redundancy.

- Operate equipment at a level that reduces potential for failure requiring emergency repairs.

- Have a list of emergency and back up service contacts at the ready.

We recognize that most water utility managers will have already done most if not all of these measures. However, we feel that if even one utility benefits by one of these suggestions, then the compilation of these practices will have been well worth it. The Compendium that follows goes into these best practices in greater detail. We at Moonshot Missions salute the tremendous work that each of you are doing to protect the public health and the environment, every minute of every day. We sincerely wish you all well during this challenging time.

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KEY CONSIDERATIONS

Leadership

- Coordination
  - Federal and state regulators
    - Contact regulatory agencies to assess compliance requirements.
  - State and local government
    - Coordination with state and local agencies
  - Governing bodies (Board of Directors)
    - Authorize remote meeting procedures.
    - Prepare for remote review and approval of emergency procurement and staffing decisions.
  - Other sectors
    - Identification of interdependencies with other sectors such as electrical power.
    - Identify key contacts and establish lines of communication.
- Communication
  - Serve as the communication spokesperson.
- Emergency Response
  - Refer to emergency response plans and business continuity plans.
- Delegation of Authority
  - Ensure key roles are delegated to essential staff for decision-making and execution.
    - Purchasing
    - Contract signing
    - Payroll approvals
    - Hiring of employees (permanent or temporary)
    - Reporting requirements
    - Releasing public statements
    - Contacting health authorities
    - Coordinating mutual aid
- Regionalization & Mutual Aid/Assistance
  - Communicating with local utilities on coordinated responses.
  - Mutual aid with other utilities – develop regional assessment of critical treatment chemicals, spare parts and equipment.
  - WARN: Leverage the Water / Wastewater Agency Response Networks (WARN) for mutual aid and assistance.
  - Potential assistance available through the Community Emergency Response Teams (CERT) and other Non-Governmental Organizations.
  - Public-Private Partnerships

Communications

- Communication Plans
  - Implement both internal and external communications.
  - Position utility leadership to be the face of communications on water issues to the media and customers.
- Internal Communication
  - Express that health and safety of essential workers and their families are the top priority.
  - Be clear that the utility is following guidance from the WHO, CDC and state and local health authorities.
  - Be transparent – be clear about what you do and do not know.
  - Be positive and reassuring, and project calm and control.
  - Promise to provide updates when available.
  - Provide a method of contact for questions.
- External Communication
  - Key Messages (Questions and answers available at EPA)
    - Is drinking tap water safe?
    - Do I need to boil my drinking water?
    - Is tap water safe to use for hand washing?
    - What should I do If I'm concerned about my drinking water?
    - Do I need to buy bottled water or store drinking water?
    - What is EPA's role in ensuring drinking water remains safe?
    - Can I get COVID-19 from wastewater or sewage?
    - Do wastewater treatment plants treat COVID-19?
  - Other Key Messages
    - Do not flush wipes, towels and other materials down the toilet.

Operations

- Remote monitoring and sensing
  - Remote monitoring can complement and enable visibility to monitor actions and target available resources.
  - Determine whether remote sensing, remote alarms and monitoring can be implemented in response to the current circumstances or to improve resiliency should similar circumstances occur in the future.
  - Enable remote sensing and alarms to be accessed either in the main control station or by remote management.
  - Examples:
    - Wire pump station and treatment plant annunciators remotely to operators' laptops so they can monitor pump station and treatment plant alarms from home.

        - Install cameras in plant control rooms that show the levels and monitors of critical process units so that they can be clearly seen by an operator from his/her laptop at home. This could create a virtual control room.
        - Install flow sensors on manholes or in fire hydrants to identify potential blockages before they trigger a back-up or Sanitary System Overflow
- Automation
    - Determine site locations that may only require automation and staff be on standby.
- Inspections
    - Identify critical aspects within the system that need regular in-person monitoring and inspection.
- Maintenance
    - Remote monitoring combined with changing operating parameters to reduce maintenance needs.
    - Examples:
        - Have all settling tanks available for operation so that if one breaks down, you can easily put or leave another tank in service.
        - Run all belt filter presses at medium speed to decrease the chances of a breakdown rather than running a few at maximum speed.
- SOPs
    - Share SOPs with relevant staff to ensure continuity of operations.
- Power and Fuel
    - Identify key power needs and back-up power systems.
    - Have fixed and/or portable emergency electrical generators to serve as power sources during outages.
    - For existing diesel generators and similar equipment, review on-site fuel needs and their ability to secure additional supplies.

Human Resources & Staffing

- Nonessential Staff
    - Messaging should highlight that every employee is “essential” – but that in this case essential translates into those employees needed on-site or in the field for incident response and operational integrity of treatment plants. Other employees are critical as well but hopefully can do their work from home.
    - Telework: establish, test and implement systems that enable work from home and virtual meetings.
    - If needed in the office, sequence work in shorter shifts with fewer employees on-site at any given time.
    - Conduct virtual meetings in every possible case.

- Essential Staff
  - ☐ Reduce operation and maintenance crews to smallest number needed to accomplish work safely.
  - ☐ Social distancing in spaces for essential staff.
  - ☐ Shift Scheduling.
    - Reduce shifts to a minimum.
    - Reduce number of essential staff per shift.
    - Have key personnel, especially operators, in reserve.
    - Consider implementing reduced staffing programs commonly associated with off-shift and/or weekend work to the entire week.
    - Lab and non-essential maintenance should be reduced to a few times a week or less.
    - Consider on-call policy.
    - For smaller treatment facilities that are already run/overseen remotely on second and third shifts or weekends, expand this approach to several more days a week.
    - To prevent the spread of COVID-19 to all essential staff, do not rotate staff on different teams.
      - Separate staff in operations and treatment.
    - Staggered breaks and lunchtimes.
    - Examples:
      - Adopt a rotating 3 day/12 hours per shift, 4 days off, then 4 days/11 hours per shift, 3 days off schedule.
      - Plant staffing is reduced from 8 per shift to 5 and/or if weekend operating model extended to weekdays.
  - ☐ Remote monitoring can complement and enable visibility to monitor actions and target available resources.
  - ☐ For essential in-person meetings, practice social distancing and cleaning before and after meeting.
  - ☐ Have staff dispatch directly to work locations rather than having crew meetings at central areas.
  - ☐ Utilize radio check-ins and post daily dispatch lists on the exterior doors.
- Training and Development
  - ☐ Limit cross-training to essential personnel and critical functions.
  - ☐ Identify full range of staff that can be cross trained if needed in an emergency, including office personnel.

- Staffing Plans
    - Plan for the utilization of special staff resources drawing on cross-training, utilization of retired employees, and/or other special arrangements.
- Travel
    - Suspend all travel to conferences or events.
- Healthcare
    - Make sure that personnel have 24/7 access to insurer/medical hotline.
- Payroll and Leave
    - Enable staff to enroll in direct deposit if not already doing so.
    - Adjust sick leave policy to include provision for employees to use paid admin instead of sick time.
- Succession Planning – Key Roles
    - Utility Director
    - Public Information Officer / Public Relations Specialist
    - IT Manager
    - Safety Manager
    - Plant Superintendents
    - Plant Operators
    - Inspectors
    - SCADA Technician
    - Utility Crew Leaders
    - Maintenance Technicians

Customer Service

- Suspend in-home services
    - No in-home routine inspection and repairs.
    - Crews will not enter privately owned building of facilities.
- Payments
    - Eliminate in-person customer payments.
    - For those unable to pay in any other fashion, offer a grace period until restrictions are lifted.
    - Eliminate shut offs until restrictions are lifted.
    - Suspend water shutoff on delinquent accounts.
    - Suspend late fees.
- Permitting
    - No in-person applications.

Safety & Security

- Facility Security
    - Close back-up water supplies to visitors.
    - Close all facilities to the public.
    - Screen every person entering facilities.

- Sanitation and Hygiene
    - Adopt enhanced cleaning procedures for workspaces, vehicles, equipment with emphasis on essential workstations, equipment and operations.
    - If limited in sanitizing products, priority should go to operations and treatment.
    - Secure and deploy personal protective equipment (PPE).
    - Disinfection of workspaces, vehicles and equipment.

Materials Management

- Essential Equipment
    - Identify key equipment needed in both emergency response to upsets (water main breaks, sewer back-ups, equipment failure) and daily operations.
        - Vehicles – including cars and trucks
        - Heavy equipment – including backhoes, loaders, and compressors
        - Portable emergency electrical generators
        - Tools
        - Laboratory and analytical equipment
- Essential Materials and Supplies
    - Chemicals for water and reclaimed water treatment.
        - Confirm existing inventory
        - Contact supplier to determine capability of securing additional supplies
        - Consider enhancing back-up supplies on site
    - Electrical power to run pumps and other critical system equipment.
    - Natural gas to provide heat where needed and occasionally to run emergency electrical generators and other processes.
    - Gasoline and diesel fuel to run vehicles, equipment, and generators.
    - Have pumps and many other items to repair and maintain treatment systems.
    - Pipes, fittings, and many other items to repair distribution and collection systems.
    - Specialized materials to repair SCADA, communications and IT systems.
- Redundancy
    - Parts, chemicals and power - identify any materials in limited supply.
    - Additional storage and inventories.
    - Additional emergency repair materials and equipment potentially stored at multiple locations.
    - Advance purchase of critical supplies.
        - Contact critical supply vendors to verify status and plans.
    - Additional stockpiles and/or emergency contracts for critical chemicals
    - Contact suppliers to determine ability and estimated time for resupplying if needed.

Procurement

- Supply Chains
  - Identify and connect with contractors or suppliers that may be needed on an emergency basis.
  - Identification and assessment of supply chain risks.
- Special contracts
  - Special contracts and supplier/contractor relationships.
  - Emergency contracts for materials, equipment, and/or services.
  - Implement or develop emergency procurement procedures to enable accelerated purchasing and adoption of needed equipment and practices.

Information Technology

- Virtual/Remote Communications
  - Immediately expand virtual communication systems and remote options with staff.
  - Two-way radio systems for use following cellular phone network overloads or failures.
  - Support remote work, including data sharing and file sharing.
  - Support remote cross-training.
  - Provide hardware/software to enable employees to telework.
  - Provide instruction for employees with VPNs.
  - Provide resources that allow remote access to control / command centers.
- IT Resiliency and Recovery
  - Clearly establish IT system security, mitigation, response and recovery policies.
  - Information Technology (IT) Disaster Recovery Plans (DRP) and back-up IT systems.
  - Redundancy of critical systems, components and capabilities.
  - Ensure interoperability between system components and between the primary and alternate locations.
- Automation
  - Support systems and software for operational automation.

Finance

- Emergency Funds
  - Identify potential emergency funding needs – seek temporary lifting of debt caps or other funding limitations.
- Financing
  - Access credit lines or other sources of short-term capital.
  - Contact State SRF funding offices to determine applicability to COVID-19 response.

Engineering

- Evaluate and identify non-emergency versus emergency projects.
- Delaying non-emergency CIP Projects.
- Ongoing identification and planning of new projects to enable COVID-19 response, particularly with respect to automation and remote sensing noted above.

Legal

- Devolution
  - What will happen in the utility if all the best planning efforts are not sufficient?
  - Who will step in to maintain the public health?
- Provide counsel on the most efficient ways to procure solutions
- Provide counsel on the suspension of enforcement actions
- Manage force majeure and performance date notifications
- Manage HR complications (COVID-19 Family Medical Leave Act expansion)

SUPPLEMENTAL RESOURCES

- Environmental Protections Agency
  https://www.epa.gov/coronavirus/coronavirus-and-drinking-water-and-wastewater

- World Health Organization
  https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19

- National Association of Clean Water Agencies
  https://www.nacwa.org/advocacy-analysis/campaigns/coronavirus-covid-19-utility-response

- American Water Works Association
  https://www.awwa.org/Resources-Tools/Resource-Topics/Coronavirus?utm_source=Unknown+List&utm_campaign=d17b9934da-EMAIL_CAMPAIGN_2020_03_23_04_36&utm_medium=email&utm_term=0_-d17b9934da-#10681531-resources

- Association of State Drinking Water Administrators
  https://www.asdwa.org/covid19/

- Water Environmental Federation
  https://www.wef.org/news-hub/current-priorities/coronavirus/?utm_source=Unknown+List&utm_campaign=d17b9934da-EMAIL_CAMPAIGN_2020_03_23_04_36&utm_medium=email&utm_term=0_-d17b9934da-#watersector

- Water Research Foundation
  https://www.waterrf.org/event/coronavirus-research-update.

- Environmental Finance Center Network
  https://efcnetwork.org/resources/efcn-coronavirus-resources/?utm_source=EFCN+Previous+Webinar+Attendees&utm_campaign=d17b9934da-EMAIL_CAMPAIGN_2020_03_23_04_36&utm_medium=email&utm_term=0_583dcf5bb7-d17b9934da-148907765

- Center for Disease Control
  https://www.cdc.gov/coronavirus/2019-ncov/community/guidance-business-response.html

ABOUT MOONSHOT MISSIONS

Moonshot Missions is a 501(c) environmental nonprofit organization founded by George Hawkins, the former GM of DC Water, to help water utilities that serve economically stressed and underserved communities identify and customize replicable strategies to deliver better services at lower cost. We believe that every community deserves clean water at the tap and in local waterbodies regardless of their zip code.

For more information: info@moonshotmissions.org