NEW HAMPSHIRE DEPARTMENT OF Environmental Services

Emergency Response Planning Guide

Developed for Insertion into Wastewater Treatment Facility O&M Manuals
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Emergency Response Planning Guide

Disclaimer: This emergency response planning guide is a document developed and written by the New Hampshire Department of Environmental Services (DES). It is intended to provide owners of treatment works with consistent guidance on how to develop an emergency response plan. This guide is not intended to be a substitute for an actual site specific plan. If there is an actual site specific plan for your facility, it should be inserted in lieu of this DES version. The New Hampshire Department of Environmental Services, the manual preparer, and/or the consulting engineers, take no responsibility for any inaccurate information presented in this guide.

1. Introduction

Emergency response planning and preparedness is an important element in managing a wastewater treatment facility and collection system. The citizens of your town and our state rely upon wastewater treatment personnel for protection against unexpected events that may jeopardize public health and safety. Wastewater employees expect to be protected from the consequences of natural or man-made disasters affecting the wastewater system. Town officials are responsible for protecting the taxpayer's investment in its infrastructure and to ensure that regulatory requirements will be met during an emergency. In other words, preparation for the unexpected is necessary and requires an emergency plan to be in place and functional to handle a variety of situations.

Both EPA and DES require the inclusion of an Emergency Response Plan in every Operation and Maintenance manual for wastewater treatment facilities and pump stations. It is listed as an O&M manual requirement in the State of New Hampshire Code of Administrative Rules, Chapter Env-Wq 700, STANDARDS OF DESIGN AND CONTRUCTION FOR SEWERAGE AND WASTEWATER TREATMENT FACILITIES, Section 708.08(b)(9). In addition, funding agencies, such as the United States Department of Agriculture, Rural Development (USDA/RD), require all systems that receive USDA/RD funding for wastewater improvement projects to complete a Security Vulnerability Assessment and Emergency Response Plan prior to awarding money.

DES takes this responsibility seriously. The Emergency Response Planning section of this manual was developed to ensure that all facilities receive the same information. It is not intended to serve as a substitute for an actual emergency response plan specific to your facility, but rather to serve as a generic guide to aid in planning for unanticipated situations in the event that a facility does not have a specific response plan. If an actual plan exists it shall be inserted into the O&M manual in lieu of this planning guide.

2. Types of Events that Constitute an Emergency

Events can occur at any time, and in any combination, that may require an immediate emergency response. Emergencies can be localized in nature or widespread, affecting the treatment plant, a pump station, or the entire town. The following events will be discussed in this planning guide:

- Power failures
- Natural disasters such as flooding, snow/ice storms, freezing, hurricanes, high winds, tornadoes, earthquakes
- Fires
- Explosions
- Chemical spills
- Hydraulic overloading, ruptures and sewer blockages
- Sewer overflows
- Intentional or accidental release of chemical or flammable substances into the collection system
- Security threats, vandalism, terrorism
- Loss of SCADA system or alarm functions
- Construction accidents
- Equipment failure
- Process upsets
- Personnel injury
- Pandemics
- Labor strikes

A typical emergency response plan includes, but is not limited to: system specific information; partnerships; a vulnerability assessment; chain of command structure; communication procedures; detailed emergency response procedures; an event follow-up evaluation; training, exercises and drills.

3. System Specific Information

Consolidate system information and make it accessible to all staff members and keep it in a secure location.

- System name (treatment plant, pump station, siphon chambers, etc.), discharge permit number, physical address and location with driving directions, outfall location, phone numbers and contact information, service area, population served and number of sewer connections.
- Detailed up-to-date maps of the service area showing collection system, locations of treatment plant and pump stations.
- Identify nearest public water supplies, municipal wells and other waterbodies. List downstream water users and provide contact information.
- Maintain a chemical inventory detailing types of bulk chemicals and fuel oils on site, storage locations, volumes and MSDS sheets.
- Maintain a list of industrial facilities that contribute to the waste stream and any hazardous chemicals used by them.

- Provide essential maps and plans of the entire treatment plant grounds in a secure location and keep back-up copies of sensitive documents in an off-site secure location.

4. Partnerships

Depending upon the magnitude of the problem, a number of groups may need to become involved in responding to an emergency.

- Establish partnerships with other town entities and outside groups.
- Coordinate with the local first responders such as police, fire and emergency medical services. Conduct periodic tours with them so that they are familiar with the plant grounds and layout. Identify local emergency planning committees and coordinate with them.
- Coordinate with local public works and water departments so that they are familiar with the system and they have an understanding of your needs and you have an understanding of their equipment and capabilities.
- Establish mutual aid agreements with other towns or wastewater treatment facilities. Equipment, resources, personnel and expertise may be shared during an emergency.
- Sign up with the New Hampshire Public Works Mutual Aid Program sponsored by the Technology Transfer Center at the University of New Hampshire. This program provides a listing of participating communities and water and wastewater plants and is designed to share equipment inventories in the event of an emergency. Go to www.t2.unh.edu/ma, or www.nhwarn.org, or call 603-862-2826 for more information. This is the New Hampshire designee for the national Water-Wastewater Agency Response Network, otherwise known as NHWARN.

5. Vulnerability Assessment

All system components should be assessed as to their susceptibility to natural and man-made disasters.

- Conduct a system-wide vulnerability assessment to determine which components are critical to the system's operation and how these components may be affected by an emergency.
- Perform an inventory of the system's main components including, but not limited to: treatment facilities, collection system, pump stations, siphon chambers, cleanouts, critical valves, power supply, communications, computer, SCADA and telemetry systems.
- Evaluate the potential of various emergencies on each component and what impact the emergencies would have.
- Identify what improvements and mitigating actions can be taken to lessen the impact of an emergency.
- Take into account the age of the components and their reliability, susceptibility to vandalism, design flaws, maintenance requirements, availability of spare parts, ease of repair, safety issues.

6. Establish a Chain of Command Structure

Having clear lines of authority and the delegation of responsibilities will help to avoid confusion when a disaster strikes.

- Designate one person to be at the top of the chain of command.
  - Usually the plant supervisor or Chief Operator.
  - This person will manage the emergency, make the decisions and ensure that the appropriate people are contacted.
  - This person should be reachable and able to respond at any time. If not, a back-up person should be designated in their absence.
- Designate other responsible people to be in the chain of command and be very specific as to their assigned duties.
- In the event that the top person will be unavailable for any length of time, someone else should be designated during his/her absence.
- Become familiar with the Incident Command System (ICS). ICS is widely used at all levels of government for command, control and coordination by professional emergency response organizations. The Incident Command System:
  - Is a standardized management tool for meeting the demands of small or large emergency or non-emergency situations;
  - Represents "best practices" and has become the standard for emergency management across the country;
  - May be used for planned events, natural disasters and acts of terrorism; and
  - Is a key feature of the National Incident Management System (NIMS).

7. Establish Communication Procedures

Effective communication is essential to ensure that the correct information reaches the proper people in a timely manner. An emergency notification system involves not only wastewater treatment personnel and emergency responders, but also the utility's customers, the general public and the media.

- Create an emergency response team consisting of treatment plant personnel. Upon being notified of a problem, the team leader would be responsible for making an initial assessment of the emergency situation and deciding the correct course of action. A chain of command structure or a call-up list can be used in lieu of a response team. The idea is to establish a hierarchy of who to call first as part of the internal notification system when an emergency first arises. An internal notification system could involve the following people and should include home phone numbers, cell phones and/or pagers:
  - WWTF Superintendent
  - Chief Operator
  - Maintenance Supervisor
  - Industrial Pretreatment Coordinator
  - Laboratory Supervisor
  - Shift Supervisors
  - Electrician
  - Safety Officer
- Establish how these individuals will be contacted depending upon the time of the emergency.
  - During regular work hours: The Superintendent calls the people on the list via phone or pager. The phone system or a cell phone can be preprogrammed with

everyone's number. An emergency contact list should be posted at every phone location.
    - After hours: The on-call supervisor calls people on the list via phone or pager. The supervisor may also initiate an automatic dial-out sequence that calls preprogrammed numbers.
    - A 24 hour incoming number can be established so that individuals can call in and hear a recorded message.
- An external notification list should be established to ensure that all appropriate first responders, local, state and federal agencies, contractors and mutual aid contacts are notified.
- Designate an Information Officer (IO) to act as spokesperson. This is someone possessing the knowledge and understanding of the system to coordinate the flow of information to the appropriate parties. The spokesperson does not necessarily need to have first-hand knowledge of the emergency itself, but would rely upon advice and expertise from upper management, first responders and public health and environmental officials. This person would be responsible for overseeing the delivery of notifications and interacting with the media. Ideally the Information Officer would not be the same person designated as the one to be the actual emergency response coordinator.
- If the emergency is large scale, affecting the general public or the sewer users, be prepared to address the public and the media in order to answer questions and respond to their concerns. Remember to be accessible, factual and honest.

8. Personnel Safety

Protecting the health and safety of everyone in the facility and the surrounding community should be the first priority during an emergency. Depending upon the emergency, decisions must be made as to whether medical assistance will be needed and by whom, whether an evacuation will be needed and to where, and how to account for all employees after an emergency.

- Basic need to know information should be
    - A description of the facility's alarm system and how to respond;
    - Posted emergency contact list; and,
    - Location of first aid kits, medical supplies, fire extinguishers, intercom and/or telephones, emergency showers, personal protective equipment and related safety devices.
- Develop an evacuation plan for each facility location and post the procedures in highly visible places. The conditions under which an evacuation would be necessary should be determined. Evacuation routes should be clearly marked, well lit and unobstructed. Employees should report to a pre-designated assembly area, both for on-site and off-site situations. Provide for emergency supplies at each assembly area. A head count should be taken after an evacuation and unaccounted-for people should be reported to the appropriate emergency responders.
- Provide regular training in evacuation and other safety procedures.
- First aid should only be administered, as necessary, until off-site medical personnel arrive. Make sure someone is designated to meet the medical team and direct them where to go.

9. Emergency Equipment List

An inventory list of all equipment that could be used in an emergency should be kept on hand as well as their storage locations.

- Heavy equipment
  - Backhoes/front end loaders/dozers
  - Dump trucks
  - Hoist trucks/cranes
- Communications equipment
  - Portable radios
  - Cell phones
  - Loudspeakers
- General equipment
  - Generators
  - Pumps
  - Air compressors
  - Fans and blowers
- Personal Protective Equipment
  - SCBA
  - Safety ropes and harnesses
  - Tripod
  - Winch
  - Respirators
  - Hardhats
  - Goggles and facemasks
  - First aid kits
  - Fire extinguishers
  - Fuel
  - Batteries
  - Battery chargers
- Bulk supplies
  - Gloves
  - Sand and sand bags
  - Absorbent pads and booms
  - Absorbent chemicals
  - Neutralizing chemicals

10. Emergency Response Procedures for Specific Events

Each unusual event or emergency will have its own specific action plan, depending upon the severity and its potential impact. The following are some examples of response procedures for events that may occur:

A. Power failure – Power failures may be caused by an interruption of service originating at the power utility company; storm damage and/or vehicle accidents resulting in downed power lines; vandalism; or equipment malfunction at the wastewater treatment facility or remote pump stations. Extended power outages in New Hampshire are not unusual. A major ice storm during December of 2008 resulted in over ½ inch of ice being deposited on tree branches and power lines, causing wide-spread power outages lasting up to 9 days or more in some areas.

- To ensure the reliability of back-up power, the following items should be done: perform regular preventative maintenance on the generator unit; regularly exercise generators under load; always ensure an adequate supply of fuel is on hand (this applies to portable generators as well); ensure all generator related alarms are functioning.

- Assess the status of all equipment during an outage. Know which equipment needs to be manually restarted or reset during a power failure as well as after the resumption of normal power. Keep a record in a log book of all activities. If emergency lasts longer than a few days, replacement personnel will need to know the status of equipment when they replace co-workers.
- At the outset of a power failure, try to determine the cause and expected duration of the event.
- For remote pump stations without permanent back-up power, install an electrical connection so that a portable generator can be utilized. Know the capacity of the wetwell in order to assess its storage volume. Utilize septage trucks if necessary to prevent an overflow or be prepared to implement emergency bypass pumping.
- Periodically check remote stations during extended periods of outages or leave a person on-site.
- Have a refueling plan and fuel supplier contact information easily accessible.

B. Floods – New Hampshire has experienced a number of significant flooding events in recent years. In October, 2005, due to a stalled storm front and the remnants of a tropical storm, the Keene / Walpole area received more than one foot of rain in a 30 hour period, resulting in flash flooding and mass evacuations. In May, 2006 the state received one foot of rain over a four day period during the famous Mother's Day flood. In April, 2007, four to eight inches of rain was received during the Patriots Day flood, the costliest storm in New Hampshire history resulting in $35 million worth of damage. Floods can be caused by swollen rivers due to excessive rain, combined rainfall and snowmelt, ice jams, or the failure of dams. Localized street flooding may occur because the capacity of storm drainage systems is exceeded. Flooding can impact an entire treatment plant or remote pump stations. High river water has been known to back-up through effluent discharge pipes and flood process tankage.

Flood preparations

- Monitor the weather regularly through your local news channels and the National Weather Service at www.nws.noaa.gov.
- Purchase a NOAA Weather Radio with a warning alarm tone and battery backup.
- Determine facility vulnerability for flooding. Know your flood risk and the elevation above which flooding occurs. Monitor river levels and flood prone pump stations.
- Have an evacuation route planned that avoids flood prone roads. If necessary, have a boat available to ferry people in and out of the plant.
- Have sand bags ready to protect flood prone areas.
- Procure or have on hand portable pumps and generators.
- To avoid the possibility of electrocution, disconnect the power to flooded buildings. If possible, cut off power before flooding begins.
- Permanent flood proofing measures that can be taken are:
    - Installing check valves to prevent river water from backing up into the effluent discharge line;
    - Building watertight walls or barriers around equipment, work areas, doorways, windows, ventilation shafts or other openings that are subject to flooding;

- Moving electrical equipment above the anticipated water level in flood prone areas of the plant or pump station;
- Sealing walls to prevent or reduce seepage;
- Installing permanent pumps to remove floodwaters; and
- Store chemicals and hazardous materials in non-flood locations. Make sure propane and fuel oil tanks are secure.

After a flooding event

- Perform a thorough inspection of the plant and/or pump stations. Watch out for potential electrocution and slip and fall hazards.
- Inspect for settling and/or erosion to building foundations, roadways, culverts and other structures.
- Clarifiers and other flooded tanks may be filled with sand, silt and grit which will need to be removed before operation.
- Cabinets, motor control centers, and walls will need to be dried out to prevent odors and mold.
- Be aware of chemical and biological contamination in flooded areas.
- Inspect chemical storage tanks for damage and contamination.
- Equipment motors will need to be dried out and pump bearings may need to be purged to eliminate moisture.
- Check electronic equipment for damage.
- Plants may get inundated with grit and sludge, requiring extra handling and sludge dewatering, and inspection to assess damage to equipment.

C. Hydraulic overloading – Hydraulic overloading is considered as any amount of flow that exceeds the design capacity of the plant to effectively treat that amount of flow. Hydraulic overloading is most often associated with storm events. It is also commonly observed during the springtime when combinations of spring rains and melting snow lead to high groundwater tables resulting in infiltration/inflow problems. Hydraulic overloading can have many serious consequences: decreased plant performance; short term and/or long term effluent quality violations; mechanical breakdowns; overflows; and grit and sludge accumulation from the scouring of sewer lines.

To effectively treat high flows, every plant should have a wet weather operating plan. The weather should be monitored continuously through the local news channels or the National Weather Service at www.nws.noaa.gov. Utilize email alerts or NOAA radio for immediate notification.

Preparations for a wet weather event

- Make sure all equipment is operable.
- Be prepared to place all unused tankage into service.
- Ensure there is an adequate supply of chlorine if used for disinfection.
- Ensure all UV bulbs are clean and in working order if ultraviolet disinfection is used. Make sure all banks and units are operable.
- Make sure there is adequate room in grit and screenings containers.
- Make sure all valves are operable.

During a high flow event

- Run grit and screenings removal continuously, especially during the first flush of the sewer lines
- Work in two person teams for safety assuredness.
- Be prepared for high grit, BOD and suspended solids loadings during the first flush
- Place unused tankage on-line as necessary.
- Increase chlorine dosage to make up for a decrease in disinfection contact time.
- Minimize recycle flows through the plant.
- For activated sludge plants, minimize solids loading on the secondary clarifiers by operating in step feed or contact stabilization mode.
- Increase monitoring of clarifier sludge blankets.
- Consider cycling aeration on and off to keep solids in the aeration tanks.
- Consider the use of polymers as a settling aid.
- Increase process monitoring and lab testing.
- Notify NHDES and the EPA of your situation.
- Consider throttling plant influent gate if so equipped and use the collection system as storage as long as back-ups do not occur in houses or the streets.

After the wet weather event

- Reorder spent chemicals.
- Catch up on sludge dewatering.
- Return to conventional operating modes.
- Review wet weather operation and make adjustments to the plan as necessary.

D. Blockages, ruptures, overflows and construction accidents – Blockages and ruptures could occur at any time. A blockage is typically caused by grease buildup or root penetration resulting in an interruption of flow, often resulting in an overflow from a manhole or within a business or residential basement. A blockage may also be caused by an object making its way into the sewer system and lodging within a pipeline. Physical settlement of the pipeline can cause a misalignment of joints, resulting in a blockage. Sand or sludge accumulation can form an impenetrable blockage in slow moving areas of the sewer system. Overflows can occur at pump stations or low lying manholes due to the failure of the pumping system or being overwhelmed by rainfall. Accumulations of air at high points of force mains can reduce discharge flow from pump stations. Intended or unintended closure of a valve could also cause simple blockage. Sewer force mains are prone to breakage, resulting in the large scale release of raw, untreated wastewater. Construction activities can result in breakage. Construction debris can be left in pipelines, causing blockage or restrictions in flow. These events are not only unpleasant but they can affect public health.

In the event of any release of wastewater, whether at the plant, pump station, collection system or a sewer back-up resulting in an overflow into someone's basement, proper notification must be made to the EPA and the NHDES. This involves a telephone call within 24 hours followed by a written submission within 5 days as per the Reporting of Non-Compliance directions found at the end of this chapter. If a spill or overflow

reaches surface waters, downstream notification must be made if a public water supply draws water from the same water source within 20 miles of the discharge. This is an immediate notification (phone call) to the water treatment plant followed by a written notification within 3 days. Seacoast facilities must also immediately report the discharge of raw or untreated wastes to the NHDES Shellfish Program. (Refer to your NPDES permit.)

To prevent blockages, overflows and construction related accidents

- Perform annual televising and cleaning of the sewer lines and remove blockages when found. Problem areas must be flushed more frequently.
- Enforce sewer use ordinances for oil and grease.
- Address I/I problems.
- Inspect new sewer lines during construction for appropriate slope and bedding and removal of any construction debris.
- Ensure Dig-Safe is called prior to initiating construction activities. **Be aware that the only companies required to belong to Dig Safe are gas, electric, telephone, cable television and public water companies. Municipalities owning their own water and sewer lines are not required to join and may be responsible for locating their own utilities.** Make sure an operator is on-hand whenever road work is taking place around sewer lines. Have as-built plans available.
- Monitor and clean siphons on a regular basis.
- Perform regular maintenance of pump stations. Keep wet wells free of grease and sludge build-up. Ensure that emergency power and alarm systems are fully functional.
- Periodically walk the sewer line in remote areas. Inspect the ground for the formation of sink holes around manholes and pipe runs for evidence of erosion and lost or shifting pipe bedding material. Check for vandalism and popped manholes.

During an overflow event or other disruption of service

- Bypass the affected portion of the line if possible to minimize the amount of spillage. Emergency bypass pumping from one manhole to another or around an affected pump station may be utilized. Septage haulers may be utilized also.
- Notify people in the affected area to avoid coming into contact with the spill. Notify swimmers or other recreational users to stay away from affected areas if the spill enters surface waters. Post information on local access cable TV stations.
- Conduct sampling during and after the event. Estimate the amount of wastewater spilled.
- Employ a contractor to make the necessary repairs or cleaning operations if they are beyond your capabilities

After an overflow event

- Determine cause, duration of incident, amount spilled and remedial actions for reporting purposes.
- Restore the affected area to its original condition. Collect and remove debris. Disinfect by spreading lime or similar disinfectant.

E. Severe winter storms, icing, freezing weather – Ice storms and freezing weather can create both mechanical and biological problems at a plant. Refer to the response plan for power failures as winter storms are likely to cause power outages.

- Monitor the weather continuously
- In severe storms, travel to the plant can be difficult or impossible. If necessary, arrange for travel in and out of the plant via local public works plow trucks or snowmobiles.
- Have two-way radios or cell phones on hand in the event telephone lines are compromised.
- Make sure all trucks and heavy equipment are fueled beforehand.
- Within the plant, ensure that power lines are free from over-hanging tree branches.
- Keep roadways within the plant clear as much as possible.
- Monitor rooftops for heavy snow accumulation and remove after the storm to prevent structural damage.
- Watch for ice build-up on plant equipment or process tankage. Remove scum skimmer blades on clarifier surfaces prone to freezing.
- Adjust biological processes to prepare for the onset of cold weather. Adjust MLSS levels in activated sludge tanks or place additional tanks on-line.
- Properly heat and winterize chemical storage areas, vulnerable process piping, and portable pumps and equipment.

F. Hurricanes, tornadoes, high winds – Hurricanes, while not common, have caused extensive damage in the state. High winds, heavy rain, coastal storm surges and tornadoes typically accompany hurricane events. Fortunately, hurricanes can be predicted with some degree of certainty as to their approximate path, strength and timeline. This often affords some opportunity to prepare for this natural disaster. Tornadoes, on the other hand, are usually isolated events capable of causing severe damage, mostly by wind, but often with little warning. In July 2008, a tornado's narrow path devastated the Epsom/Northwood area before ending in the Wolfeboro/Ossipee area, killing one woman and causing millions of dollars worth of damage.

Roll-up doors are particularly vulnerable to failure, as are roofs, roof top ventilation units, windows, and even digester covers. Flying debris is especially dangerous. Anything not anchored down becomes a lethal weapon. Hurricane and tornado force winds can fill process tanks with debris as large as vehicles. Catwalks can be ripped from their anchors and blown into clarifiers. The skin of aluminum domes can easily be peeled off.

Preparing for a storm

- Monitor the weather through local weather channels and NOAA Weather Radio.
- Make plans for communicating with employees and their families before and after a hurricane. Offer them shelter if possible. Homes of employees may be destroyed, causing severe personal disruption, making it difficult for them to come into work. Plans should be made to bring in temporary workers or volunteers such as electricians, mechanics and possibly operators from less damaged plants if needed. Options for temporary housing should be explored and identified.

- Give consideration to whether the plant needs to be staffed. It may be safest to abandon the plant and return after the storm has passed.
- Have on hand cell phones and two-way radios. Be prepared for long term communications problems.
- Barricade or tape all windows.
- Bring in or secure all loose equipment.
- In the event of a hurricane, do not seek shelter in basement or tunnels. Inundating rains may make these areas flood and electric shock hazards. A basement or tunnel may be the safest place for a tornado as these storm events are fast moving with smaller amounts of rain; otherwise, consider small interior rooms on the lowest floor and without windows, hallways on the lowest floor away from doors and windows, or rooms constructed with reinforced concrete or block with no windows.
- Make sure there is adequate fuel for all emergency generating and pumping equipment. Be prepared for long term power outages.
- Maintain detailed records and take photographs to obtain insurance company and FEMA reimbursement. Previous disasters show that this process can take as many as five to six years to complete.
- Travel to and from the plant after the storm can be difficult due to downed power lines. Scattered debris on the roadways can be very problematic causing numerous flat tires. Heavy equipment may be required to clear the road.
- Be prepared to have on hand vactor trucks and tanker/septage trucks to handle major storms.

After the storm

- Account for all personnel.
- Thoroughly inspect the plant, pump stations and collection system. Sometimes force mains or gravity sewers can be dislodged due to the uprooting of trees growing in the vicinity of these transmission lines. Be aware of downed power lines.

G. Earthquakes – Even though New Hampshire is not located near any major fault lines, the state has been affected by strong earthquakes located as far away as the St. Lawrence River region. Earthquakes have also originated at one time or another within and throughout New Hampshire. New Hampshire's recorded earthquake history dates back to the 1600s and continues to pose a threat.

Earthquakes can cause significant structural damage from shaking. Landslides are a possibility. Damage from fire caused by the disruption of gas and fuel lines poses a definite hazard. Lagoon systems contained by earthen berms can fail due to wave action and overtopping of the berm, leading to further instability and washout of the berm itself. Water surges within concrete tanks can also cause damage to interior components. All underground piping is susceptible to damage, including collection system piping. Piping galleries and tunnels have been known to flood as a result of damage to process piping. Chemical spills due to containment failure can occur. Gasoline can leak into sewer lines from damaged gas stations in town. The initial earthquake may only last for 10 seconds, but lesser aftershocks can still occur for days or weeks later.

Preparing for an earthquake

- Consult building codes or conduct an engineering evaluation to ensure that your buildings meet current structural safety standards.
- Designate safe areas to seek refuge throughout the plant. Most injuries occur by falling objects when people move more than 5-10 feet from where they were standing when the earthquake first struck.
- Bolt bookcases, cabinets and shelving to walls.
- Move large or heavy objects to lower shelves.
- Make sure overhead light fixtures are adequately secured.
- Store chemicals and flammable liquids in properly secured storage cabinets.
- Secure water heaters and gas or propane fueled appliances or equipment. Provide flexible connectors for all gas fired appliances and equipment. Secure computers and lab equipment.

During an earthquake

- Immediately take shelter at the nearest safe location. Seek protection underneath a heavy table or desk. Stay indoors if possible.
- If outdoors, find a safe spot away from buildings, trees, streetlights and power lines.
- If in a vehicle, pull over to a clear location and stop with your seatbelt fastened until the shaking stops.
- Watch for tsunamis if in a coastal area.
- Expect fire alarms and sprinkler systems to go off.

After an earthquake

- Account for all people. Check for injuries.
- Expect aftershocks and possibly more damage.
- Look for and extinguish small fires.
- Monitor the situation using radio or television.
- Open cabinets carefully and watch for falling objects.
- Inspect entire plant, pump stations and collection system for damage.
- Check for gas leaks and inspect electrical system.
- Be aware of flooding due to broken pipes.
- TV sewer lines for hidden damage.
- Monitor for methane leakage from anaerobic digesters.
- Do not use elevators until inspected.

H. Fires – Fires can occur as a result of an electrical problem, the improper use of equipment, the ignition of flammable materials, an overheated motor or a natural disaster such as an earthquake. Fires must have three components to ignite and maintain combustion: fuel, heat and oxygen. The goals of any fire safety and prevention program should be, in this order: to prevent combustion by controlling sources of fuel and heat; to protect people from injury and loss of life; and to protect property from damage and ensure the continuity of plant operations.

Fire prevention strategies

- Practice good housekeeping. Keep work areas, walkways and stairwells clear of loose materials and trash. Clean up spills such as grease, oil or chemicals immediately. Avoid the buildup of combustible trash such as paper, wood and oily rags.
- Store all chemicals and combustible liquids in approved containers and away from sources of ignition.
- Keep incompatible chemicals away from each other.
- Place oily rags in metal containers with lids.
- Always ensure adequate clearances around electrical panels.
- Use only approved extension cords and in good condition.
- Don't overload electrical circuits.
- Always keep fire doors closed.
- Smoke only in designated areas.
- Practice fire drills regularly.
- Place fire extinguishers in appropriate locations, inspect regularly, and train everyone in their use and location.
- Test smoke detectors and fire alarms regularly.
- Implement a hot work permit program. A hot work permit program establishes written procedures to be used to assist in preventing fires resulting from temporary operations involving an open flame, produce heat, or those that generate sparks and/or hot slag. This includes, but is not limited to brazing, cutting, grinding, soldering, thawing pipes, torch applied roofing, and welding.

In the event of a fire

- Use the appropriate fire extinguisher for the situation. Class A extinguishers are for ordinary combustibles such as paper, wood, cardboard, and most plastics. Class B extinguishers are for combustibles and flammables such as gasoline, kerosene, grease and oil. Class C extinguishers are for fires involving electrical equipment, circuit breakers and outlets. Class D extinguishers are for fires involving laboratory chemicals such as magnesium, titanium and potassium. Some extinguishers are multipurpose and can fight several types of fires.
- Only fight a fire if it is small and not spreading. Only fight a fire if you know how to use the extinguisher.
- When using an extinguisher, always stand with an exit at your back. Use a sweeping motion and aim at the base of the fire.
- If possible, use a buddy system.
- Watch for re-ignition.
- Never fight a fire if it is spreading rapidly or you don't know what is burning. Never fight a fire if there is too much smoke. Instead, immediately call 911.

<u>I. Explosions</u> – We often think about explosions as a result of the ignition of sewer gases, but in reality, an explosion can happen as a result of many things. The ignition of flammable liquids (gasoline, methanol), rupturing of compressed gas cylinders, boiler explosions, maintenance and laboratory activities, dust, and terrorist activities are a few

examples. The risks to health and life from an explosion are: smoke inhalation, lung and hearing damage, trauma and burns due to the force and heat of the blast, flying debris, and worsening of pre-existing medical conditions as a result of acute physiological or psychological stress. Structural damage to the facilities, equipment damage and loss of process are other hazards of an explosion.

Preventing explosions

- Properly store all hazardous materials. Routinely inspect storage areas.
- Secure cylinders of compressed gases and do not expose to excessive heat.
- Continuously monitor headworks, pump stations, sludge handling areas and digesters for explosive and flammable gases.
- Restrict smoking to designated areas of the plant well away from potentially explosive areas.
- Do not smoke in or around pump stations or manholes.
- Test the atmosphere and ventilate prior to doing any welding, cutting, or using an open flame in any area where wastewater or sludge has leaked, stored or been treated.
- Follow confined space entry procedures and use non-sparking tools.
- Enforce sewer use ordinances.
- Conduct proper preventative maintenance on boilers and compressed gas systems.
- Oversee and document all vendor-performed work.
- Implement a hot work permit program.

In the event of an explosion

- Immediately take cover under tables, desks or other objects that can offer protection from flying glass or debris.
- Seek out, assist and evacuate injured persons. Do not move seriously injured persons unless they are obviously in immediate danger.
- Evacuate and do not use elevators.
- Activate the building fire alarm system or call 911.
- Do not attempt to go back into the building.
- Once outside, move to an area at least 300 feet from the affected building. Keep roadways and walkways clear for emergency responders.
- Be wary of further possible explosions.
- After the area has been deemed safe immediately assess the damage and restore service.
- Notify NHDES of the situation as soon as practicable.

J. Chemical spills within the plant - Chemical spills can occur at any place or at any time. The severity of a spill can range from a ruptured storage tank of several thousand gallons in volume to the spilling of a few ounces of lab chemical. A spill can occur within the plant or it can happen on the roadways during transit. A spill can occur at an industry that discharges to your facility. Vandals or disgruntled employees at any location can spitefully or willfully dump chemicals. This section will deal with spills within the confines of the plant.

Spill prevention & preparedness

- Maintain MSDS sheets on all chemical substances used in the plant.
- Inventory all chemicals used in the plant. Document the chemical name, exact location, storage volume and chemical supplier.
- Provide the fire department with a copy of your chemical inventory list. Invite them for periodic tours and spill response training.
- Make sure all storage containers are in good condition, properly labeled and have proper spill containment.
- Make sure 55 gallon drums have adequate spacing between them to allow for easy access and inspection and have proper spill containment.
- Make sure all bulk storage containers have appropriate secondary containment. Perform regular inspections of secondary containment structures.
- Make sure outdoor secondary containment areas are not filled with rain water which would take up spill volume. Pump out as required.
- Keep volumes of chemicals stored to a minimum. Keep on hand only those amounts that you would normally use in a given time period.
- All hazardous substances should be stored inside buildings or under cover, preferably in areas not subject to excess heat. Keep sources of ignition away from the storage areas.
- Small volumes of hazardous chemicals should be stored in specially designated and labeled storage cabinets.
- Keep incompatible chemicals stored separately.
- Immediately clean up drips or leakage. Practice good housekeeping by keeping all storage areas clean and in good general condition.
- For bulk chemical deliveries, ensure that an operator is present at all times during the off-loading of chemical.
- Make sure that all chemical fill pipes are properly labeled.
- Make sure bulk storage tanks are equipped with high level alarms to prevent overflows.
- Alarm chemical containment areas to detect the presence of spilled material.
- Maintain spill response kits appropriate to the chemicals in storage. Typically they would be sized based on the anticipated spill volume according to the largest storage container. Spill kits should be located where spills are likely to occur. A spill kit would typically contain absorbents, booms, neutralizing agents, tools such as shovels, brooms squeegees, and personal protective equipment such as gloves, goggles, aprons, boots, respirators, etc.
- Have an evacuation plan in place and a method for alerting personnel of a major spill.
- Keep chemical storage areas away from high volume traffic areas.
- Determine which chemicals and what amounts of chemicals can be safely handled by plant staff in the event of a spill. Consult with the fire department or your chemical supplier on this.

Spill response procedures

- Refer to appropriate MSDS sheets for specific cleanup procedures.
- Determine which chemical has leaked or spilled. Estimate the volume or severity of the spill and its impact to health, property and the environment.
- Spills may be cleaned up by on-site personnel if: they are properly trained, the spilled chemical and its hazardous properties have been identified, the spill is small and easily contained, and the responder is aware of the chemical's hazardous properties.
- If a spill or release cannot be controlled or injuries have occurred, immediately call 911.
- Evacuate the area if necessary. Turn off ventilation units to avoid fumes being carried throughout the building.
- Eliminate sources of ignition if it is safe to do so.
- If the spill is small and can be contained, first obtain the proper personal safety equipment, then try to stop the leak. Contain the leaked material by applying booms or improvised dikes such as sand or soak up as much material as you can by using absorbent pads or absorbent material such as kitty litter. Isolate floor drains by plugging them or installing drain covers.

Reporting petroleum spills

Petroleum spills may involve but are not limited to crude oil, gasoline, heating oil, various fuel oils, lubricating oil, hydraulic oil or asphaltic residuals. The following guidelines as determined by DES should be used when determining when to report a petroleum spill. **WHEN IN DOUBT, REPORT THE SPILL.**

The responsible person in charge must report the spill immediately unless it meets **all** of the following conditions:

A. The discharge is less than 25 gallons;
B. The discharge is immediately contained;
C. The discharge and/or contamination is completely removed within 24 hours;
D. There is no impact or potential impact to groundwater or surface water; and
E. There is no potential for vapors which pose an imminent threat to human health.

To report a spill: First contact your local 911 responder or fire department.
Second, call the DES Spill Response and Complaint Investigation Section at
(603) 271-3899 during normal working hours (8AM to 4PM, Monday – Friday). During weekends and evenings call the State Police at (603)223-4381.

When reporting a spill, be prepared to give the following information:

A. The caller's name and phone number;
B. The name, address and phone number of the responsible party;
C. Location of the spill site;
D. Date and time of the spill;
E. Cause of the spill;
F. Substance spilled; and
G. Amount spilled.

Response to a sodium hypochlorite (liquid bleach) spill

- Spills of 100 pounds (≈ 80 gallons) or more of sodium hypochlorite must be reported to the National Response Center at 1-800-424-8802.
- Sodium hypochlorite is not combustible, but is an oxidizer and can ignite combustible materials such as wood, paper, oil, clothing, etc.
- Eliminate all ignition sources in the immediate area.
- Sodium hypochlorite is a corrosive product and may cause burns to skin, eyes, respiratory tract and mucous membranes.
- In no instance allow hypo to come into contact with acids, ammonia, metals, alum, ferric, and organic chemicals such as fuel oils, organic polymers or hydrogen peroxide as violent reactions can occur releasing toxic chlorine gas.
- Assess volume and source of leak. If the leak is manageable, attempt to stop it or begin clean-up only if you have been properly trained and have donned the appropriate protective clothing (Butyl, Nitrile, Neoprene, Natural Rubber, PVC or Viton gloves and suits, footware, respirator suited for sodium hypochlorite and splash resistant goggles.)
- It is not recommended to try and neutralize material with sodium bisulfite or other dechlorinating agents as this chemical reaction may give off heat, potentially causing boiling or splashing.
- Restrict access to the area and provide maximum ventilation.
- Dike area to contain spill and absorb spilled material with dry earth, sand, kitty litter, vermiculite or absorbent pads. Do not use combustible absorbents such as sawdust.
- Do not flush down drains to sewer. Prevent the passage of material to any drains or surface waters.
- Sodium hypochlorite will cause surfaces to become slippery and slimy.
- Place absorbed material in covered containers. Material may be treated as hazardous waste. Dispose of properly.
- Small fires involving this chemical can be fought with dry chemical, CO_2 or water sprays.

<u>K. Chemical spills originating from outside the plant</u> - Chemical spills occurring off of plant grounds can affect the treatment plant in a number of ways. Transportation accidents involving the trucking of chemicals through town can result in spillage on the roadways, potentially entering manholes or storm drains. Industrial accidents can result in spills or overflows that can be discharged to the sewer system. Fuel oil spills or overflows may enter the sewer line via a homeowner's basement sump pump or illegal floor drain. Homeowners can also dump gasoline, paint thinners or solvents down the sink without realizing the consequences. All of these scenarios have the potential to cause significant damage, either by creating an explosive or flammable situation, thereby threatening human health and safety or by inhibiting or killing the biological process and possibly causing permit violations. Some of these situations you may hear about through established notification procedures, but others may happen without your knowledge.

Prevention and preparedness

- Establish an industrial pretreatment program.
- Identify and inspect all industrial users.

- Establish notification procedures.
- Determine chemical inventories.
- Collect MSDS sheets.
- Enforce sewer use ordinance.
- Conduct public information and outreach activities through mailings, local public access channels, etc.

If you have advanced notification of a spill, petroleum or otherwise

- Any spill involving a transportation related accident would automatically involve the local fire department and other emergency responders. Follow their direction. Fire department's clean-up personnel must be instructed not to flush roadway spills to storm drains and collection system.
- If the spill comes from an industry, notify the fire department.
- Try to contain and isolate the spill if possible. If it has already entered the sewer system, isolate in a pump station or divert to an empty tank.
- Use containment booms if necessary. Call an environmental cleanup firm to dispose of the residuals. For petroleum or gas spills make sure DES has been notified, as you may be eligible for cleanup money.
- Thoroughly ventilate the areas impacted by a spill and monitor for explosive gases.
- Gasoline and fuel oils are biodegradable by typical bacteria. In small quantities they will not be toxic, however, it is best to act fast and remove it. Maximize aeration to ensure there is enough to decompose this material and also to aid in stripping out as much as possible.
- If there is no empty tankage, sacrifice one biological train over the others.
- Call your DES compliance inspector and the EPA within 24 hours of event awareness and send a detailed letter within 5 days of event awareness.

Response to an unknown spill

- Continuously monitor influent pH to provide you with an early warning system
- Signs of toxicity to the biological process include an increase in turbidity, low oxygen uptake rate, increase in dissolved oxygen, dispersed floc and dead or inactive microorganisms as observed under the microscope, and an increase in effluent ammonia or nitrite.
- For activated sludge processes; switch operating modes from plug flow to contact stabilization or complete mix, reduce RAS to keep the healthy bugs in the clarifier, decrease wasting if protozoa are present but slow, increase wasting if protozoa are absent or dead, seed from another plant if wiped out.
- Maintaining higher solids inventories helps to deal with chemical spills.

L. Equipment failure - Wastewater treatment plant environments are subject to moisture, corrosion, dust, gases, heat and chemicals. Equipment can and will break down. Developing and practicing a sound maintenance program will ensure the reliability of critical equipment. A reactive or corrective maintenance program, on the other hand, is basically a "run it until it breaks" philosophy. This approach can lead to serious

equipment failure at the worst possible time, often resulting in process failure, permit violations or environmental disaster such as sewer overflows.

Ensuring equipment reliability

- Practice a sound maintenance program incorporating regular oil changes and lubrication frequencies, in addition to thermal imaging, oil and vibration analyses for the most critical equipment.
- Maintaining a spare parts inventory so that when a critical component fails, disruption can be kept to a minimum.
- Ensuring that all critical pieces of equipment have an operable backup.
- Developing a practice to exercise seldom run equipment such as generators on a regular basis.
- For equipment that utilizes special tools, make sure those tools are on hand.
- Periodically check electrical connections and switchgear to look for potential problems.

Response to equipment failure

- Isolate the failed piece of equipment and activate the backup unit.
- If necessary, employ portable pumps or generators if a backup is not available.
- Be prepared to call in electricians or qualified repair people if necessary.
- In the event of an extended dewatering equipment failure, be prepared and budget for the hauling of sludge in liquid form or bring in portable dewatering equipment.

M. Process upsets - Most treatment plants are biological in nature and thus depend upon the activity of bacteria to treat the wastewater. Since they are living organisms, their survival and health are subject to environmental conditions. Toxic chemicals, extreme pH swings, high strength wastes, inadequate aeration and equipment malfunction can all have a detrimental effect on these organisms. All of these situations can lead to a process upset and adversely effect effluent quality.

Process upset avoidance

- Maintain adequate process control and keep good records.
- Enforce an industrial pretreatment program. Inspect industries regularly.
- Maintain a reliable preventative maintenance program.
- Regularly monitor the health of your system by performing routine microscopic exams.
- Use in-situ process monitoring such as pH, D.O., turbidity or TSS meters to be used as early warning systems.

Response to a process upset

- Any noncompliance due to an upset or any violation of a daily maximum NPDES permit limitation must be reported as outlined in the **NPDES/STATE REPORTING OF NON-COMPLIANCE** procedures found at the end of this chapter.
- Increase process monitoring until the upset condition has passed.
- Contact DES Wastewater Operations for assistance.

N. Loss of Supervisory Control and Data Acquisition (SCADA) system or alarm functions – Wastewater treatment facilities increasingly rely on automation to run the process, monitor treatment efficiency and monitor collection system pump stations. The simplest of systems consist of basic alarms such as floats in a wet well to alert us if the wet well level is too high or low. Many plants are now implementing more sophisticated control systems such as SCADA which monitors the process and runs equipment in addition to sounding alarms. Either type of system is subject to failure. Proper precautions must be taken to ensure that failure does not occur. System failure can be the result of human error, weather conditions, water damage or individual component failure. SCADA systems are particularly vulnerable to computer hackers or terrorists if the system can be accessed from the internet.

Precautions for basic alarm only systems

- Make sure all critical components are alarmed.
- Periodically test the alarms to make sure they are all in working order.
- Periodically test the transmission and communications system to make sure that if an alarm occurs during periods when the plant is not staffed the person on call will be notified.
- Keep all wet wells free of grease buildup which could interfere with alarm functions.

Precautions for SCADA systems

- The most vulnerable components are the CPU, power supply and communications. A CPU failure results in the complete loss of the SCADA system. A power supply failure results in a complete loss of the SCADA system. A communication system failure can result in the loss of data integrity and transfer, resulting in a partial loss of the SCADA system.
- Assure all processes and systems can be operated manually should the SCADA system fail.
- Make sure computer access is password protected and there is adequate virus protection installed.
- Make sure employees are thoroughly trained in the use of SCADA.
- If the system is internet connected, make sure there is industry standard firewall software installed and that it is updated regularly.
- Make sure you back up data regularly.
- Make sure system computers are located where they will be least likely to be affected by adverse conditions and natural disasters.
- Make sure SCADA computers are dedicated to SCADA only. Do not allow email or other programs to be used on SCADA computers.
- Ensure redundancy by having backup hardware components. If the main CPU goes down, the backup will automatically take over.
- Provide a backup power source capable of lasting for a minimum of four hours.
- Ensure that all SCADA and control wiring is protected within conduit.

Response to an alarm or SCADA system failure

- If the alarm system is armed, any loss of functioning should send an alarm condition. Any type of communications system error should send an alarm. A failure of the SCADA system should send an alarm.
- After receipt of a system failure, verify plant conditions and alarm status by physically going to the plant if it occurs outside of work hours.
- If necessary, call in an appropriate SCADA technician or qualified electrician if it is a simple alarm malfunction. If it is a communications problem, notify the telephone company or your communications carrier and alert them of the problem.
- Visit the plant or pump stations as often as required to verify operational status until the alarm or SCADA system failure is resolved.

O. Personnel injury – All injuries at wastewater treatment facilities require medical attention in the form of first aid, regardless of severity. Many cases have been reported where a small injury quickly leads to an infection, threatening the health and limb of an employee. Serious injuries require the assistance of medical professionals and transportation to a hospital. First aid refers to medical attention that is usually administered immediately after the injury occurs and at the location where it occurred. It often consists of a one-time, short-term treatment and requires little technology or training to administer. First aid can include cleaning minor cuts, scrapes, or scratches; treating a minor burn; applying bandages and dressings; the use of non-prescription medicine; draining blisters; removing debris from the eyes; massage; and drinking fluids to relieve heat stress. Employee allergies to specific drugs and medications should be documented and kept up to date and in-house.

Every plant should develop a first aid program. Contact OSHA or the Department of Labor for requirements that may apply to your facility. Conduct a first aid risk assessment that identifies potential causes of workplace injury and illness, assesses the risk of workplace injury and illness, determines what type of first aid facilities are required to meet the assessed needs. First aid kits should be made available throughout the plant and everyone should know how to use them and where they are located.

These emergency warning signs can be used as a guide to determine when to call 911. If one or more of these signs are present, immediately call 911:

- Prolonged chest pain or pressure;
- Uncontrolled bleeding;
- Difficulty breathing or shortness of breath;
- Choking or vomiting blood;
- Severe pain;
- A weak or non-existent heartbeat when checking for a pulse on the neck (along side the Adam's apple);
- Sudden weakness, change in vision, or dizziness;
- Persistent vomiting or diarrhea;
- Confusion or difficulty arousing;
- Unconsciousness; and
- Injuries to the head, neck or back

If you need to call 911

- Remain calm, be aware of your surroundings, and closely evaluate the scene to protect yourself and others from further injury.
- Do not move critically injured persons unless instructed by emergency medical professionals.
- Do not try to drive someone who is critically ill or injured to a hospital unless there is no way to summon help.
- Listen carefully to the 911 dispatcher's questions. Answer them calmly and quickly.
- Remain on the line until the dispatcher tells you to hang up.
- Relay any known allergies to aid personnel.

P. Pandemics – Most of the following information comes from the OSHA publication "*Guidance on Preparing Workplaces for an Influenza Pandemic*." A pandemic is a global disease outbreak such as the one caused by the 2009 swine flu (H1N1) outbreak. An influenza outbreak occurs when a new influenza virus emerges for which there is little or no immunity in the human population, begins to cause serious illness and then spreads easily person-to-person worldwide. Over one million people in this country alone were infected with the 2009 swine flu virus. As of this writing, the U.S. had half of the world's swine flu cases. In 1997 and 2005 a near pandemic was caused by the avian flu (H5N1) which was confined to Hong Kong and Asia.

Influenza viruses such as these and the ease with which they can spread can have major effects not only on the human population but also on business, trade, tourism and your workplace. A pandemic could affect as much as 40 percent of the workforce during periods of peak influenza illness. Employees could be absent because they are sick, must care for sick family members or for children if schools or day care centers are closed, are afraid to come to work, or the employer might not be notified if the employee has died. During a pandemic you may be forced to operate your facility short handed and there could be an interruption in the delivery of supplies, materials and chemicals necessary to run the plant.

Influenza is thought to spread primarily through large droplets that directly contact the nose, mouth or eyes. These droplets are produced when infected people cough, sneeze or talk, sending the relatively large infectious droplets and very small sprays (aerosols) into the nearby air and into contact with other people. Large droplets can only travel a limited range; therefore, people should limit close contact (not closer than 6 feet) with others when possible.

Pandemic Preparation

- Prepare and plan for operations with a reduced workforce. Have an arrangement in place with a contract operations firm or a neighboring treatment plant to share or temporarily hire additional staff if needed.
- Develop a sick leave policy that does not penalize sick employees. Recognize that employees with ill family members may need to stay home to care for them.

- Minimize exposure to fellow employees or the public. Some people may be able to work from home, but probably most won't be able to do so. If possible, work in shifts to minimize the number of people in the plant at any one time.
- Work with your suppliers to ensure that you can continue to operate and provide services.
- Cross train employees so that any vacant position can be filled when required.
- Provide tissues, no-touch trash cans, hand soap, hand sanitizer, disinfectants and disposable towels for workers to clean their hands and work surfaces.
- Encourage workers to obtain seasonal influenza and pandemic influenza vaccines when available.
- Provide employees with up-to-date education on influenza risk factors and protective behaviors.

Staffing

If shorthanded or if all staff is absent, substitute operators will be needed to conduct basic wastewater operations at your facility. The DES rule Env-Ws 901, Certification of Wastewater Treatment Plant Operators, requires *"the back-up operator shall hold a certificate of no more than one grade lower than that of the grade of the facility or an OIT certificate in the grade of the facility. In the case of a Grade 1 plant, the back-up operator shall hold a grade 1 or grade 1-OIT certificate or higher."* All wastewater plants should make arrangements now for substitutes to be available to assist with basic wastewater treatment operations. Substitutes should be familiar with your facility's laboratory quality assurance manual, O&M manual, NPDES permit requirements, emergency response plan and emergency phone list so they can successfully carry out basic operations at your facility. A plant tour with designated back-up operators is suggested to acquaint the operators with normal working conditions, the appearance and equipment at the facility.

Minimum Required Activities

Substitute operators will most likely not have the time or familiarity with your plant to perform all routine daily tasks. Therefore, decisions will need to be made about what to do and not do. DES has designated the following as **priority essential activities** that should be conducted by substitute employees at your plant during shorthanded conditions:

- Record daily flows;
- Collect influent and effluent samples as required by your NPDES permit (pH, TRC and DO must be done in house due to minimal holding times) – all other samples can be shipped off site for analysis;
- Check pump stations and CSOs to ensure regular maintenance (e.g. cleaning bar racks or screens) is performed. Review the proper disposal method for rags and screenings;
- Perform daily plant rounds to ensure equipment is functioning and disinfection treatment (e.g. chlorination, UV) is working and chemical tanks are not empty;
- Record all plant activities and problems encountered in a logbook;

- Respond to after hours alarms, which should be sent to the substitute operator who can respond immediately to the problem. Provide specific contact names and phone numbers for emergency responders to the back-up operators; and
- Contact DES wastewater operations or compliance section with updates on problems and requests for technical assistance or additional manpower. DES may be able to direct you to additional temporary help.

Protecting Yourself in the Workplace during a Pandemic

- Stay home if you are sick.
- Wash your hands frequently with soap and water for 20 seconds or with a hand sanitizer if soap and water are not available.
- Avoid touching your nose, mouth and eyes.
- Cover your coughs and sneezes with a tissue, or cough and sneeze into your upper sleeve. Dispose of tissues in no-touch trash receptacles.
- Wash your hands or use a hand sanitizer after coughing, sneezing, or blowing your nose.
- Avoid close contact (within 6 feet) with coworkers and customers.
- Avoid shaking hands and always wash your hands after physical contact with others.
- If wearing gloves, always wash your hands after removing them.
- Keep frequently touched common surfaces (telephones, computer equipment, etc.) clean.
- Try not to use other workers' phones, desks, offices, or other work tools and equipment.
- Minimize group meetings.
- Limit unnecessary visitors to the workplace.

Q. Security threats / vandalism / terrorism – Security threats can come in many forms: disgruntled employees, domestic violence in the workplace, upset neighbors, abutters and / or customers, domestic & international terrorists, extremist environmental groups, trespassers and vandals. The damage can range from simple mischief to outright theft, armed or hostile confrontations, bombs, or chemical, biological and even radiological agents. The threat can be limited to a local area of the plant or widespread throughout the city. Notification of a threat may come through a number of avenues: via law enforcement, the perpetrators themselves, internal security breach, eyewitness accounts, news media or unusual sewage characteristics.

General security measures

- Make sure the treatment plant and all pump stations are secured with fencing that is resistant to climbing and the gate and all buildings kept locked when unoccupied.
- Make sure all doors and windows are locked when buildings are unoccupied.
- Install outdoor lighting or motion activated lights.
- Post No Trespassing signs and state the penalty if convicted of trespassing.
- Ensure that all incoming utilities (electric, natural gas, communication lines, etc.) are protected from accidental or deliberate damage.
- Install intrusion detectors at the perimeter of the facility and building doors.

- Consider closed circuit television monitoring.
- Install security grills for accessible windows, louver openings, roof hatches, culverts, etc.
- Provide locking devices for manhole covers.
- Ensure chemical storage tanks are fully protected from unauthorized access.
- Ensure all exterior doors are made of heavy duty sheet metal with security door hardware.
- Establish a neighborhood watch system for vandal prone areas.
- Have only one access entryway to the plant.
- Keep all vegetation around the perimeter areas trimmed.
- Keep trees and shrubs trimmed back from windows, doors and walkways.
- Ask the police to step up patrols in vandal prone areas.
- Check references prior to hiring anyone. This includes education, previous employers, character references and criminal background checks.
- Use two employees to escort terminated personnel out the gate.
- Track visitors by requiring them to check in first and issue them visitor badges and check out upon exit.
- All employees should wear ID badges.
- Ensure on-site supervision for all outside contractors.
- Apply these security items to all pump stations and collection system facilities.

Response to vandalism

- Notify the police immediately upon detection.
- Before entering, assess the area to make sure the vandals are still not there. You may have no idea who did the damage or what the motive could have been. They could be armed and may resist if confronted. If the situation looks like it could be more than just broken windows or graffiti painted walls, wait for the police to arrive before entering the area.
- After the site is deemed safe, assess the damages and restore service if it has been disrupted.
- Document any damage with photos for insurance purposes.

Response to a telephone threat from the perpetrator

- Take all threats seriously.
- Remain calm and get as much information from the caller as you can.
- Listen carefully, be polite and show interest.
- Pay attention to the caller's voice, accent, demeanor, background noises, anything that can help the police.
- Find out where and when the threat will be carried out.
- Call 911 immediately.

Response to workplace violence – Workplace violence can result from domestic or family problems, termination of employment, disciplinary actions, on-going conflicts between employees, or financial problems at home. It can result in threats, physical altercations, or any conduct that creates an intimidating, offensive or hostile environment. Potential

warning signs may be: verbal, nonverbal or written threats; new or increased stress at home or at work; expressions of hopelessness or anxiety; fascination with weapons or violence; insubordinate behavior; dramatic change in work performance; drug or alcohol abuse; and externalization of blame

- Be aware of what is going on around you.
- Contact your supervisor or your Human Resources Department if you notice any unusual, troubling or suspicious behavior.

Response to face-to-face escalated behavior and threats from an outsider

- As far as possible, meet any demands – **DO NOT ARGUE!**
- DO NOT MAKE PROMISES, just say: "I hear what you are saying".
- Immediately write down a description of the individual. Include clothing, scars, glasses, speech, the way they walked, license plate of vehicle, etc.
- Notify the police if a threat or an assault occurred.
- Contact your supervisor and Human Resources department.

Response to an armed intruder

- **NEVER TAKE ANY ACTION THAT WILL PUT YOUR SAFETY OR LIFE OR THAT OF YOUR COWORKERS IN JEOPARDY!**
- **Call 911 immediately.**
- Never restrain or forcibly evict an angry or armed person from the premises.
- Evacuate occupants away from the danger area, but do not draw attention to the evacuation.
- **DO NOT** sound the fire alarm. This may send people directly into the possible line of fire.

Response to bomb threats or suspicious packages

- Work with police to determine whether the building must be evacuated.
- Be on the lookout for unusual objects which could be a bomb.
- Leave file cabinets unlocked and doors open so authorities can quickly and easily search the premises.
- When evacuating, take personal belongings such as handbags, objects or parcels which may appear suspect to searchers.
- Turn off personal computers, fans and other devices under your control which emit noise, so authorities can listen for unusual sounds.
- **DO NOT** ever touch or move a suspicious object.
- **DO NOT** turn light switches on or off as this may detonate a bomb.
- **DO NOT** use two way radios, cell phones, or other radio signal emitting devices within 150 feet of a threatened building, as this may detonate a bomb.
- If time permits, open windows as this may help to vent any explosion.

Response to the threat of a deliberate dumping of contaminants into the sewer

- Immediately call 911 for any threat involving the deliberate dumping of chemicals or contaminants and provide as much information as possible.

- If the contaminant has been identified, and if the emergency responders agree, ventilate the headworks building and any pump stations that may be affected by the chemical to avoid the buildup of hazardous fumes. Do not do this if the threat is known to be biological or radiological in origin. Emergency responders should make this decision so as not to spread the agent more than need be.
- Trap and remove the chemical contaminant in the collection system if possible or divert to empty tanks upon reaching the plant. Isolate pump station if possible to prevent further flow of contaminants.

R. Labor strikes – Most of New Hampshire's wastewater treatment facilities are publicly owned and operated. Labor strikes by public employees in New Hampshire are illegal by statute, making a labor strike unlikely in a publicly operated plant. However, municipal plants operated by contract operations firms may experience labor unrest. This possibility should be covered in the contract between the contract operations firm and the municipality. A contract operator may be able to bring in substitute workers from other facilities that they operate in the event of a localized strike. Union contractors (electricians, plumbers) working on upgrade projects for the treatment facility may go on strike, temporarily disrupting the project's work schedule, but otherwise having little effect on plant operations. In the event of a strike involving plant operators or maintenance people, a community can request help from another treatment plant, or a contract operator can be hired to provide needed manpower on a short-term basis.

11. After the emergency / recovery phase

- Designate a recovery manager and provide this person with adequate time to do this job.
- Complete a detailed evaluation of all affected components and determine priorities for repair, reconstruction or replacement.
- Coordinate all vendor and contractor activities.
- Coordinate the completion of emergency repairs and schedule permanent repairs.
- Notify key regulatory agencies of emergency repair status and the scheduled completion of system repairs.
- Document all recovery activities including labor, equipment and materials expenses for potential disaster assistance from the state or federal government.
- Take measures to protect employees, contract workers and the public from hazardous exposures.
- Restore all telecommunications, data processing and similar services to full operation.

12. Emergency plan approval, update and training

The emergency response plan should be reviewed, updated and critiqued under any of the following conditions:

- Annually, with contact list updated every three months;
- Following an emergency response training exercise or an actual activation of the emergency response plan;
- Within two months of any significant plant modification, pump station upgrade or wastewater system change;

- Whenever there is a change in the roles, the responsibilities, or the individuals involved in response activities;
- Whenever internal or external contact information changes;
- Training, exercises and drills should be conducted at least annually or whenever new employees are hired, new equipment or materials are introduced, or procedures are updated or revised;
- Training can take place in the form of orientation sessions for new employees, written tests, tabletop workshops using a fabricated event, functional exercises designed to simulate a real major event, and full scale drills utilizing actual emergency response personnel and equipment; and
- Each plan update should be reviewed and approved by management with input from the appropriate local emergency responders.

Sample External Notification List

For any emergency, first dial 911

Local Government, Organizations/Agencies	Contact Number(s) phone and/or cell
Fire Department (non-emergency)	
Police Department (non-emergency)	
Public Works Department	
Collection Systems Crew	
Water Department	
Sewer Commissioners/Selectmen	
Health Officer	
Emergency Medical Services	
Hospital	
Schools (Public/Private)	
Satellite Communities	
Neighboring WWTF	

State / Federal Government, Environmental Response Teams	Contact Number(s) phone and/or cell
Oil spills during normal working hours (M-F 8AM-4PM) Department of Environmental Services	271-3899
Oil spills during nights, weekends and holidays State Police	223-4381
Department of Environmental Services Front Desk Receptionist	271-3503
Department of Environmental Services Wastewater Engineering Bureau	271-3908
Department of Environmental Services Air Resources (Air Toxic Release)	271-1370
Department of Environmental Services Shellfish Program	Pager # 603-771-9826
Haz Mat spill during normal working hours (M-F 8AM-4PM) Department of Environmental Services	271-3899
Haz Mat spill during nights, weekends and holidays State Police	223-4381
EPA - Joy Hilton	617-918-1877
Chemtrec (Chemical Transportation Emergency Center)	1-800-424-9300
Clean Harbors	1-800-645-8265

Downstream water users	
Utilities, Vendors / Contractors	**Contact Number(s) phone and/or cell**
Electric Utility Co.	
Natural gas / propane suppliers	
Chemical suppliers	
Septage haulers	
Dig Safe	
Godwin Pump Services (emergency pumping)	1-860-215-0981(local rep in Dover/cell) 1-860-889-2343(Conn. Office)
NH Public Works Mutual Aid Program	1-877-731-9908 (you must be a member)
Electrician	
SCADA / computer technician	
Emergency generator services	
General contractors	
Pipeline cleaning companies	
Water Testing Labs	

Media / Public Information	**Contact Number(s) phone and/or cell**
Newspaper - local	
Newspaper - regional	
Radio	
Television	

Revised: April 9, 2015

NPDES/STATE WATER DISCHARGE PERMIT REPORTING
REPORTING OF NON-COMPLIANCE

1. **24-HOUR REPORTING.** This is a telephone call provided within 24 hours from the time the permittee becomes aware of the circumstances. This is followed by a written or electronic submission provided within 5 calendar days from the time the permittee becomes aware of the circumstances. Reporting is to both the EPA and the NHDES.

   The following items must be reported under the 24-hour reporting requirements:
   - Any non-compliance which may endanger health or the environment. This includes pump station and collection system or plant overflows.
   - Any unanticipated bypass (see definition in Part II of the permit) which causes a violation of any effluent limitation in the permit.
   - Any "upset" (see definition in Part II of the permit) which causes a violation of any effluent limitation in the permit.
   - Any violation of a daily maximum limitation in your permit. Daily minimum pH violations must also be reported.

   WHO ARE YOU GOING TO CALL?

   U.S. Environmental Protection Agency
   Region 1- New England
   5 Post Office Square, Suite 100
   Mail Code: OES04-3
   Boston, MA 02109-3912
   Attn: Joy Hilton
   617-918-1877

   NH Department of Environmental Services
   WaterDivision/WastewaterEngineering Bureau
   Permits & Compliance Section
   P.O. Box 95
   Concord, NH 03302-0095
   Attn: Inspector for your facility
   603-271-2985 Tom Croteau
   603-271-1493 Stephanie Larson
   603-271-1494 Teresa Ptak

2. **MONTHLY REPORTING WITH THE DMR SUBMISSION.** This covers <u>all</u> permit limit violations, including ones that are not required to be reported under the 24-hour reporting noted above. This is required by both the EPA and NHDES.

   The DMR must have a complete explanation of the circumstances surrounding all violations. The explanation MUST include the items noted in Part II, Section D.1.e of the permit (see last page).

3. **REPORTING NON-COMPLIANCE TO DOWNSTREAM PUBLIC/PRIVATELY OWNED WATER SYSTEMS WHENEVER A BYPASS OR UPSET OCCURS. THIS TYPE OF NOTIFICATION HAS THE UTMOST PRIORITY**

   This is required by RSA 485-A:13, I (c) and is designed to protect downstream users of the receiving waters. This is a NHDES requirement only.

   This notification has to be made if a public water supply draws from the same receiving stream and is within 20 miles of the discharge. This is an immediate notification (phone call) to the water treatment plant with a written or electronic notification to the water treatment plant within 3 calendar days.

4. **PART I, INDUSTRIAL NOTIFICATION.** All existing manufacturing, commercial, mining, and silvicultural dischargers must notify the Director as soon as they know or have reason to believe (40 CFR §122.42):

a. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant (as defined in 40 CFR §122.2) which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
c.
(1) One hundred micrograms per liter (100 ug/L);
(2) Two hundred micrograms per liter (200 ug/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
(3) Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f).

b. That any activity has occurred or will occur which would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

(1) Five hundred micrograms per liter (500 ug/L);
(2) One milligram per liter (1 mg/L) for antimony;
(3) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR §122.21(g)(7); or
(4) Any other notification level established by the Director in accordance with 40 CFR §122.44(f).

d. That they have begun or expect to begin to use or manufacture as an intermediate or final product or byproduct any toxic pollutant which was not reported in the permit application.

5. **DES or EPA ORDERED REPORTS.** Administrative Orders or Consent Decrees may require submission of information in addition to the permit requirements.

6. **REPORTS TO NHDES OPERATIONS SECTION.** This is usually done by telephone to obtain assistance with correcting the reasons for non-compliance.

7. **SEACOAST FACILITIES ADDITIONAL REPORTING.** Facilities in the Seacoast must immediately (day or night) report the discharge of raw or undisinfected sewage anywhere in their collection system, including CSO discharges, to the DES Shellfish Program. The person to contact is Chris Nash at pager number 603-771-9826.

THIS TYPE OF NOTIFICATION HAS THE UTMOST PRIORITY!!!

WHAT INFORMATION SHOULD <u>EVERY</u> REPORT ON NON-COMPLIANCE CONTAIN?

The following information is required by Part II, Section D.1.e. of the permit.

- A description of the non-compliance, including the amount discharged.
- The cause of the non-compliance.
- The period including the exact dates and times when it happened.
- How you corrected the non-compliance. If the non-compliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the non-compliance.

For violations that are reported monthly with the DMR, attaching a cover letter is one of the most efficient methods to relay this information.

Reminder: the NPDES permit number must be listed on all letters and reports.

Explanations should be complete! Stating that a pump failed is not sufficient.

Transmittal:

To US EPA

U.S. Environmental Protection Agency
Region 1- New England
5 Post Office Square, Suite 100
Mail Code: OES04-3
Boston, MA 02109-3912
Attn: Joy Hilton
Hilton.Joy@epa.gov
Fax: 617-918-0877

To NH DES

NH Department of Environmental Services
Water Division/Wastewater Engineering Bureau
Permits and Compliance Section
P.O. Box 95
Concord, NH 03302-0095
Attn: Inspector for your facility
Thomas.Croteau@des.nh.gov
Stephanie.Larson@des.nh.gov
Teresa.Ptak@des.nh.gov
Fax: 603-271-4128

Useful links:

EPA Reimbursement Tips for Water Sector Emergency Response and Recovery
http://water.epa.gov/infrastructure/watersecurity/emerplan/upload/fs_watersecurity_reimbursementtips_watersectory.pdf

EPA What You Need to Know About Generators
http://www.epa.gov/ne/eco/drinkwater/pdfs/WaterWastewaterSystemGeneratorPreparedness.pdf

EPA Suggested Pre-Hurricane Activities for Water and Wastewater Plants
http://water.epa.gov/infrastructure/watersecurity/emergencyinfo/pre-hurricane.cfm

FEMA Disaster Information
http://www.fema.gov