



Flood guidance for wastewater treatment facilities

Flooding poses many problems and challenges for municipalities and industries. Among these is the protection and continued operation of wastewater treatment facilities (WWTFs). This guidance provides information to consider when preparing for potential floods.

Vocabulary:

Bypass – The intentional diversion of a waste stream from any portion of your WWTF. Examples of a bypass include diverting the flow of wastewater around a clarifier or dechlorination system. Bypass wastewater must enter waters of the state from outfalls specifically authorized by the facility's permit and cannot, by law, cause an effluent limit exceedance. Bypasses are prohibited except in very rare circumstances. State Rules and Federal Regulations provide some protection for permit holders in the event of a bypass. Additional information is available on the Minnesota Pollution Control Agency (MPCA) website's [Scheduled Maintenance Bypassing Review](#) page.

Release – Any overflow or spill of wastewater or materials to the environment. A release is an unauthorized discharge of wastewater and is prohibited. Examples include sanitary sewer overflows from a plugged collection system or pumping untreated wastewater out of a manhole to a nearby ditch. Unauthorized releases, such as sanitary sewer overflows, are the most common type of event when wastewater systems are inundated with rain/snow melt or from pump or electrical failures.

Avoid a bypass/release if possible

Every WWTF operator wants to avoid bypassing/releasing untreated wastewater into the environment, however sometimes it becomes necessary for a number of reasons, including:

Power outages – WWTFs can avoid or minimize a release/bypass due to power outages if generators are available to provide emergency electricity for power. Facilities that have emergency generators available should routinely exercise the generators to make sure they will operate in emergency situations. Facilities that do not have emergency generators available should develop a plan that identifies emergency generator sources such as other local communities and/or the Minnesota Water/Wastewater Agency Response Network (MnWARN).

Lift pump failures – A common problem during floods is failure of overworked lift pumps. If possible, lift pumps should be inspected and serviced ahead of a potential flood so they will operate at peak efficiency as flows begin to rise. If your lift pumps have had recurring problems with specific parts or components in the past, consider having spare replacement parts on hand to repair pumps in emergency situations.

Excess flows – As floodwaters rise, sump pumps begin running full time and water may also find its way into the sanitary collection system through leaky manholes, open connections or cracked and leaky collection pipes. Lift pumps can be overwhelmed and unable to transport all of the flow to the WWTF. Sump pumps should be disconnected from the sanitary system. If possible, some manhole cover sealing can be done. Open connections should be located and sealed. Routine collection system maintenance and Inflow & Infiltration (I&I) reduction activities can greatly reduce the likelihood of a bypass or release during wet weather conditions.

Treatment system problems – Pond systems are normally full in the spring. Extra water from flooding can raise water in ponds to critical levels. In emergency situations, it may be preferable to open the discharge structure to allow water to leave the pond system at the same rate it is entering or to conduct a greater than six inch (6") per day pond discharge if the situation allows. Be cautious of allowing water to continue to accumulate in the ponds to the top of the dikes as the clay dike core or vinyl liner does not extend all the way to the dike top. Maintaining water above the core or liner can lead to catastrophic dike failure. Contact your assigned MPCA wastewater compliance staff if you have any questions about discharging your pond system during flooding conditions.

If you must bypass/release

If a bypass or release is the only alternative, remember that you are obligated to:

- **Immediately contact the Minnesota Duty Officer at 800-422-0798 or 651-649-5451.** If you need assistance or advice from the MPCA, you can inform the Minnesota Duty Officer or contact the MPCA directly. WWTF staff is often required to perform numerous tasks upon discovery of a release therefore it may be useful to consider having a designated person make a preliminary Duty Officer notification for the bypass/release. A final notification, with supplemental information, could then be made to the Duty Officer once all bypass/release details are obtained.
- **Discontinue the bypass/release as soon as possible.** If a bypass/release is expected to last for more than a day or two, contact your MPCA representative to keep them informed of your status and to discuss sampling requirements.
- **Recover all substances and materials.** In a flood situation this may not be possible, but a reasonable effort should be made to recover substances and materials to minimize human health and environmental impacts.
- **Collect representative sample(s) of the bypass/release.** WWTFs should have sampling kits available to perform sampling requirements.

Other potential considerations

Fuels in sewers – A number of mishaps can occur during floods that can lead to spills of fuel entering the WWTF collection system. Significant amounts of fuels can cause many problems for WWTFs whether they are pond or mechanical systems. If a fuel spill enters the collection system, call the Duty Officer immediately. Determine the origin of the spill and approximate volume. Fuels are lighter than water and will float, so it is sometimes possible to contain the spill in the wet well by adjusting float levels or running the pumps manually, so the water level does not pump all the way down. If the spill does reach the treatment system, the type of system and amount of fuel will determine how serious the problem becomes. Fuels can completely kill beneficial bacteria in a mechanical system and it may need to be “reseeded” after the fuel has passed. Pond systems can handle some fuel without major problems. The fuel should be contained in a single pond, where it may be recoverable with proper equipment.

Flooding around a pond system – During the 1997 flood, many pond systems in the Red River Valley had floodwaters rise to within a foot or two of the tops of the dikes. One of the problems this poses is that dikes become saturated from inside and out. This can weaken dikes and, as floodwaters recede, may lead to dike failure from the pressure of the water in the ponds pushing against saturated dikes. During the 1997 flood, pond operators were advised to open gates and valves and allow water in the ponds to go down with the receding floodwaters. This should only be done when absolutely necessary and after consultation with MPCA staff.

Plan ahead

Finally, if you believe you may have to face flooding problems, contact MPCA staff to discuss. Make sure you have emergency numbers you may need readily available and make sure that other staff who may assist you are aware of these numbers and of the need to contact the Minnesota State Duty Officer or others for assistance.

Assistance

Minnesota Pollution Control Agency

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| Toll free (all offices)..... | 1-800-657-3864 |
| Brainerd..... | 218-828-2492 |
| Detroit Lakes | 218-847-1519 |
| Duluth..... | 218-723-4660 |
| Mankato | 507-389-5977 |
| Marshall | 507-537-7146 |
| Rochester | 507-285-7343 |

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| St. Paul..... | 651-296-6300 |
| Willmar | 320-214-3786 |
| Website..... | http://www.pca.state.mn.us/ |

Minnesota Duty Officer

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| Toll free | 1-800-422-0798 |
| Metro | 651-649-5451 |

Minnesota Water/Wastewater Agency Response

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| Network (MnWARN)..... | 1-800-367-6792 |
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