In recent years, flooding has been a constant issue in many areas of the U.S. There are several communities impacted with flooding directly by the Red River and the mighty Mississippi. Even those living nearby to those communities most affected get a firsthand view of the devastation it can cause to the daily life of the city including extensive property damage.

Some of the biggest impacts are not necessarily visible to the naked eye. Not only damage to personal property and streets but also there are major effects flooding can have on a community wastewater system. While it can affect communities in many different ways including streets and underpasses, many if not most people do not notice the stabilization lagoons or ponds outside of town or the
wastewater treatment plant tucked in the corner of town. Some do not know what the lift stations or manholes in the streets are and what their purpose is let alone the issues flooding can cause to these vital pieces of the infrastructure puzzle. Some of these wastewater facilities and equipment can be in low-lying areas or near rivers, streams and in some cases, even lakes. These facilities are often located in places that, by design, are out of sight from the general public and can be vulnerable to flooding during heavy rain events.

It is especially important to prepare yourself and your utility to deal with the issues flooding may cause. It has been well documented; history has shown that flash flooding can occur quickly. Most of the time a wastewater operator and community officials will have some warning before waters get to a high level but this is not always the case, especially when dealing with a river that has a dam system somewhere upstream. Many larger cities are installing flood protection and implementing strategies to avoid many of the issues flooding can present. These actions, however, can make it difficult and change the dynamics for many smaller utilities downstream. This can present problems that may have not been considered before and therefore the needed planning has not been done to combat many of the issues caused by rising waters.

This makes it especially important to these small systems to be prepared and arm themselves with whatever knowledge they can for fighting flooding and rising waters. Being vigilant and keeping an eye on any indicator such as the local forecast, local rainfall, rainfall upstream, and other historical information is helpful. Other things to think about are how your system has handled rainfall or flooding in the past which can help you prepare to make key decisions that are usually needed to be made sooner rather than later. If signs are pointing toward potentially damaging conditions, having an operational procedure plan or similar document to follow could prove beneficial and in some cases, lifesaving.
An operational procedure plan is one name for this important document that should consist of many different things, but safety should always be the number one priority. You will need to know your system and plan accordingly whether that is to pull submersible lift station pumps or motors out, install plugs, shut down power, reroute traffic, or find and install backup pumps and equipment. Electricity does not mix with water and all safety precautions should be taken when working on or near any electrical equipment.

A good plan should contain contacts for repairs, vendor information, mutual aid agreements, etc. or at least be a part of a larger more encompassing emergency response plan which goes into detail regarding other natural and man-made disasters. It should also include an inventory list of staff, equipment, vehicles and other assets the utility has at its disposal. Keeping up current records and adding updates is important when dealing with the management of assets.

This plan can also include preplanned scenarios much like an emergency response plan. You also need to be prepared for the possibility of high flow in the wastewater collection system mainlines and manholes. Many times, most preparations are geared towards the wastewater plants’ capacity and rightfully so. If the plant cannot treat the incoming water then a bypass must occur and this is a big issue; guidance on how to handle this should be in the plan. However, another item to consider is the capacity of the collection system. Submerged streets, houses and basements filling up with water, and other circumstances will lead to flood water and wastewater finding its way into the residences connected to the system. By knowing what needs to be done and following an existing plan, you could save equipment from being damaged or find a way to continue operations with as little property damage as possible, both to the customers’ property as well as the property of the city or utility. This is a scenario that is likely going to happen in flood prone areas and should be one that is laid out and planned for in the planning document.

Your plan should also include steps for communication and documentation before, during and after the event. While you are preparing for and putting the appropriate measures in place for possible flooding, communicating with other officials, and doing other tasks, don’t forget to document what you have done and to take pictures if necessary. Be aware if you need to report to your regulatory agency of any changes or issues you may experience and keep them informed until conditions return to normal. Each time you have an experience (good or bad) it is an opportunity to learn how to better your system, so documenting what you do could help prepare for a future event. After such an event, you should inspect anything that may have been damaged or destroyed to ensure everything is in good working order before returning to service. If needed bring in a professional to inspect things you are unsure about such as electrical boxes or controls that were under water. It might be a good idea to write up a report on the conditions and again, take pictures if needed, as this will help in the future and possibly for insurance purposes. This is all good documentation that may save time and money in the future as areas that are prone to flood waters are usually always going to be that way.

This is not meant to be an all-encompassing template for a plan but should at least give you some ideas and allow you to get a start in constructing a formal plan. Hopefully it may also provide some tips to add to for those that have an existing plan in place.

Lastly, the number one point is safety. People think of wastewater as “gross”, but floodwaters can be very dangerous in many ways. The combination of these two is even more dangerous and unpredictable. There is a possibility of coming into contact with diseases and chemicals as well as the dangers of fast-moving water, open manholes and also floating debris. Be prepared and learn from your experiences to ensure safety and sustainability into the future.