

# Brewers' Wastewater Bulletin



## THIS ISSUE

- Documenting Your Wastewater System
- Know Your Flow
- Emergencies
- Upgrades

## RELATED ISSUES

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- Septic & Sewer
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- Chemicals & Cleaning

## WASTEWATER MANAGEMENT & IMPROVEMENTS

At first glance the management of your wastewater may seem simple...connect the piping to your disposal system, septic or sanitary, turn on the water, pay the bill... You can approach your wastewater management that way but be prepared for lots of headaches and high costs.

Managing your wastewater from the time the fresh water enters the building to the point where it leaves the property is essential for operating efficiently with low overhead costs while remaining in compliance with environmental regulations. There are numerous tools and management methods in use today across all wastewater-generating industries and it is up to each business to select the tools and methods to be used to meet their compliance, efficiency, and overhead cost goals. In this Bulletin we will explore a few of these tools and methods already in use.

A great first step is to know your wastewater sources. Hopefully you already have building plans for existing buildings that show your piping systems, above ground and underground. If not, you will need to start tracking piping and creating your own map.

Creating your own map forces you to walk your system and note critical aspects for your operations. Pipe sizes, manholes, valves, pumping systems, flow meters and other process control equipment should be identified on your map. A very helpful tool is a wastewater source identification system. This might be as simple as placing a tag on a discharge point (floor drain, pump, discharge pipe) with a number which is associated with more information in a spreadsheet or binder.



Now that you have documented your wastewater equipment and located all of your discharge points, it is time to consider what is flowing in your system at various points of the wastewater collection & discharge system. This information will be useful during emergency or troubleshooting events and will be a useful tool when considering upgrades or expansion projects.

At a minimum a facility owner or operator should have objective evidence regarding the characteristics and management of their wastewater discharge. This evidence illustrates the owner/operator's knowledge and control of their wastewater management system, especially useful when working with regulators.

Examples of objective evidence are:

- Laboratory Records
- Production Control Procedures
- Process Control Data (i.e. Flow meters, pH meter readings, etc.)

How you collect your wastewater characteristic data is dependent on your business needs. For accurate data you will need to send samples out to a lab for analysis, preferably a lab certified in the State in which you are located for the methods you are analyzing for. Work with your laboratory on a sampling plan which will include the sample volume, bottle type, preservative, hold time, etc. In some cases you may be subject to a discharge permit which will specify how frequently you must sample and what you must test for. Lab testing is an expense but will give you the most accurate information.

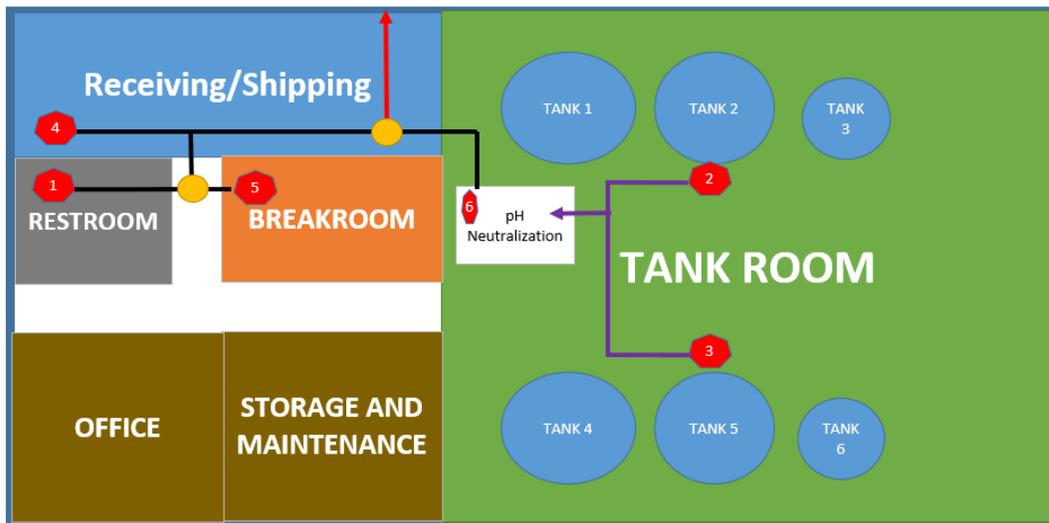
Using production process and operational knowledge is another useful way to characterize your discharges. You know how frequently you dump your production tanks, perform cleaning operations, etc.

Documenting this information in your wastewater management system will further exemplify your commitment to successfully managing your wastewater discharge. Here are some examples of process information to document, including some non-process related information that should be included in your wastewater management system:

- Normal operating hours
- Number of employees per shift
- Production sequence
- Production ingredients
- Cleaning procedures
- Cleaning chemicals, including dilution rates and application methods
- Preventative maintenance schedule
- Location of equipment manuals, calibration procedures, historical data logs
- Emergency action procedures
- Emergency contacts

WW Source #	Location	Discharge Point	Flow Type	Flow Rate (GPD)	Contaminates 1	Contaminates 2	Contaminates 3	Notes
1	Restroom	Sanitary	Gravity	100	Domestic Sewage			
2	Tank Room	pH Neutralization	Pump Station	700	BOD 600mg/L	TSS > 100mg/L	pH <5	
3	Tank Room	pH Neutralization	Pump Station	700	BOD 900mg/L	TSS > 100mg/L	pH <5	
4	Receiving/Shipping	Sanitary	Pump	50	TSS <50mg/L			For pressure washing activities
5	Breakroom	Sanitary	Gravity	20	Sewage	Food debris, dishes		
6	pH Neutralization	Sanitary	Pump	1400	BOD <100mg/L	TSS <30mg/L	pH 6.0-9.0	

\* Last Sampling Event: 1/5/2019



- = Manhole
- = 6" PVC sched.40 Pipe
- = 10" PVC sched. 80 Pipe
- = 2" PVC sched.80 Pipe, overhead.

To this point you can tell that good documentation is a key to success for proper wastewater management. But why? Well, for 99% of the employees and customers who walk through your facility, wastewater management is out of sight and mind. But when problems come up or in the event of an emergency, wastewater can become main stream. Proper documentation of your system can greatly aid you in these situations. But where do you keep it? Some businesses may store it electronically, some may keep binders and file folders in desk drawers. However you plan to store this information be sure to properly communicate its location to employees who may need access to it. If you are subject to regulatory audits it might be best to keep all of your information in a single binder. During an audit or emergency you can simply pick up the binder and have all of your information, records and procedures in one place. This is especially useful in emergency situations when employees responsible for systems may not be readily available or during off shifts.



Speaking of wastewater emergencies...are you prepared for wastewater collection or treatment system failures and emergencies? Have employees been trained on how to react to emergencies? Do you have a communication plan for these emergencies? Do employees know how to stop water from flowing into the facility, tank or system? Bad things happen and seem to happen at bad times. Pipe bursts on Superbowl Sunday, tank overflows 10 minutes after everyone leaves the facility for the day, gravity drains backup on Friday afternoon. These things happen. Having procedures in place to address these issues will improve response times and minimize your risk. Here are a few simple things you can do at your facility to prepare for wastewater emergencies:

- Identify facility main water shutoff valve(s) and label accordingly
- Train three employees on each shift on your emergency wastewater response plan
- Create a call tree posted at each phone
- Use redundant high level alarms for holding tanks on separate circuits
- Shutoff the main water valve during extended holiday weekends or long production stoppages
- Install alarm strobes/beacons in multiple areas of the facility. If a tank is overflowing in an unoccupied area of the facility, will someone be able to hear the alarm?
- Create a check list and final walk-through procedure to be completed at the end of the production day or week to ensure proper shutdown of operations
- Create agreements or contracts with local environmental response contractors to support emergency situations and post incident clean up
- Exercise main water valves every 6 months if they are not used often
- Include testing of high level alarms in your Preventative Maintenance system, every 6 months minimum
- Have pumps and hoses easily accessible and ready for use at all times

We have covered quite a bit so far...knowing your flow, documenting your system and emergency situations. Let's say all is going well with production and the facility, the future looks bright and you are considering increasing production, investing money into your existing operation to increase efficiency, or you need to invest in your wastewater system to eliminate a problem or reduce operating costs. These situations will all affect your wastewater discharge and you should look carefully at your options before making a final decision on your path forward. Many in the wastewater industry view wastewater as a primary indicator of inefficiencies in the operation. The same can be said for your solid waste disposal and scrap metal recycling. Have you ever taken a piece of waste and tracked it's use from the point of disposal back to the point of use or farther upstream? Using that method for your various waste streams will give you great insight into your inefficiencies and opportunities for improvement. The same approach is useful when dealing with problems in your wastewater system. You start at your problem point and work your way towards the root cause of the problem. Let's say you are having a problem with solids in your wastewater discharge and piping system. Your gravity drain pipes in some areas are half full of settled solids and your wastewater samples are coming back with high levels of total suspended solids (TSS). This is costing you money in repairs and maintenance and your local city wastewater treatment plant is having concerns with your discharge. Time to put all that documentation discussed above to good use. Using the map on page 2, start at the sampling point on your piping map and work your way back. Look at each discharge point; is there anything in your documentation that would cause you concerns for high solids levels? How long have you been having this problem? Maybe you find in your lab data that the elevated settleable solids are only found in colder months and your maintenance documentation concurs showing that your gravity drain has been clogged four times in the past year, twice in February and once in March and April. Now you have a good starting point...it probably isn't production related so you need to start at discharge points that aren't directly connected to production processes. Based on the lab data, repair information, and the note in the documentation for WW Source #4, you should head straight for the Receiving/Shipping dock and specifically the pressure washing activities. This is an example of how proper documentation and oversight of your wastewater management system can get you started in the troubleshooting process. The results of your troubleshooting should end in a change to your production process, facility equipment, or employee work habits to ensure the problem doesn't arise again.

You may be faced with a situation which requires a major overhaul to your wastewater treatment system to alleviate problems or to support production changes. When approaching your overhaul or upgrade you need to think about a few things before moving forward:

- Have you maximized your control of flow and contaminants in your wastewater system?
- Will your proposed changes put you at risk of meeting your discharge limits?
- Do you foresee your discharge limits changing in the near future?

Major upgrades and overhauls are expensive. In general, the higher your flow rates and contamination concentrations the higher the cost is to treat. Minimize your flow rates and contaminants to the furthest extent before investing in system upgrades. Using a well-documented wastewater management system to support your efforts will save you time and money in the long run. Use all the resources you have available to help achieve your goal, including wastewater professional associations, such as MeWEA, consultants, other breweries, equipment suppliers, your local wastewater treatment plant and State/Federal resources.

# USEFUL INFORMATION

## Maine Water Environment Association (MeWEA)

[www.mewea.org](http://www.mewea.org)

The mission of the Maine Water Environment Association is to support and enhance Maine's water environment community.

To achieve this we will:

- Promote training opportunities for the water environment community;
- Support balanced environmental policy and practice;
- Promote education and collaboration with the public to protect and enhance Maine's water resources;
- Foster a strong and resilient water environment community

## MeWEA Pretreatment Committee – Brewery Resources

<https://www.mewea.org/pretreatment-committee/>

## Brewers Association Wastewater Management Guidance Manual

<https://www.brewersassociation.org/educational-publications/wastewater-management-guidance-manual/>

## Maine Department of Environmental Protection – Stormwater Management Best Practices For Breweries

<https://www.maine.gov/dep/water/wd/multisector/breweryBMP2017.pdf>

## MeWEA Committees

[Awards Committee](#)

[Collection Systems](#)

[Communications](#)

[Conventions](#)

[Government Affairs](#)

[Laboratory](#)

[New Media](#)

[Treatment Plant Operators](#)

[Personnel Advancement](#)

[Pretreatment](#)

[Public Relations](#)

[Safety](#)

[Stormwater](#)

[Young Professionals](#)

Committee information can be found on the MeWEA website, [www.mewea.org](http://www.mewea.org), or by clicking on the Committee name above

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PROTECTING MAINE'S WATER  
RESOURCES