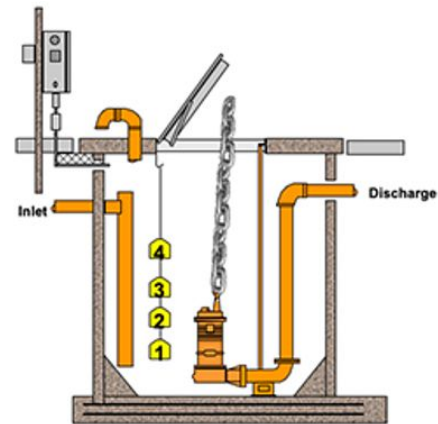


Monday, April 13th, 2020

# Submersible Pump Application Guide: Sump, Effluent, or Sewage Pump?

Monday Morning Minutes | by Norm Hall, April 13th, 2020

Plumbing engineers understand the differences in drainage piping systems depending on the source of the fluid. When selecting the submersible pump for the building trades application, we often find confusion. Sump pumps may seem too small for an application, a sewage pump may look too large and what is an effluent pump?



## It's All About the Water Source

We know there are many types of water in commercial and institutional buildings.

**Blackwater** is wastewater that contains fecal matter and bacteria which are harmful. Typically, this water is flushed from toilets. It may contain solids.

**Graywater** in buildings is generally wastewater that does not contain fecal matter. It would be the water coming from sinks and showers. It contains much smaller solids if any at all. Graywater would be easier to treat if recycling for watering lawns. Sometimes it is spelled greywater. The only difference in the terms, that I can see, is whether you are from England or the US.

**Stormwater or Rainwater runoff** is very familiar to many homeowners. This is the water that is not absorbed into the soil. This is the small but critical pump in many basements. This water is relatively clear with very small solids if any.

## Submersible Sewage Pump Applications

Sewage pumps are designed for the worst duty of the three styles mentioned in this article. They are used for blackwater applications. They typically have semi-open non-clog or

vortex impellers. These workhorse pumps will handle 1-1/2" solids in residential and smaller commercial systems. They handle 2" solids or greater in larger applications we typically see in plans and specifications.

I am often asked where to use a sewage pump designed to handle 3" and 4" solids vs. one for 2" solids. I was puzzled also. How could 4" solids get down the pipe from a toilet? I have the experience of my children and now my grandchildren trying to stuff a 4" solid down the toilet. It does not work!

I contacted the product line manager at Bell & Gossett for their expertise. Although there may be some coagulation in larger systems, that is not the answer. The pump is not engineered to handle 4" solids. It is engineered to provide a large flow rate with a non-clog impeller. Then it is tested to see what size solid sphere it can pass. In designing plumbing systems in buildings, don't worry about any size larger than 2".

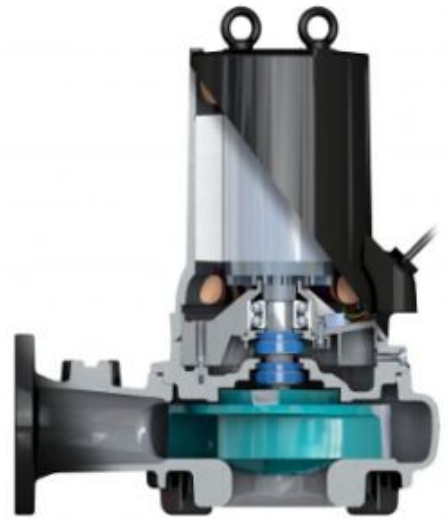
A submersible sewage pump may be used in all the applications: blackwater, graywater, and rainwater. When lighter duty applications require a larger pump, this may be your only option.

These pumps have multiple seal and impeller choices. [Visit the R. L. Deppmann sump and sewage product webpages](#) to see the good, better, and best pump differences.

## Effluent Pump Applications

Remember, this article is about drainage in buildings. In a waste treatment plant, the term effluent has a specific application. In buildings, it is a lighter duty wastewater pump. The effluent pump may or may not have a non-clog impeller. It can handle smaller solids in the 1/2" or 3/4" size. It would be the choice in smaller graywater applications if the drainage water separated.

In our world, I think of an effluent pump as a larger sump pump. These pumps normally have better seals and impellers than the



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small residential sump pumps. They can be used in graywater and sump pump applications. **Do not use effluent pumps in toilet blackwater applications.**

## Sump Pump Applications

Sump pumps are used for the clearer drain tile and rainwater runoff applications. They are normally very small pumps. Price seems to dictate this market. If a better pump construction is desired, move to the effluent style pump.

Sump pumps typically handle little or no solids. They are limited to 3/8" to 1/2" solids. These pumps cannot be used for the wastewater applications mentioned above.

## Grinder Pumps

I have purposely avoided mentioning grinder pumps. These pumps are designed and intended for use in wastewater applications with a municipal forced main. This is a specific purpose pump and should not be used in traditional drainage systems.

These pumps have much higher heads which, when misapplied, will result in curve runout and over-pumping with short cycles. These pumps also have cutting teeth which will result in more maintenance costs for your client.

Next week, the [R. L. Deppmann Monday Morning Minutes](#) will look at vortex vs. non-clog impellers.