Ripple Effect #19

From the Source to Your Glass

Water is collected from lakes, ponds, rivers or wells. In order for this water to be drinkable, it is treated to be safe and economically suited for its intended uses. The water treatment process information listed below was compiled by the River Keepers (www.riverkeepers.org).

Long-period storage is when water is held longer than one month in reservoirs or settling basins. This is where the water flows before it is treated and when suspended bacteria and sediment are reduced.

Aeration is the mixing of air and water. It is done to reduce tastes and odors, and corrosiveness by eliminating carbon dioxide, and to eliminate iron and manganese. Aerators can be contact bed, spray cascade, multiple-tray or air-injection.

Coagulation is the process where compounds are added such as alum, sodium aluminate, ferrous sulfate with lime, chlorinated copperas, ferric chloride and ferric sulfate. It causes the colloidal, color and mineral particles to gather into a floc, which is then able to settle. There are two stages to this process. The *first* is rapid mixing of coagulant with water and the *second* is a slow mixing to form floc.

Softening removes calcium and magnesium by using chemical precipitation or ion exchange. In the most commonly used method, lime and soda ash are added to cause calcium carbonate and magnesium hydroxide precipitation, sedimentation and stabilization by recarbonation. It also reduces bacteria, turbidity, tastes and odors, iron and manganese.

Filtration can occur through *slow sand* filtration, where water with low turbidity passes over beds of fine sand on top of gravel and a drainage system. This removes the suspended matter. The more common method, however, is *rapid sand* filtration in which the water flows through sand of a larger grain at a faster rate.

Microstaining removes algae and other microparticles before rapid sand filtration. This process uses a rotating filter drum covered in stainless steel mesh with micron sized holes.

Disinfection can include chlorine, UV radiation or ozone. It is done before filtration and just before distribution. Chlorine is often used to destroy bacteria, inactivate viruses and reduce tastes and odors.

Many water treatment plants offer tours of their facilities. If you are interested in learning more about how your city treats its water, contact your local water treatment plant and take the opportunity to see the interesting water treatment process in action!

Until the next Ripple Effect,

The Red River Basin Commission (RRBC)

The RRBC is a grassroots organization that is a chartered not-for-profit corporation under the provisions of Manitoba, North Dakota, Minnesota, and South Dakota law. Our offices in Moorhead, MN and Winnipeg, MB can be reached at 218-291-0422 and 204-982-7254, or you can check out our website at www.redriverbasincommission.org.