GLADEVILLE UTILITY DISTRICT

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CROSS CONNECTION PROGRAM

With help from you our customers and your involvement with the Gladeville Utility District's Cross Connection Program we are working to keep your drinking water safe. Remember - water can run in either direction in a water pipe!

WHAT IS A CROSS CONNECTION?
A cross connection is a temporary or permanent connection between a potable (drinking) water supply and non-potable source. An example would be the pipes connecting the public water system to an irrigation system.

WHAT IS BACKFLOW?
Backflow is the undesirable flow of non-potable water or other substance through a cross connection back into the consumer's plumbing system or public water system. There are two types of backflow: backsiphonage and backpressure.

WHAT IS BACKSIPHONAGE?
Backsiphonage is backflow caused by negative pressure in the public water system or the consumer's potable water system. Backsiphonage can occur during a water main break, when repairs are being made to a water main, when there is a stoppage in the water supply, etc.

WHAT IS BACKPRESSURE?
Backpressure is caused by a downstream pressure that is greater than the supply pressure of the public water system or the consumer's potable water system. This may be caused by elevated plumbing, booster pumps, pressure vessels, etc. Reductions in potable water supply pressure occur whenever the amount of water being used exceeds the amount of water being supplied, such as during water line flushing, fire fighting, breaks in water mains, etc.

WHY PROTECT AGAINST BACKFLOW?
Backflow into the public water system can pollute or contaminate the water. This means that water in the system would be unusable or unsafe to drink. It is important for everyone to make sure their cross connections are controlled. Identifying potential hazards associated with cross connections and eliminating or protecting against them is a serious concern for the Gladeville Utility District and the local health agencies. Since almost all water systems have cross connections, the water District's personnel must constantly be on the lookout for their detection and implement appropriate elimination methods.

HOW CAN BACKFLOW BE PREVENTED?
Backflow can be prevented by installing a State-approved / Gladeville Utility District-approved backflow prevention device. The most basic means of preventing backflow is an air gap, which either eliminates a cross connection or provides a barrier to backflow. The basic mechanism for preventing backflow is a mechanical backflow prevention device, which provides a physical barrier to backflow. The principal types of mechanical backflow preventers are the reduced-pressure principle assembly (RPBP) and the double check assembly. Please contact the District's administrative office for assistance in determining the type of backflow prevention device that applicable to your specific installation.

WHERE ARE CROSS CONNECTIONS FOUND?
Cross connections may be found in most plumbing systems. It is important that each cross connection be identified and evaluated as to the type of backflow prevention required to protect the drinking water system. Some plumbing fixtures have built-in backflow protection in the form of a physical air gap. However, many cross connections will need to be controlled through the installation of an approved mechanical backflow prevention device or assembly. Some common cross connections include, but are not limited to, the following:

- Wash basins and service sinks
- Irrigation sprinklers systems
- Laboratory equipment
- Processing tanks
- Water recirculation systems
- Fire sprinkler systems
- Hose bibs
- Auxiliary water supplies
- Photo developing equipment
- Boilers
- Solar heat systems
- Swimming pools

WHY MUST BACKFLOW PREVENTERS BE TESTED AT LEAST ONCE ANNUALLY?
Mechanical backflow preventers have internal seals, springs and other moving parts that are subject to fouling, wear, or fatigue. Also, mechanical backflow preventers and air gaps can be bypassed. Therefore, all backflow preventers are tested periodically to ensure they are functioning properly, in compliance with State regulations. The customer is responsible for testing of backflow devices. The Gladeville Utility District will send a letter and list of device testers to customers when their devices are due for testing. The testers must be State certified and approved by the District's Cross Connection Coordinator or the tests will not be accepted.

WHAT IS THE MOST COMMON FORM OF CROSS CONNECTION?
Ironically, the ordinary garden hose is the most common offender, as it can be easily connected to the potable water supply and used for a variety of potentially dangerous applications.

WHAT IS POTENTIALLY DANGEROUS ABOUT AN UNPROTECTED SILL COCK?
A sill cock permits easy attachment of a hose for outside watering purposes. However, a garden hose can be extremely hazardous because they are often left submerged in swimming pools, hanging in elevated locations (above the sill cock), used with chemical sprayers being attached to hoses for weed-killing, etc.; and hoses are often left laying on the ground which may be contaminated with fertilizers, storm water runoff and garden chemicals.

WHAT PROTECTION IS REQUIRED FOR SILL COCKS?
A hose bib vacuum breaker should be installed on every sill cock to isolate garden hose applications, thereby protecting the potable water supply from possible contamination.

SHOULD A HOSE BIB VACUUM BREAKER BE USED ON FROST-FREE HYDRANTS?
Definitely, provided that the device is equipped with means to permit the line to drain after the hydrant is shut-off. A "removable" type hose bib vacuum breaker could allow the hydrant to be drained, but the possibility exists that users might fail to remove it for draining purposes, thus defeating the benefit of the frost-proof hydrant feature. If the device is of the "non-removable" type, be sure it is equipped with means to drain the line to prevent winter freezing.

WHAT IS THE DIFFERENCE BETWEEN POLLUTION AND CONTAMINATION?
Pollution of the water supply does not constitute an actual health hazard, although the quality of the water may be impaired with respect to taste, odor or utility. Contamination of the water supply, however, does constitute an actual health hazard; the consumer being subjected to potentially lethal water-borne disease or illness.

WHERE SHOULD A DOUBLE CHECK VALVE ASSEMBLY BE USED?
The only place the Gladeville Utility District allows double checks to be installed is on metered fire lines that are classified as low-hazard level.

WHAT ARE TYPICAL APPLICATIONS FOR DOUBLE CHECK VALVE ASSEMBLIES?
Double Check Valve Assemblies (DCVA) may be used where the degree of hazard is low, meaning that the non-potable source is polluted rather than contaminated. Local inspection departments oftentimes determine the degree of hazard, but such departments should work closely with the District before assigning degrees of hazard for any particular location.

WHERE SHOULD A REDUCED PRESSURE BACKFLOW PREVENTER (RPBP) BE USED?
Reduced Pressure Backflow Assemblies may be used on all direct connections which may be subject to back pressure or backsiphonage, and where there is the possibility of contamination by any material that may constitute a potential health hazard.

WHAT ARE TYPICAL APPLICATIONS FOR RPBP DEVICES?
This type of device should be used whenever the non-potable source is more of a contaminant than a pollutant. Basically, they are applied as main line protection to protect the municipal water supply, but should also be used on branch line applications where non-potable fluid would constitute a health hazard, such as boiler feed lines, commercial garbage disposal systems, industrial boilers, etc.

WHAT IS THE BENEFIT OF A STRAINER PRECEDING A BACKFLOW PREVENTER?
A strainer will protect the check valves of a backflow preventer from fouling due to foreign matter and debris which may be flowing through the line. This not only protects the valve but eliminates nuisance fouling and subsequent maintenance and shutdown. The use of a strainer with a water pressure reducing valve has been an accepted practice for years. The amount of pressure drop attributed to the strainer is negligible and is far outweighed by the advantages provided by the strainer.

HOW CAN YOU AS A CUSTOMER HELP PREVENT BACKFLOW?
Do not submerge a hose in buckets, pools, spas, tubs or sinks, since they may contain dangerous bacteria or harmful cleaners. Always keep the end of the hose away from possible contaminants. When not using the hose, make sure the water is turned off. Do not put a spray or cleaning attachment on your hose without a backflow prevention device on the hose.

THE FOLLOWING SCENARIO ILLUSTRATES HOW BACKSIPHONAGE OR BACKFLOW CONDITIONS COULD OCCUR IN A PUBLIC WATER SYSTEM:
When a break occurs in a main water line, water rushes toward this point of the system. This may cause water line pressures to drop, and sometimes changes the direction of flow of the water in the main line itself. The backsiphonage condition could then begin to pull water from irrigation systems, swimming pools, watering troughs, hose pipes and many other undesirable places, if the customer happened to be using water at the same time as the line break. The undesirable water could then be pulled back into the main line. When water service is restored, the contaminated water could then be used either by you or carried on down the main line and possibly used by other customers. This is just one of the potentially hazardous situations that we are trying to eliminate.

OTHER INFORMATION
This information is being provided to help inform our customers about the need for a good cross connection program. The Gladeville Utility District strives to maintain a high quality of water to each and every customer in our service area. If you have a question about our Cross Connection Program, please feel free to call Danny Lassiter, Assistant Manager and Backflow Coordinator, at 615-449-0301. Similarly, if you have any questions or concerns about the quality

of our potable water, please feel free to call James Hutchison, Chief Water Plant Operator, at 615-444-2869.

We also encourage our customers to check for leaks periodically by observing their water meter, which is typically located near the road at the front of their property. If there is no water being used in the house the dial on the water meter should not be turning. If the red triangle or the indicator is moving this means there is a leak somewhere in the customer's plumbing or service system between the water meter and some point in the house. It is a good idea to periodically get a reading off the meter and compare the usage with that shown on the water bill.

DID YOU KNOW THAT EVEN LEAKS THAT MAY SEEM VERY SMALL CAN ADD UP OVER A PERIOD OF TIME? FOR EXAMPLE, CONSIDER THE FOLLOWING:

- A 1/4" leak can result in the loss of 393,632 gallons of water in 30 days in a water system operating at a pressure of 60 PSI.
- A 1/8" leak can result in the loss of 98,667 gallons of water in 30 days in a water system operating at a pressure of 60 PSI.
- A 1/16" leak can result in the loss of 24,665 gallons of water in 30 days in a water system operating at a pressure of 60 PSI.
- A 1/32" leak can result in the loss of 5,165 gallons of water in 30 days in a water system operating at a pressure of 60 PSI.

HAVE YOU EVER CONSIDERED HOW MUCH WATER IS USED FOR DIFFERENT ACTIVITIES IN YOUR HOME? FOLLOWING ARE A FEW TYPICAL EXAMPLES OF HOW WE USE WATER IN OUR HOMES:

ACTIVITY	DESCRIPTION	WATER USE
Shower	Regular Shower Head	30 Gallons (5 Minutes)
Toilet Flushing	Conventional Toilet	5 – 7 Gallons Per Flush
Brushing Teeth	With Tap Running	10 Gallons
Tub Bath	Full Tub	20 Gallons
Shaving	With Tap Running	20 Gallons
Washing Hands	With Tap Running	2 Gallons Or More
Dish Washing	With Tap Running	30 Gallons
Dishwasher	Full Cycle	15 Gallons
Washing Machine	Full Cycle Top Water Level	40 Gallons

Remember – these are only averages that are being presented to demonstrate how everyday usage accumulates over a 30-day period. Each family's usage will be different, depending on water use habits and the number of people in the family.