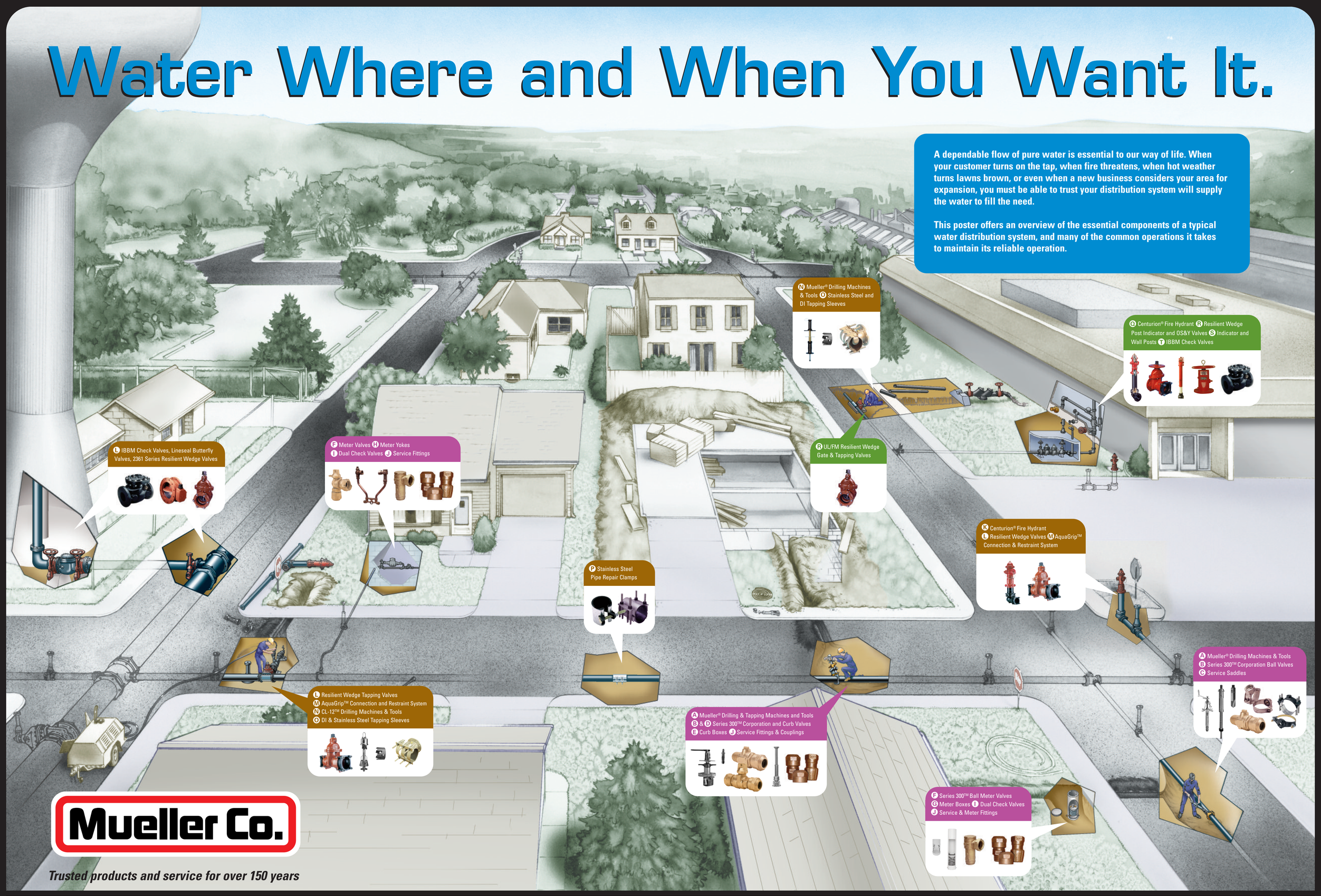
Water Where and When You Want It.

A dependable flow of pure water is essential to our way of life. When your customer turns on the tap, when fire threatens, when hot weather turns lawns brown, or even when a new business considers your area for expansion, you must be able to trust your distribution system will supply the water to fill the need.

This poster offers an overview of the essential components of a typical water distribution system, and many of the common operations it takes to maintain its reliable operation.



Mueller Co.

Trusted products and service for over 150 years

MUELLER® WATER SYSTEM

SERVICE LINES
The users' connections are made in hundreds of ways

While the method used to connect the user to the water main is almost too varied to describe, the most common methods are shown here. "Direct insertion" is used to thread a corporation valve directly into the main. Another method is to install the valve on the main using a saddle. From there, a service line of copper or plastic material can go first to a meter box, typically located near the street, or to a curb valve located in an accessible area outside the home or building, then inside where it's connected to the user's plumbing.

There are hundreds of Mueller® brand products to fit virtually any service line requirement. Mueller's long-used motto – everything from main to meter – represents the advantage of having everything needed from one premium quality source to install water distribution systems all the way to the meter – and even Mueller's Hersey® Meters subsidiary makes most types of residential and commercial water meters.

A Drilling and Tapping Machines
Service connections can be made to mains under pressure, without loss of water or interruption of service. A drilling and tapping machine first drills a hole, then taps threads into the wall of the main, and finally threads in the corporation valve. Mueller patented the concept in 1872. An alternative is to install the valve on a saddle clamped around the main, then drill the hole using a Mueller® Drilling Machine. Mueller makes several models of both types of machine to suit the needs of the water purveyor.

B Corporation Valves
This one-time-use valve connects the service line to the main.

C Service Saddles
Service saddles provide added support for the corporation valve on plastic mains or when the main wall thickness or material will not allow the required valve inlet thread engagement. Saddle features are matched to the pipe material, diameter, service size and soil conditions.

D Curb Valves
Sometimes used to provide the primary service shut-off point for the water purveyor, these valves are installed between the corporation valve and the customer's water meter.

E Curb Boxes
When a curb valve is used, access is provided through a curb box installed on top of the valve with a lid at the surface. Boxes may be set over the valve or be threaded to it, and normally are adjustable in length to accommodate various grades.

F Meter Valves
These specialized valves connect directly to the water meter inlet, and if the meter is installed outside the customer's home or business, also serve as the purveyor's primary shut-off point.

G Meter Boxes
Today, water meters are more commonly installed outside the home or business where they remain accessible to the water purveyor 24/7. The Mueller® proprietary Thermal-Coil® Box locates the meter below the frost line to prevent freezing, or allows it to be brought to the surface for easy access. Boxes and vaults are made in many sizes and styles to accommodate many sizes of meters and specialized valving.

H Meter Yokes
A meter yoke holds precise spacing in the service line for a meter to be installed, and provides solid support for the meter protecting the service connections from plumbing stresses that could cause leakage. Mueller makes yokes for installation in meter boxes, vaults or inside the customer's building.

I Dual Check Valves
Dual check valves installed in the service line prevent the possibility for contaminated water to flow back into the public water supply. "Dual" refers to two checks in such valves to provide redundant protection against backflow. Mueller offers many choices of styles.

J Service Fittings and Couplings
A vast assortment of fittings and couplings allow virtually any service tubing or pipe to be connected in any manner. Most common are compression and stab-in types. The Mueller 110® Compression Connection provides superior resistance to pipe pull-out, yet installs easily.

DISTRIBUTION MAIN SYSTEM
Making a ready supply of pure water available to the user

From the pump house, water is guided through transmission lines into storage or directly into the grid-like network of water mains that lie beneath the service area. These lines are buried where their inaccessibility makes it essential that products used on them will last for decades with little or no attention.

Large mains first carry the flow, feeding water to smaller mains that typically serve block-long areas within our cities and towns. Gate valves are located at most grid junctions to allow for repairs or maintenance of sections of the grid.

This system of mains also provides a ready source of high volumes of water to fire hydrants located throughout the system. Booster pumps, reservoirs and elevated storage tanks are often used to maintain a constant pressure within the mains, even during fire emergencies, or at the farthest reaches of the service area.

K Fire Hydrants
These must be dependable and instantly available in all weather conditions, even below-zero weather. The Mueller® Centurion® brand is the most widely installed dry-barrel fire hydrant in North America. Mueller also makes wet-barrel fire hydrants for areas where freezing weather does not occur.

L Main Valves
Wherever in the system the flow of water may need to be controlled, there's a Mueller® Resilient Wedge valve, Butterfly or Check Valve made in a style or size for the job. Especially when a leak develops in a main, the control valves must be trusted to stop the flow and help localize the effect upon the system.

M Pipe Restraint
Skip lug-type restraints, blocking or changing out gaskets by using Mueller® Hydrants and Valves delivered with integral Aqua-Grip™ Connections – tighten the connection and the pipe is also restrained against blow-outs or leaky joints. Several styles of restraining gaskets for standard connections are also available.

N Drilling Machines
Mueller® Drilling Machines, Tapping Sleeves and Resilient Wedge Tapping Valves extend mains to a single large water user, or to a new housing development. The entire operation is made using Mueller® Methods without water loss or interruption of service.

ORIGINATION
Turning a Resource into a "Product"

Water isn't manufactured, yet from the moment raw water at its source enters the treatment process until it's later consumed, the water purveyor has the same operating cost, quality, reliability, sourcing and delivery issues to consider as does any manufacturing operation.

Installing Mueller® brand products provides the advantage of proven designs and superior performance and reliability. Mueller Co. and its Henry Pratt subsidiary make the various valves and controls necessary for the reliable control of water as it passes through the treatment plant and into the water mains. With more than 150 years of waterworks experience behind them, flow control products bearing the Mueller® brand name assure many decades of dependable service. Once gathered from a lake, river, reservoir or deep well, the waterworks treats the raw water to improve its quality. This filtering and purifying is done using several possible procedures:

- **Mixing**
Chlorine and other purifying chemicals are added to the raw water by automated equipment.

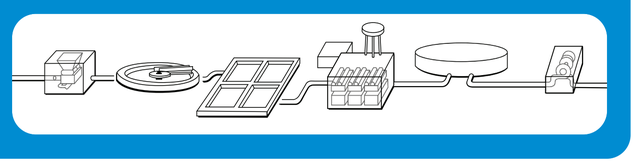
- **Flocculation**
Fine particles of foreign matter are removed in a flocculator through the formation of gelatinous masses.

- **Sedimentation**
In sedimentation tanks, water is held while the masses of fine particle or "floc" settle to the bottom. Clear water is drawn off the top of the tank.

- **Filtration**
The water is passed slowly through a porous sand filter or membrane that removes minute particles and improves taste, color and purity.

- **Clear-well Storage**
Large reservoirs and storage tanks provide reserves of water and help maintain pressure throughout the distribution system.

- **High-lift Pumping**
Powerful pumps constantly maintain pressure and flow of finished water to all parts of the water system. In the pump house, resilient-seated gate valves and butterfly valves control water flow. Check valves automatically assure flow in one direction.



O Tapping Sleeves
Tapping sleeves are used to connect a new main to the side of an existing one for system expansion, or to connect fire hydrants or a large customer service. Style and material of construction are selected depending upon pipe size, material and soil conditions.

P Pipe Repair Products
Whenever a main breaks or a leak develops, a stainless steel pipe repair clamp wrapped around the problem area can effect a repair. Mueller makes many styles to fit the situation and soil conditions, in virtually any size needed.

UL/FM FIRE PROTECTION
Products for commercial and institutional fire protection systems

Private industry and institutions rely upon special fire protection systems as required by their insurance underwriters. Their components are often referred to as UL/FM products, meaning they have been listed by Underwriters Laboratories, Inc. and/or approved by Factory Mutual Systems for use in such systems.

Mueller makes several products that are suitable for fire protections systems, and all bear the appropriate FM and/or UL casting marks as assurance they meet industry requirements.

Q Fire Hydrants
These are similar to those found on the street corners of every city, except that they must be UL listed and FM approved. Mueller offers 'triple-listed' Centurion® hydrants that meet UL/FM requirements as well as AWWA Standards.

R Resilient Wedge Valves
Valves used in private fire protection systems must also bear the UL and FM markings. They may be installed underground or with a handwheel for use inside a building in the fire sprinkler system. Mueller makes 'triple-listed' valves in NRS, PIV and OS&Y styles, and tapping valves all meeting UL/FM requirements as well as AWWA Standards.

S Indicator Posts
These are used in fire sprinkler systems to show clearly when a valve is opened or shut. Mueller makes posts for valves that are buried underground, installed in underground vaults or behind building walls.

T Check Valves
Swing check valves are used throughout a fire sprinkler system to control the direction of water flow. Mueller® iron-bodied bronze-mounted check valves provide dependable operation even after being idle for long periods of time. Wafer style valves are also available for simplified mounting between pipe flanges.

FIRE HYDRANT SECURITY
Helping prevent theft of service and vandalism

Fire hydrants are one of the most visible components in a water distribution system, and therefore one of the most vulnerable to vandalism and misuse. Also, their accessibility makes them a special concern when protecting the public water distribution system from purposeful and accidental contamination. Mueller makes both active and passive devices to provide a range of protection at various levels to help keep fire hydrants dependably on guard against fire emergencies.

In-line Check Valves
The Mueller® Centurion 250/HS™ Hydrant shoe incorporates a resilient check valve providing passive protection 24/7 against accidental and purposeful infiltration of the public water supply with potential contaminates, while leaving the normal operating or maintenance procedures of the hydrant unaffected.

Nozzle Check Valves
The unique Mueller® Nozzle Check Valve can be retrofit in the field to provide 24/7 protection against purposeful or accidental infiltration of potential contaminants, yet it does not affect the normal operation or maintenance of the hydrant.

Full Hydrant Locks
The Mueller® Hydrant Defender™ Security Device blocks unauthorized access to all nozzles and the operating nut. This active device is easy to install, and quick to remove in a fire emergency. Heavy stainless steel construction resists tampering and provides a ready signal if it should occur.

Operating Nut Protection
Mueller makes tamper-proof and tamper-resistant devices to thwart unauthorized operation, or removal or damage to the operating and hold down nuts of new and existing Mueller® hydrants.

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