

## Marsh-McBirney Multi-Mag Flowmeter of Choice at City of Everett, Washington



The City of Everett, Washington is the county seat to one of the fastest growing counties in the nation. In addition to the natural beauty that draws people to this bayside community, its 95,000 residents enjoy the prosperity reaped from the high tech industry base, world renowned manufacturing companies and retail businesses that had settled in the region. Everett's geographic location has enabled the city to become an important deep-water port to the Pacific Ocean as well as home to a state-of-the-art naval station. Everett's residents and businesses alike share a strong dedication to environmental protection and natural resource conservation that runs deep in this picturesque area of the country.

The City of Everett provides drinking water to over eighty percent of Snohomish County residents. The regions drinking water source is located in the Sultan Basin Watershed high in the Cascade Mountains. In the Sultan Basin watershed, rain and snowmelt flows down from the Cascade Mountains into creeks and streams which drain into the Spada Reservoir. The reservoir holds approximately 50 billion gallons of water. The water that exits the Spada Reservoir first flows through the Snohomish County Jackson Hydroelectric Plant to make electricity for the county. The water then flows back through a three-mile-long pipe to Chaplain Reservoir. When the water reaches Chaplain Reservoir part of the water is diverted and returned to the Sultan River to provide in-stream flow for fish.

Collected water from the Spada Reservoir is treated at the Everett Water Filtration Plant east of town. The primarily gravity fed system utilizes four-foot diameter transmission lines to carry the water from the filtration plant to Everett. While some water providers draw their water directly from the lines enroute, the remainder of the water is contained in storage reservoirs located around the city.



The Public Works Department for the City of Everett is responsible for the day-to-day operation of the Everett Water Filtration Plant which services over 500,000 connections. The plant uses advanced filtration processes for the removal of contaminants as well as the reduction of corrosives found in the area's naturally soft water. Additionally, chlorine and fluoride are added to the water during the filtration process.

The ability to accurately control the flow is essential for the precise calculation of chemical feeds into the water distribution system. Flowmeters are necessary to

accurately determine exacting flow rates. Jim McKee, title, for the Everett Filtration Plant, states, "In our application, flowmeters are used for flow control and chemical feed purposes." When previously installed Turbine (mechanical and electronic) propeller meters failed to operate in flooded vault locations throughout the plant, it was imperative that the meters be replaced. McKee adds, "Every time the vaults flooded it wiped the propeller meters out and that was not a good situation. We needed to find meters that would work during the flooding conditions." A search for replacement meters ensued and the Marsh-McBirney Multi-Mag Mag flowmeters were selected for the project.

The Multi-Mag Insertion Magmeter utilizes proven electromagnetic velocity measurement technology. The sensor (illustrated at right) has multiple electrodes that are precisely positioned according to pipe size. The electrodes constantly profile the flow to provide exceptionally high accuracy - even near bends and elbows, unlike Turbine propeller type meters that require a straight pipe run and are highly sensitive to flow swirls and flow profile effects. Independent laboratory test data from the National Institute of Standards and Technology (NIST) and the Water Research Center (WRC), as well as hundreds of installation worldwide, confirm the accuracy of the Multi-Mag. Accordingly the Multi-Mag has become one of the most popular and effective products ever produced by Marsh-McBirney. Its ability to accurately measure flow in "less than ideal" conditions has earned the Multi-Mag a great deal of respect in the water industry.



The sensor is easily installed or removed through a "hot tap" without the need to shut down the flow. McKee adds, "The fact that we can install and remove these meters without shutting the process down was the real "top ticket" for us in our selection. The other feature that we like is the ability to do on site calibrations with them. We also had some restrictive piping configurations that worked out well for the Multi-Mag installations." Whereas, the previously installed Turbine meters required a straight run of

pipe, the Multi-Mag meters can accurately monitor flow without the need for straight pipe runs and in fact were designed to operate under just such conditions. Additionally, the Multi-Mag meter is unaffected by flooding conditions making it an ideal meter selection for the site conditions present at the Everett plant.

To date, the City of Everett has purchased eleven Multi-Mag meters, with pipe sizes ranging from 24" to 84". McKee adds, "We really like the meters. They have worked out very well for us." The Multi-Mag meters have proven to be ideally suited for Everett's filtration plant applications when other flowmeters failed to operate. Accurate flow monitoring by the eleven Multi-Mag meters will aid in the efficient operation of day-to-day plant operations today and for many years to come.

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