

# Internal Monitoring Report

Policy #: O-2C Reliability

Date: November 22, 2011

I certify that the following information is true.

Signed , General Manager

## Policy Language:

The Water Utility General Manager shall not cause or allow conditions, procedures, or decisions that prevent the Madison Water Utility from meeting its obligation to provide current and future generations of customers within the City of Madison and its authorized service areas with reliable water service that is consistent in its availability and quality.

Accordingly, the General Manager shall not cause or allow conditions, procedures, or decisions that:

1. Assure that residents experience only minimal unplanned service interruptions.
2. Provide residents with adequate notice of planned service interruptions.
3. Provide residents with adequate notice in the case of planned maintenance work that would significantly reduce water flow or pressure, and/or cause water discoloration.

## General Manager's interpretation and its justification:

This Executive Limitations policy requires that the Utility budget for, fund, prioritize, plan for, and construct the necessary system improvements to replace and sustain the Utility infrastructure to provide the necessary redundancy and maintenance to ensure a reliable water supply system. The Utility shall administer and conduct long term facility and system comprehensive planning to identify system needs and funding priorities to minimize unplanned disruption of service. The Utility shall administer a maintenance program to maximize component reliability within the system. The Utility shall also establish work flow and protocol that will minimize the impact to consumers through service interruptions, reduced water flow or pressure, and water discoloration. The Utility shall plan for and build in system reliability and redundancy through backup systems, a looped and intertied water distribution network, and planned maintenance and replacement.

## **Data directly addressing the General Manager's interpretation:**

1. *Assure that residents experience only minimal unplanned service interruptions.*

Service to Water Utility customers is provided through a system of redundant pumping stations, inter-zone transfer, standby power generation, and gravity storage reservoirs. Twenty-two wells are linked within the water distribution system to feed the eleven pressure zones. The eleven pressure zones are connected and isolated by closed valves that can be opened if necessary to move water between zones. If a well has a mechanical failure and is removed from service, other wells within the zone will provide service to the impacted area. With the exception of Pressure Zone 11, all zones have a minimum of one gravity reservoir that will provide service and emergency supply. Elevated storage for Pressure Zone 11 is planned and budgeted for 2017. The Utility has access to 12 standby power generators, 9 owned by MGE and 3 owned by the Utility. A fourth Utility-owned generator is planned and has been budgeted for Unit Well 26. The Utility also owns two natural gas fired engines that drive emergency pumps that would operate during a power outage. Two Unit Wells are equipped with electric transfer switches that will allow the connection of a portable generator if necessary.

Wells, booster pumping stations, and reservoirs are routinely serviced and maintained. System operation is monitored and recorded by the Utility SCADA system. Degradation of pump performance is noted and investigated. Well pumps are scheduled for inspection every 10 years and reservoirs are inspected every 5 to 10 years.

The Utility's 2005 Infrastructure Management Plan recommends improvements to and replacement of Utility pump stations and reservoirs. The [Executive Summary](#) from this report was presented to the board with the Internal Monitoring Report on Infrastructure (Policy EL-2G) on May 24, 2011. Recommendations from the Infrastructure Management Plan are included in the 2012 Capital Improvement budget that is attached to this report.

Service interruptions due to main breaks are due to an aging piping system and are difficult to control and impossible to predict. Over the past 7 years, the Utility has experienced an average of over 240 main breaks per year. This calculates to an average of 29.0 breaks per year per 100 miles of distribution system pipe. While no standard exists due to climate and geological differences across the country, one recommendation is that breaks should be below 20 per year per 100 miles of main. Each year the Utility invests over \$7 million in pipe replacement. The budget is increased 4-6 percent per year as the replacement program continually grows. Pipe segments are selected for replacement based on their break history, hydraulic capacity, age, and material. Over 400 miles of pipe are slated for replacement within the system over the next 40 years. As pipe is replaced, the risk of main breaks is reduced.

### I report compliance.

2. *Provide residents with adequate notice of planned service interruptions.*

In the event that service is required to a well, pump station, or reservoir that results in the interruption of service to customers, those impacted customers are notified by postcard a minimum of 7 to 10 days in advance of the planned interruption. The Utility's

electronic listserv may also be used in this instance to notify area residents. This only occurs after an investigation indicates that there are no reasonable options to provide service to the area from other facilities. Planned service interruptions are kept to no more than 4 to 8 hours in these instances. During the past year, there were no planned service interruptions due to work at a well, pump station or reservoir.

For work on the piping network such as repairing or replacing a valve or cutting in a new service, prior to starting work a Water Utility employee contacts all impacted residents and explains the need for the work and the duration of the water outage. If the resident is unnecessarily inconvenienced by the planned outage, the work crew will modify the work plan to accommodate the customer to the greatest extent possible. When the work is completed, a Water Utility employee notifies the customers.

I report compliance.

3. *Provide residents with adequate notice in the case of planned maintenance work that would significantly reduce water flow or pressure, and/or cause water discoloration.*

For planned maintenance work at a well, pump station, or reservoir that has the potential of reducing water capacity and/or pressure and poses the risk of water discoloration those impacted customers are notified by postcard a minimum of 7 to 10 days in advance of the planned interruption. The Utility may also use its electronic listserv to notify area residents of an anticipated reduction in service. This only occurs after an investigation indicates that there are no reasonable options to maintain service to the area from other facilities. During the past year there were no planned reductions in the level of service due to work at a well, pump station or reservoir.

Flushing and cleaning of the distribution system may result in temporarily reducing water flow/pressure and includes the risk of causing water discoloration. For routine flushing operations, the Utility uses newspaper advertisements, yard signs, phone calls and an electronic listserv to notify impacted residents. Annual flushing schedules are published and posted on the Utility web page in the spring and a detailed schedule is maintained throughout the flushing work.

I report compliance.

***Attachments***

1. Proposed 2012 Long Range Capital Budget