MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Clifford Heckathorn, Chief
Revolving Loan and Operator Certification Section
Field Operations Division, Water Bureau

FROM: Richard Benzie, P.E.
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Lansing Operations Division, Water Bureau

DATE: October 16, 2009

SUBJECT: Village of Dexter - Project No. 7293-01
Qualification for Green Project Reserve Funding

The purpose of this memo is to document the basis for determining that the Village of Dexter, DWRF Project No. 7293-01, qualifies for the green project reserve funding under the ARRA. This project is replacing 4,050 feet of 4-inch unlined cast iron mains that are 80 or more years old. The following information was used to make this determination.

The village completed a reliability study on the water system in 2005 that recommended and prioritized improvements to the distribution system. This phase of their project will address 4,050 feet of the 11,250 feet of 4-inch cast iron pipe remaining in the village. Many of these mains are corroded and contain deposition that has significantly reduced the carrying capacity while at the same time, increasing the friction losses and energy necessary to deliver water through them.

Over the last 10 years, the village experienced 7 main breaks in that portion of the system to be replaced in this initial phase, for an average of nearly 1 break per mile per year. In comparison, the village only experienced 7 main breaks throughout the remaining pipe inventory of 123,250 feet for an average of 0.3 breaks per mile per year. The village also estimates that each break results in an average water loss of 5 million gallons for a total of 3,500,000 gallons per year in the piping to be replaced. Dexter expects a 50% reduction in breaks system-wide by replacing these 4-inch mains.

In 2005, the village reported an average daily usage of 673,000 gallons per day with unaccounted water at 17% of the total annual pumpage. That water loss equates to more than 40,000,000 gallons per year. Just eliminating the breaks occurring in the 4-inch piping should reduce the annual water losses by almost 10%.

System losses in excess of 15% are generally considered unacceptable in the waterworks industry. Although Dexter is only planning to replace 11% of their total pipe inventory, they are replacing 80-year old, antiquated piping that is likely experiencing the highest percentage of leaks. Therefore, it is expected that the replacement of these targeted mains will decrease the city's lost water to a much greater extent than the percentage of the city's total pipe inventory they represent, further enhancing the city's water conservation and efficiency.

The new mains will also have an improved C factor as compared to the existing pipes. The current, unlined, sand cast iron piping is estimated to have a C factor equal to 65, while the new,

cement-lined, ductile iron piping will have a C factor equal to 120. Dexter anticipates energy savings of 85 KwH/year from pumping water through the new mains versus the old ones.

Based on the information provided by Dexter, this project does qualify for the green project reserve funding. The water main replacements will improve water conservation/efficiency by reducing water losses experienced from frequent breaks and on-going leaks as well as provide for reduced energy use. The costs that qualify for green project reserve will be determined after bids are received and the amount of the loan established. At that point, the percentage of this loan that is provided by the ARRA can be applied to the total amount spent on this portion of the project to determine the green project reserve.

cc: Ms. Bethel Skinker, P.E., Water Bureau, Jackson District