February 22, 2006

Tony Porrazzo
City of Polson
Water & Sewer Department
106 1st East
Polson, MT 59680-2137

Dear Tony,

As per your request the following are the results of our analysis of the Polson Water Distribution System.

A Preliminary Engineering Report was prepared for the City of Polson in 2005 by Anderson-Montgomery. Thomas, Dean & Hoskins assisted Anderson-Montgomery by preparing a computer model of Polson's water distribution system and conducting the analysis required in the preparation of the PER. We were asked to present an update of the capacity of the current water distribution system with improvements made after our analysis of the PER. These improvements include expanded water treatment at Well Site 6 & 7 west of the Flathead River and the inclusion of auxiliary power at Well 3. This leaves only Wells 6 and 7 without auxiliary power.

Total pumping capacity of all wells is 2050 gallons per minute. With the water treatment improvements made at Well Site 6 & 7, this pumping capacity is available on a full time basis. In an analysis of a water distribution system capacity, a worst case scenario is used to locate weak points in the distribution system. Typically this scenario involves maximum day water demands, the largest pump without auxiliary power off line, the 7 current water tanks at less-than-full levels, and a fire flow. In Polson's case the largest pump without auxiliary power would be Pump 6 or Pump 7, the water tank levels are assumed to be three quarters full, and a fire flow of 4000 gpm for 4 hours at a large building such as the High School or Walmart.

Based on information presented in the 2005 PER, under full pumping capacity of 2050 gallons per minute, Polson should be able to meet maximum day demands through the year 2021 with an estimated system population of 7517.

If the largest non-auxiliary pump is out of service, pumping capacity falls to 1625 gpm. This would allow the City to meet the projected maximum day demand through the year 2013 with a estimated system population of 6078.

If a fire flow of 4000 gpm for 4 hours is also considered, the pumping rate that is available to meet the maximum day demand falls to a 24 hour average of 958 gpm. At this pumping rate reserve storage becomes very important. Polson's water distribution system currently has a total of 3,236,000 gallons. If the water tanks are ¾ full at the start of the fire, and if the City desired the water level in the tanks be ¾ full within 24 hours of the start of the fire, then the City could not meet maximum day demand for its current population. In this case, short term water restrictions may need to be put in place until an acceptable water level in the tanks is reestablished. This time period would probably be less than one day.

It is important to note that the circumstances leading to this situation, the largest non-auxiliary power pump off line, and a 4000 gpm, 4 hour fire demand, is remote. Also, very few cities in Montana have the capacity or manpower to efficiently fight a 4000 gpm fire.

A solution to this problem is to provide auxiliary power to Wells 6 and 7. In this case, the 24-hour average pumping rate available to meet maximum day demands increases to 1383 gpm. The pumping rate will return to 2050 gpm approximately 24 hours after the fire event.

The 2005 Preliminary Engineering Report recommends a number of improvements to the distribution system in order to improve capacity and reliability. These recommendations should be considered to effectively serve Polson's future water requirements.

If you have any questions on the above analysis, please feel free to contact me.

Sincerely,

Thomas, Dean & Hoskins, Inc.

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Michael O'Brien, P.E.

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