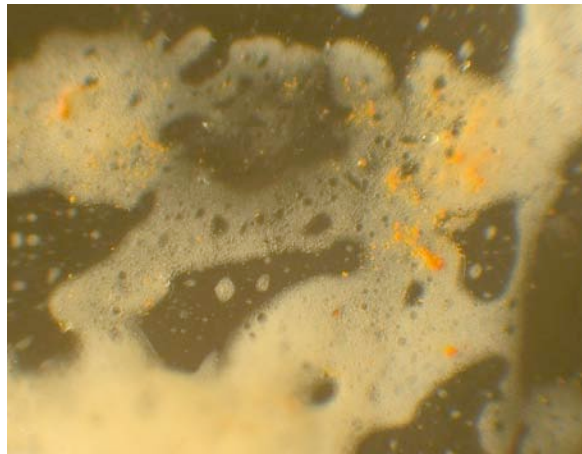


Gladstone, Missouri

Total Organic Carbon and
Ammonium Ion in
Gladstone's Well Waters



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Identification of Accumulations

During maintenance of their high service pumps, Gladstone plant personnel noted the presence of a white, slimy accumulation. On September 9, 2005, they forwarded a sample of this accumulation to H₂O'C Engineering for identification and evaluation. Micrographs of the slime indicated that the material was a froth or very fine foam with embedded iron oxide precipitates which are commonly found in water treatment plant effluents.

The presence of foam in Gladstone's finished water indicated the presence of surface-tension-lowering organic matter. For this reason, it was proposed that both dissolved organic carbon and ammonia nitrogen be monitored in each well water.

The results of these analyses will form the baseline for future well water monitoring since new wells are being constructed in the vicinity of Gladstone's wells. Any change in the subsurface flow might be reflected in changes in the concentrations of these potential microbial nutrients.

Monitoring of TOC and Ammonium ion in Wells

Samples were taken by Don Dickerson from each of Gladstone's six wells for analysis for total organic carbon and ammonium ion in January 2006. The analyses were conducted at the Kansas City Water Department laboratory.

The results, shown below, indicate that TOC concentrations (average: 2.25 mg C/l) are low and consistent in each of the well waters. Similarly, there was little variation in ammonium ion concentrations (average: 0.3 mg N/l) in the six wells.

Operators at the Gladstone plant have noted the water in Well #5 is marginally different than the other wells. Analyses confirm that TOC is 19% lower, but ammonium ion is 49% higher than the average of the other five wells.

