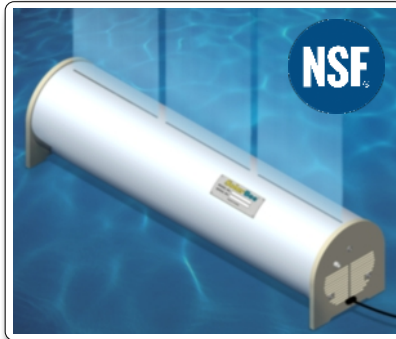


Key Words: potable, stratification, water age, short-circuiting, chlorine, GS-12



Photos: The left photo is an aerial view of the tank. The middle photo is an image of the GridBee GS-12 submersible mixer. The right photo shows a close-up view of the tank.

System overview: This standpipe tank serves a population of approximately 14,000 residents. The tank stands 75 ft tall with a 64 ft diameter. Operating water height is approximately 65 ft, yielding a tank capacity of 1.5 MG. The disinfectant utilized in this system is chlorine.

Reported problems before GridBee installation: The tank suffered from inadequate mixing, leading to short-circuiting, inconsistent water age, and water stagnation. Thermal stratification was a serious problem; temperature readings taken in the tank prior to the installation of the GS-12 showed an average difference of 12° F between depths of 10 ft to 40 ft below the surface.

GridBee Installation: Date: August 2011, installed one GridBee GS-12 submersible mixer.

Results: The benefits of enhanced circulation were clearly evident very soon after the GS-12 was installed. Notably, the GS-12 was installed during mid August, a time of year when thermal stratification can be quite strong as indicated by the 12°F variability noted above. Independent monitoring documented that the first temperature readings taken after the installation already showed a reduction down to 4°F difference between the depths of 10 ft to 40 ft below the surface. Readings taken two weeks later showed less than a 1°F difference between the water surface and 40 feet below. Furthermore, the significant reduction in stagnation has enabled the tank to maintain a consistent free chlorine residual of 0.5 mg/L. This in turn reduces the potential for microbiological growth. The Water District is pleased with the sustainable water quality benefits achieved through increased whole-tank circulation provided by the GS-12.

H2M Architects & Engineers, Inc. monitored the installation and evaluated the performance of the GS-12 submersible mixer. A letter with their findings is attached as the second page of this case study.

191-USNYPW.LOC851.001, *Last updated 12-9-11*



September 9, 2011

Re: Water District
Tank Mixer – Pilot Program

Dear

As per our July 7, 2011 letter to you, we indicated that the Water District would be installing a mixing system in the tank as part of a pilot testing program.

The Solar Bee Model GS-12 mixer was installed per the requirements set forth in your July 25, 2011 letter to the District. The mixer was placed into operation late in the afternoon on August 10, 2011. See the attached three (3) photographs of the installation. The connection for both the electric power cable and the support cable were made through the flange of the manway on the tank's roof. The connection is sealed with watertight gaskets inside and out and is well above the tank's overflow elevation.

The attached table indicates temperature conditions in the tank prior to installation of the device and temperature conditions after start up. Readings were taken at 10' intervals starting at the water surface down to 40' water depth. The tank was basically full at the times that measurements were made. Therefore, we can safely assume that within a few feet of each other the recorded temperatures were basically at the same elevations each time they were taken.

As indicated in the attached table prior to installing the mixer the water temperature between elevations 10' and 40' there was an average 12°F difference. After installing the mixer temperature the water between the 10' and 40' levels the first readings indicate that there is only a 4°F difference. After an additional two (2) weeks of operation the mixer appears to be working as planned. There is less than one (1) degree differential between the water surface and the water at the 40' level. (68.2°F-67.5°F).

The water surface sits approximately 5' below the top of the tank when it is full. With the sun beating down on the tank's steel shell, the air above the water and the surface of the water will remain slightly warmer than the rest of the tank.

Four (4) microbiological samples were taken from the tank prior to installing the mixer on August 5, 2011, and on August 24, 2011 three (3) samples were taken after the mixer was in operation. All samples were all negative for Total Coliform and *E.coli*. The tank is maintaining a constant free chlorine residual of 0.5 mg/l. Distribution samples in the

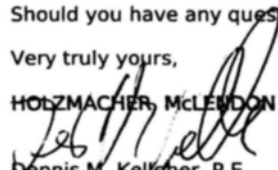
At this time we believe that we have significantly reduced stagnant conditions in the tank and expect the opportunity for microbiological growth has been similarly reduced.

The mixer will remain in the tank and the tank temperatures will be periodically monitored to continually confirm the effectiveness and operation of the unit.

Should you have any questions or comments, please contact this office.

Very truly yours,

HOLZMACHER, McLENDON & MURRELL, P.C.


Dennis M. Kelleher, P.E.
Sr. Vice President

DMK:sj

cc: Board of Commissioners
Michelle McCadden, Solar Bee