

**CUSTOMER:** Big Bear Area Regional Wastewater Agency (BBARWA)

**APPLICATION:** Radiant heating

**LOCATION:** Big Bear, CA

**CONTRACTOR:** BBARWA in-house maintenance

## California wastewater agency wins with radiant technology

When most people think of radiant heat or hydronic snow melt, the usual applications come to mind: warm floors, heated sidewalks and snow-free driveways. Viega Radiant Design Services in Nashua, NH, has designed and quoted thousands of projects like those, but occasionally they receive requests for assistance with some out-of-the-box projects.

The Big Bear Area Regional Wastewater Agency (BBARWA pronounced bar-wa) in Big Bear, CA contacted Viega Radiant Design Services with a project that needed an innovative solution.

A byproduct of the water treatment process is sludge, which is composed of 25% solids and 75% water. Since the sludge must be hauled by truck to an off-site disposal area, BBARWA had been looking for a way to reduce the water content and weight of the sludge, making it less expensive to haul. BBARWA had tried several different methods to dry the sludge with only marginal success, so they decided to devise a new system that would be more effective, more efficient, and would reduce the odor complaints.

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Based on the idea of an enclosed building with a heated slab, a new concept began to take shape. BBARWA Plant Manager Fred Uhler contacted a Viega Radiant Sales Manager and District Manager to discuss the viability of the concept his team devised – an enclosed, ventilated building with a heated slab for the sludge to dry on.

“I met the Viega rep and he thought outside of the box and was able to get what I needed in an easy and economical way,” Uhler said. “Viega was able to answer our call for this unique project.”



Since the facility produces its own electricity using three natural gas generators, the water flowing through the slab would be heated with a heat exchanger in one of the generator’s exhaust, making it an efficient co-generation system. Within the first year alone, the new system has saved approximately \$200,000 in transportation and fuel costs.

Viega Radiant Design Services worked on the specifics of the slab heating system design, focusing on what would be required to generate enough heat from the slab to meet the sludge-drying objectives. Viega design engineers used finite element analysis (FEA) to determine the optimum tubing size, spacing and install-depth in the slab based on the water temperature supplied from the diesel generator’s exhaust. Due to the shape and size of the heated slab – 315-foot-by-60-foot – it was clear that this project was an excellent application for Viega’s revolutionary Viega Climate Mat system.

The Viega Climate Mat is one of a kind. Arriving on the job site in a pre-assembled roll, the mat is best for applications over 10,000 square feet and comes complete with temporary supply-and-return headers and tubing. Installation is as easy as unrolling and securing. That means no concern about proper spacing or laying individual lines and the mat system is pre-pressurized and numbered for accurate placement.

In addition to the Viega materials were three Big Ass Fans® supplied by the company Big Ass Solutions®. Air movement is critical in this kind of situation, so Viega's recommendation was twofold: a heated slab in conjunction with the fans to move moisture out of the building.

Installation of the Viega Climate Mat and distribution manifolds was completed in less than one day. Typical radiant heating and cooling installs call for 2,500 square feet of radiant tubing to be laid in one day, but with the Viega Climate Mat, contractors can plan on laying 25,000 square feet a day with the labor of three men in both cases. BBARWA called for 18,900 square feet and it was installed in one day. Uhler estimates that he saved three weeks of labor installing the Viega Climate Mat.

"The rep was right there on the job site working hand-in-hand with my guys and that's how we like to work. We do things ourselves," Uhler said. "At the end of the rainbow you guys go away and my guys need to know what to do."

The contractors were impressed with the speed and ease of installation of the Viega Climate Mat and appreciated the support provided by Viega throughout the entire process, from design to installation.

"Anything you said you could do, you did it," Uhler said. "They were top notch guys from the sales staff to the design support," Uhler said. "They were excited about the project. It's great to work with people like that."

With the Viega Climate Mat and manifolds installed, the system was pressurized, the slab was poured, and construction of the metal building began the following week. Once the covered drying bed building was completed, the system went into operation in June 2014.

While many U.S. agencies use covered drying beds, using them in conjunction with a heated slab is unique. Within a few months, it became clear that this unique application of radiant heating was a resounding success. In 2015, Uhler reported that the system was performing beyond expectations and even better in the low-humidity winter months.



"This system is self-operational and I've had zero maintenance issues with it from Viega's side of things," Uhler said. "It couldn't be any better."

He also has a number of other wastewater agencies that are interested in this process. Additionally, the project received the California Water Association Desert Mountain Award for Innovation.

While conventional radiant heating and snow melting projects are everyday business for the Viega ProRadiant team, projects like the Big Bear Area Regional Wastewater Agency covered drying bed are prime examples of how Viega can design and deliver innovative solutions that improve people's lives, reduce energy usage and help protect the environment.

**For more information on Viega system solutions, visit [www.viega.us](http://www.viega.us), or call toll free: 800-976-9819.**