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## **SAK Environmental to provide geothermal system inspection services for Isabella Stewart Gardner Museum expansion project**

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The historic Isabella Stewart Gardner Museum has selected SAK Environmental LLC to oversee the construction and permit compliance of an open-loop geothermal heating and cooling system for the highly publicized museum's restoration and expansion project.

The Gardner museum has completed months of extensive planning among city and state authorities to preserve the Museum's historic galleries while planning a new building adjacent to the Palace to better accommodate the 200,000 guests who visit the museum annually.

Well construction began in August and is expected to continue through November 2009. The wells will be operational and the geothermal heating and cooling system is scheduled to go online in 2010.

Supporting the progress and preservation goals of the effort is a planned geothermal system that will complement the Gardner Museum's existing heating and cooling systems. The geothermal system is designed to provide up to 170 tons of cooling, allowing the Gardner to become more energy independent and create less of a carbon footprint on the environment. SAK Environmental's geologists and engineers are working with the museum and their Project Management Team, Paratus Group of New York City, to provide expertise in construction inspection, aquifer testing, water quality testing, and system troubleshooting.

The geothermal system will use the thermal capacity of the underlying bedrock aquifer (estimated to be 55 to 60 degrees Fahrenheit year-round) to heat and cool the Gardner Museum. Groundwater will circulate from eight, 6-inch diameter, 1,500 foot deep Standing Column Wells to heat exchangers located in the mechanical room of the building, and return to the aquifer. Therefore, there is no net change to groundwater levels. The groundwater transfers energy to either extract heat from the ground for heating during the winter or reject heat to the ground for cooling during the summer. Ground source heat pumps located in the building concentrate the energy transfer and interface with conventional HVAC distribution systems.

"Geothermal systems are an excellent means to dramatically increase a building's energy efficiency and reduce energy-related operating costs," says Stephen Sakakeeny, hydrogeologist and Principal at SAK Environmental. "Our expertise in underground aquifers, water quality, and well construction methods will contribute to achieving high performing wells for this important project."

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