

PROJECT BRIEF

Fukushima Nuclear Power Plant Asset Management

PROJECT PROFILE

CLIENT:

Kajima Corporation

LOCATION:

Tokyo, Japan

VALUE:

- Developed risk register, identifying risks and their potential causes, impacts, and mitigation measures
- Performed thermo-hydro-mechanical modeling to evaluate feasibility design, understand potential threats to the barrier, and quantify impacts of ground freezing to adjacent structures

SERVICES PROVIDED:

- Risk assessment management for the world's largest underground frozen barrier
- Engineering analysis to evaluate potential failure modes of the ice wall

“Geocomp provided coupled groundwater heat flow analyses to evaluate potential failure modes for the ice wall.”



GROUNDWATER ANALYSIS & DESIGN PLANS

Geocomp and Moretrench provided Kajima with assessments of comparable ground freezing experiences from around the world to help share technological achievements to enhance the design, construction, and performance of the Fukushima Ice Wall. In addition, they assisted in the evaluation of the design plans, construction quality assurance, and performance testing. Artificial ground freezing is the process of converting the subsurface pore water to ice to produce a strong, water-tight barrier. It has been used for more than 100 years in the construction of deep shafts, excavations, and groundwater barriers in the mining and civil construction industries. Geocomp provided coupled groundwater, heat flow analyses to evaluate potential failure modes for the “Ice Wall”. Asked about the project, Dr. Marr replied, “We feel very honored to be asked to participate in this unprecedented project and to have the collaboration of Moretrench’s experienced staff.”



BACKGROUND

Kajima Corporation of Tokyo, Japan contracted with Geocomp to provide engineering services on the construction and evaluation of an “ice wall” groundwater barrier around the Fukushima Nuclear Power Plant. Geocomp subcontracted with Moretrench American Corporation, North America’s largest ground freezing contractor, to assist with their construction experience.