



Design of an Ion Exchange System to Treat Perchlorate Contaminated Groundwater

Town of Barnstable, Massachusetts

The Horsley Witten Group, Inc. (HW) designed an ion exchange treatment facility to treat a groundwater plume impacted by perchlorate, an emerging contaminant toxic to pregnant mothers and infants at low concentrations in drinking water. The work was done on behalf of the Barnstable County Commissioners, who oversee the operation of the Barnstable County Fire Training Academy in Hyannis, Massachusetts.

In recent years the Academy has used straw to ignite fires for fire training purposes. Outdated marine flares have been used to help ignite the straw. The perchlorate in the flares washed into the ground and created a contaminant plume potentially impacting downgradient drinking water wells.

HW was awarded a competitive bid to design and supervise the construction of an ion exchange system to remove the perchlorate from groundwater. Three extraction wells were installed within the contaminant plume and pumped at a maximum rate of 120 gallons per minute. The ion exchange system used Dowel Perchlorate Removal resin and Purlite A520E Anion Nitrate Selective resins to remove perchlorate from the groundwater. The treated water was then discharged back into the ground at the head of the plume to further flush the contaminated aquifer.

HW completed the project on an accelerated schedule to allow treatment to begin in order to protect the downgradient wells. The system was designed in four weeks and operational within two months.

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