



## CASE STUDY FOR WINTHROP PETROLEUM SITE UPDATED

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On May 14, 2001, GBI submitted an Immediate Response Action (IRA) Plan Modification to the DEP documenting the proposed remediation of soil and groundwater at the Site using *Butane Biostimulation Technologies*<sup>™</sup>. The IRA Plan proposed the injection of butane into the groundwater as a remedial action. Butane along with air was injected into the subsurface environment to stimulate the metabolism and cometabolism of the petroleum compounds remaining in the subsurface. The IRA Plan was approved and the butane biostimulation system began operation on December 12, 2001. The system was closely monitored through periodic system inspection and groundwater monitoring and sampling.

Since the historical groundwater sampling data demonstrated that the concentrations of petroleum constituents dropped below the Method 1 Risk Standards in most of the monitoring wells located at the Site and in all of the monitoring wells located on the downgradient property, the butane injection system was shut down on November 10, 2003. A Dunkin Donuts was constructed on the downgradient property. Based on the March 2004 sampling event, two monitoring wells located on the upgradient property still had groundwater exceedances above the Method 1 Risk Standards for MTBE, the C<sub>5</sub>-C<sub>8</sub> aliphatics, and the C<sub>9</sub>-C<sub>10</sub> aromatics. These two monitoring wells are located on the gasoline station property and not on the downgradient property and represent discrete hot spot locations. Due to their location and the direction of groundwater flow at the Site, the two monitoring wells were located outside (and upgradient) of the butane biotreatment zone of influence. The butane injection system installed at the Site under the IRA was configured to target the mass of petroleum contamination located on the downgradient property. Since that location has been successfully remediated, the butane injection equipment was shut down. However, portable butane injection will continue at the two monitoring wells located on the gas station property until the collective groundwater data demonstrates that a Response Action Outcome has been obtained for the upgradient property.