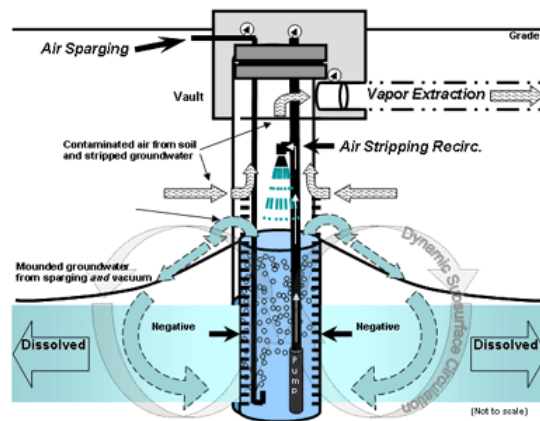


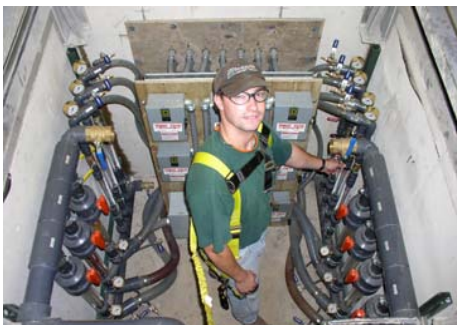
## Novi Office Applies Innovative ART in Indiana

Taking an aggressive, innovative approach to cleaning up contamination at a 110-acre manufacturing facility, MACTEC's Novi office saved a confidential industrial / aerospace client \$40K in up-front remediation costs and one month of drilling time on a remediation project performed under the State of Indiana's Department of Environmental Management Voluntary Remediation Program.

Environmental investigations conducted during the 1990s at the South Bend, Indiana site, where automotive and aircraft parts have been manufactured for more than 80 years, revealed the presence of volatile organic compounds (VOCs--primarily trichloroethylene [TCE]), petroleum oils, metals, and polychlorinated biphenyls (PCBs) in soil and shallow groundwater that were above industrial clean-up goals. Using a proprietary remediation technology developed by Accelerated Remediation Technologies (ART), MACTEC performed soil vapor extraction (SVE) testing and treatment at the facility. This innovative technology combines in situ (in well) air stripping, air sparging, SVE, and enhanced bioremediation / oxidation and Dynamic Subsurface Circulation. Working in concert, these components actually enlarge the radius of influence in a well, and contaminants are eliminated from groundwater as a result of the combined effects of in-well air stripping and air sparging. MACTEC selected the ART technology because it is less intrusive, able to reduce subsurface contamination, and can achieve acceptable levels of remediation and site closure more rapidly and economically than traditional pump-and-treat or air sparging methods.



MACTEC's SVE test results indicated that seven treatment wells covering 8,500 square feet would be required to achieve the project's remediation objectives. Consequently, MACTEC began corrective action at the first soil source area, prioritized by a site-specific risk assessment, in a former painting and degreasing area located below ground level in a recently renovated engineering testing building. Negotiations with the third-party owners of the building, as well as permitting issues, required the trailer housing the treatment system to be situated at a remote location at the facility, approximately 400 feet away from the actual treatment area. The ARTT technology treatment system MACTEC installed consists of a rotary-screw compressor to supply oil-free air for sparging, a regenerative blower for vapor extraction, and vapor-phase carbon to capture VOCs liberated by system operation. This equipment is monitored by a wireless web-based system. Between routine operation and maintenance site visits, key treatment system components are monitored via an Internet interface.



To date, this in-well vapor stripping system is removing approximately 28 pounds of VOCs per day compared to nearby groundwater extraction well removal rates of less than 13 pounds per year. In addition, since the initial startup/shakedown phase, the system has been on-line without interruption except for routine maintenance.

The MACTEC Novi project team responsible for this work includes **Steven Murray, CPG, Project Manager**; **Ravi Adibhatla, PE, Senior Project Engineer**; **Jesse Kolb, PE, Senior Project Engineer**; and **Nick Rogers, Project Geologist**.

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