

NAS NORTH ISLAND - NAVY REGION SOUTHWEST NAVY ENVIRONMENTAL LEADERSHIP PROGRAM

CLEANUP

NOVOCs™ IN-WELL STRIPPING TECHNOLOGY

LEAD ACTIVITY

Southwest Division Naval Facilities Engineering Command (SWDIV)

STATUS

Active

MISSION

In situ groundwater remediation

DESCRIPTION

MACTEC Inc.'s NoVOCs™ system (acquired from EG&G) is a patented in-well stripping process for the *in situ* removal of VOCs from groundwater. The NoVOCs™ system installed at Naval Air Station (NAS) North Island, Site 9, consists of a well installed into the contaminated saturated zone with two screened intervals and an air injection line extending into the groundwater within the well.

Contaminated groundwater enters the well through the lower screen and is pumped upward within the well by pressurized air supplied through the air injection line, creating an airlift pump. As the water is airlifted within the well, VOCs dissolved in the groundwater volatilize into the air space at the saturated zone. The treated water rises to a deflector plate and is forced out the upper screen. The treated water is recharged to the aquifer and the stripped VOC vapors are removed from the subsurface by a vacuum applied to the upper well casing. The stripped vapors then are treated at the surface by the Thermatrix flameless oxidation process. The NoVOCs™ well may be used to remediate contaminant source areas or as a groundwater interdiction system to prevent further migration of a contaminant plume. At NAS North Island, one NoVOCs™ well has been installed as part of a pilot-scale



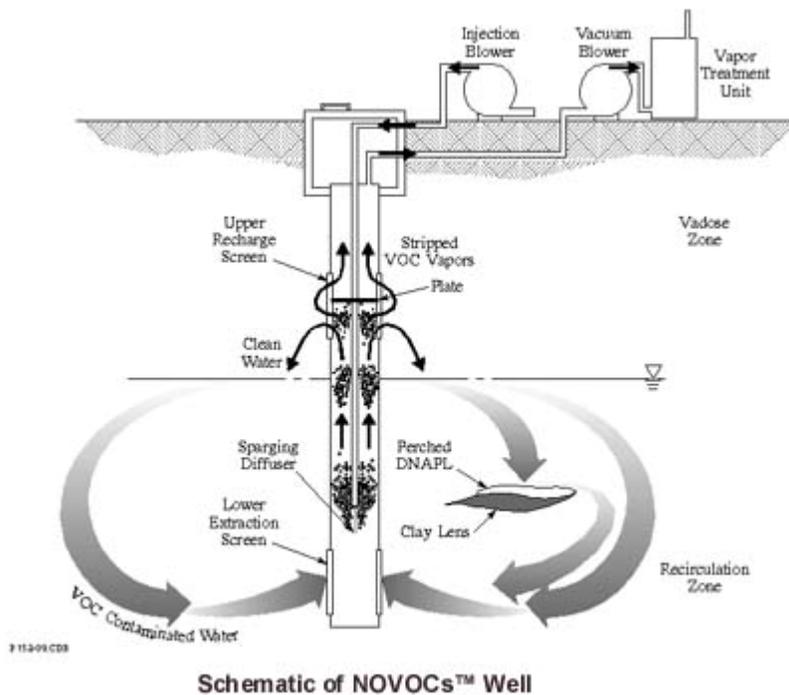
NoVOCs™ well



NoVOCs™ Well at Site 9

demonstration of the technology to treat a portion of the aquifer downgradient from the Site 9 contaminant source area.

MACTEC claims that the NoVOCs™ system can reduce effluent VOC concentrations to below federal maximum contaminant levels (MCL) if the contaminant source has been removed. Since dense nonaqueous phase liquids (DNAPL) may be present in the aquifer at this evaluation site and may act as a continuing source of groundwater contamination, MACTEC does not make any claims for the reduction of dissolved VOC concentrations in groundwater at Site 9 to below MCLs. However, MACTEC does claim that the NoVOCs™ system will remove more than 80 percent of the VOCs that pass through the system. MACTEC also estimates that the effective radius of influence of the treatment well for this site will be at least 60 feet.



BENEFITS

- MACTEC claims that remediation of VOC-contaminated groundwater using the NoVOCs™ system occurs without extracting groundwater, lowering the groundwater table, or generating wastewater typical of traditional pump and treat systems.
- Capital and operation and maintenance costs are claimed to be significantly less than pump and treat systems.

ACCOMPLISHMENTS/CURRENT STATUS

Date	Activity
FEB 1996	EG&G Work Plan for NoVOCs™ demonstration completed
MAR 1997	Navy contracted with Thermatrix to conduct off-gas treatment
JUL 1997	Addendum to the Site 9 Remedial Action Plan submitted to DTSC for

	approval
MAR 1998	Clean Site's Work Plan for the NoVOCs™ demonstration competed
MAR 1998	Tetra Tech's Test and Evaluation Plan for the NoVOCs™ SITE demonstration completed
MAR 1998	System Startup, begin collection of demonstration data
AUG 1998	Aquifer pump tests complete
SEP 1998	System modifications completed, NoVOCs™ system operating on an intermittent basis
JAN 1999	System turned off, demonstration terminated
JUN 1999	Demonstration results reported

FUTURE PLAN OF ACTION & MILESTONES

Date	Activity
Ongoing	Transfer of technology to other commands

COLLABORATION/TECHNOLOGY TRANSFER

Many parties have contributed to the demonstration of this technology including: the U.S. Environmental Protection Agency (EPA) Technology Innovation Office (TIO), the EPA Superfund Innovative Technology Evaluation (SITE) Program, Clean Sites, Inc., MACTEC, Inc., and the Navy.

BIBLIOGRAPHY

- EG&G Environmental, Inc., Work Plan for the Application of NoVOCs™ In-Well Vapor Stripping Groundwater Remediation Technology. February 1996.
- Bechtel National, Inc. Draft Addendum to the Action Memorandum/Remedial Action Plan for Removal Action at Installation Restoration Site 9, at NAS North Island, San Diego CA. July 1997.
- Tetra Tech EM Inc. Revised Draft Technology Evaluation Plan/Quality Assurance Project Plan for the NoVOCs™ Technology Evaluation at the Naval Air Station North Island, California. March 13, 1998.
- Clean Sites, Inc. and MACTEC, Inc. Revised Work Plan NoVOCs™ Pilot Test, Naval Air Station - North Island. March 1998.

RELATED GOVERNMENT INTERNET SITES

[Hazardous Waste Clean-Up Information Web Page](#)

RELATED NAVY GUIDEBOOK REQUIREMENT

Not applicable

UPDATED: 01/23/02