



North Carolina Department of Environment and Natural Resources
Division of Waste Management

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MEMORANDUM

TO: Sean R. Carter, P.E., President
Matrix Environmental Technologies, Inc.
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FROM: Sharon Ghiold, Chairperson
Innovative Technology Committee
DENR/DWM/UST Section

COPY TO: Grover Nicholson, Section Chief
Bob Davies, CAB Head

DATE: January 24, 2012

SUBJECT: **Matrix Oxygen Injection Process** Evaluation
U.S. Patent No. 5,874,001

The Underground Storage Tank Section's Innovative Technology Committee (ITC) has evaluated and approves the Matrix Oxygen Injection Process to degrade petroleum contaminants. Per Matrix's Request for Evaluation, the Matrix Oxygen Injection Process produces pure oxygen from compressed air for pulse injection into groundwater at controlled rates, resulting in high transfer efficiency to groundwater and dissolved oxygen saturation levels exceeding 50 mg/L. When the resultant oxygen supply exceeds the total oxygen demand, the system creates optimal conditions for native bacteria to break down petroleum hydrocarbons, gasoline oxygenates, and solvents.

This process is generally not suitable for sites with the following:

- tight cohesive soils (e.g., high clay content)
- non-aqueous phase liquids (NAPL)
- highly contaminated source areas

Oxygen injection systems should not be located in the same enclosure/building as vapor producing systems.