

April 10, 1997

Mr. Kevin Moran
Environmental Restoration Systems
P.O. Box 510
Middletown, Pennsylvania 17057-0510

Re: Enviro-Jet

Dear Mr. Moran:

The Bureau of Petroleum Storage Systems thanks you and your associates for the April 10, 1997 presentation, which included Florida petroleum cleanup site data, regarding an innovative groundwater recovery system called Enviro-Jet, manufactured by Environmental Restoration Systems. It is our understanding that the system is an above-ground piping loop which recirculates groundwater, consisting of a tank, pump, and a manifold of eductors. As water recirculates, a venturi effect at each eductor draws more groundwater into the loop from the eductor's dedicated well. When the tank becomes filled with both recirculating and additional recovered groundwater, an overflow pipe at the tank directs the excess to a treatment system.

The bureau has no objection to the use of Enviro-Jet for the recovery of petroleum contaminated groundwater, or similar competing products which operate on the venturi principle, provided no specific environmental rules within the Florida Administrative Code are violated. Based on your presentation, it does not appear that any violations will occur, and that successful recovery of groundwater via eduction is more a matter of good design and engineering practice, and proper use of the equipment.

While the Department of Environmental Protection does not provide endorsement of specific or brand name remediation products or processes, it does recognize the need to determine their acceptability from an environmental standpoint, with respect to applicable rules and regulations, and the interests of public health, safety, and welfare. Vendor's must then market the products and processes on their own merits regarding performance, cost, and safety in comparison to competing alternatives in the marketplace.

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In cases where preparers of remedial action plans recommend the use of eduction type groundwater recovery systems for state-funded cleanups, the selection of such systems should be based on ability to meet the site specific conditions and performance requirements, and any capital, operating and maintenance cost advantages offered in comparison to other methods of groundwater recovery.

Some of the items mentioned during your presentation that we believed noteworthy are:

- a. the system is inherently reliable as a result of its simplicity, using only a single pump to drive all the eductors, thereby eliminating the typical, multiple equipment items and instrument loops associated with other methods of groundwater recovery;
- b. the simplicity of the system should translate into lower operation and maintenance costs as a result of fewer moving parts and fewer instrument loops, controls, and sensors in comparison to other methods of groundwater recovery;
- c. the initial cost of purchasing and installing the system should be low in comparison to other types of groundwater recovery systems due to the low number of components;
- d. the system is best suited for situations where there are multiple groundwater recovery wells involved (3 or more) and relatively low flow rates ranging from 0.1 to 12 gallons per minute per well, which corresponds to 0.1 to 12 gallons per minute per eductor;
- e. no make up water is needed;
- f. the velocity of the recirculating water through the orifices of the eductors serves to prevent fouling;
- g. the system is intended mainly for the recovery of groundwater but not free product, which could become emulsified by the turbulence and therefore difficult to later separate;
- h. eductors, while capable of drawing air at a rate of approximately 3 to 4 cubic feet per minute when water levels in the well drop below the inlet point

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of the recovery tube, are not intended to serve as significant petroleum vapor extractors for remediation purposes;

- i. sampling the water recovered by each eductor, separately, before it is mixed into the recirculation loop containing water recovered by other eductors requires that either a drop leg be installed in the piping, or that the recovery well be sampled directly; and
- j. direct measurement of the flow rate of groundwater recovered by each eductor requires that a non-intrusive flow meter be installed in the piping to the eductor's recovery well. Indirectly, the same flow can be obtained by subtracting the flow rate of recirculating water which exits the eductor from the flow rate which enters; the difference is the amount being recovered from the well by the eductor.

Preparers of remedial action plan documents for state-funded cleanups may wish to include a copy of this letter in the appendix of plans they submit, and call attention to it in the text of their document. In this way, technical reviewers throughout the state and its contracted local reviewing programs will be informed that you have contacted the Department of Environmental Protection in regard to this product. You may contact me at 904/487-3299.

Sincerely,

Rick Ruscito, P.E.
Bureau of Petroleum Storage Systems

RR/rr

cc: Ron McCall
Eder Associates
9471 Baymeadows Road, Suite 106
Jacksonville, Florida 32256

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