



Vacuum Enhanced Product Skimming BIO-VEPS

"SHORT" PILOT STUDY PROCEDURE

The purpose of this pilot study is to VERY quickly determine the benefits of applying a low vacuum to an LNAPL recovery well. Data from this test should indicate what the increased recovery rate of LNAPL will be and what the proper well spacing should be. Also, the data will provide a good idea what type of emissions treatment system would be required for the vacuum system.

Objective #1: "Establish the LNAPL recovery rate WITHOUT vacuum.

I. REQUIRED EQUIPMENT:

1. Bailer (consultant to supply)
2. Electronic Interface meter (consultant to supply)
3. Disposal of small amount of product (consultant to supply)
4. VEPS pipe TEE with ball valve and stopper (Xitech to supply)

II. SET UP:

1. Install VEPS pipe tee assembly (refer to drawing).

III. OPERATION PROCEDURE:

1. Remove free product to a sheen.

IV. DATA COLLECTION:

1. Record the product thickness every 10 minutes for the first hour and every 20 minutes for the second hour.

Objective #2: Determine the effect vacuum has on the LNAPL recovery rate per day and radius of influence between wells. Determine air treatment requirements.

I. ADDITIONAL REQUIRED EQUIPMENT:

1. 110AC power source.
2. 90 CFM Vacuum source, Hose, and CFM gauge (Consultant to supply)
3. Dwyer gauges in low inches of H₂O (0-1", 0-10", 0-50") (Consultant to supply)
4. Well cap with a sampling port for a Dwyer gauge (Consultant to supply)
5. VOC analyzer for measuring air emissions (Consultant to supply)

II. SET UP:

1. Attach vacuum source to the VEPS pipe tee assembly (refer to drawing). NOTE: you may need to install an additional air make-up intake on the vacuum line to obtain low vacuum at the well without damaging the vacuum source.
2. Cap all near by wells to reduce air leaks into the formation.
3. Turn off the vacuum at any nearby wells.
4. Install the well cap with a Dwyer gauge on a well closest to the test well.

III. OPERATION PROCEDURE:

1. Remove free product to a sheen.
2. Install interface probe at water interface.
3. Seal top of well with rubber stopper.
2. Apply 10 inches of H₂O vacuum to test well.

IV. DATA COLLECTION:

1. Record the product thickness every 10 minutes for the first hour and every 20 minutes for the second hour.
2. Record the vacuum force at any surrounding wells.
3. Record the VOC concentrations and CFM at the inlet to the vacuum source.
4. Repeat this data collection for additional vacuum settings.

XITECH VACUUM ENHANCED PRODUCT SKIMMING

