

ERE Dulex Multiphase Extraction Technology Principal of Operation



Dulex™ Multiphase Extraction System Automated System



Filtration & Separation Process



Touch Screen Display Control panel

ERE Dulex™ Multiphase Extraction Technology utilizes a process where by groundwater/hydrocarbons and vapors can be extracted from the same well with a single vacuum pump located in the equipment compound. The recovered groundwater is then typically treated with to desired levels through various established treatment technologies. Selection of remedial action plans are dependent on factors such as solubility, strippability, adsorbability and biodegradability as well air and water discharge criteria.

ERE Dulex Multiphase high vacuum is applied to an extraction tube placed down an extraction well, below the static groundwater table, with the bottom end of the tube at the elevation in which draw down is desired. The top of the well casing is sealed to atmosphere. The vacuum applied to the wellhead then begins to extract the groundwater from the well until the well is drawn down and the water surface in the well reaches the bottom of the extraction tube. At this point, the tube "breaks suction" and begins to apply the vacuum to the air space in the well and surrounding soil. As additional groundwater flows into the well, it is sucked up by the extraction tube until it again breaks suction. This process then continues indefinitely, with alternating slugs of groundwater, hydrocarbons and vapors pulled up the extraction tube, out of the well and into the process equipment. The extracted vapors and groundwater then flow through piping from the well to ERE **TORNADO™** Cyclonic Air/Liquid Separator. There, the liquids, groundwater and product are separated from the vapors by cyclonic action. Oil/Water Separators such as ERE's **Olio-Sep™** are used to separate the two phases allowing hydrocarbons to be captured in a storage recovery tank. The effluent proceeds into other means of treatment such as ERE **V.O.Cease™** Air Stirpper and/or conventional carbon treatment methods such as ERE's vast line of **UltraSorbbers™**. Once contaminants are separated, filtered and/or treated, the clean water can then be recharged into the ground or discharged to the surface water body or municipal sewage plant. The contaminated vapor continue on into the High Vac Pump. It is then discharged, under pressure, out of the High Vac Pump, and into the atmosphere. Secondary treatment of vapors may be added. Contact your Local Environmental Regulatory Agency for permit requirements.

The typical limit for dual extraction is from wells less than 25' deep. Extraction from deeper wells is possible, but requires some additional fittings. Most systems utilize a High Vacuum Pump as the vacuum source because they can achieve the high levels of vacuum required, typically 18-22 inches of mercury. ERE Dulex Multiphase Extraction Technology has been successfully implemented in well up to 55 ft in depth without significant modifications in wellhead design.