



YSI Equipment Monitors Ground Water Remediation Project

At one of its client sites in New Jersey, XDD, LLC, an environmental consulting firm based in Quakertown, Pennsylvania, uses air sparging for remediation of the soil and ground water that are contaminated with semi-volatile aromatic hydrocarbons.

Air sparging is an *in situ* remedial technology that reduces concentrations of volatile constituents that are absorbed in soils and dissolved in ground water. The technique may vary from site to site but generally involves the injection of air or pure oxygen into the subsurface saturated zone.

At this particular site, XDD injects pure oxygen into the ground below the ground water table at the contaminated source area. The oxygen injection is cycled through 16 different wells. There are two wells per bore hole. Each bore hole has a shallow well that injects oxygen into the overburden soil and gravel and a deeper well that injects oxygen into the fractured bedrock. Using a specialized portable system, XDD injects each well with pure oxygen for two minutes each hour.

The injection of oxygen enhances the microbial remediation by providing an environment where the microbes thrive. As the bacteria break down the contaminant, they consume oxygen which results in a reducing environment. As oxygen levels decrease, the microbes' ability to effectively process the contaminant also decreases. By injecting oxygen, XDD is providing the oxidizing environment required by the bacteria, increasing the biodegradation and speeding up the remediation process.

“Due to the extremely high level of dissolved oxygen we expect in the treatment area, it was prudent to use YSI equipment for the elevated DO reading capabilities they offer,” states Aaron Norton,

Senior Hydrogeologist with XDD. At this location, XDD deploys three YSI 600XL sondes down well to continuously monitor temperature, dissolved oxygen, conductivity, pH, and ORP. YSI 600XLs are ideal for this application because they have the ability to accurately measure dissolved oxygen up to 50 mg/L without the need for sample movement.

Monitoring with the 600XLs ensures that the injected oxygen is being distributed throughout the treatment area and provides a better understanding of what is happening in the subsurface. For example, data from the YSI

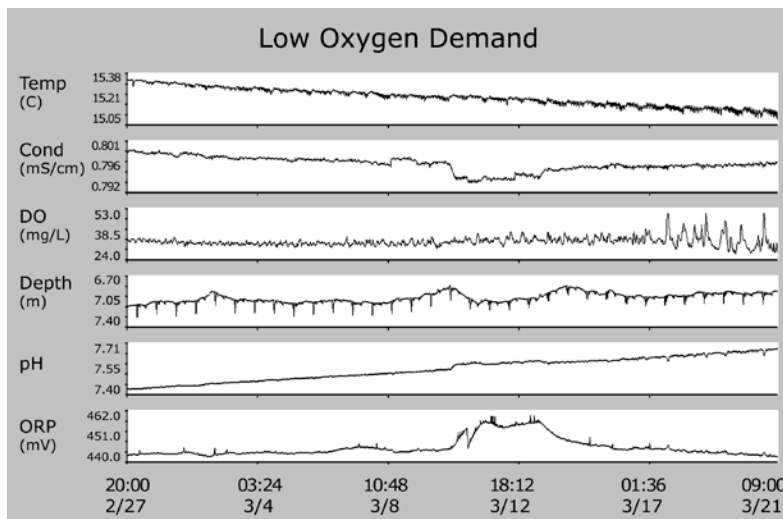
sondes are used to delineate areas of high- and low-oxygen demand rates. This can be used to determine the level of contamination for a given area because the oxygen consumption rate is dependent on the amount of contaminant present. Higher levels of contamination will be located in areas of higher oxygen consumption rates because the bacteria are consuming more oxygen.

The site has been monitored with YSI instruments for more than three years. The

long-term data coupled with soil sampling data are used to fine tune the configuration of the oxygen sparge sequence in order to target areas of higher contamination.



Portable oxygen delivery system designed by XDD. Injection lines are connected to valves on the exterior of the trailer.



High dissolved oxygen levels indicate a low oxygen demand environment.

In addition to continuously monitoring the ground water quality, XDD conducts low-flow sampling at the site on a quarterly basis to monitor the progress of the remediation project. Using a YSI sonde with a flow cell, XDD is able to monitor for parameter stabilization to ensure the collected field samples are a good representation of the site.

“YSI has helped XDD provide a high level of service to our clients by consistently providing reliable, high quality monitoring data. We can count on the data we get from YSI products to be accurate and usable in a variety of field applications,” states Norton. “YSI instruments are also very user-friendly which increases our efficiency both in the field and office.” And XDD’s clients benefit from this when contaminants are removed more quickly and with the assurance of full remediation.

For additional information please contact

YSI Environmental

Tel. +1 937 767 7241

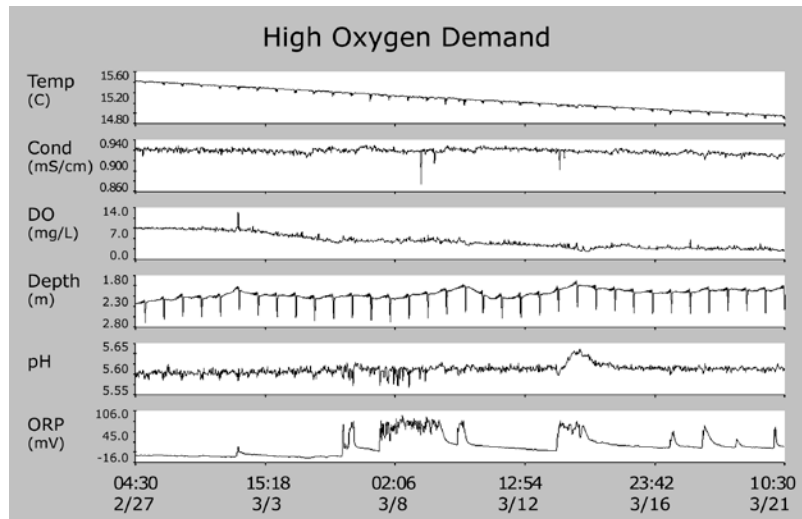
US 800 897 4151

Fax +1 937 767 1058

Email. groundwater@ysi.com

Web. www.ysi.com

For more information regarding XDD and its remediation and consulting services, please call 800 486-3575 or visit www.xdd-llc.com.



Low dissolved oxygen levels indicate a high oxygen demand environment.