

# Case Study: Groundwater Monitoring Comes of Age with the YSI ProDSS

Hahn Associates, Inc. (HAI) based in Portland, Oregon, provides environmental consulting services related to contamination of soil and groundwater in the Pacific Northwest. They specialise in problem solving for the municipal, commercial and industrial communities, and their clients have included individuals, businesses, lenders, developers, land conservation groups, utilities, and public agencies. HAI has conducted over 4,000 Phase 1 Environmental Site Assessments (ESA) since 1987. Their experienced team of environmental professionals has assessed every type of property, ranging from residential properties to large tracts of undeveloped land, to commercial and industrial properties.

Much of the work that HAI has done over the years is long-term low-flow groundwater monitoring projects, to monitor for specific contaminants and indicator parameters, and to provide detailed data back to governing bodies or clients as a result of that monitoring. With such an active workload, and with many clients and agencies relying on the data they provide, HAI leans heavily on their monitoring devices and instrumentation - both in the lab and in the field. At the end of the day, they need to be accurate, they need to be dependable, and they need to be consistent. When it comes to field instruments, they also need to be rugged, to take the beating of the outdoors.

## Data You Can Trust

In the fall of 2014, to hopefully address some of the challenges they were having with existing handheld instruments for the field, HAI acquired a newly-released YSI ProDSS multi-parameter handheld water quality meter. With four sensor ports and the ability to measure up to 20 different parameters, HAI was very interested to see how it performed and how it might impact the daily routines of their field staff and benefit their clients as well. What they got was a ruggedised, easy to use field instrument that provided the accuracy and integrity of lab quality data. "We mainly use the new meter on low-flow groundwater monitoring projects," says Ben Uhl, R.G., Field Manager for HAI. "During the groundwater

purging process of the wells, we can identify when they have reached 'stable' conditions, upon which a groundwater sample can be collected. Our stabilisation criteria is important to meet and it is essential to have a meter that can provide accurate and precise readings of these measurements. When looking at trend plots of field measurements over time, reliable data is a must, and the ProDSS is able to provide data we can trust. And that's a huge benefit for us."

## Copper Sulfate Contamination

Along with the slew of ongoing, long-term monitoring projects that HAI has been involved with, they are also engaged in specific projects, typically brought in to address suspected contamination of groundwater or soil to one extent or another. One such project involved a manufacturing facility regarding a potential copper sulfate release to groundwater. The facility manufactured circuit boards for use in numerous applications, from automotive and flight control systems to telecom switching and renewable energy, and HAI was brought in to install some wells for groundwater sample collection, and needed to provide the data back to the client. "The data captured by the ProDSS, monitoring PH and ORP in temporary groundwater wells, helped us to determine and delineate the presence and magnitude of the release," says Ben. "This saved the client from installing additional wells for investigation and groundwater sample collection, thereby reducing costs related to equipment, field staff, and laboratory testing, and that turned out to be a big deal for them."

## Chlorinated Solvent Bioremediation

Another specific application was a site where chlorinated solvents related to a former dry cleaning operation had contaminated groundwater. Under the Voluntary Cleanup Program through the Oregon Department of Environmental Quality (DEQ) HAI installed a bioremediation system in which a carbon substrate was injected into recirculating groundwater (extraction and injection wells). Field readings, taken weekly by the ProDSS from the wells, monitoring the area of influence

of the system performance. Identifying groundwater wells with a high positive value ORP indicated the carbon substrate had not yet reached a particular location of the site. And conversely, measurements with very negative ORP or low DO (dissolved oxygen) levels indicated that the carbon substrate was having an effect (anaerobic - reducing environment) and bioremediation of the chlorinated solvents is occurring.

"This project required highly accurate field readings, which we were able to get from the ProDSS," Ben continues. "To confirm the accuracy of the data with the DEQ, we were able to directly correlate the weekly field measurements with lab data and trends over time, confirming chlorinated solvent biodegradation. The field measurements provide us with 'real-time' insight of general system performance. This saves us money so we do not have to collect samples constantly for laboratory testing, which in turn reduces project costs related to field staff and additional equipment usage. It's a win-win for HAI and for the customer."

## Game Changer

In addition to saving time and money with sophisticated instrumentation like the ProDSS, the HAI team has also found that features like simple calibration, backlit color display, and long life of the rechargeable battery can provide game changing benefits when looking at the different types of handheld meters available on the market. The built-in turbidity probe of the ProDSS also saves the time typically needed to fill vials for a separate colorimetric meter, and the GPS coordinates that are automatically captured with each reading - tying the readings back to a specific location - is a key user friendly feature as well. Given their rich history and their involvement with such a broad scope of projects, over the years HAI has seen it all. And to be able to see the parameters they need to see in their samples - with the use of cutting edge scientific instrumentation that gets the job done easily and efficiently - has provided them with great success in the field of environmental consulting and groundwater monitoring.

