For this Company Spotlight, we interviewed Sourcewater Founder and CEO, Josh Adler, about their efforts to make the oilfield water industry more efficient and transparent. Sourcewater strives to show where every drop of water comes from and ultimately goes to in the oilfield, both on and beneath the surface of the Permian Basin and other U.S. shale plays. For more information on Sourcewater, please visit www.sourcewater.com.

Background: While a Sloan Fellow at MIT in 2012, Josh Adler learned about the exponential growth the oil and gas industry was experiencing from the shale revolution. While Josh had no prior oil and gas experience, he knew that any industry growing that fast presented a multitude of opportunities for value enhancement through process improvement. After researching the differences between conventional and unconventional oil and gas operations, Josh realized that the amount of water that had to be sourced, handled, and disposed was one of the most substantial variations, and he believed that applying innovative digital solutions to oilfield water logistics could help operators save time and money.

In 2014, Josh founded Sourcewater initially to serve as an online marketplace for buying and selling oilfield water, as sourcing water was a very manual process that involved calling or emailing several parties. Over the next few years, Sourcewater was actively utilized by thousands of users. However, the number of transactions completed through the platform was relatively small, which meant that users were primarily utilizing Sourcewater for market intelligence purposes. This led Josh and his team to pivot from a transaction-based revenue model to building out a subscription-based oilfield water research data offering in 2017.

Value Proposition: Oilfield water information offered by the major energy data providers largely relies on regulatory filings, which typically lag actual activity by several months to a year. Although Sourcewater initially based its oilfield water data offering on these regulatory filings, Josh and his team knew that in order to capture market share from other energy data providers and increase customer adoption, Sourcewater would need to offer additional value. Sourcewater's goal became and remains to provide end-to-end oilfield water market intelligence in as close to real time as possible. Thus, over the past couple of years, Sourcewater has added the following features to its offering:

- *Real-time Vehicle Location/Routing:* An Affiliate of Sourcewater acquired Wellsite Navigator, which is a smartphone navigation application that helps vehicles route to oil, gas, and disposal wells using roads that are not mapped on other navigation platforms. By analyzing oilfield vehicle traffic, Sourcewater can discover and map wellsites and disposal facilities well before regulatory filings are available and provide intel into where oilfield activity is currently focused.

- *Satellite Image Analysis:* In most cases, there is not a specific permitting requirement to either construct surface water ponds or well pads. With the construction of water ponds and well pads often completed up to six months before the filing of associated drilling permits, Sourcewater wanted an efficient method to discover newly constructed ponds and pads. When Josh and his team realized that water ponds and well pads could be discerned in satellite images, they developed patented, machine-learning-based image analytics that evaluates satellite images every five days in order to detect ponds and pads, which enables new ponds and pads to be added to Sourcewater's market intelligence offering in near real time.

- *Local Newspaper Scraping:* Before permits for saltwater disposal wells (SWDs) can be filed, the operator must give notice to the local communities, so any formal complaints can be submitted and addressed. These notifications are typically published in newspapers with very small circulation. Since this information can be very valuable to service companies that serve the water midstream sector as well as for E&P operators' planning purposes, Sourcewater developed a proprietary system that analyzes these local newspapers in order to determine the approximate location of proposed SWDs.

Subsurface Insights for Disposal Formations: In addition to mapping and documenting where water is coming and going on the surface, Sourcewater also wants to inform the industry about the optimal injection formations for each specific SWD as well as provide E&P operators with critical information about the formation characteristics that affect drilling and completion procedures, such as depth and pressure in that specific location. Today, the vast majority of wastewater in the Permian is injected into four formations even though there are 47 disposal formations available. To champion the subsurface intelligence offering, Sourcewater hired the leading expert in saltwater disposal geology from The University of Texas at Austin to develop a 3D map of the disposal formations and further educate the marketplace.

Closing Thoughts: As it continues to make strides to offering a comprehensive, near real time oilfield market intelligence platform, Sourcewater is hopeful that the "information silos" in the industry will continue to be eliminated, as intel on water management is critical to the entire spectrum of the upstream oil and gas value chain. We look forward to seeing how Sourcewater can help the industry be more efficient in not only in their water management functions but across their entire upstream operation.