

Remedial Action for Arroyo Hondo State Lead Site

Santa Fe, New Mexico

Client

New Mexico
Environment
Department

Highlights

- ◆ State Lead remediation services for SVE system expansion, existing SVE equipment replacement, and a containerized groundwater treatment system
- ◆ Installed 20 wells in fractured bedrock lithology using sonic and air rotary drilling technologies
- ◆ Implemented pneumatic pumps due to relatively low extraction rates
- ◆ Treated water discharged to a low pressure sanitary sewer using a grinder pump
- ◆ Coordinated public involvement with impacted community stakeholders

Releases from former underground and above ground petroleum storage tank systems have contaminated both soil and groundwater at the Arroyo Hondo State Lead Site in Santa Fe, New Mexico, and impacted downgradient domestic water supply wells. After three decades of intermittent remediation by others, the New Mexico Environment Department (NMED) Petroleum Storage Tank Bureau (PSTB) retained Daniel B. Stephens and Associates (DBS&A) to expedite the timeframe for corrective action and move the site toward closure. DBS&A's plan included expanding the existing soil vapor extraction (SVE) system, replacing existing SVE equipment, and installing a new containerized groundwater treatment system.

DBS&A recognized early on that additional wells would be needed to address significant gaps in the existing monitor and remediation well network. Twenty (20) new wells were installed through fractured bedrock in two different mobilizations,



DBS&A staff conducted aquifer pumping tests to assess reasonable flow rates for groundwater extraction.



DBS&A provided oversight and CQA for the installation of 20 wells, most of which were installed in highway ROW.

using a combination of air rotary and sonic drilling technologies. Drilling locations were complicated by variable site topography, dense vegetation, and extensive highway right-of-way (ROW). DBS&A provided geologic oversight and construction quality assurance (CQA) during installation of the wells as well as regular soil and groundwater sampling.

The DBS&A team also conducted aquifer pumping tests, coordinated SVE pilot testing, and synthesized the data and associated analyses to update the Final Remediation Plan (FRP) and associated engineering design documents. The FRP was updated and

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remediation was implemented in multiple phases to prioritize removal of the source area mass, expedite the remediation timeframe, and satisfy client budget constraints.

After PSTB approved the FRP, DBS&A led the effort to implement corrective action by providing construction observation, CQA, and developing as-built documentation, including record engineering drawings. DBS&A determined that the existing SVE treatment equipment had exhausted its useful life, so containerized equipment owned by NMED, including an electric catalytic oxidizer, was repurposed from another PSTB site to increase overall system capacity and minimize the overall cost to the client. The SVE blower was provided with a variable frequency drive (VFD) to provide operational flexibility as new remediation wells were connected during SVE system expansion. A state-of-the-art telemetry system provided remote-start capability and alarm notifications that minimized system downtime.

DBS&A worked with multiple reliable and known vendors to develop the most cost-effective solution to site-specific water quality issues, while also meeting an aggressive project schedule. DBS&A reviewed submittals to ensure that the selected equipment would meet remedial goals and interface with existing SVE equipment. Due to relatively low extraction rates, DBS&A set up pneumatic pumps to route groundwater from wells directly to the containerized treatment equipment. Treated water is discharged to a low pressure sanitary sewer using a grinder pump.

DBS&A worked closely with stakeholders, including the City of Santa Fe, Santa Fe County, New Mexico Department of Transportation, New Mexico Office of the State Engineer, and private landowners. DBS&A provided technical support for access and water rights issues, including drafting of agreements, and coordinated delivery of potable water to a bulk delivery system on an adjacent property. DBS&A also performed community relations by presenting technical information to students at two separate schools located on property impacted by the contamination.

During the treatment phase, which is still in progress, DBS&A staff provide operation and maintenance (O&M) services with a focus on optimizing system performance and maximizing mass removal.



DBS&A creatively engineered larger SVE equipment to fit within a space that is shared by highway ROW and a utility corridor.