



August 17, 2016

Reference No. 088173

Keith Coffman, L48 HSER  
ConocoPhillips RM&R  
600 North Dairy Ashford,  
EC3 06-W056  
Houston, TX 77079

Dear Mr. Coffman:

**Re: Monitoring Well Installation Work Plan  
State Com J #6 (API # 30-045-10070)  
3R-468  
ConocoPhillips Company  
Unit L Sec 36, T31N, R9W  
San Juan County, New Mexico**

GHD Services, Inc. (GHD) is pleased to present this workplan to further assess groundwater quality at the above referenced site (Site). This workplan is submitted based on discussions regarding this Site with the New Mexico Oil Conservation Division (NMOCD). The Site is situated on lands owned by the State of New Mexico within Section 36, Township 31 North, Range 9 West. Geographical coordinates for the Site are 36° 51' 8.97"N and 107° 44' 24.45"W. A Site location map is included as Figure 1. Project Information

Groundwater investigation and remediation activities were performed at the Site in 2014 to address impacts from a pipeline release in the spring of 2013. The project area consists of the release site from the pipeline in a large wash between the State Com J6 natural gas wellhead and the State Com J6 Compressor site. Four groundwater recovery wells and one monitoring well were installed followed by three consecutive groundwater recovery events in May 2014. Mobile dual-phase extraction (MDPE) events were conducted in August and November 2014 and again in April 2015. Groundwater monitoring was conducted after the groundwater recovery in May 2014, and after MDPE events in 2014 and 2015.

Groundwater monitoring at the site has been conducted generally on a quarterly basis. During these events, a groundwater sample has been collected only from monitoring well MW-1 since the recovery wells usually contained either measureable free product or a continuous sheen and therefore were not sampled for dissolved-phase constituents.

Benzene has been detected in groundwater collected from monitor well MW-1 in concentrations above the New Mexico Water Quality Control Commission (NMWQCC) standard since sampling began in 2014. Measureable free product has also been present in the recovery wells since installation.

In an October 31, 2014 meeting with the NMOCD and ConocoPhillips to discuss Site status, two additional groundwater monitoring wells were requested to be installed. The NMOCD requested monitoring wells be installed down gradient and cross gradient of the recovery well cluster in the release location to monitor dissolved-phase contaminant migration (Figure 2).

GHD

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## 1. Scope of Work

The proposed new monitoring wells, MW-2 and MW-3, will be advanced to approximately 15 feet below ground surface (ft bgs). Groundwater at the site is anticipated to be encountered between 4 and 5 ft bgs.

The newly-installed monitoring wells will be sampled and analyzed for BTEX by EPA method 8260B and for semi-volatile organic compounds by EPA method 8270. Data from this sampling event will be used as an aid in development of plans for further remedial efforts.

### ***Task 1 - Project Preparation***

This task includes preparing and submitting this Work Plan and other project preparation activities that occur after Work Plan approval, but before fieldwork mobilization. After receiving authorization to proceed, GHD will:

- Update the Site Health and Safety Plan (HASP) and job hazard analyses (JHAs), as necessary, that address field work specified in the Work Plan;
- Coordinate site access with appropriate ConocoPhillips staff.
- Develop monitoring well drilling permits for submittal to the New Mexico Office of the State Engineer.
- Execute GHD's subsurface clearance protocol.
- Develop work orders and contracts for subcontractors.

All on Site activities will be coordinated through ConocoPhillips. GHD and the drilling contractor will notify New Mexico One-Call to facilitate location of underground utilities and pipelines prior to drilling activities. Boreholes for monitoring well installations will be pre-drilled to a depth of 5 ft bgs using hand auguring or hydro excavation. GHD will document subsurface clearance activities in accordance with our protocol.

### ***Task 2 –Monitoring Well Drilling and Installation***

GHD, ConocoPhillips representatives and the drilling subcontractor will mobilize to the Site to perform a project kickoff meeting. The project kickoff meeting will include a tailgate safety meeting to discuss the Site-specific HASP, applicable JHA's, and stop work authority. Tailgate safety meetings will be conducted daily at the beginning of the day and as conditions change.

Borings will be drilled using a hollow-stem auger drill rig and will be supervised by a GHD geologist/environmental scientist. Cuttings and samples will be logged according to the Unified Soil Classification System.

Each boring will be advanced to an estimated depth of 15 ft bgs or refusal. Grab samples of drill cuttings will be field screen for volatile organic compounds using a calibrated photo-ionization detector (PID). The new monitoring well locations are located far enough down/cross gradient that soil impacts are not



anticipated. Should PID readings indicate otherwise, soil cuttings will be containerized for later off-Site disposal. No samples will be collected from below the saturated zone level.

A 2-in. diameter, Schedule 40 polyvinyl chloride (PVC) monitoring well will be installed in the borings. Each well will be constructed with 10 feet of 2-inch machine slot 0.010-in. PVC screen. The remainder of the wells will be constructed with 2-in. diameter PVC blank casing.

The borehole annulus will be backfilled with 10-20 silica sand from the bottom to approximately 2 feet above the well screen. A seal of 3/8-in. hydrated bentonite pellets will be placed above the sand pack. The remainder of the borehole annulus will be filled with a high-solids bentonite grout mix.

The surface completion will consist of a stick-up steel well monument at least 3 feet above the existing grade. The well monument will be placed within a 24 in. by 24 in. by 4 in. thick concrete pad. Monitoring well MW-3, to be located near the access roadway, will be protected by concrete-filled steel bollards.

Well development will be performed by bailing, pumping, or a combination of both. Development of each well will be performed until the water is reasonably clear and parameters of pH, temperature, and specific conductance have stabilized (within a 10 percent margin).

The top of each casing of the newly installed monitoring wells will be surveyed and tied in to existing top of casing elevations.

### ***Task 3 –Groundwater Monitoring***

Initial groundwater sampling will be conducted within one month following well installation and development to allow for aquifer equilibration. Prior to groundwater sample collection, the depth to groundwater will be observed using an oil/water interface probe.

A disposable bailer will be used to purge and sample each well. A groundwater sample will be collected once specific conductance, pH, and temperature are determined to have stabilized (within a 10 percent margin). Records of each sampling event will be kept on GHD ground water sampling forms and in a bound field notebook dedicated to the Site.

Groundwater samples will be analyzed for BTEX by EPA method 8260 and for SVOC's by EPA method 8270. Groundwater samples will be collected in laboratory-prepared bottles, placed on ice in a cooler, and transported under chain of custody documentation. Samples will be submitted to Pace (or other COP-approved laboratory) via overnight courier.

### ***Task 4: Monitor Well Installation Reporting***

Results of the monitoring well installation and groundwater sampling will be included in the Annual Groundwater Monitoring Report for the Site. Specific reporting on the installation and sampling will include:



- An updated site plan showing the location of the newly installed wells and other site features.
- Boring logs and monitoring well construction diagrams.
- Tabulation of soil field screening and groundwater laboratory analytical test results.

The Annual Groundwater Monitoring Report will include copies of laboratory chain-of-custody documentation and results, laboratory quality assurance/quality control (QA/QC) documentation, tabulated groundwater elevations and concentration data, groundwater elevation maps, and a summary of findings.

### ***Health and Safety Considerations***

Personal protective equipment including fire retardant clothing, steel-toed work boots, gloves, safety glasses and hard hats will be required (basic Level D requirements) during field tasks. The project HASP will be maintained onsite. It will be reviewed and signed by on-site personnel, subcontractors, and authorized visitors.

### ***Investigation Derived Waste***

Soil cuttings will be field screened with a PID during drilling and those soils above 100 ppm will be placed in DOT approved 55-gallon drums, sealed, labeled and staged on Site pending laboratory soils analyses. Disposal of the soil at a landfarm will be based on analytical results of samples. Field screened soils found to be below the 100 ppm threshold will be thin-spread across the Site. Liquids recovered during monitoring well development and sampling will be transferred to the on-Site produced water tank. Notifications of quantities placed in the on-Site tank will be made to the appropriate ConocoPhillips San Juan Basin personnel.

### ***Quality Assurance/Quality Control***

Well installation and sampling will be completed in accordance with GHDs standard Quality Assurance/Quality Control procedures designed to minimize cross-contamination between samples and to provide reliable laboratory results.

### ***Cost***

A cost estimate spreadsheet is provided with a breakdown of anticipated labor, subcontractor, and other direct costs (travel/per diem, field equipment rental, etc.) to complete the scope of work described herein.

### ***Schedule***

GHD is prepared to initiate the scope of work immediately, subsequent to ConocoPhillips approvals, the availability of resources and stakeholder concurrence. A start date and schedule of report submittals will be provided following receipt of driller availability.



If you have any questions or comments with regards to this work plan, please do not hesitate to contact GHDs Albuquerque office at (505) 884-0672. Your timely response to this correspondence is appreciated.

Sincerely,

GHD

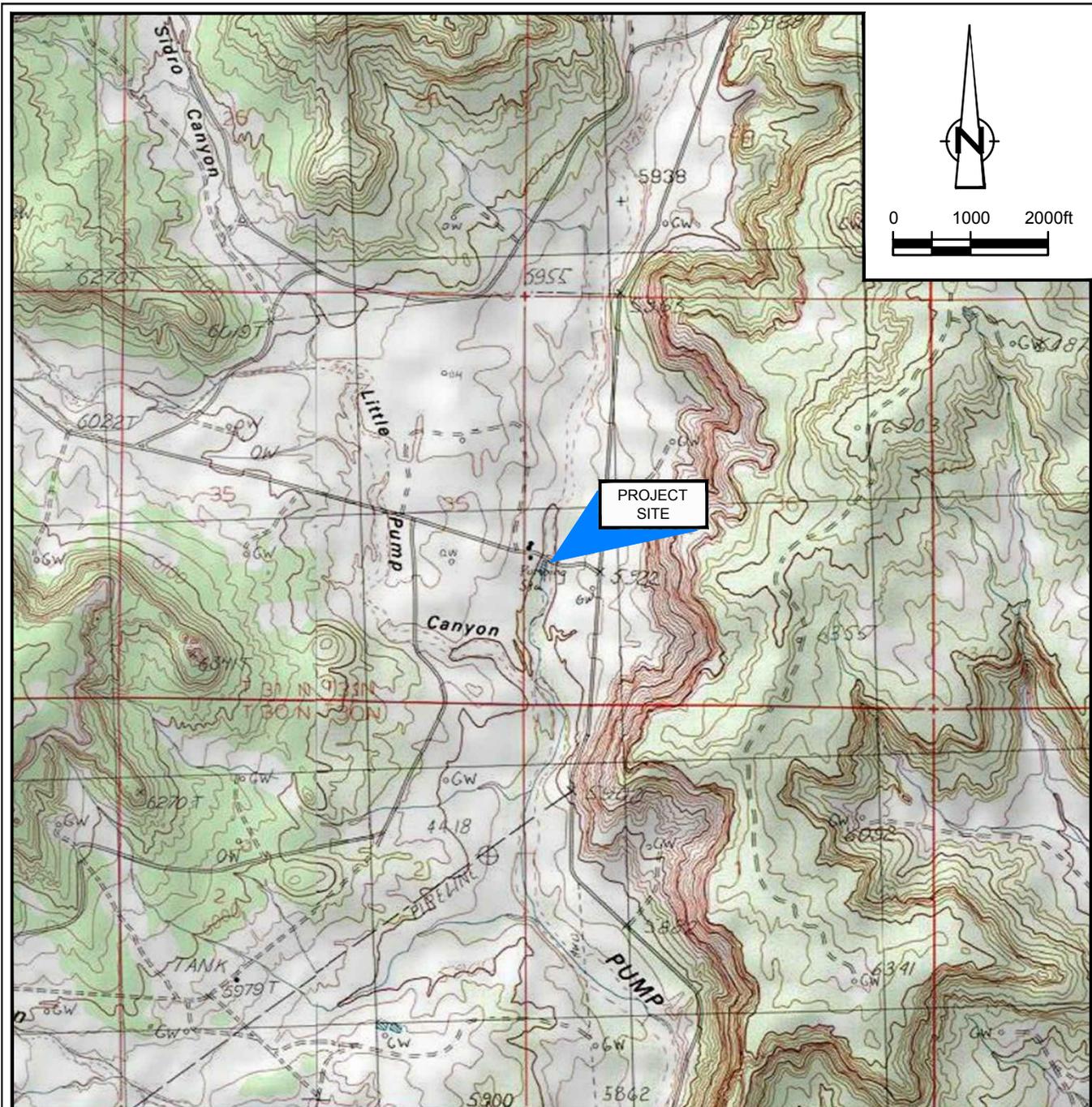
A handwritten signature in blue ink that reads "Jeffrey Walker". The signature is fluid and cursive.

Jeffrey Walker, CPG, PMP  
Project Manager

CM/mc/01

A handwritten signature in blue ink that reads "Bernard Bockisch". The signature is fluid and cursive.

Bernard Bockisch, PMP  
Sr. Project Manager

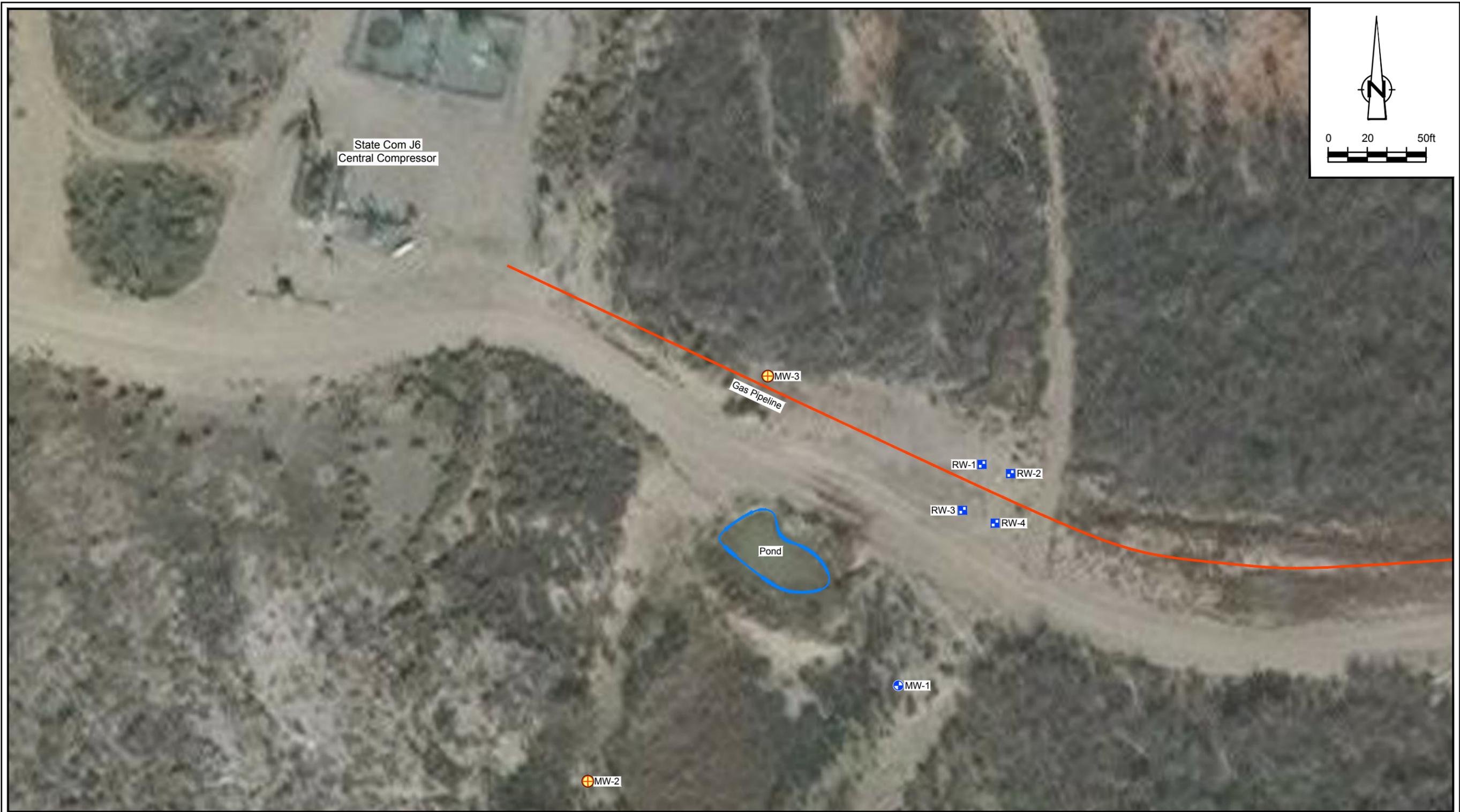


SOURCE: USGS 7.5 MINUTE QUAD  
"ARCHULETA, NEW MEXICO"

LAT/LONG: 36.8524° NORTH, 107.7401° WEST  
COORDINATE: NAD83 DATUM, U.S. FOOT  
STATE PLANE ZONE - NEW MEXICO WEST

Figure 1  
SITE LOCATION MAP  
STATE COM J6  
NW 1/4 / SW 1/4 OF SEC. 36, T31N, R9W  
SAN JUAN COUNTY, NEW MEXICO  
*ConocoPhillips Company*





SOURCE: © 2015 - TerraServer®

LEGEND	
	Recovery Well Location
	Monitoring Well Location
	Proposed Monitoring Well



Figure 2  
 LNAPL RECOVERY WELL AND GROUNDWATER MONITOR WELL LOCATION MAP  
 STATE COM J6  
 NW 1/4 / SW 1/4 OF SEC. 36, T31N, R9W  
 SAN JUAN COUNTY, NEW MEXICO  
 ConocoPhillips Company