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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

August 8, 2022

Mr. Joshua Roberts
Campo Viejo Gas Processing Plant
1548 County Road 165
Plains, Texas 79355

Re: Monitoring, Reporting and Verification (MRV) Plan for Campo Viejo Gas Processing Plant

Dear Mr. Roberts:

The United States Environmental Protection Agency (EPA) has reviewed the Monitoring, Reporting and Verification (MRV) Plan submitted for Campo Viejo Gas Processing Plant, as required by 40 CFR Part 98, Subpart RR of the Greenhouse Gas Reporting Program. The EPA is approving the MRV Plan submitted by Campo Viejo Gas Processing Plant on July 7, 2022, as the final MRV plan. The MRV Plan Approval Number is 1013609-1. This decision is effective August 13, 2022 and is appealable to the EPA's Environmental Appeals Board, under 40 CFR Part 78.

If you have any questions regarding this determination, please contact me or Melinda Miller of the Greenhouse Gas Reporting Branch at miller.melinda@epa.gov.

Sincerely,

Julius Banks, Chief
Greenhouse Gas Reporting Branch

Technical Review of Subpart RR MRV Plan for Campo Viejo Gas Processing Plant

August 2022

Contents

<u>Appendices</u>

This document summarizes the U.S. Environmental Protection Agency's (EPA's) technical evaluation of the Greenhouse Gas Reporting Program (GHGRP) Subpart RR Monitoring, Reporting, and Verification (MRV) plan submitted by the Campo Viejo Gas Processing Plant (CVGPP) facility for the carbon dioxide (CO_2) capture and storage (CCS) project in the Bronco (Siluro-Devonian) Field in Yoakum County, Texas. Note that this evaluation pertains only to the Subpart RR MRV plan, and does not in any way replace, remove, or affect Underground Injection Control (UIC) permitting obligations.

1 Overview of Project

CVGPP states in the introduction of the MRV plan that it currently has a Class II permit for acid gas injection (AGI), issued by the Texas Railroad Commission (TRRC) in August 2018, for its Pozo Acido Viejo #1 well (PAV #1), API No. 42-501-36935. This permit currently authorizes CVGPP to inject up to 6.9 million standard cubic feet per day (MMSCF/d) of treated acid gas (TAG) into the Bronco Field at a depth of 12,020 to 12,349 feet with a maximum allowable surface pressure of 6,010 pounds per square inch (psi). Since being permitted, the plan states that injection has proceeded without incident. This AGI well is associated with the Campo Viejo gas treating and processing plant (Campo Viejo Facility) located in Yoakum County, Texas, approximately 10 miles west of the town of Plains.

In addition to submitting this MRV plan to the EPA, CVGPP is also applying to the TRRC for an amendment to the PAV #1 well's Class II permit to increase its authorized injection volume to 20 MMSCF/d. The MRV plan states that approval of the permit amendment will allow CVGPP to increase the capacity of its existing Campo Viejo Facility, which removes H_2S and CO_2 from natural gas production using amine treating. Approval will also increase the injection well capacity for a future gas processing facility, which is currently under development. Additionally, expanded capacity allows CVGPP to potentially provide future disposal in its acid gas injection well for oil and gas waste derived TAG from similar third-party gas processing facilities.

CVGPP states in the MRV plan that the PAV #1 well is designed in such a way to protect against migration of CO_2 into productive oil and gas formations, freshwater aquifers, and against surface releases. The injection interval for PAV #1 is located over 3,320 feet below the active producing formations in the area and 9,770 feet below the base of the lowest underground source of drinking water (USDW), as shown in Figure 2 of the MRV plan. As stated in Section 6 of the MRV plan, this well will initially inject a CO_2 stream that contains 9.75% H_2S and 89.25% CO_2. The concentration of H_2S will drop to approximately 6% as additional volumes are added. For these reasons, the MRV plan states that the well and the facility are designed to minimize any leakage to the surface.

In Section 2 of the MRV plan, CVGPP describes the geologic setting, planned injection volumes and process, and the reservoir modeling performed for the PAV #1 well. The target injection formation is the Wristen Group. This formation was deposited in a basin platform setting across the northern half of the Permian Basin. The MRV plan refers to this sequence as Devonian, Silurian-Devonian, or Siluro-Devonian in age. The Silurian-age lithology on the inner platform is dominated by grain-rich skeletal carbonates. Carbonate buildups are common within the shallow inner platform, mainly skeletal wackestone, indicating a lower-energy deposition on the inner platform. The Wristen Group is composed of three formations: Fasken, Frame, and Wink Formations. The Frame and Wink Formations are found near the ramp boundary to the south, while the Fasken formation is found predominantly in the inner platform, where the PAV #1 well is located. The Fasken Formation is predominately dolomite grading to limestone, occurring as cycles, down section. Figure 4 in the MRV plan shows a generalized stratigraphic column of the area underlying the CCS project site.

The MRV plan states that the upper confining interval is the Woodford Shale. The Woodford Shale is a late Devonian-aged organic-rich shale deposited as a result of a widespread marine transgression. The flooding event occurred over the majority of the Permian basin, which produced a low relief, blanket-like shale deposit of the Woodford. Two major lithofacies found within the Woodford are black shale and siltstone. Nutrient-rich surface waters promoted the decay of abundant organic matter within the Woodford, resulting in a high total organic carbon (TOC) percentage.

The low-permeability Fusselman Formation will act as the lower confining unit for the injection interval. Figure 10 of the MRV plan shows the tight limestone rock in the lower section that was not exposed to leaching diagenesis. The MRV plan states that the porosity in the lower section can range from 2% to 3%, with permeabilities below 1 millidarcy (md). The MRV plan states that these characteristics represent ideal sealing properties to prohibit any migration of injected fluid outside of the injection interval.

The description of the project is determined to be acceptable and provides the necessary information for 40 CFR 98.448(a)(6).

2 Evaluation of the Delineation of the Maximum Monitoring Area (MMA) and Active Monitoring Area (AMA)

As part of the MRV plan, the reporter must identify and delineate both the maximum monitoring area (MMA) and active monitoring area (AMA), pursuant to 40 CFR 98.448(a)(1). Subpart RR defines the maximum monitoring area as “the area that must be monitored under this regulation and is defined as equal to or greater than the area expected to contain the free phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile.” Subpart RR defines the active monitoring area as “the area that will be monitored over a specific time interval from the first year of the period (n) to the last year in the period (t). The boundary of the active monitoring area is established by superimposing two areas: (1) the area projected to contain the free phase CO_2 plume at the end of year t, plus an all-around buffer zone of one-half mile or greater if known leakage pathways extend laterally more than one-half mile; (2) the area projected to contain the free phase CO_2 plume at the end of year t + 5.” See 40 CFR 98.449.

CVGPP has defined the AMA as having the same boundary as the MMA, which is the maximum extent of the plume boundary plus a ½-mile buffer. As stated in the introduction to the MRV plan, CVGPP has used the applied-for expanded permit capacity of 20 MMSCF/d for the 22-year life of the project in modeling inputs to determine the MMA.

The plume boundary was defined by the weighted average gas saturation in the aquifer. A value of 3% gas saturation of CO_2 was used to determine the boundary of the plume. When injection ceases in year 25, the MRV plan states that the areal expanse of the plume will be 2,473 acres. The maximum distance between the wellbore and the edge of the plume is expected to be approximately 0.87 miles to the southeast. After 25 additional years of density drift, the areal extent of the plume is predicted to be 3,193 acres with a maximum distance to the edge of the plume of approximately 1.35 miles to the southeast. A map of the plume can be seen in Figure 25 of the MRV plan.

The MMA, as it is defined in the MRV plan, is consistent with Subpart RR requirements because the defined MMA accounts for the expected free phase CO_2 plume, based on modeling results, and incorporates the additional 0.5-mile or greater buffer area. The rationale used to delineate the MMA, as described in CVGPP's MRV plan, accounts for the existing operational and subsurface conditions at the site, along with any potential changes in future operations. Therefore, the designation of the AMA and MMA as the is an acceptable approach.

The delineations of the MMA and AMA were determined to be acceptable per the requirements in 40 CFR 98.448(a)(1). The MMA and AMA described in the MRV plan are clearly and explicitly delineated in the plan and are consistent with the definitions in 40 CFR 98.449.

3 Identification of Potential Surface Leakage Pathways

As part of the MRV plan, the reporter must identify potential surface leakage pathways for CO_2 in the MMA and the likelihood, magnitude, and timing of surface leakage of CO_2 through these pathways pursuant to 40 CFR 98.448(a)(2). CVGPP identified the following as potential leakage pathways in their MRV plan that required consideration:

- Leakage from Surface equipment
- Leakage through wells within MMA
    - Existing wells
    - Future drilling
    - Groundwater wells
- Leakage through Faults and Fractures
- Leakage through Confining Layers
- Leakage from Natural or Induced Seismicity

3.1 Leakage through Surface Equipment

The MRV plan states that the Campo Viejo Facility is designed for injecting acid gas containing H_2S, and is, therefore, designed and operated to minimize leakage from points such as valves and flanges following industry standards and best practices. The MRV plan states that H_2S detectors are located around the facility and well site and are set to trigger alarms at 10 parts per million (ppm). Additionally, all CVGPP field personnel are required to wear H_2S monitors which are triggered at 5 ppm of H_2S. A shut-in valve is also located at the wellhead and is locally controlled by pressure, with a high pressure and low pressure shut-off.

Additional safety features noted in the MRV plan include emergency shutdown valves that isolate portions of the plant and pipeline, pressure relief valves along the pipeline to prevent over pressurization, and flares to allow piping and equipment to be de-pressured rapidly.

The MRV plan states that with the level of monitoring at the Campo Viejo Facility and the PAV #1 well, any release of H_2S and CO_2 would be quickly identified and the safety systems would quickly minimize the volume of the release.

Thus, the MRV plan provides an acceptable characterization of the likelihood of CO_2 leakage that could be expected through surface equipment.

3.2 Leakage through Wells in MMA

Existing Wells and Oil and Gas Operations

CVGPP states that production within the MMA has mostly been in shallower formations, such as the San Andres and Wolfcamp, with the closer of the two being separated from the Wristen Group by 3,300 feet. Of the 84 wells that have been drilled and completed within the plume area of PAV #1, 71 are active. Seven wells, not including PAV #1, penetrate the injection interval within the MMA. The MRV plan notes that the casing and cementing of each of the seven wells meets the TRRC regulations as specified in TAC § 3.13(a)(4). Five of these wells have been plugged and abandoned, per TRRC regulations as specified in § 3.14(d). One injection well is plugged across the Devonian interval and injects into the San Andres formation. The final well is shut-in and has not produced since 2015. Mechanical Integrity Tests (MITs) are performed annually to verify the PAV #1 well and wellhead's ability to hold pressure, according to the MRV plan. MITs can also indicate leakage.

Future Drilling

The MRV plan states that potential leak pathways caused by future drilling in the area are not expected to occur. The deeper formations in the area have proven to be less productive or non-productive, which is why the location was selected for injection. The TRRC designates the Bronco (Siluro-Devonian) Field as an H_2S field, which necessitates more rigorous casing, cementing, drilling, well control, and completion requirements under TRRC regulations. As stated in the MRV plan, any new wells within a one-quarter mile radius of PAV #1 will be required under TRRC Rule 13 to set steel casing and cement above the PAV #1 injection zone. Additionally, Rule 13 requires operators to case and cement across and above all potential flow zones and/or zones with corrosive formation fluids. The MRV plan states that if any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release.

Groundwater Wells

The MRV plan states that there are thirty-two groundwater wells located within the MMA, as identified by the Texas Water Development Board. All of the identified groundwater wells in the area have total depths less than or equal to 400 feet, as shown in the plan in Figure 31 and Table 7. Additionally, CVGPP has a water well on the facility property with a total depth of approximately 180 feet. The MRV plan also states that the surface and intermediate casings of the PAV #1 well, as shown in Figure 28, are designed to protect the shallow freshwater aquifers consistent with applicable TRRC regulations and the GAU letter issued for this location. The wellbore casings and cements also serve to prevent CO_2 leakage to the surface along the borehole.

Thus, the MRV plan provides an acceptable characterization of the likelihood of CO_2 leakage that could be expected through existing and future oil, gas, and groundwater wells.

3.3 Leakage through Faults or Fractures

The MRV plan states that dynamic modeling at the PAV #1 well location indicates migration of the plume will not intersect a fault. The MRV plan further asserts that regional faults act as structural traps creating a seal against the migration of hydrocarbons, as demonstrated by the Bronco Field. Therefore, the MRV plan states that should an unmapped fault exist within the plume boundary, vertical migration is unlikely. It also states that shale gouge within the fault plane from a thick Woodford shale section will prevent vertical transmission of injected fluid along the fault and contain it below the Woodford. Faulting in this region terminates vertically below the Pennsylvanian-age rock. Secondary confining shales within the Wolfcampian and younger strata provide additional, redundant confining layers that would prevent CO_2 from migrating into freshwater aquifers.

Thus, the MRV plan provides an acceptable characterization of the likelihood of CO_2 leakage that could be expected through faults or fractures.

3.4 Leakage through Confining Layers

According to the MRV plan, the Silurian-Devonian injection zones have competent sealing rocks above and below the porous sub-areally exposed carbonate. It states that the properties of the overlying transgressive Woodford shale (widespread deposition, high illite clay and organic matter composition, and low porosity and permeability) make an excellent sealing rock to the underlying Silurian formation. The MRV plan states that the underlying low porosity and permeability Fusselman carbonate minimize the likelihood of downward migration of injected fluids. It also states that the relative buoyancy of injected gas to the in-situ reservoir fluid makes migration below the lower confining layer unlikely.

Thus, the MRV plan provides an acceptable characterization of the likelihood of CO_2 leakage that could be expected through confining layers.

3.5 Leakage From Natural or Induced Seismicity

The MRV plan states that the location of PAV #1 is in an area of the Permian Basin that is inactive from a seismicity perspective, whether induced or natural. The MRV plan states that this is based on a review of historical seismic events on the USGS's Advanced National Seismic System site (from 1971 to present) and the Bureau of Economic Geology's TexNet catalog (from 2017 to present), as shown in Figure 32 in the MRV plan, indicates the nearest seismic event occurred more than 60 miles away. CVGPP suggests that a regional analysis of the probabilistic fault slip potential across the Permian Basin, as seen in Figure 33 in the MRV plan, further demonstrates that the PAV #1 well is in a seismically inactive area. CVGPP also states that this area has little to no potential for an induced seismicity event.

Thus, the MRV plan provides an acceptable characterization of the likelihood of CO_2 leakage that could be expected from natural or induced seismicity.

4 Strategy for Detection and Quantifying Surface Leakage of CO_2 and for Establishing Expected Baselines for Monitoring

40 CFR 98.448(a)(3) requires that an MRV plan contain a strategy for detecting and quantifying any surface leakage of CO_2, and 40 CFR 98.448(a)(4) requires that an MRV plan include a strategy for establishing the expected baselines for monitoring CO_2 surface leakage. Section 5 of the MRV plan details CVGPP's strategy for monitoring and quantifying CO_2 leakage, and section 6 of the MRV plan details strategies for establishing baselines for CO_2 leakage. The MRV plan explains that as the CO_2 stream injected at the Campo Viejo facility contains both H_2S and CO_2, fixed and personal H_2S monitors will be CVGPP's primary method for monitoring CO_2 leakage. The H_2S will serve as a proxy for CO_2. Additional approaches for detecting and quantifying surface leakage of CO_2 primarily include visual inspections, MITs, groundwater sampling, continuous monitoring, and seismic monitoring. Monitoring will occur during the planned 25-year injection period, or cessation of injection operations, plus a proposed 5-year post-injection period. Table 8 of the MRV plan, which has been reproduced below, provides a summary of the potential leakage pathway(s) and their respective monitoring methods.

Leakage Pathway	Monitoring Method
Leakage from surface equipment	Fixed H_2S monitors throughout the AGI facility
	Daily visual inspections
	Personal H_2S monitors
	Distributed Control System Monitoring (Volumes and Pressures)
Leakage through existing wells	Fixed H_2S monitor at the AGI well
	SCADA Continuous Monitoring at the AGI Well
	Annual Mechanical Integrity Tests ("MIT") of the AGI Well
	Visual Inspections
	Quarterly CO_2 Measurements within MMA
Leakage through groundwater wells	Annual Groundwater Samples on Property
Leakage from future wells	H_2S Monitoring during offset drilling operations
Leakage through faults and fractures	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage through confining layer	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage from natural or induced seismicity	Seismic monitoring station to be installed

SCADA – Supervisory control and data acquisition

4.1 Detection of Leakage from Surface Equipment

As described in section 5 of the MRV plan, the H_2S in the injectate serves as a proxy for the release of CO_2. The MRV plan states that the Campo Viejo Facility and the PAV #1 well are designed to handle H_2S through a facility design that minimizes leak points and corrosion points. Therefore, the MRV plan states that CO_2 leakage from surface equipment is unlikely to occur and would be quickly detected and addressed. Fixed H_2S monitors are set with a high alarm setpoint of 10 ppm of H_2S, while personal H_2S monitors have a setpoint of 5 ppm H_2S. CVGPP utilizes monitoring through automated systems. In addition, field personnel conduct daily visual field inspections of gauges, monitors, and leak indicators such as vapor plumes. Visual inspections include analysis of liquids collected from the line and inspection of the cathodic protection system. The MRV plan states that these inspections and automated systems allow CVGPP to quickly respond to any leakage situation. Monitoring will occur for the duration of injection and the post-injection period.

Thus, the MRV plan provides adequate characterization of CVGPP’s approach to detect potential leakage through surface equipment as required by 40 CFR 98.448(a)(3).

4.2 Detection of Leakage from Existing and Future Wells

As described in section 5 of the MRV plan, CVGPP continuously monitors and collects injection volumes, pressures, temperatures, and gas composition data from the PAV #1 well using their SCADA system. The

PAV #1 well has a pressure and temperature gauge placed in the injection stream at its wellhead, and a pressure gauge on the casing annulus. Any possible leakage data will be reviewed by qualified personnel who will follow response and reporting procedures when data is outside standard performance limits. The MRV plan also states that MITs performed annually at the PAV #1 well would also indicate the presence of a leak. Should the MITs reveal a leak, the well would immediately be isolated, and the leak mitigated.

The MRV plan states that the seven offset penetrating wells within the MMA are adequately cased and cemented to prevent potential leakage of CO_2 from the PAV #1 well plume. Additionally, the plan states that the plugging of these wells was executed in a way to prevent migration, as provided in Appendix E of the MRV plan. As discussed in the MRV plan, future drilling in the area is not expected to occur in the area of the PAV #1 well because, according to the MRV plan, the deeper formations, such as the Devonian, have proven to-date to be less productive or non-productive in this area. Furthermore, the MRV plan notes that the H_2S field designation also reduces the possibility of new wells being drilled. However, the MRV plan states that in the event an operator chooses to drill a new well, it would have to comply with strict TRRC regulations to do so. The MRV plan explains that new wells permitted and drilled to the PAV #1 well's injection zone, located within a one-quarter mile radius of the PAV #1 well, would be required to set steel casing and cement across and above all formations permitted for injection pursuant to TRRC Rule 13 to prevent migration from the injection interval. Upon approval of the MRV plan, CVGPP will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the MMA. Part of this monitoring program will include minimum, quarterly atmospheric monitoring near identified penetrations within the MMA.

Thus, the MRV plan provides adequate characterization of CVGPP's approach to detect potential leakage through existing and future wells as required by 40 CFR 98.448(a)(3).

4.3 Detection of Leakage through Faults, Fractures, and Confining Seals

As described in section 5 of the MRV plan, CVGPP continuously monitors the operations of the PAV #1 well through automated systems. The plan states that any deviation from normal operating conditions indicating movement into a potential pathway such as a fault or breakthrough of the confining seal would trigger an alert. Any such alert would be reviewed by field personnel and action taken to shut in the well, if necessary. Field H_2S monitoring systems would alert field personnel for any release of H_2S/CO_2 caused by such leakage.

Thus, the MRV plan provides adequate characterization of CVGPP's approach to detect potential leakage through faults, fractures, and confining seals as required by 40 CFR 98.448(a)(3).

4.4 Detection of Leakage Due to Natural or Induced Seismicity

As described in section 5 of the MRV plan, CVGPP plans to install a seismic monitoring station in the general area of the PAV #1 well. This monitoring station will be tied into the Bureau of Economic Geology's TexNet Seismic Monitoring system. If a seismic event of 3.0 magnitude or greater is detected, CVGPP states that it will review the injection volumes and pressures at the PAV #1 well to determine if any significant changes occurred that would indicate potential leakage.

Thus, the MRV plan provides adequate characterization of CVGPP's approach to detect potential leakage through natural or induced seismicity as required by 40 CFR 98.448(a)(3).

4.5 Determination of Baselines and Quantification of Potential CO_2 Leakage

Section 6 of the MRV plan outlines CVGPP's methodology for determining expected baselines for monitoring CO_2 surface leakage. CVGPP will use SCADA (Supervisory Control and Data Acquisition) monitoring systems, visual inspections, H_2S monitors, CO_2 detection, operational data, continuous monitoring, and ground water monitoring to establish baselines.

Daily Inspections

The MRV plan states that daily visual inspections will be conducted by field personnel at the Campo Viejo Facility and the PAV #1 well, according to the MRV plan. The presence of any new visual indicators such as vapor clouds or ice formations surrounding the Campo Viejo Facility will indicate CO_2 leakage.

H_2S Detection

The MRV plan asserts that known H_2S concentrations of the injectate will be used to establish expected baseline leakage. As stated in section 6 of the MRV plan, H_2S will be initially injected into the AGI well at a concentration of approximately ten percent or 100,000 ppm. The concentration will drop to approximately six percent as additional volumes are added. H_2S gas detectors are located throughout the AGI facility and well site and are set to trigger the alarm at 10 ppm. Additionally, all field personnel are required to wear personal H_2S monitors, which are set to trigger the alarm at 5 ppm. Any alarm would trigger an immediate response to protect personnel and verify that the monitors are working properly.

CO_2 Detection

The MRV plan states that any CO_2 release would be accompanied by H_2S. Therefore, the H_2S monitors at the facility would also serve as a CO_2 release warning system. In addition to the fixed and personal monitors described previously, CVGPP will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the AMA and MMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as atmospheric monitoring near identified penetrations within the AMA.

Operational Data

The MRV plan explains that baseline measurements of injection volumes and pressures will be taken upon implementation of the MRV plan, and any significant deviations over time will be analyzed for indication of leakage.

Continuous Monitoring

The MRV plan states that the mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for any well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as per Texas regulations and CVGPP's TRRC approved H_2S Contingency Plan. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. CVGPP notes that this method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation. The MRV plan states that no CO_2 emissions should occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

Groundwater Monitoring

Initial groundwater samples will be taken from the groundwater well on CVGPP property and analyzed by a third-party laboratory upon the MRV plan's approval to establish the baseline properties of the groundwater.

Given the methodologies list above, CVGPP provides an acceptable approach for establishing CO_2 leakage monitoring baselines in accordance with 40 CFR 98.448(a)(4).

5 Considerations Used to Calculate Site-Specific Variables for the Mass Balance Equation

5.1 Calculation of Mass of CO_2 Received

According to the MRV plan, the CO_2 received for this injection well will be wholly injected and not mixed with any other supplies of CO_2, thus the annual mass of CO_2 injected will equal the quantity of CO_2 received at the receiving flow meter. Therefore, in accordance with 40 CFR §98.444(a)(4), CVGPP has elected to use the mass of CO_2 injected as the mass of CO_2 received instead of using Equation RR-1 or RR-2.

CVGPP's approach to calculating the mass of CO_2 received is acceptable for the Subpart RR requirements.

5.2 Calculation of Mass of CO_2 Injected

Section 7 of the MRV plan states that the mass of CO_2 injected will be calculated using Equation RR-5 in accordance with 40 CFR §98.444(b). The flow rate of CO_2 injected will be measured with a volumetric flow meter, the total annual mass of CO_2, in metric tons, will be calculated by multiplying the volumetric flow at standard conditions by the CO_2 concentration in the flow and the density of CO_2 at standard conditions, as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}}$$

Where:

$CO_{2,u}$ = Annual CO_2 mass injected (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly mass flow rate measurement for flow meter u in quarter p (metric tons per quarter).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682

$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year

u = Flow meter.

CVGPP provides an acceptable approach to calculating the mass of CO_2 injected in accordance Subpart RR requirements.

5.3 Mass of CO_2 Produced

The MRV plan states that the PAV #1 well is not part of an enhanced oil recovery project and that no CO_2 will be produced.

5.4 Calculation of Mass of CO_2 Emitted by Surface Leakage

The MRV Plan states that the mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as a major upset event. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

In the unlikely event that CO_2 was released as a result of surface leakage, the plan states that the mass emitted would be calculated for each surface pathway according to methods outlined in the plan and totaled using Equation RR-10 as follows:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x}$$

Where:

CO_2 = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year

X = Leakage pathway

Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

CVGPP provides an acceptable approach for calculating the mass of CO_2 emitted by surface leakage under the Subpart RR requirements.

5.5 Calculation of Mass of CO_2 Sequestered

The MRV Plan states that the mass of CO_2 sequestered in subsurface geologic formations will be calculated based off Equation RR-12, as this well will not actively produce oil or natural gas or any other fluids, as follows:

$$CO_2 = CO_{2I} - CO_{2E} - CO_{2FI}$$

Where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of

CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

The plan further states that CO_{2FI} will be calculated in accordance with Subpart W reporting of GHGs. Because no venting would occur due to the high H_2S concentrations of the injectate stream, the calculations would be based on the blowdown emissions that would be sent to flares and would be reported as part of the required GHG reporting for the gas plant.

The plan also states that calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

CVGPP provides an acceptable approach for calculating the mass of CO_2 sequestered under Subpart RR.

6 Summary of Findings

The Subpart RR MRV plan for the CVGPP Campo Viejo Facility meets the requirements of 40 CFR 98.238. The regulatory provisions of 40 CFR 98.238(a), which specifies the requirements for MRV plans, are summarized below along with a summary of relevant provisions in the CVGPP MRV plan.

Subpart RR MRV Plan Requirement	CVGPP MRV Plan
40 CFR 98.448(a)(1): Delineation of the maximum monitoring area (MMA) and the active monitoring areas (AMA).	Section 3 of the MRV plan describes the MMA and AMA. CVGPP used CMG's GEM software package to determine the areal extent and density drift of the CO_2 plume. Numerical simulation was also used by CVGPP to predict the size and drift of the CO_2 plume. The MMA and AMA share the same boundary. The MMA and the MMA is defined as equal to or greater than the area expected to contain the free-phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile.
40 CFR 98.448(a)(2): Identification of potential surface leakage pathways for CO_2 in the MMA and the likelihood, magnitude, and timing, of surface leakage of CO_2 through these pathways.	Section 4 of the MRV plan identifies and evaluates potential surface leakage pathways. The MRV plan identifies the following potential pathways: leakage from surface equipment, leakage through existing wells within MMA, leakage through faults and fractures, leakage through natural or induced seismicity, leakage from drilling through the MMA, and leakage through the confining layer. The MRV plan analyzes the

	likelihood, magnitude, and timing of surface leakage through these pathways.
40 CFR 98.448(a)(3): A strategy for detecting and quantifying any surface leakage of CO_2.	Section 5 of the MRV plan describes strategies for how the facility would detect CO_2 leakage to the surface, such as H_2S monitors, visual inspections, and SCADA continuous monitoring of the AGI well. Section 6 of the MRV plan describes a strategy for how surface leakage would be quantified.
40 CFR 98.448(a)(4): A strategy for establishing the expected baselines for monitoring CO_2 surface leakage.	Section 6 of the MRV plan describes the strategy for establishing baselines against which monitoring results will be compared to assess potential surface leakage. CVGPP will use visual inspections, H_2S detection, CO_2 detection, operational data, continuous monitoring, and groundwater monitoring to establish baselines for monitoring CO_2 surface leakage.
40 CFR 98.448(a)(5): A summary of the considerations you intend to use to calculate site-specific variables for the mass balance equation.	Section 7 of the MRV plan describes CVGPP's approach to determining the amount of CO_2 sequestered using the Subpart RR mass balance equation, including as related to calculation of total annual mass emitted from equipment leakage.
40 CFR 98.448(a)(6): For each injection well, report the well identification number used for the UIC permit (or the permit application) and the UIC permit class.	Section 1 of the MRV plan provides well identification number for the PAV #1 well. The MRV plan specifies that the PAV #1 AGI well has been issued a UIC Class II permit under TRRC Rule 46 and Rule 36.
40 CFR 98.448(a)(7): Proposed date to begin collecting data for calculating total amount sequestered according to equation RR-11 or RR-12 of this subpart.	Section 8 of the MRV plan states that the CVGPP Campo Viejo facility will begin implementing baseline measurements of injection volumes and pressures will be taken upon implementation of this MRV plan.

Appendix A: Final MRV Plan

Subpart RR Monitoring, Reporting, and Verification (MRV) Plan
Pozo Acido Viejo #1

Yoakum County, Texas

Prepared for *Stakeholder Gas Services, LLC*
San Antonio, TX

By

Lonquist Sequestration, LLC
Austin, TX

Version 3
July 2022

INTRODUCTION

Stakeholder Gas Services, LLC ("Stakeholder") currently has a Class II acid gas injection ("AGI") permit, issued by the Texas Railroad Commission ("TRRC") in August 2018, for its Pozo Acido Viejo #1 well ("PAV #1"), API No. 42-501-36935. This permit currently authorizes Stakeholder to inject up to 6.9 million standard cubic feet per day ("MMSCF/d") of treated acid gas ("TAG") into the Bronco (Siluro-Devonian) Field at a depth of 12,020 to 12,349 feet with a maximum allowable surface pressure of 6,010 psi. Since being permitted, injection has proceeded without incident. This AGI well is associated with Stakeholder's Campo Viejo gas treating and processing plant ("Campo Viejo Facility") located in a rural, sparsely populated area of Yoakum County, Texas, approximately 10 miles west of the town of Plains.

Figure 1 – Location of PAV #1 Well

Stakeholder is submitting this Monitoring, Reporting, and Verification ("MRV") plan to the EPA for approval under 40 CFR §98.440(a), Subpart RR, of the Greenhouse Gas Reporting Program ("GHGRP"). In addition to submitting this MRV plan to the EPA, Stakeholder also is applying to the TRRC for an amendment to the PAV #1 well's Class II permit to increase its authorized injection volume. Approval of the permit amendment will allow Stakeholder to increase the capacity of its existing Campo Viejo Facility, which removes H_2S and CO_2 from natural gas production using amine treating, as well as increase the injection well capacity for a future gas processing facility which is currently under development by Stakeholder. Additionally, expanded capacity allows Stakeholder to potentially provide future disposal in its acid gas injection well for oil and gas waste derived TAG from similar third-party gas processing facilities. Increased disposal capacity will allow for greater gas processing capacity in the region, ultimately helping to reduce flaring and its associated emissions. Throughout this document, both in written reference and in modeling inputs, Stakeholder has used the applied-for expanded permit capacity of 20 MMSCF/d. Stakeholder plans to inject CO_2 for approximately 22 more years.

ACRONYMS AND ABBREVIATIONS

%	Percent (Age)
°C	Degrees Celsius
°F	Degrees Fahrenheit
AMA	Active Monitoring Area
BCF	Billion Cubic Feet
CH_4	Methane
CMG	Computer Modeling Group
CO_2	Carbon Dioxide (may also refer to other Carbon Oxides)
E	East
EOS	Equation of State
EPA	U.S. Environmental Protection Agency
ESD	Emergency Shutdown
FG	Fracture Gradient
ft	Foot (Feet)
GAU	Groundwater Advisory Unit
GEM	Computer Modelling Group's GEM 2020.11
GHGs	Greenhouse Gases
GHGRP	Greenhouse Gas Reporting Program
H_2S	Hydrogen Sulfide
md	Millidarcy(ies)
mi	Mile(s)
MIT	Mechanical Integrity Test
MM	Million
MMA	Maximum Monitoring Area
MMCF	Million Cubic Feet
MMSCF	Million Standard Cubic Feet
MMSCF/d	Million Standard Cubic Feet per Day
MRV	Monitoring, Reporting and Verification

ν	Poisson's Ratio
N	North
NW	Northwest
OBG	Overburden Gradient
PAV #1	Pozo Acido Viejo #1
PG	Pore Gradient
pH	Scale of Acidity
ppm	Parts per Million
psi	Pounds per Square Inch
psig	Pounds per Square Inch Gauge
S	South
SE	Southeast
SF	Safety Factor
SWD	Salt Water Disposal
TAC	Texas Administrative Code
TAG	Treated Acid Gas
TOC	Total Organic Carbon
TRRC	Texas Railroad Commission
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water
W	West

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SECTION 1 – FACILITY INFORMATION

This section contains key information regarding the Acid Gas and CO_2 injection facility.

Reporter number:

- Gas Plant Facility Name: Campo Viejo Gas Processing Plant
- Greenhouse Gas Reporting Program ID: 573525
    - Currently reporting under Subpart UU
- Operator: Stakeholder Gas Services, LLC

Underground Injection Control (UIC) Permit Class: Class II

The TRRC regulates oil and gas activities in Texas and has primacy to implement the Underground Injection Control ("UIC") Class II program. TRRC classifies the PAV #1 well as a UIC Class II well. A Class II permit was issued to Stakeholder under TRRC Rule 46 (entitled "Fluid Injection into Productive Reservoirs") and Rule 36 (entitled "Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas").

UIC Well Identification Number:

Pozo Acido Viejo #1, API No. 42-501-36935, UIC #000117488.

SECTION 2 – PROJECT DESCRIPTION

This Project Description discusses the geologic setting, planned injection volumes and process, and the reservoir modeling performed for the PAV #1 well. Stakeholder, with the assistance of Lonquist and Co., LLC, originally provided a geological overview as part of Stakeholder's original Class II application with the TRRC in 2018. Lonquist has updated the geology and the plume modeling within the reservoir for this MRV Plan.

The PAV #1 well is located and designed to protect against migration of CO_2 into productive oil and gas formations, freshwater aquifers and against surface releases. The injection interval for PAV #1 is located over 3,320' below the active producing formations in the area and 9,770 feet below the base of the lowest useable quality water table, as Shown in Figure 2. This well injects both H_2S and CO_2, therefore the well and the facility are designed to minimize any leakage to the surface.

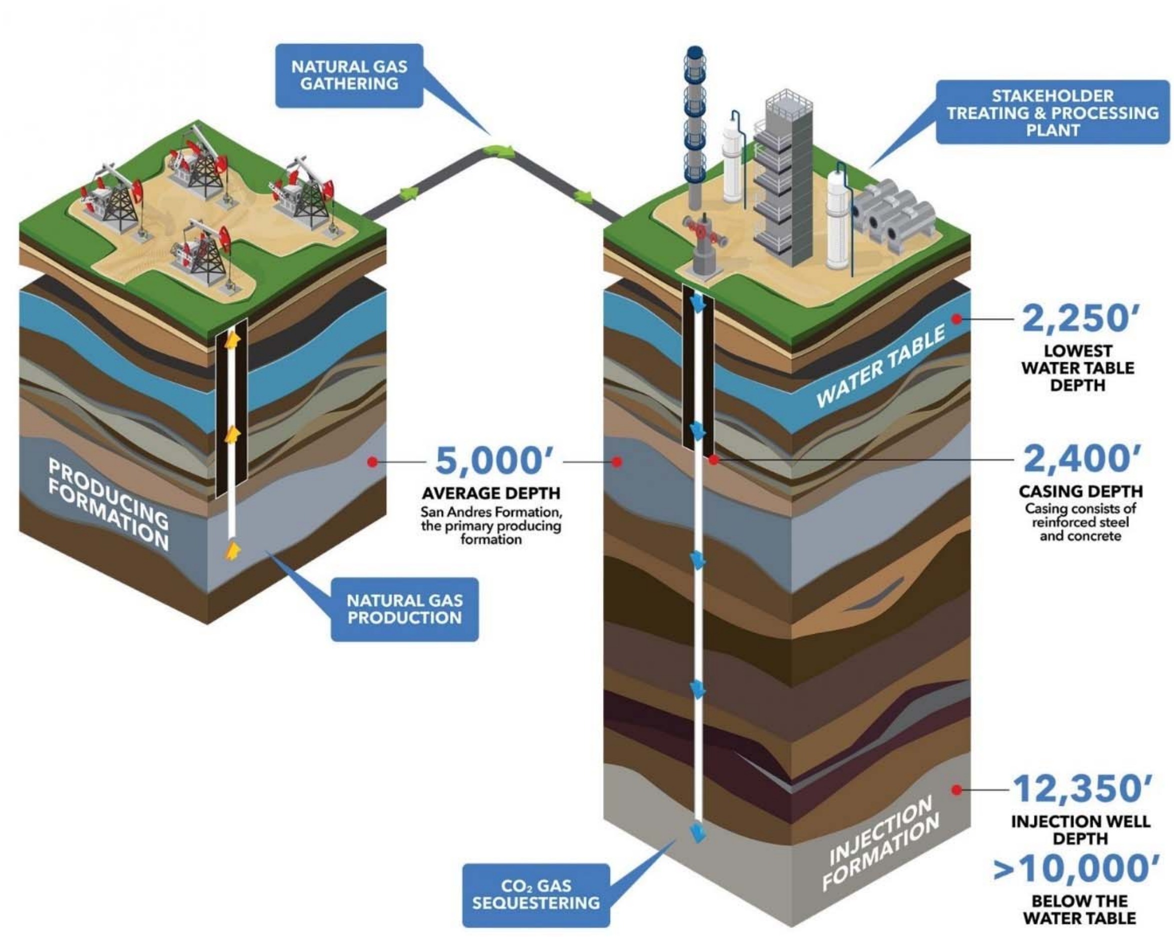


Figure 2 – Illustrative overview of PAV #1 and Campo Viejo Facility

Regional Geology

The PAV #1 well is located on the southern portion of the Northwestern Shelf within the larger Permian Basin as seen in Figure 3. The Northwestern Shelf is a broad marine shelf located in the northern portion of the Permian Basin.

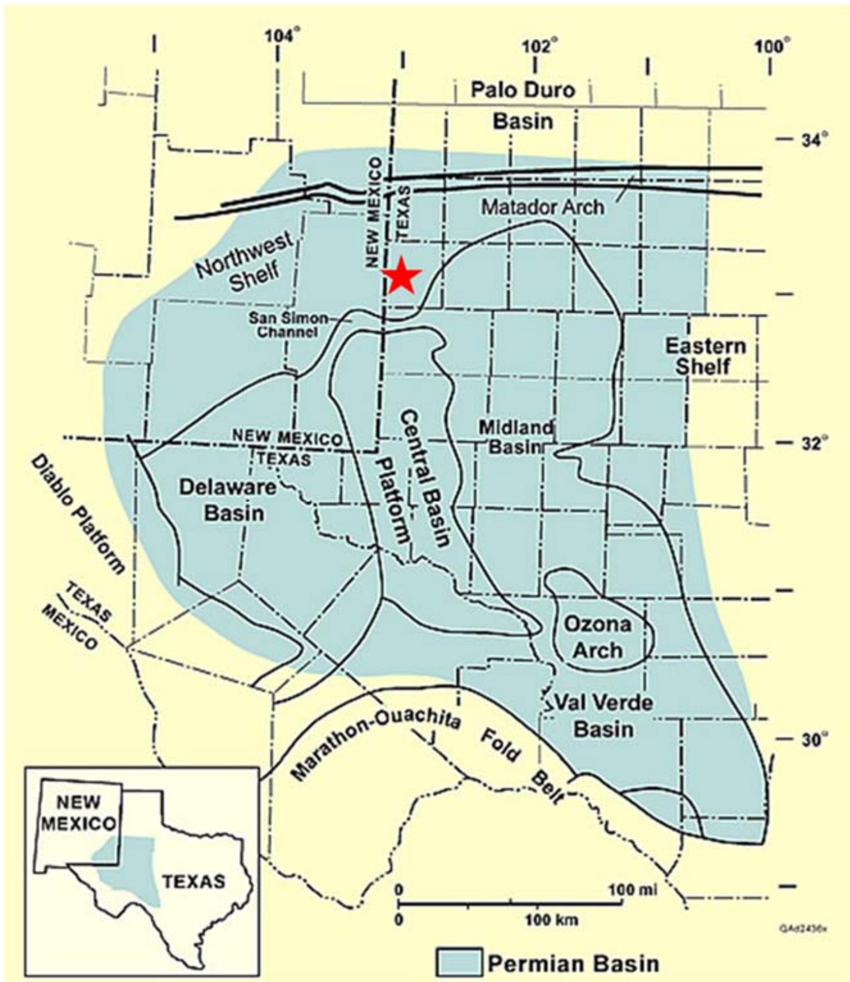


Figure 3 – Regional Map of the Permian Basin. Red Star is approximate location of PAV #1 well

Figure 4 depicts the stratigraphic column found at the PAV #1 well location with a red star referencing the injection formation and green stars indicating the productive intervals in the area. The primary injection interval is found within the Wristen group, of Silurian-age, as seen in Figure 5. The TRRC refers to this sequence under the general terms "Devonian", "Silurian-Devonian" or "Siluro-Devonian".

<table>
<tr><th>Period</th><th>Epoch</th><th colspan="2">Formation</th><th>General Lithology</th></tr>
<tr><td rowspan="16">Permian</td><td rowspan="3">Ochoan</td><td colspan="2">Dewey Lake</td><td>Redbeds/Anhydrite</td></tr>
<tr><td colspan="2">Rustler</td><td>Halite</td></tr>
<tr><td colspan="2">Salado</td><td>Halite/Anhydrite</td></tr>
<tr><td rowspan="5">Guadalupian</td><td colspan="2">Tansil</td><td>Anhydrite/Dolomite</td></tr>
<tr><td colspan="2">Yates</td><td>Anhydrite/Dolomite</td></tr>
<tr><td colspan="2">Seven Rivers</td><td>Dolomite/Anhydrite</td></tr>
<tr><td colspan="2">Queen</td><td>Sandy Dolomite/Anhydrite/Sandstone</td></tr>
<tr><td colspan="2">Grayburg</td><td>Dolomite/Anhydrite/Shale/Sandstone</td></tr>
<tr><td rowspan="7">Leonardian</td><td colspan="2">★ San Andres</td><td>Dolomite/Anhydrite</td></tr>
<tr><td colspan="2">Glorieta</td><td>Sandy Dolomite</td></tr>
<tr><td rowspan="4">Yeso</td><td>Paddock</td><td rowspan="4">Dolomite/Anhydrite/Sandstone</td></tr>
<tr><td>Blinebry</td></tr>
<tr><td>Tubb</td></tr>
<tr><td>Drinkard</td></tr>
<tr><td colspan="2">Abo</td><td>Dolomite/Anhydrite/Shale</td></tr>
<tr><td>Wolfcampian</td><td colspan="2">★ Wolfcamp</td><td>Limestone/Dolomite</td></tr>
<tr><td rowspan="5">Pennsylvanian</td><td>Virgilian</td><td colspan="2">Cisco</td><td>Limestone/Dolomite</td></tr>
<tr><td>Missourian</td><td colspan="2">Canyon</td><td>Limestone/Shale</td></tr>
<tr><td>Des Moinesian</td><td colspan="2">Strawn</td><td>Limestone/Sandstone</td></tr>
<tr><td>Atokan</td><td colspan="2">Bend</td><td rowspan="2">Limestone/Sandstone/Shale</td></tr>
<tr><td>Morrowan</td><td colspan="2">Morrow</td></tr>
<tr><td>Mississippian</td><td></td><td colspan="2">Mississippian Lime</td><td>Limestone</td></tr>
<tr><td>Devonian</td><td></td><td colspan="2">Woodford</td><td>Shale</td></tr>
<tr><td rowspan="2">Silurian</td><td></td><td colspan="2">★ Wristen Group</td><td>Dolomite/Limestone</td></tr>
<tr><td></td><td colspan="2" rowspan="2">Fusselman</td><td rowspan="2">Dolomite/Chert</td></tr>
<tr><td rowspan="4">Ordovician</td><td rowspan="2">Upper</td></tr>
<tr><td colspan="2">Montoya</td><td>Dolomite/Chert</td></tr>
<tr><td>Middle</td><td colspan="2">Simspson Gp</td><td>Limestone/Sandstone/Shale</td></tr>
<tr><td>Lower</td><td colspan="2">Ellenburger</td><td>Dolomite</td></tr>
</table>

Figure 4 – Stratigraphic column of the Northwest Shelf. Red star indicates injection interval. Green star indicates productive intervals.

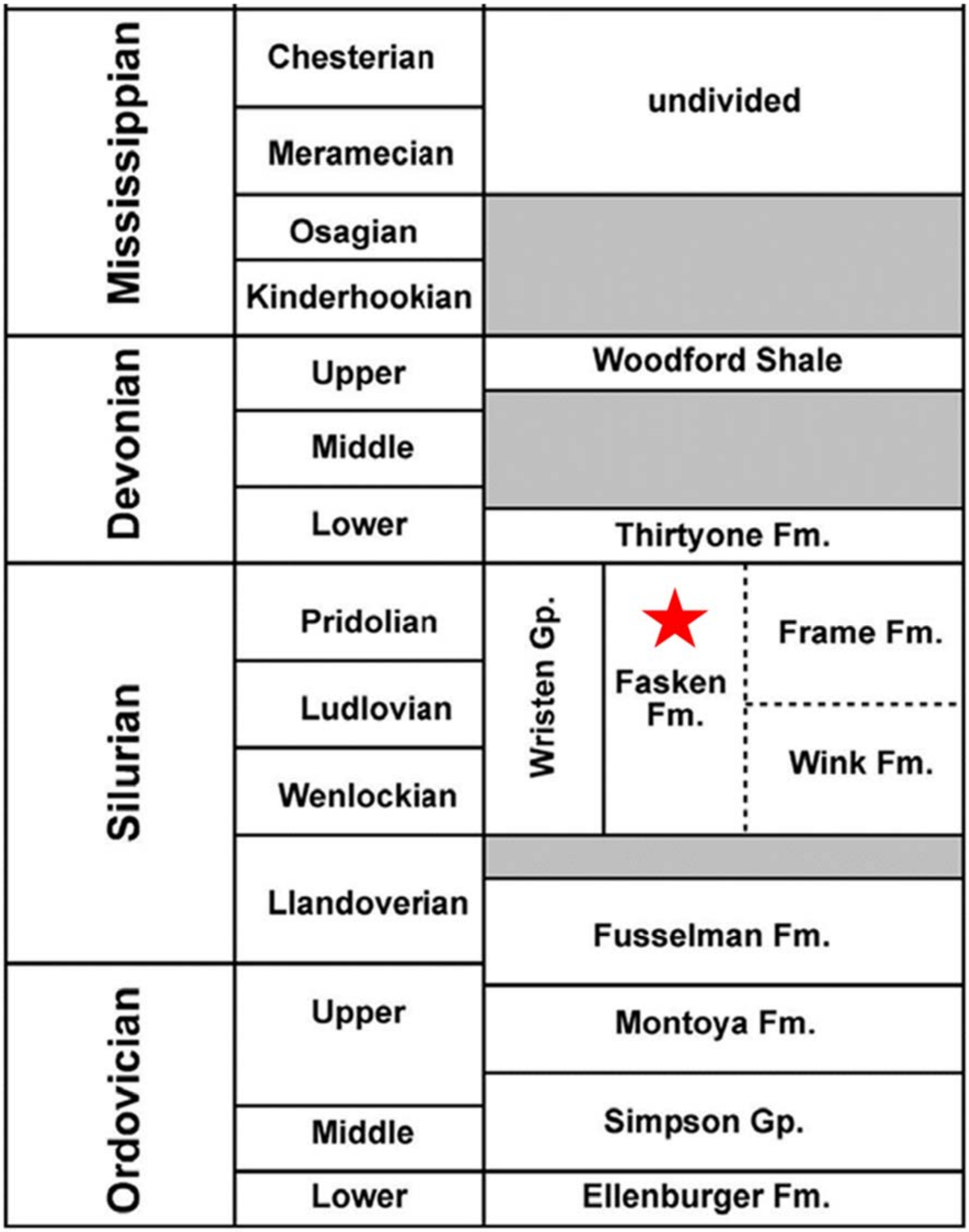


Figure 5 – Stratigraphic column depicting the composition of the Silurian group. Red star indicates injection interval (Broadhead, 2005)

The Wristen group was deposited in a basin platform setting across the northern half of the Permian Basin. The depositional environment over Yoakum County during the Silurian period was a shallow inner platform, the margin of which exists to the south, in southern Andrews County, Texas. The Silurian-age lithology on the inner platform is dominated by grain-rich skeletal carbonates. Carbonate buildups are common within the shallow inner platform, mainly skeletal wackestone, indicating a lower-energy deposition on the inner

platform. The carbonate shelf margin to the south acted as a barrier from basin-ward wave energy (Ruppel and Holtz, 1994).

Depositional cycles within the inner platform indicate it was controlled by episodic sea level rise and fall, resulting in sub-areal exposure and diagenesis. The diagenesis of the Silurian-age carbonate rocks initiated secondary porosity development and increased permeability. Dolomite and solution-related features are the most prominent diagenetic characteristics found within the Silurian. The Wristen Group is composed of three formations; Fasken, Frame, and Wink formations. The Frame and Wink formations are found near the ramp boundary to the south, while the Fasken formation is found predominantly in the inner platform, where the PAV #1 well is located. The Fasken formation is predominately dolomite grading to limestone, occurring as cycles, down section. This dolomitization is due in part to sub-areal exposure, during which karsts and secondary porosity developed. Additional dolomitization was possible during successive sea level fluctuations via movement of magnesium-rich solution through karsts and vugs, which acted as channels for fluid flow (Ruppel and Holtz, 1994).

Figure 6 shows a regional isopach map of the Silurian (combined Fasken and Fusselman formations) with a red star depicting the PAV #1 well location. Thickness of the Silurian-age rock is approximately 1,000 feet at the PAV #1 well location.

North of Andrews County there is little differentiation between the Fasken and Fusselman formations which are both carbonate deposits with the potential for sub-areal exposure and porosity development. The injection interval defined here is based on petrophysical characteristics rather than stratigraphic nomenclature. For purposes of this MRV Plan, the Fasken is defined as the porous and permeable carbonate rock at the top of the Silurian section and the Fusselman is the low permeability rock that comprises the carbonate section between the Fasken and the Montoya formation.

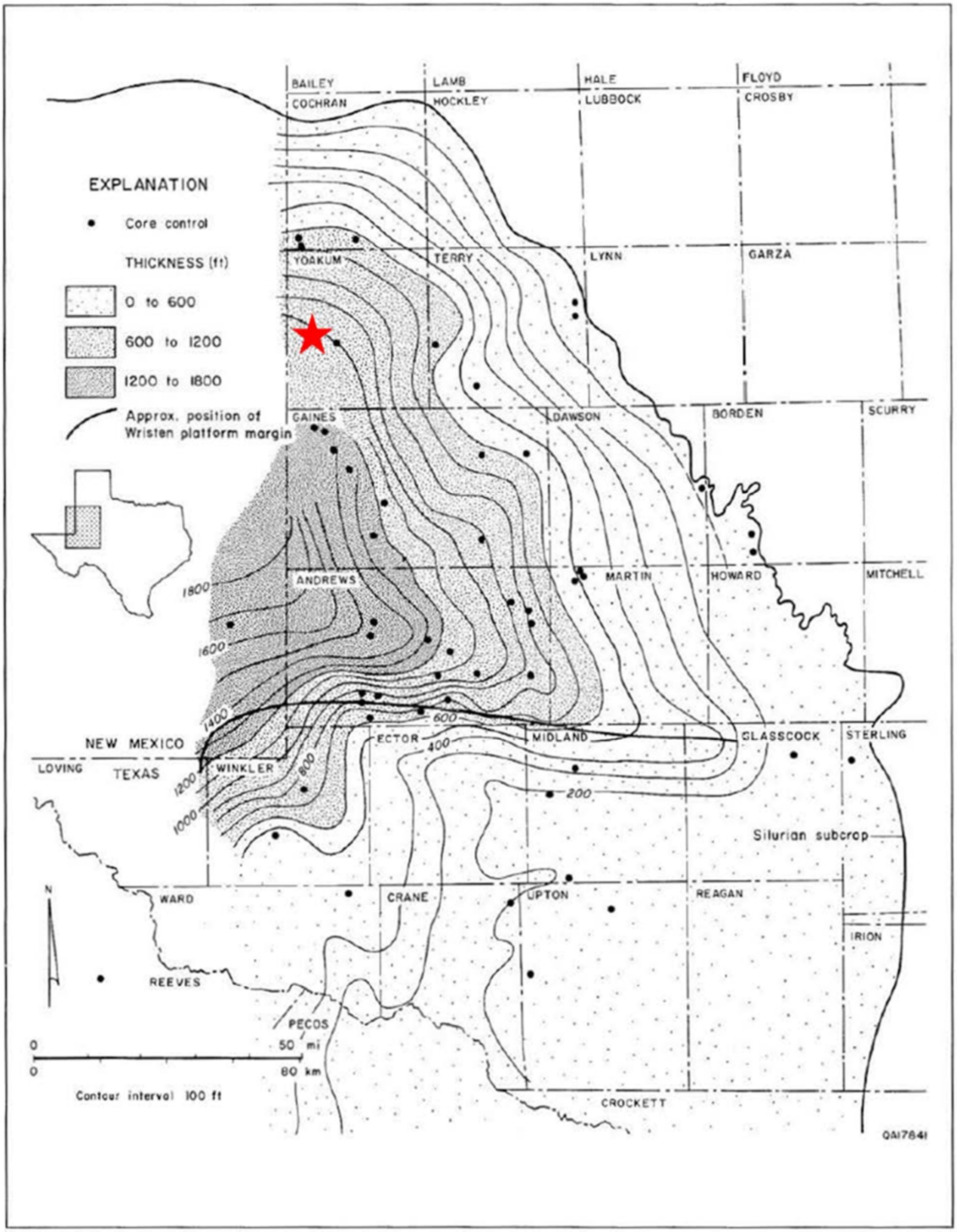


Figure 6 – Thickness map of the Silurian system which composes the Fusselman and Wristen group

Regional Faulting

A major uplift that began in the Pennsylvanian to the south, the Central Basin Platform, ceased in Wolfcampian time, which caused a regional unconformity of the underlying formations (Hoak, Sundberg, and Ortoleva). Faulting on the Northwest Shelf can be seen through high angle basement faults that tend to die within the Pennsylvanian strata. These faults predominately represent contractional (thrust) faults that were initiated during the Pennsylvanian as a result of regional tectonics. Hydrocarbon traps within the Wristen group are primarily anticlinal structures dependent upon reservoir development (Broadhead, 2005).

Site Characterization

The PAV #1 well is located in Section 452, Block D, John H. Gibson Survey, in Yoakum County, Texas. Stakeholder owns the 200-acre surface tract where the plant and PAV #1 well are located. The following discusses the geological character of this site.

Stratigraphy and Lithologic Characteristics

Figure 7 depicts an open hole log from an offset well (API No. 42-501-33943) to the PAV #1 well indicating the injection and primary upper confining zone.

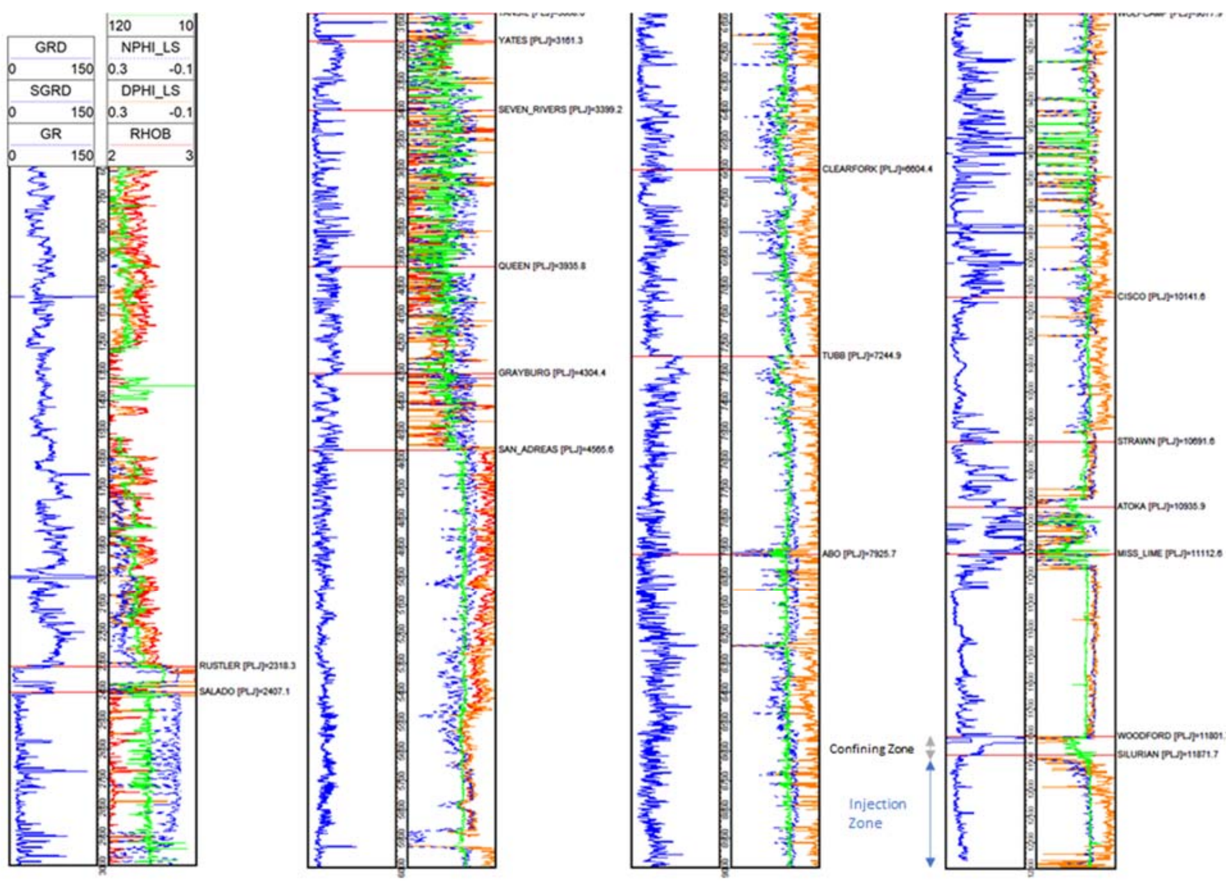


Figure 7 – Type Log (42-501-33943) with tops, confining and injection zones depicted

Upper Confining Interval - Woodford Shale

The Woodford is a late Devonian-aged organic-rich shale deposited as a result of a widespread marine transgression. The flooding event occurred over the majority of the Permian basin, which produced a low-relief blanket-like shale deposit of the Woodford. Two major lithofacies found within the Woodford are black shale and siltstone. Nutrient-rich surface waters promoted the decay of abundant organic matter within the Woodford, resulting in a high total organic carbon ("TOC") percentage. The Woodford shale acts as the primary source and sealant rock for the Wristen Group (Comer, 1991).

Figure 8 is a description of a core sample taken in Lea County, New Mexico just southwest of the PAV #1 well location. This sample is referenced as C9 in the reference map with the blue star representing the PAV #1 well. In the core description, black shale with abundant illitic clays is observed in the upper section, and medium gray dolomitic siltstone found in the basal section. The mineralogic and lithologic properties recorded in this description serve as excellent sealant characteristics to prohibit any injected fluids from migrating above the injection interval.

The Woodford at the PAV #1 well location is encountered at 11,965 ft and is approximately 87 ft thick.

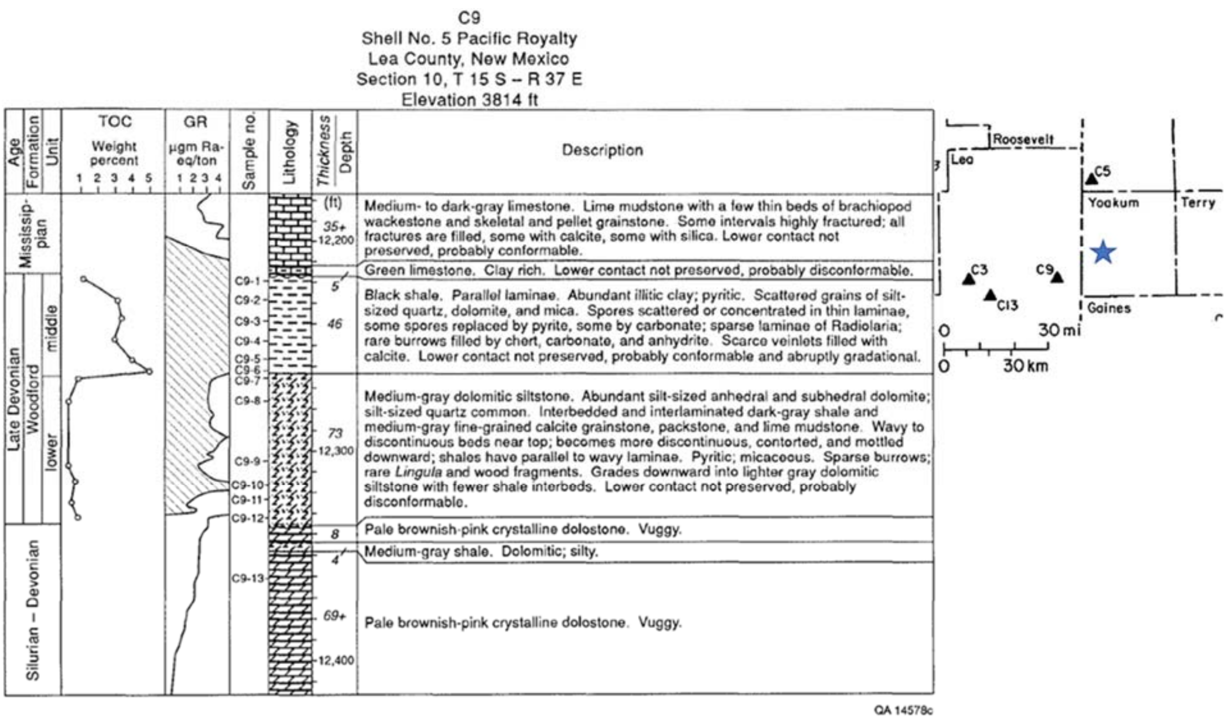


Figure 8 – Core description of the Woodford Shale and Upper Silurian (Ruppel and Holtz, 1994)

Injection Interval – Fasken Formation

The PAV #1 well reaches total depth in the Fasken formation (Silurian in age), directly below the Woodford formation. Dolomites at the top of the Fasken formation underwent multiple leaching and diagenetic episodes which developed secondary porosity. This is evidenced in offset wells by the practice of only drilling through the top 30 feet of the Fasken, in anticipation of encountering the best reservoir quality. In Figure 8, the uppermost Silurian section is described as 'vuggy dolostone' in the core description. Beds below the top

of the Fasken section may also have similar petrophysical attributes if exposed to multiple diagenetic events. Solution-collapse and karst breccia horizons can be found within inner platform deposits, some occurring as much as 100 ft below the Fasken top (Ruppel and Holtz, 1994).

Porosity/Permeability Development

Porosity in the Fasken formation at the PAV #1 well location is typically moldic and intercrystalline associated with leaching of allochem-rich intervals. Porosity is directly related to these leaching events which occurred during and post-deposition, resulting in vugs and karst-like features. Figure 9 provides reservoir information from core data within fields in the Wristen buildup and platform carbonate play. The average porosity of these cores is 7.1% with an average permeability of 45.28 millidarcies (Ruppel and Holtz, 1994). The porosity and permeability described in the offset core data indicate the Fasken formation provides sufficient accessible pore space for the amount of fluid injection proposed.

Using the above values as reference points, an offset porosity log (API No. 42-501-33942) was evaluated. Figure 10 is the product of the petrophysical analysis performed on the offset open hole log shown in Figure 7. A permeability curve was generated from the effective porosity curve using the table in Figure 9 to establish the porosity-permeability relationship. In Figure 10, the majority of the injection interval's porosity and permeability is found at the top of the Fasken formation, which correlates with the diagenetic processes described above. These curves are extrapolated to the injection site and used to establish reservoir characteristics in the plume model.

	Fusselman Shallow Platform Carbonate play	Wristen Buildups and Platform Carbonate play	Thirtyone Ramp Carbonate play	Thirtyone Deep-Water Chert play
Porosity (%)				
Number of data points	33	30	16	35
Mean	7.93	7.10	6.41	14.85
Minimum	1.00	2.70	3.50	2.00
Maximum	17.70	14.00	9.50	30.00
Standard deviation	4.01	2.67	1.75	6.76
Permeability (md)				
Number of data points	21	24	12	33
Mean	11.61	45.28	1.51	8.56
Minimum	0.60	2.90	0.40	1.00
Maximum	84.80	400.00	30.00	100.00
Standard deviation	22.48	99.17	8.36	22.23
Initial water saturation (%)				
Number of data points	24	28	10	31
Mean	26.96	31.55	24.70	31.46
Minimum	10.00	20.00	16.00	10.00
Maximum	50.00	55.00	40.00	45.00
Standard deviation	9.31	10.45	7.39	8.33
Residual oil saturation (%)				
Number of data points	8	13	5	22
Mean	34.06	30.54	21.30	29.17
Minimum	30.00	20.00	9.00	14.00
Maximum	50.00	35.00	35.00	48.20
Standard deviation	6.99	4.61	11.66	9.76
Oil viscosity (cp)				
Number of data points	11	12	5	21
Mean	0.69	1.16	0.33	0.68
Minimum	0.13	0.32	0.04	0.07
Maximum	1.08	2.00	1.00	1.03
Standard deviation	0.81	0.75	0.40	0.42
Oil formation volume factor				
Number of data points	21	22	6	32
Mean	1.57	1.22	1.65	1.50
Minimum	1.05	1.05	1.31	1.30
Maximum	1.91	1.55	1.66	1.73
Standard deviation	0.28	0.14	0.48	0.16
Bubble-point pressure (psi)				
Number of data points	9	9	5	19
Mean	2,272	1,055	3,750	2,752
Minimum	798	450	2,660	1,755
Maximum	4,050	2,600	4,440	4,656
Standard deviation	1,300	689	756	667

Figure 9 – Table of reservoir properties found within the Wristen buildups and platform plays (Ruppel and Holtz, 1994)

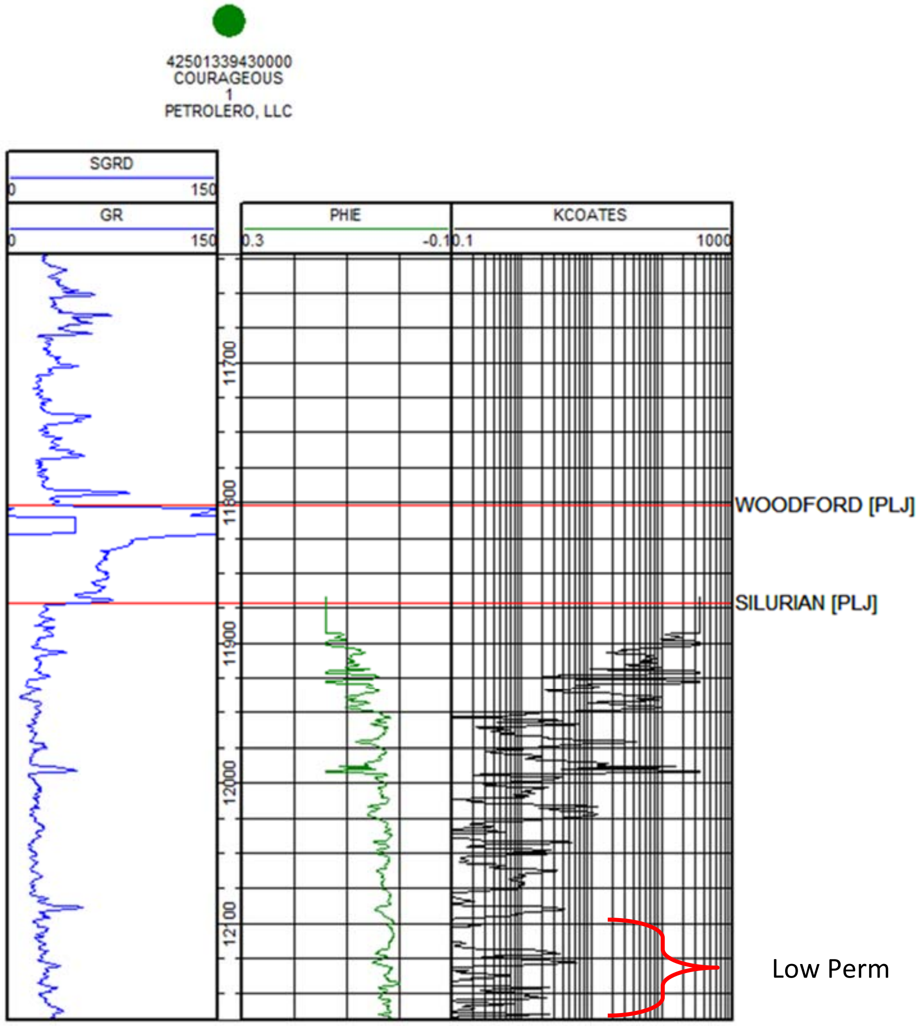


Figure 10 – Offset open hole log (42-501-33943) with effective porosity (green) and permeability (black)

Formation Fluid

Four wells were identified through a review of chemical analyses of oil-field brines from the U.S. Geological Survey National Produced Waters Geochemical Database v2.1 within the Devonian, Silurian-Devonian, or Fusselman formations within 20 miles of the PAV #1 well. The location of these wells is shown in Figure 11. Water chemistry analyses conducted on oil-field brines in Gaines County, as reported to the Texas Water Development Board, provided additional data on Devonian and Silurian reservoir fluids. Results from the synthesis of these two sources are provided in Table 1. The fluids have greater than 20,000 parts per million ("ppm") total dissolved solids, therefore these aquifers are considered saline. These analyses indicate the in-situ reservoir fluid of the Devonian, Silurian, and Fusselman formations are compatible with the proposed injection fluids.

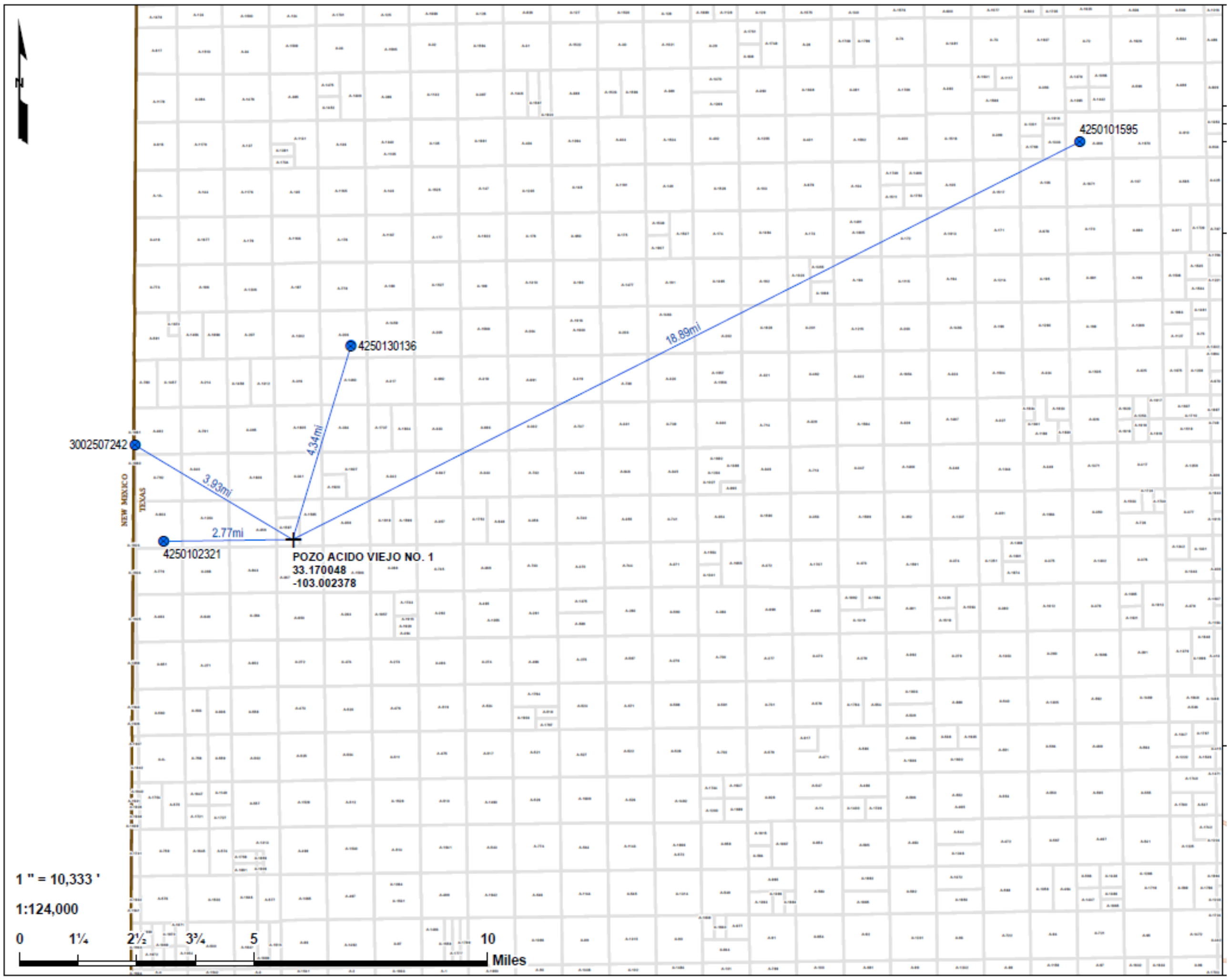


Figure 11 – Offset wells used for Formation Fluid Characterization

Table 1 – Analysis of Silurian-Devonian age formation fluids from nearby oil-field brine samples

Measurement	Average	Low	High
Total Dissolved Solids (ppm)	51,933	23,100	81,770
pH	7.2	7.0	7.3
Sodium (ppm)	18,550	7,426	25,377
Calcium (ppm)	2,195	1,010	2,760
chloride (ppm)	27,250	12,810	43,800

Fracture Pressure Gradient

Fracture pressure gradient was estimated using Eaton's equation. Eaton's equation is commonly accepted as the standard practice for the determination of fracture gradients. Poisson's ratio ("ν"), overburden gradient ("OBG"), and pore gradient ("PG") are all variables that can be changed to match the site-specific injection zone. Through literature review and industry standards, we are able to determine the expected fracture gradient. First, 1.05 psi/ft and 0.465 psi/ft were assumed for both the overburden and pore gradients, respectively. These values are considered best practice values when there are no site-specific numbers available. For limestone/dolomite rock, the Poisson's ratio to be assumed to be 0.3 through literature review (Molina, Vilarras, Zeidouni 2016). Using these values in the equation below, a fracture gradient of 0.72 psi/ft was calculated. A 10% safety factor was then applied to this number resulting in maximum allowed bottom hole pressure of 0.64 psi/ft. This was done to ensure that the injection pressure would never exceed the fracture pressure of the injection zone.

For the upper confining interval, a similar fracture gradient as the limestone was calculated. Shale has an increased chance to vertically fracture if the injection interval is fractured (Molina, Vilarras, Zeidouni 2016), so assuming a Poisson's ratio equal to the injection interval was used as a conservative estimate. The lower confining zone was assumed to be of a similar matrix to that of the injection interval, with the key difference being that the formation is much tighter (lower porosity/permeability). The Poisson's ratio was assumed to be slightly higher in this rock. As seen in Table 2, the fracture gradient is slightly higher than the upper zones.

Table 2 – Fracture Gradient Assumptions

	Injection Interval	Upper Confining	Lower Confining
Overburden Gradient (psi/ft)	1.05	1.05	1.05
Pore Gradient (psi/ft)	0.465	0.465	0.465
Poisson's Ratio	0.30	0.30	0.31
Fracture Gradient psi/ft	0.72	0.72	0.73
FG + 10% Safety Factor (psi/ft)	**0.64**	**0.64**	**0.66**

The following steps were taken to calculate fracture gradient:

$$FG = \frac{\nu}{1-\nu}(OBG - PG) + PG$$

$$FG = \frac{0.3}{1-0.3}(1.05 - 0.465) + 0.465 = 0.72$$

$$FG\ with\ SF = 0.72 \times (1 - 0.1) = \mathbf{0.64}$$

Lower Confining Zone – Fusselman Formation

The low-permeability Fusselman Formation will act as the lower confining unit for the injection interval. Figure 10 shows the tight limestone rock in the lower section that was not exposed to leaching diagenesis. Porosity in the lower section can range from 2-3% with permeabilities below 1 millidarcy. These petrophysical characteristics represent ideal sealing properties to prohibit any migration of injected fluid outside of the injection interval.

Local Structure

Regional structure in the area of the PAV #1 well is dictated by carbonate buildups and structural events causing anticlinal to synclinal features throughout the area. The PAV #1 well is specifically located at the base of a syncline with anticlinal features to the north, west, and east. Figure 12 is a structure map of the Silurian formation of subsea depths with the star representing the location of the PAV #1 well. The red and blue lines represent the cross-section reference lines.

Faulting can be seen to the west of the PAV #1 well location, which set up the hydrocarbon trap for the Bronco field. Figures 13 and 14 are north-south and west-east structural cross sections showing the structural dips. As seen in these figures, the Woodford is laterally present above the injection interval, alleviating risk of erosion of the upper sealant formation.

Larger versions of Figures 12, 13 and 14 are provided in Appendix A.

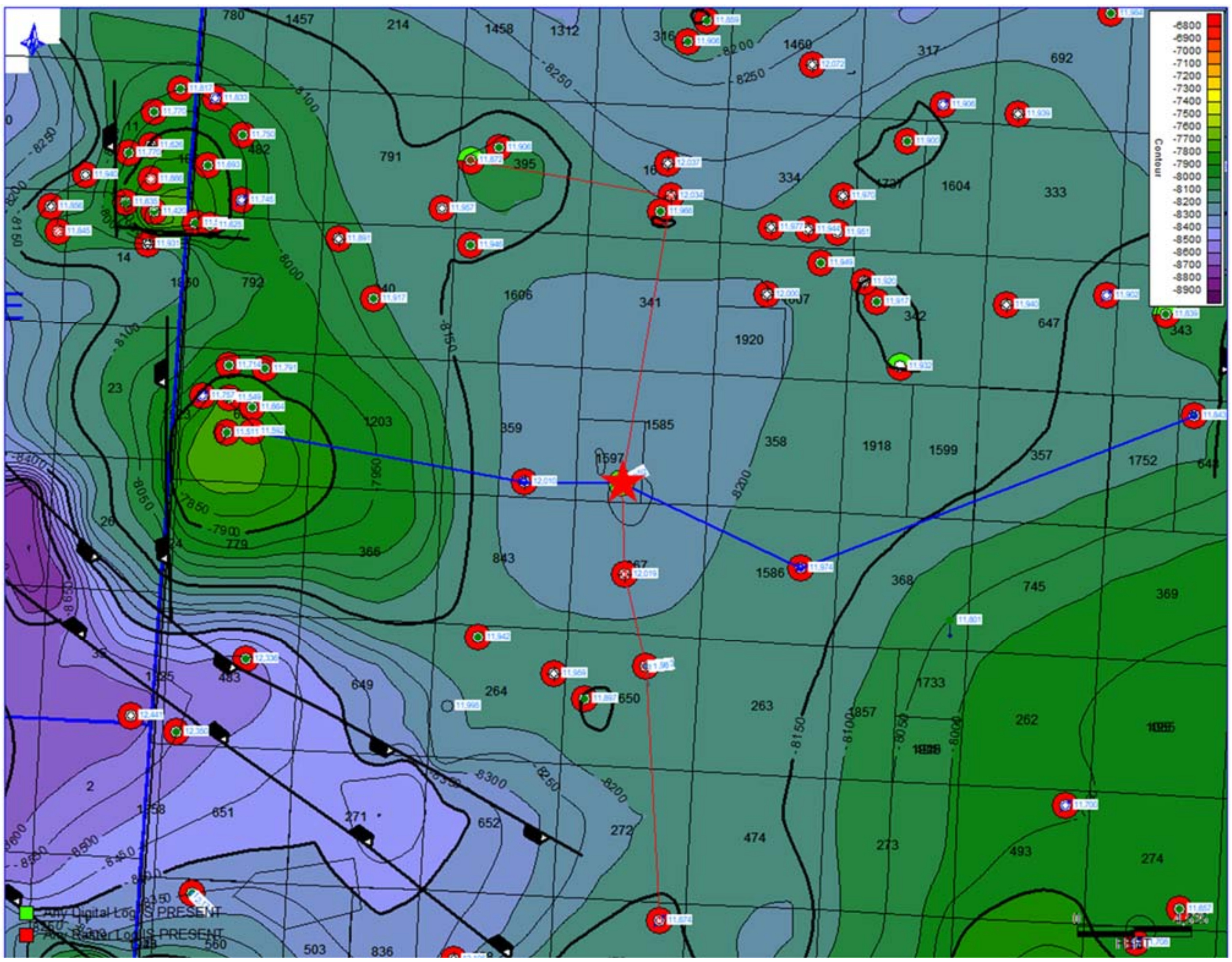


Figure 12 – Silurian Structure Map (subsea depths)

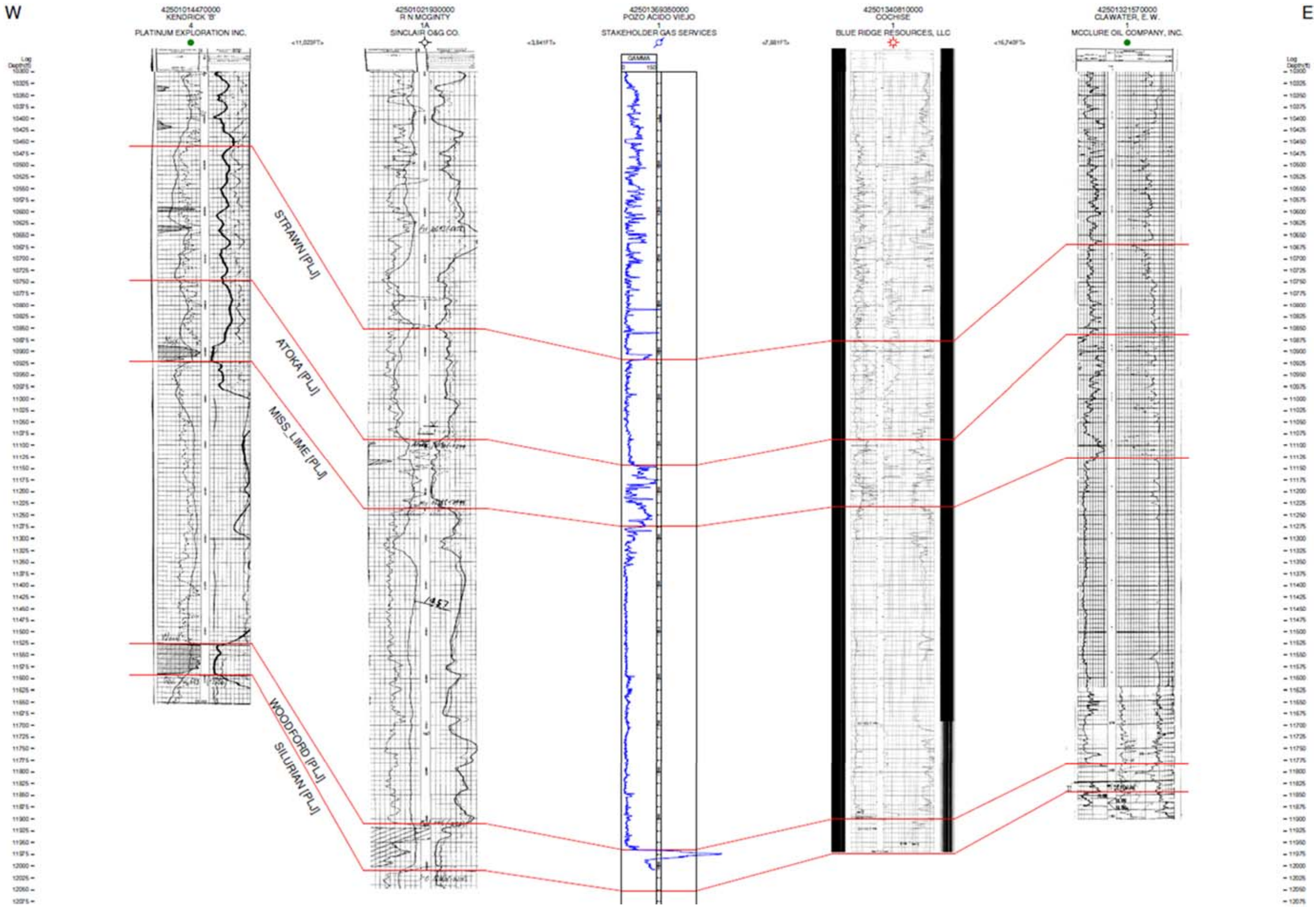


Figure 13 – Structural West-East Cross Section

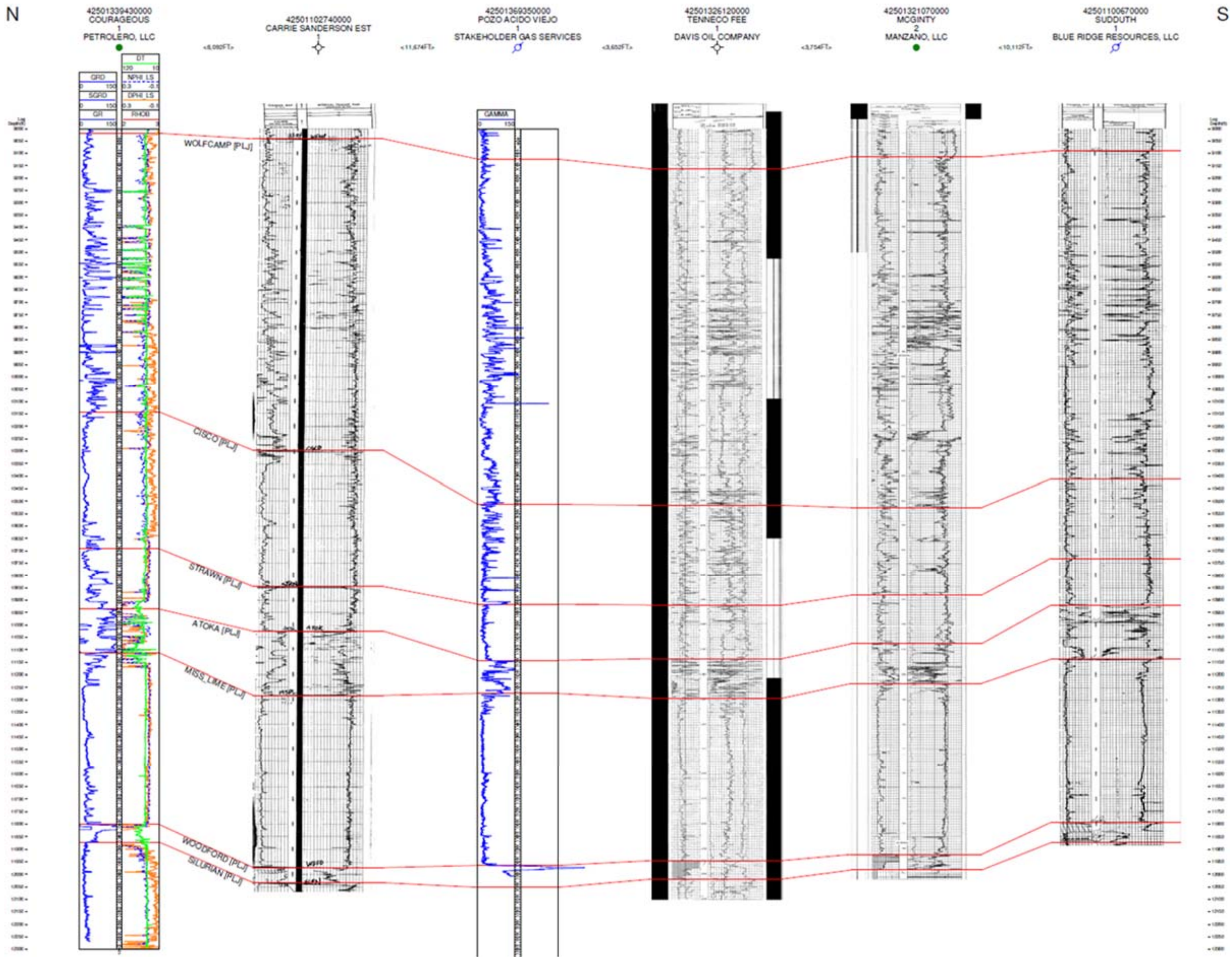


Figure 14 – Structural North-South Cross Section

Injection and Confinement Summary

The lithologic and petrophysical characteristics of the Fasken formation at the PAV #1 well location indicate the formation has sufficient thickness, porosity, permeability, and lateral continuity to accept the proposed injection fluids. The Woodford formation shale at the PAV #1 well has low permeability and is of sufficient thickness and lateral continuity to serve as the upper confining zone. Beneath the injection interval, the low permeability, low porosity Fusselman formation is unsuitable for fluid migration and serves as the lower confining zone. Although few wells penetrate the lower confining zone in the area of the PAV #1, it can be expected that lateral deposition of the tight carbonate found in the lower confining zone to be extensive around the PAV #1 location based on lack of exposure events in that time of deposition. Additionally deeper, laterally continuous formations, including the Montoya and Simpson Group, provide additional confinement.

Groundwater Hydrology

Yoakum County falls within the boundary of the Sandy Land Underground Water Conservation District. Three aquifers are identified by the Texas Water Development Board's *Aquifers of Texas* report in the vicinity of the proposed PAV #1 well: the Dockum Aquifer, Edwards-Trinity Aquifer, and Ogallala Aquifer (George, Mace and Petrossian, 2011). Table 3 references the aquifers' positions in geologic time and the associated geologic formations. A schematic cross section in Figure 15, near the proposed PAV #1 well, illustrates the structure and stratigraphy of these water-bearing formations. Groundwater flow direction is the same for the three aquifers, generally from northwest to southeast, Figure 16 (Teeple, et al., 2021).

Table 3 – Geologic and hydrogeologic units with accompanying lithologic descriptions near Gaines, Terry and Yoakum Counties, Texas (Teeple, et al. 2021)

Era	Period	Epoch or series	Geologic unit group or formation	Lithologic descriptions	Hydrogeologic unit
Cenozoic	Tertiary	Pliocene	Ogallala Formation	Gravel, sand, silt, and clay	High Plains aquifer system (Ogallala aquifer)
		Miocene			
Mesozoic	Cretaceous[1]	Comanchean Series	Washita Group[2]	Shale and limestone	Edwards-Trinity (High Plains) aquifer system
			Fredericksburg Group	Clay, shale, and limestone	
			Trinity Group	Sand and gravel	
	Triassic	Upper	Dockum Group	Siltstone, mudstone, shale, and sandstone	Dockum aquifer

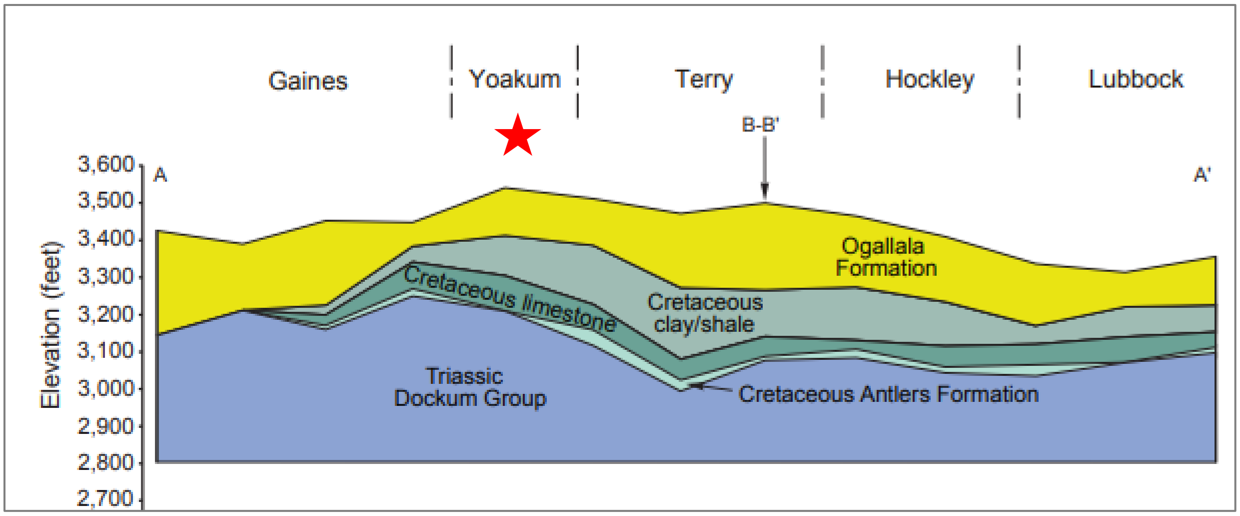


Figure 15 – NW-SE Cross Section of aquifers in the PAV #1 well area (George, Mac and Petrossian, 2011)

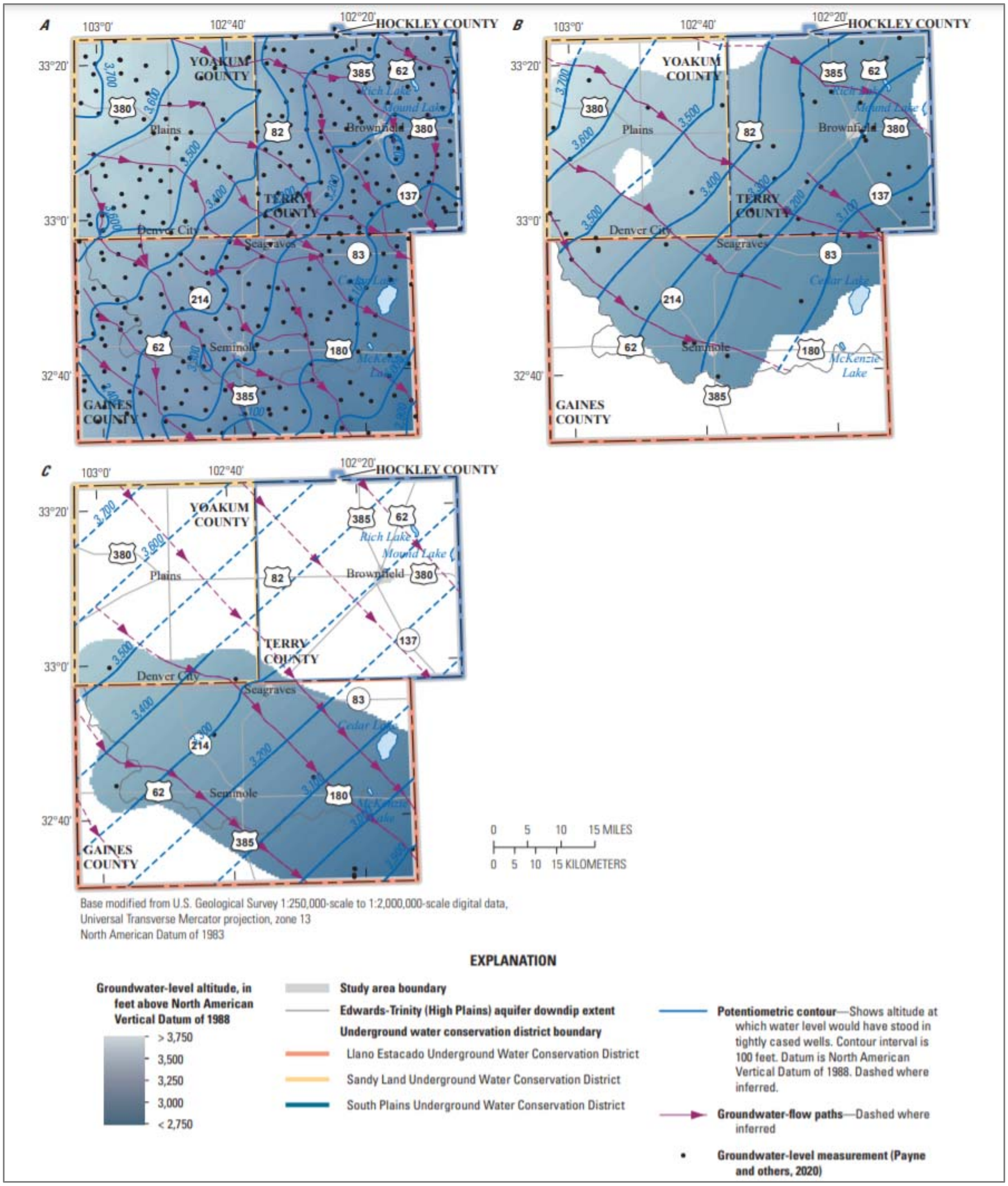


Figure 16 – Potentiometric surfaces from wells completed in A, Ogallala aquifer, B, the Edwards-Trinity aquifer and C, the Dockum aquifer (George, Mace and Petrossian, 2011).

The Dockum Aquifer is the oldest of the three aquifers, formed from Triassic-age Dockum Group sediments, and underlies the Cretaceous Trinity and Fredericksburg Groups (Teeple, et al., 2021). Figure 17 shows the subsurface and outcrop extent of the Dockum Aquifer. As shown in Figure 18, the total dissolved solids in western Yoakum County exceed 5,000 milligrams per liter ("mg/L"), therefore the aquifer is considered brackish.

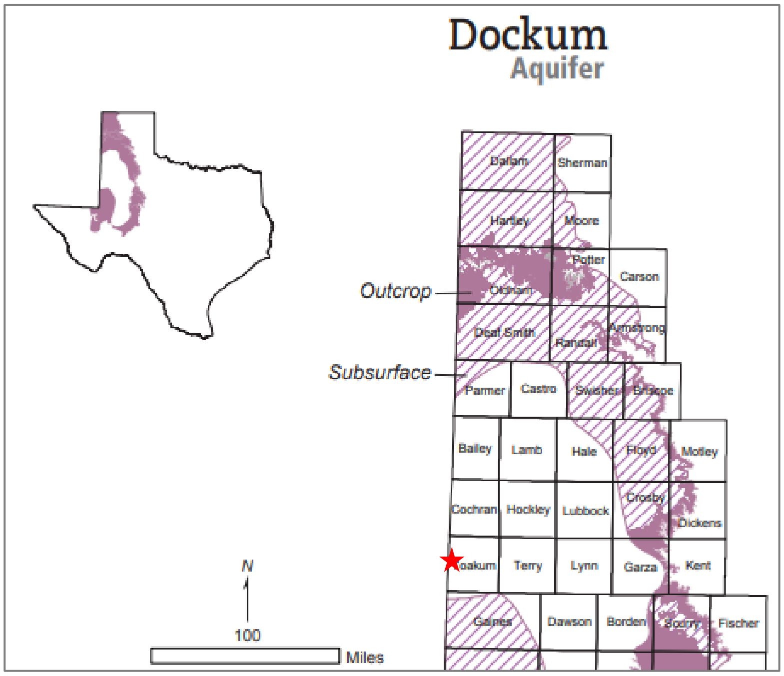


Figure 17 – Regional extent of the Dockum fresh water aquifer (TWDB)

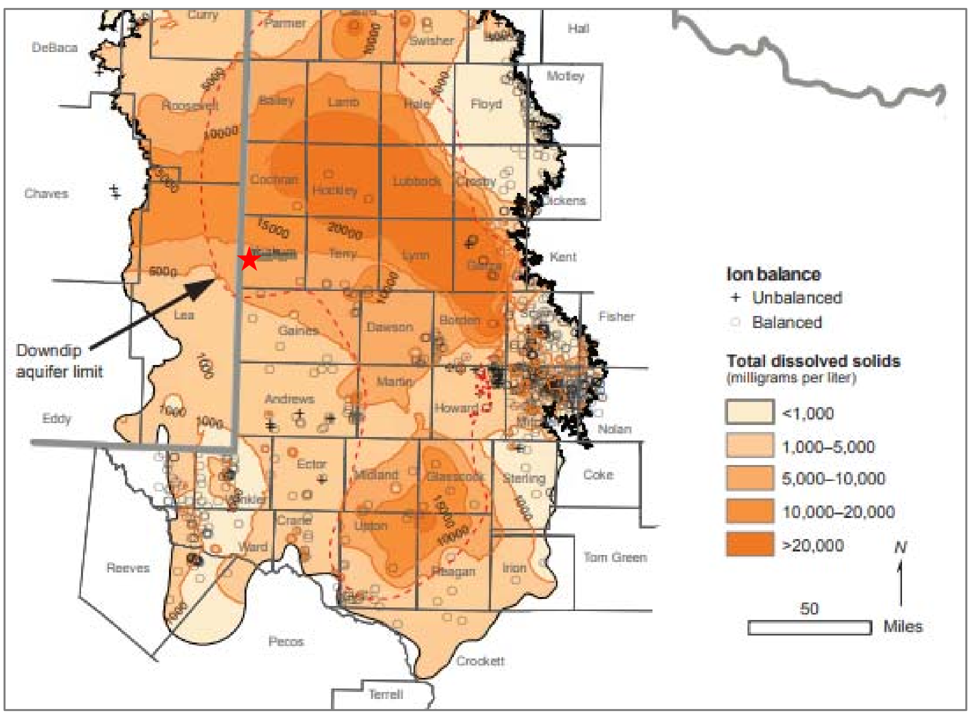


Figure 18 – Total dissolved solids in groundwater from the Dockum Aquifer (Ewing et al, 2008)

The Edwards-Trinity Aquifer is a collection of Cretaceous age sediments – primarily the Trinity Group Antlers formation sandstone and limestones of the Fredericksburg Group, specifically the Comanche Peak and Edwards formations. Figure 19 shows the subsurface and outcrop extent of the Edwards-Trinity Aquifer. Freshwater infiltration to this aquifer is primarily from the overlying Ogallala Aquifer. (George, Mace and Petrossian, 2011).

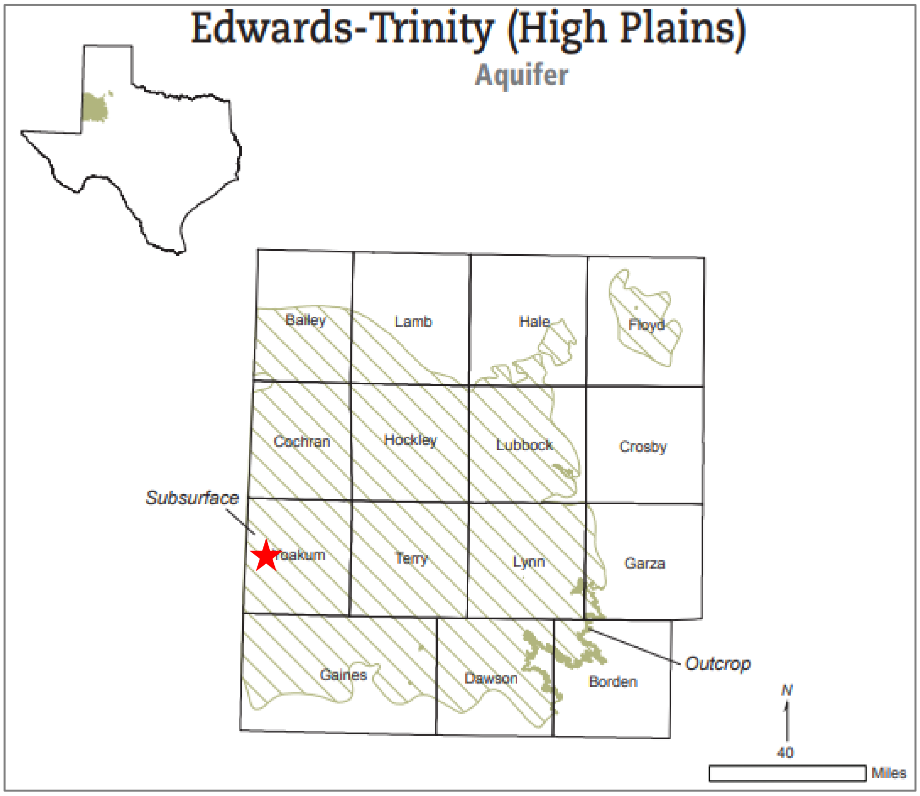


Figure 19 – Regional extent of the Edwards-Trinity fresh water aquifer (George, Mace and Petrossian, 2011)

The Ogallala aquifer consists of sand, gravel, clay and silt sediments (George, Mace and Petrossian, 2011) and produces the majority of the fresh water for Yoakum County. Figure 19 shows the subsurface and outcrop extent of the Ogallala Aquifer.

The base of the deepest aquifer is separated from the injection interval by more than 9,500' of rock, including 650' of Salado salt. Though unlikely for reasons outlined in the confinement and potential leaks sections, if migration of injected fluid did occur above the Woodford Shale, thousands of feet of tight sandstone, limestone, shale and anhydrite beds occur between the injection interval and the lowest water-bearing aquifer.

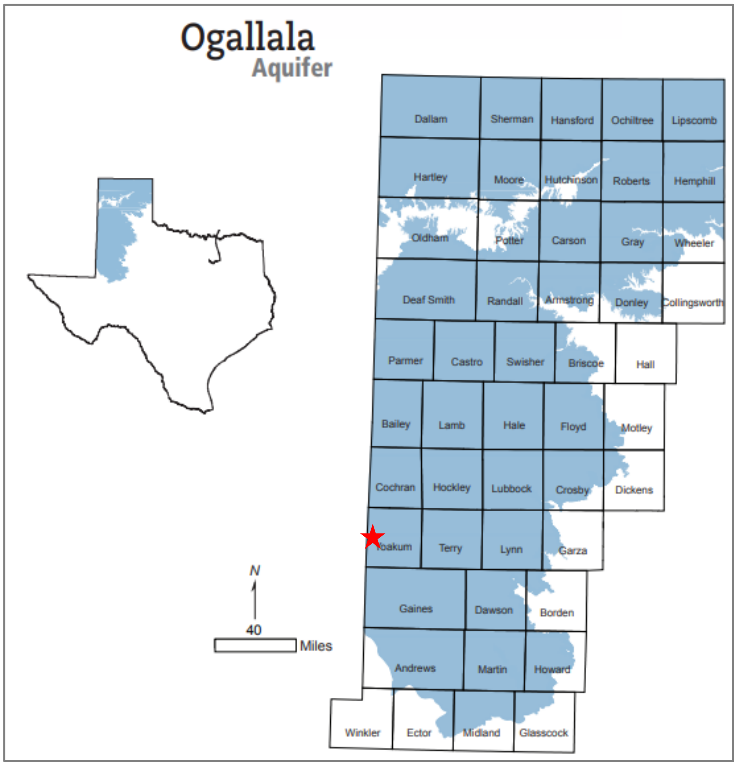


Figure 20 – Regional extent of the Ogallala fresh water aquifer (George, Mace and Petrossian, 2011)

The TRRC's Groundwater Advisory Unit ("GAU") identified the base of Underground Sources of Drinking Water ("USDW") at 2,250 feet at the location of the PAV #1 well. Therefore, there is approximately 9,470 feet separating the base of the USDW and the injection interval. A copy of the GAU's Groundwater Protection Determination letter issued by the TRRC as part of the Class II permitting process for the PAV #1 well is provided in Appendix B.

Description of the Injection Process

Current Operations

The Campo Viejo Facility and its associated PAV #1 well began operating in March of 2019. Since operations began, 2.8 billion cubic feet ("BCF") of treated acid gas ("TAG") has been injected, which equates to 143,483 metric tons of CO_2. Over the life of the injection period, the average daily injection rate has been 2.7 MMSCF/d. The approximate current composition of the TAG stream is as follows:

Table 4 – Gas Composition of Campo Viejo Facility outlet

Component	Mol %
CO2	89.25%
H2S	9.75%
N2	0.58%
Other	0.43%

The Campo Viejo Facility is designed to compress, treat, and process natural gas produced from the surrounding counties in Texas and New Mexico. The gas is dehydrated to remove the water content, then

processed to separate natural gas liquids which are then sold, along with the pipeline quality natural gas, to various customers. TAG is then directly routed from the plant sweeteners to the PAV #1 well. The facility is manned 24 hours per day, 7 days per week.

Planned Operations

Stakeholder anticipates increasing the amount of CO_2 injected into PAV #1 well from the current rate up to 20 MMSCF/d. Additional growth is expected both at Stakeholder facilities and regionally as rising sour gas production and flaring reduction mandates create the need for additional CO_2 and H_2S disposal capacity. Stakeholder plans to inject into this AGI well for a total of 25 years from the start of injection in 2019.

Figure 21 shows a high-level view of the current process flow plus the prospective additional operations over time.

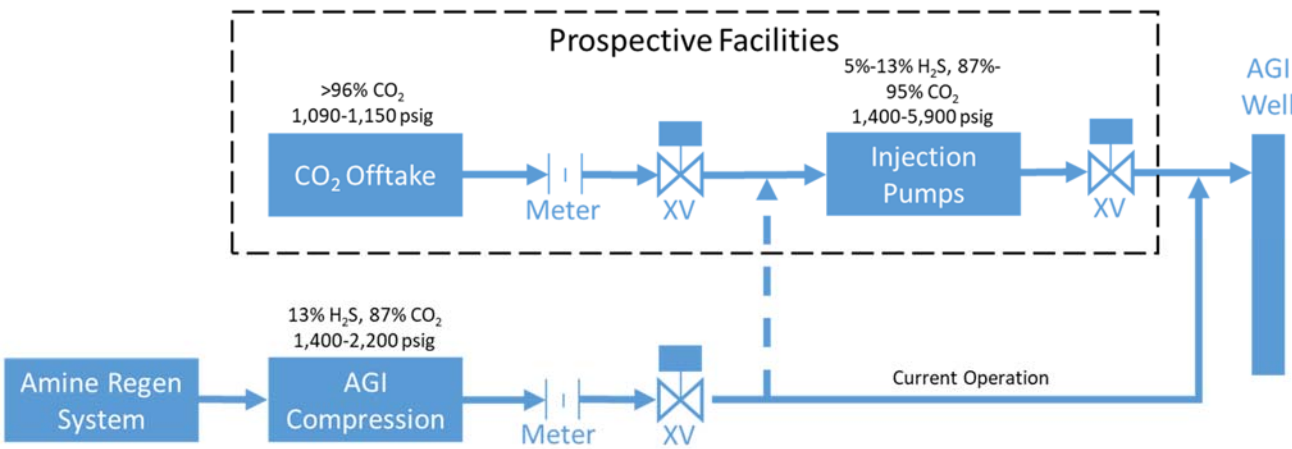


Figure 21 – Campo Viejo Facility Process Flow Diagram

Reservoir Characterization Modeling

The modeling software used to evaluate this project was Computer Modelling Group's GEM 2020.11 ("GEM") simulator. Computer Modelling Group ("CMG") has put together one of the most accurate and technically sound reservoir simulation software packages for conventional, unconventional, and secondary recovery. GEM utilizes equation-of-state ("EOS") algorithms along with some of the most advanced computational methods to evaluate compositional, chemical, and geochemical processes and characteristics to produce highly accurate and reliable simulation models for carbon injection and storage. The GEM model is recognized by the EPA for use in area of review delineation modeling as listed in the Class VI Well Area of Review Evaluation and Corrective Action Guidance document.

The Silurian (Fasken) formation is the target formation for PAV #1 well. The Petra software package was used to create the geologic model of the target formation. The faulting and geologic structure was then imported into GEM and used to create contours for the model grid.
Porosity and permeability estimates were determined using the porosity log from a nearby injector (API No. 42-501-33943) and a petrophysical analysis was performed to correlate porosity values by depth with core porosities as shown in the Holtz paper. The Coates permeability equation was then used to calculate permeability with depth. Both porosity and permeability are assumed to be laterally homogeneous in the reservoir.

The reservoir is assumed to be at hydrostatic equilibrium and initially saturated with 100% brine. An infinite acting reservoir was created to simulate boundary conditions. The gas injectate is composed of H_2S, CO_2, CH_4, and other components as shown in Table 5. Core data from literature review was used to determine residual gas saturation (Ruppel and Holtz, 1994). The modeled composition only takes into consideration the carbon dioxide and hydrogen sulfide as they comprise nearly 99% of total stream. For the initial injection period, these compositions are normalized up to 100%. For the proposed additional injection period, it is expected that a larger portion of the gas added is carbon dioxide, changing the composition to 94% CO_2 and 6% H_2S.

Table 5 – Modeled Initial Gas Composition

Component	Measured Current Composition (mol%)	2019-2022 Model Composition (mol%)	2022-2044 Model Composition (mol%)
H2S (H2S)	9.745	9.844	6.000
Nitrogen (N2)	0.577	0.000	0.000
CO2 (CO2)	89.249	90.156	94.000
Methane (C1)	0.190	0.000	0.000
Ethane (C2)	0.012	0.000	0.000
Propane (C3)	0.028	0.000	0.000
Hexanes Plus (C6+)	0.199	0.000	0.000

Core data from literature review was used to determine relative permeability curves between carbon dioxide and the connate brine within the Silurian-Devonian carbonates (Ruppel and Holtz, 1994). The key inputs used in the model include an irreducible water saturation of 25% and a maximum residual gas saturation of 21%.

The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 19,740 grid blocks per layer. Each grid block has dimensions of 250 feet by 250 feet which results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square-mile area. Each layer in the model was determined by identifying higher permeability zones as targets for injection from the logs and assigning each high permeability and intermediary low permeability zone its own layer. There are a total of 9 layers in the model, representing 5 layers of pay and 4 layers of intermediary low permeability zones. The properties of each of these layers are summarized in Table 6 below.

Table 6 – CMG Model Layer Properties

Layer #	Top (ft)	Thickness (ft)	Perm. (mD)	Porosity
1	11,867	83	168.3	10.4%
2	11,951	16	1.3	3.2%
3	11,968	6	14.1	5.8%
4	11,975	8	1.0	3.2%
5	11,984	14	53.1	6.4%
6	11,999	16	0.8	2.9%
7	12,016	9	6.8	5.1%
8	12,026	213	0.6	2.3%
9	12,240	5	122.1	8.0%

Simulation Modeling

The primary objectives of the model simulation were to:

1) Estimate the maximum areal extent and density drift of the acid gas plume after injection
2) Assess the impact of offset salt water disposal ("SWD") well injection on density drift of the plume
3) Determine the ability of the target formation to handle the required injection rate without fracturing the injection zone
4) Assess the likelihood of the acid gas plume migrating into potential leak pathways

The reservoir is assumed to be an aquifer filled with 100% brine. The salinity of the formation is estimated to be 100,000 ppm, typical for the region. The acid gas stream is primarily composed of CO_2 and H_2S as stated previously. Core data was used to help generate relative permeability curves. Cores, from the literature reviews as previous discussed, that most closely represent the vuggy carbonate seen in this region were identified and the Corey-Brooks equations were used to develop the curves. The lowest residual gas saturation found in the cores was then used for a conservative estimate of plume size. The initial reservoir pressure is 5,601 psi which is equivalent to a 0.465 psi/ft pressure gradient and was determined from offset injection well analysis. The fracture gradient of the injection zone was estimated to be 0.72 psi/ft, which was determined using Eaton's equation. A 10% safety factor was then applied to this number, putting the maximum bottom-hole pressure allowed in the model at 0.65 psi/ft which is equivalent to 7,829 psi.

The model also takes into account offset SWD injection volumes close to the PAV #1 well. A total of 19 offset wells currently injecting into the Devonian were identified within a 5-mile radius of PAV #1 well. Historical injection rates of each of these wells were analyzed and projected into the model. This simulation includes the effect of water injection on the density drift of the plume and bottom hole pressure.

The model runs for a total of 50 years comprised of 25 years of active injection and an additional 25 years of density drift. The model begins the injection period in 2019 when the PAV #1 well first became operational. An injection rate of 7.2 MMSCF/d is assumed during the first 3 years and 3 months (which is higher than the current actual permitted injection rate) to model the maximum available rate and therefore results in a more conservative plume size. After this initial period, it is assumed that the injection rate increases to 20 MMSCF/d for the remainder of the active injection period. At this point, the PAV #1 well stops injection while the offset injectors continue operations during the density drift period (also a conservative assumption).

The maximum plume extent during the 25-year injection period is shown in Figure 22. The final extent after 25 years of density drift after injection ceases is shown in Figure 23.

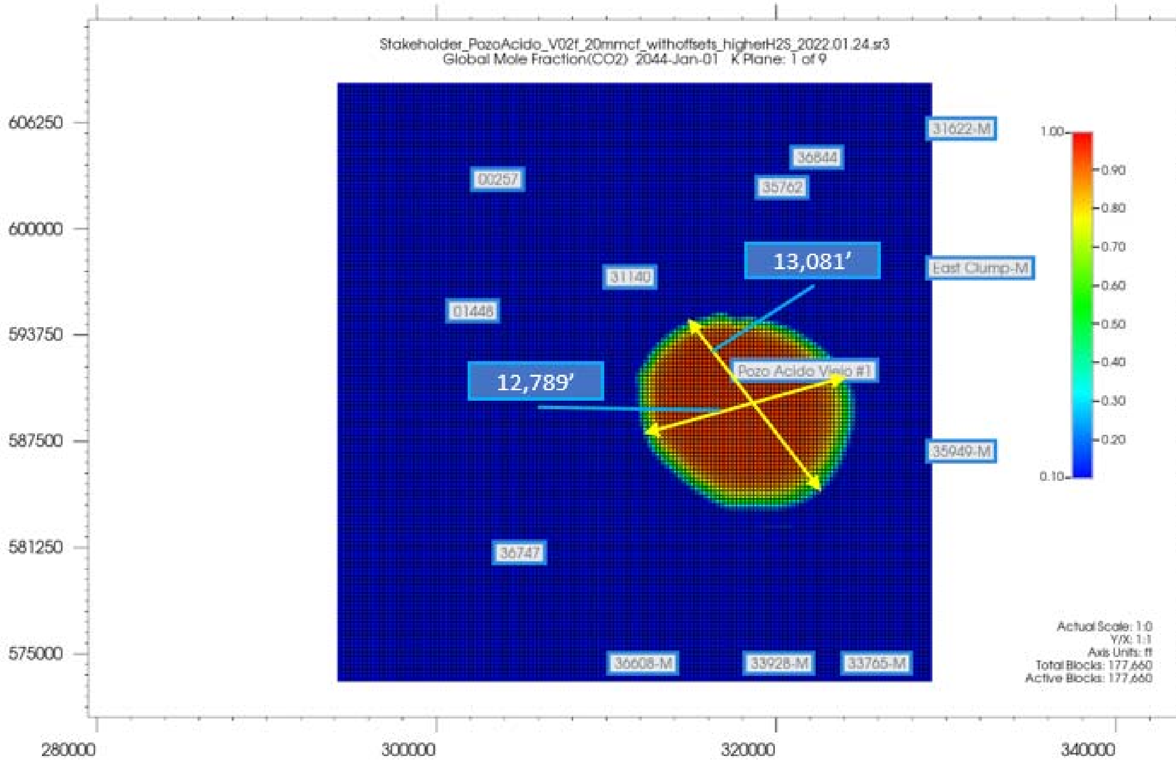


Figure 22 – Areal View Gas Saturation Plume, Year 25 (End of Injection)

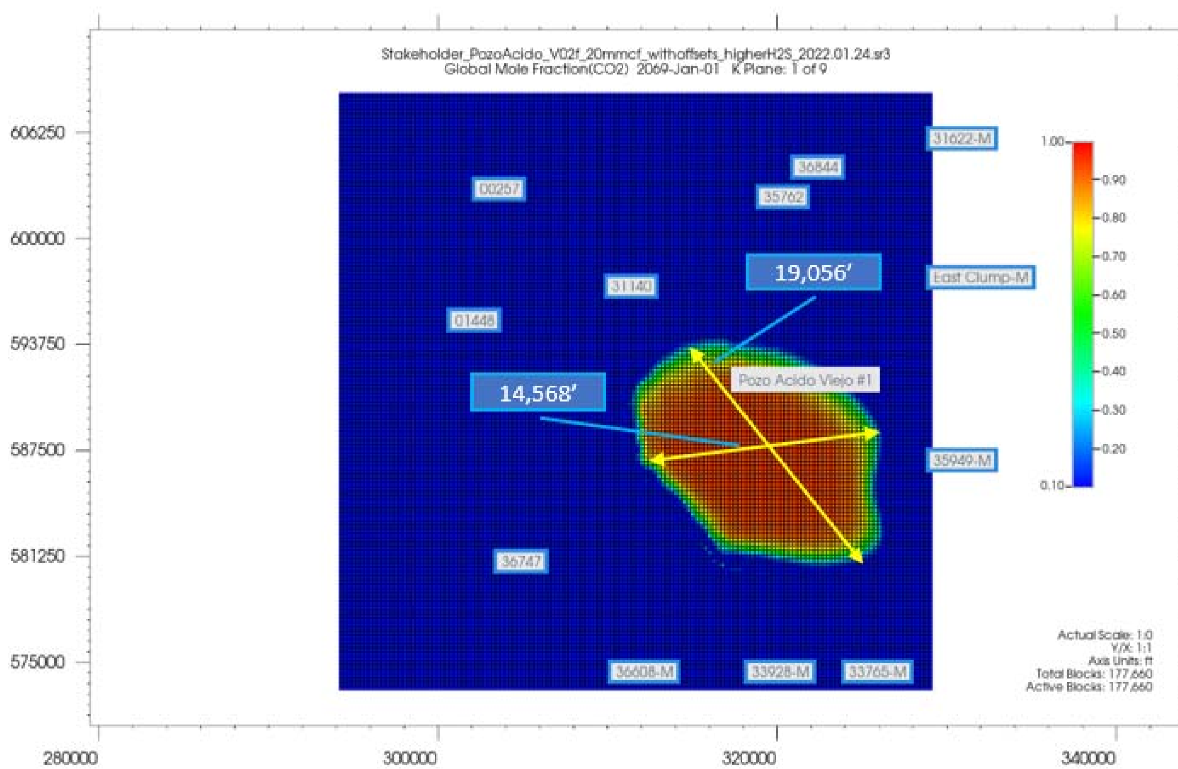


Figure 23 – Areal View Gas Saturation Plume, Year 50 (End of Simulation)

Figure 24 shows the surface injection rate and bottom hole pressure over the injection period and the period of density drift after injection ceases. The bottomhole pressure increases steadily throughout the injection period, reaching a maximum pressure of 5,920 psi as injection ceases. This buildup of 190 psi keeps the bottomhole pressure well below the fracture pressure of 7,829 psi. The maximum surface pressure associated with the maximum bottomhole pressure reached is 2,996 psi, well below the maximum allowable 6,010 psi per the TRRC UIC permit for this well.

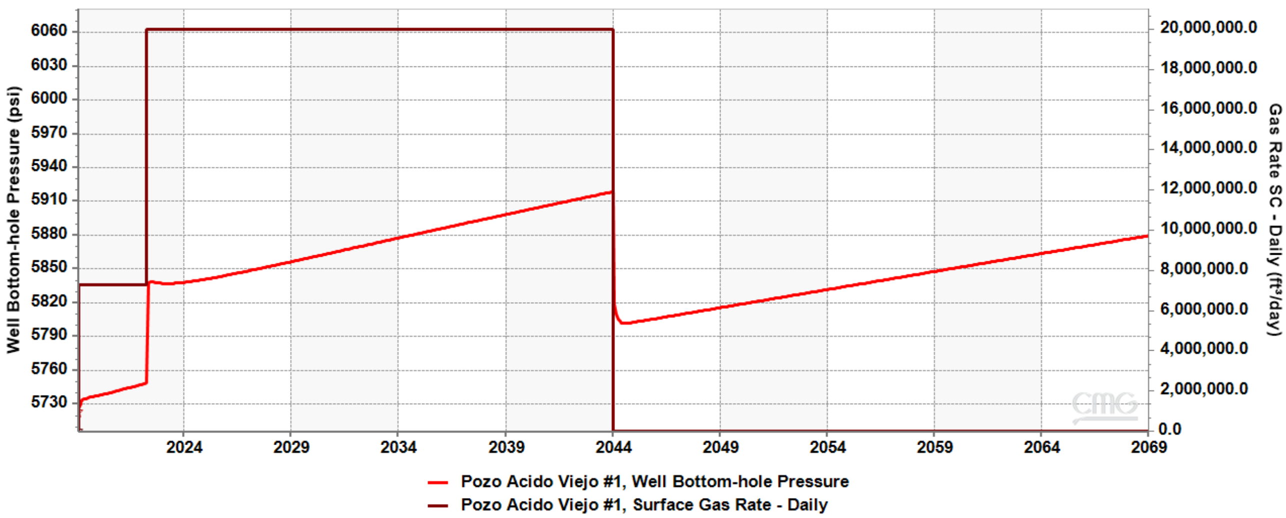


Figure 24 – Well Injection Rate and Bottomhole Pressure over Time

SECTION 3 – DELINATION OF MONITORING AREA

This section discusses the delineation of Maximum Monitoring Area ("MMA") and Active Monitoring Area ("AMA") as described in EPA 40 CFR §98.448(a)(1).

Maximum Monitoring Area

The MMA is defined as equal to or greater than the area expected to contain the free-phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile. Numerical simulation was used to predict the size and drift of the plume. With CMG's GEM software package, reservoir modeling was used to determine the areal extent and density drift of the plume. The model takes into account the following considerations:

- Offset well logs to estimate geologic properties
- Petrophysical analysis to calculate the heterogeneity of the rock
- Geological interpretations to determine faulting and geologic structure
- Offset injection history to adequately predict the density drift of the plume

Acid gas injectate was analyzed by a third-party vendor to determine the initial composition used in the model. The report is provided in Appendix C. The molar composition of the gas is primarily CO_2 with some H_2S and CH_4. The change in molar composition was also incorporated into the model as future predominantly CO_2 streams are added for injection. As discussed in Section 2, the gas was injected into the Silurian formation, specifically, the Fasken formation. The geomodel was created based off the rock properties seen in the Fasken.

The plume boundary was defined by the weighted average gas saturation in the aquifer. A value of 3% gas saturation was used to determine the boundary of the plume. When injection ceases in year 25, the areal expanse of the plume will be 2,473 acres. The maximum distance between the wellbore and the edge of the plume is approximately 0.87 miles to the southeast. After 25 additional years of density drift, the areal extent of the plume is 3,193 acres with a maximum distance to the edge of the plume of approximately 1.35 miles to the southeast.

Figure 25 shows the 25-year plume boundary, the 50-year plume boundary and the MMA.

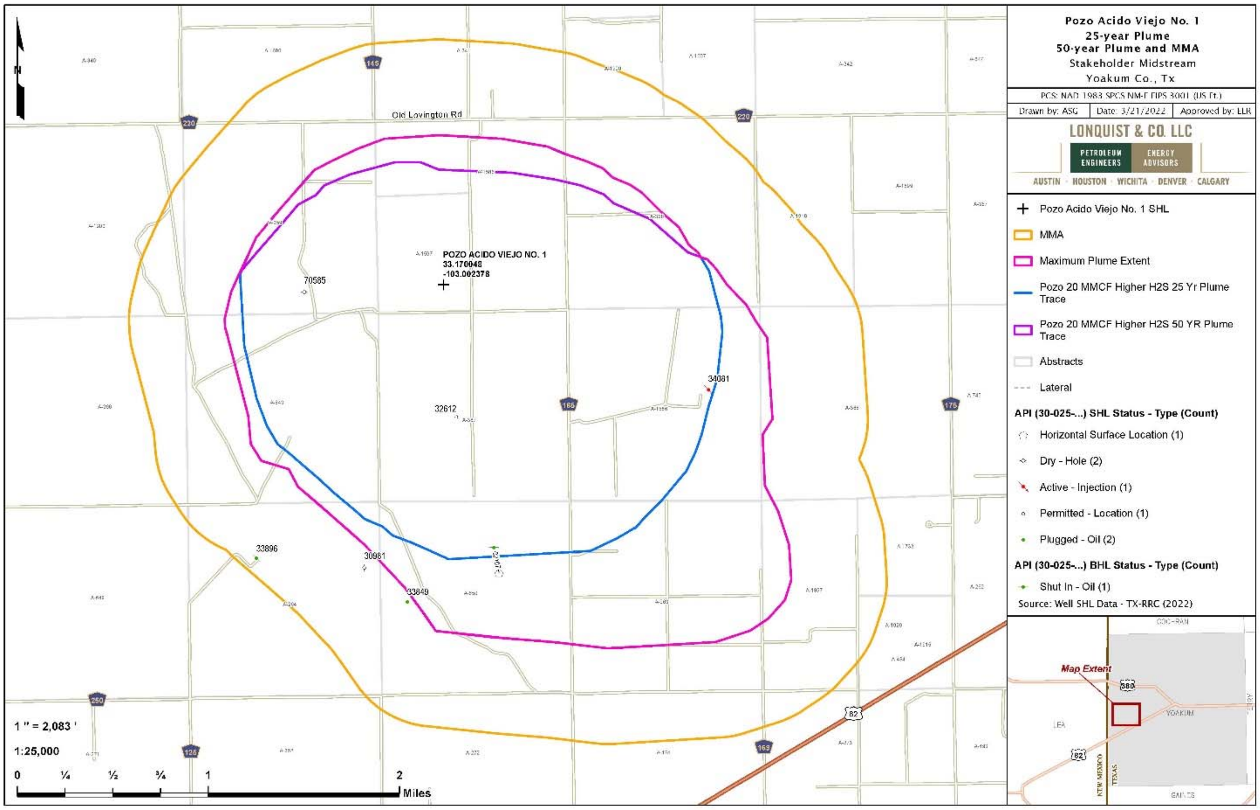


Figure 25 – 25-year plume, 50-year plume, Maximum Monitoring Area

Active Monitoring Area

The AMA is proposed to have the same boundary as the MMA. The only probable leakage paths in the MMA are the wells which penetrate the injection interval and the surface equipment; therefore, the MMA adequately covers the area which should be monitored for CO_2 leakage. Leakage from groundwater wells, faults and fractures, through the confining layer and seismicity events are highly improbable as discussed in the subsequent section and would be covered by the MMA. Further consideration was done in determining the plume boundary to provide the most conservative estimate. Anisotropy of formation was taken into account to allow gas to flow into the highest permeability zones. The zone with the highest permeability would take on the most gas and allow for a larger areal extent of gas.

SECTION 4 – POTENTIAL PATHWAYS FOR LEAKAGE

This section identifies the potential pathways for CO_2 to leak to the surface within the MMA and the likelihood, magnitude and timing of such leakage. The potential leakage pathways are:

- Leakage from surface equipment
- Leakage through existing wells within MMA
- Leakage through faults and fractures
- Natural or Induced Seismicity
- Drilling through the MMA
- Leakage through the confining layer

Leakage from Surface Equipment

The surface facilities at the Campo Viejo Facility are designed for injecting acid gas containing H_2S, and therefore minimize leakage points such as valves and flanges following industry standards and best practices. H_2S gas detectors are located around the facility and the well site. These gas detectors trigger alarms at 10 parts per million ("ppm"). Additionally, all Stakeholder field personnel are required to wear H_2S monitors which are triggered at 5 ppm of H_2S. A shut-in valve is located at the wellhead and is locally controlled by pressure, with a high pressure and low pressure shut-off.

The facilities have been designed and constructed with additional safety systems to provide for safe operations. These systems include Emergency Shutdown ("ESD") valves to isolate portions of the plant and pipeline, pressure relief valves along the pipeline to prevent over pressurization, and flares to allow piping and equipment to be de-pressured rapidly under safe and controlled operating conditions in the event of a leak. Figures 26 and 27 display the facility safety plot plan, taken from the Campo Viejo H_2S Contingency Plan, and show the location of the H_2S monitors in the vicinity of the plant and the PAV #1 well. Should Stakeholder construct additional CO_2 facilities, as indicated in Figure 21, a separate meter will be installed for the additional stream in order to comply with the 40 CFR §98.448(a)(5) measurement. As this meter will be in close proximity to the existing facilities, it will utilize the existing monitoring programs discussed previously. Additionally, CO_2 monitors will be installed near the new meter and tied into the facility monitoring systems.

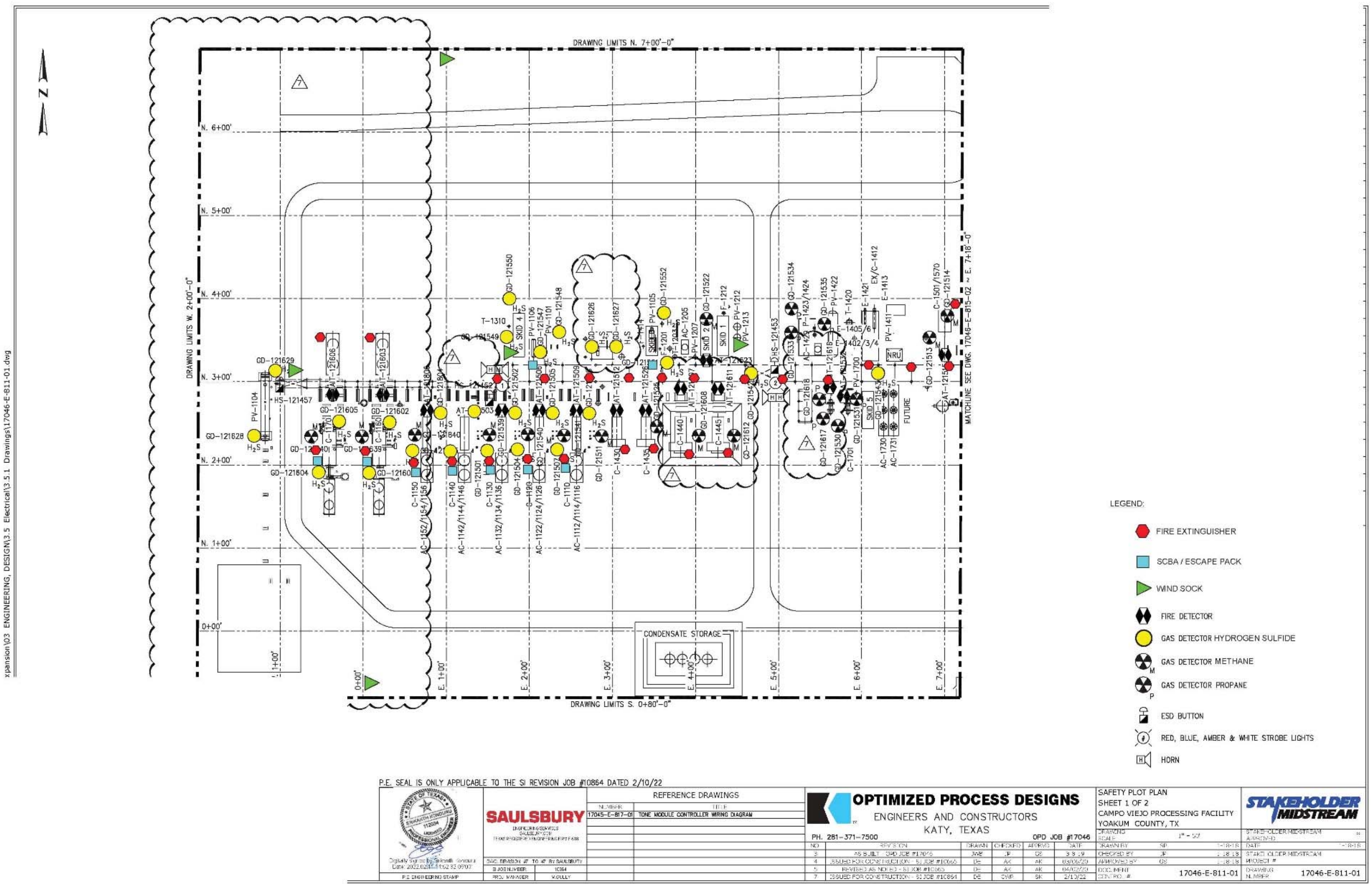


Figure 26 – Site Plan, Campo Viejo Facility – West Section

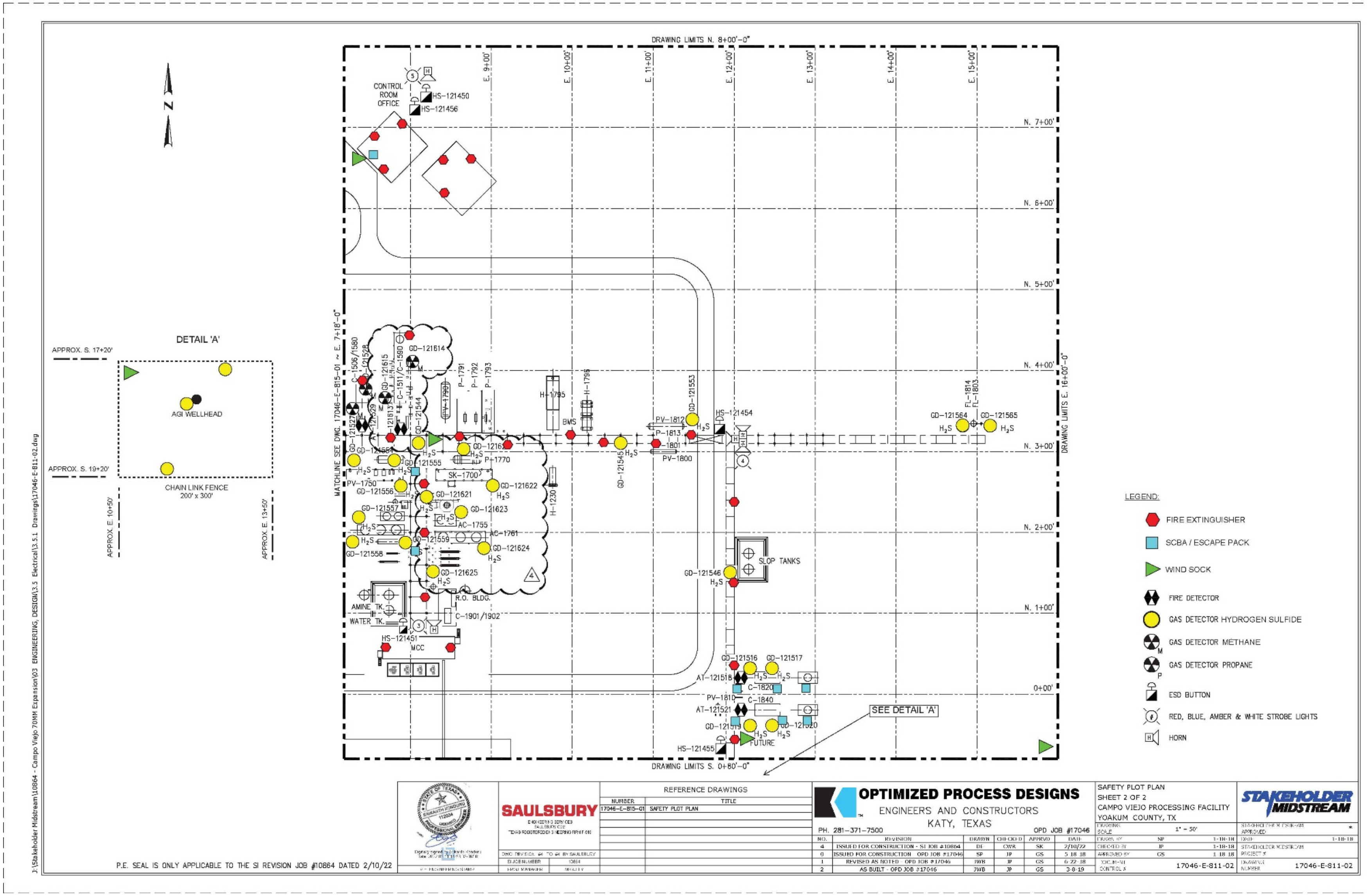


Figure 27 – Site Plan, Campo Viejo Facility and PAV #1 – East Section

With the level of monitoring at the Campo Viejo Facility and the PAV #1 well, any release of H_2S and CO_2 would be quickly identified and the safety systems would quickly minimize the volume of the release. The CO_2 injected into PAV #1 is injected with H_2S at a concentration of 10% (100,000 ppm). At this high level of H_2S concentration, even small leakage would trigger personal and facility H_2S monitors set to alarm at 5 ppm and 10 ppm respectively. If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release, as stated in Section 7 in accordance with 40 CFR §98.448(a)(5).

Larger scale versions of Figures 26 and 27 are provided in Appendix D.

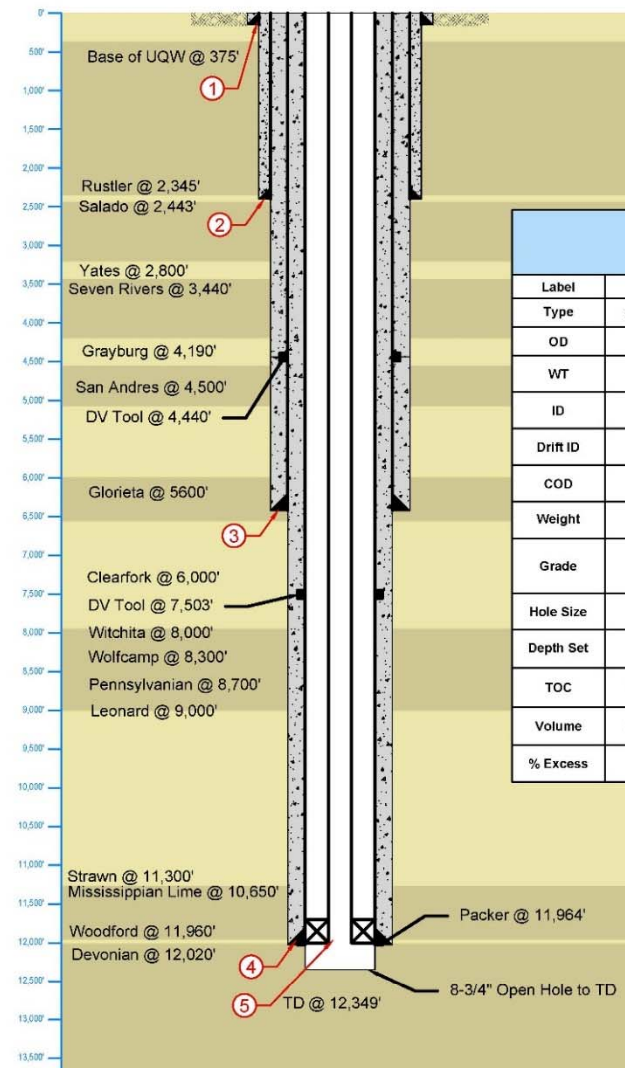
Leakage from Wells in the Monitoring Area

Oil and Gas Operations within Monitoring Area

Historical production within the area of the PAV #1 well has primarily been from the shallower San Andres and Wolfcamp formations. These formations are separated from the Silurian-Devonian interval by 6,400 and 3,300 feet, respectively. Within the plume area of the PAV #1 well, eighty-four (84) wells have been drilled and completed or plugged. 71 of these wells are active, 1 is shut-in, 12 are plugged and abandoned. Seven (7) wells, not including the PAV #1 well, penetrate the injection interval within the MMA. The casing and cementing of each of the seven wells meets the TRRC regulations as specified in TAC § 3.13(a)(4). Five (5) of these wells have been properly plugged and abandoned per TRRC regulations as specified in § 3.14(d). One (1) active injection well (Cochise 1W) is plugged across the Devonian interval and currently injects into the much shallower San Andres. One (1) shut-in oil well (McGinty 2 #2), located more than 1.4 miles from the PAV #1, has not produced since 2015. The plume model shows that the CO_2 will not reach that wellbore until the end of the 25-year injection period. The operator of the well has signed an agreement (effective May 16, 2022) with Stakeholder to plug and abandon this well by December 31, 2022, and in so doing, will plug the well to the standards required by the TRRC.

All of the wells which penetrate the injection interval within the MMA were properly cased and cemented to prevent annular leakage of CO_2 to the surface. The plugged wells are also adequately protected against migration from the Devonian by the placement of the plugs within the wellbores. Additionally, the PAV #1 well was designed to prevent migration from the injection interval to the surface through the casing and cement placed in the well, as shown in Figure 28. Mechanical integrity tests ("MIT") required under TRRC rules are run annually to verify the well and wellhead can hold the appropriate amount of pressure. If the MIT were to indicate a leak, the well would be isolated and the leak mitigated quickly to prevent leakage to the atmosphere.

A map of all wells within the MMA is shown in Figure 29. Figure 30 shows only those wells which penetrate the injection interval. The MMA review maps, a summary of all the wells in the MMA and detailed wellbore schematics for those wells which penetrate the injection interval are provided in Appendix D.



KB:	3,787
BHF:	NA
GL:	3,789'
Spud:	5/27/2018

Casing/Tubing Information

Label	1	2	3	4	5
Type	Conductor	Surface	Intermediate	Production	Tubing
OD	20"	13-5/8"	9-5/8"	7"	3-1/2"
WT	NA	.430	.395	.408	NA
ID	NA	NA	NA	NA	NA
Drift ID	NA	NA	8.679"	6.151" 6.059"	2.867"
COD	21"	NA	10.625"	7.656"	3.905"
Weight	40 lb/ft	61.35 lb/ft	40 lb/ft	26 lb/ft 29 lb/ft	9.3 lb/ft
Grade	H-40	J-55 BTC	J-55 LTC HCL-80 LTC	HCL-80 BTC	95CR13S
Hole Size	24"	17-1/2"	12-1/4"	8-3/4"	8-3/4"
Depth Set	90'	2,402'	4400' 6,421'	7503' 12,026'	12,000'
TOC	Surface	Surface	Surface 4400'	Surface	NA
Volume	200 sks	3,449 sks	2,593 sks 475 sks	1,390 sks 1,033 sks	NA
% Excess	Na	NA	NA	NA	NA

LONQUIST & CO. LLC PETROLEUM ENGINEERS | ENERGY ADVISORS HOUSTON | CALGARY AUSTIN | WICHITA | DENVER	Stakeholder Midstream	Pozo Acido Viejo No. 1	
	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location: 33.1700484, -103.0023776	**Site:**	**Survey:**
	API No: 42-501-36935	**Field:**	**Well Type/Status:** AGI
Texas License F-9147	**RRC District No:**	**Project No:** 1549.2	**Date:** 11/22/2021
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Figure 28 – Pozo Acido Viejo #1 Wellbore Schematic

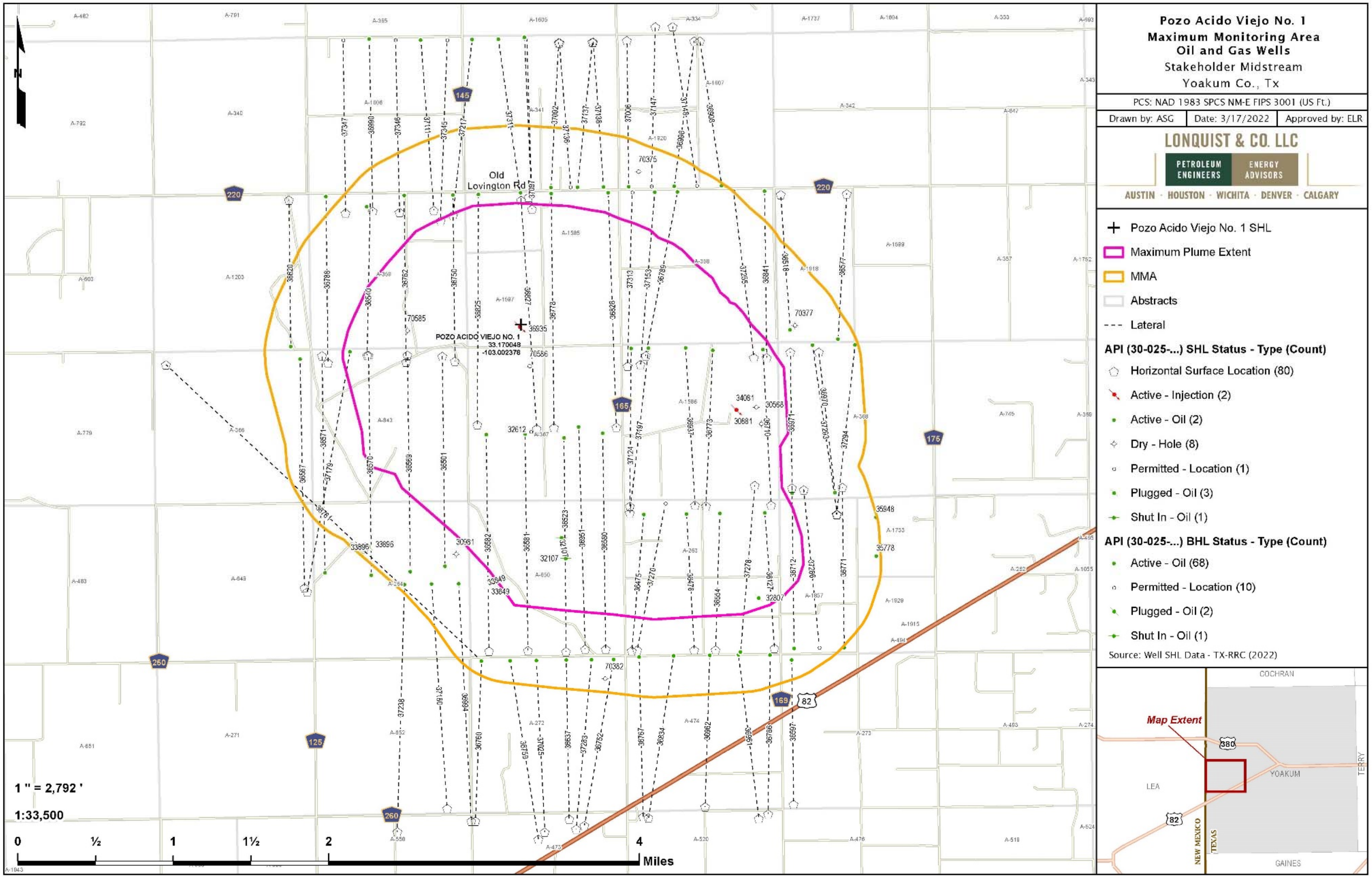


Figure 29 – Oil and Gas Wells within the MMA

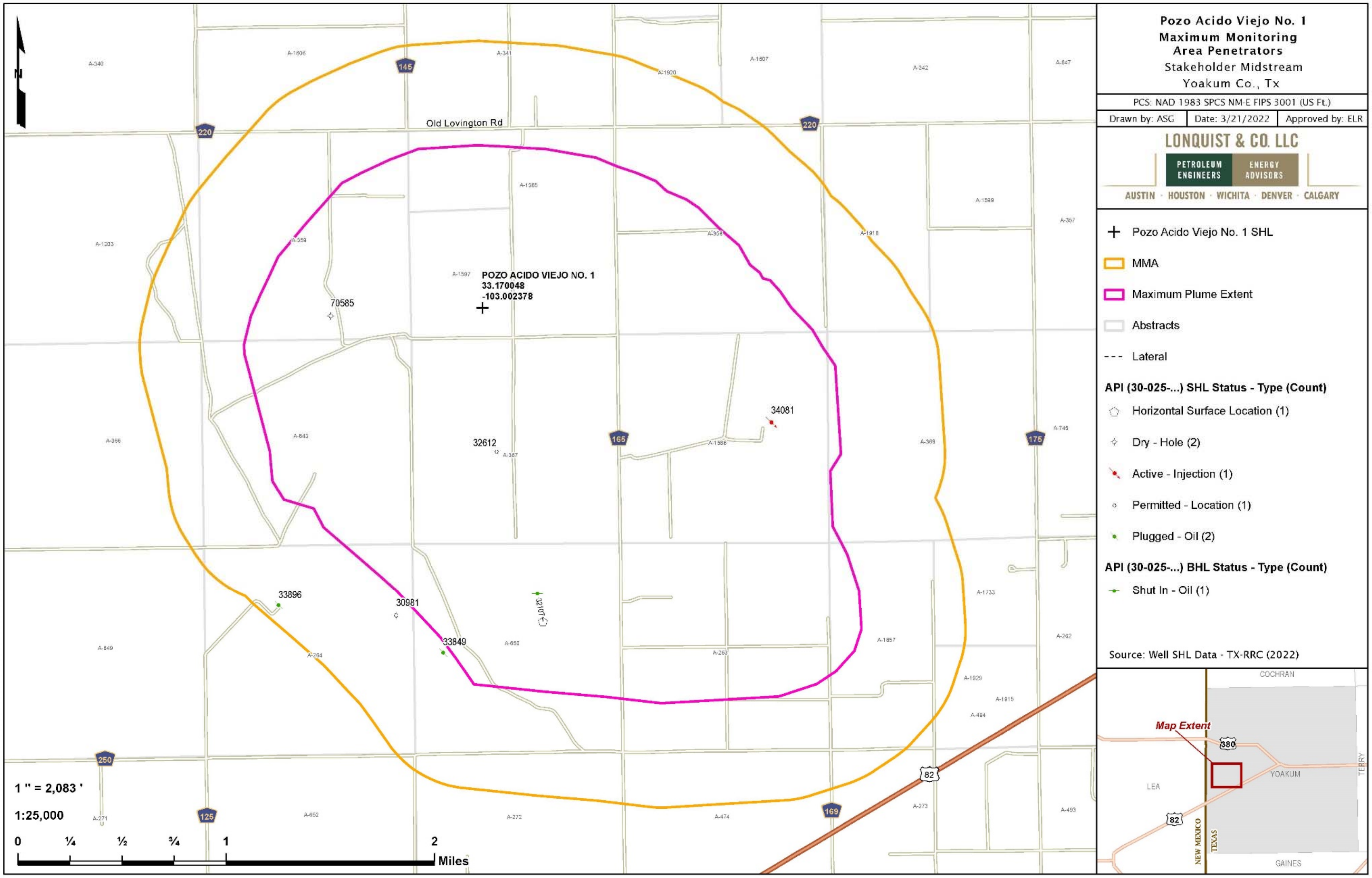


Figure 30 – Penetrating Oil and Gas Wells within the MMA

Future Drilling

Potential leak pathways caused by future drilling in the area are not expected to occur. The deeper formations, such as the Devonian, have proven to-date to be less productive or non-productive in this area, which is why the location was selected for injection. Also, the PAV #1 well is carried in the TRRC's Bronco (Siluro-Devonian) Field which is designated by the TRRC as an H_2S field. An H_2S field designation alerts potential oil and gas operators to the presence of H_2S. Any drilling permits issued by the TRRC in the area of the PAV #1 well include a list of formations for which oil and gas operators are required to comply with TRRC Rule 13 (entitled "Casing, Cementing, Drilling, Well Control, and Completion Requirements"). 16 TAC § 3.13. By way of example, see the PAV #1 well drilling permit provided in Appendix B. TRRC Rule 13 requires oil and gas operators to set steel casing and cement across and above all formations permitted for injection under TRRC Rule 9 or immediately above all formations permitted for injection under Rule 46 for any well proposed within a one-quarter mile radius of an injection well. In this instance, any new well permitted and drilled to the PAV #1 well's injection zone located within a one-quarter mile radius of the PAV #1 well will be required under TRRC Rule 13 to set steel casing and cement above the PAV #1 well injection zone. Additionally, Rule 13 requires operators to case and cement across and above *all* potential flow zones and/or zones with corrosive formation fluids. The TRRC maintains a list of such known zones by RRC district and county and provides that list with each drilling permit issued, which is also shown in the above-mentioned permit in Appendix B.

If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release.

Groundwater wells

There are thirty-two groundwater wells located within the MMA, as identified by the Texas Water Development Board. All of the identified groundwater wells in the area have total depths less than or equal to 400 feet, as shown in Figure 31 and Table 7. Additionally, Stakeholder has a water well on the facility property with a total depth of approximately 180 feet.

The surface and intermediate casings of the PAV #1 well, as shown in Figure 28, are designed to protect the shallow freshwater aquifers consistent with applicable RRC regulations and the GAU letter issued for this location. See GAU letter attached included within Appendix B. The wellbore casings and cements also serve to prevent CO_2 leakage to the surface along the borehole.

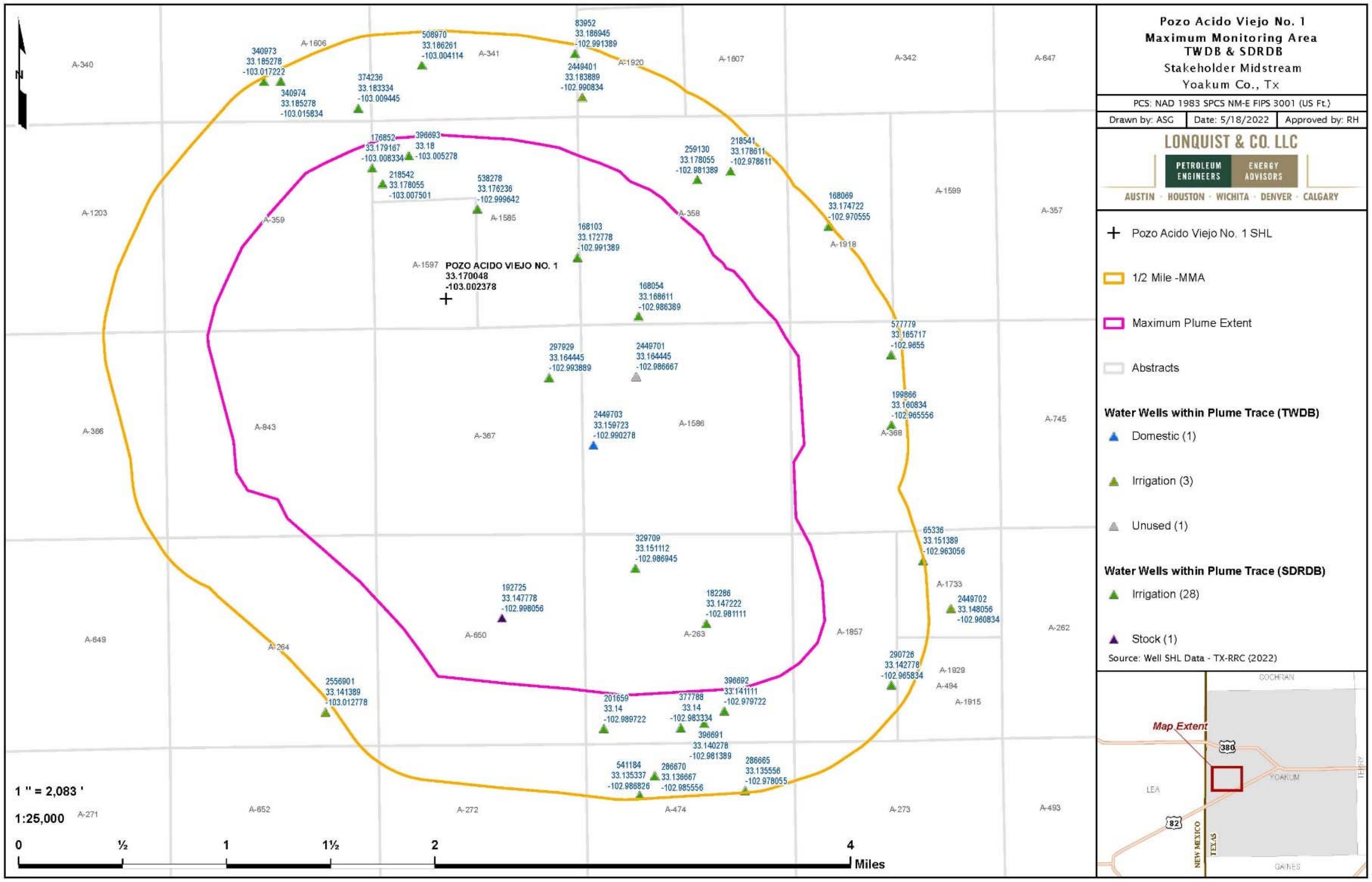


Figure 31 – Groundwater Wells within MMA

Table 7 – Groundwater Well Summary

State Well ID	OwnerName	PrimaryWat	WellDepth	Elevation	Data Source
2449701	Gene Smith	Unused	167	3775	TWDB
2449703	Larry Morrow	Domestic	200	3774	TWDB
2449401	Robert Box	Irrigation	165	3790	TWDB
65336	Larry Morrow	Irrigation	190	-	SDRDB
83952	D.L. Hartman Partnership	Irrigation	220	-	SDRDB
168054	Teichroeb, Peter	Irrigation	208	-	SDRDB
168069	Teichroeb, Peter	Irrigation	208	-	SDRDB
168103	Teichroeb, Peter	Irrigation	206	-	SDRDB
176852	Darrel Lowrey	Irrigation	183	-	SDRDB
182286	Buford Duff	Irrigation	205	-	SDRDB
192725	LANNY SMITH	Stock	185	-	SDRDB
199866	Henry letkeman	Irrigation	354	-	SDRDB
201659	Warren, Jim	Irrigation	240	-	SDRDB
218541	RANDY FORBUS	Irrigation	174	-	SDRDB
218542	BRAD MCWHIRTER	Irrigation	217	-	SDRDB
259130	RANDY FORBUS	Irrigation	176	-	SDRDB
286665	BRIAN SNODGRASS	Irrigation	309	-	SDRDB
286670	BRIAN SNODGRASS	Irrigation	342	-	SDRDB
290726	JEROME HEAD	Irrigation	342	-	SDRDB
297929	3D LandCo	Irrigation	186	-	SDRDB
329709	MELRA BEARDEN	Irrigation	200	-	SDRDB
340973	Ben Dyck	Irrigation	400	-	SDRDB
340974	Ben Dyck	Irrigation	360	-	SDRDB
374236	Ben Dyck	Irrigation	320	-	SDRDB
377788	WARREN FAMILY FARMS	Irrigation	335	-	SDRDB
396691	McWhirter Famliy Farms	Irrigation	293	-	SDRDB
396692	Mc Whirter Family Farms	Irrigation	288	-	SDRDB
396693	Brad McWhirter	Irrigation	266	-	SDRDB
508970	BRAD McWHIRTER	Irrigation	204	-	SDRDB
538278	BRAD McWHIRTER	Irrigation	238	-	SDRDB
541184	BRIAN SNODGRASS	Irrigation	285	-	SDRDB
577779	Henry Letkeman	Irrigation	195	-	SDRDB

Leakage Through Faults or Fractures

Dynamic modeling at the PAV #1 well location indicates migration of the plume will not intersect a fault. Regional faults act as structural traps creating a seal against the migration of hydrocarbons, as demonstrated by the Bronco field. Therefore, should an unmapped fault exist within the plume boundary, vertical migration is unlikely. Shale gouge within the fault plane from a thick Woodford shale section will prevent vertical transmission of injected fluid along the fault and contain it below the Woodford. Faulting in this region terminates vertically below the Pennsylvanian-age rock. Secondary confining shales within the Wolfcampian and younger strata provide additional, redundant confining layers that would prevent CO_2 from migrating into freshwater aquifers.

Fractures are responsible for porosity development within the injection intervals. However, the subsequent exposure events did not produce the same solution diagenesis in the Woodford shale. Upward migration of injected gas through confining bed fractures is unlikely.

Leakage Through Confining Layers

The Silurian-Devonian injection zones have competent sealing rocks above and below the porous sub-areally exposed carbonate. The properties of the overlying transgressive Woodford shale (widespread deposition, high illite clay and organic matter composition, and low porosity and permeability) make an excellent sealing rock to the underlying Silurian formation. The underlying low porosity and permeability Fusselman carbonate minimizes the likelihood of downward migration of injected fluids. The relative buoyancy of injected gas to the in-situ reservoir fluid makes migration below the lower confining layer unlikely.

Leakage from Natural or Induced Seismicity

The location of PAV #1 is in an area of the Permian Basin that is inactive from a seismicity perspective, whether induced or natural. A review of historical seismic events on the USGS's Advanced National Seismic System site (from 1971 to present) and the Bureau of Economic Geology's TexNet catalog (from 2017 to present), as shown in Figure 32, indicates the nearest seismic event occurred more than 60 miles away.

A regional analysis of the probabilistic fault slip potential across the Permian Basin (Snee & Zoback 2016), as seen in Figure 33, further demonstrates that the PAV #1 well is located in a seismically inactive area and confirms that this area has little to no potential for an induced seismicity event.

Therefore, there is no indication that seismic activity poses a risk for loss of CO_2 to the surface within the MMA.

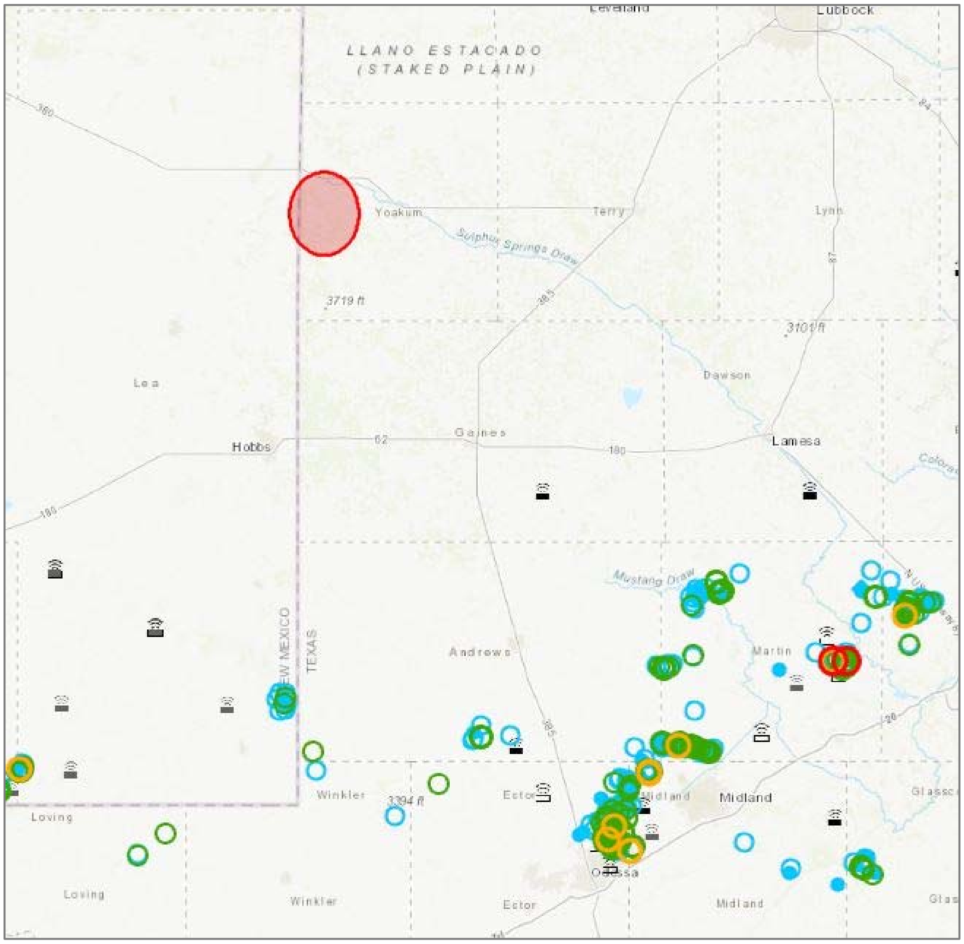


Figure 32 – Seismicity Review (TexNet – 3/21/2022)

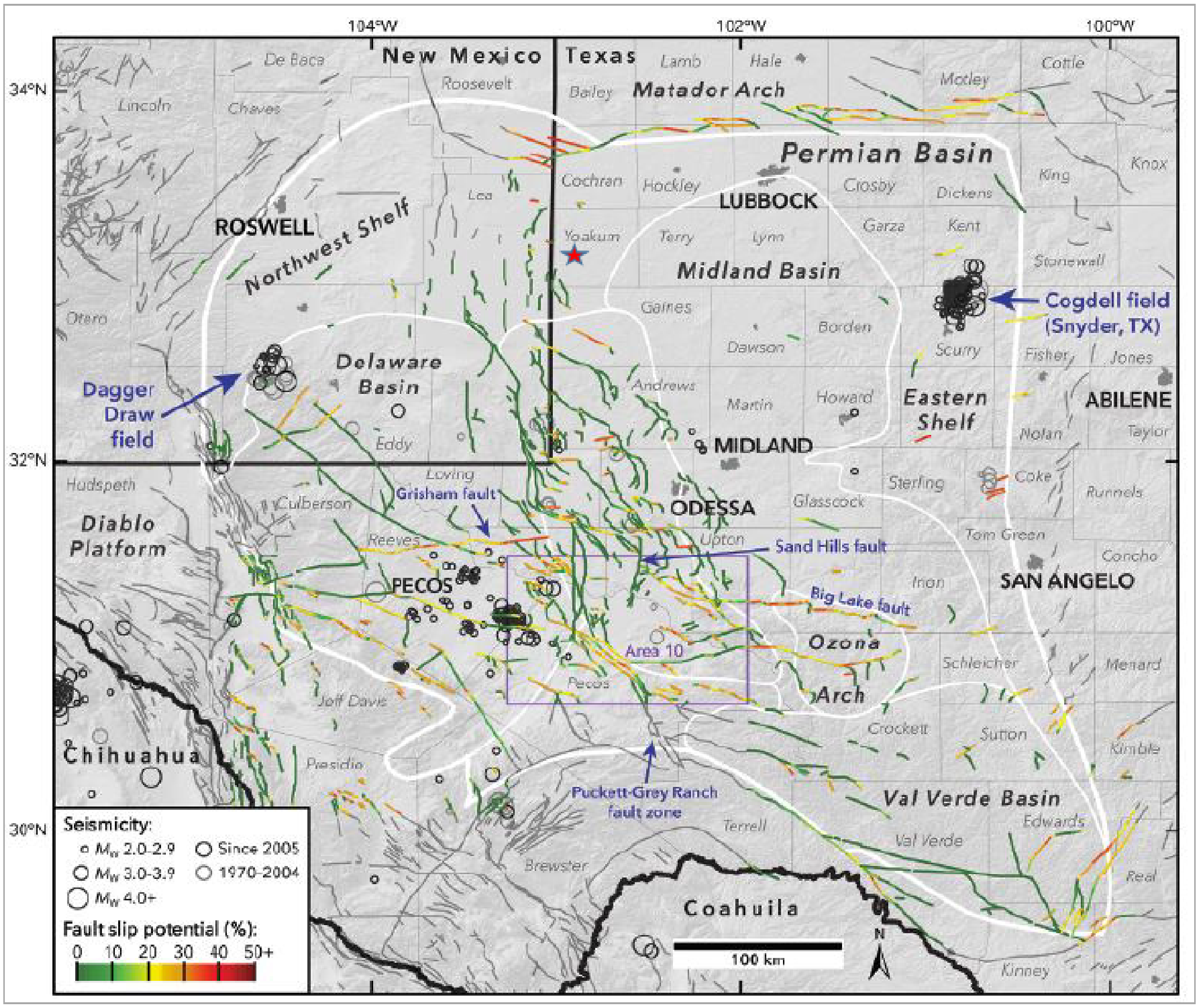


Figure 33 – Probabilistic Fault Slip Potential Analysis with PAV #1 location (Snee & Zobak 2016)

SECTION 5 – MONITORING FOR LEAKAGE

This section discusses the strategy that Stakeholder will employ for detecting and quantifying surface leakage of CO_2 through the pathways identified in Section 4 to meet the requirements of 40 CFR §98.448(a)(3). As the injectate stream contains both H_2S and CO_2, the H_2S will be a proxy for CO_2 leakage and therefore the monitoring systems in place to detect H_2S will also indicate a release of CO_2. Table 8 summarizes the monitoring of potential leakage pathways to the surface. Monitoring will occur during the planned 25-year injection period, or cessation of injection operations, plus a proposed 5-year post-injection period.

- Leakage from surface equipment
- Leakage through existing and future wells within MMA
- Leakage through faults and fractures
- Leakage through the confining layer
- Leakage through natural or induced seismicity

Because the acid gas injection stream also contains H_2S, any leakage would be detected by the H_2S alarms located around the facility and would be quickly addressed and would minimize the release of CO_2 into the atmosphere.

Table 8 – Summary of Leakage Monitoring Methods

Leakage Pathway	Monitoring Method
Leakage from surface equipment	Fixed H_2S monitors throughout the AGI facility
	Daily visual inspections
	Personal H_2S monitors
	Distributed Control System Monitoring (Volumes and Pressures)
Leakage through existing wells	Fixed H_2S monitor at the AGI well
	SCADA Continuous Monitoring at the AGI Well
	Annual Mechanical Integrity Tests ("MIT") of the AGI Well
	Visual Inspections
	Quarterly CO_2 Measurements within MMA
Leakage through groundwater wells	Annual Groundwater Samples on Property
Leakage from future wells	H_2S Monitoring during offset drilling operations
Leakage through faults and fractures	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage through confining layer	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage from natural or induced seismicity	Seismic monitoring station to be installed

Leakage from Surface Equipment

As the Campo Viejo Facility and the PAV #1 well are designed to handle H_2S, leakage from surface equipment is unlikely to occur and would be quickly detected and addressed. The facility design minimizes leak points through the equipment used and the type of connections are designed to minimize corrosion points. The H_2S in the injectate serves as a proxy for the release of CO_2. The facility and well site contain a number of H_2S alarms, set with a high alarm setpoint of 10 ppm of H_2S, which are shown in Figures 26 and 27 above. Additionally, all Stakeholder field personnel are required to wear H_2S monitors, which trigger the alarm at 5 ppm H_2S.

The AGI facility is continuously monitored through automated systems. In addition, field personnel conduct daily visual field inspections of gauges, monitors and leak indicators such as vapor plumes. The effectiveness of the internal and external corrosion control program is monitored through the periodic inspection of the system, analysis of liquids collected from the line, and inspection of the cathodic protection system. These inspections, in addition to the automated systems, allow Stakeholder to quickly respond to any leakage situation. Monitoring will occur for the duration of injection and the post-injection period. Should leakage be detected during active injection operations, the volume of CO_2 released will be calculated based on operating conditions at the time of the event, per 40 CFR §98.448(a)(5).

Leakage from Existing and Future Wells within Monitoring Area

Stakeholder continuously monitors and collects injection volumes, pressures, temperatures and gas composition data, through their SCADA systems, for the PAV #1 well. This data is reviewed by qualified personnel and will follow response and reporting procedures when data is outside acceptable performance limits. PAV #1 has a pressure and temperature gauge placed in the injection stream at its wellhead, and a pressure gauge on the casing annulus. A change of pressure on the annulus would indicate the presence of a possible leak. Mechanical integrity tests ("MITs") performed annually would also indicate the presence of a leak. Upon a negative MIT, the well would immediately be isolated and the leak mitigated.

The seven offset penetrating wells within the MMA are adequately cased and cemented to prevent potential leakage of CO_2 from the PAV #1 well plume. Additionally, the plugged wells were done so in a way to prevent migration of CO_2 as provided in Appendix E. As discussed previously, Rule 13 would ensure that new wells in the field would be constructed in a manner to prevent migration from the injection interval.

In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the MMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as minimum, quarterly atmospheric monitoring near identified penetrations within the MMA. Upon approval of the MRV and through the post-injection monitoring period, Stakeholder will have these monitoring systems in place.

Groundwater Quality Monitoring

Stakeholder will monitor the groundwater quality in fluids above the confining interval by sampling the well on the facility property and analyzing the sample with a third-party laboratory on an annual basis. Any significant changes to the water analysis would be investigated to determine if such change was a result of leakage from the PAV #1 well.

Leakage through Faults, Fractures or Confining Seals

Stakeholder continuously monitors the operations of the PAV #1 well through automated systems. Any deviation from normal operating conditions indicating movement into a potential pathway such as a fault or breakthrough of the confining seal would trigger an alert. Any such alert would be reviewed by field personnel and action taken to shut in the well, if necessary. Field H_2S monitoring systems would alert field personnel for any release of H_2S/CO_2 caused by such leakage.

Leakage through Natural or Induced Seismicity

While the likelihood of a natural or induced seismicity event is extremely low, Stakeholder plans to install a seismic monitoring station in the general area of the PAV #1 well. This monitoring station will be tied into the Bureau of Economic Geology's TexNet Seismic Monitoring system. If a seismic event of 3.0 magnitude or greater is detected, Stakeholder will review the injection volumes and pressures at the PAV #1 well to determine if any significant changes occur that would indicate potential leakage.

SECTION 6 – BASELINE DETERMINATIONS

This section identifies the strategies Stakeholder will undertake to establish the expected baselines for monitoring CO_2 surface leakage per 40 CFR §98.448(a)(4). Stakeholder will use the existing SCADA monitoring systems to identify changes from expected performance that may indicate leakage of CO_2.

Visual Inspections

Daily inspections will be conducted by field personnel at the Campo Viejo Facility and the PAV #1 well. These inspections will aid with identifying and addressing issues timely to minimize the possibility of leakage. If any issues are identified, such as vapor clouds or ice formations, corrective actions would be taken to address such issues.

H_2S Detection

H_2S will be initially injected into the AGI well at a concentration of approximately ten (10) percent or 100,000 ppm. The concentration will drop to approximately six (6) percent as additional volumes are added. H_2S gas detectors are located throughout the AGI facility and well site and are set to trigger the alarm at 10 ppm. Additionally, all field personnel are required to wear personal H_2S monitors, which are set to trigger the alarm at 5 ppm. Any alarm would trigger an immediate response to protect personnel and verify that the monitors are working properly. If monitors are working correctly, immediate actions would be taken to secure the facility.

CO_2 Detection

Any CO_2 release would be accompanied by H_2S and therefore the H_2S monitors at the facility would also serve as a CO_2 release warning system. In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the AMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as atmospheric monitoring near identified penetrations within the AMA.

Operational Data

Baseline measurements of injection volumes and pressures will be taken upon implementation of this MRV plan. Any significant deviations over time will be analyzed for indication of leakage of CO_2.

Continuous Monitoring

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as per Texas regulations and Stakeholder's TRRC-approved H_2S Contingency Plan. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

Groundwater Monitoring

An initial sample will be taken from the groundwater well on Stakeholder's property upon approval of Stakeholder's MRV and prior to increasing injection. The sample will be analyzed by a third-party laboratory to establish the baseline properties of the groundwater.

SECTION 7 – SITE SPECIFIC CONSIDERATIONS FOR MASS BALANCE EQUATION

This section identifies how Stakeholder will calculate the mass of CO_2 injected, emitted, and sequestered. This also includes site-specific variables for calculating the CO_2 emissions from equipment leaks and vented emissions of CO_2 between the injection flow meter and the injection well, per 40 CFR §98.448(a)(5).

Mass of CO_2 Received

Per 40 CFR §98.443, the mass of CO_2 received must be calculated using the specified CO_2 received equations "unless you follow the procedures in 40 CFR §98.444(a)(4)." 40 CFR §98.444(a)(4) states that "if the CO_2 you receive is wholly injected and is not mixed with any other supply of CO_2, you may report the annual mass of CO_2 injected that you determined following the requirements under paragraph (b) of this section as the total annual mass of CO_2 received instead of using Equation RR-1 or RR-2 of this subpart to calculate CO_2 received." The CO_2 received for this injection well is wholly injected and not mixed with any other supply and the annual mass of CO_2 injected will equal the amount received. Any future streams would be metered separately before being combined into the calculated stream.

Mass of CO_2 Injected

Per 40 CFR §98.444(b), since the flow rate of CO_2 injected will be measured with a volumetric flow meter, the total annual mass of CO_2, in metric tons, will be calculated by multiplying the volumetric flow at standard conditions by the CO_2 concentration in the flow and the density of CO_2 at standard conditions, according to Equation RR-5:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}}$$

where:

$CO_{2,u}$ = Annual CO_2 mass injected (metric tons) as measured by flow meter u

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p (metric tons per quarter)

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682

$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. percent CO_2, expressed as a decimal fraction)

p = Quarter of the year

u = Flow meter

Mass of CO_2 Produced

The PAV #1 well is not part of an enhanced oil recovery project; therefore, no CO_2 will be produced.

Mass of CO_2 Emitted by Surface Leakage

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as a major upset event. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

In the unlikely event that CO_2 was released as a result of surface leakage, the mass emitted would be calculated for each surface pathway according to methods outlined in the plan and totaled using Equation RR-10 as follows:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x}$$

Where:

CO_2 = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year

X = Leakage pathway

Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

Mass of CO_2 Sequestered

The mass of CO_2 sequestered in subsurface geologic formations will be calculated based off Equation RR-12, as this well will not actively produce oil or natural gas or any other fluids, as follows:

$$CO_2 = CO_{2I} - CO_{2E} - CO_{2FI}$$

Where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

CO_{2FI} will be calculated in accordance with Subpart W reporting of GHGs. Because no venting would occur due to the high H_2S concentrations of the injectate stream, the calculations would be based on the blowdown emissions that would be sent to flares and would be reported as part of the required GHG reporting for the gas plant.

- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

SECTION 8 – IMPLEMENTATION SCHEDULE FOR MRV PLAN

The PAV #1 well currently reports GHGs under Subpart UU but Stakeholder has elected to submit an MRV plan under, and otherwise comply with, Subpart RR. The MRV plan will be implemented upon receiving EPA approval. The Annual Subpart RR Report will be filed on March 31st of the year following the reporting year.

SECTION 9 – QUALITY ASSURANCE

This section identifies how Stakeholder plans to manage quality assurance and control, to meet the requirements of 40 CFR §98.444.

Monitoring QA/QC

CO_2 *Injected*

- The flow rate of the CO_2 being injected will be measured with a volumetric flow meter, consistent with industry best practices. These flow rates will be compiled quarterly.
- The composition of the CO_2 stream will be measured upstream of the volumetric flow meter with a continuous gas composition analyzer or representative sampling consistent with industry best practices.
- The gas composition measurements of the injected stream will be averaged quarterly.
- The CO_2 measurement equipment will be calibrated according to manufacturer recommendations.

CO_2 *Emissions from Leaks and Vented Emissions*

- Gas detectors will be operated continuously, except for maintenance and calibration.
- Gas detectors will be calibrated according to manufacturer recommendations and API standards.
- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

Measurement Devices

- Flow meters will be continuously operated except for maintenance and calibration.
- Flow meters will be calibrated according to the requirements in 40 CFR §98.3(i).
- Flow meters will be operated per an appropriate standard method as published by a consensus-based standards organization.
- Flow meter calibrations will be traceable to the National Institute of Standards and Technology (NIST).

All measured volumes of CO_2 will be converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and an absolute pressure of 1 atmosphere.

Missing Data

In accordance with 40 CFR §98.445, Stakeholder will use the following procedures to estimate missing data if unable to collect the data needed for the mass balance calculations:

- If a quarterly quantity of CO_2 injected is missing, the amount will be estimated using a representative quantity of CO_2 injected from the nearest previous period of time at a similar injection pressure.
- Fugitive CO_2 emissions from equipment leaks from facility surface equipment will be estimated and reported per the procedures specified in subpart W of 40 CFR §98.

MRV Plan Revisions

If any of the changes outlined in 40 CFR §98.448(d) occur, Stakeholder will revise and submit an amended MRV plan within 180 days to the Administrator for approval.

SECTION 10 – RECORDS RETENTION

Stakeholder will retain records as required by 40 CFR §98.3(g). These records will be retained for at least three years and include:

- Quarterly records of the CO_2 injected
  - Volumetric flow at standard conditions
  - Volumetric flow at operating conditions
  - Operating temperature and pressure
  - Concentration of the CO_2 stream
- Annual records of the information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

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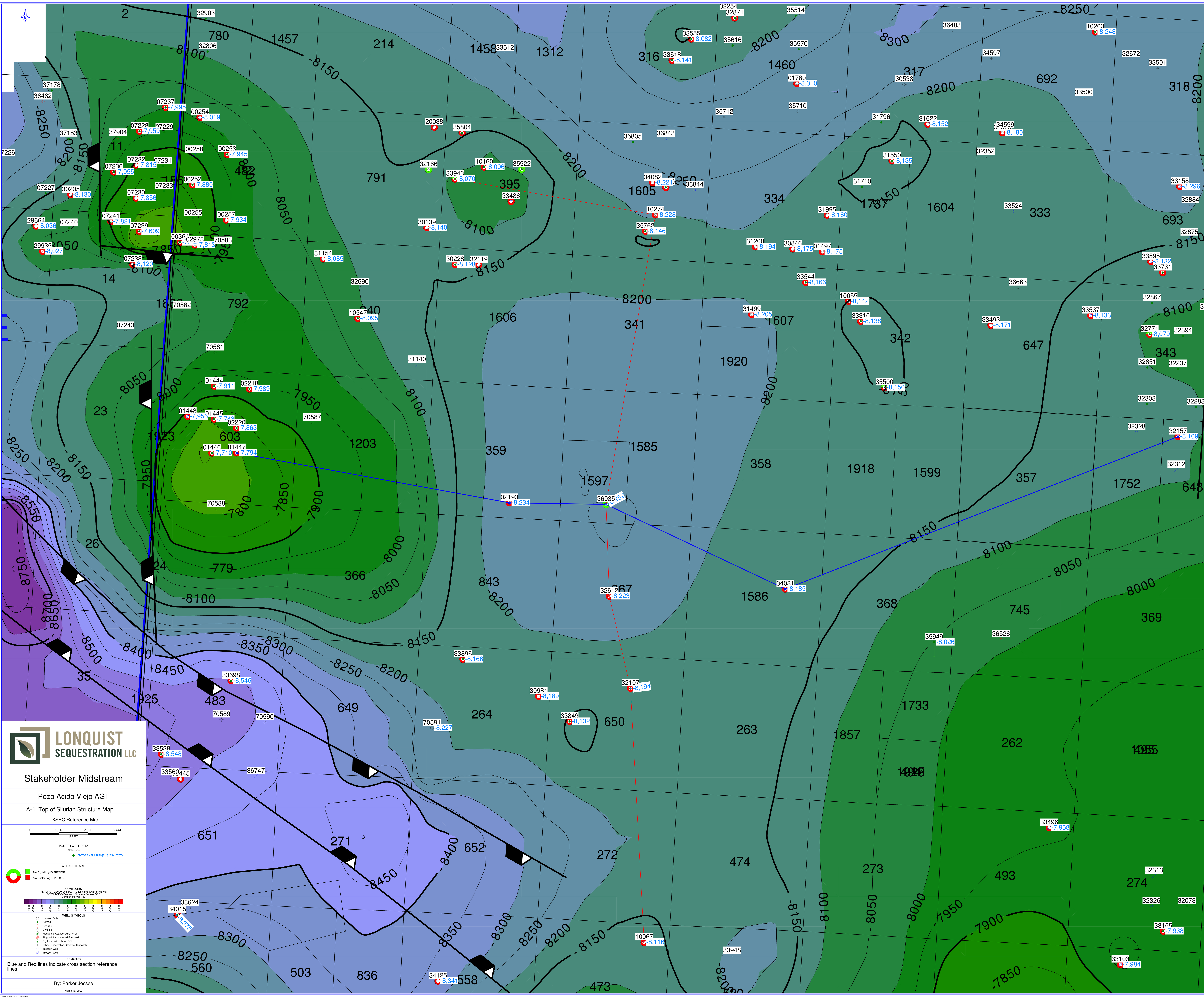
APPENDICES

APPENDIX A – GEOLOGY

APPENDIX A-1: SILURIAN STRUCTURE MAP

APPENDIX A-2: N-S CROSS SECTION

APPENDIX A-3: W-E CROSS SECTION



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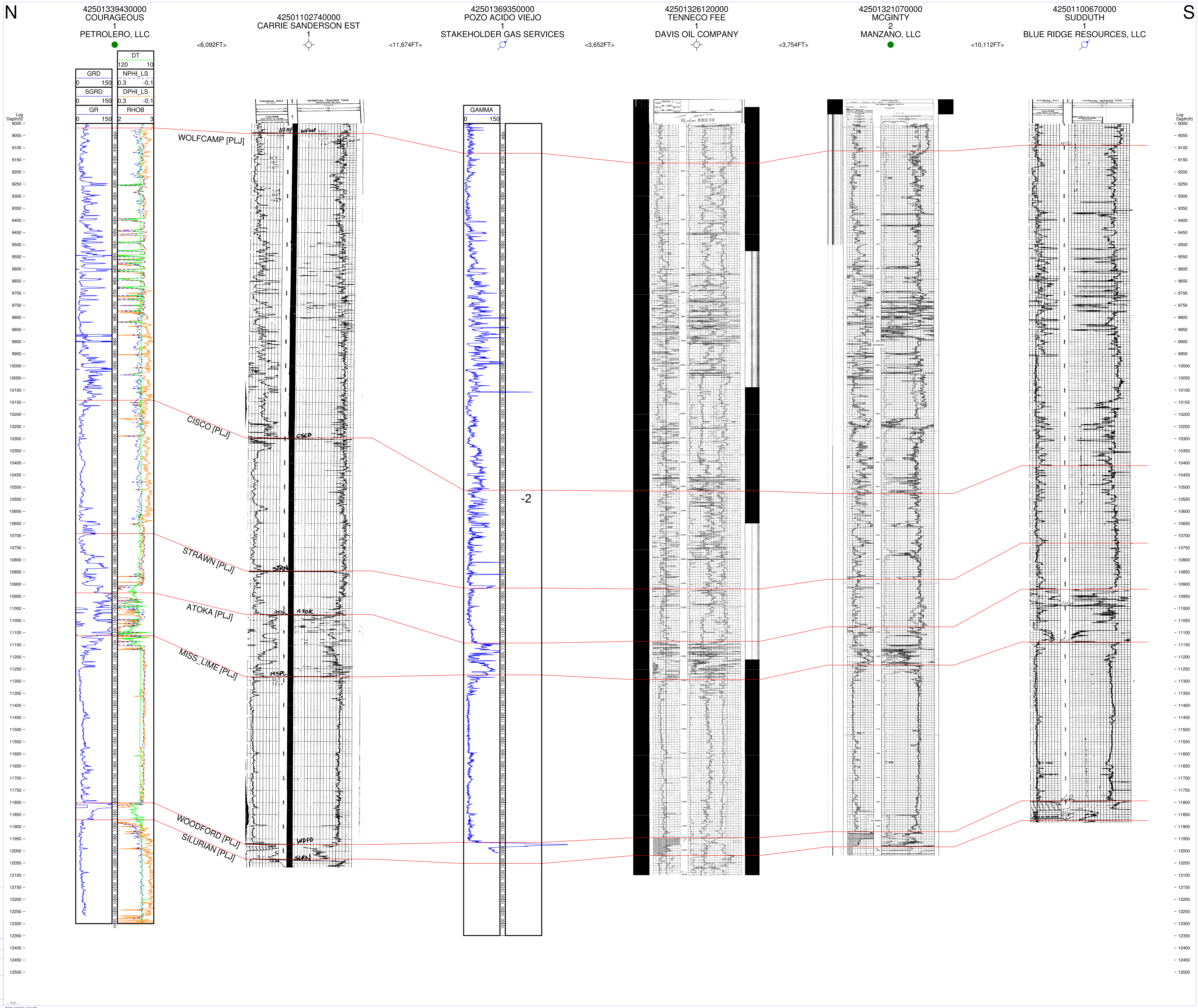

A-2

LONQUIST SEQUESTRATION LLC

Stakeholder Midstream

Pozo Acido Viejo MRV

N-S Structural Cross Section

Horizontal Scale = 466.0
Vertical Scale = 50.0
Vertical Exaggeration = 9.3x

Well Name
Well Number
Operator

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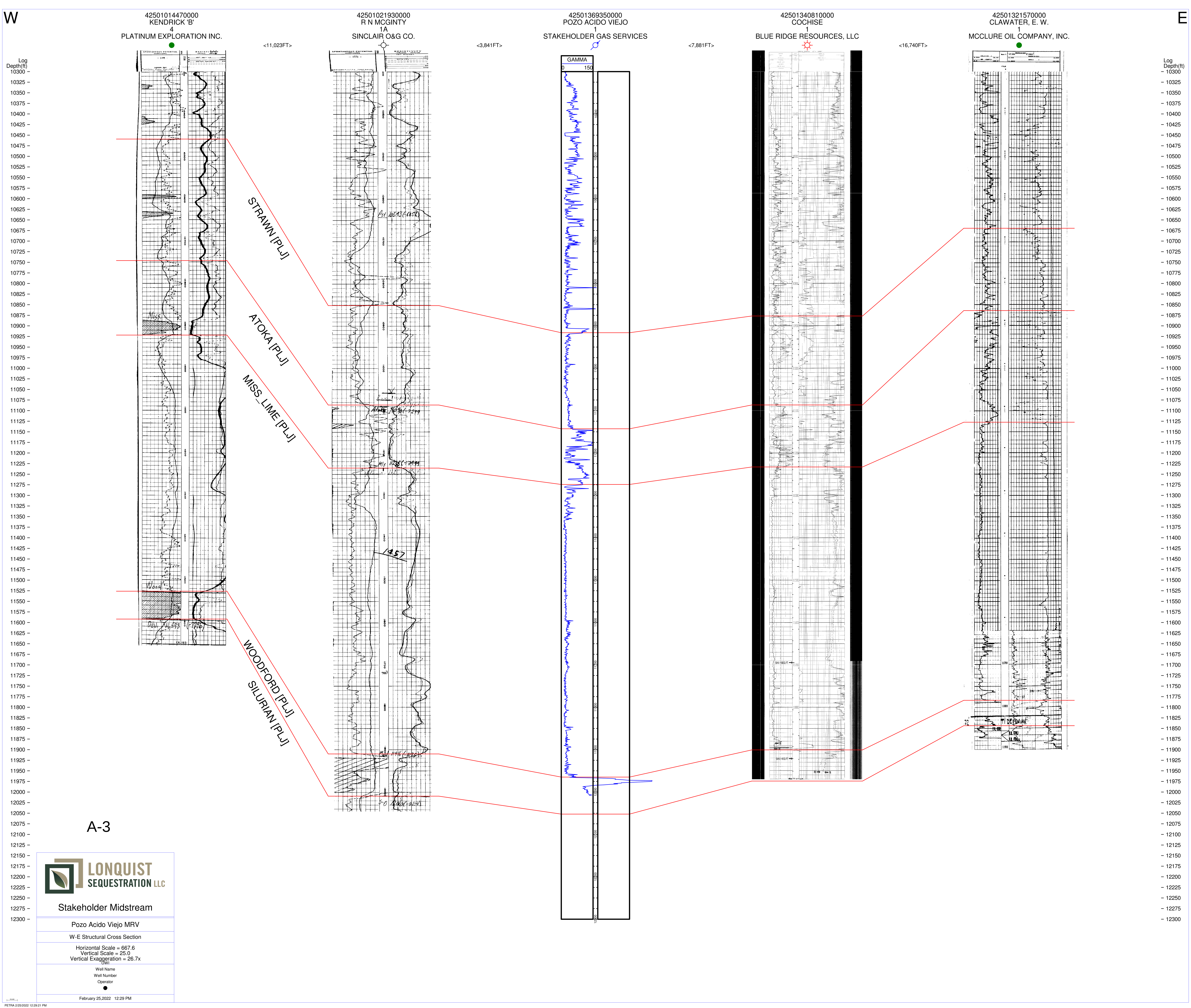

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10475
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11675
11700
11725
11750
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11800
11825
11850
11875
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11925
11950
11975
12000
12025
12050
12075
12100
12125
12150
12175
12200
12225
12250
12275
12300
GAMMA
0
150
STRAWN [PLJ]
ATOKA [PLJ]
MISS_LIME [PLJ]
WOODFORD [PLJ]
SILURIAN [PLJ]
A-3
LONQUIST SEQUESTRATION LLC
Stakeholder Midstream
Pozo Acido Viejo MRV
W-E Structural Cross Section
Horizontal Scale = 667.6
Vertical Scale = 25.0
Vertical Exaggeration = 26.7x
UWI
Well Name
Well Number
Operator
February 25,2022 12:29 PM
PETRA 2/25/2022 12:29:21 PM

APPENDIX B – TRRC FORMS PAV #1

APPENDIX B-1: UIC CLASS II ORDER

APPENDIX B-2: GAU GROUNDWATER PROTECTION DETERMINATION

APPENDIX A-3: DRILLING PERMIT

APPENDIX A-4: COMPLETION REPORT

B-1

RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

OIL & GAS DOCKET NO. 8A-0310710

THE APPLICATION OF STAKEHOLDER GAS SERVICES, LLC (811207) PURSUANT TO SWR 46 AND 36 INJECTION PERMIT FOR A PERMIT TO INJECT FLUID CONTAINING HYDROGEN SULIDE INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS FOR THE POZO ACIDO VIEJO LEASE, WELL NO. 1, BRONCO (SILURO-DEVONIAN) FIELD, YOAKUM COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice in the above-numerated docket heard on June 29, 2018, the presiding Technical Examiner and the Administrative Law Judge (collectively the Examiners) have made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application submitted by Stakeholder Gas Services, LLC is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiners' report and recommendation, the findings of fact and conclusions of law contained therein, and any exceptions and replies thereto, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to dispose of fluids containing hydrogen sulfide into its Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, pursuant to Statewide Rule 36(c)(10)(A).

It is further **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to conduct disposal operations in the Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, subject to the following terms and conditions.

SPECIAL CONDITIONS

1. Open hole completions shall have a plug back depth no deeper than the bottom of the permitted injection interval.

2. The operator shall provide to the UIC section an electric log and a mud log of the subject well or a copy of the log submitted with the permitted application with the top(s)and bottom(s) of the permitted formations indicated on the log.

3. Injection shall be no deeper than 100 feet above the estimated base of the Ellenberger thickness at the well location, if known. The top and bottom of the authorized injection interval may be modified based on electric log or mud log indications of the top(s) and bottom(s) of the permitted formations.

4. Waste shall be injected into the strata in the subsurface depth interval from 12,020 feet to 12,349 feet.

5. The injection volume shall not exceed 6,900 Mcf/day.

6. The maximum surface injection pressure shall not exceed 6,010 psig.

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.

2. The District Office must be notified 48 hours prior to:

   a. running tubing and setting packer;
   b. beginning any workover or remedial operation;
   c. conducting any required pressure tests or surveys.

3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.

4. Prior to beginning injection and subsequently after any workover, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed annually and the results submitted in accordance with the instructions of Form H-5.

5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.

6. Within 30 days after completion, conversion to disposal, or any workover which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit and the permit number must be included on the new Form W-2 or G-1.

7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.

8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.

9. Unless otherwise required by conditions of the permit, completion and operation of the well shall be in accordance with the information represented on the application (Form W-14).

10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

11. The operator shall be responsible for complying with the following requirements so as to assure that discharges of oil and gas waste will not occur:

    A. Prior to beginning operation, all collecting pits, skimming pits, or washout pits must be permitted under the requirements of Statewide Rule 8.

    B. Prior to beginning operation, a catch basin constructed of concrete, steel, or fiberglass must be installed to catch oil and gas waste which may spill as a result of connecting and disconnecting hoses or other apparatus while transferring oil and gas waste from tank trucks to the disposal facility.

    C. Prior to beginning operation, all fabricated waste storage and pretreatment facilities (tanks, separators, or flow lines) shall be constructed of steel, concrete, fiberglass, or other materials approved by the Director or Director's delegate and shall be maintained so as to prevent discharges of oil and gas waste.

    D. Prior to beginning operation, dikes shall be placed around all waste storage, pretreatment, or disposal facilities. The containment area shall be dewatered within 24 hours by being disposed of in an authorized disposal facility.

    E. Prior to beginning operation, the facility shall have security to prevent unauthorized access. Access shall be secured by a 24-hour attendant, a fence and locked gate when unattended, or a key-controlled access system. For a facility without a 24-hour attendant, fencing shall be required unless terrain or vegetation prevents truck access except through entrances with lockable gates.

    F. Prior to beginning operation, each storage tank shall be equipped with a device (visual gauge or alarm) to alert drivers when each tank is within 130 barrels from being full.

12. Form P-18, Skim Oil report, must be filed in duplicate with the District Office by the 15th day of the month following the month covered by the report.

13. If the facility will have staff on-site for periods of time necessitating bathroom

accommodations, these accommodations must be designed, installed and maintained by a person licensed to do so and the accommodations must comply with all local, county and state health regulations.

14. The permit Number shall be__________. (21146)

Provided further that should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

Pursuant to **§2001.144(a)(4)(A),** of the Texas Government Code, and the agreement of the applicant, this Final Order is effective when a Master Order relating to this Final Order is signed.

Done this 21st day of August, 2018.

RAILROAD COMMISSION OF TEXAS

(Order approved and signatures affixed by Hearings Divisions' unprotested Master Order Dated August 21, 2018)

B-2

GROUNDWATER PROTECTION DETERMINATION

Form GW-2

Groundwater Advisory Unit

Date Issued:	01 November 2017	**GAU Number:**	182849
Attention:	STAKEHOLDER MIDSTREAM, 777 E SONTERRA STE 100 SAN ANTONIO, TX 78258	**API Number:**	50100000
		County:	YOAKUM
		Lease Name:	Pozo Acido Viejo
		Lease Number:	
Operator No.:	811202	**Well Number:**	1
		Total Vertical Depth:	12600
		Latitude:	33.169934
		Longitude:	-103.001911
		Datum:	NAD27

Purpose: Injection into Producing Zone (H1)

Location: Survey-Gibson, J H; Abstract-1597; Block-D; Section-452

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

The interval from the land surface to a depth of 375 feet must be protected.

The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 2250 feet at the site of the referenced well.

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 10/30/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary. If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

Railroad Commission of Texas

PERMIT TO DRILL, RE-COMPLETE, OR RE-ENTER ON REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

CONDITIONS AND INSTRUCTIONS

Permit Invalidation. It is the operator's responsibility to make sure that the permitted location complies with Commission density and spacing rules in effect on the spud date. The permit becomes invalid automatically if, because of a field rule change or the drilling of another well, the stated location is not in compliance with Commission field rules on the spud date. If this occurs, application for an exception to Statewide Rules 37 and 38 must be made and a special permit granted prior to spudding. Failure to do so may result in an allowable not being assigned and/or enforcement procedures being initiated.

Notice Requirements. Per H.B 630, signed May 8, 2007, the operator is required to provide notice to the surface owner no later than the 15th business day after the Commission issues a permit to drill. Please refer to subchapter Q Sec. 91.751-91.755 of the Texas Natural Resources Code for applicability.

Permit expiration. This permit expires two (2) years from the date of issuance shown on the original permit. The permit period will not be extended.

Drilling Permit Number. The drilling permit number shown on the permit MUST be given as a reference with any notification to the district (see below), correspondence, or application concerning this permit.

Rule 37 Exception Permits. This Statewide Rule 37 exception permit is granted under either provision Rule 37 (h)(2)(A) or 37(h)(2)(B). Be advised that a permit granted under Rule 37(h)(2)(A), notice of application, is subject to the General Rules of Practice and Procedures and if a protest is received under Section 1.3, "Filing of Documents," and/or Section 1.4, "Computation of Time," the permit may be deemed invalid.

Before Drilling

Fresh Water Sand Protection. The operator must set and cement sufficient surface casing to protect all usable-quality water, as defined by the Railroad Commission of Texas (RRC) Groundwater Advisory Unit (GWAU). Before drilling a well, the operator must obtain a letter from the Railroad Commission of Texas stating the depth to which water needs protection, Write: Railroad Commission of Texas, Groundwater Advisory Unit (GWAU), P.O. Box 12967, Austin, TX 78711-3087. File a copy of the letter with the appropriate district office.

Accessing the Well Site. If an OPERATOR, well equipment TRANSPORTER or WELL service provider must access the well site from a roadway on the state highway system (Interstate, U.S. Highway, State Highway, Farm-to-Market Road, Ranch-to-Market Road, etc.), an access permit is required from TxDOT. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

Water Transport to Well Site. If an operator intends to transport water to the well site through a temporary pipeline laid above ground on the state's right-of-way, an additional TxDOT permit is required. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

*NOTIFICATION

The operator is **REQUIRED** to notify the district office when setting surface casing, intermediate casing, and production casing, or when plugging a dry hole. The district office **MUST** also be notified if the operator intends to re-enter a plugged well or re-complete a well into a different regulatory field. Time requirements are given below. The drilling permit number **MUST** be given with such notifications.

During Drilling

Permit at Drilling Site. A copy of the Form W-1 Drilling Permit Application, the location plat, a copy of Statewide Rule 13 alternate surface casing setting depth approval from the district office, if applicable, and this drilling permit must be kept at the permitted well site throughout drilling operations.

***Notification of Setting Casing.** The operator MUST call in notification to the appropriate district office (phone number shown the on permit) a minimum of eight (8) hours prior to the setting of surface casing, intermediate casing, AND production casing. The individual giving notification MUST be able to advise the district office of the drilling permit number.

***Notification of Re-completion/Re-entry.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of eight (8) hours prior to the initiation of drilling or re-completion operations. The individual giving notification MUST be able to advise the district office of the drilling permit number.

Completion and Plugging Reports

Hydraulic Fracture Stimulation using Diesel Fuel: Most operators in Texas do not use diesel fuel in hydraulic fracturing fluids. Section 322 of the Energy Policy Act of 2005 amended the Underground Injection Control (UIC) portion of the federal Safe Drinking Water Act (42 USC 300h(d)) to define "underground Injection" to *EXCLUDE* " ...the underground injection of fluids or propping agents (*<u>other than diesel fluels</u>*) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities." (italic and underlining added.) Therefore, hydraulic fracturing may be subject to regulation under the federal UIC regulations if diesel fuel is injected or used as a propping agent. EPA defined "diesel fuel" using the following five (5) Chemical Abstract Service numbers: 68334-30-5 Primary Name: Fuels, diesel; 68476-34-6 Primary Name: Fuels, diesel, No. 2; 68476-30-2 Primary Name: Fuel oil No. 2; 68476-31-3 Primary Nmae: Fuel oil, No. 4; and 8008-20-6 Primary Name: Kerosene. As a result, an injection well permit would be required before performing hydraulic fracture stimulation using diesel fuel as defined by EPA on any well in Texas. Hydraulic fracture stimulation using diesel fuel as defined by EPA on a well in Texas without an injection well permit could result in enforcement action.

Producing Well. Statewide Rule 16 states that the operator of a well shall file with the Commission the appropriate completion report within thirty (30) days after completion of the well or within ninety (90) days after the date on which the drilling operation is completed, whichever is earlier. Completion of the well in a field authorized by this permit voids the permit for all other fields included in the permit unless the operator indicates on the initial completion report that the well is to be a dual or multiple completion and promptly submits an application for multiple completion. All zones are required to be completed before the expiration date on the existing permit. Statewide Rule 40(d) requires that upon successful completion of a well in the same reservoir as any other well previously assigned the same acreage, proration plats and P-15s (if required) must be submitted with no double assignment of acreage.

Dry or Noncommercial Hole. Statewide Rule 14(b)(2) prohibits suspension of operations on each dry or non-commercial well without plugging unless the hole is cased and the casing is cemented in compliance with Commission rules. If properly cased, Statewide Rule 14(b)(2) requires that plugging operations must begin within a period of one (1) year after drilling or operations have ceased. Plugging operations must proceed with due diligence until completed. An extension to the one-year plugging requirement may be granted under the provisions stated in Statewide Rule 14(b)(2).

Intention to Plug. The operator must file a Form W-3A (Notice of Intention to Plug and Abandon) with the district office at least five (5) days prior to beginning plugging operations. If, however, a drilling rig is already at work on location and ready to begin plugging operations, the district director or the director's delegate may waive this requirement upon request, and verbally approve the proposed plugging procedures.

***Notification of Plugging a Dry Hole.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of four (4) hours prior to beginning plugging operations. The individual giving the notification MUST be able to advise the district office of the drilling permit number and all water protection depths for that location as stated in the Texas Commission on Environmental Quality letter.

DIRECT INQUIRIES TO: DRILLING PERMIT SECTION, OIL AND GAS DIVISION

PHONE
(512) 463-6751

MAIL:
PO Box 12967
Austin, Texas, 78711-2967

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER 834810	DATE PERMIT ISSUED OR AMENDED Jan 09, 2018	DISTRICT * 8A
API NUMBER 42-501-36935	FORM W-1 RECEIVED Jan 04, 2018	COUNTY YOAKUM
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Vertical	ACRES 200

OPERATOR 811207 STAKEHOLDER GAS SERVICES, LLC 401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000	NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. **District Office Telephone No:** (432) 684-5581
LEASE NAME POZO ACIDO VIEJO	WELL NUMBER 1
LOCATION 10.3 miles W direction from PLAINS, TX	TOTAL DEPTH 14000

Section, Block and/or Survey
SECTION 452 BLOCK D ABSTRACT 1597
SURVEY GIBSON, J H / READ, W K

DISTANCE TO SURVEY LINES 1862.8 ft. W 754.6 ft. S	DISTANCE TO NEAREST LEASE LINE 754.6 ft.
DISTANCE TO LEASE LINES 777.2 ft. E 754.6 ft. S	DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below

FIELD(s) and LIMITATIONS:

* SEE FIELD DISTRICT FOR REPORTING PURPOSES *

FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH	WELL # NEAREST WE	DIST
BRONCO (SILURO-DEVONIAN) POZO ACIDO VIEJO	200.00 754.6	12,000	1 0	8A

RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.

THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS

This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.

This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data

YOAKUM (501) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
RED BED-SANTA ROSA	1,100	1,100		1	12/17/2013
YATES	2,800	3,450		2	12/17/2013
SAN ANDRES	4,500	5,500	high flows, H2S, corrosive	3	12/17/2013
GLORIETA	5,600	6,000		4	12/17/2013
CLEARFORK	6,000	7,900	Active CO2 Flood	5	12/17/2013
WICHITA	8,000	8,200		6	12/17/2013
LEONARD	9,000	9,700		7	12/17/2013
WOLFCAMP	8,300	10,700		8	12/17/2013
PENNSYLVANIAN	8,700	8,700		9	12/17/2013
STRAWN	11,300	11,500		10	12/17/2013
MISSISSIPPIAN	10,650	10,800		11	12/17/2013
DEVONIAN	11,200	13,100		12	12/17/2013
DEVONIAN-SILURIAN	11,500	11,500		13	12/17/2013

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator’s responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information.
http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info

B-4

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

Tracking No.: 201485

Status: Approved

This facsimile W-2 was generated electronically from data submitted to the RRC.

API No. 42- 501-36935		7. RRC District No. 8A

Oil Well Potential Test, Completion or Recompletion Report, and Log

1. FIELD NAME (as per RRC Records or Wildcat) BRONCO (SILURO-DEVONIAN)	2. LEASE NAME POZO ACIDO VIEJO	8. RRC Lease No. 70951
		9. Well No. 1
3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report) STAKEHOLDER GAS SERVICES, LLC	RRC Operator No. 811207	10. County of well site YOAKUM
4. ADDRESS 401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000		11. Purpose of filing: Initial Potential [ ] Retest [ ] Reclass [ ] Well record only (Explain In remarks) [X]
5. If Operator has changed within last 60 days, name former operator		
6a. Location (Section, Block, and Survey) 452 , D , GIBSON, J H / READ, W K , A-1597	6b. Distance and direction to nearest town in this county. PLAINS, TX	

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no. FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

13. Type of electric or other log run None	14. Completion or recompletion date 01/08/2019

SECTION I- POTENTIAL TEST DATA IMPORTANT: Test should be for 24 hours unless otherwise specified infield rules.

15. Date of test	16. No. of hours tested	17. Production method (Flowing, Gas Lift, Jetting, Pumping- Size & Type of pump)	18. Choke size

	Oil - BBLS	Gas - MCF	Water - BBLS	Gas - Oil Ratio	Flowing Tubing Pressure
19. Production during Test Period				0	PSI
	Oil - BBLS	Gas - MCF	Water - BBLS	Oil Gravity-API-60 °	Casing Pressure
20. Calculated 24-Hour Rate					PSI

21. Was swab used during this test? Yes [ ] No [X]	22. Oil produced prior to test (New & Reworked wells)	23. Injection Gas-Oil Ratio

REMARKS: N/A

INSTRUCTIONS: File an original and one copy of the completed FormW-2 in the appropriate RRC District Office within 30 days after completing a well and within 10 days after a potential test. If an operator does not properly report the results of a potential test within the 10-day period, the effective date of the allowable assigned to the well will not extend back more than 10 days before the W-2 was received in the District Office. (Statewide Rules 16 and 51) To report a completion or recompletion, fill in both sides of this form. To report a retest, fill in only the front side.

WELL TESTERS CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test by observation of (a) meter readings or (b) the top and bottom gauges of each tank into which production was run during the test. I further certify that the potential test data shown above is true, correct, and complete, to the best of my knowledge.

Signature: Well Tester | Name of Company | RRC Representative

OPERATOR'S CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct and complete, to the best of my knowledge.

Type or printed name of operator's representative

Consultant

Title of Person

(806) 665-0338 01/31/2020

Telephone: Area Code Number Month Day Year

Rebecca Dunn

Signature

SECTION III

DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

24. Type of Completion

New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

25. Permit to Drill, Plug Back or Deepen — DATE: 01/09/2018 — PERMIT NO.: 834810

Rule 37 Exception — CASE NO.:

Water Injection Permit — PERMIT NO.:

Salt Water Disposal Permit — PERMIT NO.:

Other — 08/21/2018 — PERMIT NO.: 21146

CO2,H2S, OTHER

26. Notice of Intention to Drill this well was filed in Name of

STAKEHOLDER GAS SERVICES, LLC

27. Number of producing wells on this lease in this field (reservoir) including this well

0

28. Total number of acres in this lease

200.0

29. Date Plug Back, Deepening, Workover or Drilling Operations: Commenced 05/25/2018 Completed 06/23/2018

30. Distance to nearest well, Same Lease &Reservoir

31. Location of well, relative to nearest lease boundaries: 777.2 Feet From East Line and 754.6 Feet from South Line of the POZO ACIDO VIEJO Lease

32. Elevation (DF. RKB, RT. GR ETC.) 3787 GL

33. Was directional survey made other than inclination (Form W-12)? Yes [ ] No [X]

34. Top of Pay

35. Total Depth 12349

36. P. B. Depth

37. Surface Casing Determined by: Field Rules [ ] Recommendation of T.D.W.R. [X] Dt. of Letter 11/01/2017 Railroad Commission (Special) [ ] Dt. of Letter

38. Is well multiple completion? Yes [ ] No [X]

39. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

40. Intervals Drilled by: Rotary Tools X Cable Tools

41. Name of Drilling Contractor

42. Is Cementing Affidavit Attached? Yes [X] No [ ]

43. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
20		90		C HSR 169	24	SURF	200.0
13 3/8		2402		C HSR 1600	17 1/2	SURF	3449.0
9 5/8		6421	4400	C HSR 1250	12 1/4	0	2593.0
9 5/8		6421		C HSR 358	12 1/4	4400	475.0
7		12026	7503	C HSR 717	8 3/4	250	1390.0
7		12026		C & H HSR 535	8 3/4	7503	1033.0

44. LINER RECORD

Size	Top	Bottom	Sacks Cement	Screen
N/A				

45. TUBING RECORD

Size	Depth Set	Packer Set
3 1/2	11964	11964

46. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
12026	12349 OH

47. ACID, SHOT, FRACTURE, CEMENT SQUEEZE. ETC.

Depth Interval		Amount and Kind of Material Used
12026.0	12349.0	2000 GALS 15% HCL

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
RED BED-SANTA ROSA	1100.0	WOLFCAMP	8300.0
YATES	2800.0	PENNSYLVANIAN	8700.0
SAN ANDRES - HIGH FLOWS, H2S, CORROSIVE	4500.0	STRAWN	11300.0
GLORIETA	5600.0	MISSISSIPPIAN	10650.0
CLEARFORK - ACTIVE CO2 FLOOD	6000.0	DEVONIAN	12020.0

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)			
Formations	Depth	Formations	Depth
WICHITA	8000.0	DEVONIAN-SILURIAN	11050.0
LEONARD	9000.0		
REMARKS: ACID GAS INJECTION WELL INTO THE DEVONIAN. OIL & GAS DOCKET NO 8A-0310710 - FINAL ORDER			

APPENDIX C – GAS COMPOSITION

LABORATORY SERVICES Natural Gas Analysis

www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

9252G	30110	Campo Viejo North Acid Gas
Sample Point Code	Sample Point Name	Sample Point Location

Laboratory Services	2021047959	0410	D Armstrong - Spot
Source Laboratory	Lab File No	Container Identity	Sampler
USA	USA	USA	Texas
District	Area Name	Field Name	Facility Name
Nov 4, 2021 10:45	Nov 4, 2021 10:45	Nov 5, 2021 08:15	Nov 8, 2021
Date Sampled	Date Effective	Date Received	Date Reported

53.00		Torrance	1222 @ 89
Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions

Stakeholder Midstream	Campo Viejo
Operator	Lab Source Description

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	9.7450	9.745	
Nitrogen (N2)	0.5770	0.6329	
CO2 (CO2)	89.2490	98.89586	
Methane (C1)	0.1900	0.208	
Ethane (C2)	0.0120	0.01366	0.0030
Propane (C3)	0.0280	0.03069	0.0080
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1990	0.21889	0.0860
TOTAL	100.0000	109.7450	0.0970

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Oct 10, 2021

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 Â°F		14.73 PSI @ 60.00 Â°F	
Dry	Saturated	Dry	Saturated
75.4	75.00	75.6	75.2

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
1.4926	1.4844

Molecular Weight
42.9928

C6+ Group Properties

Assumed Composition

C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S
97450.6 PPM

PROTREND STATUS:
Passed By Validator on Nov 8, 2021

DATA SOURCE:
Imported

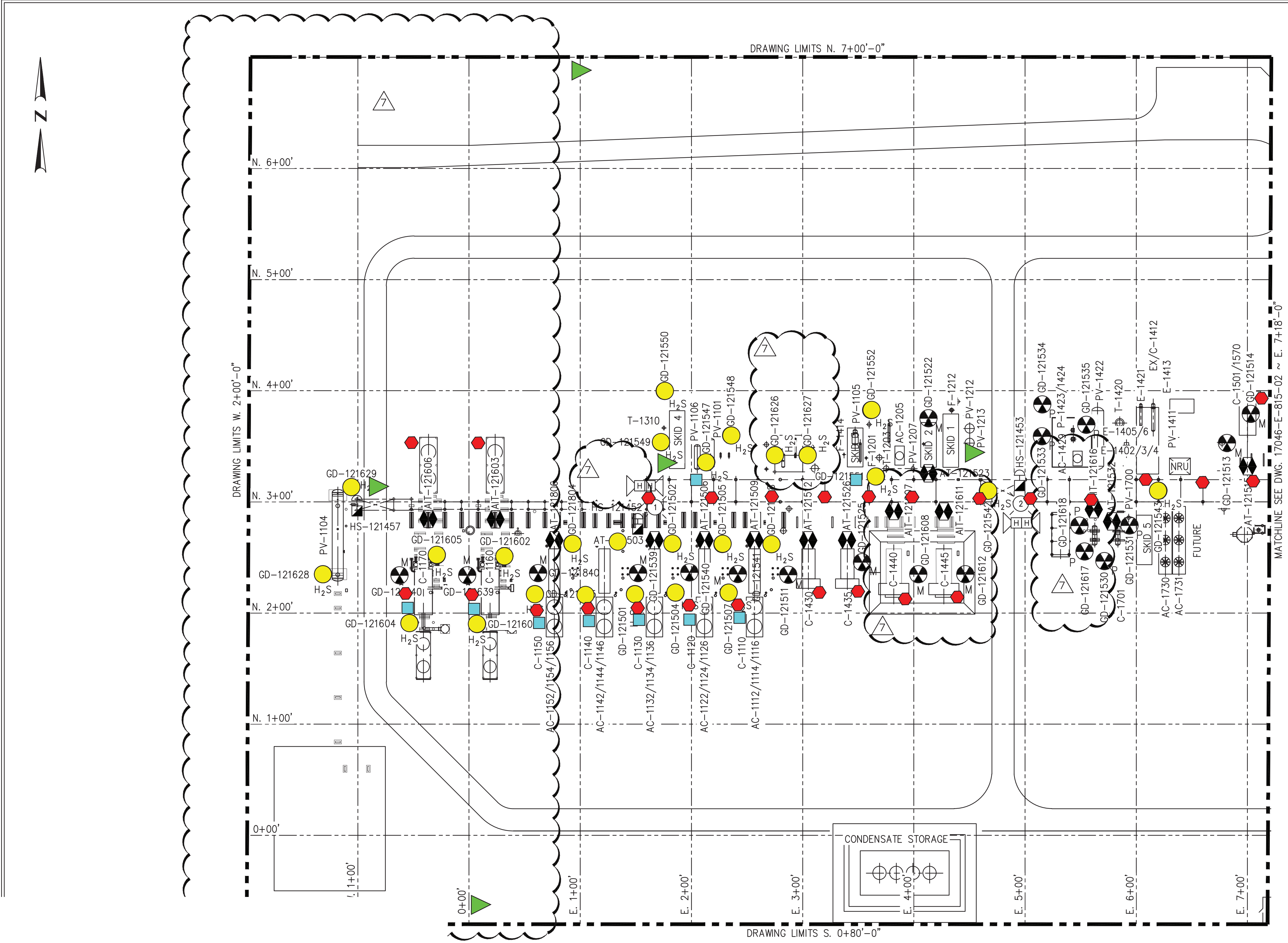
PASSED BY VALIDATOR REASON:
Close enough to be considered reasonable.

VALIDATOR:
Dustin Armstrong

VALIDATOR COMMENTS:
OK

C-1

APPENDIX D – FACILITY SAFETY PLOT PLANS



LEGEND:

- FIRE EXTINGUISHER
- SCBA / ESCAPE PACK
- WIND SOCK
- FIRE DETECTOR
- GAS DETECTOR HYDROGEN SULFIDE
- GAS DETECTOR METHANE
- GAS DETECTOR PROPANE
- ESD BUTTON
- RED, BLUE, AMBER & WHITE STROBE LIGHTS
- HORN

D-1

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS SRIKANTH KONDURU 112034 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:52:32-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #7 TO #7 BY SAULSBURY	
SI JOB NUMBER:	10864
PROJ. MANAGER	M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17045-E-817-01	TONE MODULE CONTROLLER WIRING DIAGRAM

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500
OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
3	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19
4	ISSUED FOR CONSTRUCTION - SI JOB #10665	DE	AK	AK	03/06/20
5	REVISED AS NOTED - SI JOB #10665	DE	AK	AK	04/02/20
7	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22

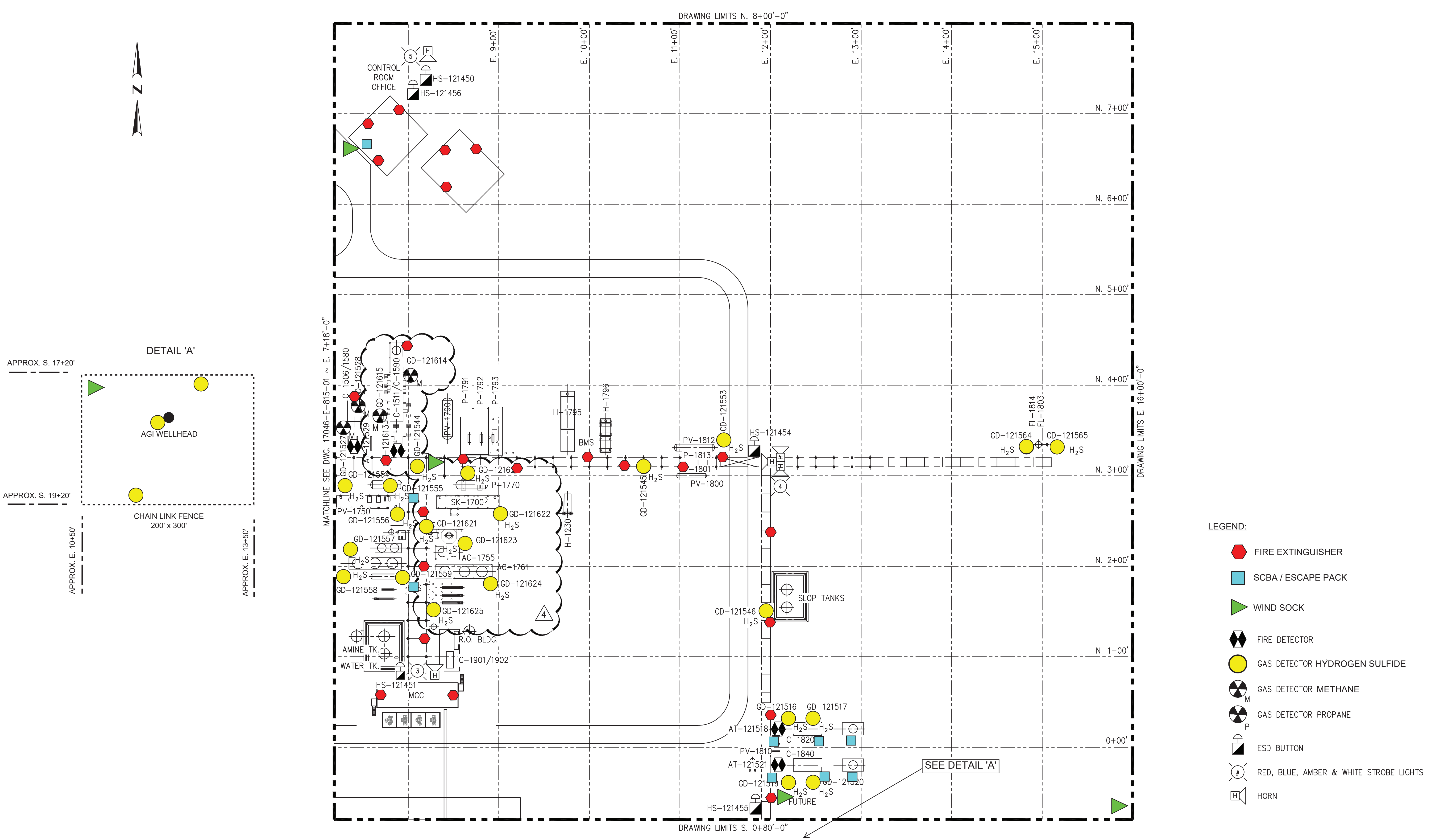
SAFETY PLOT PLAN
SHEET 1 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-01	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-01

xpansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-01.dwg



P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS
SRIKANTH KONDURU
112034
LICENSED
PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:53:03-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #4 TO #4 BY SAULSBURY	
SI JOB NUMBER:	10864
PROJ. MANAGER	M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17046-E-815-01	SAFETY PLOT PLAN

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500 OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
4	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22
0	ISSUED FOR CONSTRUCTION - OPD JOB #17046	SP	JP	GS	5-18-18
1	REVISED AS NOTED - OPD JOB #17046	JWB	JP	GS	6-22-18
2	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19

SAFETY PLOT PLAN
SHEET 2 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-02	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-02

J:\Stakeholder Midstream\10864 - Campo Viejo 70MM Expansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-02.dwg

APPENDIX E – MMA/AMA REVIEW MAPS

APPENDIX E-1: 25-YEAR PLUME EXTENT, 50-YEAR PLUME EXTENT AND MAXIMUM MONITORING AREA MAP

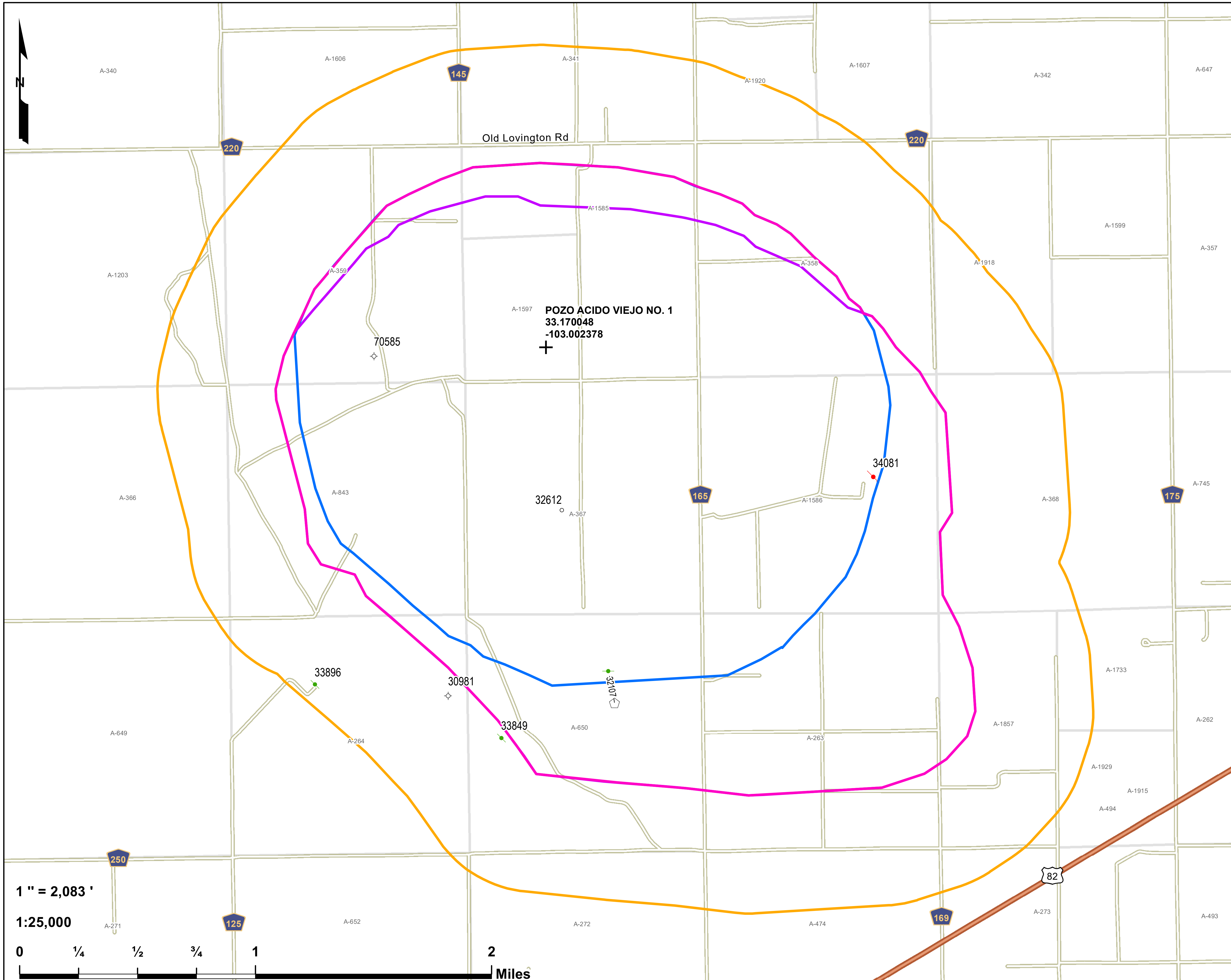
APPENDIX E-2: OIL AND GAS WELLS WITHIN THE MMA MAP

APPENDIX E-3: INJECTION INTERVAL PENETRATING WELLS WITHIN THE MMA MAP

APPENDIX E-4: OIL AND GAS WELLS WITHIN THE MMA LIST

APPENDIX E-5: GROUNDWATER WELLS WITHIN THE MMA

APPENDIX E-6: WELLBORE SCHEMATICS FOR INJECTION INTERVAL PENETRATING WELLS



Pozo Acido Viejo No. 1 25-year Plume 50-year Plume and MMA

E-1

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Pozo 20 MMCF Higher H2S 25 Yr Plume Trace
- Pozo 20 MMCF Higher H2S 50 YR Plume Trace
- Abstracts
- Lateral

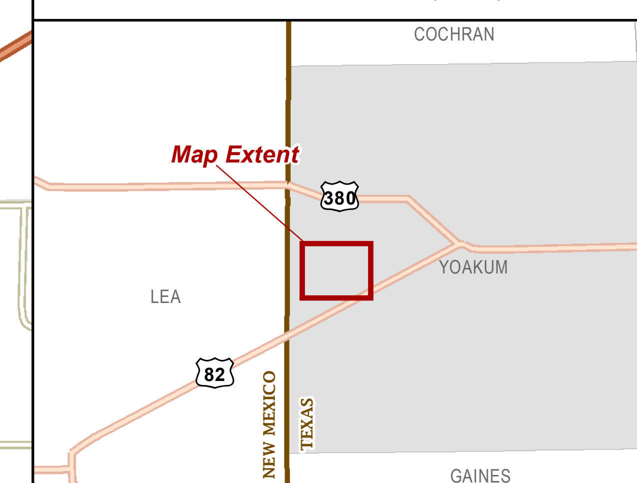
API (30-025-...) SHL Status - Type (Count)

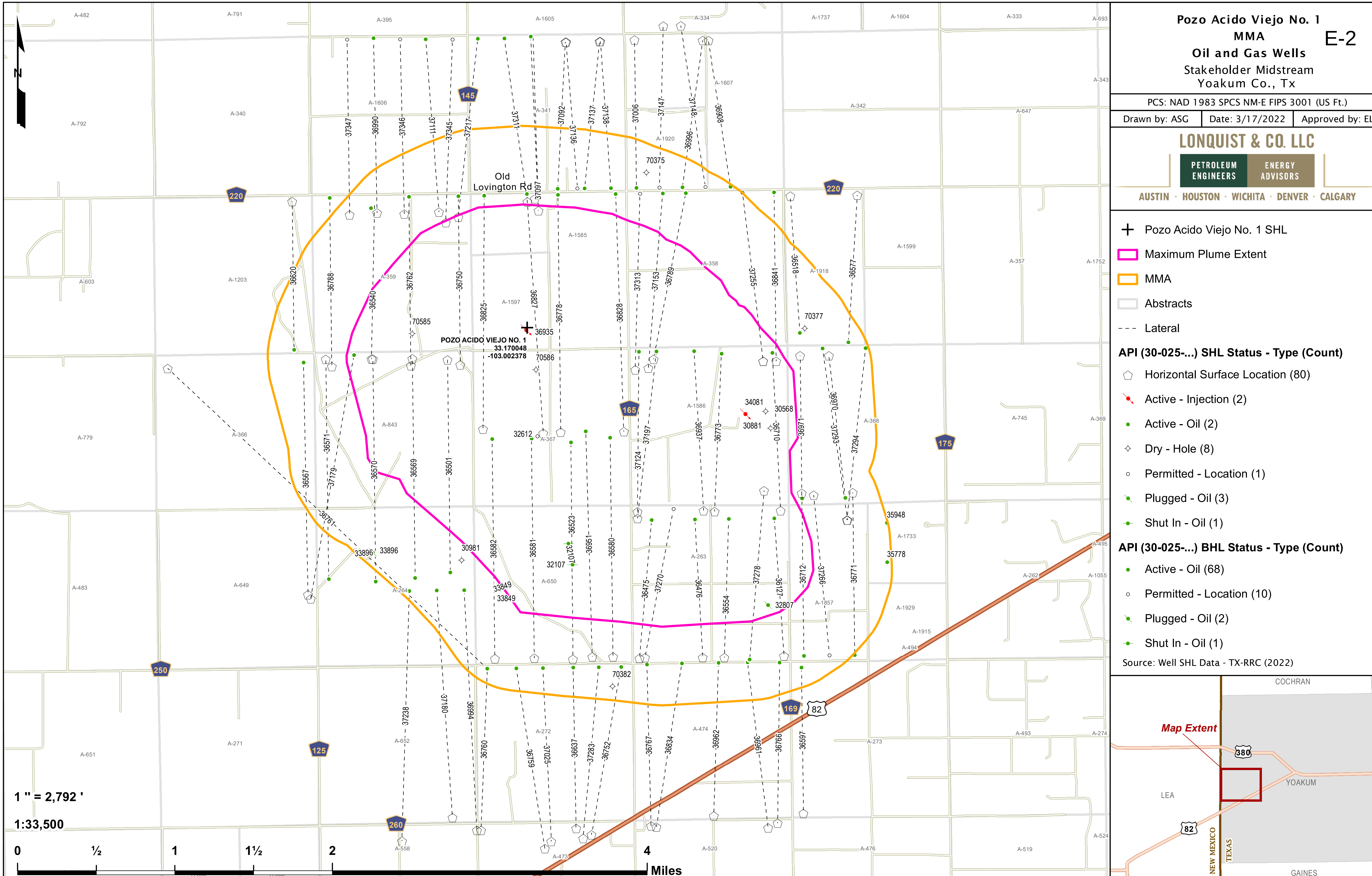
- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

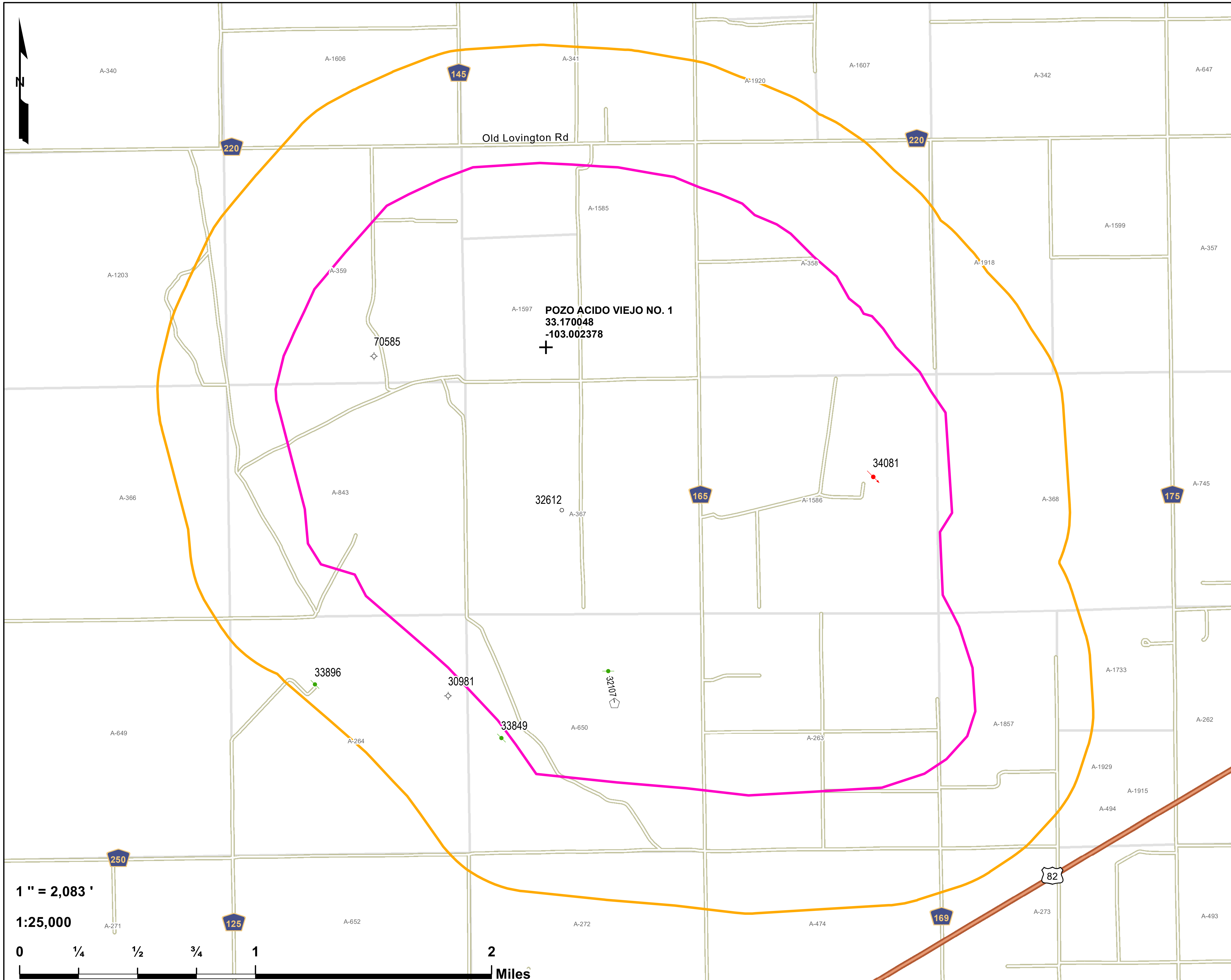
- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)





Pozo Acido Viejo No. 1
MMA
Oil and Gas Wells
Stakeholder Midstream
Yoakum Co., Tx
E-2
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 3/17/2022
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY
Pozo Acido Viejo No. 1 SHL
Maximum Plume Extent
MMA
Abstracts
Lateral
API (30-025-...) SHL Status - Type (Count)
Horizontal Surface Location (80)
Active - Injection (2)
Active - Oil (2)
Dry - Hole (8)
Permitted - Location (1)
Plugged - Oil (3)
Shut In - Oil (1)
API (30-025-...) BHL Status - Type (Count)
Active - Oil (68)
Permitted - Location (10)
Plugged - Oil (2)
Shut In - Oil (1)
Source: Well SHL Data - TX-RRC (2022)
POZO ACIDO VIEJO NO. 1
33.170048
-103.002378
Old Lovington Rd
1 " = 2,792 '
1:33,500
0
½
1
1½
2
4
Miles
N
COCHRAN
Map Extent
YOAKUM
LEA
TERRY
GAINES
NEW MEXICO
TEXAS



Pozo Acido Viejo No. 1

MMA Penetrators

E-3

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Abstracts
- Lateral

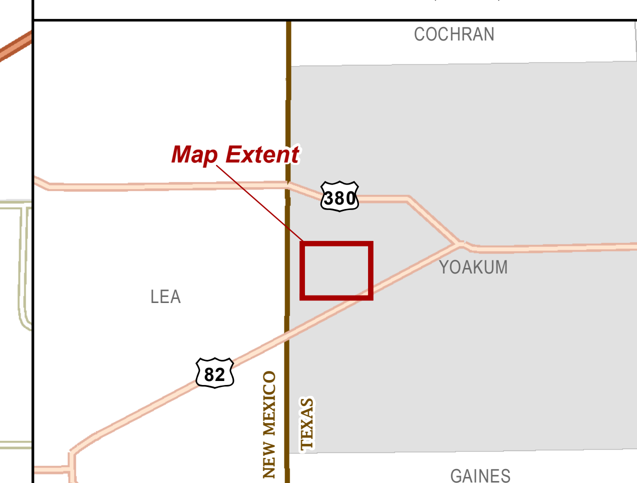
API (30-025-...) SHL Status - Type (Count)

- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



Pozo Acido Viejo No. 1
Wells within MMA

API	WELL NAME	WELL NO.	STATUS	OPERATOR	FIELD	TVD (Ft.)
4250136908	OLD SWITCHEROO 418	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250137148	OLD SWITCHEROO 418	4H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250130568	LIBERTY NATIONAL BANK	1	Dry - Hole	Commission`s hardcopy map	-	5374
4250130881	LIBERTY NATIONAL BANK	2	Dry - Hole	Commission`s hardcopy map	-	5400
4250130981	WEST PLAINS	1	Dry - Hole	Commission`s hardcopy map	-	12020
4250132107	MCGINTY 2	2	Shut In - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	12028
4250132612	TENNECO FEE	1	Plugged - Dry Hole	DAVIS OIL COMPANY	WILDCAT	12130
4250132807	HIGGINBOTHAM BROS. & CO.	1	Plugged - Oil	HENDERSON, VICTOR W.	BRAHANEY	5320
4250133849	MCGINTY	1	Plugged - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	11928
4250133896	GAYLE	1	Plugged - Oil	HARVARD PETROLEUM CORPORATION	HARVARD, W. (DEVONIAN)	12402
4250134081	COCHISE	1W	Active - Injection	STEWARD ENERGY II, LLC	BRAHANEY	11979
4250135778	CHAPPLE, H.	3	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5308
4250135948	CHAPPLE, H.	4	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5302
4250136127	WHAT A MELLON 519	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5310
4250136475	WHAT A MELLON 519	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5316
4250136476	WHAT A MELLON 519	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250136501	SKINNY DENNIS 468	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5319
4250136518	COUSIN WILLARD 450	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136523	SMOKIN TRAIN 520	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5273
4250136540	BLAZIN SKIES 453	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5240
4250136554	WHAT A MELLON 519	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5300
4250136567	ONE EYED JOHN 522	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5239
4250136569	SKINNY DENNIS 468	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136570	SKINNY DENNIS 468	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136571	SKINNY DENNIS 468	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5322
4250136577	COUSIN WILLARD 450	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5312
4250136580	SMOKIN TRAIN 520	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136581	SMOKIN TRAIN 520	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136582	SMOKIN TRAIN 520	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5260
4250136597	HIGGINBOTHAM "A"	6H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5214
4250136620	HAIR SPLITTER 454	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5286
4250136637	WHITEPORT 537	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5251
4250136710	COCHISE UNIT 470	1H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5237
4250136712	HUFFINES 518	1H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5243
4250136750	BLAZIN SKIES 453	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5215
4250136752	WHITEPORT 537	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136759	WHITEPORT 537	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5241
4250136760	WHITEPORT 537	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5309
4250136761	HAIR SPLITTER 454	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5272
4250136762	BLAZIN SKIES 453	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136766	DESPERADO E 538	1H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5223
4250136767	DESPERADO W 538	4H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5261
4250136771	HUFFINES 518	2H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5234
4250136773	COCHISE UNIT 470	2H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5310

List Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

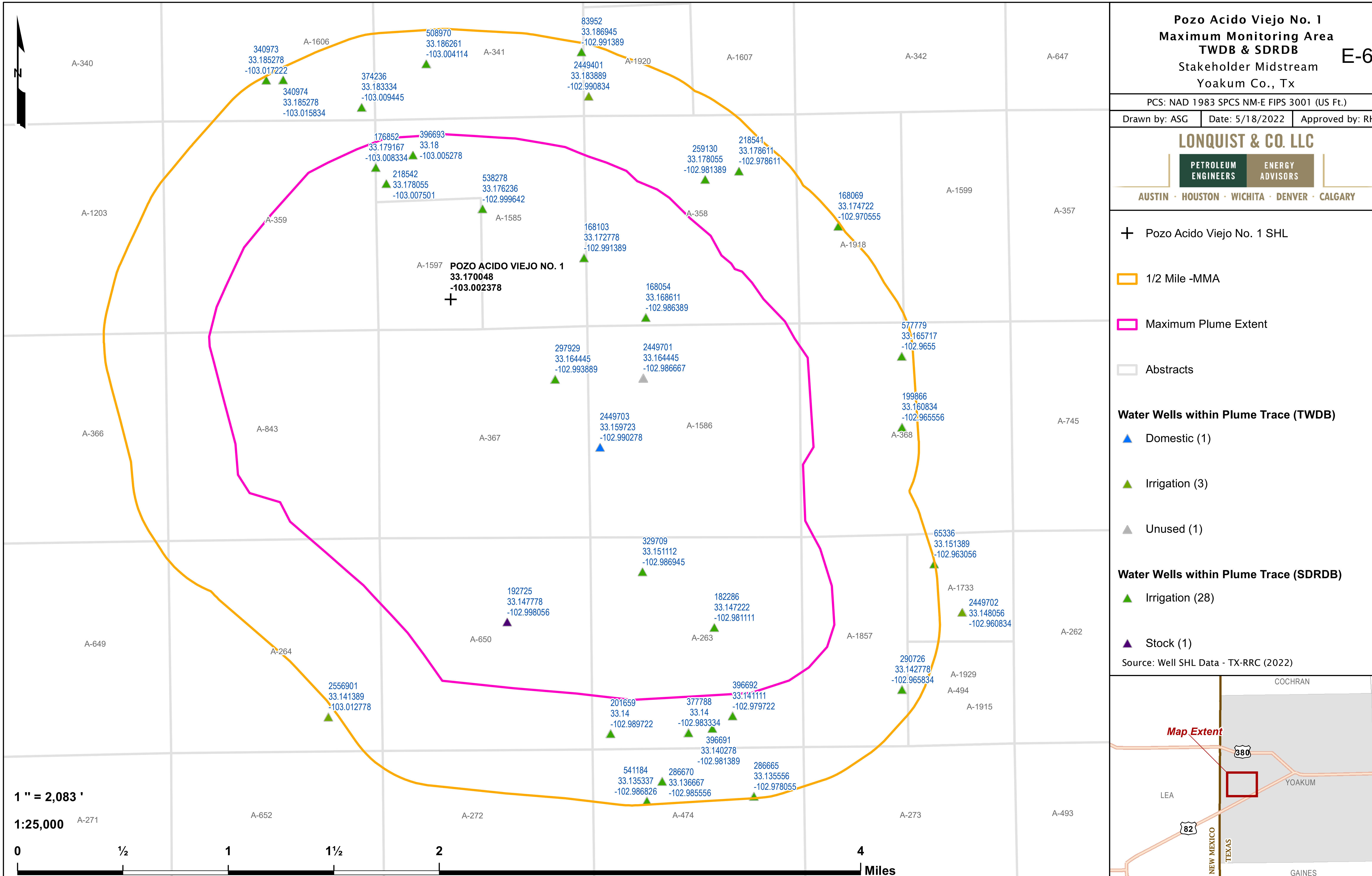
4250136778	BANJO BILL 452	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5229
4250136788	BLAZIN SKIES 453	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5248
4250136789	NEVERMIND 451	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5267
4250136825	UNDER THE BRIDGE 452A	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250136827	UNDER THE BRIDGE 452	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136828	BANJO BILL 452 A	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5298
4250136834	DESPERADO E 538	3H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5215
4250136841	NEVERMIND 451	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5308
4250136935	POZO ACIDO VIEJO	1	Active - Injection	STAKEHOLDER GAS SERVICES, LLC	BRONCO (SILURO-DEVONIAN)	12349
4250136937	SANDMAN 470	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250136951	SMOKIN TRAIN 520	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5182
4250136961	DESPERADO E 538	2H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5205
4250136962	DESPERADO E 538	5H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5213
4250136970	DIANNE CHAPIN 471	3H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5342
4250136971	DIANNE CHAPIN 471	4H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5341
4250136990	SIXTEEN STONE 416	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250136994	FANDANGO 536	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5160
4250136996	OLD SWITCHEROO 418	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250137006	OLD SWITCHEROO 418	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5323
4250137025	WHITEPORT 537	25H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5342
4250137092	CHICKEN ROASTER 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5318
4250137097	LIGHTNING CRASHES 417	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250137111	SIXTEEN STONE 416	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5301
4250137124	SANDMAN 470	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5357
4250137136	CHICKEN ROASTER 417	6H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137137	CHICKEN ROASTER 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5327
4250137138	CHICKEN ROASTER 417	7H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5325
4250137147	OLD SWITCHEROO 418	2H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137153	NEVERMIND 451	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5311
4250137179	SKINNY DENNIS 468	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5289
4250137180	FANDANGO 536	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250137197	SANDMAN 470	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5232
4250137217	LIGHTNING CRASHES 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5332
4250137238	FANDANGO 536	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250137255	NEVERMIND 451	2H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137266	HUFFINES 518	3H	Permitted - Location	WALSH PETROLEUM, INC.	BRAHANEY	5500
4250137270	WHAT A MELLON 519	35H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137278	WHAT A MELLON 519	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5423
4250137283	WHITEPORT 537	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5394
4250137293	DIANNE CHAPIN 471	7H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5389
4250137294	DIANNE CHAPIN 471	6H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5392
4250137311	LIGHTNING CRASHES 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5344
4250137313	NEVERMIND 451	4H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137345	SIXTEEN STONE 416	1H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137346	SIXTEEN STONE 416	3H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600

Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

4250137347	SIXTEEN STONE 416	5H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250170375	A. J Granger	1	Dry - Hole	Commission`s hardcopy map	-	5500
4250170377	Cora Reed	1	Dry - Hole	Commission`s hardcopy map	-	5350
4250170382	R. M. Jones	1	Dry - Hole	Commission`s hardcopy map	-	5510
4250170585	R. N. McGinty	1	Dry - Hole	Commission`s hardcopy map	-	12046
4250170586	T. W. READ	1	Dry - Hole	Commission`s hardcopy map	-	5445

Source: Texas Railroad Commission (2022)


Pozo Acido Viejo No. 1
Maximum Monitoring Area
TWDB & SDRDB
Stakeholder Midstream
Yoakum Co., Tx
E-6
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 5/18/2022
Approved by: RH
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY
Pozo Acido Viejo No. 1 SHL
1/2 Mile -MMA
Maximum Plume Extent
Abstracts
Water Wells within Plume Trace (TWDB)
Domestic (1)
Irrigation (3)
Unused (1)
Water Wells within Plume Trace (SDRDB)
Irrigation (28)
Stock (1)
Source: Well SHL Data - TX-RRC (2022)
POZO ACIDO VIEJO NO. 1
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-103.002378
N
1 " = 2,083 '
1:25,000
0
½
1
1½
2
4
Miles
COCHRAN
Map Extent
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YOAKUM
TERRY
LEA
82
NEW MEXICO
TEXAS
GAINES
A-340
A-1606
A-341
A-1920
A-1607
A-342
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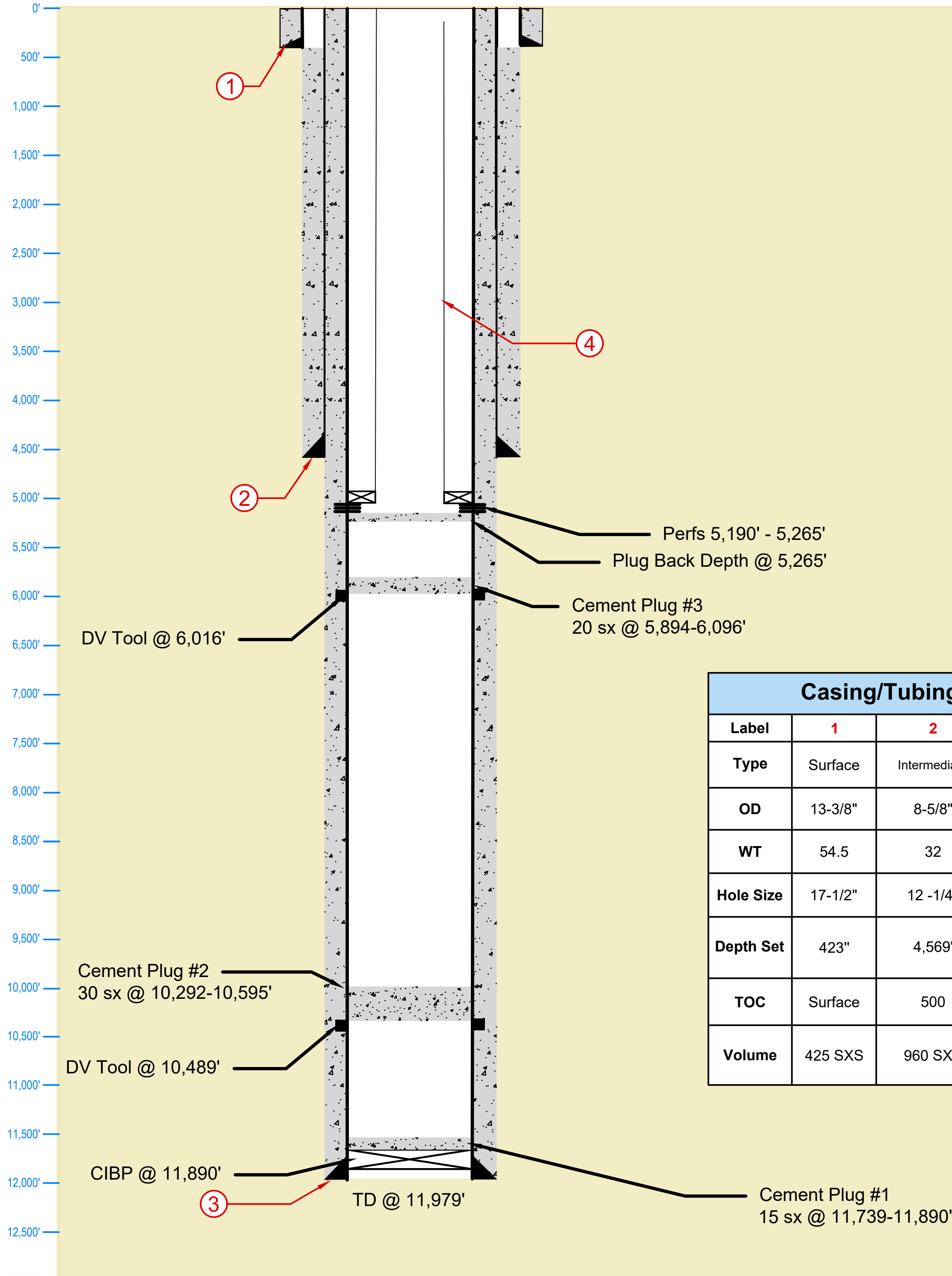

KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6a

Casing/Tubing Information

Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	54.5	32	17	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	423"	4,569'	11,965'	5,200'
TOC	Surface	500	Surface	N/A
Volume	425 SXS	960 SXS	2445 SXS	N/A

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Cochise 1W

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-34081	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

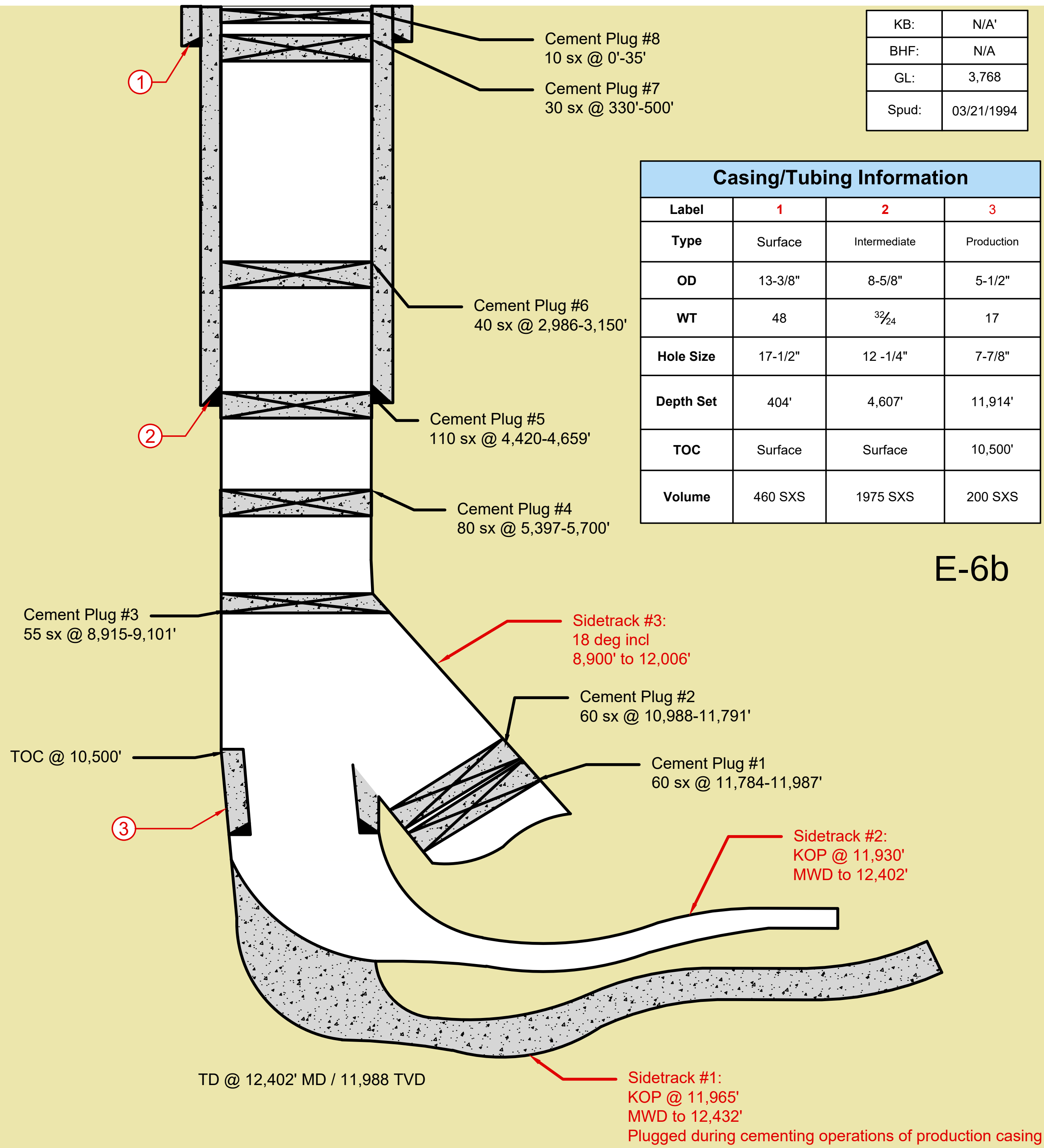
12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	03/21/1994

Casing/Tubing Information

Label	1	2	3
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	32/24	17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	404'	4,607'	11,914'
TOC	Surface	Surface	10,500'
Volume	460 SXS	1975 SXS	200 SXS

E-6b



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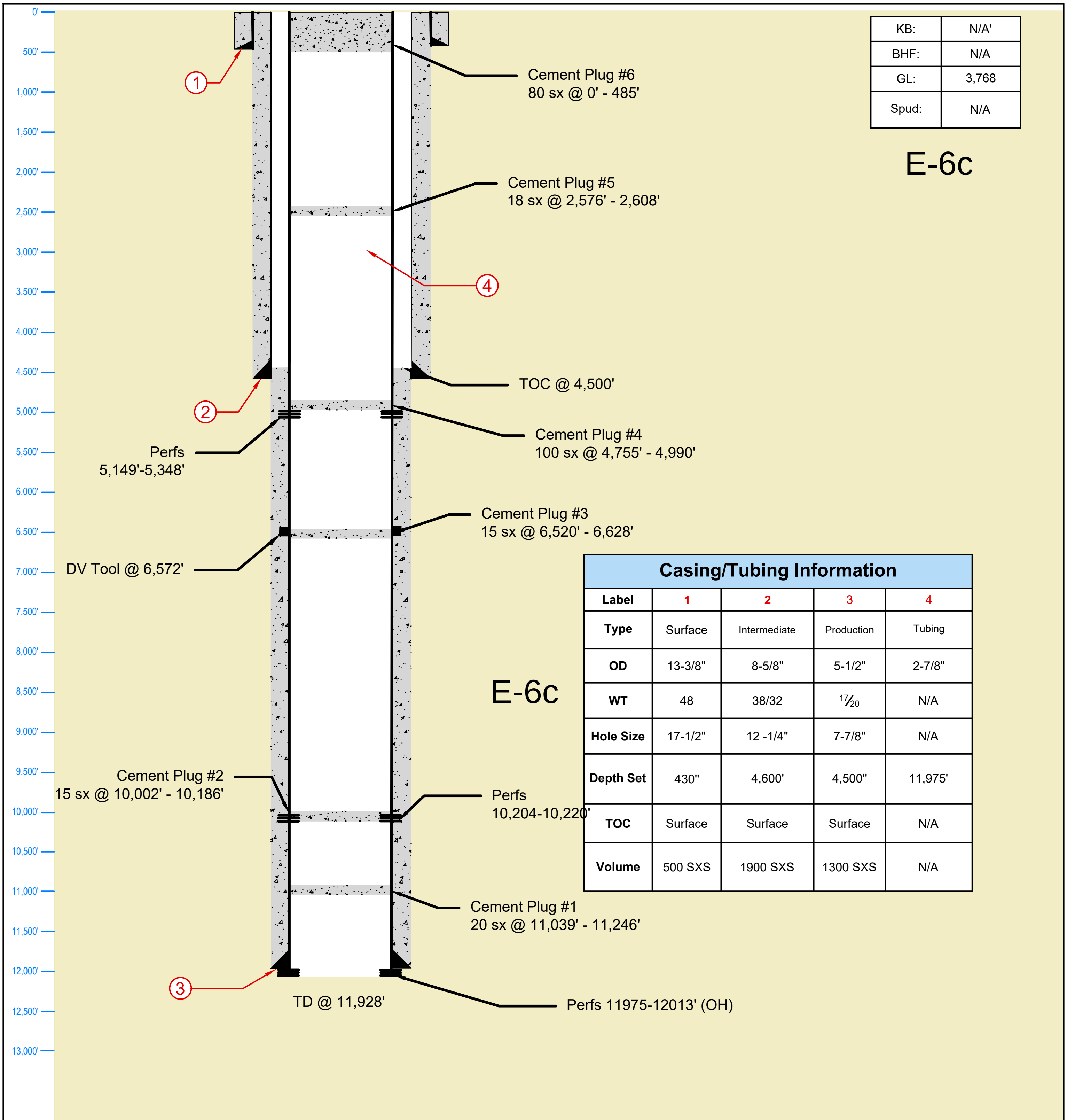
Gayle #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-33896	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/22/2022
Drawn: KAS	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816



KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

Casing/Tubing Information

Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	48	38/32	17/20	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	430"	4,600'	4,500"	11,975'
TOC	Surface	Surface	Surface	N/A
Volume	500 SXS	1900 SXS	1300 SXS	N/A

MCGINTY #1

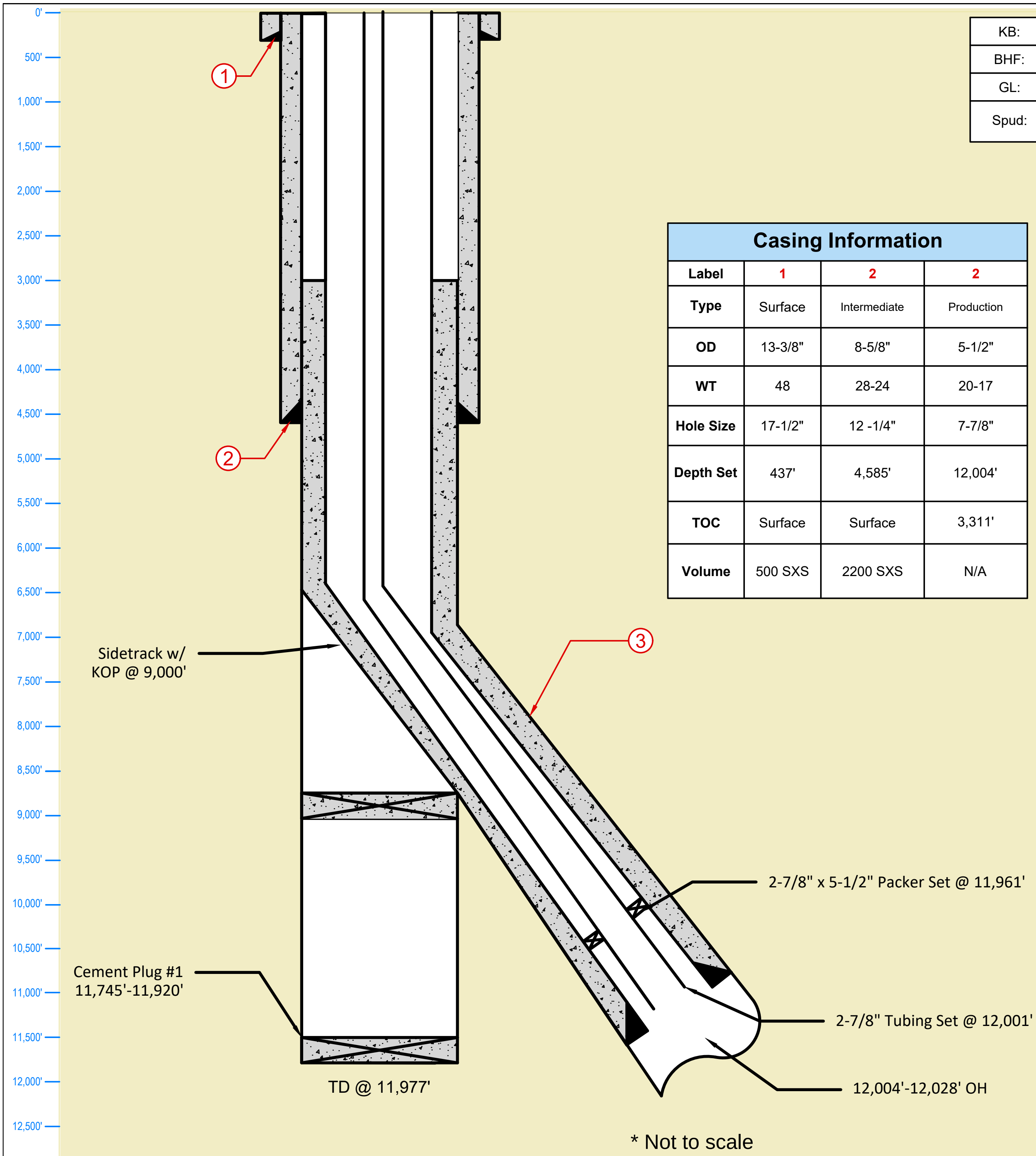
Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-33849	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/21/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

KB:	3,768'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6d



Casing Information			
Label	1	2	2
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	28-24	20-17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	437'	4,585'	12,004'
TOC	Surface	Surface	3,311'
Volume	500 SXS	2200 SXS	N/A

* Not to scale

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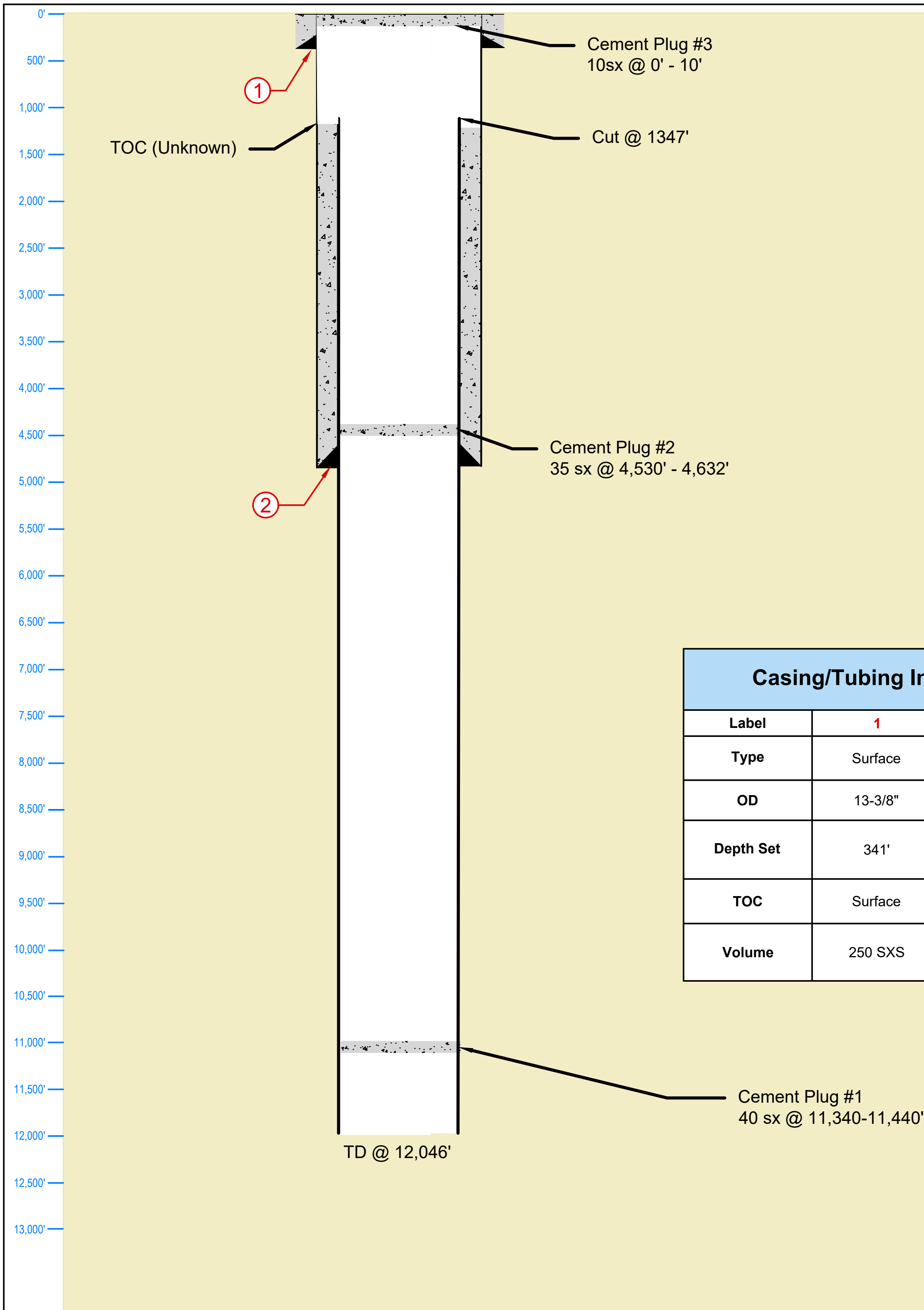
McGinty 2 #2

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32107	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816



KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6e

Casing/Tubing Information		
Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	9-5/8"
Depth Set	341'	4,581'
TOC	Surface	Surface
Volume	250 SXS	1500 SXS

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R.N. McGinty #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No:	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/15/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

KB:	N/A'
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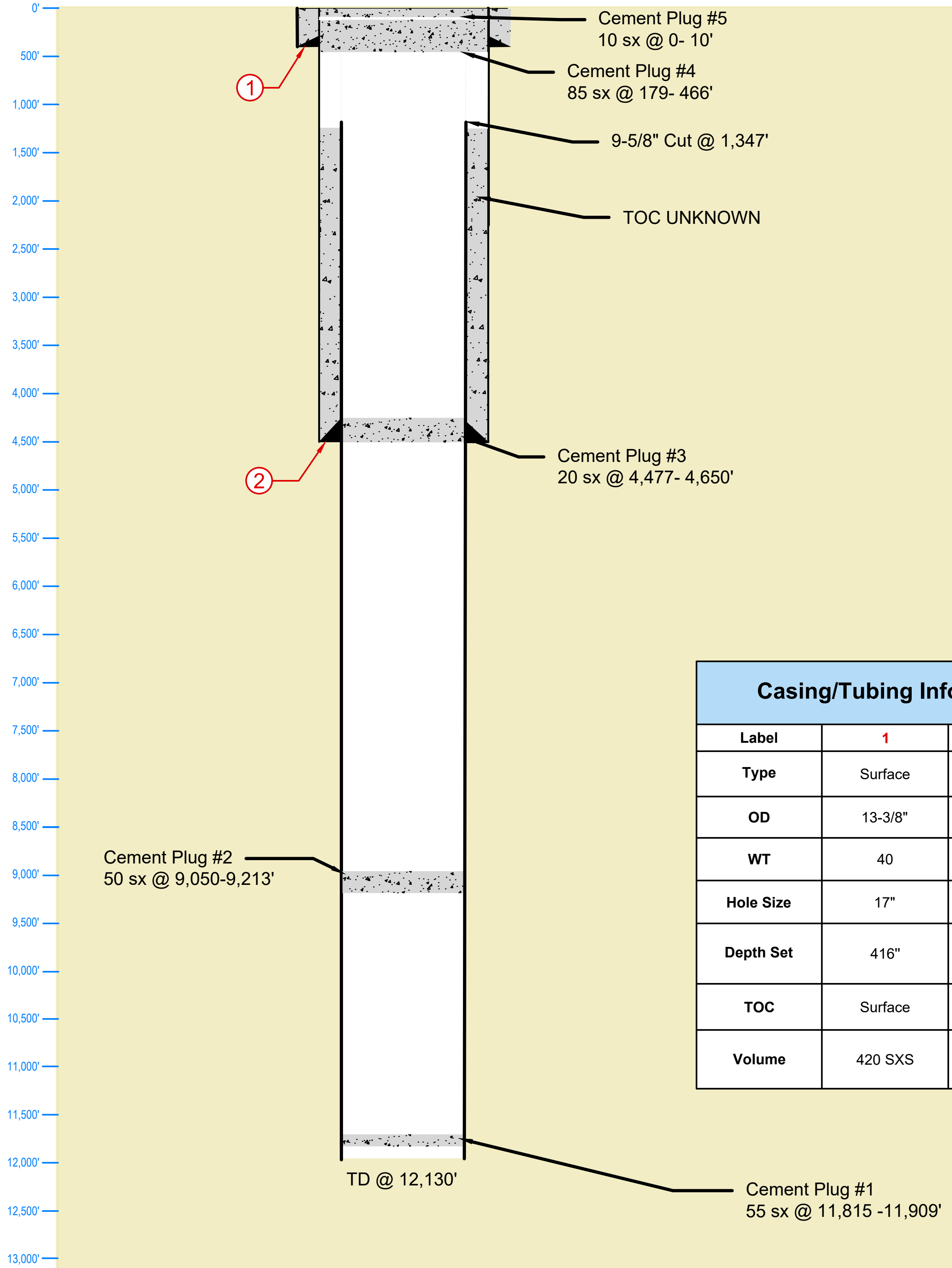
GL:	N/A
Spud:	N/A

E-6f



Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	8-5/8"
WT	40	36
Hole Size	17"	11"
Depth Set	416"	4,600'
TOC	Surface	Surface
Volume	420 SXS	1250 SXS

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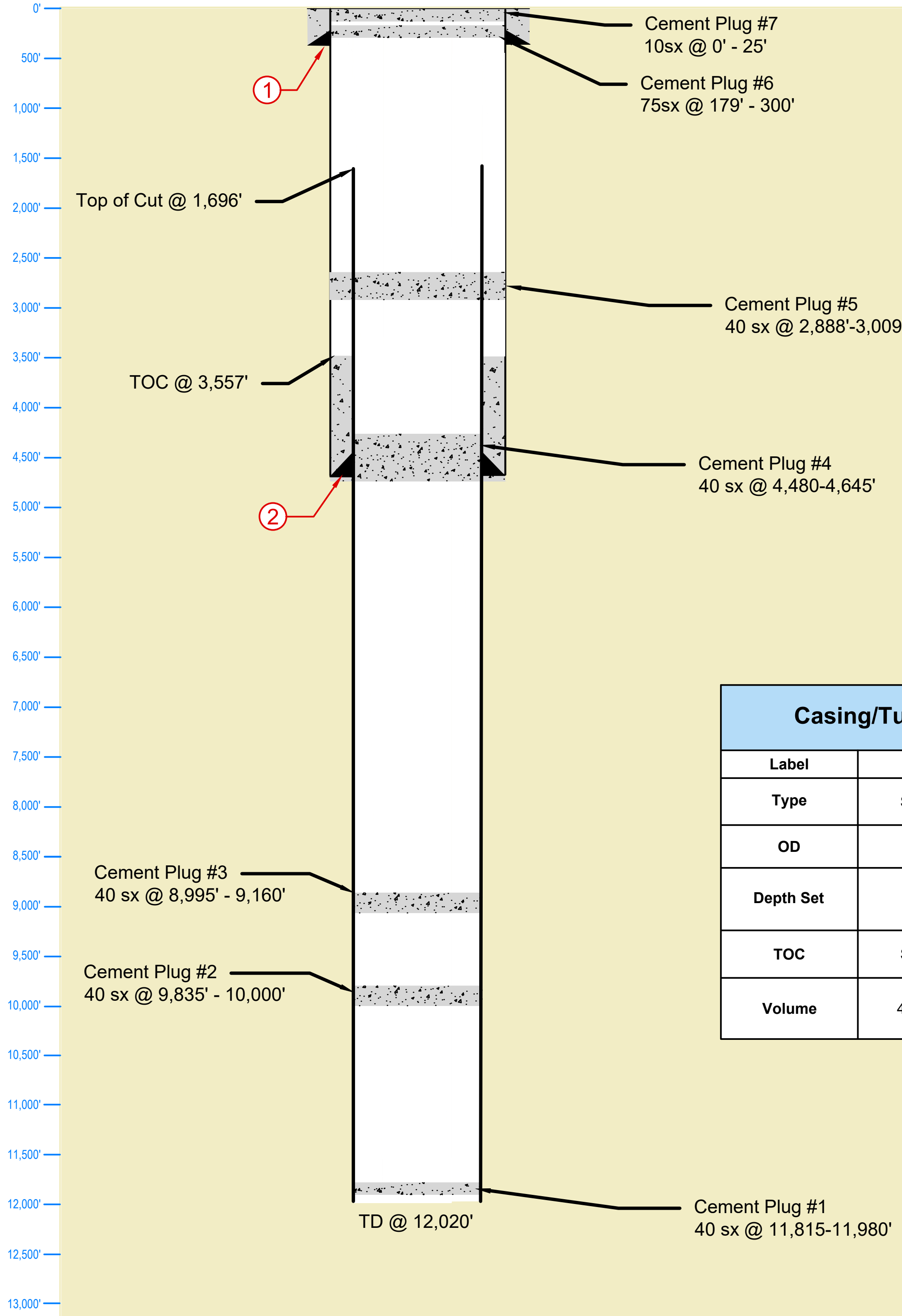
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

Tenneco Fee #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32612	**Field:** BRAHANEY	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	



KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6g

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	12-3/4"	8-5/8"
Depth Set	358'	4,595'
TOC	Surface	3,557'
Volume	400 SXS	200 SXS

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West Plains Unit #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 4250130981	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/17/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Appendix B: Submissions and Responses to Requests for Additional Information

Subpart RR Monitoring, Reporting, and Verification (MRV) Plan
Pozo Acido Viejo #1

Yoakum County, Texas

Prepared for *Stakeholder Gas Services, LLC*
San Antonio, TX

By

Lonquist Sequestration, LLC
Austin, TX

Version 3
July 2022

INTRODUCTION

Stakeholder Gas Services, LLC ("Stakeholder") currently has a Class II acid gas injection ("AGI") permit, issued by the Texas Railroad Commission ("TRRC") in August 2018, for its Pozo Acido Viejo #1 well ("PAV #1"), API No. 42-501-36935. This permit currently authorizes Stakeholder to inject up to 6.9 million standard cubic feet per day ("MMSCF/d") of treated acid gas ("TAG") into the Bronco (Siluro-Devonian) Field at a depth of 12,020 to 12,349 feet with a maximum allowable surface pressure of 6,010 psi. Since being permitted, injection has proceeded without incident. This AGI well is associated with Stakeholder's Campo Viejo gas treating and processing plant ("Campo Viejo Facility") located in a rural, sparsely populated area of Yoakum County, Texas, approximately 10 miles west of the town of Plains.

Figure 1 – Location of PAV #1 Well

Stakeholder is submitting this Monitoring, Reporting, and Verification ("MRV") plan to the EPA for approval under 40 CFR §98.440(a), Subpart RR, of the Greenhouse Gas Reporting Program ("GHGRP"). In addition to submitting this MRV plan to the EPA, Stakeholder also is applying to the TRRC for an amendment to the PAV #1 well's Class II permit to increase its authorized injection volume. Approval of the permit amendment will allow Stakeholder to increase the capacity of its existing Campo Viejo Facility, which removes H_2S and CO_2 from natural gas production using amine treating, as well as increase the injection well capacity for a future gas processing facility which is currently under development by Stakeholder. Additionally, expanded capacity allows Stakeholder to potentially provide future disposal in its acid gas injection well for oil and gas waste derived TAG from similar third-party gas processing facilities. Increased disposal capacity will allow for greater gas processing capacity in the region, ultimately helping to reduce flaring and its associated emissions. Throughout this document, both in written reference and in modeling inputs, Stakeholder has used the applied-for expanded permit capacity of 20 MMSCF/d. Stakeholder plans to inject CO_2 for approximately 22 more years.

ACRONYMS AND ABBREVIATIONS

%	Percent (Age)
°C	Degrees Celsius
°F	Degrees Fahrenheit
AMA	Active Monitoring Area
BCF	Billion Cubic Feet
CH_4	Methane
CMG	Computer Modeling Group
CO_2	Carbon Dioxide (may also refer to other Carbon Oxides)
E	East
EOS	Equation of State
EPA	U.S. Environmental Protection Agency
ESD	Emergency Shutdown
FG	Fracture Gradient
ft	Foot (Feet)
GAU	Groundwater Advisory Unit
GEM	Computer Modelling Group's GEM 2020.11
GHGs	Greenhouse Gases
GHGRP	Greenhouse Gas Reporting Program
H_2S	Hydrogen Sulfide
md	Millidarcy(ies)
mi	Mile(s)
MIT	Mechanical Integrity Test
MM	Million
MMA	Maximum Monitoring Area
MMCF	Million Cubic Feet
MMSCF	Million Standard Cubic Feet
MMSCF/d	Million Standard Cubic Feet per Day
MRV	Monitoring, Reporting and Verification

ν	Poisson's Ratio
N	North
NW	Northwest
OBG	Overburden Gradient
PAV #1	Pozo Acido Viejo #1
PG	Pore Gradient
pH	Scale of Acidity
ppm	Parts per Million
psi	Pounds per Square Inch
psig	Pounds per Square Inch Gauge
S	South
SE	Southeast
SF	Safety Factor
SWD	Salt Water Disposal
TAC	Texas Administrative Code
TAG	Treated Acid Gas
TOC	Total Organic Carbon
TRRC	Texas Railroad Commission
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water
W	West

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SECTION 1 – FACILITY INFORMATION

This section contains key information regarding the Acid Gas and CO_2 injection facility.

Reporter number:

- Gas Plant Facility Name: Campo Viejo Gas Processing Plant
- Greenhouse Gas Reporting Program ID: 573525
    - Currently reporting under Subpart UU
- Operator: Stakeholder Gas Services, LLC

Underground Injection Control (UIC) Permit Class: Class II

The TRRC regulates oil and gas activities in Texas and has primacy to implement the Underground Injection Control ("UIC") Class II program. TRRC classifies the PAV #1 well as a UIC Class II well. A Class II permit was issued to Stakeholder under TRRC Rule 46 (entitled "Fluid Injection into Productive Reservoirs") and Rule 36 (entitled "Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas").

UIC Well Identification Number:

Pozo Acido Viejo #1, API No. 42-501-36935, UIC #000117488.

SECTION 2 – PROJECT DESCRIPTION

This Project Description discusses the geologic setting, planned injection volumes and process, and the reservoir modeling performed for the PAV #1 well. Stakeholder, with the assistance of Lonquist and Co., LLC, originally provided a geological overview as part of Stakeholder's original Class II application with the TRRC in 2018. Lonquist has updated the geology and the plume modeling within the reservoir for this MRV Plan.

The PAV #1 well is located and designed to protect against migration of CO_2 into productive oil and gas formations, freshwater aquifers and against surface releases. The injection interval for PAV #1 is located over 3,320' below the active producing formations in the area and 9,770 feet below the base of the lowest useable quality water table, as Shown in Figure 2. This well injects both H_2S and CO_2, therefore the well and the facility are designed to minimize any leakage to the surface.

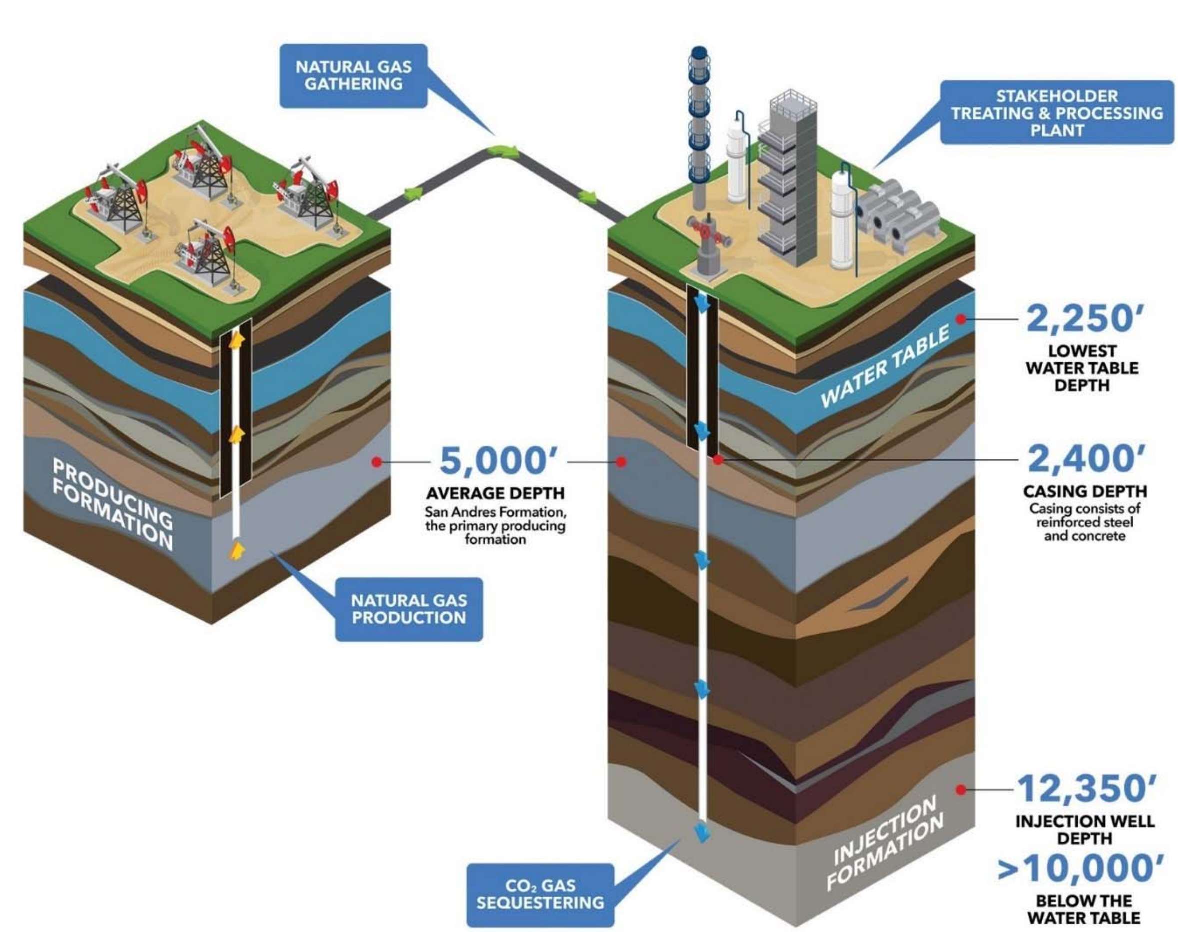

Figure 2 – Illustrative overview of PAV #1 and Campo Viejo Facility

Regional Geology

The PAV #1 well is located on the southern portion of the Northwestern Shelf within the larger Permian Basin as seen in Figure 3. The Northwestern Shelf is a broad marine shelf located in the northern portion of the Permian Basin.

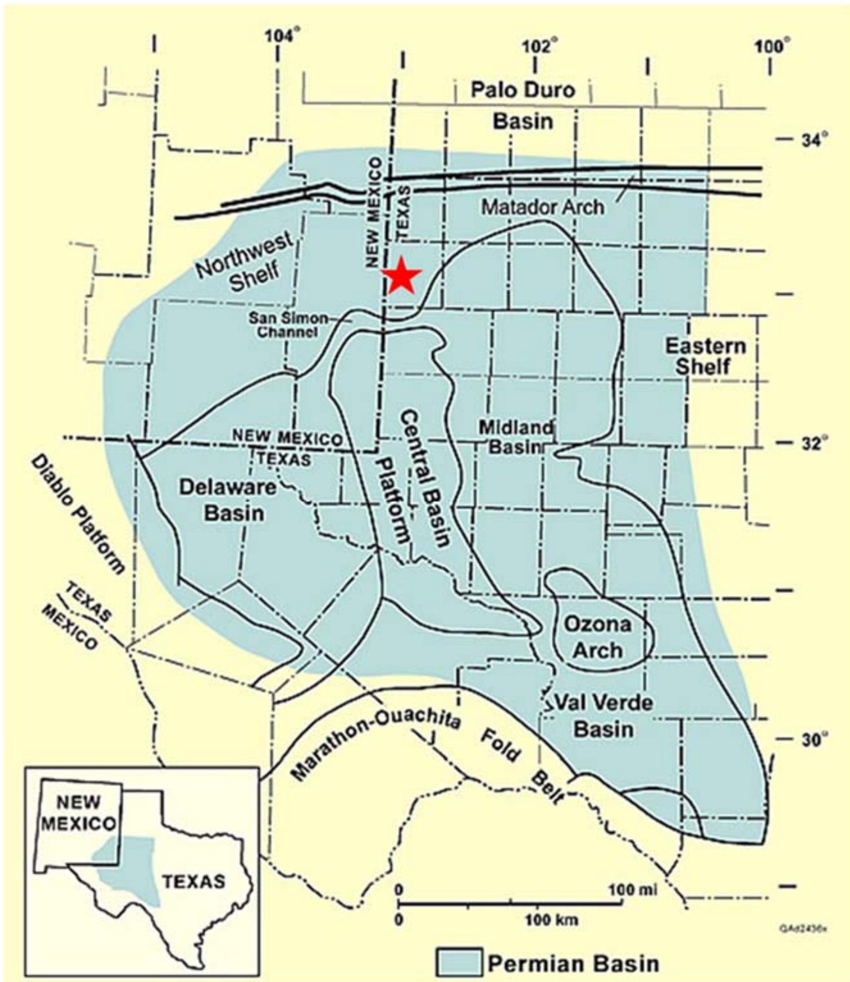

Figure 3 – Regional Map of the Permian Basin. Red Star is approximate location of PAV #1 well

Figure 4 depicts the stratigraphic column found at the PAV #1 well location with a red star referencing the injection formation and green stars indicating the productive intervals in the area. The primary injection interval is found within the Wristen group, of Silurian-age, as seen in Figure 5. The TRRC refers to this sequence under the general terms “Devonian”, “Silurian-Devonian” or “Siluro-Devonian”.

<table>
<tr><th>Period</th><th>Epoch</th><th colspan="2">Formation</th><th>General Lithology</th></tr>
<tr><td rowspan="16">Permian</td><td rowspan="3">Ochoan</td><td colspan="2">Dewey Lake</td><td>Redbeds/Anhydrite</td></tr>
<tr><td colspan="2">Rustler</td><td>Halite</td></tr>
<tr><td colspan="2">Salado</td><td>Halite/Anhydrite</td></tr>
<tr><td rowspan="5">Guadalupian</td><td colspan="2">Tansil</td><td>Anhydrite/Dolomite</td></tr>
<tr><td colspan="2">Yates</td><td>Anhydrite/Dolomite</td></tr>
<tr><td colspan="2">Seven Rivers</td><td>Dolomite/Anhydrite</td></tr>
<tr><td colspan="2">Queen</td><td>Sandy Dolomite/Anhydrite/Sandstone</td></tr>
<tr><td colspan="2">Grayburg</td><td>Dolomite/Anhydrite/Shale/Sandstone</td></tr>
<tr><td rowspan="7">Leonardian</td><td colspan="2">★ San Andres</td><td>Dolomite/Anhydrite</td></tr>
<tr><td colspan="2">Glorieta</td><td>Sandy Dolomite</td></tr>
<tr><td rowspan="4">Yeso</td><td>Paddock</td><td rowspan="4">Dolomite/Anhydrite/Sandstone</td></tr>
<tr><td>Blinebry</td></tr>
<tr><td>Tubb</td></tr>
<tr><td>Drinkard</td></tr>
<tr><td colspan="2">Abo</td><td>Dolomite/Anhydrite/Shale</td></tr>
<tr><td>Wolfcampian</td><td colspan="2">★ Wolfcamp</td><td>Limestone/Dolomite</td></tr>
<tr><td rowspan="5">Pennsylvanian</td><td>Virgilian</td><td colspan="2">Cisco</td><td>Limestone/Dolomite</td></tr>
<tr><td>Missourian</td><td colspan="2">Canyon</td><td>Limestone/Shale</td></tr>
<tr><td>Des Moinesian</td><td colspan="2">Strawn</td><td>Limestone/Sandstone</td></tr>
<tr><td>Atokan</td><td colspan="2">Bend</td><td rowspan="2">Limestone/Sandstone/Shale</td></tr>
<tr><td>Morrowan</td><td colspan="2">Morrow</td></tr>
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<tr><td></td><td colspan="2" rowspan="2">Fusselman</td><td rowspan="2">Dolomite/Chert</td></tr>
<tr><td rowspan="4">Ordovician</td><td rowspan="2">Upper</td></tr>
<tr><td colspan="2">Montoya</td><td>Dolomite/Chert</td></tr>
<tr><td>Middle</td><td colspan="2">Simspson Gp</td><td>Limestone/Sandstone/Shale</td></tr>
<tr><td>Lower</td><td colspan="2">Ellenburger</td><td>Dolomite</td></tr>
</table>

Figure 4 – Stratigraphic column of the Northwest Shelf. Red star indicates injection interval. Green star indicates productive intervals.

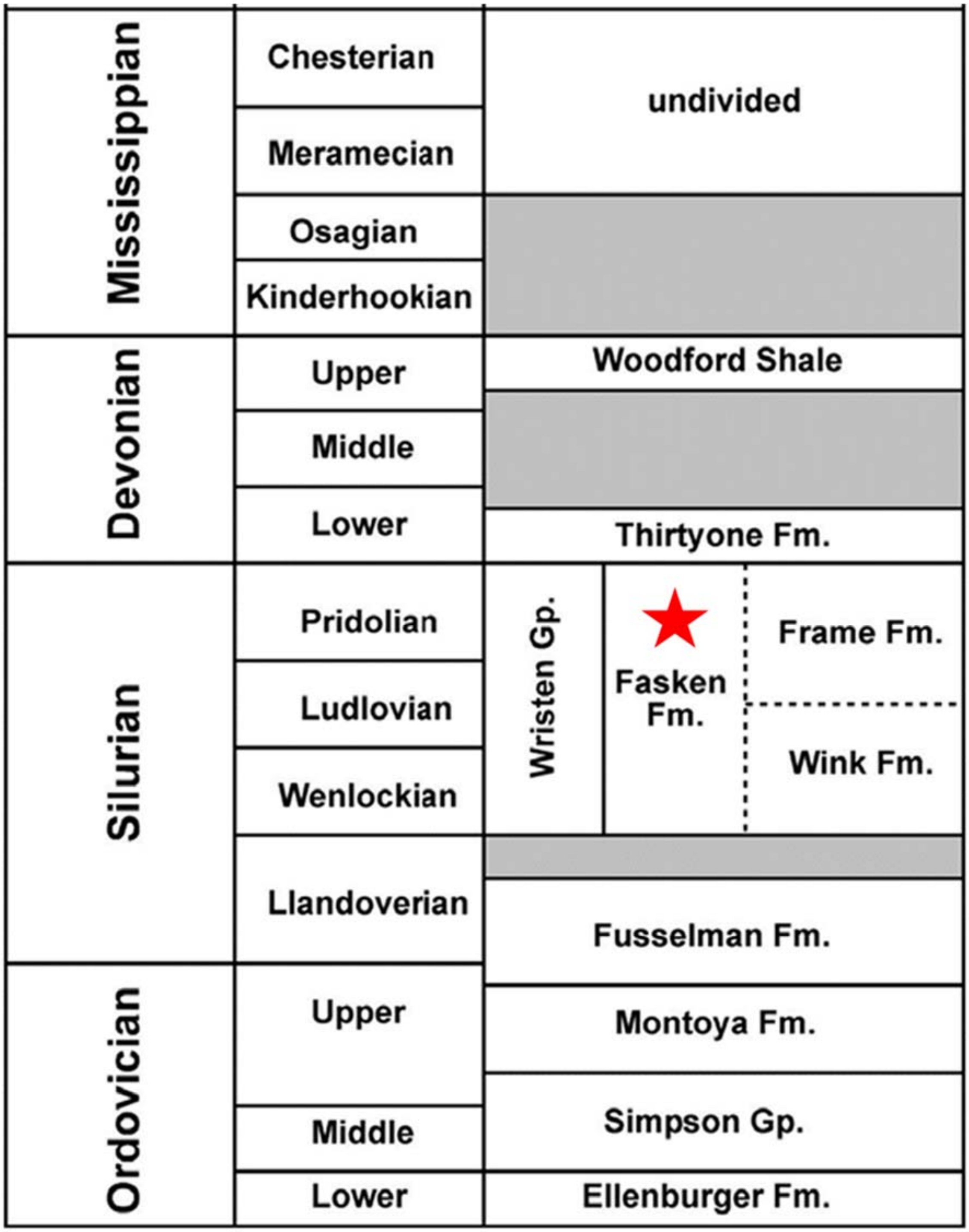


Figure 5 – Stratigraphic column depicting the composition of the Silurian group. Red star indicates injection interval (Broadhead, 2005)

The Wristen group was deposited in a basin platform setting across the northern half of the Permian Basin. The depositional environment over Yoakum County during the Silurian period was a shallow inner platform, the margin of which exists to the south, in southern Andrews County, Texas. The Silurian-age lithology on the inner platform is dominated by grain-rich skeletal carbonates. Carbonate buildups are common within the shallow inner platform, mainly skeletal wackestone, indicating a lower-energy deposition on the inner

platform. The carbonate shelf margin to the south acted as a barrier from basin-ward wave energy (Ruppel and Holtz, 1994).

Depositional cycles within the inner platform indicate it was controlled by episodic sea level rise and fall, resulting in sub-areal exposure and diagenesis. The diagenesis of the Silurian-age carbonate rocks initiated secondary porosity development and increased permeability. Dolomite and solution-related features are the most prominent diagenetic characteristics found within the Silurian. The Wristen Group is composed of three formations; Fasken, Frame, and Wink formations. The Frame and Wink formations are found near the ramp boundary to the south, while the Fasken formation is found predominantly in the inner platform, where the PAV #1 well is located. The Fasken formation is predominately dolomite grading to limestone, occurring as cycles, down section. This dolomitization is due in part to sub-areal exposure, during which karsts and secondary porosity developed. Additional dolomitization was possible during successive sea level fluctuations via movement of magnesium-rich solution through karsts and vugs, which acted as channels for fluid flow (Ruppel and Holtz, 1994).

Figure 6 shows a regional isopach map of the Silurian (combined Fasken and Fusselman formations) with a red star depicting the PAV #1 well location. Thickness of the Silurian-age rock is approximately 1,000 feet at the PAV #1 well location.

North of Andrews County there is little differentiation between the Fasken and Fusselman formations which are both carbonate deposits with the potential for sub-areal exposure and porosity development. The injection interval defined here is based on petrophysical characteristics rather than stratigraphic nomenclature. For purposes of this MRV Plan, the Fasken is defined as the porous and permeable carbonate rock at the top of the Silurian section and the Fusselman is the low permeability rock that comprises the carbonate section between the Fasken and the Montoya formation.

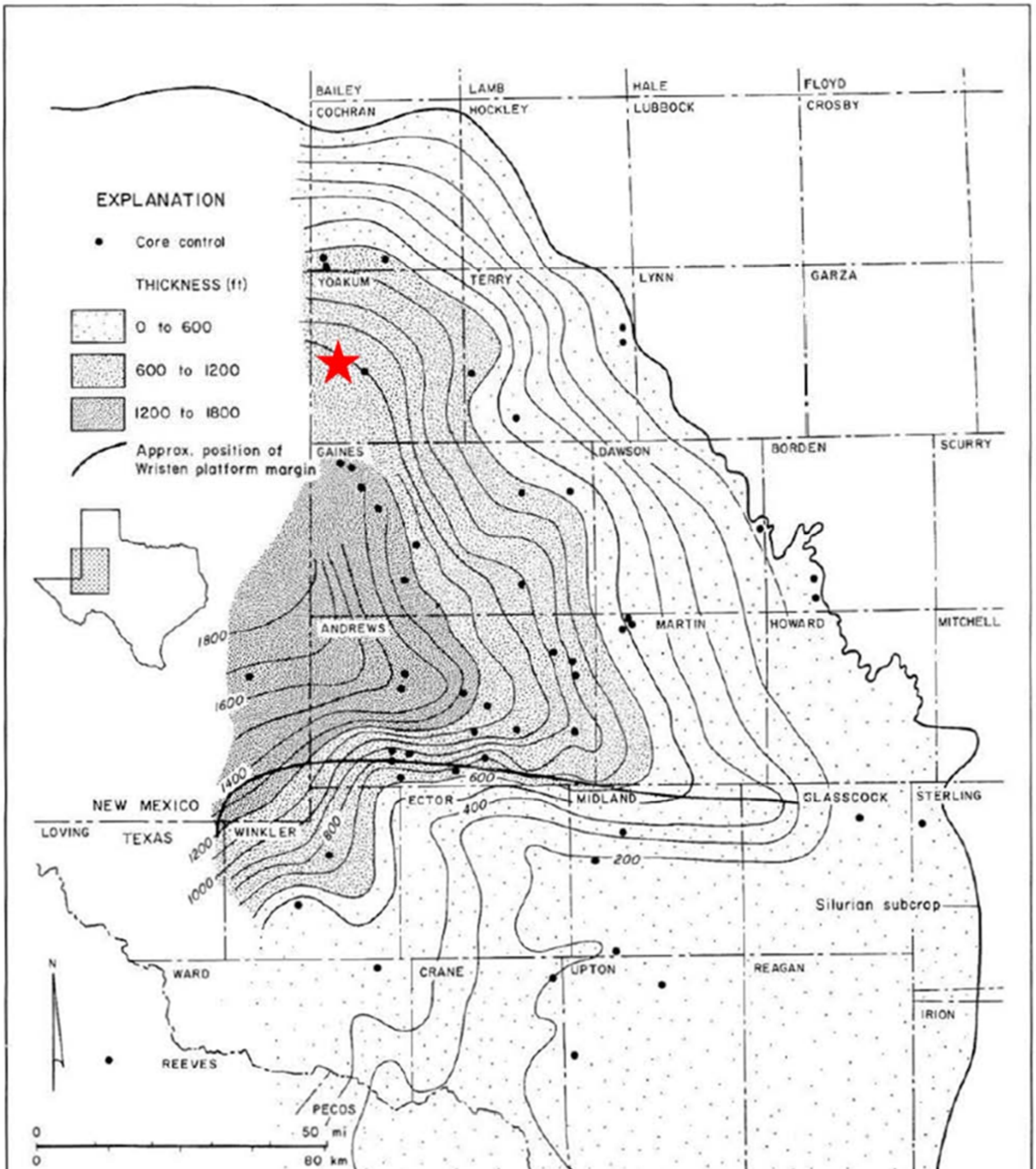


Figure 6 – Thickness map of the Silurian system which composes the Fusselman and Wristen group

Regional Faulting

A major uplift that began in the Pennsylvanian to the south, the Central Basin Platform, ceased in Wolfcampian time, which caused a regional unconformity of the underlying formations (Hoak, Sundberg, and Ortoleva). Faulting on the Northwest Shelf can be seen through high angle basement faults that tend to die within the Pennsylvanian strata. These faults predominately represent contractional (thrust) faults that were initiated during the Pennsylvanian as a result of regional tectonics. Hydrocarbon traps within the Wristen group are primarily anticlinal structures dependent upon reservoir development (Broadhead, 2005).

Site Characterization

The PAV #1 well is located in Section 452, Block D, John H. Gibson Survey, in Yoakum County, Texas. Stakeholder owns the 200-acre surface tract where the plant and PAV #1 well are located. The following discusses the geological character of this site.

Stratigraphy and Lithologic Characteristics

Figure 7 depicts an open hole log from an offset well (API No. 42-501-33943) to the PAV #1 well indicating the injection and primary upper confining zone.

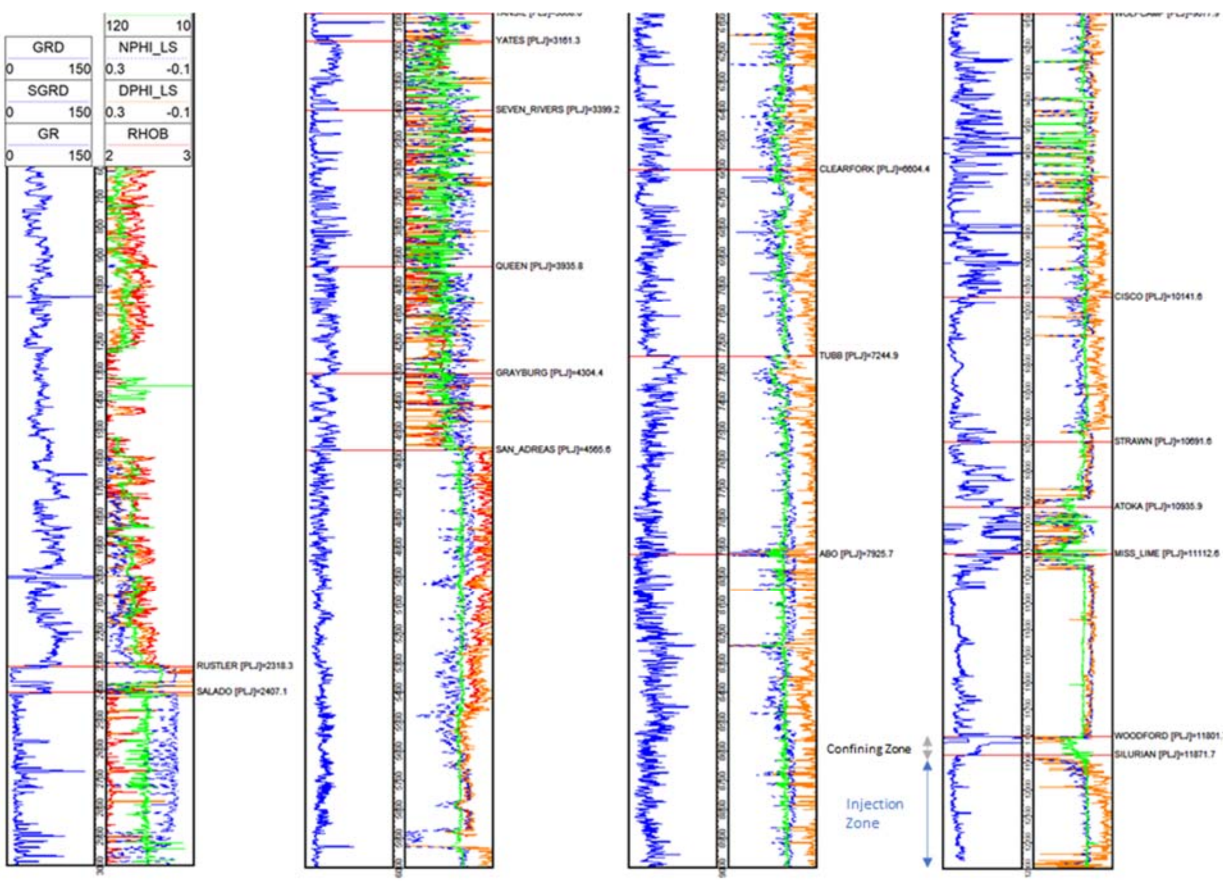


Figure 7 – Type Log (42-501-33943) with tops, confining and injection zones depicted

Upper Confining Interval - Woodford Shale

The Woodford is a late Devonian-aged organic-rich shale deposited as a result of a widespread marine transgression. The flooding event occurred over the majority of the Permian basin, which produced a low-relief blanket-like shale deposit of the Woodford. Two major lithofacies found within the Woodford are black shale and siltstone. Nutrient-rich surface waters promoted the decay of abundant organic matter within the Woodford, resulting in a high total organic carbon ("TOC") percentage. The Woodford shale acts as the primary source and sealant rock for the Wristen Group (Comer, 1991).

Figure 8 is a description of a core sample taken in Lea County, New Mexico just southwest of the PAV #1 well location. This sample is referenced as C9 in the reference map with the blue star representing the PAV #1 well. In the core description, black shale with abundant illitic clays is observed in the upper section, and medium gray dolomitic siltstone found in the basal section. The mineralogic and lithologic properties recorded in this description serve as excellent sealant characteristics to prohibit any injected fluids from migrating above the injection interval.

The Woodford at the PAV #1 well location is encountered at 11,965 ft and is approximately 87 ft thick.

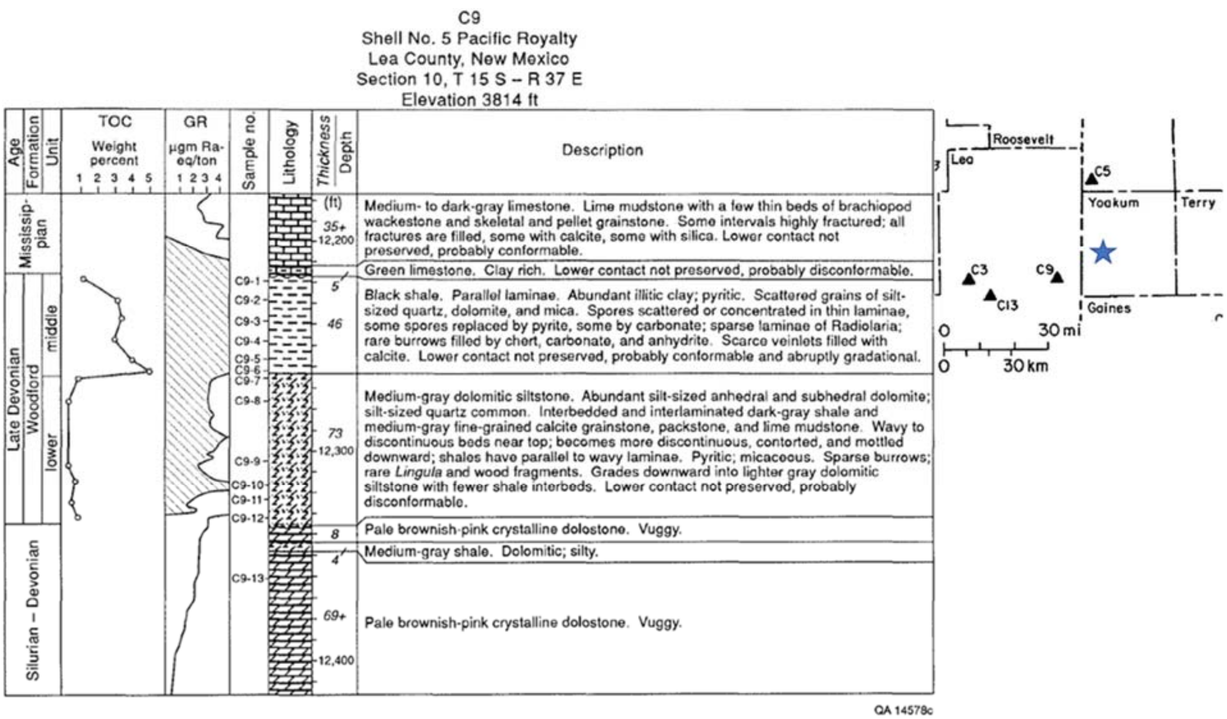


Figure 8 – Core description of the Woodford Shale and Upper Silurian (Ruppel and Holtz, 1994)

Injection Interval – Fasken Formation

The PAV #1 well reaches total depth in the Fasken formation (Silurian in age), directly below the Woodford formation. Dolomites at the top of the Fasken formation underwent multiple leaching and diagenetic episodes which developed secondary porosity. This is evidenced in offset wells by the practice of only drilling through the top 30 feet of the Fasken, in anticipation of encountering the best reservoir quality. In Figure 8, the uppermost Silurian section is described as 'vuggy dolostone' in the core description. Beds below the top

of the Fasken section may also have similar petrophysical attributes if exposed to multiple diagenetic events. Solution-collapse and karst breccia horizons can be found within inner platform deposits, some occurring as much as 100 ft below the Fasken top (Ruppel and Holtz, 1994).

Porosity/Permeability Development

Porosity in the Fasken formation at the PAV #1 well location is typically moldic and intercrystalline associated with leaching of allochem-rich intervals. Porosity is directly related to these leaching events which occurred during and post-deposition, resulting in vugs and karst-like features. Figure 9 provides reservoir information from core data within fields in the Wristen buildup and platform carbonate play. The average porosity of these cores is 7.1% with an average permeability of 45.28 millidarcies (Ruppel and Holtz, 1994). The porosity and permeability described in the offset core data indicate the Fasken formation provides sufficient accessible pore space for the amount of fluid injection proposed.

Using the above values as reference points, an offset porosity log (API No. 42-501-33942) was evaluated. Figure 10 is the product of the petrophysical analysis performed on the offset open hole log shown in Figure 7. A permeability curve was generated from the effective porosity curve using the table in Figure 9 to establish the porosity-permeability relationship. In Figure 10, the majority of the injection interval's porosity and permeability is found at the top of the Fasken formation, which correlates with the diagenetic processes described above. These curves are extrapolated to the injection site and used to establish reservoir characteristics in the plume model.

	Fusselman Shallow Platform Carbonate play	Wristen Buildups and Platform Carbonate play	Thirtyone Ramp Carbonate play	Thirtyone Deep-Water Chert play
Porosity (%)				
Number of data points	33	30	16	35
Mean	7.93	7.10	6.41	14.85
Minimum	1.00	2.70	3.50	2.00
Maximum	17.70	14.00	9.50	30.00
Standard deviation	4.01	2.67	1.75	6.76
Permeability (md)				
Number of data points	21	24	12	33
Mean	11.61	45.28	1.51	8.56
Minimum	0.60	2.90	0.40	1.00
Maximum	84.80	400.00	30.00	100.00
Standard deviation	22.48	99.17	8.36	22.23
Initial water saturation (%)				
Number of data points	24	28	10	31
Mean	26.96	31.55	24.70	31.46
Minimum	10.00	20.00	16.00	10.00
Maximum	50.00	55.00	40.00	45.00
Standard deviation	9.31	10.45	7.39	8.33
Residual oil saturation (%)				
Number of data points	8	13	5	22
Mean	34.06	30.54	21.30	29.17
Minimum	30.00	20.00	9.00	14.00
Maximum	50.00	35.00	35.00	48.20
Standard deviation	6.99	4.61	11.66	9.76
Oil viscosity (cp)				
Number of data points	11	12	5	21
Mean	0.69	1.16	0.33	0.68
Minimum	0.13	0.32	0.04	0.07
Maximum	1.08	2.00	1.00	1.03
Standard deviation	0.81	0.75	0.40	0.42
Oil formation volume factor				
Number of data points	21	22	6	32
Mean	1.57	1.22	1.65	1.50
Minimum	1.05	1.05	1.31	1.30
Maximum	1.91	1.55	1.66	1.73
Standard deviation	0.28	0.14	0.48	0.16
Bubble-point pressure (psi)				
Number of data points	9	9	5	19
Mean	2,272	1,055	3,750	2,752
Minimum	798	450	2,660	1,755
Maximum	4,050	2,600	4,440	4,656
Standard deviation	1,300	689	756	667

Figure 9 – Table of reservoir properties found within the Wristen buildups and platform plays (Ruppel and Holtz, 1994)

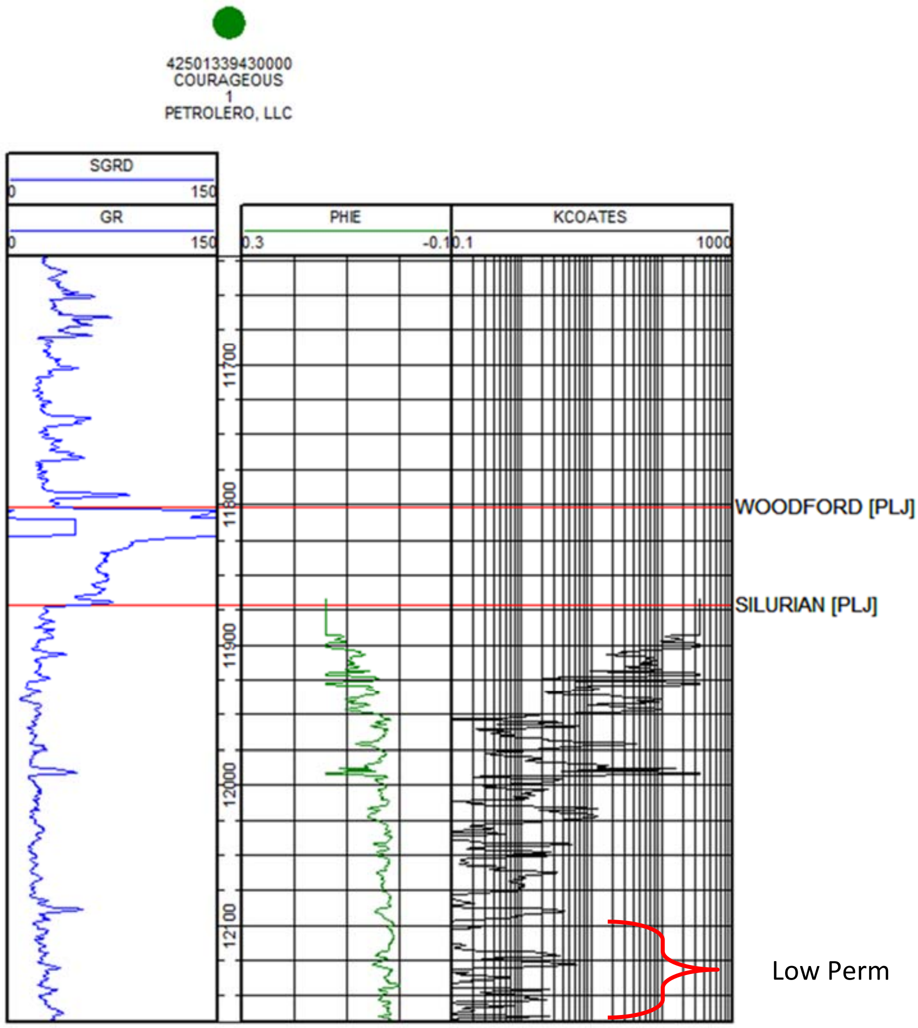


Figure 10 – Offset open hole log (42-501-33943) with effective porosity (green) and permeability (black)

Formation Fluid

Four wells were identified through a review of chemical analyses of oil-field brines from the U.S. Geological Survey National Produced Waters Geochemical Database v2.1 within the Devonian, Silurian-Devonian, or Fusselman formations within 20 miles of the PAV #1 well. The location of these wells is shown in Figure 11. Water chemistry analyses conducted on oil-field brines in Gaines County, as reported to the Texas Water Development Board, provided additional data on Devonian and Silurian reservoir fluids. Results from the synthesis of these two sources are provided in Table 1. The fluids have greater than 20,000 parts per million ("ppm") total dissolved solids, therefore these aquifers are considered saline. These analyses indicate the in-situ reservoir fluid of the Devonian, Silurian, and Fusselman formations are compatible with the proposed injection fluids.

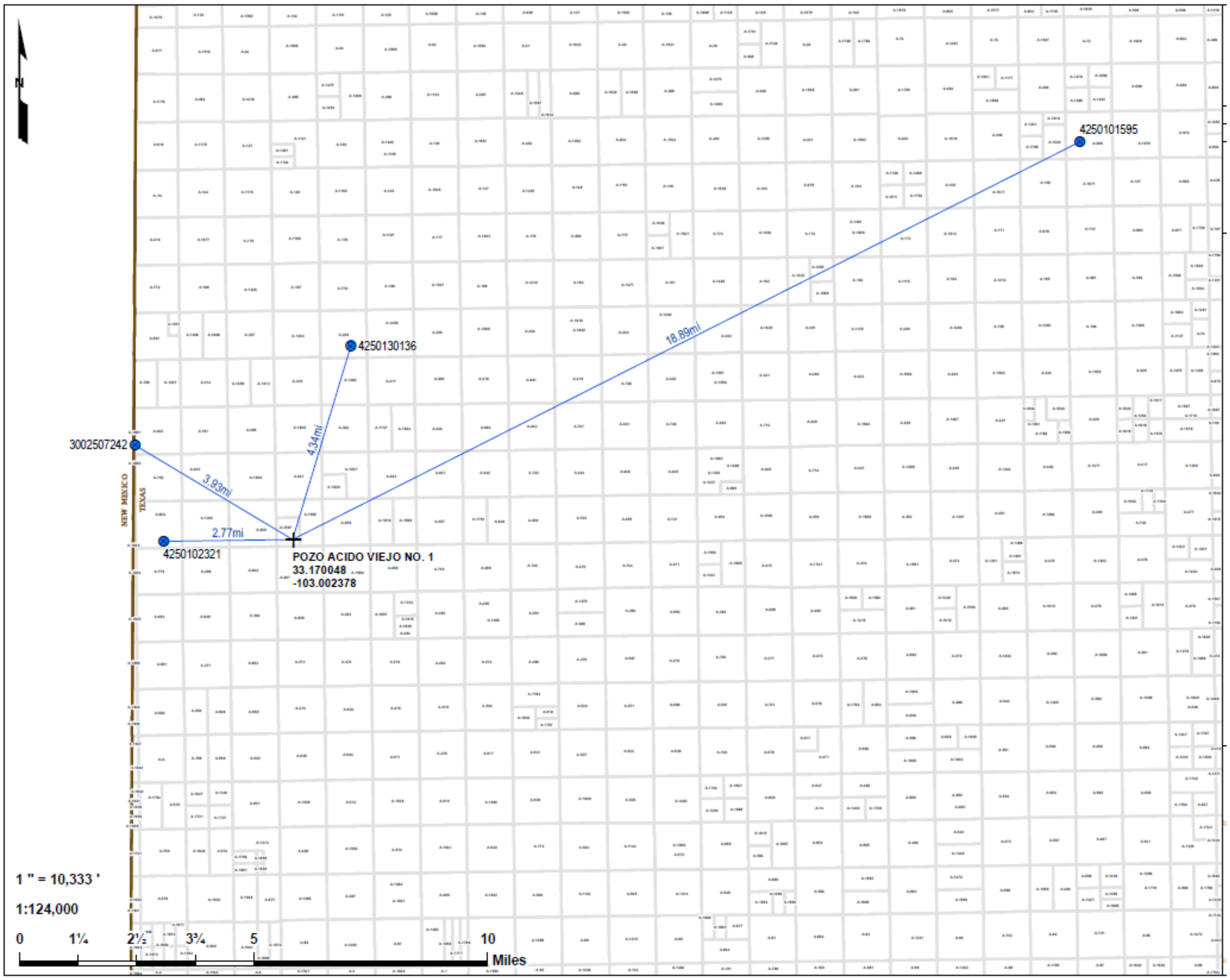


Figure 11 – Offset wells used for Formation Fluid Characterization

Table 1 – Analysis of Silurian-Devonian age formation fluids from nearby oil-field brine samples

Measurement	Average	Low	High
Total Dissolved Solids (ppm)	51,933	23,100	81,770
pH	7.2	7.0	7.3
Sodium (ppm)	18,550	7,426	25,377
Calcium (ppm)	2,195	1,010	2,760
chloride (ppm)	27,250	12,810	43,800

Fracture Pressure Gradient

Fracture pressure gradient was estimated using Eaton's equation. Eaton's equation is commonly accepted as the standard practice for the determination of fracture gradients. Poisson's ratio ("ν"), overburden gradient ("OBG"), and pore gradient ("PG") are all variables that can be changed to match the site-specific injection zone. Through literature review and industry standards, we are able to determine the expected fracture gradient. First, 1.05 psi/ft and 0.465 psi/ft were assumed for both the overburden and pore gradients, respectively. These values are considered best practice values when there are no site-specific numbers available. For limestone/dolomite rock, the Poisson's ratio to be assumed to be 0.3 through literature review (Molina, Vilarras, Zeidouni 2016). Using these values in the equation below, a fracture gradient of 0.72 psi/ft was calculated. A 10% safety factor was then applied to this number resulting in maximum allowed bottom hole pressure of 0.64 psi/ft. This was done to ensure that the injection pressure would never exceed the fracture pressure of the injection zone.

For the upper confining interval, a similar fracture gradient as the limestone was calculated. Shale has an increased chance to vertically fracture if the injection interval is fractured (Molina, Vilarras, Zeidouni 2016), so assuming a Poisson's ratio equal to the injection interval was used as a conservative estimate. The lower confining zone was assumed to be of a similar matrix to that of the injection interval, with the key difference being that the formation is much tighter (lower porosity/permeability). The Poisson's ratio was assumed to be slightly higher in this rock. As seen in Table 2, the fracture gradient is slightly higher than the upper zones.

Table 2 – Fracture Gradient Assumptions

	Injection Interval	Upper Confining	Lower Confining
Overburden Gradient (psi/ft)	1.05	1.05	1.05
Pore Gradient (psi/ft)	0.465	0.465	0.465
Poisson's Ratio	0.30	0.30	0.31
Fracture Gradient psi/ft	0.72	0.72	0.73
FG + 10% Safety Factor (psi/ft)	**0.64**	**0.64**	**0.66**

The following steps were taken to calculate fracture gradient:

$$FG = \frac{\nu}{1-\nu}(OBG - PG) + PG$$

$$FG = \frac{0.3}{1-0.3}(1.05 - 0.465) + 0.465 = 0.72$$

$$FG\ with\ SF = 0.72\ \times (1 - 0.1) = \mathbf{0.64}$$

Lower Confining Zone – Fusselman Formation

The low-permeability Fusselman Formation will act as the lower confining unit for the injection interval. Figure 10 shows the tight limestone rock in the lower section that was not exposed to leaching diagenesis. Porosity in the lower section can range from 2-3% with permeabilities below 1 millidarcy. These petrophysical characteristics represent ideal sealing properties to prohibit any migration of injected fluid outside of the injection interval.

Local Structure

Regional structure in the area of the PAV #1 well is dictated by carbonate buildups and structural events causing anticlinal to synclinal features throughout the area. The PAV #1 well is specifically located at the base of a syncline with anticlinal features to the north, west, and east. Figure 12 is a structure map of the Silurian formation of subsea depths with the star representing the location of the PAV #1 well. The red and blue lines represent the cross-section reference lines.

Faulting can be seen to the west of the PAV #1 well location, which set up the hydrocarbon trap for the Bronco field. Figures 13 and 14 are north-south and west-east structural cross sections showing the structural dips. As seen in these figures, the Woodford is laterally present above the injection interval, alleviating risk of erosion of the upper sealant formation.

Larger versions of Figures 12, 13 and 14 are provided in Appendix A.

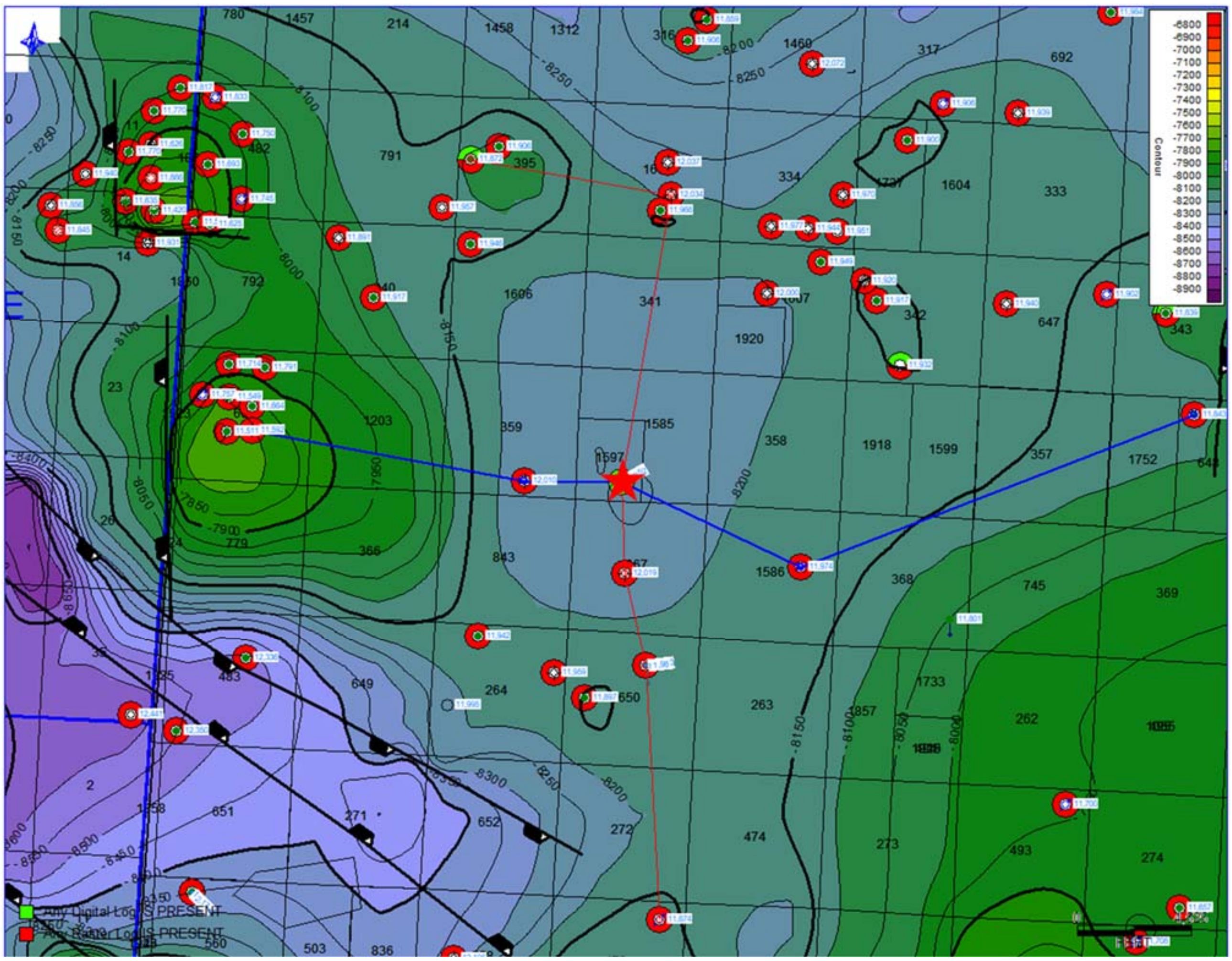


Figure 12 – Silurian Structure Map (subsea depths)

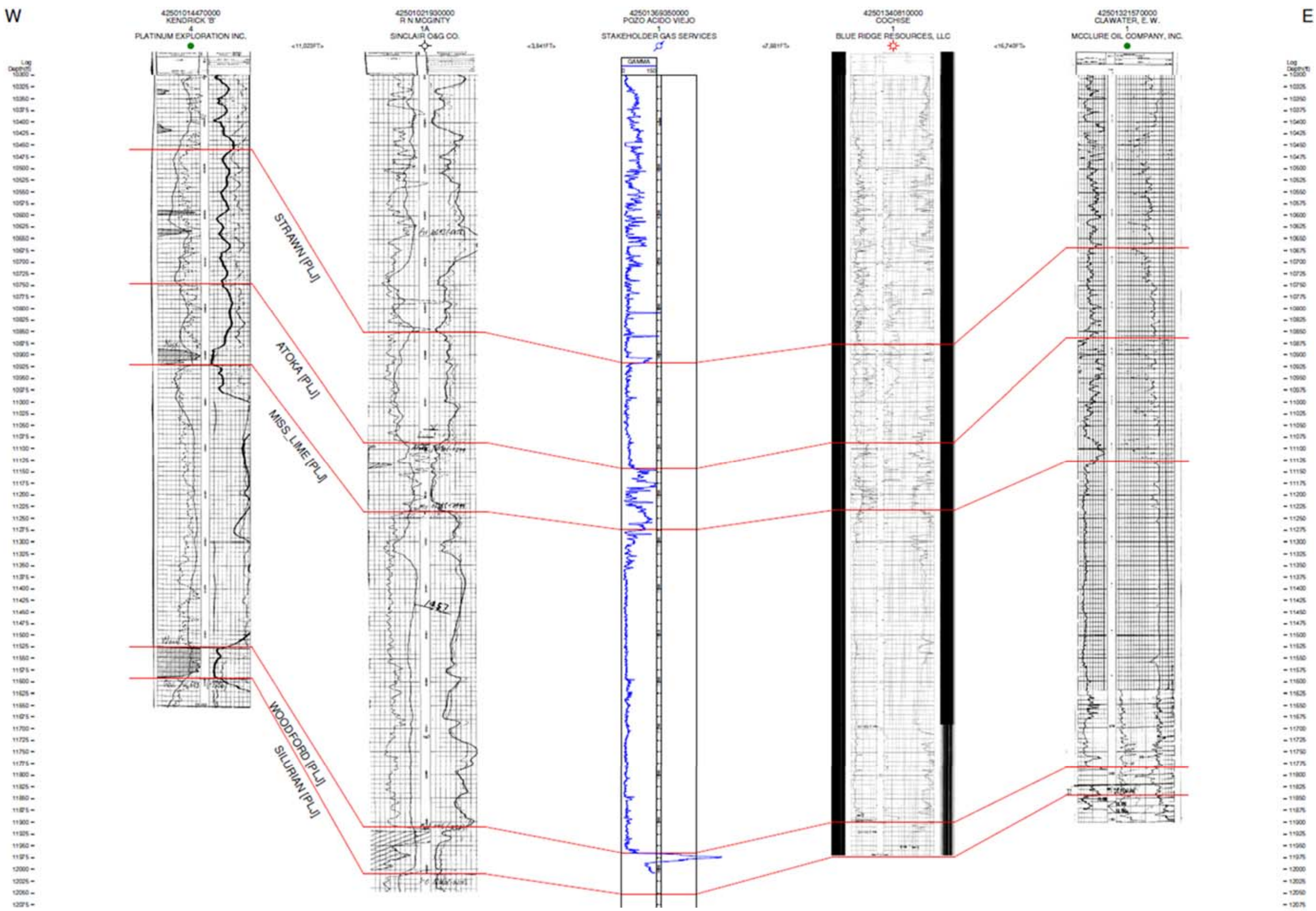


Figure 13 – Structural West-East Cross Section

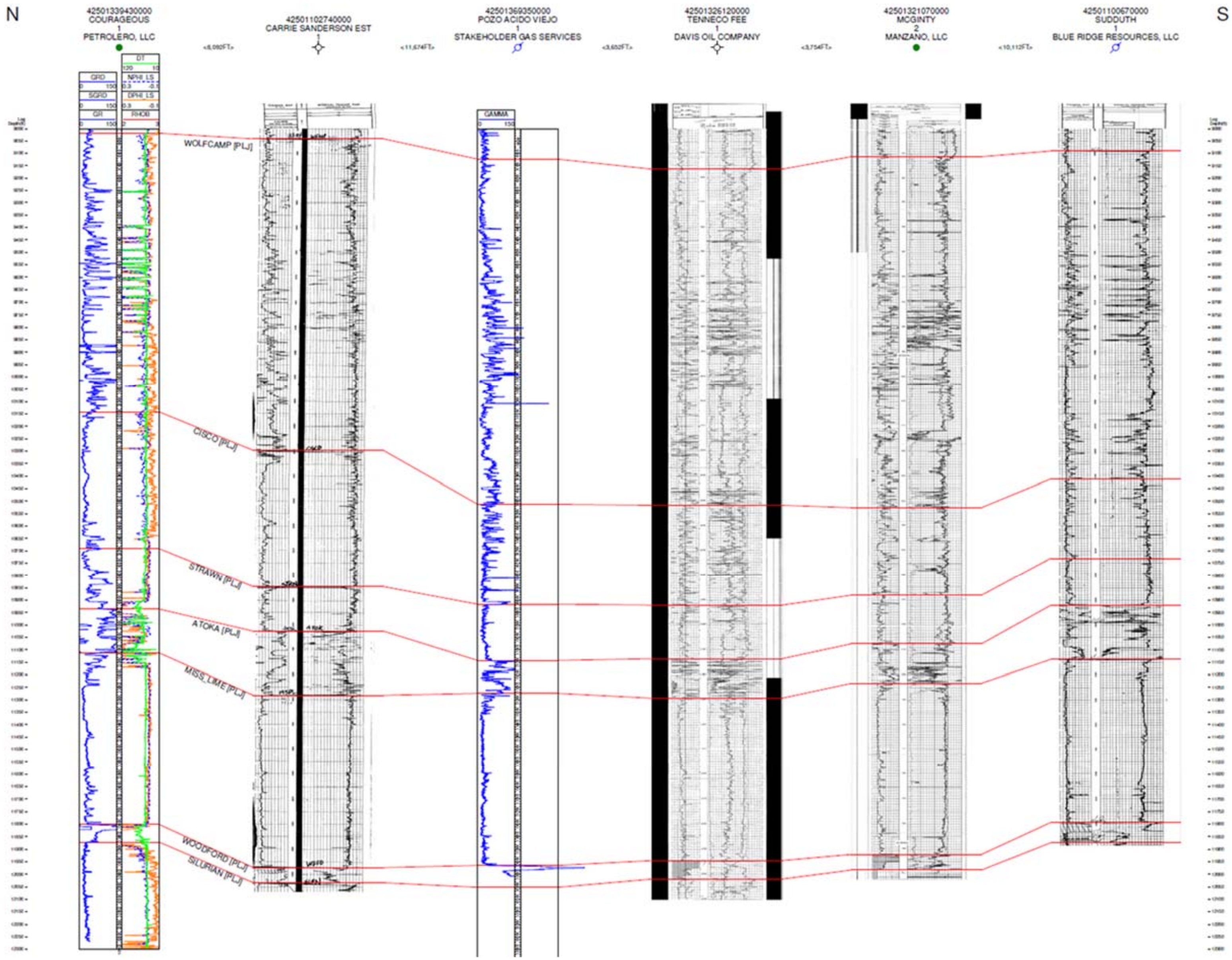


Figure 14 – Structural North-South Cross Section

Injection and Confinement Summary

The lithologic and petrophysical characteristics of the Fasken formation at the PAV #1 well location indicate the formation has sufficient thickness, porosity, permeability, and lateral continuity to accept the proposed injection fluids. The Woodford formation shale at the PAV #1 well has low permeability and is of sufficient thickness and lateral continuity to serve as the upper confining zone. Beneath the injection interval, the low permeability, low porosity Fusselman formation is unsuitable for fluid migration and serves as the lower confining zone. Although few wells penetrate the lower confining zone in the area of the PAV #1, it can be expected that lateral deposition of the tight carbonate found in the lower confining zone to be extensive around the PAV #1 location based on lack of exposure events in that time of deposition. Additionally deeper, laterally continuous formations, including the Montoya and Simpson Group, provide additional confinement.

Groundwater Hydrology

Yoakum County falls within the boundary of the Sandy Land Underground Water Conservation District. Three aquifers are identified by the Texas Water Development Board's *Aquifers of Texas* report in the vicinity of the proposed PAV #1 well: the Dockum Aquifer, Edwards-Trinity Aquifer, and Ogallala Aquifer (George, Mace and Petrossian, 2011). Table 3 references the aquifers' positions in geologic time and the associated geologic formations. A schematic cross section in Figure 15, near the proposed PAV #1 well, illustrates the structure and stratigraphy of these water-bearing formations. Groundwater flow direction is the same for the three aquifers, generally from northwest to southeast, Figure 16 (Teeple, et al., 2021).

Table 3 – Geologic and hydrogeologic units with accompanying lithologic descriptions near Gaines, Terry and Yoakum Counties, Texas (Teeple, et al. 2021)

Era	Period	Epoch or series	Geologic unit group or formation	Lithologic descriptions	Hydrogeologic unit
Cenozoic	Tertiary	Pliocene	Ogallala Formation	Gravel, sand, silt, and clay	High Plains aquifer system (Ogallala aquifer)
		Miocene			
Mesozoic	Cretaceous[1]	Comanchean Series	Washita Group[2]	Shale and limestone	Edwards-Trinity (High Plains) aquifer system
			Fredericksburg Group	Clay, shale, and limestone	
			Trinity Group	Sand and gravel	
	Triassic	Upper	Dockum Group	Siltstone, mudstone, shale, and sandstone	Dockum aquifer

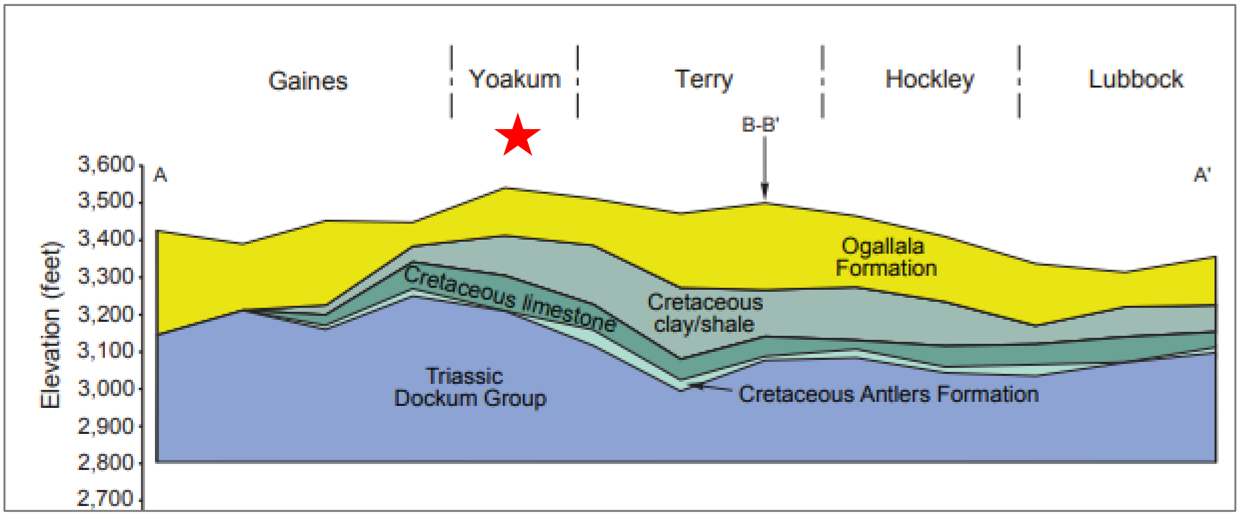


Figure 15 – NW-SE Cross Section of aquifers in the PAV #1 well area (George, Mac and Petrossian, 2011)

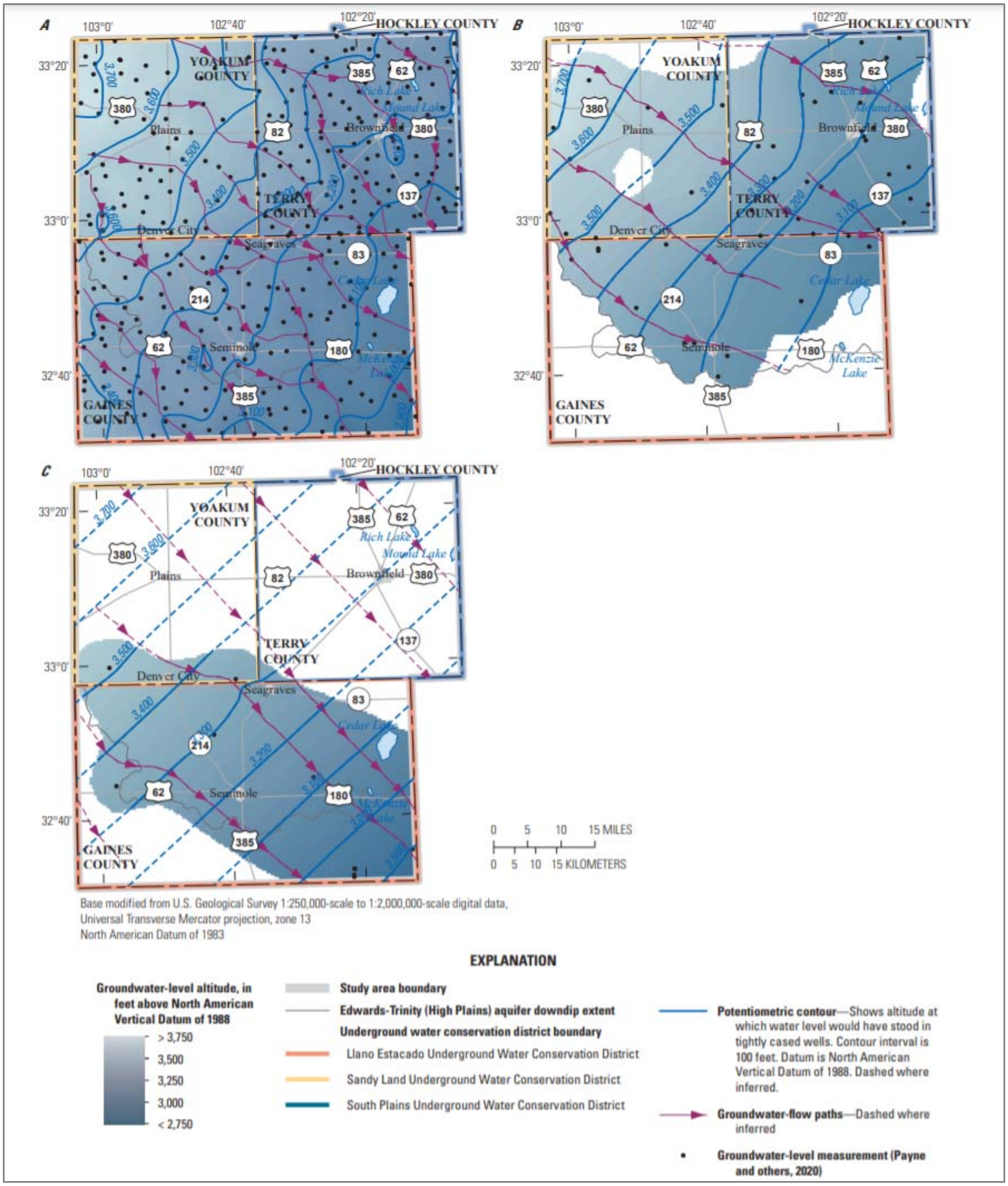


Figure 16 – Potentiometric surfaces from wells completed in A, Ogallala aquifer, B, the Edwards-Trinity aquifer and C, the Dockum aquifer (George, Mace and Petrossian, 2011).

The Dockum Aquifer is the oldest of the three aquifers, formed from Triassic-age Dockum Group sediments, and underlies the Cretaceous Trinity and Fredericksburg Groups (Teeple, et al., 2021). Figure 17 shows the subsurface and outcrop extent of the Dockum Aquifer. As shown in Figure 18, the total dissolved solids in western Yoakum County exceed 5,000 milligrams per liter ("mg/L"), therefore the aquifer is considered brackish.

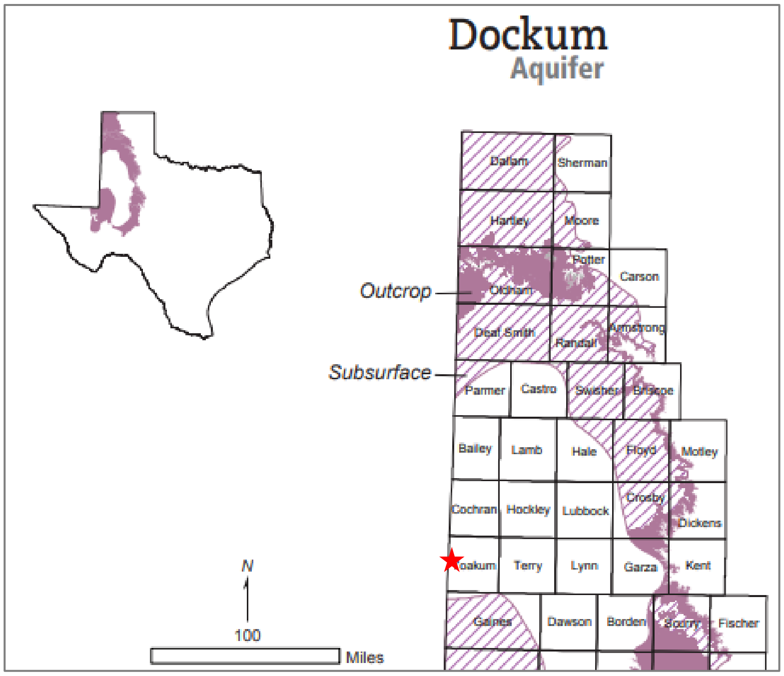


Figure 17 – Regional extent of the Dockum fresh water aquifer (TWDB)

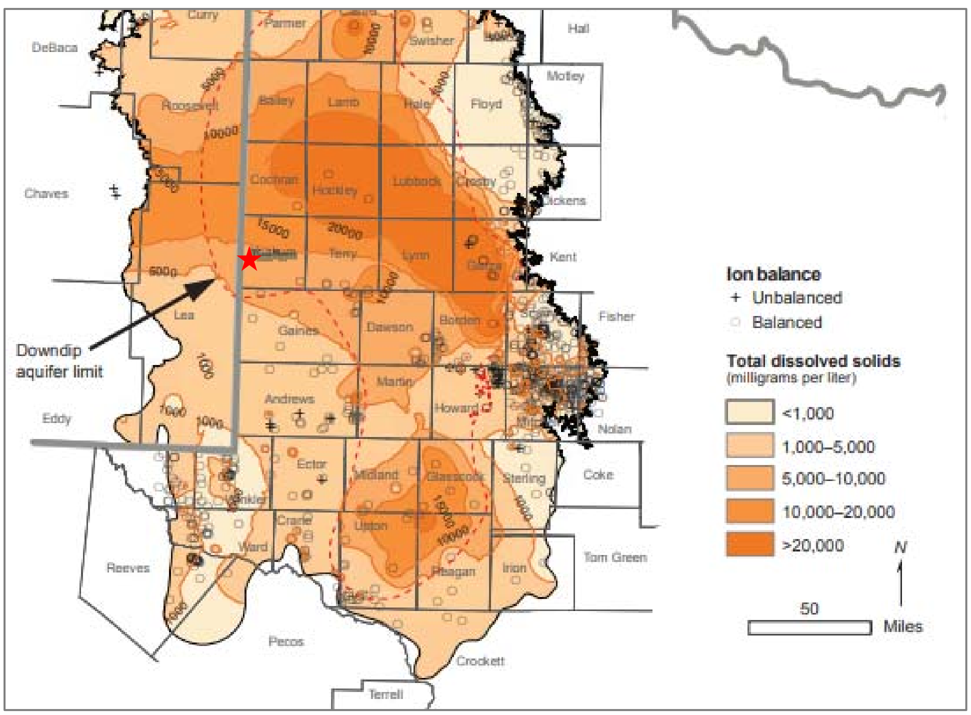


Figure 18 – Total dissolved solids in groundwater from the Dockum Aquifer (Ewing et al, 2008)

The Edwards-Trinity Aquifer is a collection of Cretaceous age sediments – primarily the Trinity Group Antlers formation sandstone and limestones of the Fredericksburg Group, specifically the Comanche Peak and Edwards formations. Figure 19 shows the subsurface and outcrop extent of the Edwards-Trinity Aquifer. Freshwater infiltration to this aquifer is primarily from the overlying Ogallala Aquifer. (George, Mace and Petrossian, 2011).

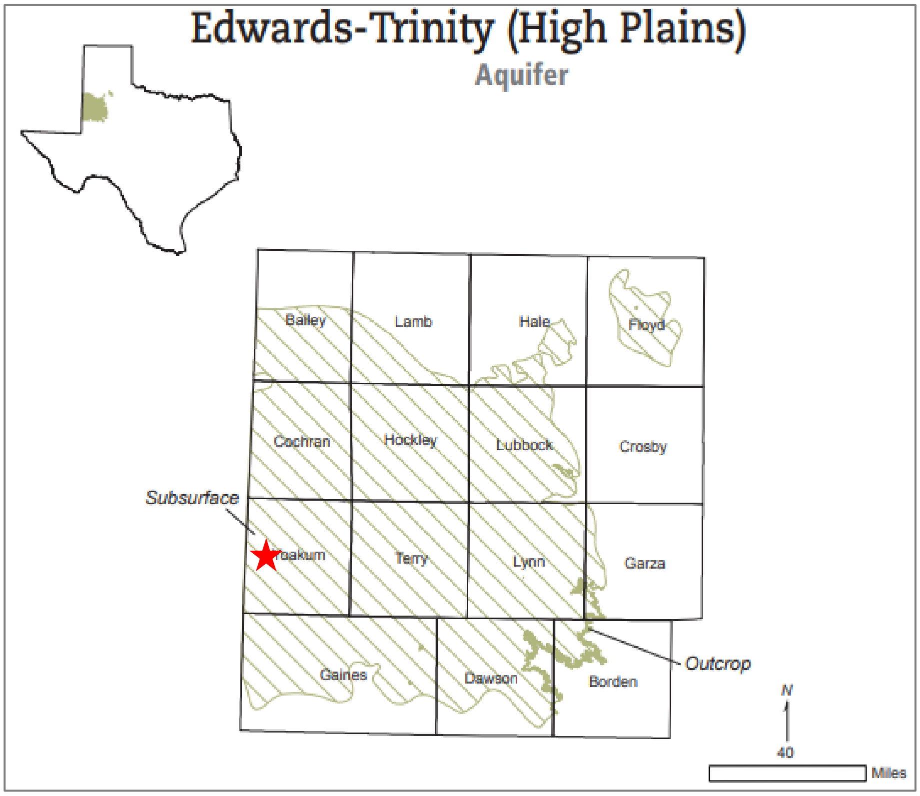


Figure 19 – Regional extent of the Edwards-Trinity fresh water aquifer (George, Mace and Petrossian, 2011)

The Ogallala aquifer consists of sand, gravel, clay and silt sediments (George, Mace and Petrossian, 2011) and produces the majority of the fresh water for Yoakum County. Figure 19 shows the subsurface and outcrop extent of the Ogallala Aquifer.

The base of the deepest aquifer is separated from the injection interval by more than 9,500’ of rock, including 650’ of Salado salt. Though unlikely for reasons outlined in the confinement and potential leaks sections, if migration of injected fluid did occur above the Woodford Shale, thousands of feet of tight sandstone, limestone, shale and anhydrite beds occur between the injection interval and the lowest water-bearing aquifer.

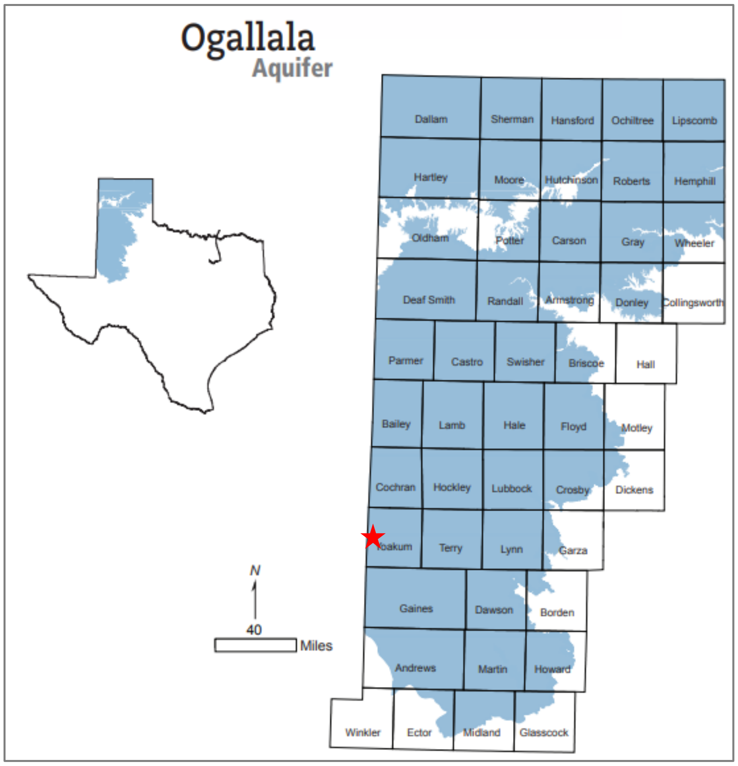


Figure 20 – Regional extent of the Ogallala fresh water aquifer (George, Mace and Petrossian, 2011)

The TRRC's Groundwater Advisory Unit ("GAU") identified the base of Underground Sources of Drinking Water ("USDW") at 2,250 feet at the location of the PAV #1 well. Therefore, there is approximately 9,470 feet separating the base of the USDW and the injection interval. A copy of the GAU's Groundwater Protection Determination letter issued by the TRRC as part of the Class II permitting process for the PAV #1 well is provided in Appendix B.

Description of the Injection Process

Current Operations

The Campo Viejo Facility and its associated PAV #1 well began operating in March of 2019. Since operations began, 2.8 billion cubic feet ("BCF") of treated acid gas ("TAG") has been injected, which equates to 143,483 metric tons of CO_2. Over the life of the injection period, the average daily injection rate has been 2.7 MMSCF/d. The approximate current composition of the TAG stream is as follows:

Table 4 – Gas Composition of Campo Viejo Facility outlet

Component	Mol %
CO2	89.25%
H2S	9.75%
N2	0.58%
Other	0.43%

The Campo Viejo Facility is designed to compress, treat, and process natural gas produced from the surrounding counties in Texas and New Mexico. The gas is dehydrated to remove the water content, then

processed to separate natural gas liquids which are then sold, along with the pipeline quality natural gas, to various customers. TAG is then directly routed from the plant sweeteners to the PAV #1 well. The facility is manned 24 hours per day, 7 days per week.

Planned Operations

Stakeholder anticipates increasing the amount of CO_2 injected into PAV #1 well from the current rate up to 20 MMSCF/d. Additional growth is expected both at Stakeholder facilities and regionally as rising sour gas production and flaring reduction mandates create the need for additional CO_2 and H_2S disposal capacity. Stakeholder plans to inject into this AGI well for a total of 25 years from the start of injection in 2019.

Figure 21 shows a high-level view of the current process flow plus the prospective additional operations over time.

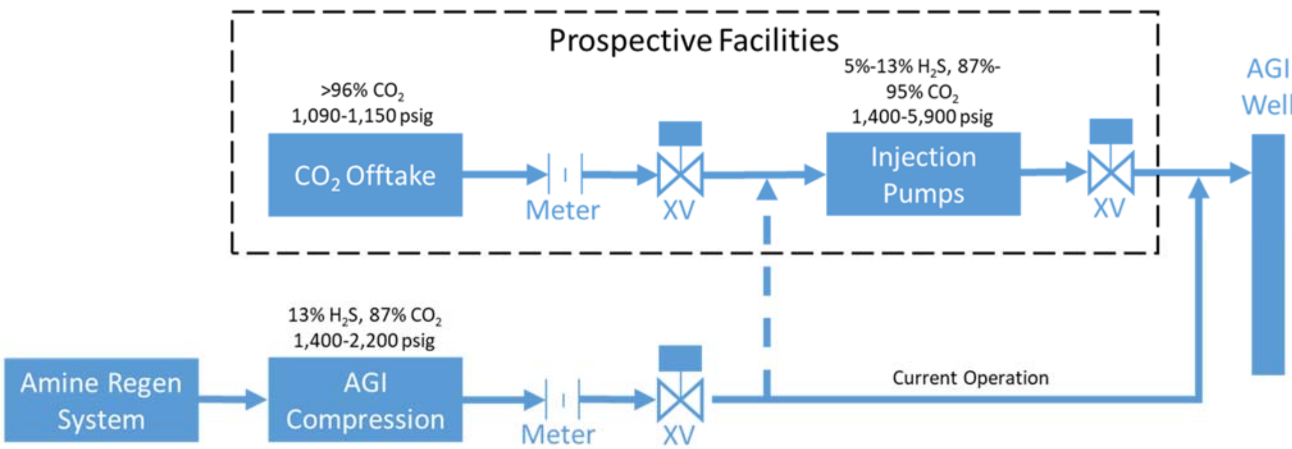


Figure 21 – Campo Viejo Facility Process Flow Diagram

Reservoir Characterization Modeling

The modeling software used to evaluate this project was Computer Modelling Group's GEM 2020.11 ("GEM") simulator. Computer Modelling Group ("CMG") has put together one of the most accurate and technically sound reservoir simulation software packages for conventional, unconventional, and secondary recovery. GEM utilizes equation-of-state ("EOS") algorithms along with some of the most advanced computational methods to evaluate compositional, chemical, and geochemical processes and characteristics to produce highly accurate and reliable simulation models for carbon injection and storage. The GEM model is recognized by the EPA for use in area of review delineation modeling as listed in the Class VI Well Area of Review Evaluation and Corrective Action Guidance document.

The Silurian (Fasken) formation is the target formation for PAV #1 well. The Petra software package was used to create the geologic model of the target formation. The faulting and geologic structure was then imported into GEM and used to create contours for the model grid.
Porosity and permeability estimates were determined using the porosity log from a nearby injector (API No. 42-501-33943) and a petrophysical analysis was performed to correlate porosity values by depth with core porosities as shown in the Holtz paper. The Coates permeability equation was then used to calculate permeability with depth. Both porosity and permeability are assumed to be laterally homogeneous in the reservoir.

The reservoir is assumed to be at hydrostatic equilibrium and initially saturated with 100% brine. An infinite acting reservoir was created to simulate boundary conditions. The gas injectate is composed of H_2S, CO_2, CH_4, and other components as shown in Table 5. Core data from literature review was used to determine residual gas saturation (Ruppel and Holtz, 1994). The modeled composition only takes into consideration the carbon dioxide and hydrogen sulfide as they comprise nearly 99% of total stream. For the initial injection period, these compositions are normalized up to 100%. For the proposed additional injection period, it is expected that a larger portion of the gas added is carbon dioxide, changing the composition to 94% CO_2 and 6% H_2S.

Table 5 – Modeled Initial Gas Composition

Component	Measured Current Composition (mol%)	2019-2022 Model Composition (mol%)	2022-2044 Model Composition (mol%)
H2S (H2S)	9.745	9.844	6.000
Nitrogen (N2)	0.577	0.000	0.000
CO2 (CO2)	89.249	90.156	94.000
Methane (C1)	0.190	0.000	0.000
Ethane (C2)	0.012	0.000	0.000
Propane (C3)	0.028	0.000	0.000
Hexanes Plus (C6+)	0.199	0.000	0.000

Core data from literature review was used to determine relative permeability curves between carbon dioxide and the connate brine within the Silurian-Devonian carbonates (Ruppel and Holtz, 1994). The key inputs used in the model include an irreducible water saturation of 25% and a maximum residual gas saturation of 21%.

The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 19,740 grid blocks per layer. Each grid block has dimensions of 250 feet by 250 feet which results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square-mile area. Each layer in the model was determined by identifying higher permeability zones as targets for injection from the logs and assigning each high permeability and intermediary low permeability zone its own layer. There are a total of 9 layers in the model, representing 5 layers of pay and 4 layers of intermediary low permeability zones. The properties of each of these layers are summarized in Table 6 below.

Table 6 – CMG Model Layer Properties

Layer #	Top (ft)	Thickness (ft)	Perm. (mD)	Porosity
1	11,867	83	168.3	10.4%
2	11,951	16	1.3	3.2%
3	11,968	6	14.1	5.8%
4	11,975	8	1.0	3.2%
5	11,984	14	53.1	6.4%
6	11,999	16	0.8	2.9%
7	12,016	9	6.8	5.1%
8	12,026	213	0.6	2.3%
9	12,240	5	122.1	8.0%

Simulation Modeling

The primary objectives of the model simulation were to:

1) Estimate the maximum areal extent and density drift of the acid gas plume after injection
2) Assess the impact of offset salt water disposal ("SWD") well injection on density drift of the plume
3) Determine the ability of the target formation to handle the required injection rate without fracturing the injection zone
4) Assess the likelihood of the acid gas plume migrating into potential leak pathways

The reservoir is assumed to be an aquifer filled with 100% brine. The salinity of the formation is estimated to be 100,000 ppm, typical for the region. The acid gas stream is primarily composed of CO_2 and H_2S as stated previously. Core data was used to help generate relative permeability curves. Cores, from the literature reviews as previous discussed, that most closely represent the vuggy carbonate seen in this region were identified and the Corey-Brooks equations were used to develop the curves. The lowest residual gas saturation found in the cores was then used for a conservative estimate of plume size. The initial reservoir pressure is 5,601 psi which is equivalent to a 0.465 psi/ft pressure gradient and was determined from offset injection well analysis. The fracture gradient of the injection zone was estimated to be 0.72 psi/ft, which was determined using Eaton's equation. A 10% safety factor was then applied to this number, putting the maximum bottom-hole pressure allowed in the model at 0.65 psi/ft which is equivalent to 7,829 psi.

The model also takes into account offset SWD injection volumes close to the PAV #1 well. A total of 19 offset wells currently injecting into the Devonian were identified within a 5-mile radius of PAV #1 well. Historical injection rates of each of these wells were analyzed and projected into the model. This simulation includes the effect of water injection on the density drift of the plume and bottom hole pressure.

The model runs for a total of 50 years comprised of 25 years of active injection and an additional 25 years of density drift. The model begins the injection period in 2019 when the PAV #1 well first became operational. An injection rate of 7.2 MMSCF/d is assumed during the first 3 years and 3 months (which is higher than the current actual permitted injection rate) to model the maximum available rate and therefore results in a more conservative plume size. After this initial period, it is assumed that the injection rate increases to 20 MMSCF/d for the remainder of the active injection period. At this point, the PAV #1 well stops injection while the offset injectors continue operations during the density drift period (also a conservative assumption).

The maximum plume extent during the 25-year injection period is shown in Figure 22. The final extent after 25 years of density drift after injection ceases is shown in Figure 23.

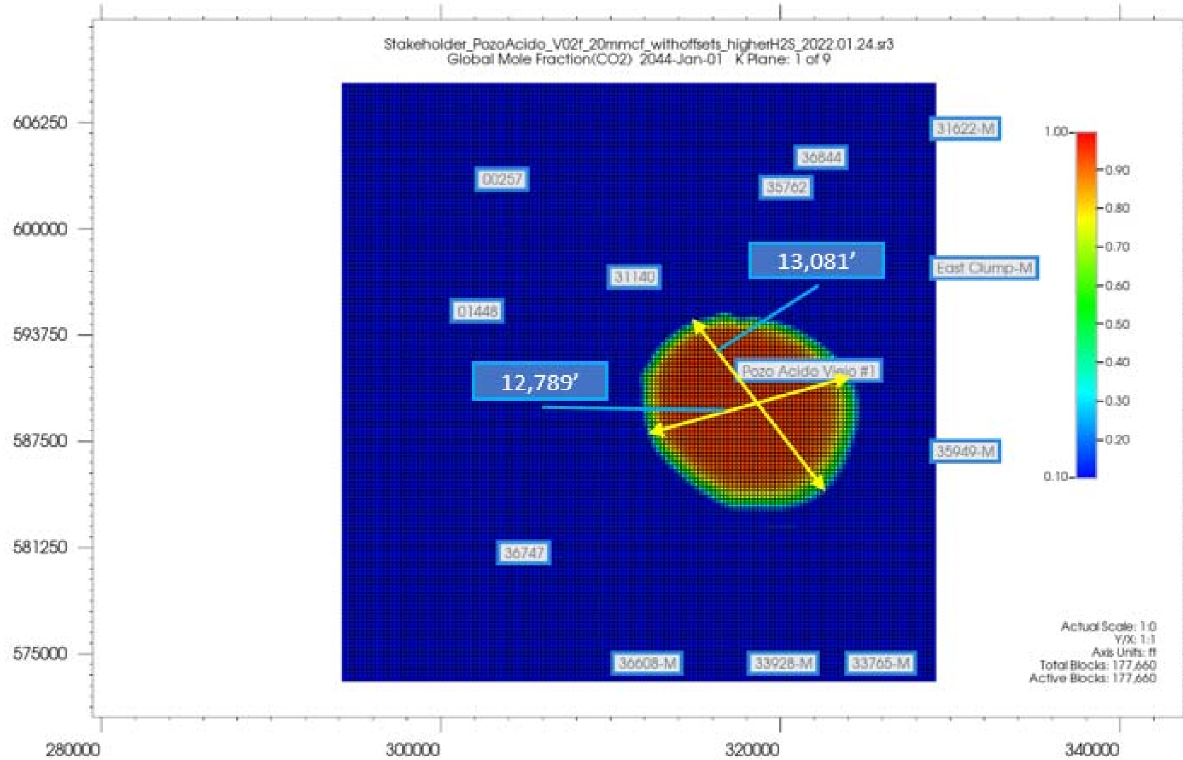


Figure 22 – Areal View Gas Saturation Plume, Year 25 (End of Injection)

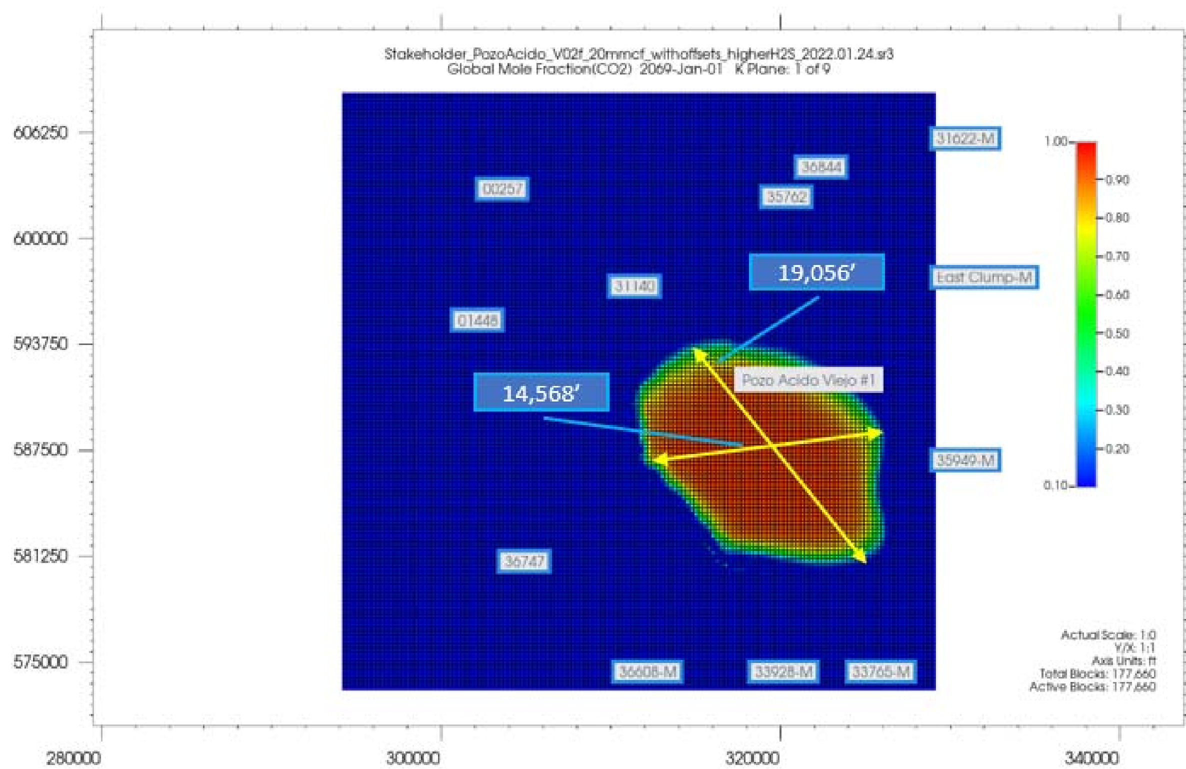


Figure 23 – Areal View Gas Saturation Plume, Year 50 (End of Simulation)

Figure 24 shows the surface injection rate and bottom hole pressure over the injection period and the period of density drift after injection ceases. The bottomhole pressure increases steadily throughout the injection period, reaching a maximum pressure of 5,920 psi as injection ceases. This buildup of 190 psi keeps the bottomhole pressure well below the fracture pressure of 7,829 psi. The maximum surface pressure associated with the maximum bottomhole pressure reached is 2,996 psi, well below the maximum allowable 6,010 psi per the TRRC UIC permit for this well.

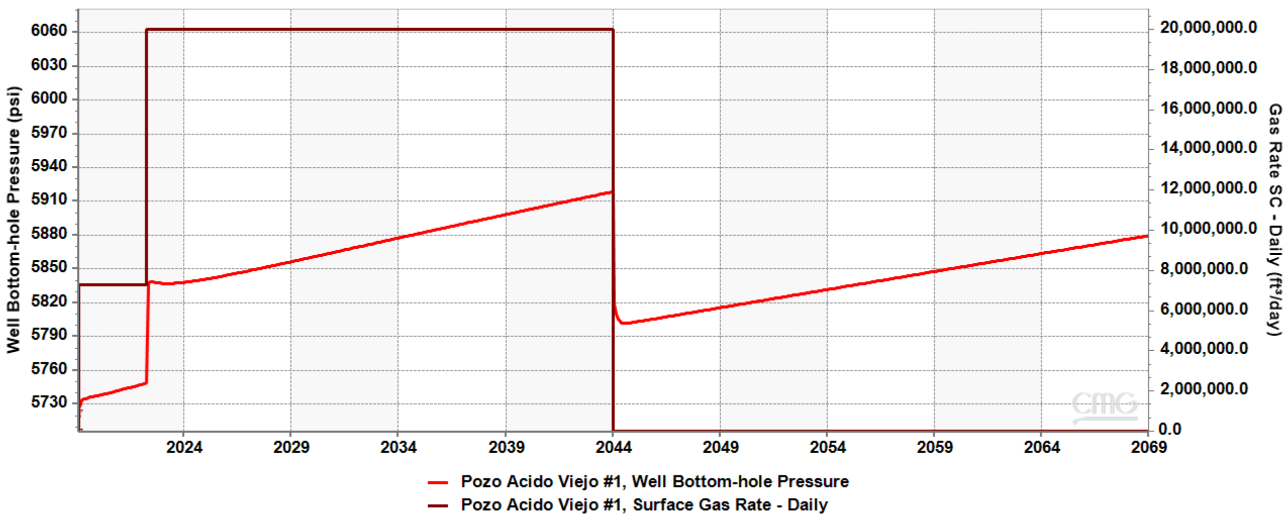


Figure 24 – Well Injection Rate and Bottomhole Pressure over Time

SECTION 3 – DELINATION OF MONITORING AREA

This section discusses the delineation of Maximum Monitoring Area ("MMA") and Active Monitoring Area ("AMA") as described in EPA 40 CFR §98.448(a)(1).

Maximum Monitoring Area

The MMA is defined as equal to or greater than the area expected to contain the free-phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile. Numerical simulation was used to predict the size and drift of the plume. With CMG's GEM software package, reservoir modeling was used to determine the areal extent and density drift of the plume. The model takes into account the following considerations:

- Offset well logs to estimate geologic properties
- Petrophysical analysis to calculate the heterogeneity of the rock
- Geological interpretations to determine faulting and geologic structure
- Offset injection history to adequately predict the density drift of the plume

Acid gas injectate was analyzed by a third-party vendor to determine the initial composition used in the model. The report is provided in Appendix C. The molar composition of the gas is primarily CO_2 with some H_2S and CH_4. The change in molar composition was also incorporated into the model as future predominantly CO_2 streams are added for injection. As discussed in Section 2, the gas was injected into the Silurian formation, specifically, the Fasken formation. The geomodel was created based off the rock properties seen in the Fasken.

The plume boundary was defined by the weighted average gas saturation in the aquifer. A value of 3% gas saturation was used to determine the boundary of the plume. When injection ceases in year 25, the areal expanse of the plume will be 2,473 acres. The maximum distance between the wellbore and the edge of the plume is approximately 0.87 miles to the southeast. After 25 additional years of density drift, the areal extent of the plume is 3,193 acres with a maximum distance to the edge of the plume of approximately 1.35 miles to the southeast.

Figure 25 shows the 25-year plume boundary, the 50-year plume boundary and the MMA.

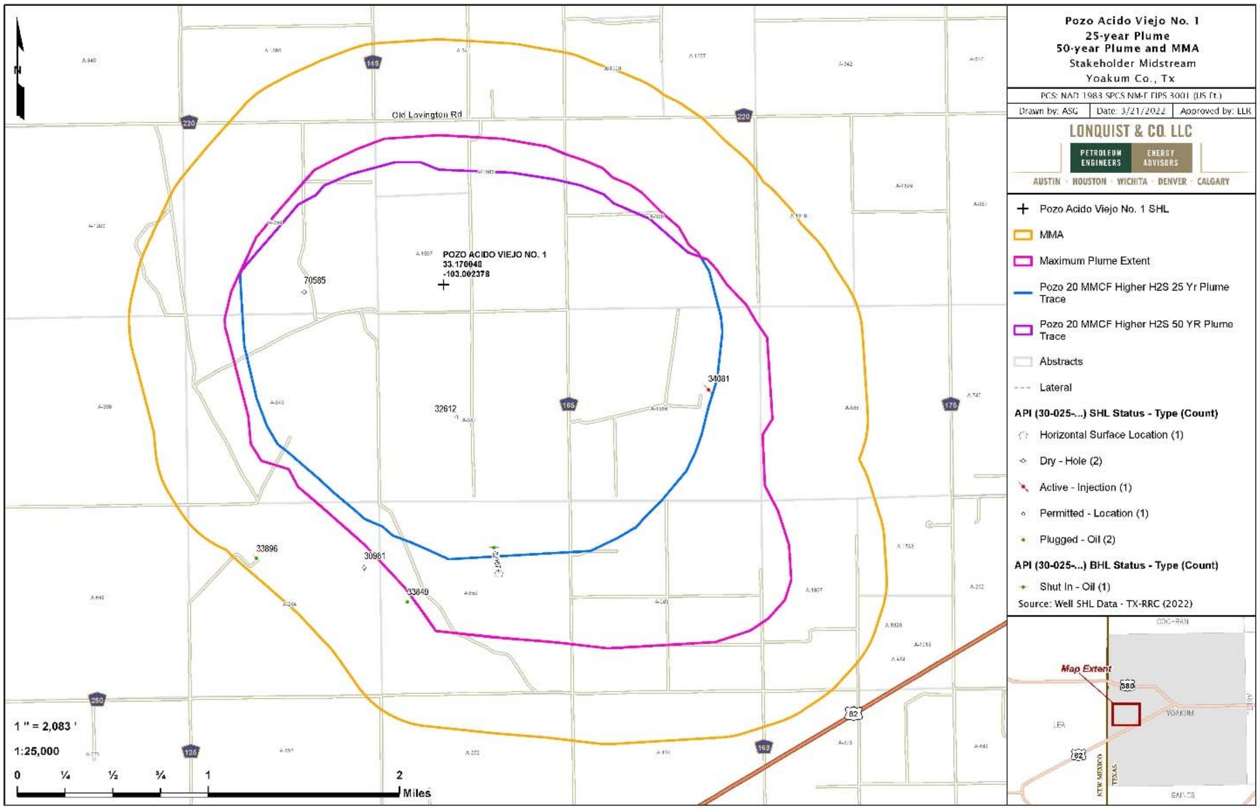


Figure 25 – 25-year plume, 50-year plume, Maximum Monitoring Area

Active Monitoring Area

The AMA is proposed to have the same boundary as the MMA. The only probable leakage paths in the MMA are the wells which penetrate the injection interval and the surface equipment; therefore, the MMA adequately covers the area which should be monitored for CO_2 leakage. Leakage from groundwater wells, faults and fractures, through the confining layer and seismicity events are highly improbable as discussed in the subsequent section and would be covered by the MMA. Further consideration was done in determining the plume boundary to provide the most conservative estimate. Anisotropy of formation was taken into account to allow gas to flow into the highest permeability zones. The zone with the highest permeability would take on the most gas and allow for a larger areal extent of gas.

SECTION 4 – POTENTIAL PATHWAYS FOR LEAKAGE

This section identifies the potential pathways for CO_2 to leak to the surface within the MMA and the likelihood, magnitude and timing of such leakage. The potential leakage pathways are:

- Leakage from surface equipment
- Leakage through existing wells within MMA
- Leakage through faults and fractures
- Natural or Induced Seismicity
- Drilling through the MMA
- Leakage through the confining layer

Leakage from Surface Equipment

The surface facilities at the Campo Viejo Facility are designed for injecting acid gas containing H_2S, and therefore minimize leakage points such as valves and flanges following industry standards and best practices. H_2S gas detectors are located around the facility and the well site. These gas detectors trigger alarms at 10 parts per million ("ppm"). Additionally, all Stakeholder field personnel are required to wear H_2S monitors which are triggered at 5 ppm of H_2S. A shut-in valve is located at the wellhead and is locally controlled by pressure, with a high pressure and low pressure shut-off.

The facilities have been designed and constructed with additional safety systems to provide for safe operations. These systems include Emergency Shutdown ("ESD") valves to isolate portions of the plant and pipeline, pressure relief valves along the pipeline to prevent over pressurization, and flares to allow piping and equipment to be de-pressured rapidly under safe and controlled operating conditions in the event of a leak. Figures 26 and 27 display the facility safety plot plan, taken from the Campo Viejo H_2S Contingency Plan, and show the location of the H_2S monitors in the vicinity of the plant and the PAV #1 well. Should Stakeholder construct additional CO_2 facilities, as indicated in Figure 21, a separate meter will be installed for the additional stream in order to comply with the 40 CFR §98.448(a)(5) measurement. As this meter will be in close proximity to the existing facilities, it will utilize the existing monitoring programs discussed previously. Additionally, CO_2 monitors will be installed near the new meter and tied into the facility monitoring systems.

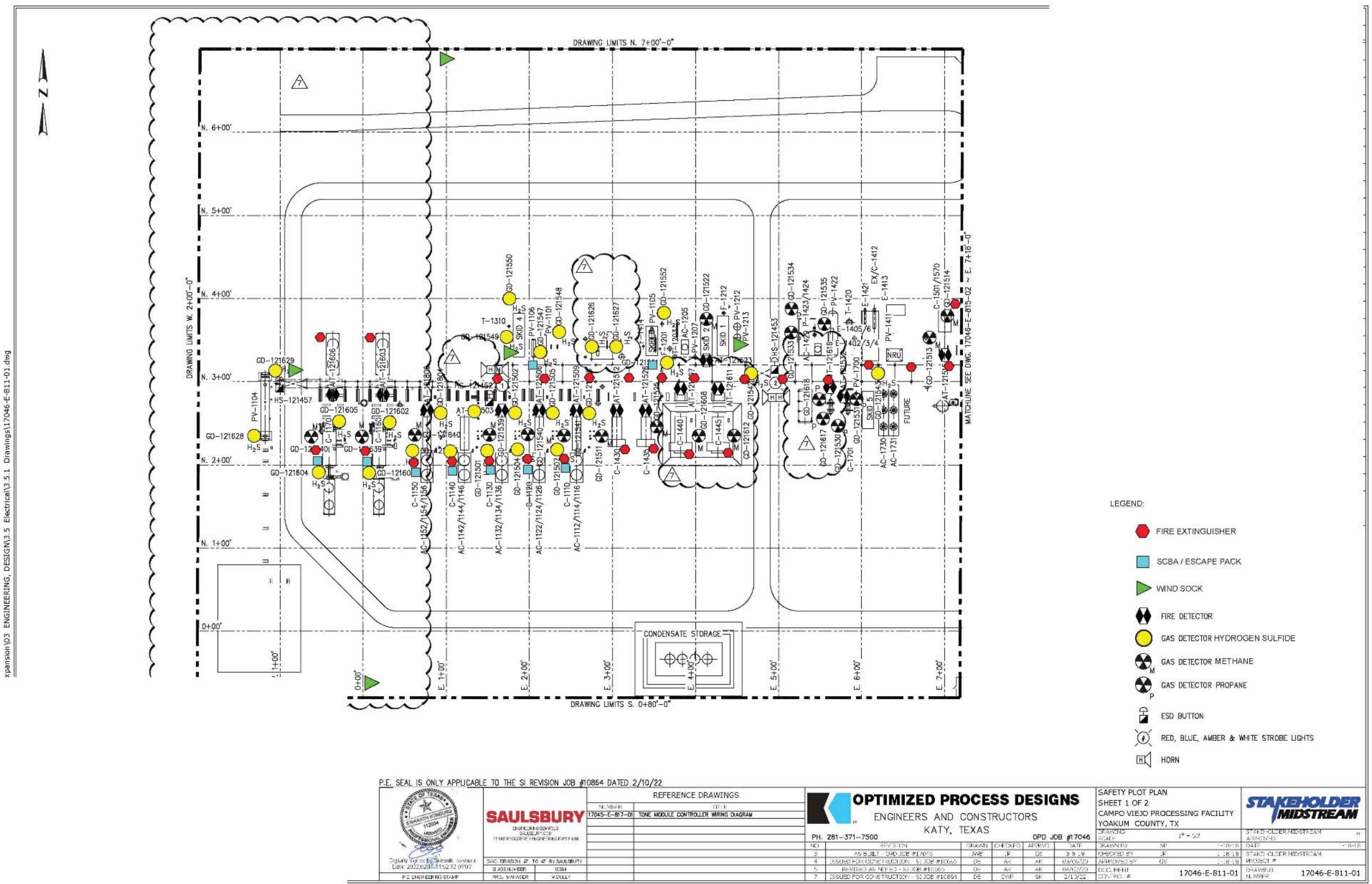


Figure 26 – Site Plan, Campo Viejo Facility – West Section

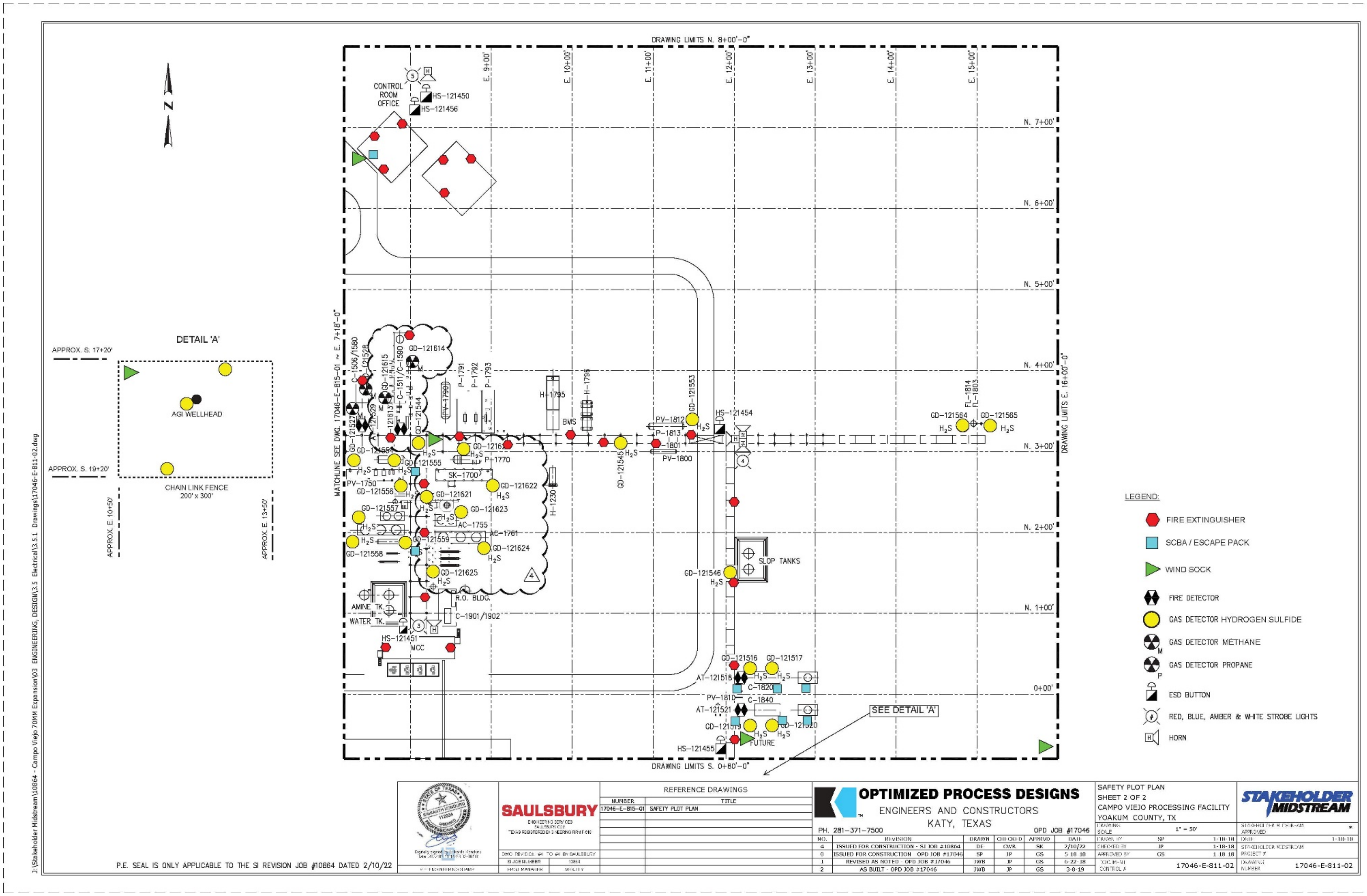


Figure 27 – Site Plan, Campo Viejo Facility and PAV #1 – East Section

With the level of monitoring at the Campo Viejo Facility and the PAV #1 well, any release of H_2S and CO_2 would be quickly identified and the safety systems would quickly minimize the volume of the release. The CO_2 injected into PAV #1 is injected with H_2S at a concentration of 10% (100,000 ppm). At this high level of H_2S concentration, even small leakage would trigger personal and facility H_2S monitors set to alarm at 5 ppm and 10 ppm respectively. If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release, as stated in Section 7 in accordance with 40 CFR §98.448(a)(5).

Larger scale versions of Figures 26 and 27 are provided in Appendix D.

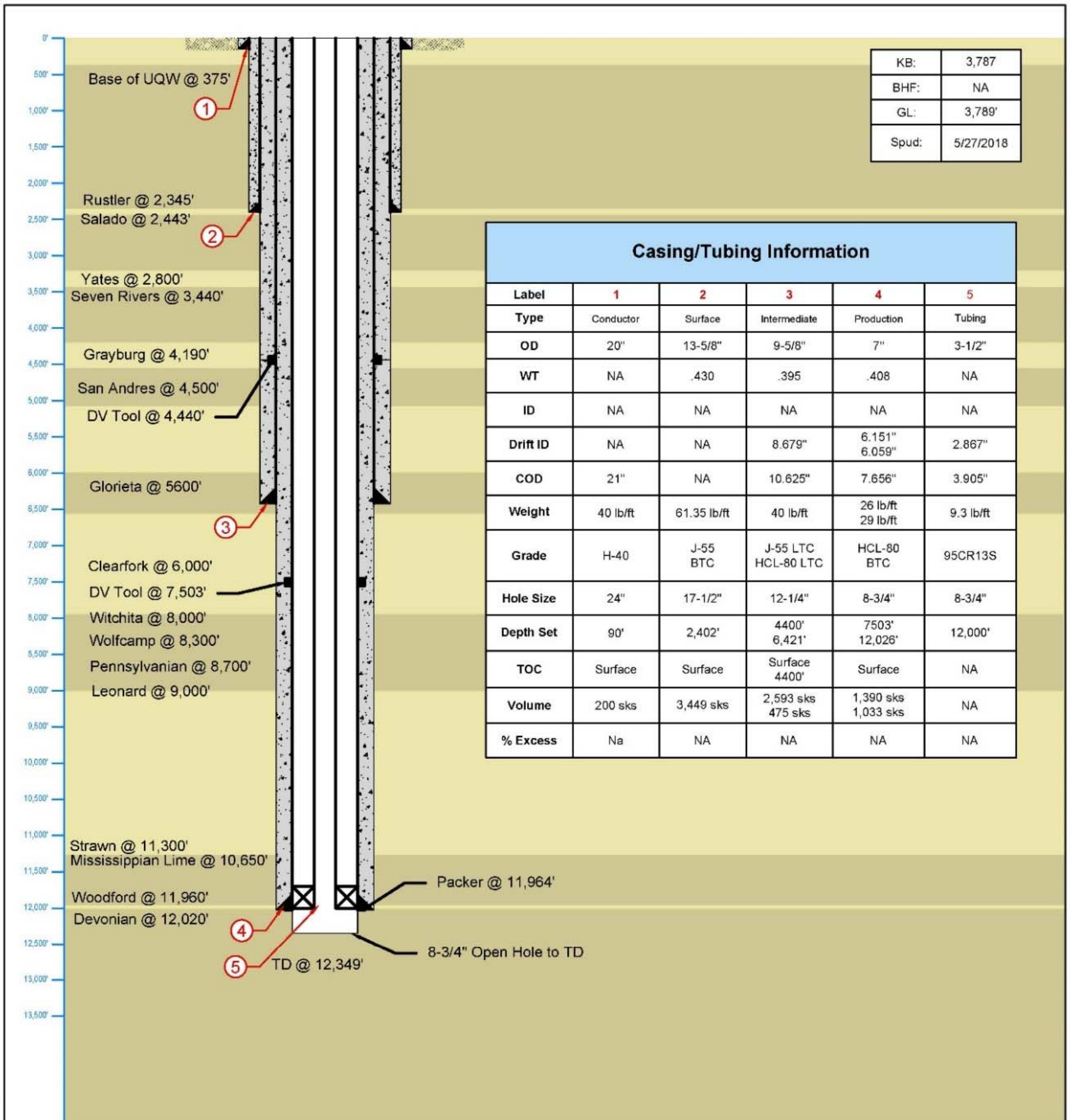
Leakage from Wells in the Monitoring Area

Oil and Gas Operations within Monitoring Area

Historical production within the area of the PAV #1 well has primarily been from the shallower San Andres and Wolfcamp formations. These formations are separated from the Silurian-Devonian interval by 6,400 and 3,300 feet, respectively. Within the plume area of the PAV #1 well, eighty-four (84) wells have been drilled and completed or plugged. 71 of these wells are active, 1 is shut-in, 12 are plugged and abandoned. Seven (7) wells, not including the PAV #1 well, penetrate the injection interval within the MMA. The casing and cementing of each of the seven wells meets the TRRC regulations as specified in TAC § 3.13(a)(4). Five (5) of these wells have been properly plugged and abandoned per TRRC regulations as specified in § 3.14(d). One (1) active injection well (Cochise 1W) is plugged across the Devonian interval and currently injects into the much shallower San Andres. One (1) shut-in oil well (McGinty 2 #2), located more than 1.4 miles from the PAV #1, has not produced since 2015. The plume model shows that the CO_2 will not reach that wellbore until the end of the 25-year injection period. The operator of the well has signed an agreement (effective May 16, 2022) with Stakeholder to plug and abandon this well by December 31, 2022, and in so doing, will plug the well to the standards required by the TRRC.

All of the wells which penetrate the injection interval within the MMA were properly cased and cemented to prevent annular leakage of CO_2 to the surface. The plugged wells are also adequately protected against migration from the Devonian by the placement of the plugs within the wellbores. Additionally, the PAV #1 well was designed to prevent migration from the injection interval to the surface through the casing and cement placed in the well, as shown in Figure 28. Mechanical integrity tests ("MIT") required under TRRC rules are run annually to verify the well and wellhead can hold the appropriate amount of pressure. If the MIT were to indicate a leak, the well would be isolated and the leak mitigated quickly to prevent leakage to the atmosphere.

A map of all wells within the MMA is shown in Figure 29. Figure 30 shows only those wells which penetrate the injection interval. The MMA review maps, a summary of all the wells in the MMA and detailed wellbore schematics for those wells which penetrate the injection interval are provided in Appendix D.



KB:	3,787
BHF:	NA
GL:	3,789'
Spud:	5/27/2018

Casing/Tubing Information

Label	1	2	3	4	5
Type	Conductor	Surface	Intermediate	Production	Tubing
OD	20"	13-5/8"	9-5/8"	7"	3-1/2"
WT	NA	.430	.395	.408	NA
ID	NA	NA	NA	NA	NA
Drift ID	NA	NA	8.679"	6.151" 6.059"	2.867"
COD	21"	NA	10.625"	7.656"	3.905"
Weight	40 lb/ft	61.35 lb/ft	40 lb/ft	26 lb/ft 29 lb/ft	9.3 lb/ft
Grade	H-40	J-55 BTC	J-55 LTC HCL-80 LTC	HCL-80 BTC	95CR13S
Hole Size	24"	17-1/2"	12-1/4"	8-3/4"	8-3/4"
Depth Set	90'	2,402'	4400' 6,421'	7503' 12,026'	12,000'
TOC	Surface	Surface	Surface 4400'	Surface	NA
Volume	200 sks	3,449 sks	2,593 sks 475 sks	1,390 sks 1,033 sks	NA
% Excess	Na	NA	NA	NA	NA

LONQUIST & CO. LLC PETROLEUM ENGINEERS / ENERGY ADVISORS HOUSTON | CALGARY AUSTIN | WICHITA | DENVER	Stakeholder Midstream	Pozo Acido Viejo No. 1	
	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location: 33.1700484, -103.0023776	**Site:**	**Survey:**
	API No: 42-501-36935	**Field:**	**Well Type/Status:** AGI
Texas License F-9147	**RRC District No:**	**Project No:** 1549.2	**Date:** 11/22/2021
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Figure 28 – Pozo Acido Viejo #1 Wellbore Schematic

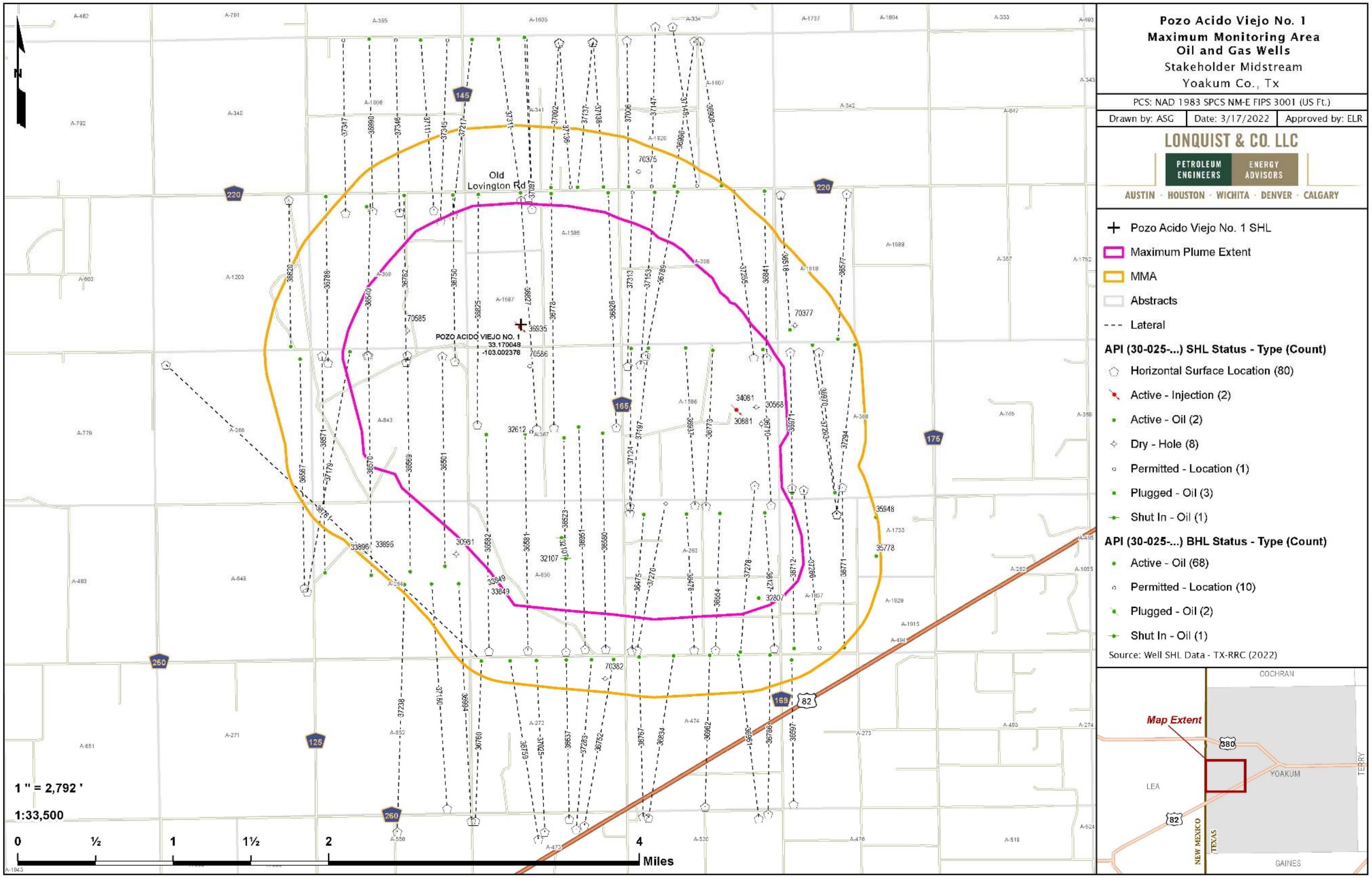


Figure 29 – Oil and Gas Wells within the MMA

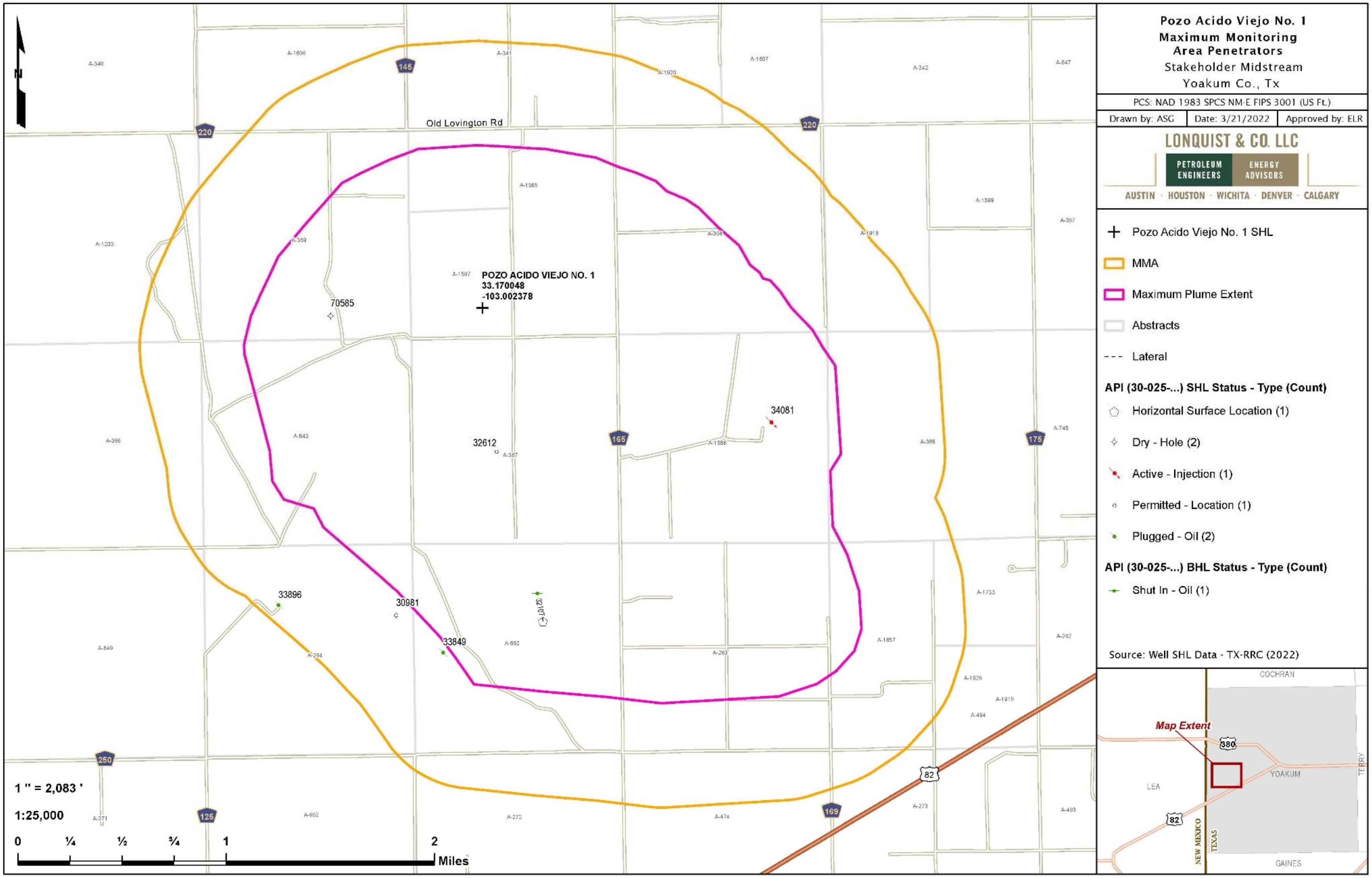


Figure 30 – Penetrating Oil and Gas Wells within the MMA

Future Drilling

Potential leak pathways caused by future drilling in the area are not expected to occur. The deeper formations, such as the Devonian, have proven to-date to be less productive or non-productive in this area, which is why the location was selected for injection. Also, the PAV #1 well is carried in the TRRC's Bronco (Siluro-Devonian) Field which is designated by the TRRC as an H_2S field. An H_2S field designation alerts potential oil and gas operators to the presence of H_2S. Any drilling permits issued by the TRRC in the area of the PAV #1 well include a list of formations for which oil and gas operators are required to comply with TRRC Rule 13 (entitled "Casing, Cementing, Drilling, Well Control, and Completion Requirements"). 16 TAC § 3.13. By way of example, see the PAV #1 well drilling permit provided in Appendix B. TRRC Rule 13 requires oil and gas operators to set steel casing and cement across and above all formations permitted for injection under TRRC Rule 9 or immediately above all formations permitted for injection under Rule 46 for any well proposed within a one-quarter mile radius of an injection well. In this instance, any new well permitted and drilled to the PAV #1 well's injection zone located within a one-quarter mile radius of the PAV #1 well will be required under TRRC Rule 13 to set steel casing and cement above the PAV #1 well injection zone. Additionally, Rule 13 requires operators to case and cement across and above *all* potential flow zones and/or zones with corrosive formation fluids. The TRRC maintains a list of such known zones by RRC district and county and provides that list with each drilling permit issued, which is also shown in the above-mentioned permit in Appendix B.

If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release.

Groundwater wells

There are thirty-two groundwater wells located within the MMA, as identified by the Texas Water Development Board. All of the identified groundwater wells in the area have total depths less than or equal to 400 feet, as shown in Figure 31 and Table 7. Additionally, Stakeholder has a water well on the facility property with a total depth of approximately 180 feet.

The surface and intermediate casings of the PAV #1 well, as shown in Figure 28, are designed to protect the shallow freshwater aquifers consistent with applicable RRC regulations and the GAU letter issued for this location. See GAU letter attached included within Appendix B. The wellbore casings and cements also serve to prevent CO_2 leakage to the surface along the borehole.

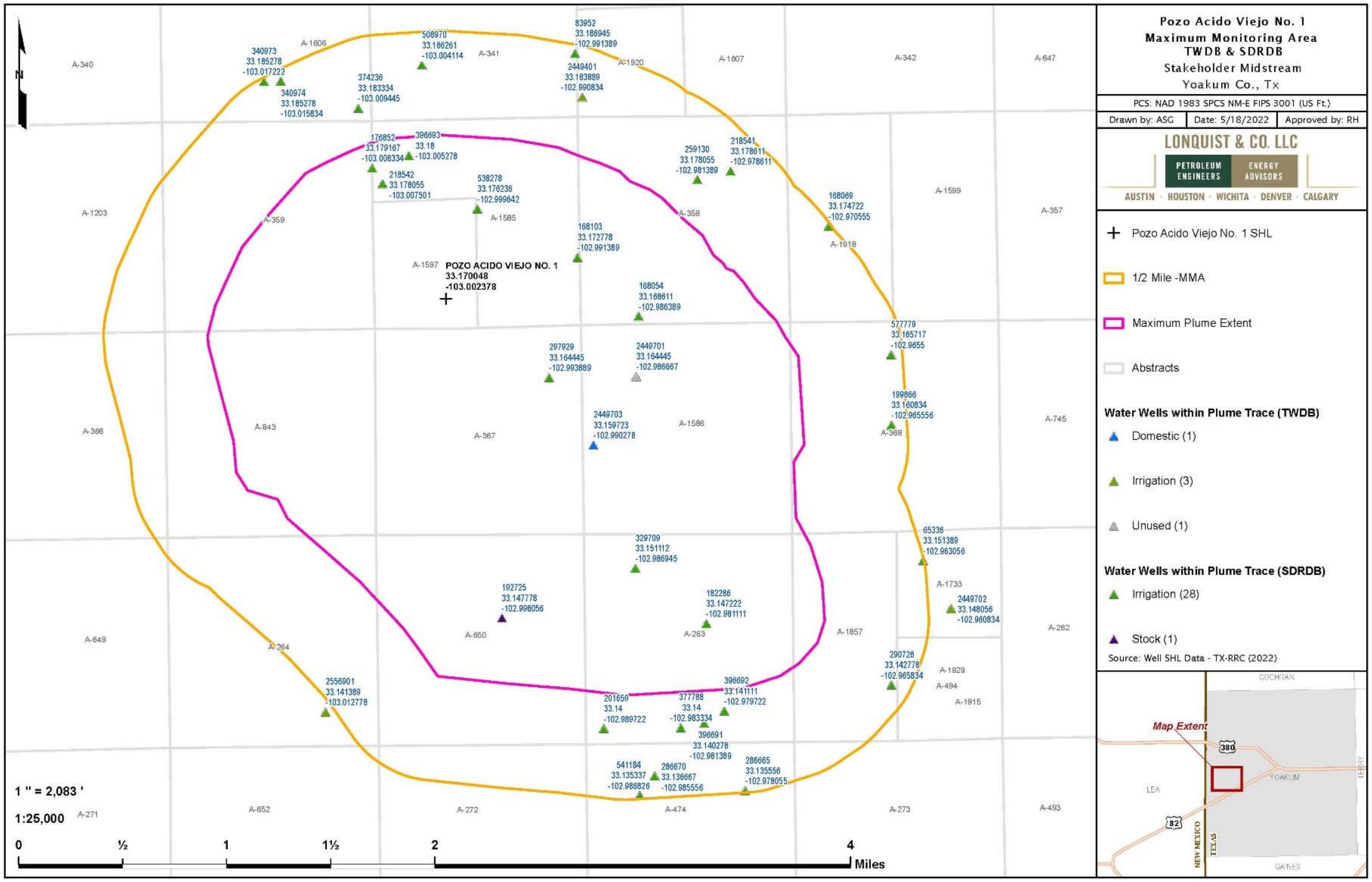


Figure 31 – Groundwater Wells within MMA

Table 7 – Groundwater Well Summary

State Well ID	OwnerName	PrimaryWat	WellDepth	Elevation	Data Source
2449701	Gene Smith	Unused	167	3775	TWDB
2449703	Larry Morrow	Domestic	200	3774	TWDB
2449401	Robert Box	Irrigation	165	3790	TWDB
65336	Larry Morrow	Irrigation	190	-	SDRDB
83952	D.L. Hartman Partnership	Irrigation	220	-	SDRDB
168054	Teichroeb, Peter	Irrigation	208	-	SDRDB
168069	Teichroeb, Peter	Irrigation	208	-	SDRDB
168103	Teichroeb, Peter	Irrigation	206	-	SDRDB
176852	Darrel Lowrey	Irrigation	183	-	SDRDB
182286	Buford Duff	Irrigation	205	-	SDRDB
192725	LANNY SMITH	Stock	185	-	SDRDB
199866	Henry letkeman	Irrigation	354	-	SDRDB
201659	Warren, Jim	Irrigation	240	-	SDRDB
218541	RANDY FORBUS	Irrigation	174	-	SDRDB
218542	BRAD MCWHIRTER	Irrigation	217	-	SDRDB
259130	RANDY FORBUS	Irrigation	176	-	SDRDB
286665	BRIAN SNODGRASS	Irrigation	309	-	SDRDB
286670	BRIAN SNODGRASS	Irrigation	342	-	SDRDB
290726	JEROME HEAD	Irrigation	342	-	SDRDB
297929	3D LandCo	Irrigation	186	-	SDRDB
329709	MELRA BEARDEN	Irrigation	200	-	SDRDB
340973	Ben Dyck	Irrigation	400	-	SDRDB
340974	Ben Dyck	Irrigation	360	-	SDRDB
374236	Ben Dyck	Irrigation	320	-	SDRDB
377788	WARREN FAMILY FARMS	Irrigation	335	-	SDRDB
396691	McWhirter Famliy Farms	Irrigation	293	-	SDRDB
396692	Mc Whirter Family Farms	Irrigation	288	-	SDRDB
396693	Brad McWhirter	Irrigation	266	-	SDRDB
508970	BRAD McWHIRTER	Irrigation	204	-	SDRDB
538278	BRAD McWHIRTER	Irrigation	238	-	SDRDB
541184	BRIAN SNODGRASS	Irrigation	285	-	SDRDB
577779	Henry Letkeman	Irrigation	195	-	SDRDB

Leakage Through Faults or Fractures

Dynamic modeling at the PAV #1 well location indicates migration of the plume will not intersect a fault. Regional faults act as structural traps creating a seal against the migration of hydrocarbons, as demonstrated by the Bronco field. Therefore, should an unmapped fault exist within the plume boundary, vertical migration is unlikely. Shale gouge within the fault plane from a thick Woodford shale section will prevent vertical transmission of injected fluid along the fault and contain it below the Woodford. Faulting in this region terminates vertically below the Pennsylvanian-age rock. Secondary confining shales within the Wolfcampian and younger strata provide additional, redundant confining layers that would prevent CO_2 from migrating into freshwater aquifers.

Fractures are responsible for porosity development within the injection intervals. However, the subsequent exposure events did not produce the same solution diagenesis in the Woodford shale. Upward migration of injected gas through confining bed fractures is unlikely.

Leakage Through Confining Layers

The Silurian-Devonian injection zones have competent sealing rocks above and below the porous sub-areally exposed carbonate. The properties of the overlying transgressive Woodford shale (widespread deposition, high illite clay and organic matter composition, and low porosity and permeability) make an excellent sealing rock to the underlying Silurian formation. The underlying low porosity and permeability Fusselman carbonate minimizes the likelihood of downward migration of injected fluids. The relative buoyancy of injected gas to the in-situ reservoir fluid makes migration below the lower confining layer unlikely.

Leakage from Natural or Induced Seismicity

The location of PAV #1 is in an area of the Permian Basin that is inactive from a seismicity perspective, whether induced or natural. A review of historical seismic events on the USGS's Advanced National Seismic System site (from 1971 to present) and the Bureau of Economic Geology's TexNet catalog (from 2017 to present), as shown in Figure 32, indicates the nearest seismic event occurred more than 60 miles away.

A regional analysis of the probabilistic fault slip potential across the Permian Basin (Snee & Zoback 2016), as seen in Figure 33, further demonstrates that the PAV #1 well is located in a seismically inactive area and confirms that this area has little to no potential for an induced seismicity event.

Therefore, there is no indication that seismic activity poses a risk for loss of CO_2 to the surface within the MMA.

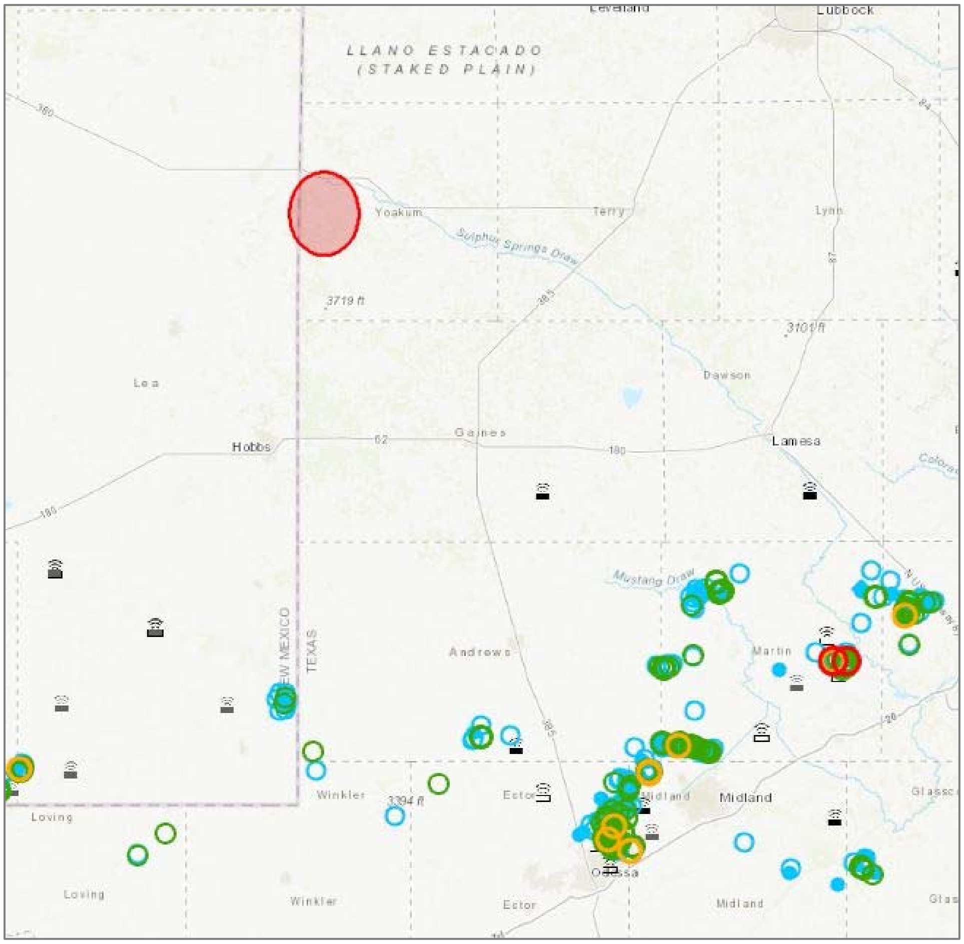


Figure 32 – Seismicity Review (TexNet – 3/21/2022)

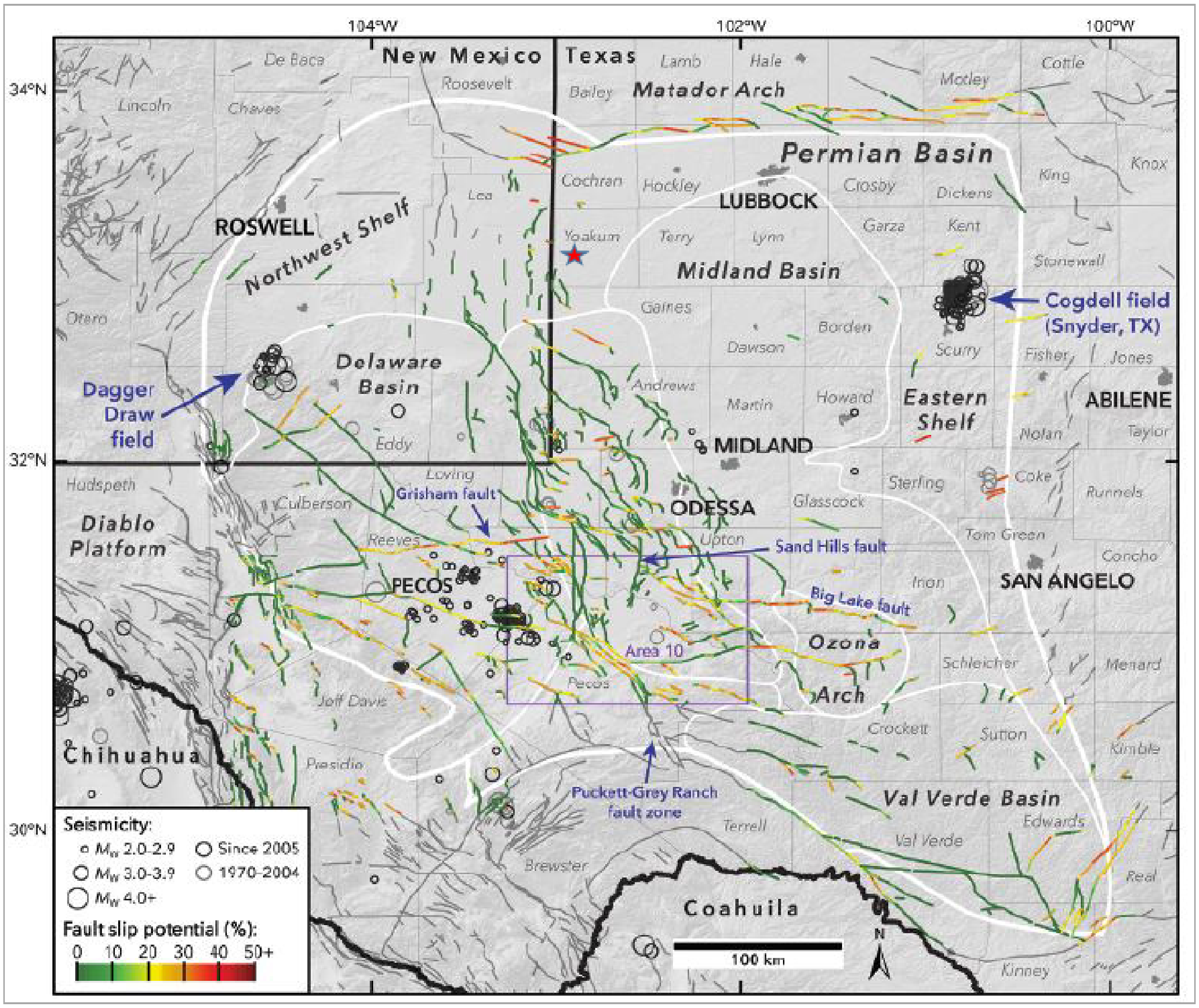


Figure 33 – Probabilistic Fault Slip Potential Analysis with PAV #1 location (Snee & Zobak 2016)

SECTION 5 – MONITORING FOR LEAKAGE

This section discusses the strategy that Stakeholder will employ for detecting and quantifying surface leakage of CO_2 through the pathways identified in Section 4 to meet the requirements of 40 CFR §98.448(a)(3). As the injectate stream contains both H_2S and CO_2, the H_2S will be a proxy for CO_2 leakage and therefore the monitoring systems in place to detect H_2S will also indicate a release of CO_2. Table 8 summarizes the monitoring of potential leakage pathways to the surface. Monitoring will occur during the planned 25-year injection period, or cessation of injection operations, plus a proposed 5-year post-injection period.

- Leakage from surface equipment
- Leakage through existing and future wells within MMA
- Leakage through faults and fractures
- Leakage through the confining layer
- Leakage through natural or induced seismicity

Because the acid gas injection stream also contains H_2S, any leakage would be detected by the H_2S alarms located around the facility and would be quickly addressed and would minimize the release of CO_2 into the atmosphere.

Table 8 – Summary of Leakage Monitoring Methods

Leakage Pathway	Monitoring Method
Leakage from surface equipment	Fixed H_2S monitors throughout the AGI facility
	Daily visual inspections
	Personal H_2S monitors
	Distributed Control System Monitoring (Volumes and Pressures)
Leakage through existing wells	Fixed H_2S monitor at the AGI well
	SCADA Continuous Monitoring at the AGI Well
	Annual Mechanical Integrity Tests ("MIT") of the AGI Well
	Visual Inspections
	Quarterly CO_2 Measurements within MMA
Leakage through groundwater wells	Annual Groundwater Samples on Property
Leakage from future wells	H_2S Monitoring during offset drilling operations
Leakage through faults and fractures	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage through confining layer	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage from natural or induced seismicity	Seismic monitoring station to be installed

Leakage from Surface Equipment

As the Campo Viejo Facility and the PAV #1 well are designed to handle H_2S, leakage from surface equipment is unlikely to occur and would be quickly detected and addressed. The facility design minimizes leak points through the equipment used and the type of connections are designed to minimize corrosion points. The H_2S in the injectate serves as a proxy for the release of CO_2. The facility and well site contain a number of H_2S alarms, set with a high alarm setpoint of 10 ppm of H_2S, which are shown in Figures 26 and 27 above. Additionally, all Stakeholder field personnel are required to wear H_2S monitors, which trigger the alarm at 5 ppm H_2S.

The AGI facility is continuously monitored through automated systems. In addition, field personnel conduct daily visual field inspections of gauges, monitors and leak indicators such as vapor plumes. The effectiveness of the internal and external corrosion control program is monitored through the periodic inspection of the system, analysis of liquids collected from the line, and inspection of the cathodic protection system. These inspections, in addition to the automated systems, allow Stakeholder to quickly respond to any leakage situation. Monitoring will occur for the duration of injection and the post-injection period. Should leakage be detected during active injection operations, the volume of CO_2 released will be calculated based on operating conditions at the time of the event, per 40 CFR §98.448(a)(5).

Leakage from Existing and Future Wells within Monitoring Area

Stakeholder continuously monitors and collects injection volumes, pressures, temperatures and gas composition data, through their SCADA systems, for the PAV #1 well. This data is reviewed by qualified personnel and will follow response and reporting procedures when data is outside acceptable performance limits. PAV #1 has a pressure and temperature gauge placed in the injection stream at its wellhead, and a pressure gauge on the casing annulus. A change of pressure on the annulus would indicate the presence of a possible leak. Mechanical integrity tests ("MITs") performed annually would also indicate the presence of a leak. Upon a negative MIT, the well would immediately be isolated and the leak mitigated.

The seven offset penetrating wells within the MMA are adequately cased and cemented to prevent potential leakage of CO_2 from the PAV #1 well plume. Additionally, the plugged wells were done so in a way to prevent migration of CO_2 as provided in Appendix E. As discussed previously, Rule 13 would ensure that new wells in the field would be constructed in a manner to prevent migration from the injection interval.

In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the MMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as minimum, quarterly atmospheric monitoring near identified penetrations within the MMA. Upon approval of the MRV and through the post-injection monitoring period, Stakeholder will have these monitoring systems in place.

Groundwater Quality Monitoring

Stakeholder will monitor the groundwater quality in fluids above the confining interval by sampling the well on the facility property and analyzing the sample with a third-party laboratory on an annual basis. Any significant changes to the water analysis would be investigated to determine if such change was a result of leakage from the PAV #1 well.

Leakage through Faults, Fractures or Confining Seals

Stakeholder continuously monitors the operations of the PAV #1 well through automated systems. Any deviation from normal operating conditions indicating movement into a potential pathway such as a fault or breakthrough of the confining seal would trigger an alert. Any such alert would be reviewed by field personnel and action taken to shut in the well, if necessary. Field H_2S monitoring systems would alert field personnel for any release of H_2S/CO_2 caused by such leakage.

Leakage through Natural or Induced Seismicity

While the likelihood of a natural or induced seismicity event is extremely low, Stakeholder plans to install a seismic monitoring station in the general area of the PAV #1 well. This monitoring station will be tied into the Bureau of Economic Geology's TexNet Seismic Monitoring system. If a seismic event of 3.0 magnitude or greater is detected, Stakeholder will review the injection volumes and pressures at the PAV #1 well to determine if any significant changes occur that would indicate potential leakage.

SECTION 6 – BASELINE DETERMINATIONS

This section identifies the strategies Stakeholder will undertake to establish the expected baselines for monitoring CO_2 surface leakage per 40 CFR §98.448(a)(4). Stakeholder will use the existing SCADA monitoring systems to identify changes from expected performance that may indicate leakage of CO_2.

Visual Inspections

Daily inspections will be conducted by field personnel at the Campo Viejo Facility and the PAV #1 well. These inspections will aid with identifying and addressing issues timely to minimize the possibility of leakage. If any issues are identified, such as vapor clouds or ice formations, corrective actions would be taken to address such issues.

H_2S Detection

H_2S will be initially injected into the AGI well at a concentration of approximately ten (10) percent or 100,000 ppm. The concentration will drop to approximately six (6) percent as additional volumes are added. H_2S gas detectors are located throughout the AGI facility and well site and are set to trigger the alarm at 10 ppm. Additionally, all field personnel are required to wear personal H_2S monitors, which are set to trigger the alarm at 5 ppm. Any alarm would trigger an immediate response to protect personnel and verify that the monitors are working properly. If monitors are working correctly, immediate actions would be taken to secure the facility.

CO_2 Detection

Any CO_2 release would be accompanied by H_2S and therefore the H_2S monitors at the facility would also serve as a CO_2 release warning system. In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the AMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as atmospheric monitoring near identified penetrations within the AMA.

Operational Data

Baseline measurements of injection volumes and pressures will be taken upon implementation of this MRV plan. Any significant deviations over time will be analyzed for indication of leakage of CO_2.

Continuous Monitoring

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as per Texas regulations and Stakeholder's TRRC-approved H_2S Contingency Plan. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

Groundwater Monitoring

An initial sample will be taken from the groundwater well on Stakeholder's property upon approval of Stakeholder's MRV and prior to increasing injection. The sample will be analyzed by a third-party laboratory to establish the baseline properties of the groundwater.

SECTION 7 – SITE SPECIFIC CONSIDERATIONS FOR MASS BALANCE EQUATION

This section identifies how Stakeholder will calculate the mass of CO_2 injected, emitted, and sequestered. This also includes site-specific variables for calculating the CO_2 emissions from equipment leaks and vented emissions of CO_2 between the injection flow meter and the injection well, per 40 CFR §98.448(a)(5).

Mass of CO_2 Received

Per 40 CFR §98.443, the mass of CO_2 received must be calculated using the specified CO_2 received equations "unless you follow the procedures in 40 CFR §98.444(a)(4)." 40 CFR §98.444(a)(4) states that "if the CO_2 you receive is wholly injected and is not mixed with any other supply of CO_2, you may report the annual mass of CO_2 injected that you determined following the requirements under paragraph (b) of this section as the total annual mass of CO_2 received instead of using Equation RR-1 or RR-2 of this subpart to calculate CO_2 received." The CO_2 received for this injection well is wholly injected and not mixed with any other supply and the annual mass of CO_2 injected will equal the amount received. Any future streams would be metered separately before being combined into the calculated stream.

Mass of CO_2 Injected

Per 40 CFR §98.444(b), since the flow rate of CO_2 injected will be measured with a volumetric flow meter, the total annual mass of CO_2, in metric tons, will be calculated by multiplying the volumetric flow at standard conditions by the CO_2 concentration in the flow and the density of CO_2 at standard conditions, according to Equation RR-5:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}}$$

where:

$CO_{2,u}$ = Annual CO_2 mass injected (metric tons) as measured by flow meter u

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p (metric tons per quarter)

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682

$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. percent CO_2, expressed as a decimal fraction)

p = Quarter of the year

u = Flow meter

Mass of CO_2 Produced

The PAV #1 well is not part of an enhanced oil recovery project; therefore, no CO_2 will be produced.

Mass of CO_2 Emitted by Surface Leakage

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as a major upset event. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

In the unlikely event that CO_2 was released as a result of surface leakage, the mass emitted would be calculated for each surface pathway according to methods outlined in the plan and totaled using Equation RR-10 as follows:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x}$$

Where:

CO_2 = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year

X = Leakage pathway

Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

Mass of CO_2 Sequestered

The mass of CO_2 sequestered in subsurface geologic formations will be calculated based off Equation RR-12, as this well will not actively produce oil or natural gas or any other fluids, as follows:

$$CO_2 = CO_{2I} - CO_{2E} - CO_{2FI}$$

Where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

CO_{2FI} will be calculated in accordance with Subpart W reporting of GHGs. Because no venting would occur due to the high H_2S concentrations of the injectate stream, the calculations would be based on the blowdown emissions that would be sent to flares and would be reported as part of the required GHG reporting for the gas plant.

- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

SECTION 8 – IMPLEMENTATION SCHEDULE FOR MRV PLAN

The PAV #1 well currently reports GHGs under Subpart UU but Stakeholder has elected to submit an MRV plan under, and otherwise comply with, Subpart RR. The MRV plan will be implemented upon receiving EPA approval. The Annual Subpart RR Report will be filed on March 31st of the year following the reporting year.

SECTION 9 – QUALITY ASSURANCE

This section identifies how Stakeholder plans to manage quality assurance and control, to meet the requirements of 40 CFR §98.444.

Monitoring QA/QC

CO_2 *Injected*

- The flow rate of the CO_2 being injected will be measured with a volumetric flow meter, consistent with industry best practices. These flow rates will be compiled quarterly.
- The composition of the CO_2 stream will be measured upstream of the volumetric flow meter with a continuous gas composition analyzer or representative sampling consistent with industry best practices.
- The gas composition measurements of the injected stream will be averaged quarterly.
- The CO_2 measurement equipment will be calibrated according to manufacturer recommendations.

CO_2 *Emissions from Leaks and Vented Emissions*

- Gas detectors will be operated continuously, except for maintenance and calibration.
- Gas detectors will be calibrated according to manufacturer recommendations and API standards.
- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

Measurement Devices

- Flow meters will be continuously operated except for maintenance and calibration.
- Flow meters will be calibrated according to the requirements in 40 CFR §98.3(i).
- Flow meters will be operated per an appropriate standard method as published by a consensus-based standards organization.
- Flow meter calibrations will be traceable to the National Institute of Standards and Technology (NIST).

All measured volumes of CO_2 will be converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and an absolute pressure of 1 atmosphere.

Missing Data

In accordance with 40 CFR §98.445, Stakeholder will use the following procedures to estimate missing data if unable to collect the data needed for the mass balance calculations:

- If a quarterly quantity of CO_2 injected is missing, the amount will be estimated using a representative quantity of CO_2 injected from the nearest previous period of time at a similar injection pressure.
- Fugitive CO_2 emissions from equipment leaks from facility surface equipment will be estimated and reported per the procedures specified in subpart W of 40 CFR §98.

MRV Plan Revisions

If any of the changes outlined in 40 CFR §98.448(d) occur, Stakeholder will revise and submit an amended MRV plan within 180 days to the Administrator for approval.

SECTION 10 – RECORDS RETENTION

Stakeholder will retain records as required by 40 CFR §98.3(g). These records will be retained for at least three years and include:

- Quarterly records of the CO_2 injected
  - Volumetric flow at standard conditions
  - Volumetric flow at operating conditions
  - Operating temperature and pressure
  - Concentration of the CO_2 stream
- Annual records of the information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

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George, Peter G., Mace, Robert E., and Petrossian, Rima, 2011. Aquifers of Texas: Texas Water Development Board Report, no 380.

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Molina, Oscar, Vilarras, Victor, and Zeidouni, Mehdi, 2016. Geologic carbon storage for shale gas recovery: 13th International Conference on Greenhouse Gas Control Technologies, GHGT-13, 14-18.

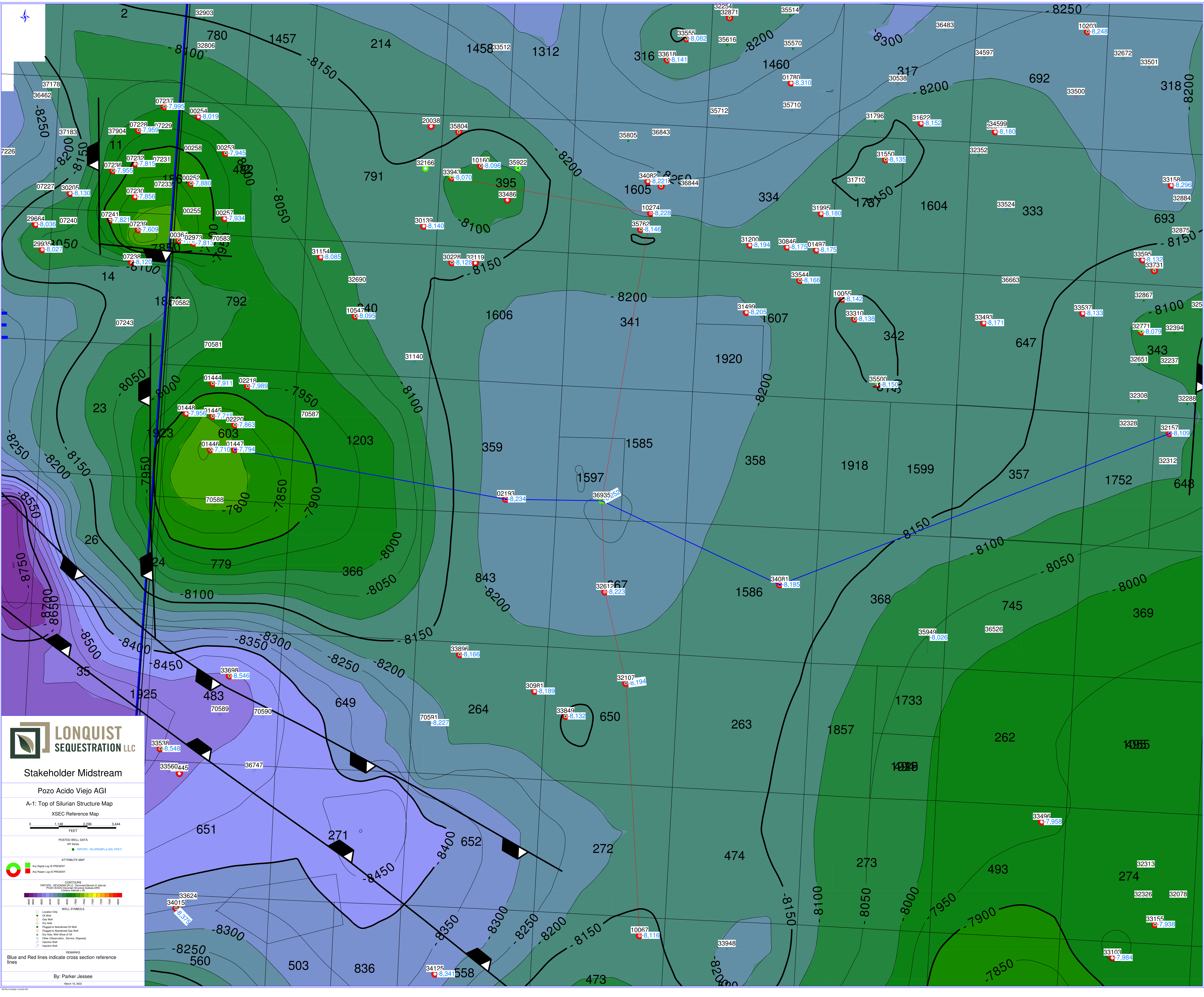
Ruppel, Stephen C. and Holtz, Mark H., 1994. Depositional and Diagenetic Facies Patterns and Reservoir Development in Silurian and Devonian Rocks of the Permian Basin: Bureau of Economic Geology Report of Investigations, no. 216.

Snee, Jens-Erik Lund and Zoback, Mark D., 2016. State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity.

Teeple, Andrew P., Ging, Patricia B., Thomas, Jonathan V., Wallace, David S., and Payne, Jason D., 2021. Hydrogeologic Framework, Geochemistry, Groundwater-Flow System, and Aquifer Hydraulic Properties Used in the Development of a Conceptual Model of the Ogallala, Edwards-Trinity (High Plains), and Dockum Aquifers In and Near Gaines, Terry, and Yoakum Counties, Texas: USGS Scientific Investigations Report 2021-5009.

APPENDICES

APPENDIX A – GEOLOGY



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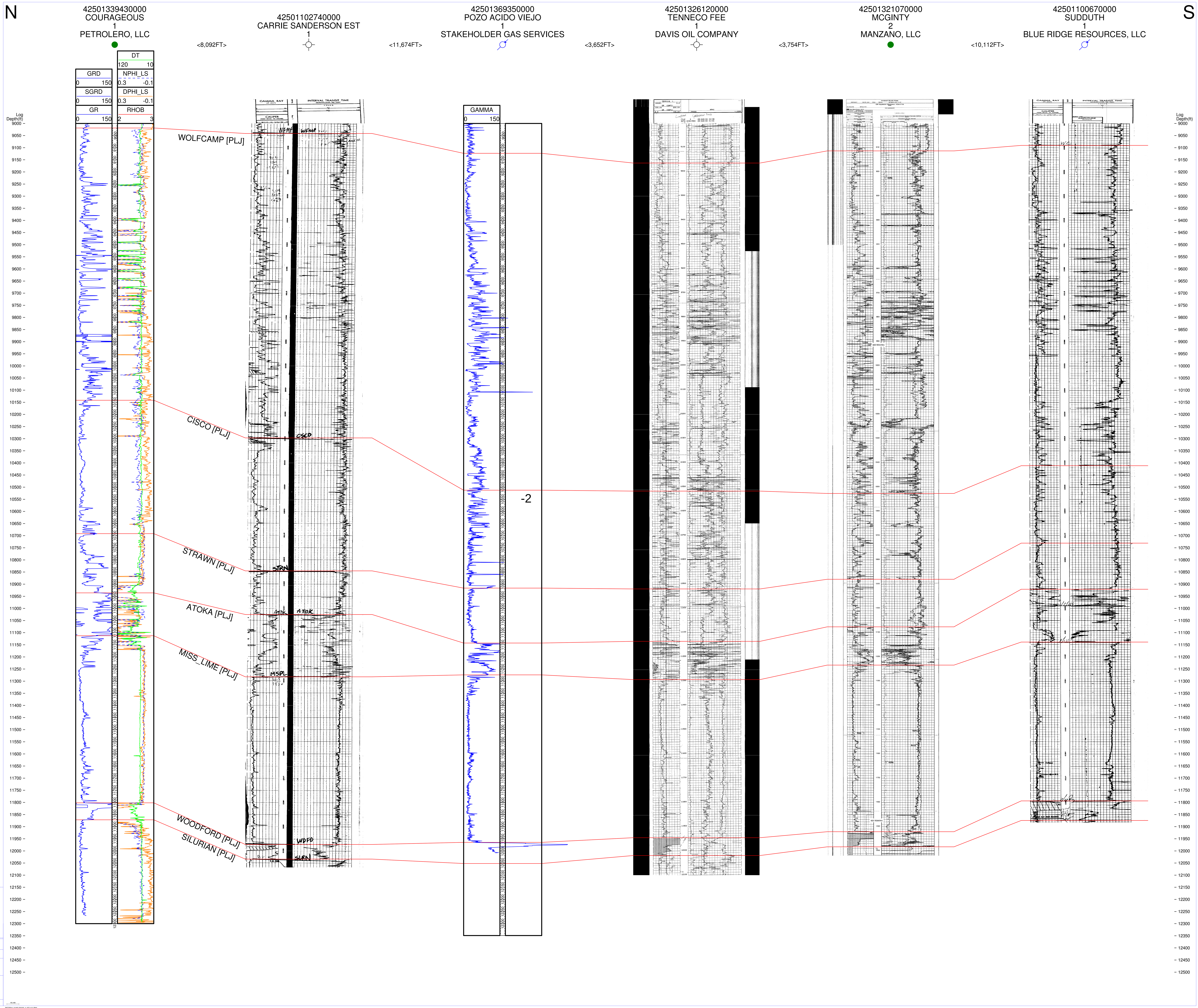

A-2

LONQUIST SEQUESTRATION LLC

Stakeholder Midstream

Pozo Acido Viejo MRV

N-S Structural Cross Section

Horizontal Scale = 466.0
Vertical Scale = 50.0
Vertical Exaggeration = 9.3x

Well Name
Well Number
Operator

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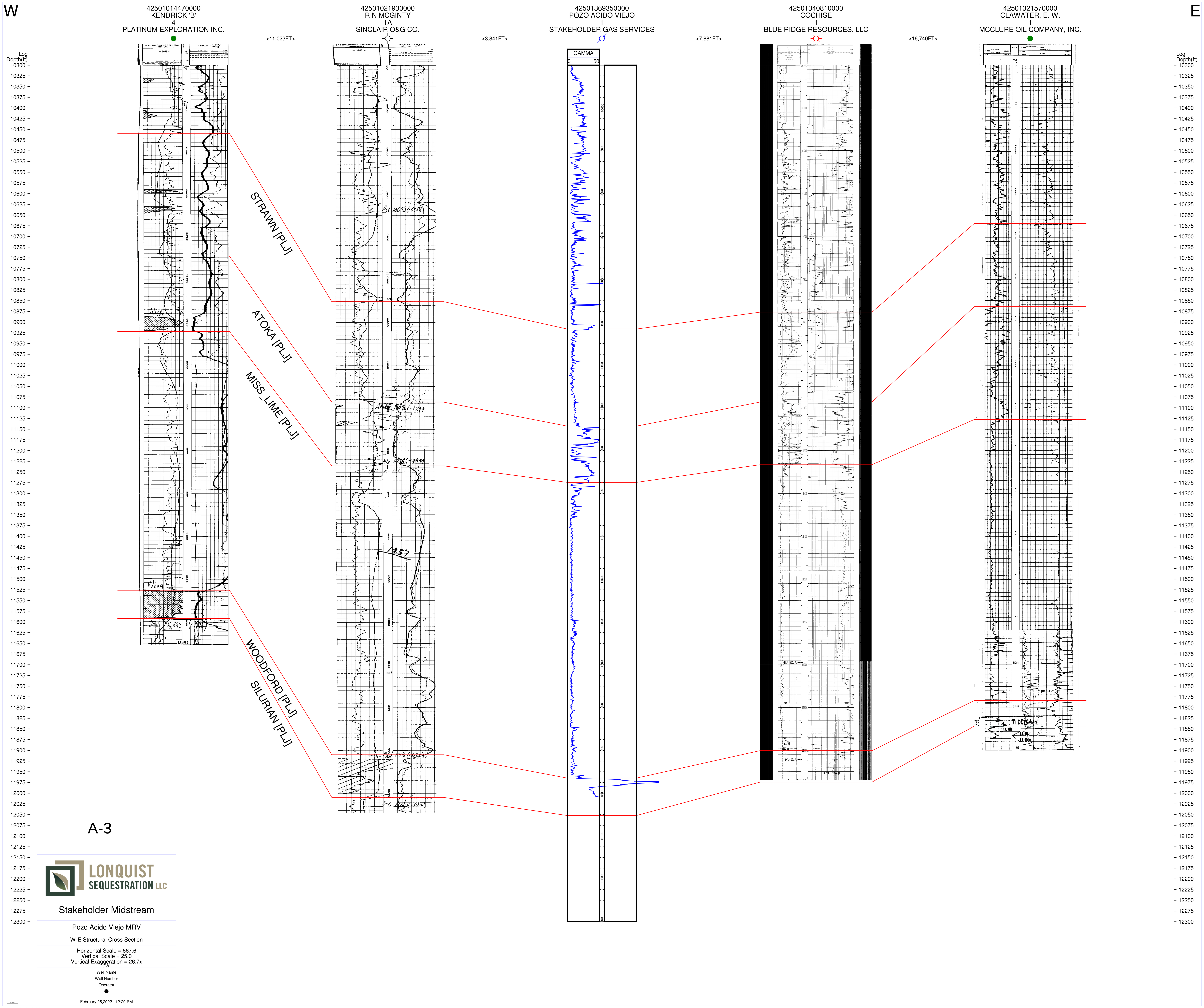

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ATOKA [PLJ]
MISS_LIME [PLJ]
WOODFORD [PLJ]
SILURIAN [PLJ]
A-3
LONQUIST SEQUESTRATION LLC
Stakeholder Midstream
Pozo Acido Viejo MRV
W-E Structural Cross Section
Horizontal Scale = 667.6
Vertical Scale = 25.0
Vertical Exaggeration = 26.7x
UWI
Well Name
Well Number
Operator
February 25,2022 12:29 PM

APPENDIX B – TRRC FORMS PAV #1

APPENDIX B-1: UIC CLASS II ORDER

APPENDIX B-2: GAU GROUNDWATER PROTECTION DETERMINATION

APPENDIX A-3: DRILLING PERMIT

APPENDIX A-4: COMPLETION REPORT

B-1

RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

OIL & GAS DOCKET NO. 8A-0310710

THE APPLICATION OF STAKEHOLDER GAS SERVICES, LLC (811207) PURSUANT TO SWR 46 AND 36 INJECTION PERMIT FOR A PERMIT TO INJECT FLUID CONTAINING HYDROGEN SULIDE INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS FOR THE POZO ACIDO VIEJO LEASE, WELL NO. 1, BRONCO (SILURO-DEVONIAN) FIELD, YOAKUM COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice in the above-numerated docket heard on June 29, 2018, the presiding Technical Examiner and the Administrative Law Judge (collectively the Examiners) have made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application submitted by Stakeholder Gas Services, LLC is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiners' report and recommendation, the findings of fact and conclusions of law contained therein, and any exceptions and replies thereto, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to dispose of fluids containing hydrogen sulfide into its Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, pursuant to Statewide Rule 36(c)(10)(A).

It is further **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to conduct disposal operations in the Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, subject to the following terms and conditions.

SPECIAL CONDITIONS

1. Open hole completions shall have a plug back depth no deeper than the bottom of the permitted injection interval.

2. The operator shall provide to the UIC section an electric log and a mud log of the subject well or a copy of the log submitted with the permitted application with the top(s)and bottom(s) of the permitted formations indicated on the log.

3. Injection shall be no deeper than 100 feet above the estimated base of the Ellenberger thickness at the well location, if known. The top and bottom of the authorized injection interval may be modified based on electric log or mud log indications of the top(s) and bottom(s) of the permitted formations.

4. Waste shall be injected into the strata in the subsurface depth interval from 12,020 feet to 12,349 feet.

5. The injection volume shall not exceed 6,900 Mcf/day.

6. The maximum surface injection pressure shall not exceed 6,010 psig.

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.

2. The District Office must be notified 48 hours prior to:

   a. running tubing and setting packer;
   b. beginning any workover or remedial operation;
   c. conducting any required pressure tests or surveys.

3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.

4. Prior to beginning injection and subsequently after any workover, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed annually and the results submitted in accordance with the instructions of Form H-5.

5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.

6. Within 30 days after completion, conversion to disposal, or any workover which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit and the permit number must be included on the new Form W-2 or G-1.

7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.

8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.

9. Unless otherwise required by conditions of the permit, completion and operation of the well shall be in accordance with the information represented on the application (Form W-14).

10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

11. The operator shall be responsible for complying with the following requirements so as to assure that discharges of oil and gas waste will not occur:

    A. Prior to beginning operation, all collecting pits, skimming pits, or washout pits must be permitted under the requirements of Statewide Rule 8.

    B. Prior to beginning operation, a catch basin constructed of concrete, steel, or fiberglass must be installed to catch oil and gas waste which may spill as a result of connecting and disconnecting hoses or other apparatus while transferring oil and gas waste from tank trucks to the disposal facility.

    C. Prior to beginning operation, all fabricated waste storage and pretreatment facilities (tanks, separators, or flow lines) shall be constructed of steel, concrete, fiberglass, or other materials approved by the Director or Director's delegate and shall be maintained so as to prevent discharges of oil and gas waste.

    D. Prior to beginning operation, dikes shall be placed around all waste storage, pretreatment, or disposal facilities. The containment area shall be dewatered within 24 hours by being disposed of in an authorized disposal facility.

    E. Prior to beginning operation, the facility shall have security to prevent unauthorized access. Access shall be secured by a 24-hour attendant, a fence and locked gate when unattended, or a key-controlled access system. For a facility without a 24-hour attendant, fencing shall be required unless terrain or vegetation prevents truck access except through entrances with lockable gates.

    F. Prior to beginning operation, each storage tank shall be equipped with a device (visual gauge or alarm) to alert drivers when each tank is within 130 barrels from being full.

12. Form P-18, Skim Oil report, must be filed in duplicate with the District Office by the 15th day of the month following the month covered by the report.

13. If the facility will have staff on-site for periods of time necessitating bathroom

accommodations, these accommodations must be designed, installed and maintained by a person licensed to do so and the accommodations must comply with all local, county and state health regulations.

14. The permit Number shall be______. (21146)

Provided further that should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

Pursuant to **§2001.144(a)(4)(A),** of the Texas Government Code, and the agreement of the applicant, this Final Order is effective when a Master Order relating to this Final Order is signed.

Done this 21st day of August, 2018.

RAILROAD COMMISSION OF TEXAS

(Order approved and signatures affixed by Hearings Divisions' unprotested Master Order Dated August 21, 2018)

GROUNDWATER PROTECTION DETERMINATION

Form GW-2

Groundwater Advisory Unit

Date Issued:	01 November 2017	**GAU Number:**	182849
Attention:	STAKEHOLDER MIDSTREAM, 777 E SONTERRA STE 100 SAN ANTONIO, TX 78258	**API Number:**	50100000
		County:	YOAKUM
		Lease Name:	Pozo Acido Viejo
Operator No.:	811202	**Lease Number:**	
		Well Number:	1
		Total Vertical Depth:	12600
		Latitude:	33.169934
		Longitude:	-103.001911
		Datum:	NAD27

Purpose: Injection into Producing Zone (H1)

Location: Survey-Gibson, J H; Abstract-1597; Block-D; Section-452

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

The interval from the land surface to a depth of 375 feet must be protected.

The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 2250 feet at the site of the referenced well.

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 10/30/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary.
If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

Railroad Commission of Texas

PERMIT TO DRILL, RE-COMPLETE, OR RE-ENTER ON REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

CONDITIONS AND INSTRUCTIONS

Permit Invalidation. It is the operator's responsibility to make sure that the permitted location complies with Commission density and spacing rules in effect on the spud date. The permit becomes invalid automatically if, because of a field rule change or the drilling of another well, the stated location is not in compliance with Commission field rules on the spud date. If this occurs, application for an exception to Statewide Rules 37 and 38 must be made and a special permit granted prior to spudding. Failure to do so may result in an allowable not being assigned and/or enforcement procedures being initiated.

Notice Requirements. Per H.B 630, signed May 8, 2007, the operator is required to provide notice to the surface owner no later than the 15th business day after the Commission issues a permit to drill. Please refer to subchapter Q Sec. 91.751-91.755 of the Texas Natural Resources Code for applicability.

Permit expiration. This permit expires two (2) years from the date of issuance shown on the original permit. The permit period will not be extended.

Drilling Permit Number. The drilling permit number shown on the permit MUST be given as a reference with any notification to the district (see below), correspondence, or application concerning this permit.

Rule 37 Exception Permits. This Statewide Rule 37 exception permit is granted under either provision Rule 37 (h)(2)(A) or 37(h)(2)(B). Be advised that a permit granted under Rule 37(h)(2)(A), notice of application, is subject to the General Rules of Practice and Procedures and if a protest is received under Section 1.3, “Filing of Documents,” and/or Section 1.4, “Computation of Time,” the permit may be deemed invalid.

Before Drilling

Fresh Water Sand Protection. The operator must set and cement sufficient surface casing to protect all usable-quality water, as defined by the Railroad Commission of Texas (RRC) Groundwater Advisory Unit (GWAU). Before drilling a well, the operator must obtain a letter from the Railroad Commission of Texas stating the depth to which water needs protection, Write: Railroad Commission of Texas, Groundwater Advisory Unit (GWAU), P.O. Box 12967, Austin, TX 78711-3087. File a copy of the letter with the appropriate district office.

Accessing the Well Site. If an OPERATOR, well equipment TRANSPORTER or WELL service provider must access the well site from a roadway on the state highway system (Interstate, U.S. Highway, State Highway, Farm-to-Market Road, Ranch-to-Market Road, etc.), an access permit is required from TxDOT. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

Water Transport to Well Site. If an operator intends to transport water to the well site through a temporary pipeline laid above ground on the state’s right-of-way, an additional TxDOT permit is required. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

*NOTIFICATION

The operator is **REQUIRED** to notify the district office when setting surface casing, intermediate casing, and production casing, or when plugging a dry hole. The district office **MUST** also be notified if the operator intends to re-enter a plugged well or re-complete a well into a different regulatory field. Time requirements are given below. The drilling permit number **MUST** be given with such notifications.

During Drilling

Permit at Drilling Site. A copy of the Form W-1 Drilling Permit Application, the location plat, a copy of Statewide Rule 13 alternate surface casing setting depth approval from the district office, if applicable, and this drilling permit must be kept at the permitted well site throughout drilling operations.

***Notification of Setting Casing.** The operator MUST call in notification to the appropriate district office (phone number shown the on permit) a minimum of eight (8) hours prior to the setting of surface casing, intermediate casing, AND production casing. The individual giving notification MUST be able to advise the district office of the drilling permit number.

***Notification of Re-completion/Re-entry.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of eight (8) hours prior to the initiation of drilling or re-completion operations. The individual giving notification MUST be able to advise the district office of the drilling permit number.

Completion and Plugging Reports

Hydraulic Fracture Stimulation using Diesel Fuel: Most operators in Texas do not use diesel fuel in hydraulic fracturing fluids. Section 322 of the Energy Policy Act of 2005 amended the Underground Injection Control (UIC) portion of the federal Safe Drinking Water Act (42 USC 300h(d)) to define "underground Injection" to *EXCLUDE* " ...the underground injection of fluids or propping agents (*other than diesel fluels*) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities." (italic and underlining added.) Therefore, hydraulic fracturing may be subject to regulation under the federal UIC regulations if diesel fuel is injected or used as a propping agent. EPA defined "diesel fuel" using the following five (5) Chemical Abstract Service numbers: 68334-30-5 Primary Name: Fuels, diesel; 68476-34-6 Primary Name: Fuels, diesel, No. 2; 68476-30-2 Primary Name: Fuel oil No. 2; 68476-31-3 Primary Nmae: Fuel oil, No. 4; and 8008-20-6 Primary Name: Kerosene. As a result, an injection well permit would be required before performing hydraulic fracture stimulation using diesel fuel as defined by EPA on any well in Texas. Hydraulic fracture stimulation using diesel fuel as defined by EPA on a well in Texas without an injection well permit could result in enforcement action.

Producing Well. Statewide Rule 16 states that the operator of a well shall file with the Commission the appropriate completion report within thirty (30) days after completion of the well or within ninety (90) days after the date on which the drilling operation is completed, whichever is earlier. Completion of the well in a field authorized by this permit voids the permit for all other fields included in the permit unless the operator indicates on the initial completion report that the well is to be a dual or multiple completion and promptly submits an application for multiple completion. All zones are required to be completed before the expiration date on the existing permit. Statewide Rule 40(d) requires that upon successful completion of a well in the same reservoir as any other well previously assigned the same acreage, proration plats and P-15s (if required) must be submitted with no double assignment of acreage.

Dry or Noncommercial Hole. Statewide Rule 14(b)(2) prohibits suspension of operations on each dry or non-commercial well without plugging unless the hole is cased and the casing is cemented in compliance with Commission rules. If properly cased, Statewide Rule 14(b)(2) requires that plugging operations must begin within a period of one (1) year after drilling or operations have ceased. Plugging operations must proceed with due diligence until completed. An extension to the one-year plugging requirement may be granted under the provisions stated in Statewide Rule 14(b)(2).

Intention to Plug. The operator must file a Form W-3A (Notice of Intention to Plug and Abandon) with the district office at least five (5) days prior to beginning plugging operations. If, however, a drilling rig is already at work on location and ready to begin plugging operations, the district director or the director’s delegate may waive this requirement upon request, and verbally approve the proposed plugging procedures.

***Notification of Plugging a Dry Hole.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of four (4) hours prior to beginning plugging operations. The individual giving the notification MUST be able to advise the district office of the drilling permit number and all water protection depths for that location as stated in the Texas Commission on Environmental Quality letter.

DIRECT INQUIRIES TO: DRILLING PERMIT SECTION, OIL AND GAS DIVISION

PHONE
(512) 463-6751

MAIL:
PO Box 12967
Austin, Texas, 78711-2967

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER	DATE PERMIT ISSUED OR AMENDED	DISTRICT
834810	Jan 09, 2018	* 8A
API NUMBER 42-501-36935	FORM W-1 RECEIVED Jan 04, 2018	COUNTY YOAKUM
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Vertical	ACRES 200

OPERATOR 811207

STAKEHOLDER GAS SERVICES, LLC

401 E SONTERRA BLVD STE 215
SAN ANTONIO, TX 78258-0000

NOTICE
This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored.
District Office Telephone No:
(432) 684-5581

LEASE NAME	WELL NUMBER
POZO ACIDO VIEJO	1
LOCATION 10.3 miles W direction from PLAINS, TX	TOTAL DEPTH 14000

Section, Block and/or Survey
SECTION 452 BLOCK D ABSTRACT 1597
SURVEY GIBSON, J H / READ, W K

DISTANCE TO SURVEY LINES	DISTANCE TO NEAREST LEASE LINE
1862.8 ft. W 754.6 ft. S	754.6 ft.
DISTANCE TO LEASE LINES 777.2 ft. E 754.6 ft. S	DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below

FIELD(s) and LIMITATIONS:

* SEE FIELD DISTRICT FOR REPORTING PURPOSES *

FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH	WELL # NEAREST WE	DIST
BRONCO (SILURO-DEVONIAN) POZO ACIDO VIEJO	200.00 754.6	12,000	1 0	8A

RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.

THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS

This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.

This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data

YOAKUM (501) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
RED BED-SANTA ROSA	1,100	1,100		1	12/17/2013
YATES	2,800	3,450		2	12/17/2013
SAN ANDRES	4,500	5,500	high flows, H2S, corrosive	3	12/17/2013
GLORIETA	5,600	6,000		4	12/17/2013
CLEARFORK	6,000	7,900	Active CO2 Flood	5	12/17/2013
WICHITA	8,000	8,200		6	12/17/2013
LEONARD	9,000	9,700		7	12/17/2013
WOLFCAMP	8,300	10,700		8	12/17/2013
PENNSYLVANIAN	8,700	8,700		9	12/17/2013
STRAWN	11,300	11,500		10	12/17/2013
MISSISSIPPIAN	10,650	10,800		11	12/17/2013
DEVONIAN	11,200	13,100		12	12/17/2013
DEVONIAN-SILURIAN	11,500	11,500		13	12/17/2013

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator’s responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information. http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info

B-4

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

Tracking No.: 201485

Status: Approved

This facsimile W-2 was generated electronically from data submitted to the RRC.

API No. 42- 501-36935

7. RRC District No. 8A

Oil Well Potential Test, Completion or Recompletion Report, and Log

8. RRC Lease No. 70951

1. FIELD NAME (as per RRC Records or Wildcat) BRONCO (SILURO-DEVONIAN)	2. LEASE NAME POZO ACIDO VIEJO	9. Well No. 1
3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report) STAKEHOLDER GAS SERVICES, LLC	RRC Operator No. 811207	10. County of well site YOAKUM
4. ADDRESS 401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000		11. Purpose of filing Initial Potential [ ] Retest [ ] Reclass [ ] Well record only (Explain In remarks) [X]
5. If Operator has changed within last 60 days, name former operator		
6a. Location (Section, Block, and Survey) 452 , D , GIBSON, J H / READ, W K , A-1597	6b. Distance and direction to nearest town in this county. PLAINS, TX	

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no. FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

13. Type of electric or other log run	14. Completion or recompletion date
None	01/08/2019

SECTION I- POTENTIAL TEST DATA IMPORTANT: Test should be for 24 hours unless otherwise specified infield rules.

15. Date of test	16. No. of hours tested	17. Production method (Flowing, Gas Lift, Jetting, Pumping- Size & Type of pump)	18. Choke size

	Oil - BBLS	Gas - MCF	Water - BBLS		
19. Production during Test Period				Gas - Oil Ratio: 0	Flowing Tubing Pressure: PSI
20. Calculated 24-Hour Rate				Oil Gravity-API-60 º	Casing Pressure: PSI

21. Was swab used during this test?	22. Oil produced prior to test (New & Reworked wells)	23. Injection Gas-Oil Ratio
Yes [ ] No [X]		

REMARKS: N/A

INSTRUCTIONS: File an original and one copy of the completed FormW-2 in the appropriate RRC District Office within 30 days after completing a well and within 10 days after a potential test. If an operator does not properly report the results of a potential test within the 10-day period, the effective date of the allowable assigned to the well will not extend back more than 10 days before the W-2 was received in the District Office. (Statewide Rules 16 and 51) To report a completion or recompletion, fill in both sides of this form. To report a retest, fill in only the front side.

WELL TESTERS CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test by observation of (a) meter readings or (b) the top and bottom gauges of each tank into which production was run during the test. I further certify that the potential test data shown above is true, correct, and complete, to the best of my knowledge.

Signature: Well Tester — Name of Company — RRC Representative

OPERATOR'S CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct and complete, to the best of my knowledge.

Type or printed name of operator's representative

Consultant
Title of Person

(806) 665-0338 — 01/31/2020
Telephone: Area Code Number — Month Day Year

Rebecca Dunn
Signature

SECTION III **DATA ON WELL COMPLETION AND LOG (Not Required on Retest)**

24. Type of Completion: New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

25. Permit to Drill, Plug Back or Deepen — DATE: 01/09/2018 — PERMIT NO.: 834810

Rule 37 Exception — CASE NO.:

Water Injection Permit — PERMIT NO.:

Salt Water Disposal Permit — PERMIT NO.:

Other — 08/21/2018 — PERMIT NO.: 21146

CO2,H2S, OTHER

26. Notice of Intention to Drill this well was filed in Name of

STAKEHOLDER GAS SERVICES, LLC

27. Number of producing wells on this lease in this field (reservoir) including this well: 0

28. Total number of acres in this lease: 200.0

29. Date Plug Back, Deepening, Workover or Drilling Operations: Commenced 05/25/2018 — Completed 06/23/2018

30. Distance to nearest well, Same Lease &Reservoir:

31. Location of well, relative to nearest lease boundaries: 777.2 Feet From East Line and 754.6 Feet from South Line of the POZO ACIDO VIEJO Lease

32. Elevation (DF. RKB, RT. GR ETC.): 3787 GL

33. Was directional survey made other than inclination (Form W-12)? Yes [ ] No [X]

34. Top of Pay:

35. Total Depth: 12349

36. P. B. Depth:

37. Surface Casing Determined by: Field Rules [ ] Recommendation of T.D.W.R. [X] Dt. of Letter 11/01/2017; Railroad Commission (Special) [ ] Dt. of Letter

38. Is well multiple completion? Yes [ ] No [X]

39. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

40. Intervals Drilled by: Rotary Tools X; Cable Tools

41. Name of Drilling Contractor:

42. Is Cementing Affidavit Attached? Yes [X] No [ ]

43. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
20		90		C HSR 169	24	SURF	200.0
13 3/8		2402		C HSR 1600	17 1/2	SURF	3449.0
9 5/8		6421	4400	C HSR 1250	12 1/4	0	2593.0
9 5/8		6421		C HSR 358	12 1/4	4400	475.0
7		12026	7503	C HSR 717	8 3/4	250	1390.0
7		12026		C & H HSR 535	8 3/4	7503	1033.0

44. LINER RECORD

Size	Top	Bottom	Sacks Cement	Screen
N/A				

45. TUBING RECORD

Size	Depth Set	Packer Set
3 1/2	11964	11964

46. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
12026	12349 OH

47. ACID, SHOT, FRACTURE, CEMENT SQUEEZE. ETC.

Depth Interval		Amount and Kind of Material Used
12026.0	12349.0	2000 GALS 15% HCL

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
RED BED-SANTA ROSA	1100.0	WOLFCAMP	8300.0
YATES	2800.0	PENNSYLVANIAN	8700.0
SAN ANDRES - HIGH FLOWS, H2S, CORROSIVE	4500.0	STRAWN	11300.0
GLORIETA	5600.0	MISSISSIPPIAN	10650.0
CLEARFORK - ACTIVE CO2 FLOOD	6000.0	DEVONIAN	12020.0

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)			
Formations	Depth	Formations	Depth
WICHITA	8000.0	DEVONIAN-SILURIAN	11050.0
LEONARD	9000.0		
REMARKS: ACID GAS INJECTION WELL INTO THE DEVONIAN. OIL & GAS DOCKET NO 8A-0310710 - FINAL ORDER			

APPENDIX C – GAS COMPOSITION

C6+ Gas Analysis Report

Sample Point Code	Sample Point Name	Sample Point Location
9252G	30110	Campo Viejo North Acid Gas

Source Laboratory	Lab File No	Container Identity	Sampler
Laboratory Services	2021047959	0410	D Armstrong - Spot

District	Area Name	Field Name	Facility Name
USA	USA	USA	Texas

Date Sampled	Date Effective	Date Received	Date Reported
Nov 4, 2021 10:45	Nov 4, 2021 10:45	Nov 5, 2021 08:15	Nov 8, 2021

Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
53.00		Torrance	1222 @ 89

Operator	Lab Source Description
Stakeholder Midstream	Campo Viejo

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	9.7450	9.745	
Nitrogen (N2)	0.5770	0.6329	
CO2 (CO2)	89.2490	98.89586	
Methane (C1)	0.1900	0.208	
Ethane (C2)	0.0120	0.01366	0.0030
Propane (C3)	0.0280	0.03069	0.0080
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1990	0.21889	0.0860
TOTAL	100.0000	109.7450	0.0970

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Oct 10, 2021

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 Â°F		14.73 PSI @ 60.00 Â°F	
Dry	Saturated	Dry	Saturated
75.4	75.00	75.6	75.2

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
1.4926	1.4844

Molecular Weight
42.9928

C6+ Group Properties

Assumed Composition

C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S
97450.6 PPM

PROTREND STATUS:
Passed By Validator on Nov 8, 2021

DATA SOURCE:
Imported

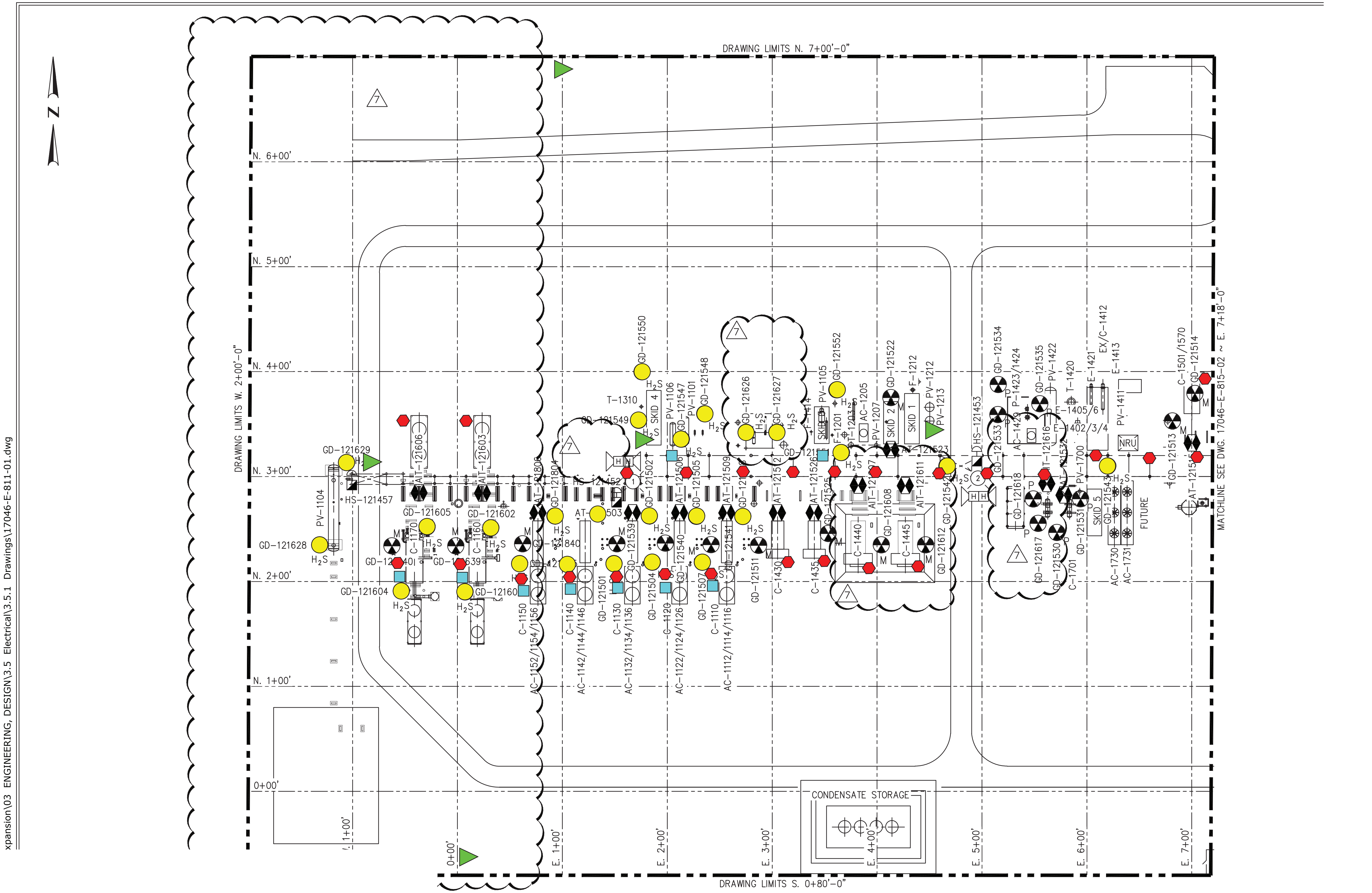
PASSED BY VALIDATOR REASON:
Close enough to be considered reasonable.

VALIDATOR:
Dustin Armstrong

VALIDATOR COMMENTS:
OK

C-1

APPENDIX D – FACILITY SAFETY PLOT PLANS



LEGEND:

- FIRE EXTINGUISHER
- SCBA / ESCAPE PACK
- WIND SOCK
- FIRE DETECTOR
- GAS DETECTOR HYDROGEN SULFIDE
- GAS DETECTOR METHANE
- GAS DETECTOR PROPANE
- ESD BUTTON
- RED, BLUE, AMBER & WHITE STROBE LIGHTS
- HORN

D-1

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:52:32-06'00'
P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #7 TO #7 BY SAULSBURY
SI JOB NUMBER: 10864
PROJ. MANAGER M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17045-E-817-01	TONE MODULE CONTROLLER WIRING DIAGRAM

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500
OPD JOB #17046

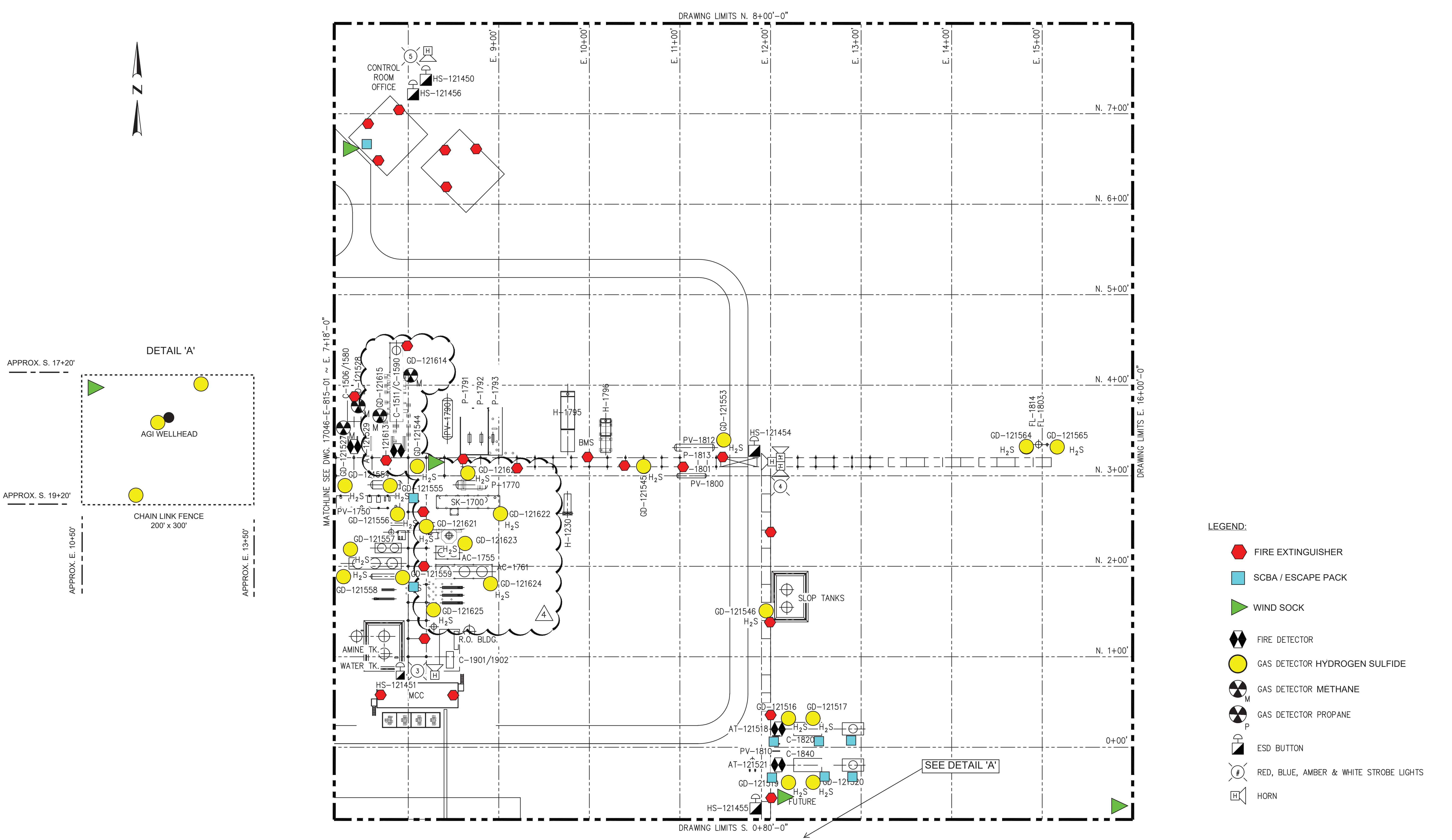
NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
3	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19
4	ISSUED FOR CONSTRUCTION - SI JOB #10665	DE	AK	AK	03/06/20
5	REVISED AS NOTED - SI JOB #10665	DE	AK	AK	04/02/20
7	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22

SAFETY PLOT PLAN
SHEET 1 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-01	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-01



P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS
SRIKANTH KONDURU
112034
LICENSED
PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:53:03-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #4 TO #4 BY SAULSBURY	
SI JOB NUMBER:	10864
PROJ. MANAGER	M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17046-E-815-01	SAFETY PLOT PLAN

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500
OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
4	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22
0	ISSUED FOR CONSTRUCTION - OPD JOB #17046	SP	JP	GS	5-18-18
1	REVISED AS NOTED - OPD JOB #17046	JWB	JP	GS	6-22-18
2	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19

SAFETY PLOT PLAN
SHEET 2 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

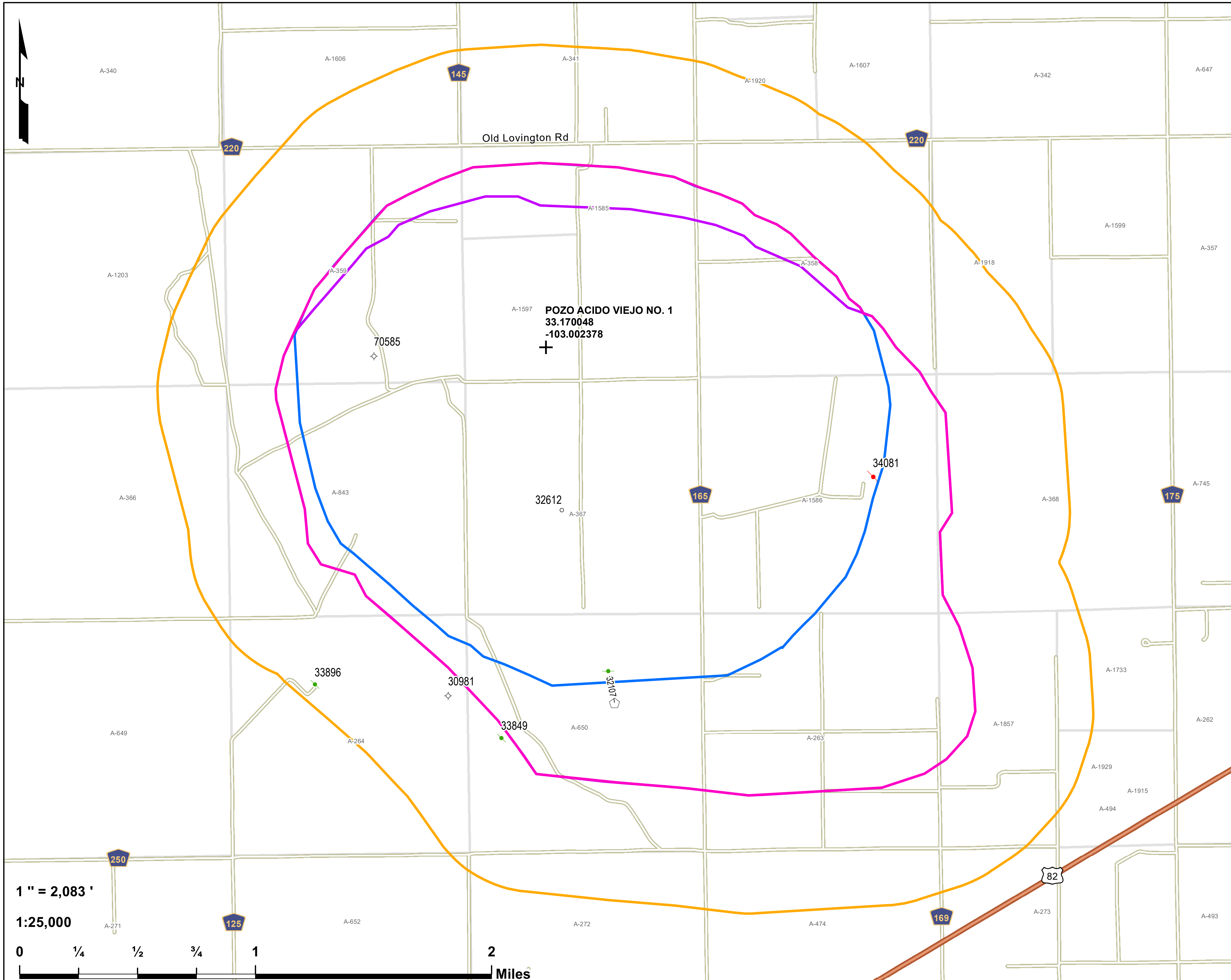
DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-02	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-02

J:\Stakeholder Midstream\10864 - Campo Viejo 70MM Expansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-02.dwg

APPENDIX E – MMA/AMA REVIEW MAPS



Pozo Acido Viejo No. 1
25-year Plume
50-year Plume and MMA

E-1

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Pozo 20 MMCF Higher H2S 25 Yr Plume Trace
- Pozo 20 MMCF Higher H2S 50 YR Plume Trace
- Abstracts
- Lateral

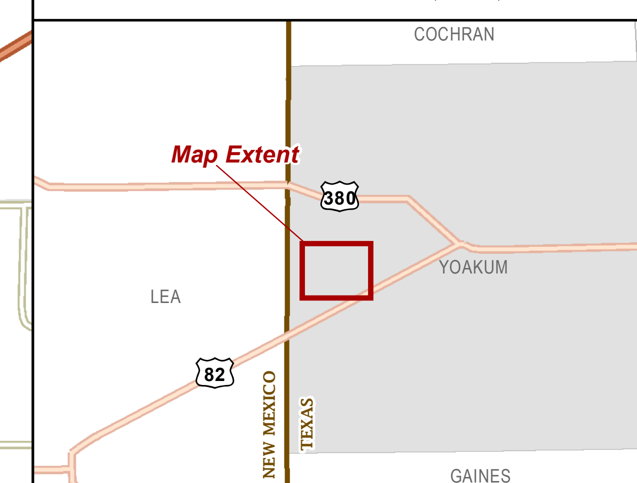
API (30-025-...) SHL Status - Type (Count)

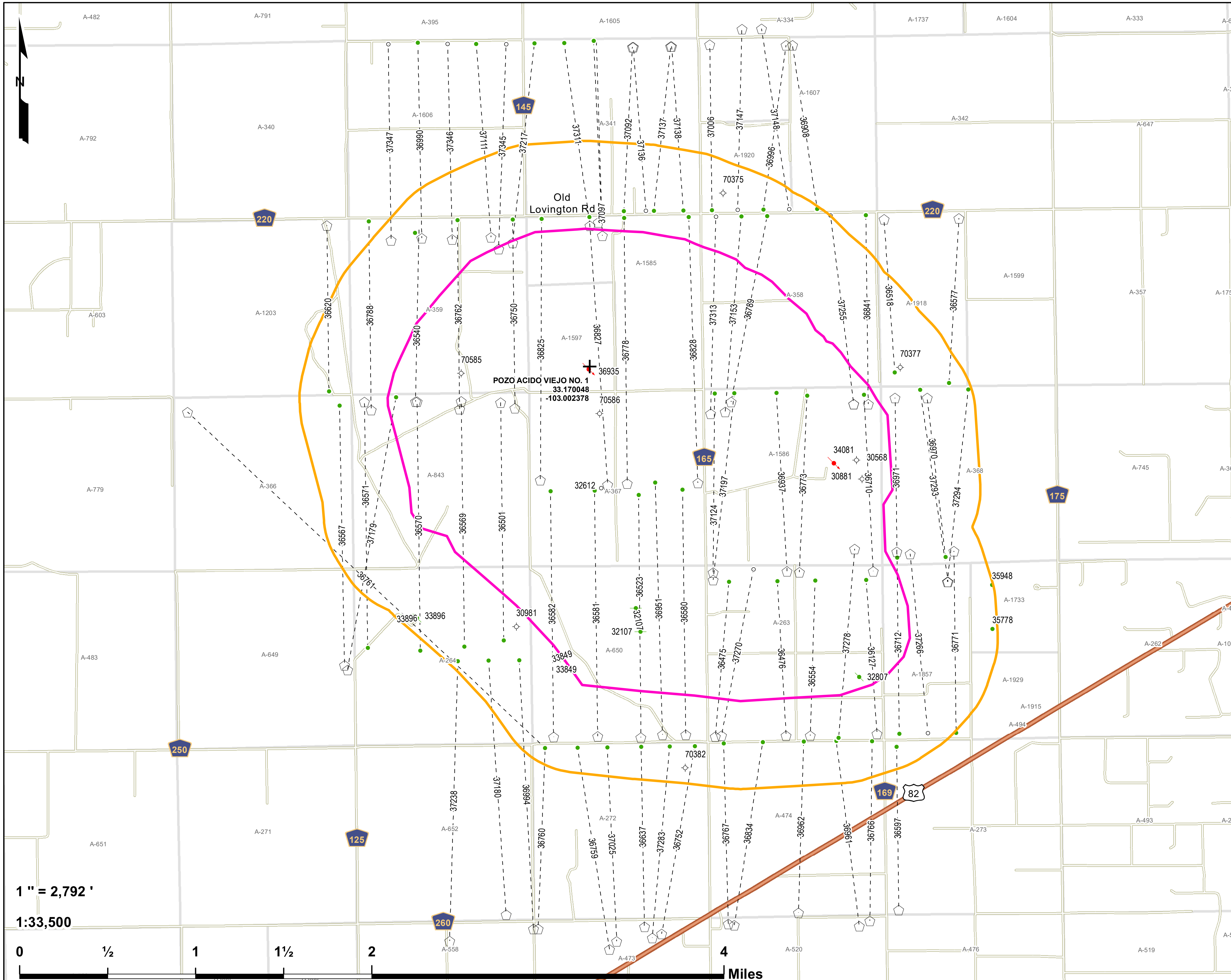
- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)





Pozo Acido Viejo No. 1
MMA
Oil and Gas Wells
Stakeholder Midstream
Yoakum Co., Tx

E-2

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/17/2022	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- Maximum Plume Extent
- MMA
- Abstracts
- Lateral

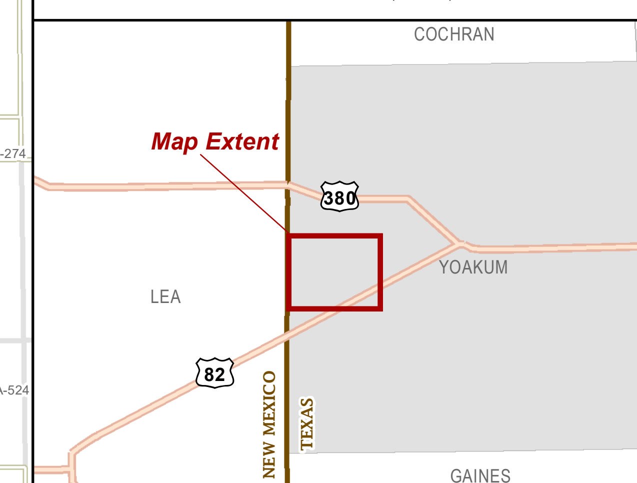
API (30-025-...) SHL Status - Type (Count)

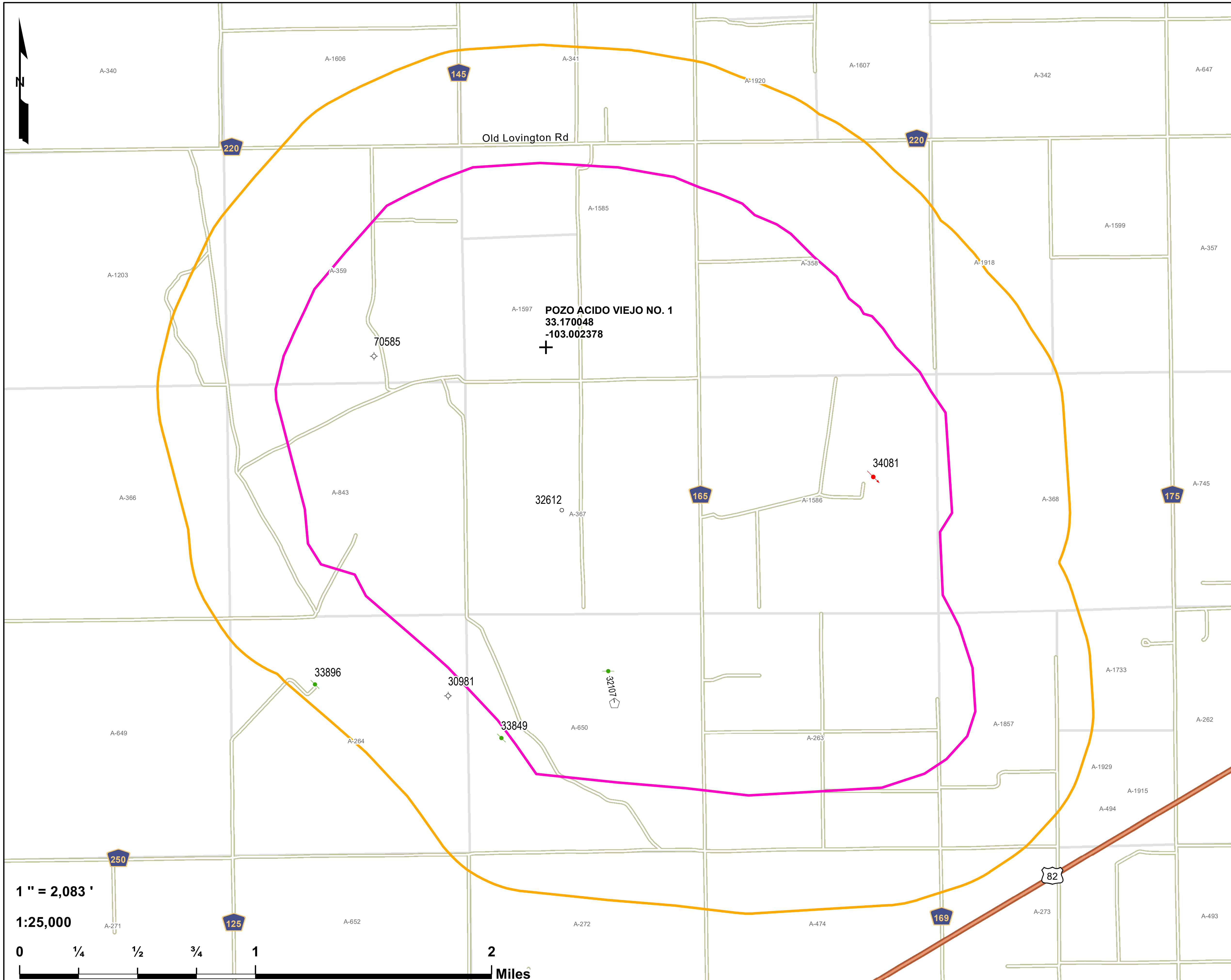
- Horizontal Surface Location (80)
- Active - Injection (2)
- Active - Oil (2)
- Dry - Hole (8)
- Permitted - Location (1)
- Plugged - Oil (3)
- Shut In - Oil (1)

API (30-025-...) BHL Status - Type (Count)

- Active - Oil (68)
- Permitted - Location (10)
- Plugged - Oil (2)
- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)





Pozo Acido Viejo No. 1
MMA Penetrators
E-3

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Abstracts
- Lateral

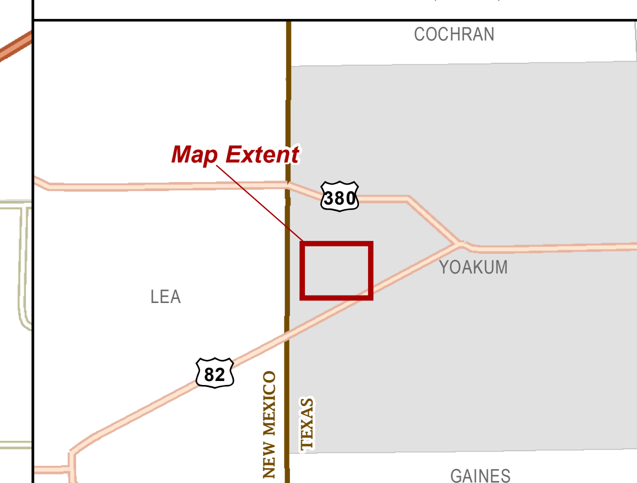
API (30-025-...) SHL Status - Type (Count)

- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



Pozo Acido Viejo No. 1
Wells within MMA

API	WELL NAME	WELL NO.	STATUS	OPERATOR	FIELD	TVD (Ft.)
4250136908	OLD SWITCHEROO 418	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250137148	OLD SWITCHEROO 418	4H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250130568	LIBERTY NATIONAL BANK	1	Dry - Hole	Commission`s hardcopy map	-	5374
4250130881	LIBERTY NATIONAL BANK	2	Dry - Hole	Commission`s hardcopy map	-	5400
4250130981	WEST PLAINS	1	Dry - Hole	Commission`s hardcopy map	-	12020
4250132107	MCGINTY 2	2	Shut In - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	12028
4250132612	TENNECO FEE	1	Plugged - Dry Hole	DAVIS OIL COMPANY	WILDCAT	12130
4250132807	HIGGINBOTHAM BROS. & CO.	1	Plugged - Oil	HENDERSON, VICTOR W.	BRAHANEY	5320
4250133849	MCGINTY	1	Plugged - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	11928
4250133896	GAYLE	1	Plugged - Oil	HARVARD PETROLEUM CORPORATION	HARVARD, W. (DEVONIAN)	12402
4250134081	COCHISE	1W	Active - Injection	STEWARD ENERGY II, LLC	BRAHANEY	11979
4250135778	CHAPPLE, H.	3	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5308
4250135948	CHAPPLE, H.	4	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5302
4250136127	WHAT A MELLON 519	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5310
4250136475	WHAT A MELLON 519	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5316
4250136476	WHAT A MELLON 519	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250136501	SKINNY DENNIS 468	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5319
4250136518	COUSIN WILLARD 450	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136523	SMOKIN TRAIN 520	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5273
4250136540	BLAZIN SKIES 453	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5240
4250136554	WHAT A MELLON 519	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5300
4250136567	ONE EYED JOHN 522	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5239
4250136569	SKINNY DENNIS 468	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136570	SKINNY DENNIS 468	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136571	SKINNY DENNIS 468	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5322
4250136577	COUSIN WILLARD 450	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5312
4250136580	SMOKIN TRAIN 520	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136581	SMOKIN TRAIN 520	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136582	SMOKIN TRAIN 520	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5260
4250136597	HIGGINBOTHAM "A"	6H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5214
4250136620	HAIR SPLITTER 454	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5286
4250136637	WHITEPORT 537	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5251
4250136710	COCHISE UNIT 470	1H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5237
4250136712	HUFFINES 518	1H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5243
4250136750	BLAZIN SKIES 453	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5215
4250136752	WHITEPORT 537	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136759	WHITEPORT 537	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5241
4250136760	WHITEPORT 537	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5309
4250136761	HAIR SPLITTER 454	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5272
4250136762	BLAZIN SKIES 453	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136766	DESPERADO E 538	1H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5223
4250136767	DESPERADO W 538	4H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5261
4250136771	HUFFINES 518	2H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5234
4250136773	COCHISE UNIT 470	2H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5310

List Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

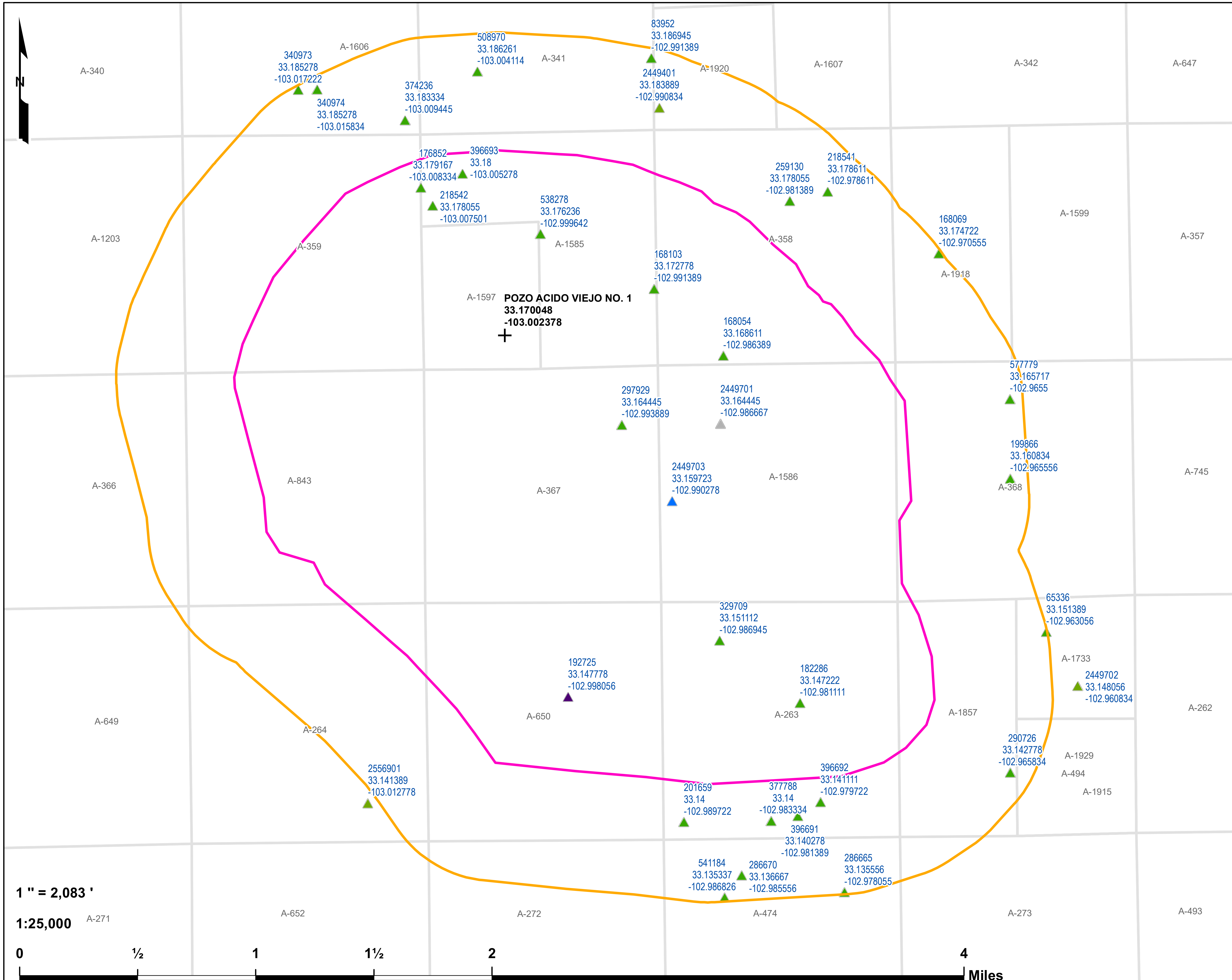
4250136778	BANJO BILL 452	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5229
4250136788	BLAZIN SKIES 453	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5248
4250136789	NEVERMIND 451	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5267
4250136825	UNDER THE BRIDGE 452A	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250136827	UNDER THE BRIDGE 452	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136828	BANJO BILL 452 A	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5298
4250136834	DESPERADO E 538	3H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5215
4250136841	NEVERMIND 451	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5308
4250136935	POZO ACIDO VIEJO	1	Active - Injection	STAKEHOLDER GAS SERVICES, LLC	BRONCO (SILURO-DEVONIAN)	12349
4250136937	SANDMAN 470	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250136951	SMOKIN TRAIN 520	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5182
4250136961	DESPERADO E 538	2H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5205
4250136962	DESPERADO E 538	5H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5213
4250136970	DIANNE CHAPIN 471	3H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5342
4250136971	DIANNE CHAPIN 471	4H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5341
4250136990	SIXTEEN STONE 416	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250136994	FANDANGO 536	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5160
4250136996	OLD SWITCHEROO 418	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250137006	OLD SWITCHEROO 418	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5323
4250137025	WHITEPORT 537	25H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5342
4250137092	CHICKEN ROASTER 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5318
4250137097	LIGHTNING CRASHES 417	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250137111	SIXTEEN STONE 416	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5301
4250137124	SANDMAN 470	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5357
4250137136	CHICKEN ROASTER 417	6H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137137	CHICKEN ROASTER 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5327
4250137138	CHICKEN ROASTER 417	7H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5325
4250137147	OLD SWITCHEROO 418	2H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137153	NEVERMIND 451	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5311
4250137179	SKINNY DENNIS 468	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5289
4250137180	FANDANGO 536	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250137197	SANDMAN 470	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5232
4250137217	LIGHTNING CRASHES 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5332
4250137238	FANDANGO 536	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250137255	NEVERMIND 451	2H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137266	HUFFINES 518	3H	Permitted - Location	WALSH PETROLEUM, INC.	BRAHANEY	5500
4250137270	WHAT A MELLON 519	35H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137278	WHAT A MELLON 519	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5423
4250137283	WHITEPORT 537	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5394
4250137293	DIANNE CHAPIN 471	7H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5389
4250137294	DIANNE CHAPIN 471	6H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5392
4250137311	LIGHTNING CRASHES 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5344
4250137313	NEVERMIND 451	4H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137345	SIXTEEN STONE 416	1H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137346	SIXTEEN STONE 416	3H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600

Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

4250137347	SIXTEEN STONE 416	5H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250170375	A. J Granger	1	Dry - Hole	Commission`s hardcopy map	-	5500
4250170377	Cora Reed	1	Dry - Hole	Commission`s hardcopy map	-	5350
4250170382	R. M. Jones	1	Dry - Hole	Commission`s hardcopy map	-	5510
4250170585	R. N. McGinty	1	Dry - Hole	Commission`s hardcopy map	-	12046
4250170586	T. W. READ	1	Dry - Hole	Commission`s hardcopy map	-	5445

Source: Texas Railroad Commission (2022)



Pozo Acido Viejo No. 1
Maximum Monitoring Area
TWDB & SDRDB
Stakeholder Midstream
Yoakum Co., Tx

E-6

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 5/18/2022	Approved by: RH

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+ Pozo Acido Viejo No. 1 SHL

1/2 Mile -MMA

Maximum Plume Extent

Abstracts

Water Wells within Plume Trace (TWDB)

Domestic (1)

Irrigation (3)

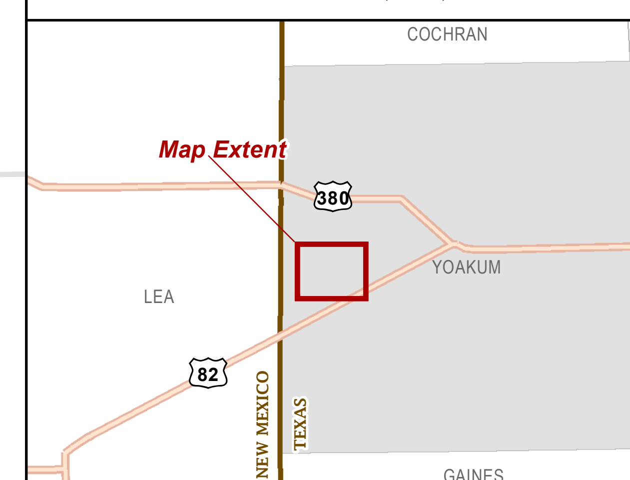
Unused (1)

Water Wells within Plume Trace (SDRDB)

Irrigation (28)

Stock (1)

Source: Well SHL Data - TX-RRC (2022)



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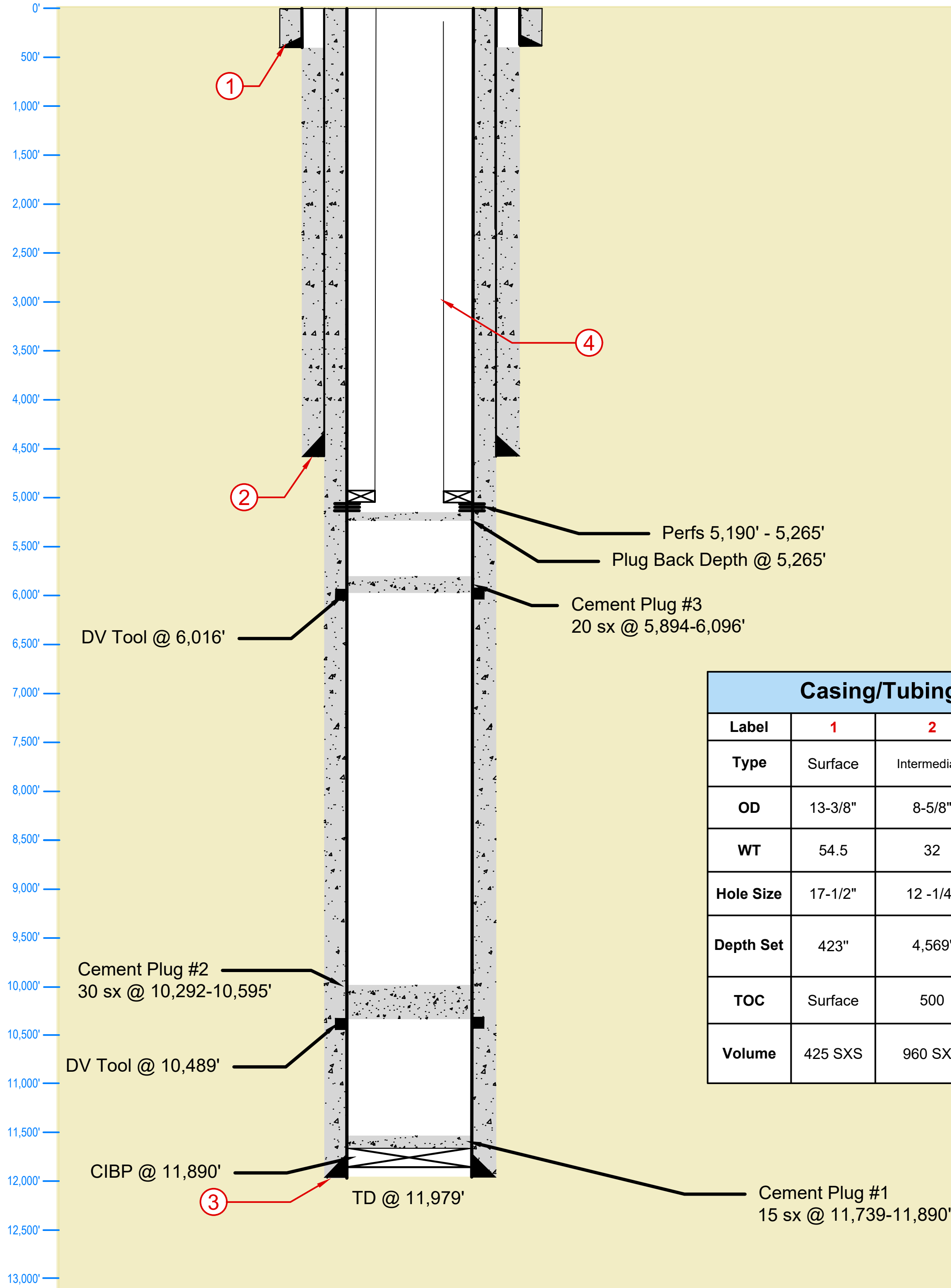
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6a



Casing/Tubing Information

Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	54.5	32	17	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	423"	4,569'	11,965'	5,200'
TOC	Surface	500	Surface	N/A
Volume	425 SXS	960 SXS	2445 SXS	N/A

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Cochise 1W

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-34081	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

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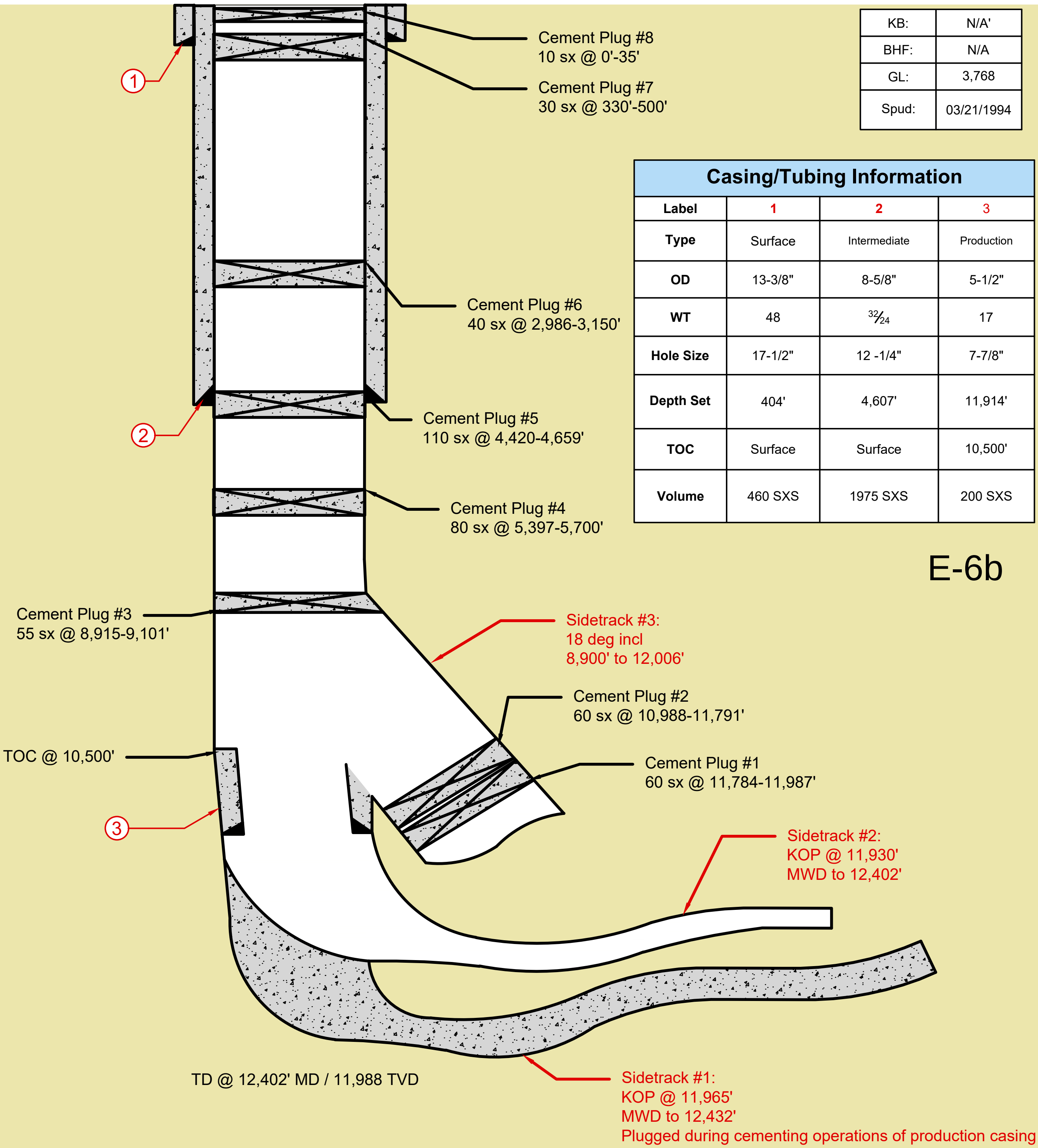
Fax: 512.732.9816

KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	03/21/1994



Casing/Tubing Information

Label	1	2	3
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	32/24	17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	404'	4,607'	11,914'
TOC	Surface	Surface	10,500'
Volume	460 SXS	1975 SXS	200 SXS

E-6b

Gayle #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-33896	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/22/2022
Drawn: KAS	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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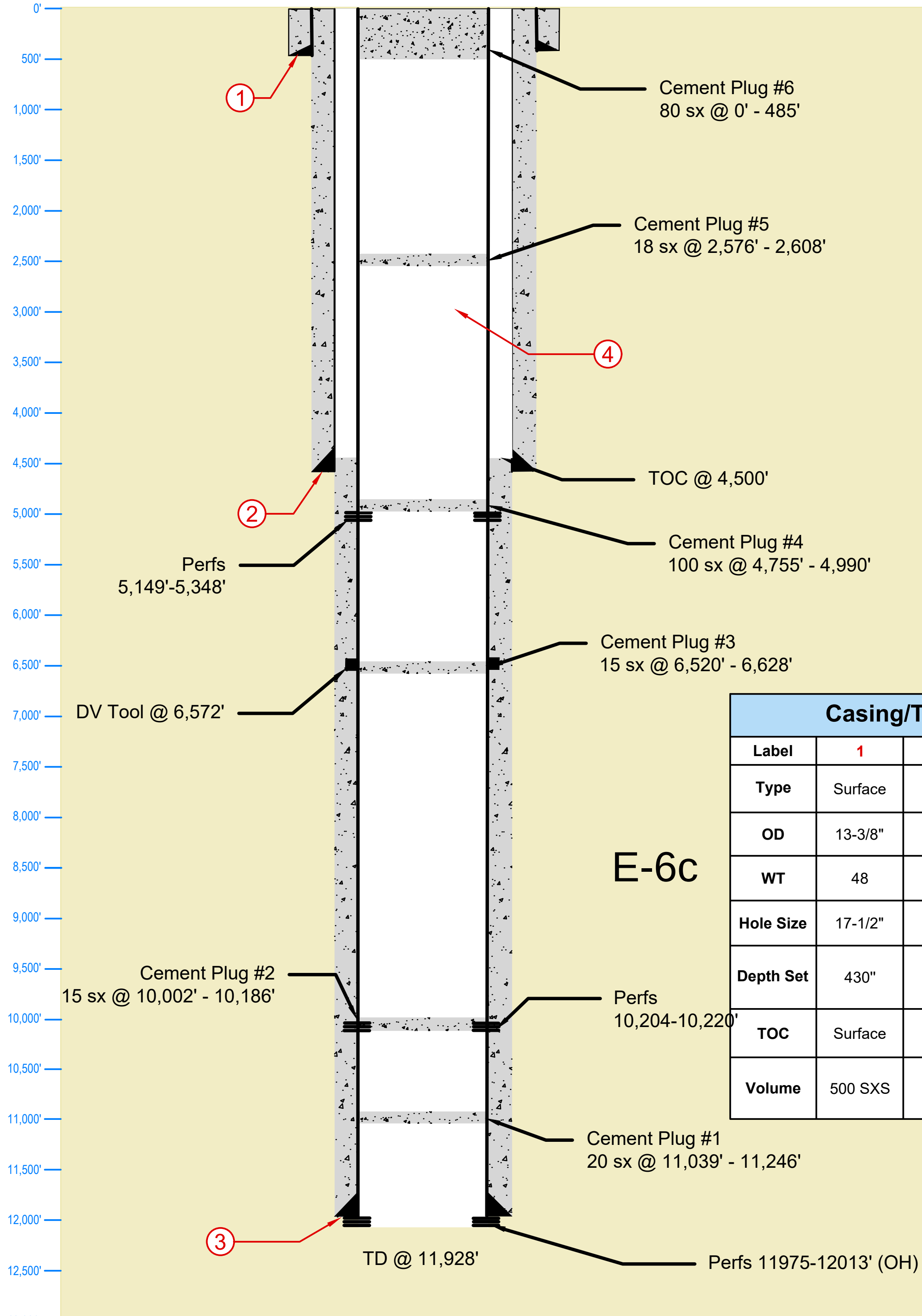


KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6c

Casing/Tubing Information

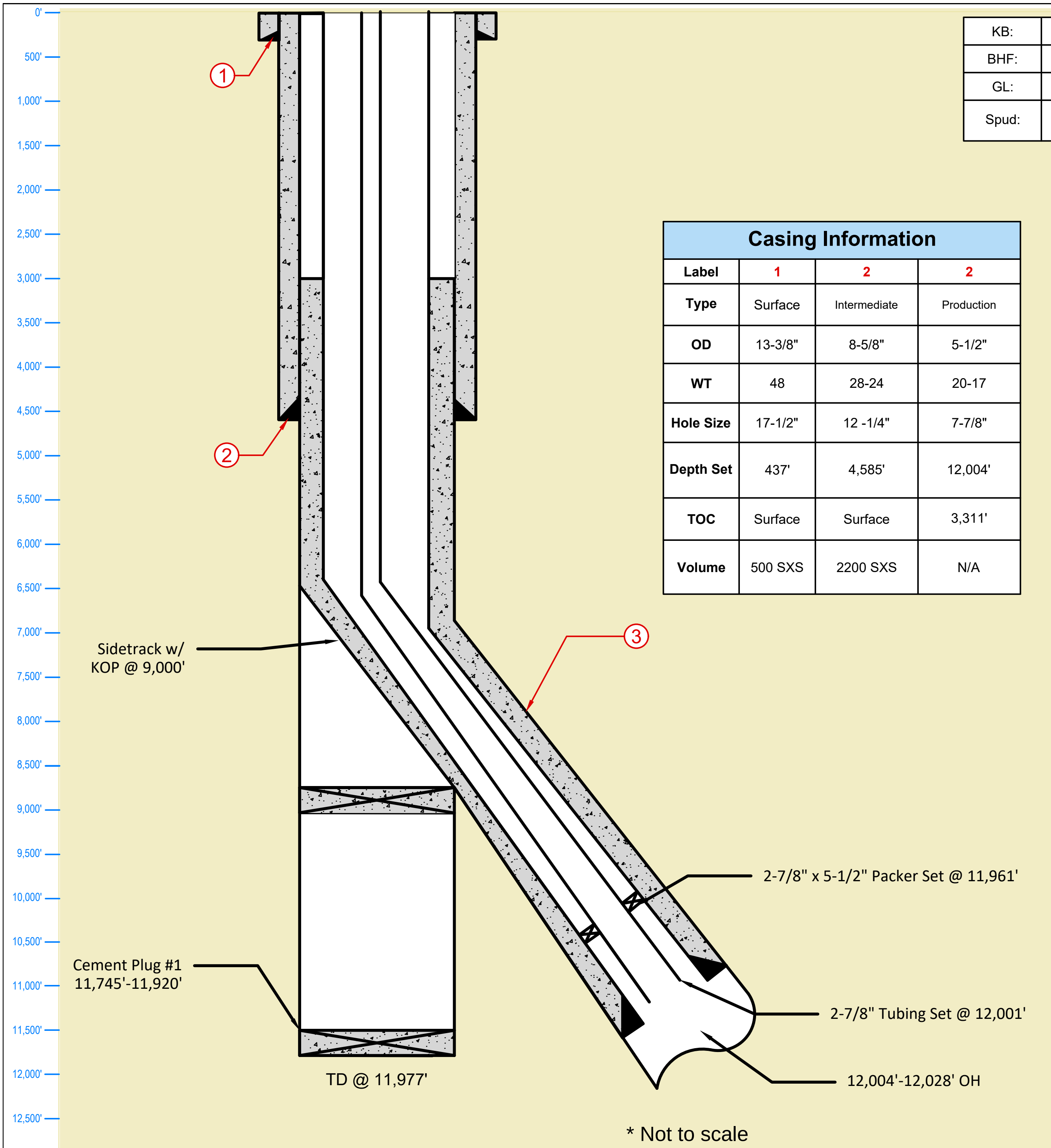
Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	48	38/32	17/20	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	430"	4,600'	4,500"	11,975'
TOC	Surface	Surface	Surface	N/A
Volume	500 SXS	1900 SXS	1300 SXS	N/A

MCGINTY #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-33849	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/21/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

KB:	3,768'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6d



* Not to scale

Casing Information

Label	1	2	2
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	28-24	20-17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	437'	4,585'	12,004'
TOC	Surface	Surface	3,311'
Volume	500 SXS	2200 SXS	N/A

McGinty 2 #2

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DENVER · COLLEGE STATION · BATON ROUGE · EDMONTON

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32107	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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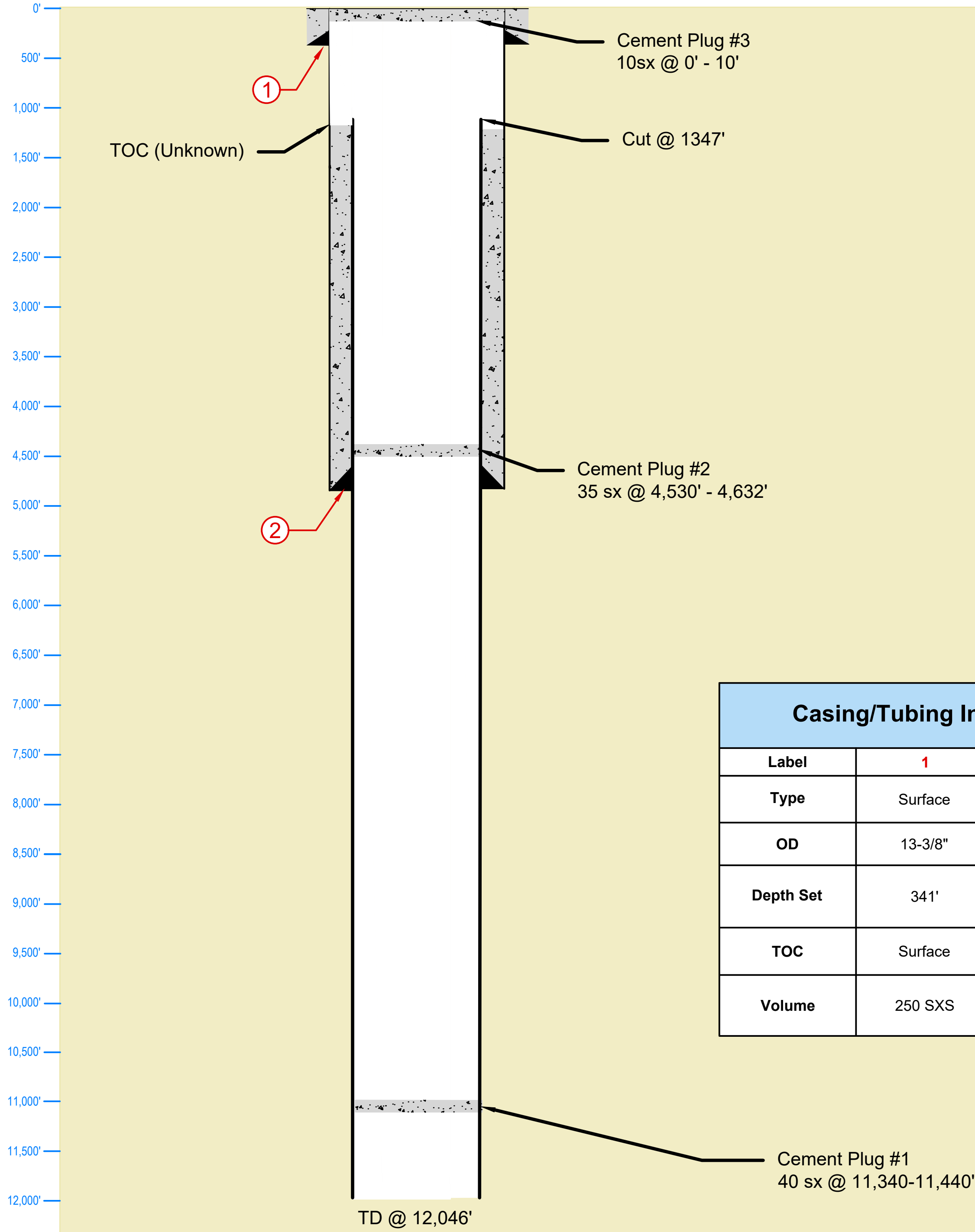

KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6e

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	9-5/8"
Depth Set	341'	4,581'
TOC	Surface	Surface
Volume	250 SXS	1500 SXS

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R.N. McGinty #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No:	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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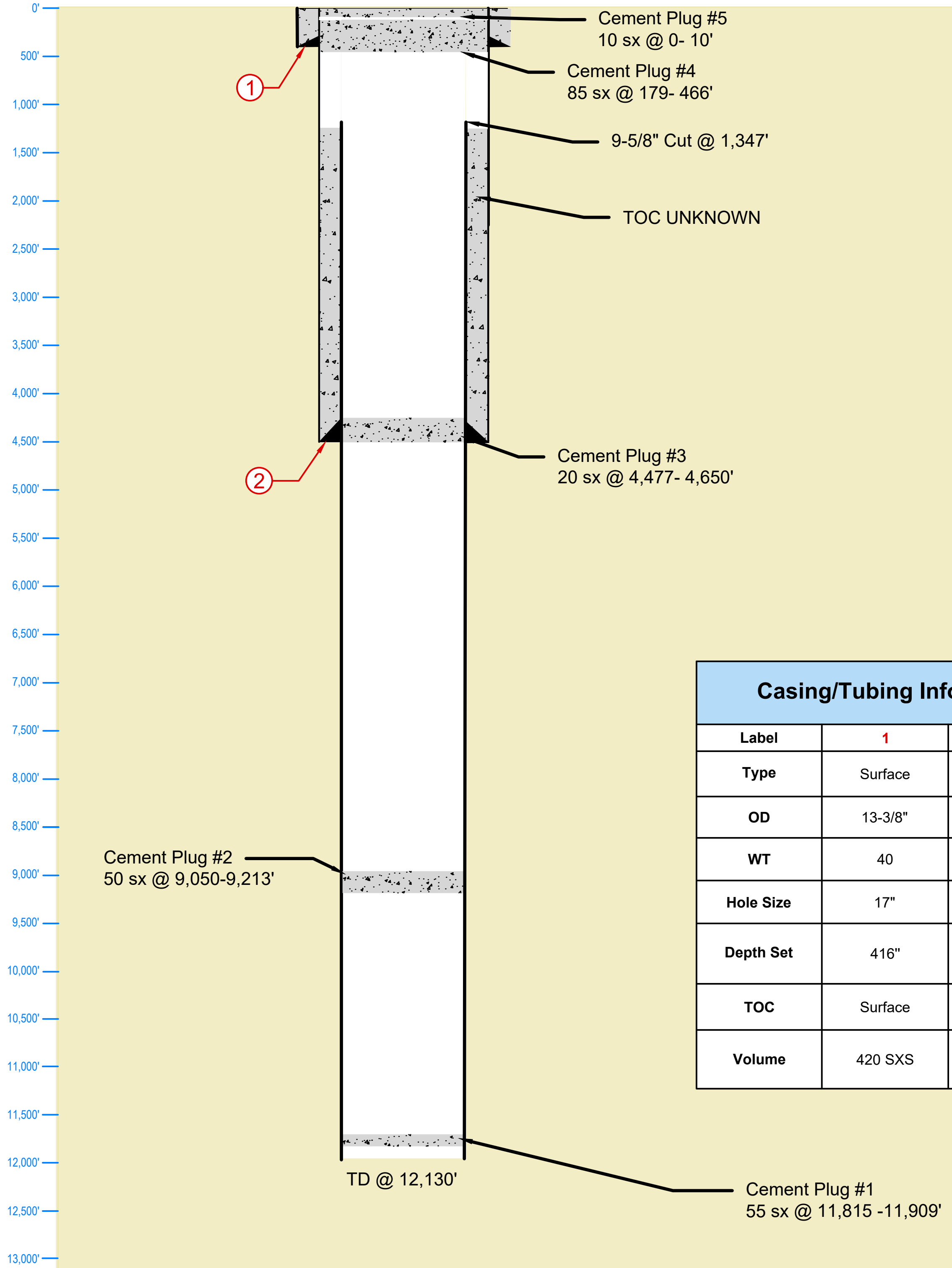

KB:	N/A'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6f

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	8-5/8"
WT	40	36
Hole Size	17"	11"
Depth Set	416"	4,600'
TOC	Surface	Surface
Volume	420 SXS	1250 SXS

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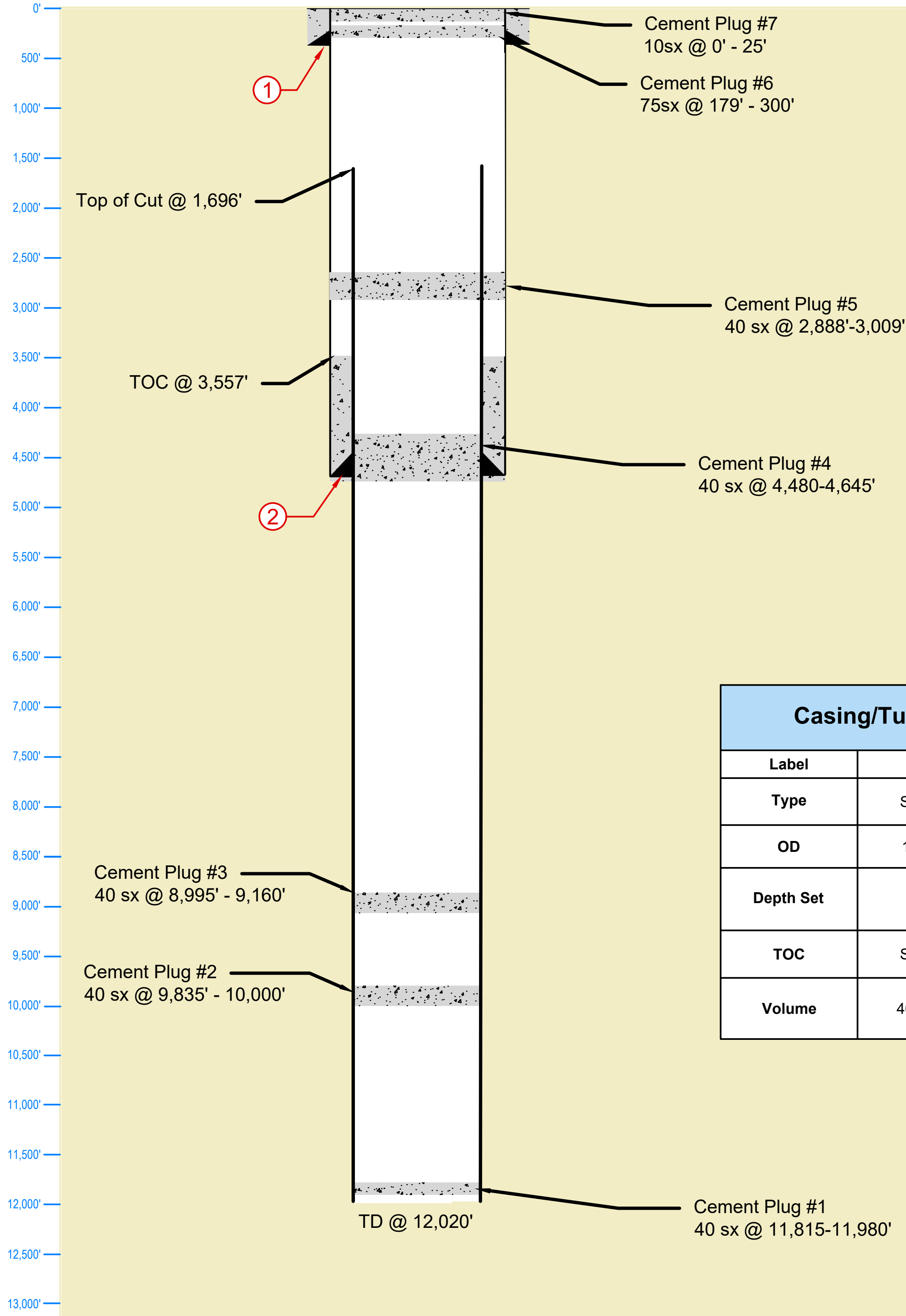
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

Tenneco Fee #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32612	**Field:** BRAHANEY	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	



KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6g

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	12-3/4"	8-5/8"
Depth Set	358'	4,595'
TOC	Surface	3,557'
Volume	400 SXS	200 SXS

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West Plains Unit #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 4250130981	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/17/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

Request for Additional Information: Campo Viejo Gas Processing Plant
July 6, 2022

Instructions: Please enter responses into this table and make corresponding revisions to the MRV Plan as necessary. Any long responses, references, or supplemental information may be attached to the end of the table as an appendix. This table may be uploaded to the Electronic Greenhouse Gas Reporting Tool (e-GGRT) in addition to any MRV Plan resubmissions.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
1.	7	56	"Per 40 CFR §98.444(b), since the flow rate of CO2 injected will be measured with a volumetric flow meter, the total annual mass of CO2, in metric tons, will be calculated by multiplying the mass flow by the CO2 concentration in the flow according to Equation RR-4…" The above sentence states that flow will be measured with a volumetric flow meter, but then also states that equation RR-4, which is for mass flow meters, will be used. If you use a mass flow meter, you must use equation RR-4 (40 CFR 98.443(c)(1)). If you use a volumetric flow meter, you must use equation RR-5 (40 CFR 98.443(c)(2)). Please clarify what type of flow meter and which equation will be used to calculate the annual CO2 mass injected and update the MRV plan as necessary.	Volumetric Flow Meter is the correct type. This section was modified to reflects that the flow rate measurements are volumetric and the equation changed to RR-5 with corrected input variables.

Subpart RR Monitoring, Reporting, and Verification (MRV) Plan
Pozo Acido Viejo #1

Yoakum County, Texas

Prepared for *Stakeholder Gas Services, LLC*
San Antonio, TX

By

Lonquist Sequestration, LLC
Austin, TX

Version 2
May 2022

INTRODUCTION

Stakeholder Gas Services, LLC ("Stakeholder") currently has a Class II acid gas injection ("AGI") permit, issued by the Texas Railroad Commission ("TRRC") in August 2018, for its Pozo Acido Viejo #1 well ("PAV #1"), API No. 42-501-36935. This permit currently authorizes Stakeholder to inject up to 6.9 million standard cubic feet per day ("MMSCF/d") of treated acid gas ("TAG") into the Bronco (Siluro-Devonian) Field at a depth of 12,020 to 12,349 feet with a maximum allowable surface pressure of 6,010 psi. Since being permitted, injection has proceeded without incident. This AGI well is associated with Stakeholder's Campo Viejo gas treating and processing plant ("Campo Viejo Facility") located in a rural, sparsely populated area of Yoakum County, Texas, approximately 10 miles west of the town of Plains.

Figure 1 – Location of PAV #1 Well

Stakeholder is submitting this Monitoring, Reporting, and Verification ("MRV") plan to the EPA for approval under 40 CFR §98.440(a), Subpart RR, of the Greenhouse Gas Reporting Program ("GHGRP"). In addition to submitting this MRV plan to the EPA, Stakeholder also is applying to the TRRC for an amendment to the PAV #1 well's Class II permit to increase its authorized injection volume. Approval of the permit amendment will allow Stakeholder to increase the capacity of its existing Campo Viejo Facility, which removes H_2S and CO_2 from natural gas production using amine treating, as well as increase the injection well capacity for a future gas processing facility which is currently under development by Stakeholder. Additionally, expanded capacity allows Stakeholder to potentially provide future disposal in its acid gas injection well for oil and gas waste derived TAG from similar third-party gas processing facilities. Increased disposal capacity will allow for greater gas processing capacity in the region, ultimately helping to reduce flaring and its associated emissions. Throughout this document, both in written reference and in modeling inputs, Stakeholder has used the applied-for expanded permit capacity of 20 MMSCF/d. Stakeholder plans to inject CO_2 for approximately 22 more years.

ACRONYMS AND ABBREVIATIONS

%	Percent (Age)
°C	Degrees Celsius
°F	Degrees Fahrenheit
AMA	Active Monitoring Area
BCF	Billion Cubic Feet
CH_4	Methane
CMG	Computer Modeling Group
CO_2	Carbon Dioxide (may also refer to other Carbon Oxides)
E	East
EOS	Equation of State
EPA	U.S. Environmental Protection Agency
ESD	Emergency Shutdown
FG	Fracture Gradient
ft	Foot (Feet)
GAU	Groundwater Advisory Unit
GEM	Computer Modelling Group's GEM 2020.11
GHGs	Greenhouse Gases
GHGRP	Greenhouse Gas Reporting Program
H_2S	Hydrogen Sulfide
md	Millidarcy(ies)
mi	Mile(s)
MIT	Mechanical Integrity Test
MM	Million
MMA	Maximum Monitoring Area
MMCF	Million Cubic Feet
MMSCF	Million Standard Cubic Feet
MMSCF/d	Million Standard Cubic Feet per Day
MRV	Monitoring, Reporting and Verification

ν	Poisson's Ratio
N	North
NW	Northwest
OBG	Overburden Gradient
PAV #1	Pozo Acido Viejo #1
PG	Pore Gradient
pH	Scale of Acidity
ppm	Parts per Million
psi	Pounds per Square Inch
psig	Pounds per Square Inch Gauge
S	South
SE	Southeast
SF	Safety Factor
SWD	Salt Water Disposal
TAC	Texas Administrative Code
TAG	Treated Acid Gas
TOC	Total Organic Carbon
TRRC	Texas Railroad Commission
UIC	Underground Injection Control
USDW	Underground Source of Drinking Water
W	West

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SECTION 1 – FACILITY INFORMATION

This section contains key information regarding the Acid Gas and CO_2 injection facility.

Reporter number:

- Gas Plant Facility Name: Campo Viejo Gas Processing Plant
- Greenhouse Gas Reporting Program ID: 573525
    - Currently reporting under Subpart UU
- Operator: Stakeholder Gas Services, LLC

Underground Injection Control (UIC) Permit Class: Class II

The TRRC regulates oil and gas activities in Texas and has primacy to implement the Underground Injection Control ("UIC") Class II program. TRRC classifies the PAV #1 well as a UIC Class II well. A Class II permit was issued to Stakeholder under TRRC Rule 46 (entitled "Fluid Injection into Productive Reservoirs") and Rule 36 (entitled "Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas").

UIC Well Identification Number:

Pozo Acido Viejo #1, API No. 42-501-36935, UIC #000117488.

SECTION 2 – PROJECT DESCRIPTION

This Project Description discusses the geologic setting, planned injection volumes and process, and the reservoir modeling performed for the PAV #1 well. Stakeholder, with the assistance of Lonquist and Co., LLC, originally provided a geological overview as part of Stakeholder's original Class II application with the TRRC in 2018. Lonquist has updated the geology and the plume modeling within the reservoir for this MRV Plan.

The PAV #1 well is located and designed to protect against migration of CO_2 into productive oil and gas formations, freshwater aquifers and against surface releases. The injection interval for PAV #1 is located over 3,320' below the active producing formations in the area and 9,770 feet below the base of the lowest useable quality water table, as Shown in Figure 2. This well injects both H_2S and CO_2, therefore the well and the facility are designed to minimize any leakage to the surface.

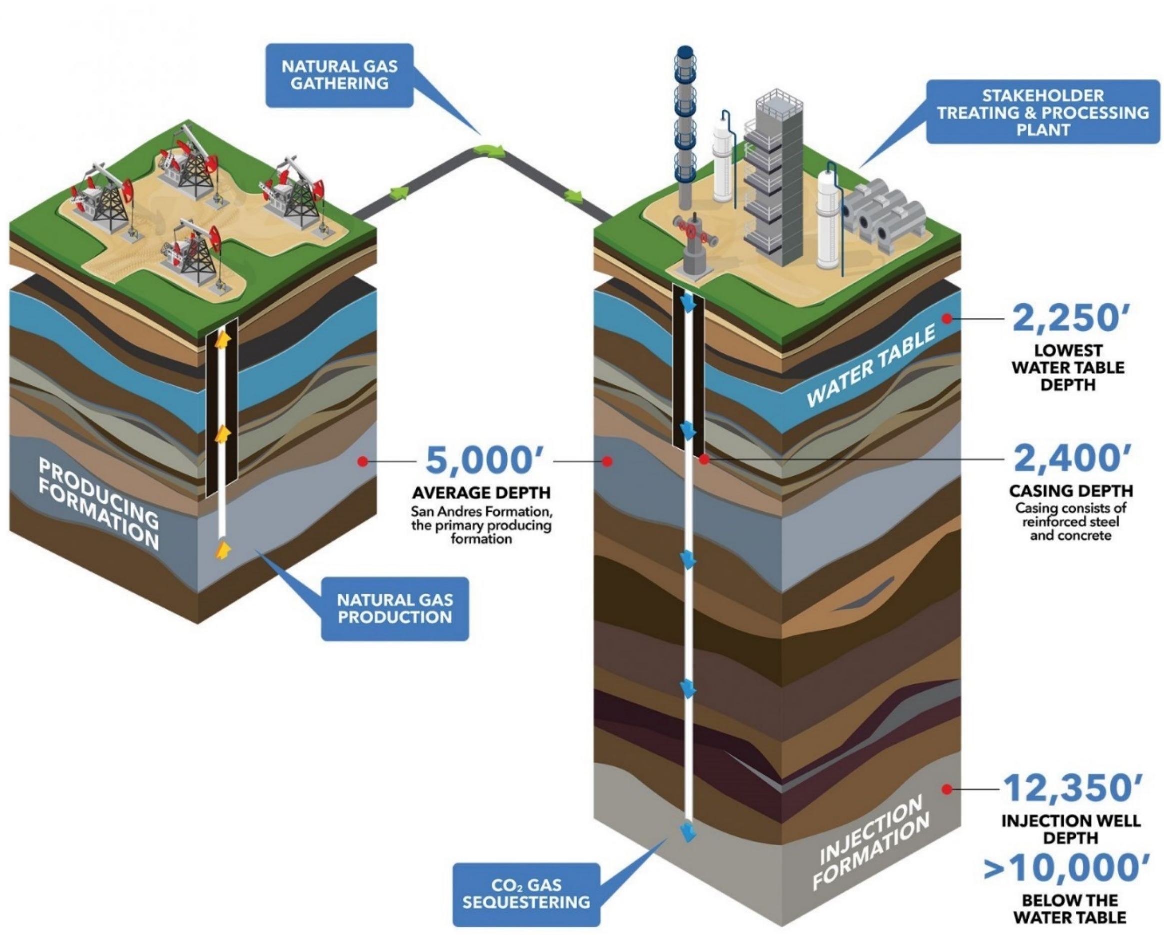


Figure 2 – Illustrative overview of PAV #1 and Campo Viejo Facility

Regional Geology

The PAV #1 well is located on the southern portion of the Northwestern Shelf within the larger Permian Basin as seen in Figure 3. The Northwestern Shelf is a broad marine shelf located in the northern portion of the Permian Basin.

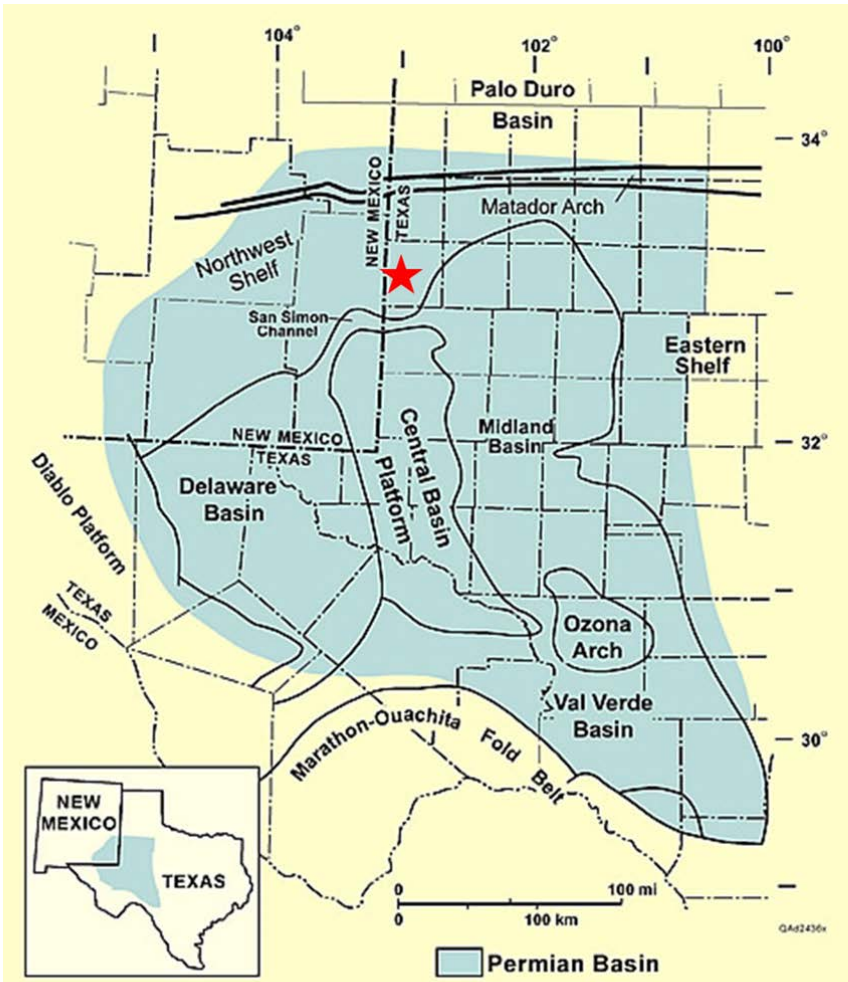


Figure 3 – Regional Map of the Permian Basin. Red Star is approximate location of PAV #1 well

Figure 4 depicts the stratigraphic column found at the PAV #1 well location with a red star referencing the injection formation and green stars indicating the productive intervals in the area. The primary injection interval is found within the Wristen group, of Silurian-age, as seen in Figure 5. The TRRC refers to this sequence under the general terms “Devonian”, “Silurian-Devonian” or “Siluro-Devonian”.

Period	Epoch	Formation	General Lithology
Permian	Ochoan	Dewey Lake	Redbeds/Anhydrite
Permian	Ochoan	Rustler	Halite
Permian	Ochoan	Salado	Halite/Anhydrite
Permian	Guadalupian	Tansil	Anhydrite/Dolomite
Permian	Guadalupian	Yates	Anhydrite/Dolomite
Permian	Guadalupian	Seven Rivers	Dolomite/Anhydrite
Permian	Guadalupian	Queen	Sandy Dolomite/Anhydrite/Sandstone
Permian	Guadalupian	Grayburg	Dolomite/Anhydrite/Shale/Sandstone
Permian	Leonardian	★ San Andres	Dolomite/Anhydrite
Permian	Leonardian	Glorieta	Sandy Dolomite
Permian	Leonardian	Yeso: Paddock	Dolomite/Anhydrite/Sandstone
Permian	Leonardian	Yeso: Blinebry	Dolomite/Anhydrite/Sandstone
Permian	Leonardian	Yeso: Tubb	Dolomite/Anhydrite/Sandstone
Permian	Leonardian	Yeso: Drinkard	Dolomite/Anhydrite/Sandstone
Permian	Leonardian	Abo	Dolomite/Anhydrite/Shale
Permian	Wolfcampian	★ Wolfcamp	Limestone/Dolomite
Pennsylvanian	Virgilian	Cisco	Limestone/Dolomite
Pennsylvanian	Missourian	Canyon	Limestone/Shale
Pennsylvanian	Des Moinesian	Strawn	Limestone/Sandstone
Pennsylvanian	Atokan	Bend	Limestone/Sandstone/Shale
Pennsylvanian	Morrowan	Morrow	Limestone/Sandstone/Shale
Mississippian		Mississippian Lime	Limestone
Devonian		Woodford	Shale
Silurian		★ Wristen Group	Dolomite/Limestone
Silurian / Ordovician	/ Upper	Fusselman	Dolomite/Chert
Ordovician	Upper	Montoya	Dolomite/Chert
Ordovician	Middle	Simspson Gp	Limestone/Sandstone/Shale
Ordovician	Lower	Ellenburger	Dolomite

Figure 4 – Stratigraphic column of the Northwest Shelf. Red star indicates injection interval. Green star indicates productive intervals.

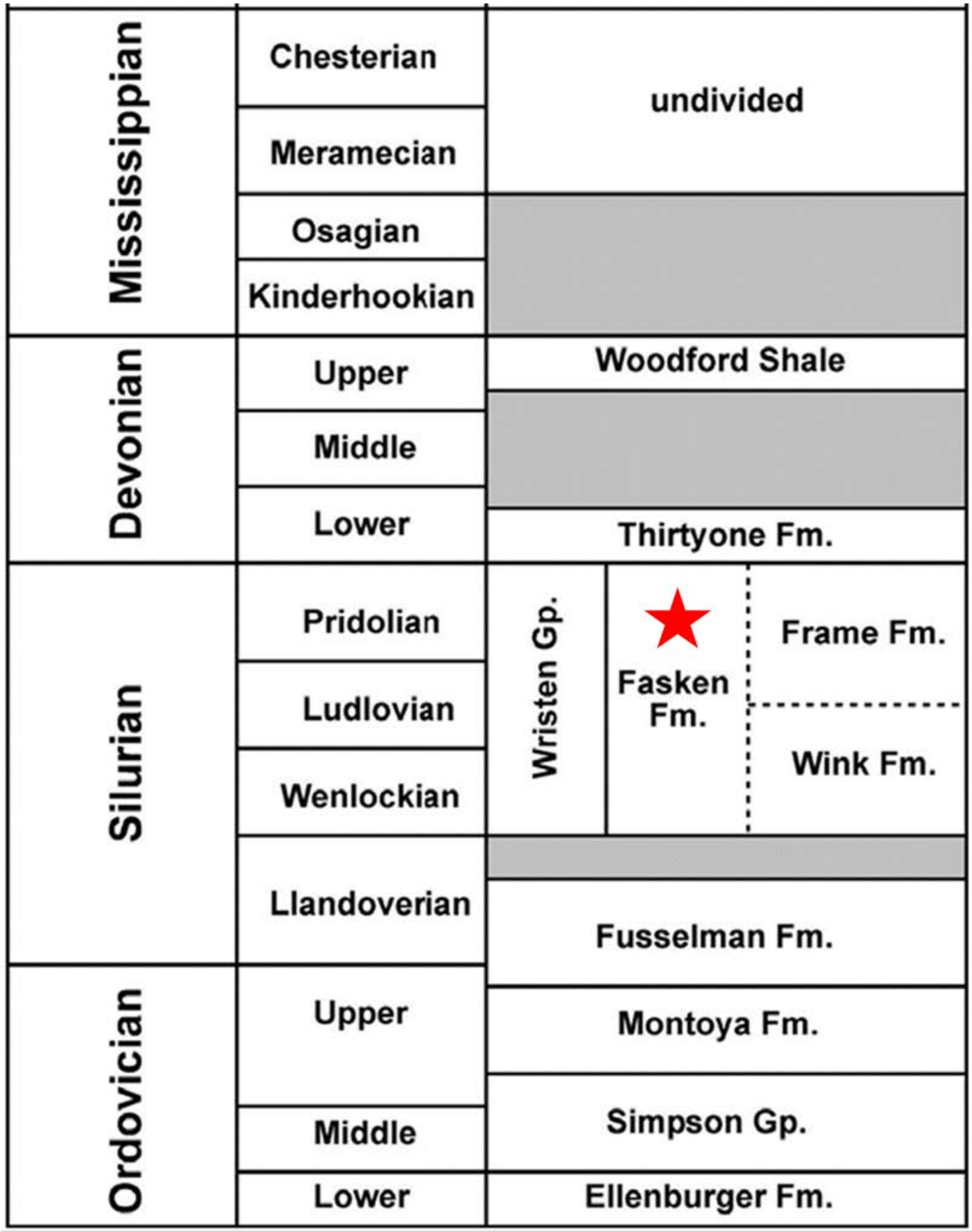


Figure 5 – Stratigraphic column depicting the composition of the Silurian group. Red star indicates injection interval (Broadhead, 2005)

The Wristen group was deposited in a basin platform setting across the northern half of the Permian Basin. The depositional environment over Yoakum County during the Silurian period was a shallow inner platform, the margin of which exists to the south, in southern Andrews County, Texas. The Silurian-age lithology on the inner platform is dominated by grain-rich skeletal carbonates. Carbonate buildups are common within the shallow inner platform, mainly skeletal wackestone, indicating a lower-energy deposition on the inner

platform. The carbonate shelf margin to the south acted as a barrier from basin-ward wave energy (Ruppel and Holtz, 1994).

Depositional cycles within the inner platform indicate it was controlled by episodic sea level rise and fall, resulting in sub-areal exposure and diagenesis. The diagenesis of the Silurian-age carbonate rocks initiated secondary porosity development and increased permeability. Dolomite and solution-related features are the most prominent diagenetic characteristics found within the Silurian. The Wristen Group is composed of three formations; Fasken, Frame, and Wink formations. The Frame and Wink formations are found near the ramp boundary to the south, while the Fasken formation is found predominantly in the inner platform, where the PAV #1 well is located. The Fasken formation is predominately dolomite grading to limestone, occurring as cycles, down section. This dolomitization is due in part to sub-areal exposure, during which karsts and secondary porosity developed. Additional dolomitization was possible during successive sea level fluctuations via movement of magnesium-rich solution through karsts and vugs, which acted as channels for fluid flow (Ruppel and Holtz, 1994).

Figure 6 shows a regional isopach map of the Silurian (combined Fasken and Fusselman formations) with a red star depicting the PAV #1 well location. Thickness of the Silurian-age rock is approximately 1,000 feet at the PAV #1 well location.

North of Andrews County there is little differentiation between the Fasken and Fusselman formations which are both carbonate deposits with the potential for sub-areal exposure and porosity development. The injection interval defined here is based on petrophysical characteristics rather than stratigraphic nomenclature. For purposes of this MRV Plan, the Fasken is defined as the porous and permeable carbonate rock at the top of the Silurian section and the Fusselman is the low permeability rock that comprises the carbonate section between the Fasken and the Montoya formation.

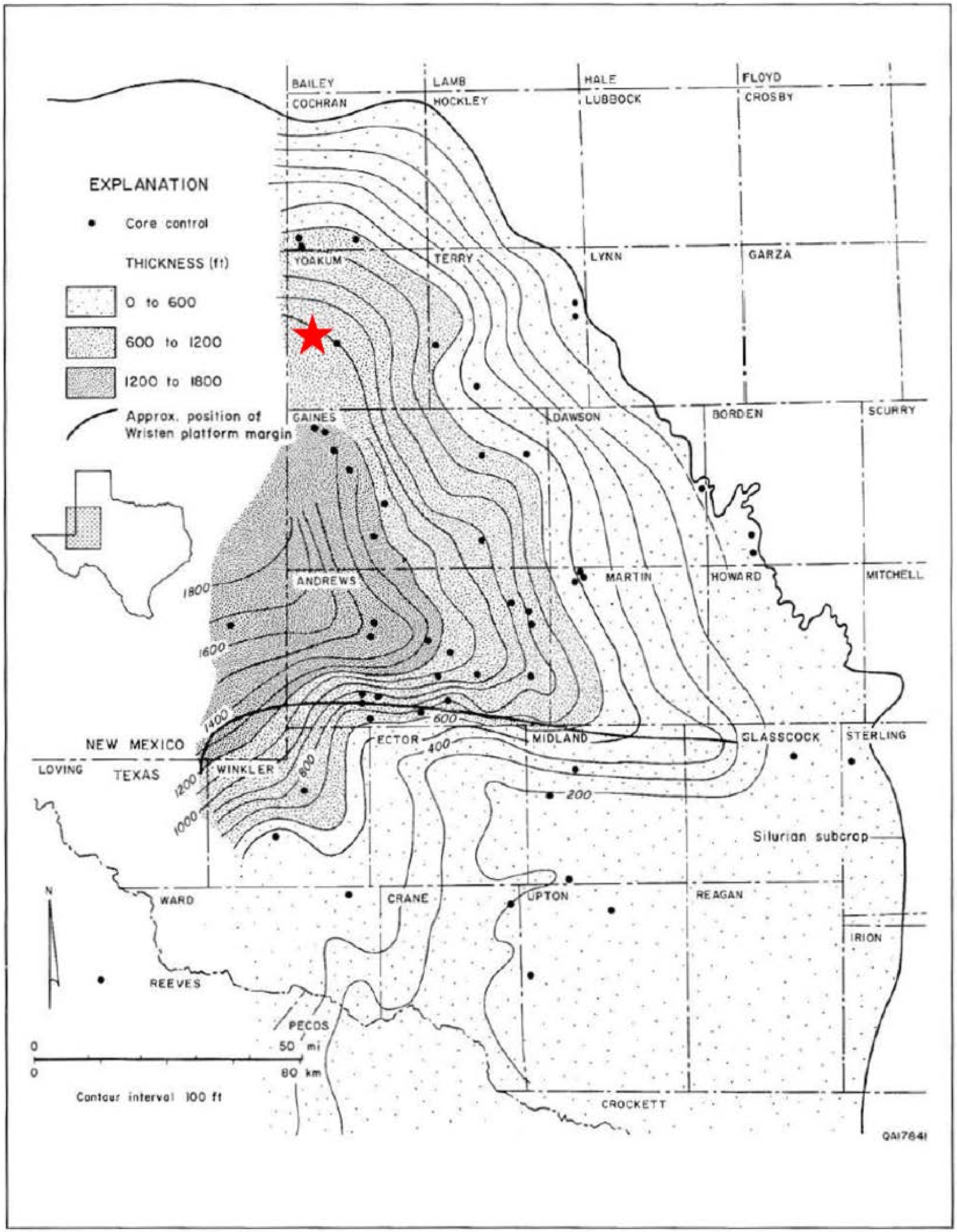


Figure 6 – Thickness map of the Silurian system which composes the Fusselman and Wristen group

Regional Faulting

A major uplift that began in the Pennsylvanian to the south, the Central Basin Platform, ceased in Wolfcampian time, which caused a regional unconformity of the underlying formations (Hoak, Sundberg, and Ortoleva). Faulting on the Northwest Shelf can be seen through high angle basement faults that tend to die within the Pennsylvanian strata. These faults predominately represent contractional (thrust) faults that were initiated during the Pennsylvanian as a result of regional tectonics. Hydrocarbon traps within the Wristen group are primarily anticlinal structures dependent upon reservoir development (Broadhead, 2005).

Site Characterization

The PAV #1 well is located in Section 452, Block D, John H. Gibson Survey, in Yoakum County, Texas. Stakeholder owns the 200-acre surface tract where the plant and PAV #1 well are located. The following discusses the geological character of this site.

Stratigraphy and Lithologic Characteristics

Figure 7 depicts an open hole log from an offset well (API No. 42-501-33943) to the PAV #1 well indicating the injection and primary upper confining zone.

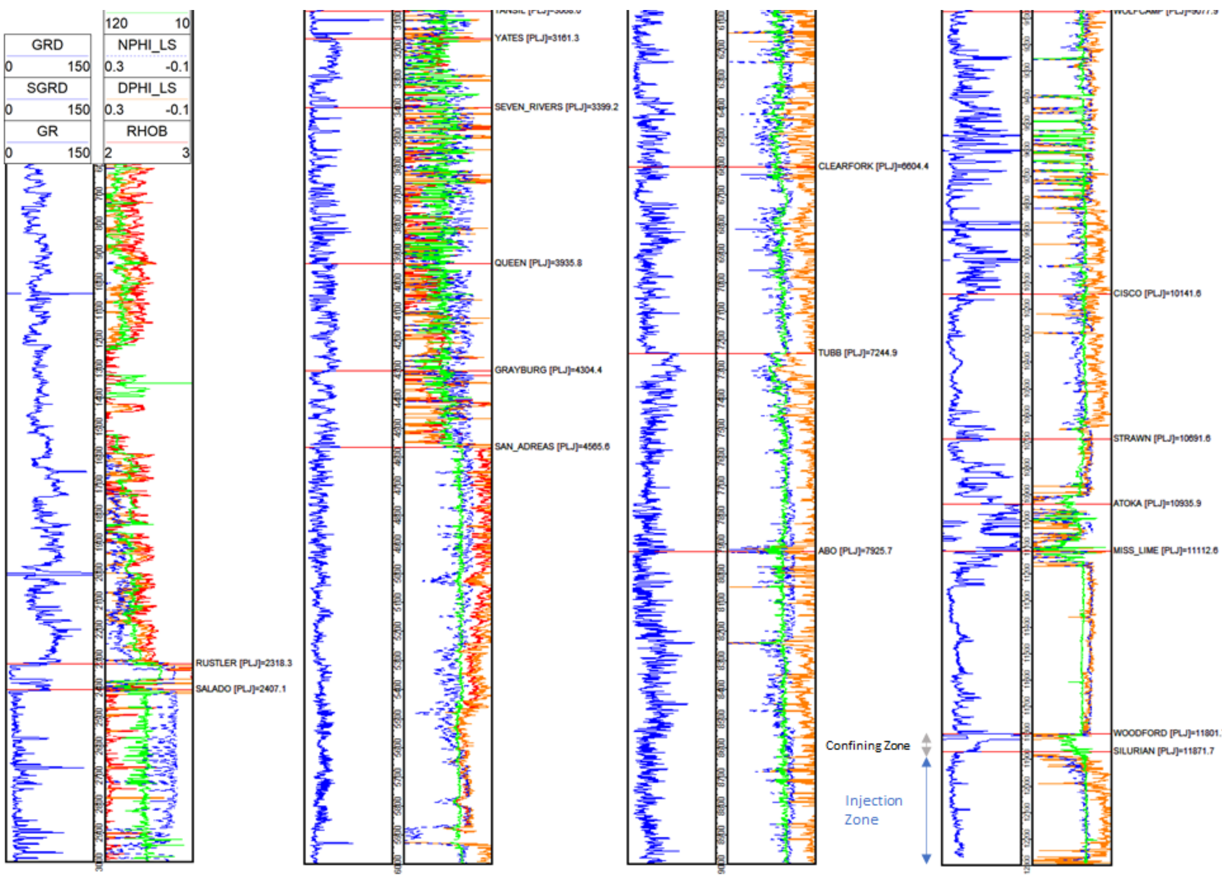


Figure 7 – Type Log (42-501-33943) with tops, confining and injection zones depicted

Upper Confining Interval - Woodford Shale

The Woodford is a late Devonian-aged organic-rich shale deposited as a result of a widespread marine transgression. The flooding event occurred over the majority of the Permian basin, which produced a low-relief blanket-like shale deposit of the Woodford. Two major lithofacies found within the Woodford are black shale and siltstone. Nutrient-rich surface waters promoted the decay of abundant organic matter within the Woodford, resulting in a high total organic carbon ("TOC") percentage. The Woodford shale acts as the primary source and sealant rock for the Wristen Group (Comer, 1991).

Figure 8 is a description of a core sample taken in Lea County, New Mexico just southwest of the PAV #1 well location. This sample is referenced as C9 in the reference map with the blue star representing the PAV #1 well. In the core description, black shale with abundant illitic clays is observed in the upper section, and medium gray dolomitic siltstone found in the basal section. The mineralogic and lithologic properties recorded in this description serve as excellent sealant characteristics to prohibit any injected fluids from migrating above the injection interval.

The Woodford at the PAV #1 well location is encountered at 11,965 ft and is approximately 87 ft thick.

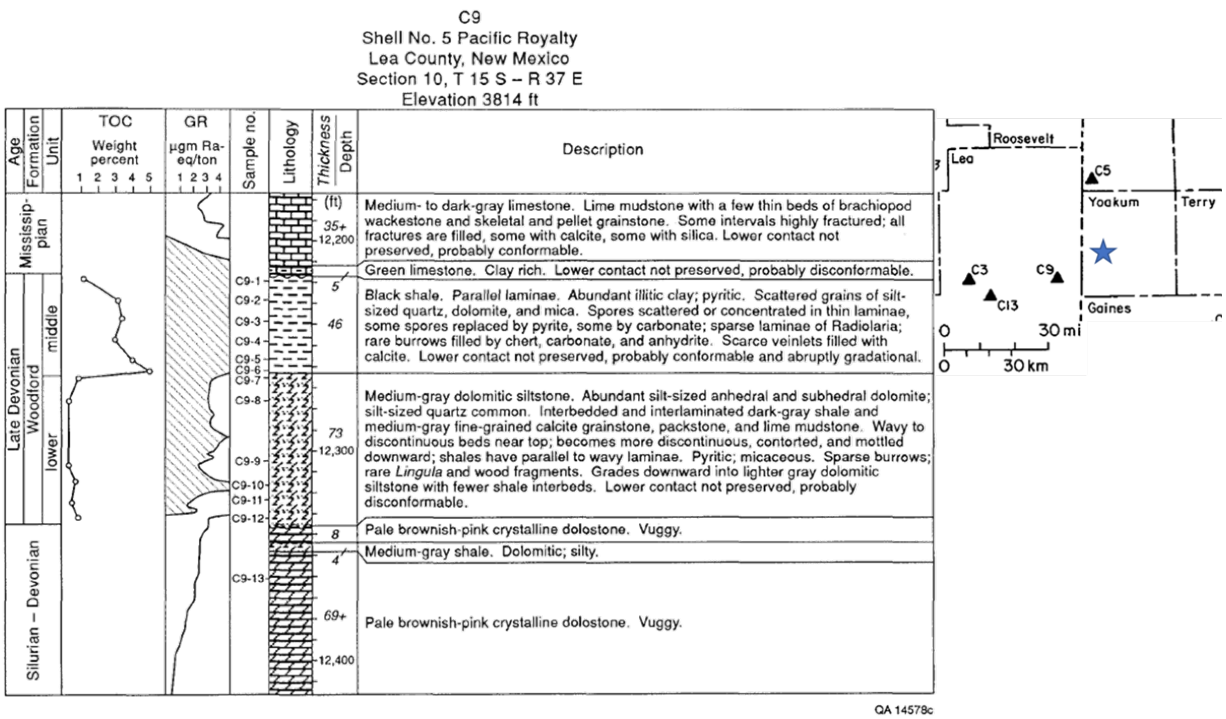


Figure 8 – Core description of the Woodford Shale and Upper Silurian (Ruppel and Holtz, 1994)

Injection Interval – Fasken Formation

The PAV #1 well reaches total depth in the Fasken formation (Silurian in age), directly below the Woodford formation. Dolomites at the top of the Fasken formation underwent multiple leaching and diagenetic episodes which developed secondary porosity. This is evidenced in offset wells by the practice of only drilling through the top 30 feet of the Fasken, in anticipation of encountering the best reservoir quality. In Figure 8, the uppermost Silurian section is described as 'vuggy dolostone' in the core description. Beds below the top

of the Fasken section may also have similar petrophysical attributes if exposed to multiple diagenetic events. Solution-collapse and karst breccia horizons can be found within inner platform deposits, some occurring as much as 100 ft below the Fasken top (Ruppel and Holtz, 1994).

<u>Porosity/Permeability Development</u>

Porosity in the Fasken formation at the PAV #1 well location is typically moldic and intercrystalline associated with leaching of allochem-rich intervals. Porosity is directly related to these leaching events which occurred during and post-deposition, resulting in vugs and karst-like features. Figure 9 provides reservoir information from core data within fields in the Wristen buildup and platform carbonate play. The average porosity of these cores is 7.1% with an average permeability of 45.28 millidarcies (Ruppel and Holtz, 1994). The porosity and permeability described in the offset core data indicate the Fasken formation provides sufficient accessible pore space for the amount of fluid injection proposed.

Using the above values as reference points, an offset porosity log (API No. 42-501-33942) was evaluated. Figure 10 is the product of the petrophysical analysis performed on the offset open hole log shown in Figure 7. A permeability curve was generated from the effective porosity curve using the table in Figure 9 to establish the porosity-permeability relationship. In Figure 10, the majority of the injection interval's porosity and permeability is found at the top of the Fasken formation, which correlates with the diagenetic processes described above. These curves are extrapolated to the injection site and used to establish reservoir characteristics in the plume model.

	Fusselman Shallow Platform Carbonate play	Wristen Buildups and Platform Carbonate play	Thirtyone Ramp Carbonate play	Thirtyone Deep-Water Chert play
Porosity (%)				
Number of data points	33	30	16	35
Mean	7.93	7.10	6.41	14.85
Minimum	1.00	2.70	3.50	2.00
Maximum	17.70	14.00	9.50	30.00
Standard deviation	4.01	2.67	1.75	6.76
Permeability (md)				
Number of data points	21	24	12	33
Mean	11.61	45.28	1.51	8.56
Minimum	0.60	2.90	0.40	1.00
Maximum	84.80	400.00	30.00	100.00
Standard deviation	22.48	99.17	8.36	22.23
Initial water saturation (%)				
Number of data points	24	28	10	31
Mean	26.96	31.55	24.70	31.46
Minimum	10.00	20.00	16.00	10.00
Maximum	50.00	55.00	40.00	45.00
Standard deviation	9.31	10.45	7.39	8.33
Residual oil saturation (%)				
Number of data points	8	13	5	22
Mean	34.06	30.54	21.30	29.17
Minimum	30.00	20.00	9.00	14.00
Maximum	50.00	35.00	35.00	48.20
Standard deviation	6.99	4.61	11.66	9.76
Oil viscosity (cp)				
Number of data points	11	12	5	21
Mean	0.69	1.16	0.33	0.68
Minimum	0.13	0.32	0.04	0.07
Maximum	1.08	2.00	1.00	1.03
Standard deviation	0.81	0.75	0.40	0.42
Oil formation volume factor				
Number of data points	21	22	6	32
Mean	1.57	1.22	1.65	1.50
Minimum	1.05	1.05	1.31	1.30
Maximum	1.91	1.55	1.66	1.73
Standard deviation	0.28	0.14	0.48	0.16
Bubble-point pressure (psi)				
Number of data points	9	9	5	19
Mean	2,272	1,055	3,750	2,752
Minimum	798	450	2,660	1,755
Maximum	4,050	2,600	4,440	4,656
Standard deviation	1,300	689	756	667

Figure 9 – Table of reservoir properties found within the Wristen buildups and platform plays (Ruppel and Holtz, 1994)

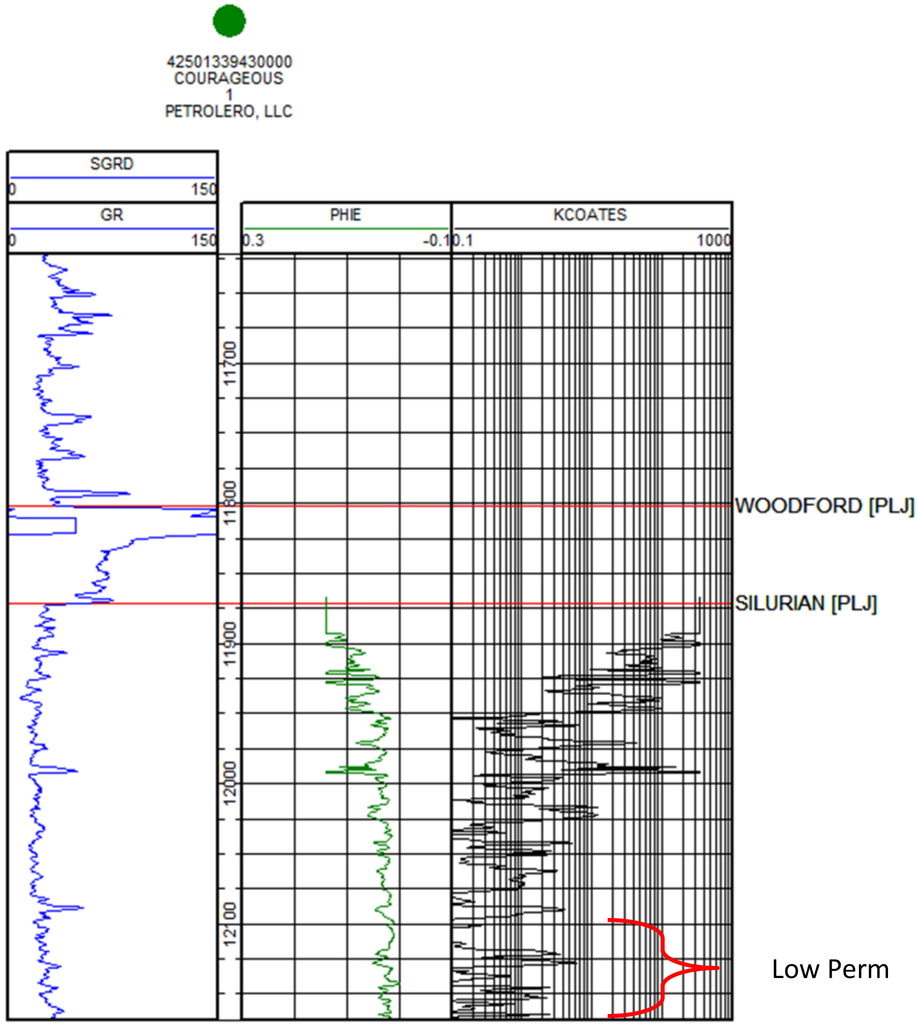


Figure 10 – Offset open hole log (42-501-33943) with effective porosity (green) and permeability (black)

Formation Fluid

Four wells were identified through a review of chemical analyses of oil-field brines from the U.S. Geological Survey National Produced Waters Geochemical Database v2.1 within the Devonian, Silurian-Devonian, or Fusselman formations within 20 miles of the PAV #1 well. The location of these wells is shown in Figure 11. Water chemistry analyses conducted on oil-field brines in Gaines County, as reported to the Texas Water Development Board, provided additional data on Devonian and Silurian reservoir fluids. Results from the synthesis of these two sources are provided in Table 1. The fluids have greater than 20,000 parts per million ("ppm") total dissolved solids, therefore these aquifers are considered saline. These analyses indicate the in-situ reservoir fluid of the Devonian, Silurian, and Fusselman formations are compatible with the proposed injection fluids.

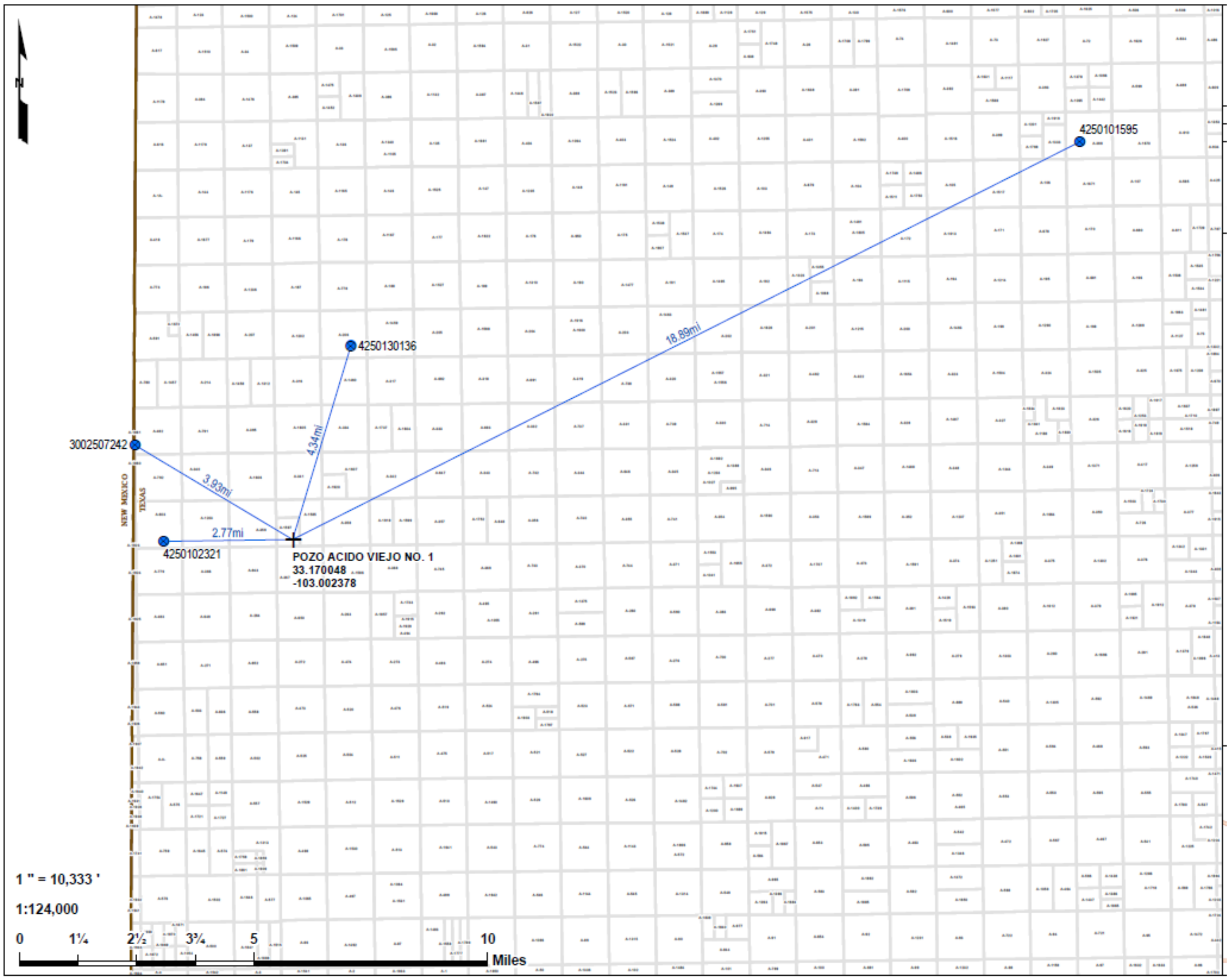


Figure 11 – Offset wells used for Formation Fluid Characterization

Table 1 – Analysis of Silurian-Devonian age formation fluids from nearby oil-field brine samples

Measurement	Average	Low	High
Total Dissolved Solids (ppm)	51,933	23,100	81,770
pH	7.2	7.0	7.3
Sodium (ppm)	18,550	7,426	25,377
Calcium (ppm)	2,195	1,010	2,760
chloride (ppm)	27,250	12,810	43,800

Fracture Pressure Gradient

Fracture pressure gradient was estimated using Eaton's equation. Eaton's equation is commonly accepted as the standard practice for the determination of fracture gradients. Poisson's ratio ("ν"), overburden gradient ("OBG"), and pore gradient ("PG") are all variables that can be changed to match the site-specific injection zone. Through literature review and industry standards, we are able to determine the expected fracture gradient. First, 1.05 psi/ft and 0.465 psi/ft were assumed for both the overburden and pore gradients, respectively. These values are considered best practice values when there are no site-specific numbers available. For limestone/dolomite rock, the Poisson's ratio to be assumed to be 0.3 through literature review (Molina, Vilarras, Zeidouni 2016). Using these values in the equation below, a fracture gradient of 0.72 psi/ft was calculated. A 10% safety factor was then applied to this number resulting in maximum allowed bottom hole pressure of 0.64 psi/ft. This was done to ensure that the injection pressure would never exceed the fracture pressure of the injection zone.

For the upper confining interval, a similar fracture gradient as the limestone was calculated. Shale has an increased chance to vertically fracture if the injection interval is fractured (Molina, Vilarras, Zeidouni 2016), so assuming a Poisson's ratio equal to the injection interval was used as a conservative estimate. The lower confining zone was assumed to be of a similar matrix to that of the injection interval, with the key difference being that the formation is much tighter (lower porosity/permeability). The Poisson's ratio was assumed to be slightly higher in this rock. As seen in Table 2, the fracture gradient is slightly higher than the upper zones.

Table 2 – Fracture Gradient Assumptions

	Injection Interval	Upper Confining	Lower Confining
Overburden Gradient (psi/ft)	1.05	1.05	1.05
Pore Gradient (psi/ft)	0.465	0.465	0.465
Poisson's Ratio	0.30	0.30	0.31
Fracture Gradient psi/ft	0.72	0.72	0.73
FG + 10% Safety Factor (psi/ft)	**0.64**	**0.64**	**0.66**

The following steps were taken to calculate fracture gradient:

$$FG = \frac{\nu}{1-\nu}(OBG - PG) + PG$$

$$FG = \frac{0.3}{1-0.3}(1.05 - 0.465) + 0.465 = 0.72$$

$$FG\ with\ SF = 0.72\ \times (1 - 0.1) = \mathbf{0.64}$$

Lower Confining Zone – Fusselman Formation

The low-permeability Fusselman Formation will act as the lower confining unit for the injection interval. Figure 10 shows the tight limestone rock in the lower section that was not exposed to leaching diagenesis. Porosity in the lower section can range from 2-3% with permeabilities below 1 millidarcy. These petrophysical characteristics represent ideal sealing properties to prohibit any migration of injected fluid outside of the injection interval.

Local Structure

Regional structure in the area of the PAV #1 well is dictated by carbonate buildups and structural events causing anticlinal to synclinal features throughout the area. The PAV #1 well is specifically located at the base of a syncline with anticlinal features to the north, west, and east. Figure 12 is a structure map of the Silurian formation of subsea depths with the star representing the location of the PAV #1 well. The red and blue lines represent the cross-section reference lines.

Faulting can be seen to the west of the PAV #1 well location, which set up the hydrocarbon trap for the Bronco field. Figures 13 and 14 are north-south and west-east structural cross sections showing the structural dips. As seen in these figures, the Woodford is laterally present above the injection interval, alleviating risk of erosion of the upper sealant formation.

Larger versions of Figures 12, 13 and 14 are provided in Appendix A.

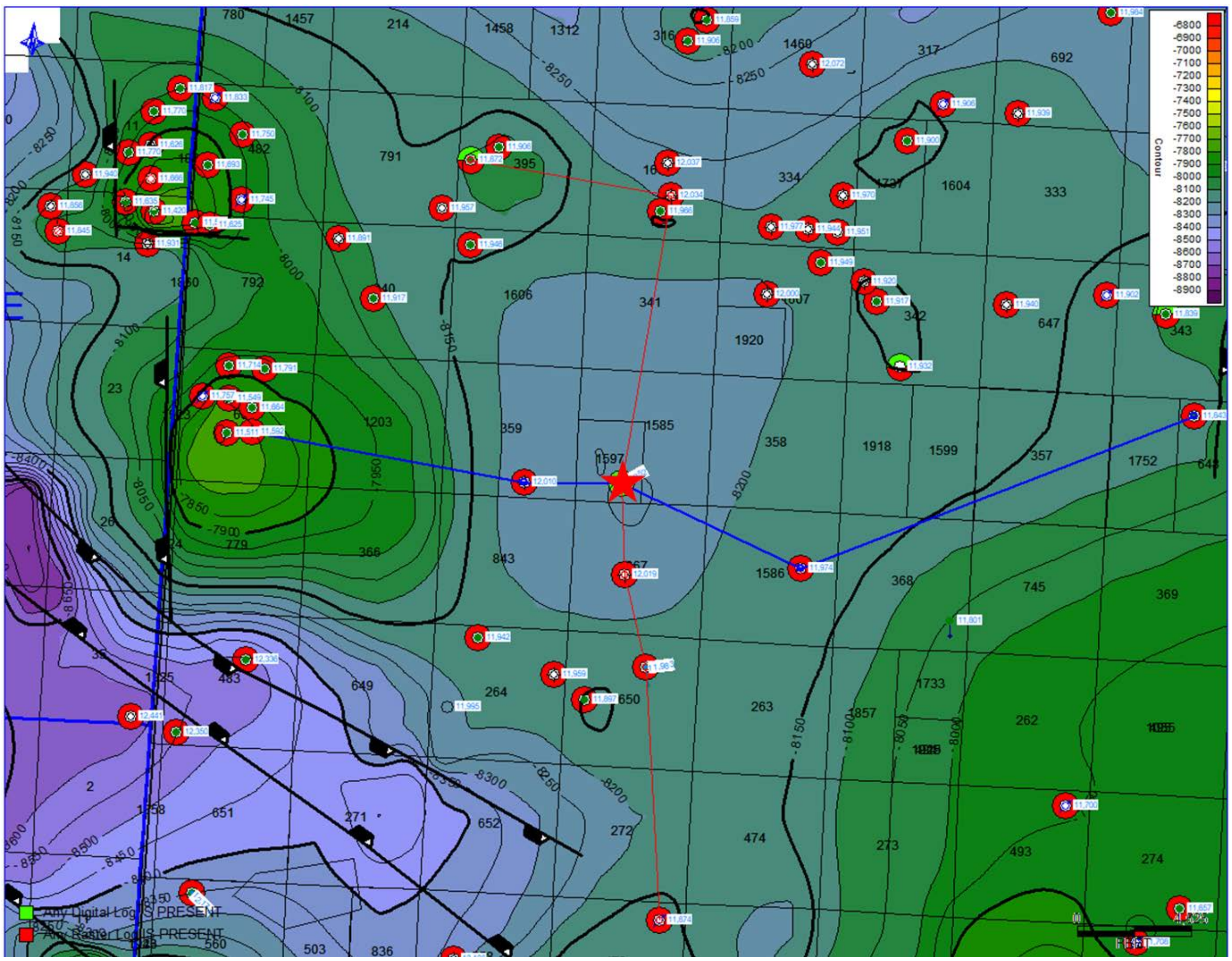


Figure 12 – Silurian Structure Map (subsea depths)

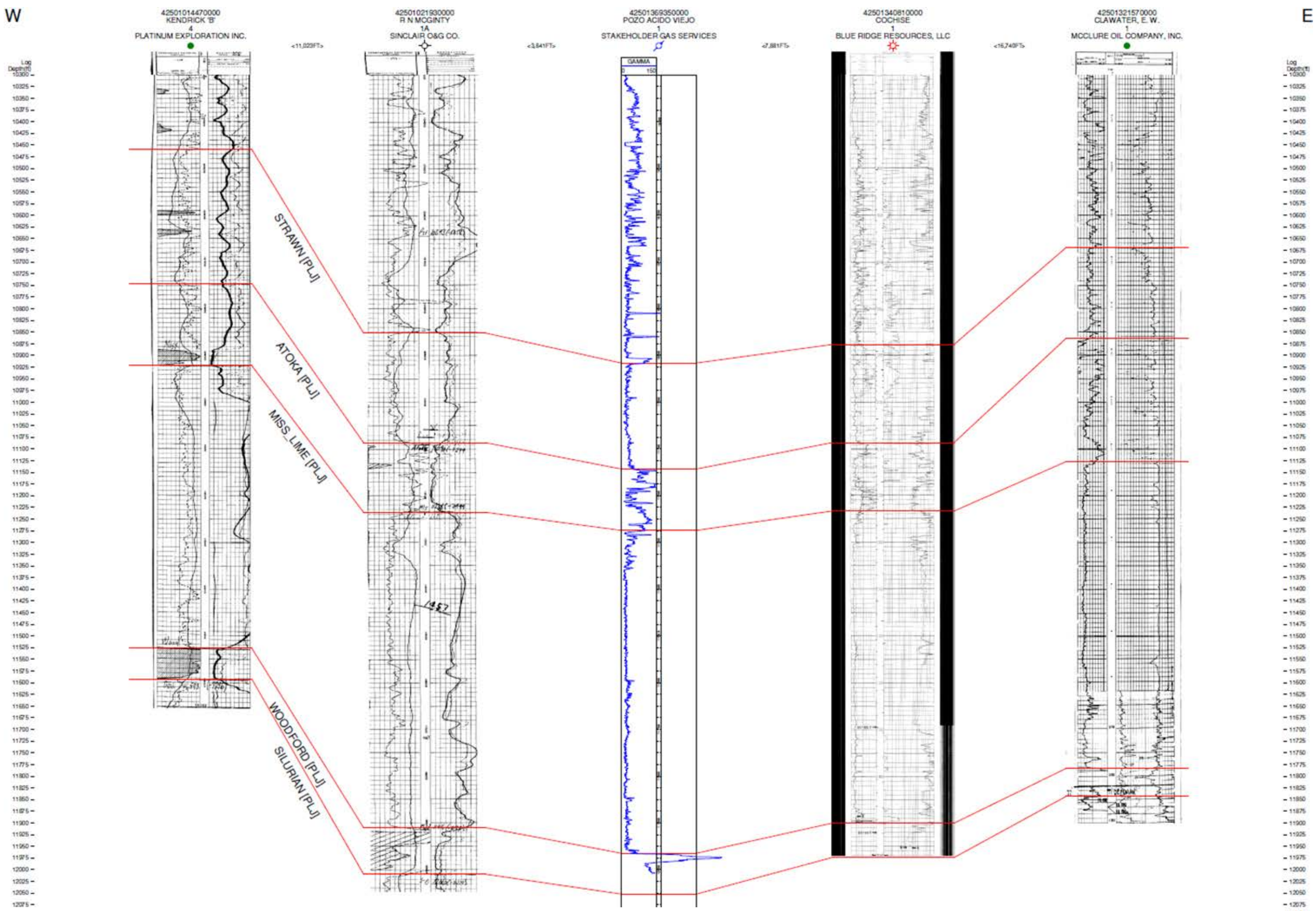


Figure 13 – Structural West-East Cross Section

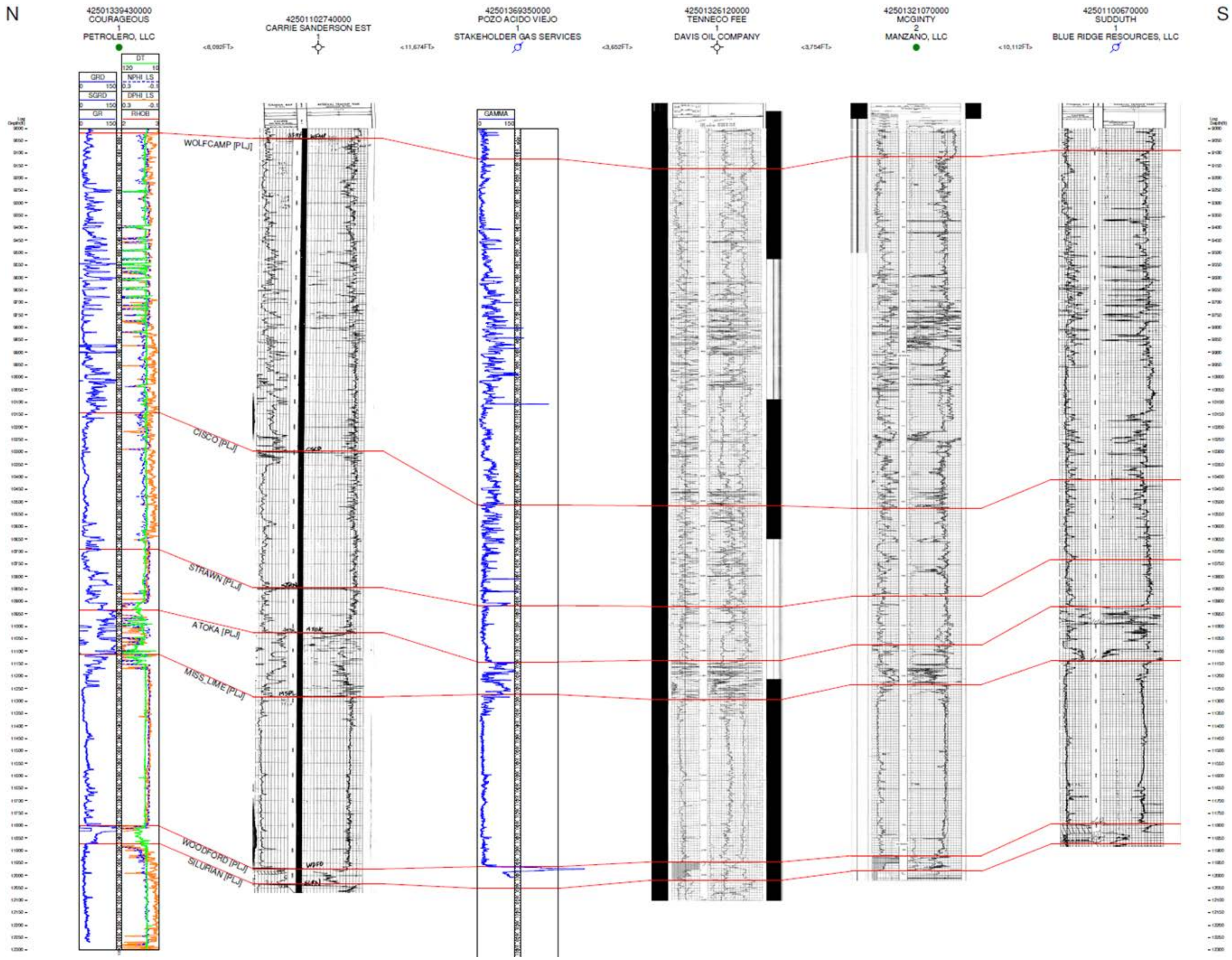


Figure 14 – Structural North-South Cross Section

Injection and Confinement Summary

The lithologic and petrophysical characteristics of the Fasken formation at the PAV #1 well location indicate the formation has sufficient thickness, porosity, permeability, and lateral continuity to accept the proposed injection fluids. The Woodford formation shale at the PAV #1 well has low permeability and is of sufficient thickness and lateral continuity to serve as the upper confining zone. Beneath the injection interval, the low permeability, low porosity Fusselman formation is unsuitable for fluid migration and serves as the lower confining zone. Although few wells penetrate the lower confining zone in the area of the PAV #1, it can be expected that lateral deposition of the tight carbonate found in the lower confining zone to be extensive around the PAV #1 location based on lack of exposure events in that time of deposition. Additionally deeper, laterally continuous formations, including the Montoya and Simpson Group, provide additional confinement.

Groundwater Hydrology

Yoakum County falls within the boundary of the Sandy Land Underground Water Conservation District. Three aquifers are identified by the Texas Water Development Board's *Aquifers of Texas* report in the vicinity of the proposed PAV #1 well: the Dockum Aquifer, Edwards-Trinity Aquifer, and Ogallala Aquifer (George, Mace and Petrossian, 2011). Table 3 references the aquifers' positions in geologic time and the associated geologic formations. A schematic cross section in Figure 15, near the proposed PAV #1 well, illustrates the structure and stratigraphy of these water-bearing formations. Groundwater flow direction is the same for the three aquifers, generally from northwest to southeast, Figure 16 (Teeple, et al., 2021).

Table 3 – Geologic and hydrogeologic units with accompanying lithologic descriptions near Gaines, Terry and Yoakum Counties, Texas (Teeple, et al. 2021)

Era	Period	Epoch or series	Geologic unit group or formation	Lithologic descriptions	Hydrogeologic unit
Cenozoic	Tertiary	Pliocene	Ogallala Formation	Gravel, sand, silt, and clay	High Plains aquifer system (Ogallala aquifer)
		Miocene			
Mesozoic	Cretaceous[1]	Comanchean Series	Washita Group[2]	Shale and limestone	Edwards-Trinity (High Plains) aquifer system
			Fredericksburg Group	Clay, shale, and limestone	
			Trinity Group	Sand and gravel	
	Triassic	Upper	Dockum Group	Siltstone, mudstone, shale, and sandstone	Dockum aquifer

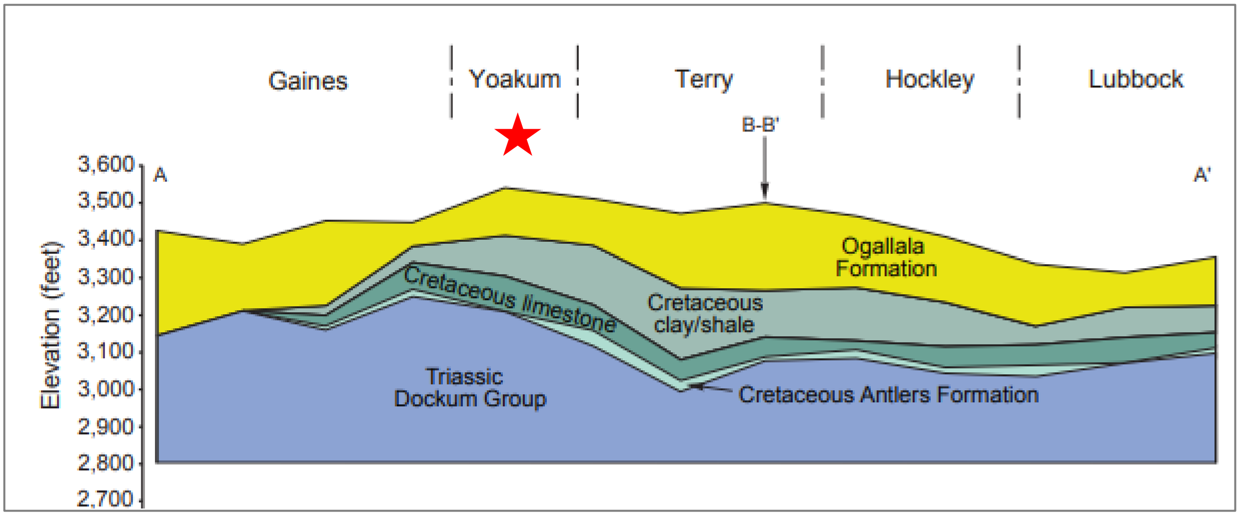


Figure 15 – NW-SE Cross Section of aquifers in the PAV #1 well area (George, Mac and Petrossian, 2011)

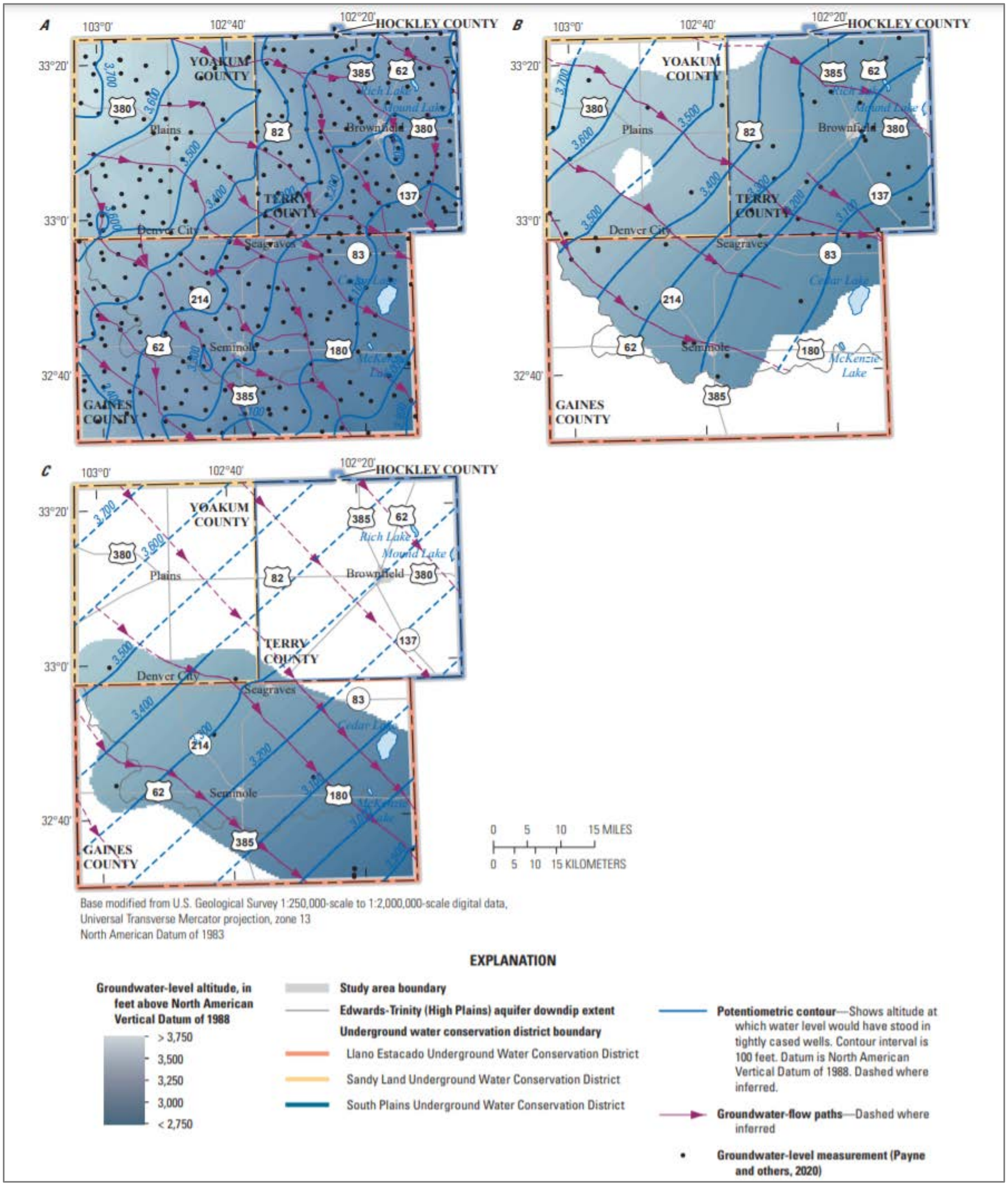


Figure 16 – Potentiometric surfaces from wells completed in A, Ogallala aquifer, B, the Edwards-Trinity aquifer and C, the Dockum aquifer (George, Mace and Petrossian, 2011).

The Dockum Aquifer is the oldest of the three aquifers, formed from Triassic-age Dockum Group sediments, and underlies the Cretaceous Trinity and Fredericksburg Groups (Teeple, et al., 2021). Figure 17 shows the subsurface and outcrop extent of the Dockum Aquifer. As shown in Figure 18, the total dissolved solids in western Yoakum County exceed 5,000 milligrams per liter ("mg/L"), therefore the aquifer is considered brackish.

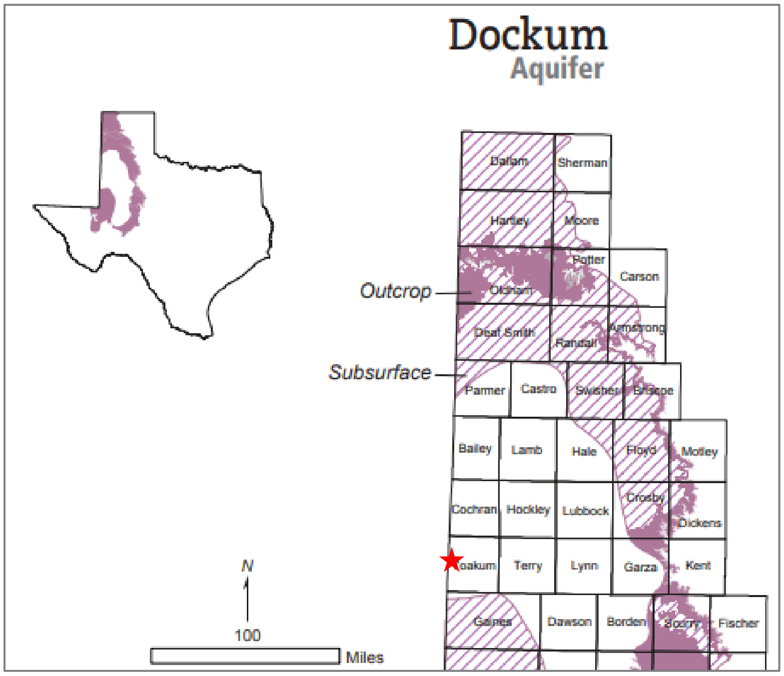


Figure 17 – Regional extent of the Dockum fresh water aquifer (TWDB)

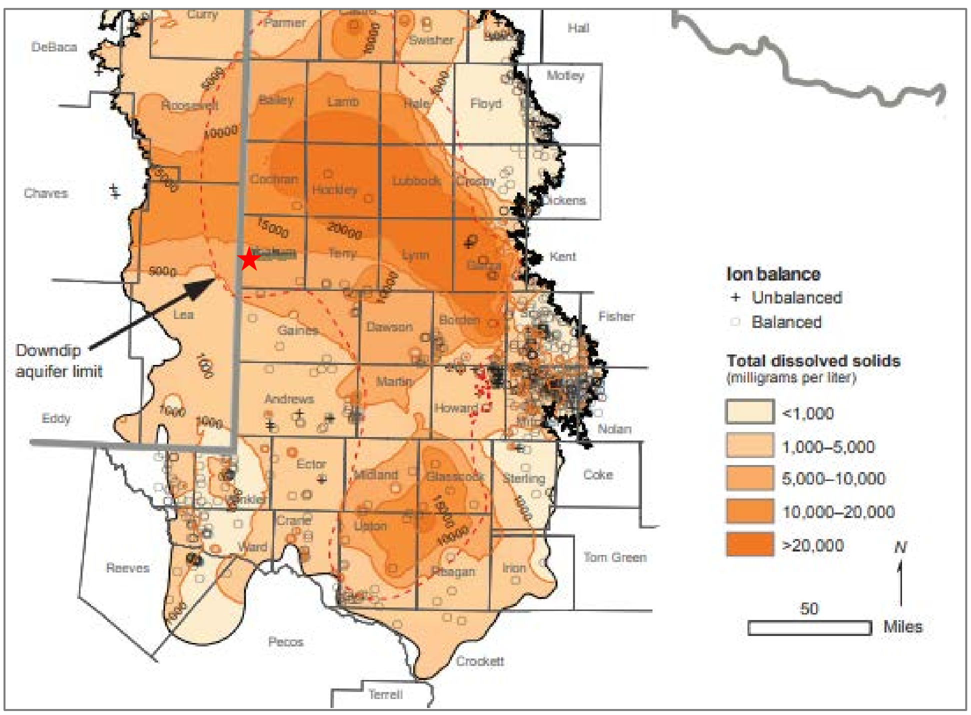


Figure 18 – Total dissolved solids in groundwater from the Dockum Aquifer (Ewing et al, 2008)

The Edwards-Trinity Aquifer is a collection of Cretaceous age sediments – primarily the Trinity Group Antlers formation sandstone and limestones of the Fredericksburg Group, specifically the Comanche Peak and Edwards formations. Figure 19 shows the subsurface and outcrop extent of the Edwards-Trinity Aquifer. Freshwater infiltration to this aquifer is primarily from the overlying Ogallala Aquifer. (George, Mace and Petrossian, 2011).

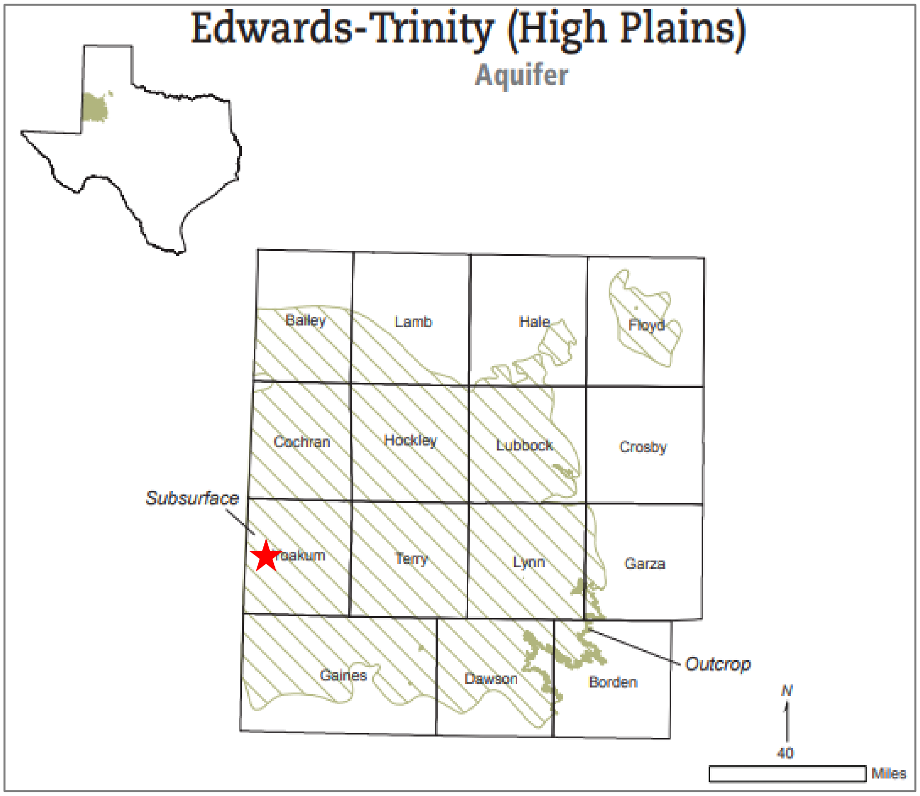


Figure 19 – Regional extent of the Edwards-Trinity fresh water aquifer (George, Mace and Petrossian, 2011)

The Ogallala aquifer consists of sand, gravel, clay and silt sediments (George, Mace and Petrossian, 2011) and produces the majority of the fresh water for Yoakum County. Figure 19 shows the subsurface and outcrop extent of the Ogallala Aquifer.

The base of the deepest aquifer is separated from the injection interval by more than 9,500' of rock, including 650' of Salado salt. Though unlikely for reasons outlined in the confinement and potential leaks sections, if migration of injected fluid did occur above the Woodford Shale, thousands of feet of tight sandstone, limestone, shale and anhydrite beds occur between the injection interval and the lowest water-bearing aquifer.

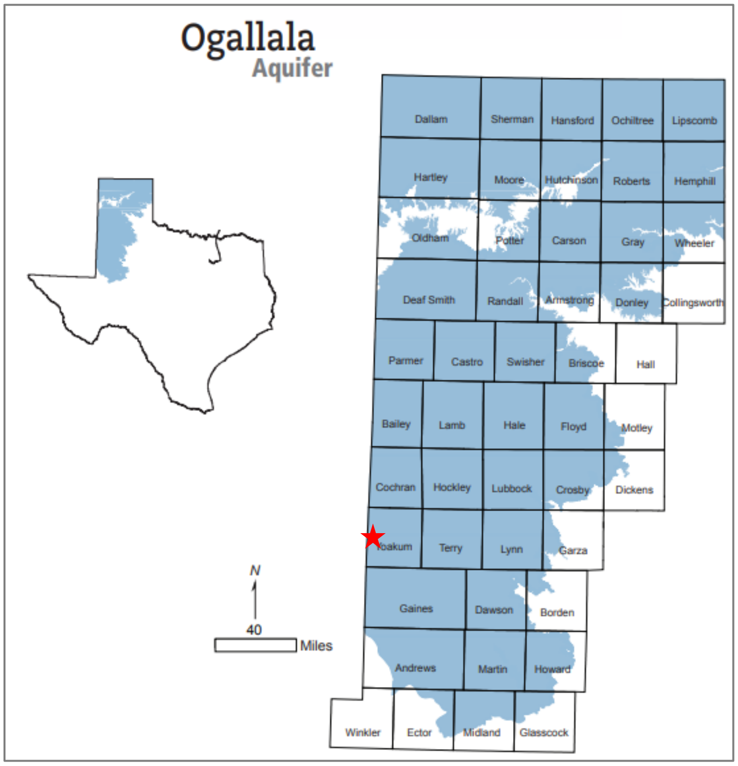


Figure 20 – Regional extent of the Ogallala fresh water aquifer (George, Mace and Petrossian, 2011)

The TRRC's Groundwater Advisory Unit ("GAU") identified the base of Underground Sources of Drinking Water ("USDW") at 2,250 feet at the location of the PAV #1 well. Therefore, there is approximately 9,470 feet separating the base of the USDW and the injection interval. A copy of the GAU's Groundwater Protection Determination letter issued by the TRRC as part of the Class II permitting process for the PAV #1 well is provided in Appendix B.

Description of the Injection Process

Current Operations

The Campo Viejo Facility and its associated PAV #1 well began operating in March of 2019. Since operations began, 2.8 billion cubic feet ("BCF") of treated acid gas ("TAG") has been injected, which equates to 143,483 metric tons of CO_2. Over the life of the injection period, the average daily injection rate has been 2.7 MMSCF/d. The approximate current composition of the TAG stream is as follows:

Table 4 – Gas Composition of Campo Viejo Facility outlet

Component	Mol %
CO2	89.25%
H2S	9.75%
N2	0.58%
Other	0.43%

The Campo Viejo Facility is designed to compress, treat, and process natural gas produced from the surrounding counties in Texas and New Mexico. The gas is dehydrated to remove the water content, then

processed to separate natural gas liquids which are then sold, along with the pipeline quality natural gas, to various customers. TAG is then directly routed from the plant sweeteners to the PAV #1 well. The facility is manned 24 hours per day, 7 days per week.

Planned Operations

Stakeholder anticipates increasing the amount of CO_2 injected into PAV #1 well from the current rate up to 20 MMSCF/d. Additional growth is expected both at Stakeholder facilities and regionally as rising sour gas production and flaring reduction mandates create the need for additional CO_2 and H_2S disposal capacity. Stakeholder plans to inject into this AGI well for a total of 25 years from the start of injection in 2019.

Figure 21 shows a high-level view of the current process flow plus the prospective additional operations over time.

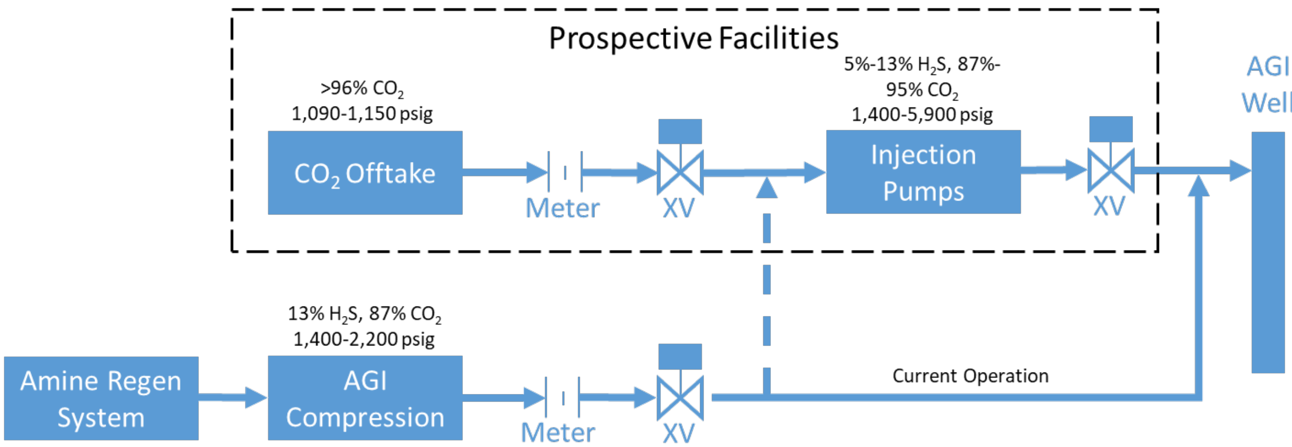


Figure 21 – Campo Viejo Facility Process Flow Diagram

Reservoir Characterization Modeling

The modeling software used to evaluate this project was Computer Modelling Group's GEM 2020.11 ("GEM") simulator. Computer Modelling Group ("CMG") has put together one of the most accurate and technically sound reservoir simulation software packages for conventional, unconventional, and secondary recovery. GEM utilizes equation-of-state ("EOS") algorithms along with some of the most advanced computational methods to evaluate compositional, chemical, and geochemical processes and characteristics to produce highly accurate and reliable simulation models for carbon injection and storage. The GEM model is recognized by the EPA for use in area of review delineation modeling as listed in the Class VI Well Area of Review Evaluation and Corrective Action Guidance document.

The Silurian (Fasken) formation is the target formation for PAV #1 well. The Petra software package was used to create the geologic model of the target formation. The faulting and geologic structure was then imported into GEM and used to create contours for the model grid.
Porosity and permeability estimates were determined using the porosity log from a nearby injector (API No. 42-501-33943) and a petrophysical analysis was performed to correlate porosity values by depth with core porosities as shown in the Holtz paper. The Coates permeability equation was then used to calculate permeability with depth. Both porosity and permeability are assumed to be laterally homogeneous in the reservoir.

The reservoir is assumed to be at hydrostatic equilibrium and initially saturated with 100% brine. An infinite acting reservoir was created to simulate boundary conditions. The gas injectate is composed of H_2S, CO_2, CH_4, and other components as shown in Table 5. Core data from literature review was used to determine residual gas saturation (Ruppel and Holtz, 1994). The modeled composition only takes into consideration the carbon dioxide and hydrogen sulfide as they comprise nearly 99% of total stream. For the initial injection period, these compositions are normalized up to 100%. For the proposed additional injection period, it is expected that a larger portion of the gas added is carbon dioxide, changing the composition to 94% CO_2 and 6% H_2S.

Table 5 – Modeled Initial Gas Composition

Component	Measured Current Composition (mol%)	2019-2022 Model Composition (mol%)	2022-2044 Model Composition (mol%)
H2S (H2S)	9.745	9.844	6.000
Nitrogen (N2)	0.577	0.000	0.000
CO2 (CO2)	89.249	90.156	94.000
Methane (C1)	0.190	0.000	0.000
Ethane (C2)	0.012	0.000	0.000
Propane (C3)	0.028	0.000	0.000
Hexanes Plus (C6+)	0.199	0.000	0.000

Core data from literature review was used to determine relative permeability curves between carbon dioxide and the connate brine within the Silurian-Devonian carbonates (Ruppel and Holtz, 1994). The key inputs used in the model include an irreducible water saturation of 25% and a maximum residual gas saturation of 21%.

The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 19,740 grid blocks per layer. Each grid block has dimensions of 250 feet by 250 feet which results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square-mile area. Each layer in the model was determined by identifying higher permeability zones as targets for injection from the logs and assigning each high permeability and intermediary low permeability zone its own layer. There are a total of 9 layers in the model, representing 5 layers of pay and 4 layers of intermediary low permeability zones. The properties of each of these layers are summarized in Table 6 below.

Table 6 – CMG Model Layer Properties

Layer #	Top (ft)	Thickness (ft)	Perm. (mD)	Porosity
1	11,867	83	168.3	10.4%
2	11,951	16	1.3	3.2%
3	11,968	6	14.1	5.8%
4	11,975	8	1.0	3.2%
5	11,984	14	53.1	6.4%
6	11,999	16	0.8	2.9%
7	12,016	9	6.8	5.1%
8	12,026	213	0.6	2.3%
9	12,240	5	122.1	8.0%

Simulation Modeling

The primary objectives of the model simulation were to:

1) Estimate the maximum areal extent and density drift of the acid gas plume after injection
2) Assess the impact of offset salt water disposal ("SWD") well injection on density drift of the plume
3) Determine the ability of the target formation to handle the required injection rate without fracturing the injection zone
4) Assess the likelihood of the acid gas plume migrating into potential leak pathways

The reservoir is assumed to be an aquifer filled with 100% brine. The salinity of the formation is estimated to be 100,000 ppm, typical for the region. The acid gas stream is primarily composed of CO_2 and H_2S as stated previously. Core data was used to help generate relative permeability curves. Cores, from the literature reviews as previous discussed, that most closely represent the vuggy carbonate seen in this region were identified and the Corey-Brooks equations were used to develop the curves. The lowest residual gas saturation found in the cores was then used for a conservative estimate of plume size. The initial reservoir pressure is 5,601 psi which is equivalent to a 0.465 psi/ft pressure gradient and was determined from offset injection well analysis. The fracture gradient of the injection zone was estimated to be 0.72 psi/ft, which was determined using Eaton's equation. A 10% safety factor was then applied to this number, putting the maximum bottom-hole pressure allowed in the model at 0.65 psi/ft which is equivalent to 7,829 psi.

The model also takes into account offset SWD injection volumes close to the PAV #1 well. A total of 19 offset wells currently injecting into the Devonian were identified within a 5-mile radius of PAV #1 well. Historical injection rates of each of these wells were analyzed and projected into the model. This simulation includes the effect of water injection on the density drift of the plume and bottom hole pressure.

The model runs for a total of 50 years comprised of 25 years of active injection and an additional 25 years of density drift. The model begins the injection period in 2019 when the PAV #1 well first became operational. An injection rate of 7.2 MMSCF/d is assumed during the first 3 years and 3 months (which is higher than the current actual permitted injection rate) to model the maximum available rate and therefore results in a more conservative plume size. After this initial period, it is assumed that the injection rate increases to 20 MMSCF/d for the remainder of the active injection period. At this point, the PAV #1 well stops injection while the offset injectors continue operations during the density drift period (also a conservative assumption).

The maximum plume extent during the 25-year injection period is shown in Figure 22. The final extent after 25 years of density drift after injection ceases is shown in Figure 23.

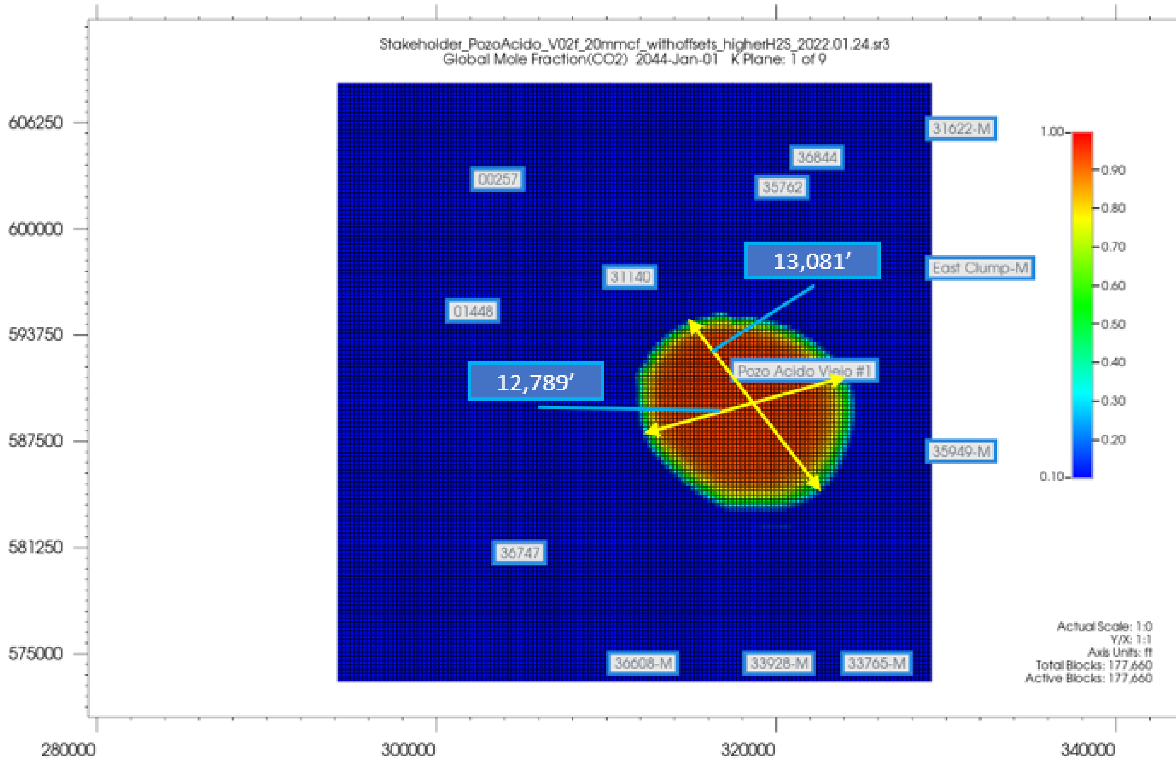


Figure 22 – Areal View Gas Saturation Plume, Year 25 (End of Injection)

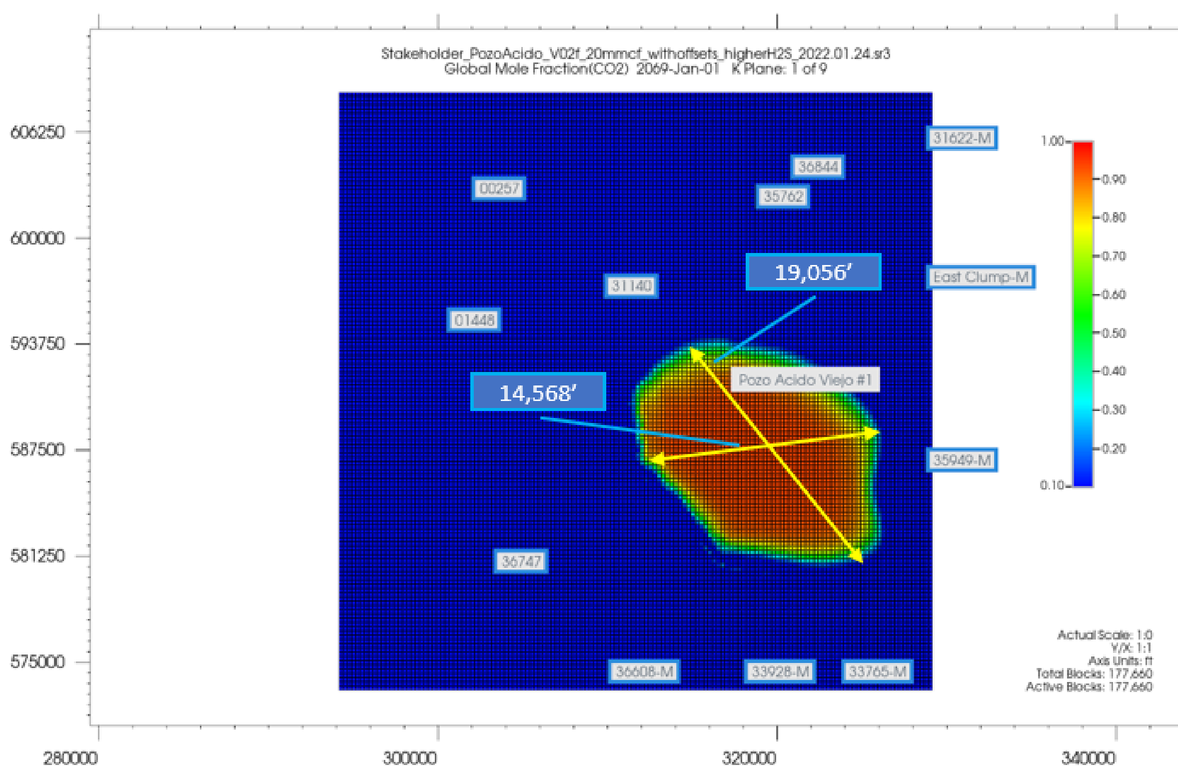


Figure 23 – Areal View Gas Saturation Plume, Year 50 (End of Simulation)

Figure 24 shows the surface injection rate and bottom hole pressure over the injection period and the period of density drift after injection ceases. The bottomhole pressure increases steadily throughout the injection period, reaching a maximum pressure of 5,920 psi as injection ceases. This buildup of 190 psi keeps the bottomhole pressure well below the fracture pressure of 7,829 psi. The maximum surface pressure associated with the maximum bottomhole pressure reached is 2,996 psi, well below the maximum allowable 6,010 psi per the TRRC UIC permit for this well.

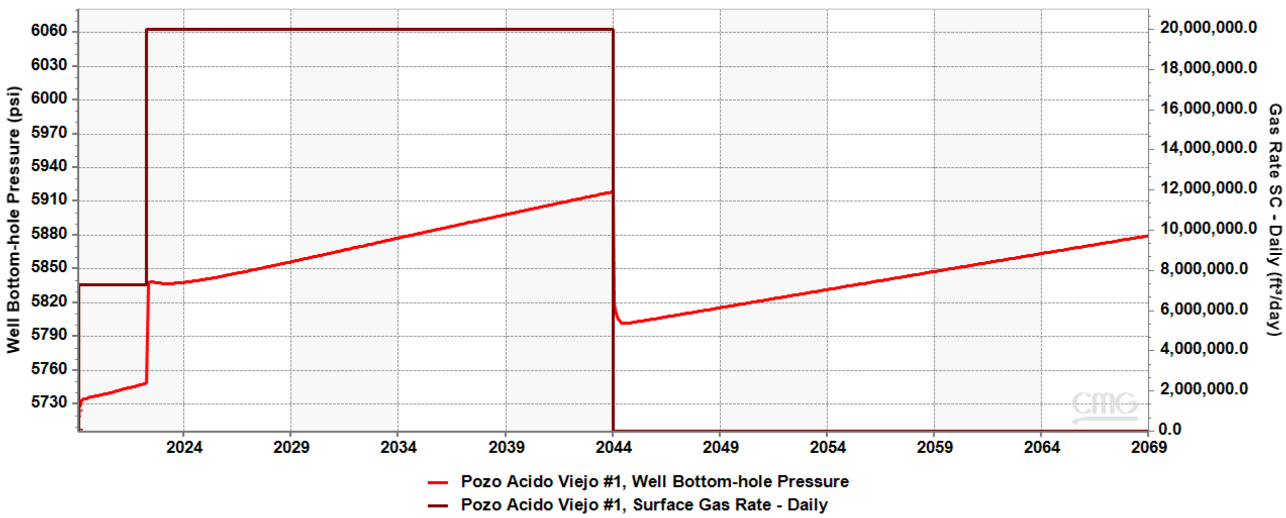


Figure 24 – Well Injection Rate and Bottomhole Pressure over Time

SECTION 3 – DELINATION OF MONITORING AREA

This section discusses the delineation of Maximum Monitoring Area ("MMA") and Active Monitoring Area ("AMA") as described in EPA 40 CFR §98.448(a)(1).

Maximum Monitoring Area

The MMA is defined as equal to or greater than the area expected to contain the free-phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile. Numerical simulation was used to predict the size and drift of the plume. With CMG's GEM software package, reservoir modeling was used to determine the areal extent and density drift of the plume. The model takes into account the following considerations:

- Offset well logs to estimate geologic properties
- Petrophysical analysis to calculate the heterogeneity of the rock
- Geological interpretations to determine faulting and geologic structure
- Offset injection history to adequately predict the density drift of the plume

Acid gas injectate was analyzed by a third-party vendor to determine the initial composition used in the model. The report is provided in Appendix C. The molar composition of the gas is primarily CO_2 with some H_2S and CH_4. The change in molar composition was also incorporated into the model as future predominantly CO_2 streams are added for injection. As discussed in Section 2, the gas was injected into the Silurian formation, specifically, the Fasken formation. The geomodel was created based off the rock properties seen in the Fasken.

The plume boundary was defined by the weighted average gas saturation in the aquifer. A value of 3% gas saturation was used to determine the boundary of the plume. When injection ceases in year 25, the areal expanse of the plume will be 2,473 acres. The maximum distance between the wellbore and the edge of the plume is approximately 0.87 miles to the southeast. After 25 additional years of density drift, the areal extent of the plume is 3,193 acres with a maximum distance to the edge of the plume of approximately 1.35 miles to the southeast.

Figure 25 shows the 25-year plume boundary, the 50-year plume boundary and the MMA.

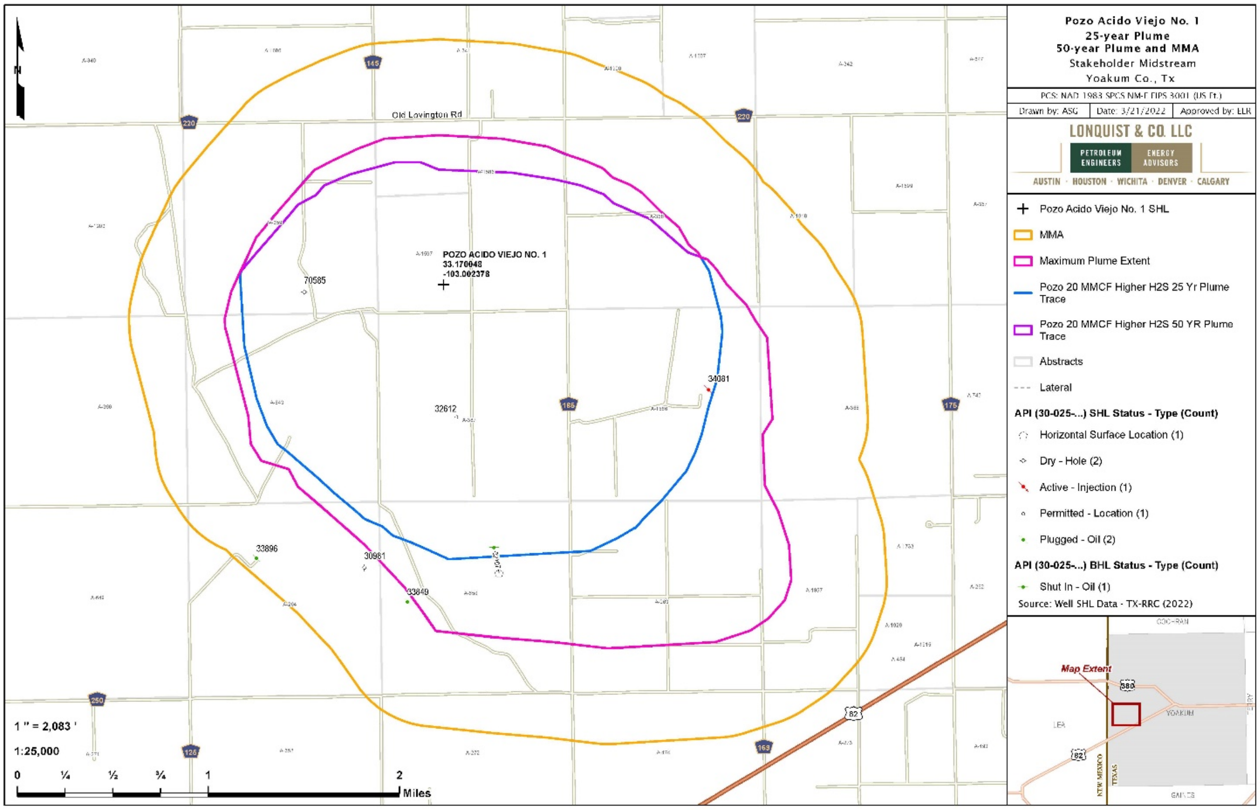


Figure 25 – 25-year plume, 50-year plume, Maximum Monitoring Area

Active Monitoring Area

The AMA is proposed to have the same boundary as the MMA. The only probable leakage paths in the MMA are the wells which penetrate the injection interval and the surface equipment; therefore, the MMA adequately covers the area which should be monitored for CO_2 leakage. Leakage from groundwater wells, faults and fractures, through the confining layer and seismicity events are highly improbable as discussed in the subsequent section and would be covered by the MMA. Further consideration was done in determining the plume boundary to provide the most conservative estimate. Anisotropy of formation was taken into account to allow gas to flow into the highest permeability zones. The zone with the highest permeability would take on the most gas and allow for a larger areal extent of gas.

SECTION 4 – POTENTIAL PATHWAYS FOR LEAKAGE

This section identifies the potential pathways for CO_2 to leak to the surface within the MMA and the likelihood, magnitude and timing of such leakage. The potential leakage pathways are:

- Leakage from surface equipment
- Leakage through existing wells within MMA
- Leakage through faults and fractures
- Natural or Induced Seismicity
- Drilling through the MMA
- Leakage through the confining layer

Leakage from Surface Equipment

The surface facilities at the Campo Viejo Facility are designed for injecting acid gas containing H_2S, and therefore minimize leakage points such as valves and flanges following industry standards and best practices. H_2S gas detectors are located around the facility and the well site. These gas detectors trigger alarms at 10 parts per million (“ppm”). Additionally, all Stakeholder field personnel are required to wear H_2S monitors which are triggered at 5 ppm of H_2S. A shut-in valve is located at the wellhead and is locally controlled by pressure, with a high pressure and low pressure shut-off.

The facilities have been designed and constructed with additional safety systems to provide for safe operations. These systems include Emergency Shutdown (“ESD”) valves to isolate portions of the plant and pipeline, pressure relief valves along the pipeline to prevent over pressurization, and flares to allow piping and equipment to be de-pressured rapidly under safe and controlled operating conditions in the event of a leak. Figures 26 and 27 display the facility safety plot plan, taken from the Campo Viejo H_2S Contingency Plan, and show the location of the H_2S monitors in the vicinity of the plant and the PAV #1 well. Should Stakeholder construct additional CO_2 facilities, as indicated in Figure 21, a separate meter will be installed for the additional stream in order to comply with the 40 CFR §98.448(a)(5) measurement. As this meter will be in close proximity to the existing facilities, it will utilize the existing monitoring programs discussed previously. Additionally, CO_2 monitors will be installed near the new meter and tied into the facility monitoring systems.

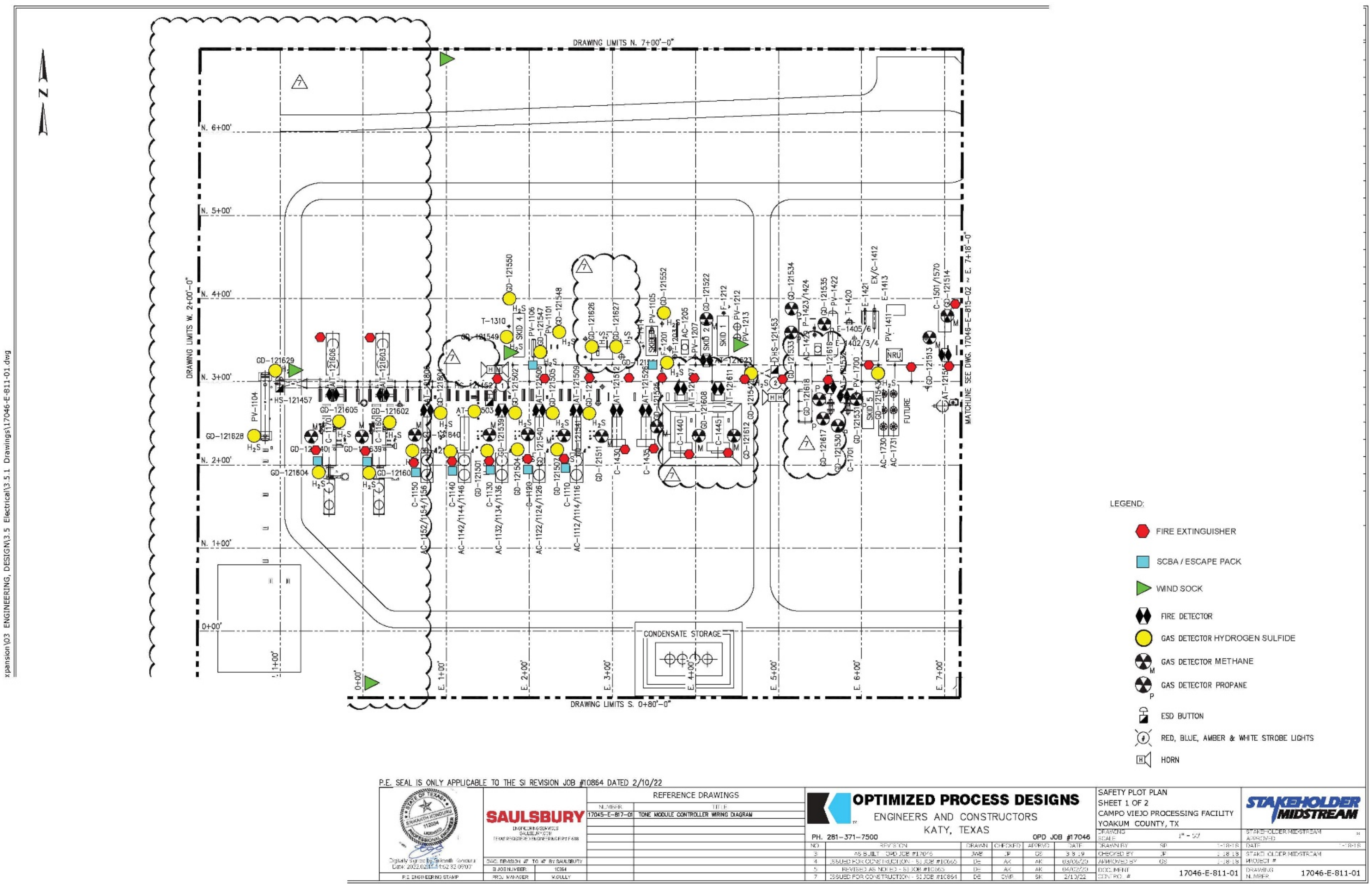


Figure 26 – Site Plan, Campo Viejo Facility – West Section

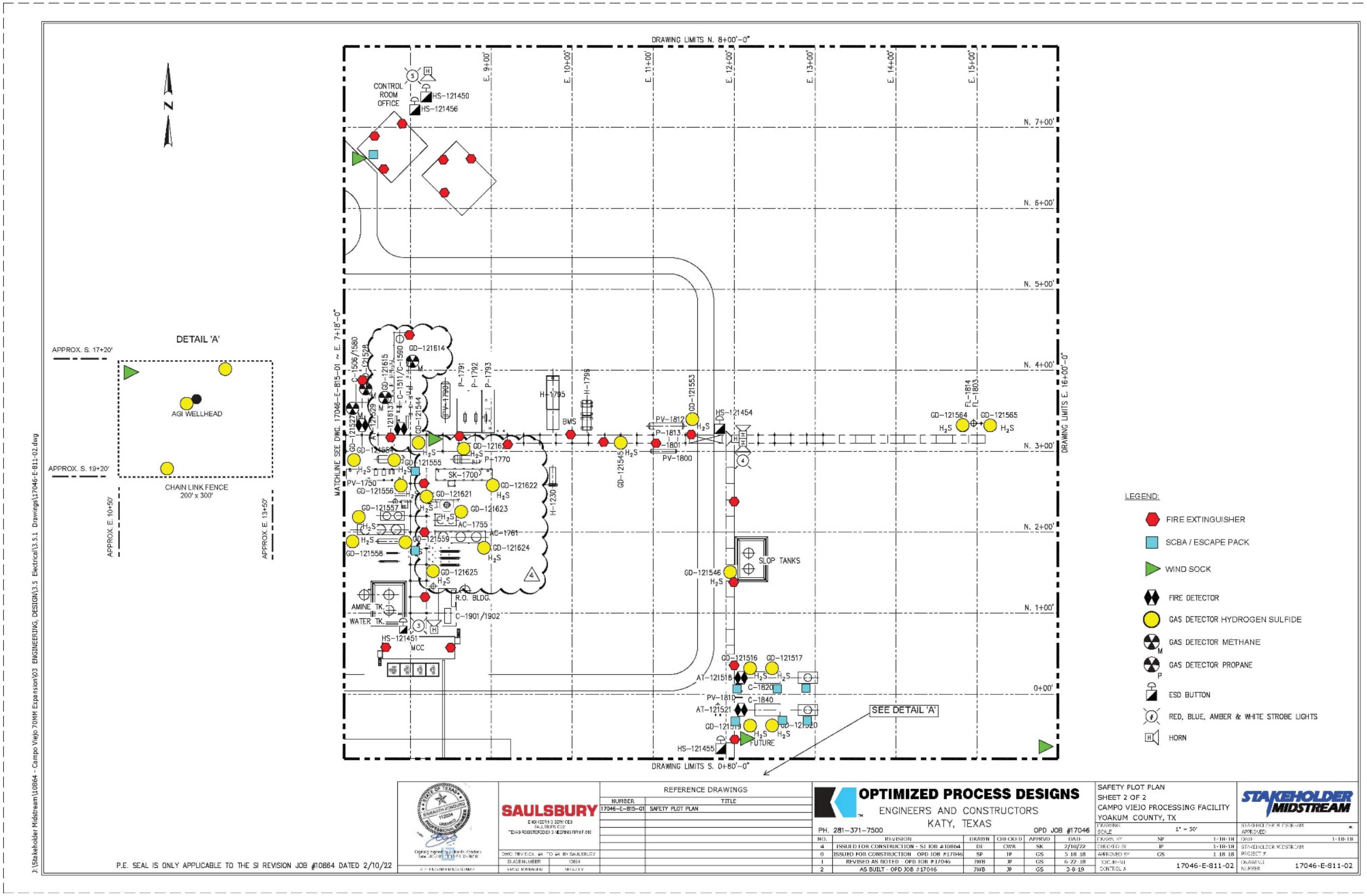


Figure 27 – Site Plan, Campo Viejo Facility and PAV #1 – East Section

With the level of monitoring at the Campo Viejo Facility and the PAV #1 well, any release of H_2S and CO_2 would be quickly identified and the safety systems would quickly minimize the volume of the release. The CO_2 injected into PAV #1 is injected with H_2S at a concentration of 10% (100,000 ppm). At this high level of H_2S concentration, even small leakage would trigger personal and facility H_2S monitors set to alarm at 5 ppm and 10 ppm respectively. If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release, as stated in Section 7 in accordance with 40 CFR §98.448(a)(5).

Larger scale versions of Figures 26 and 27 are provided in Appendix D.

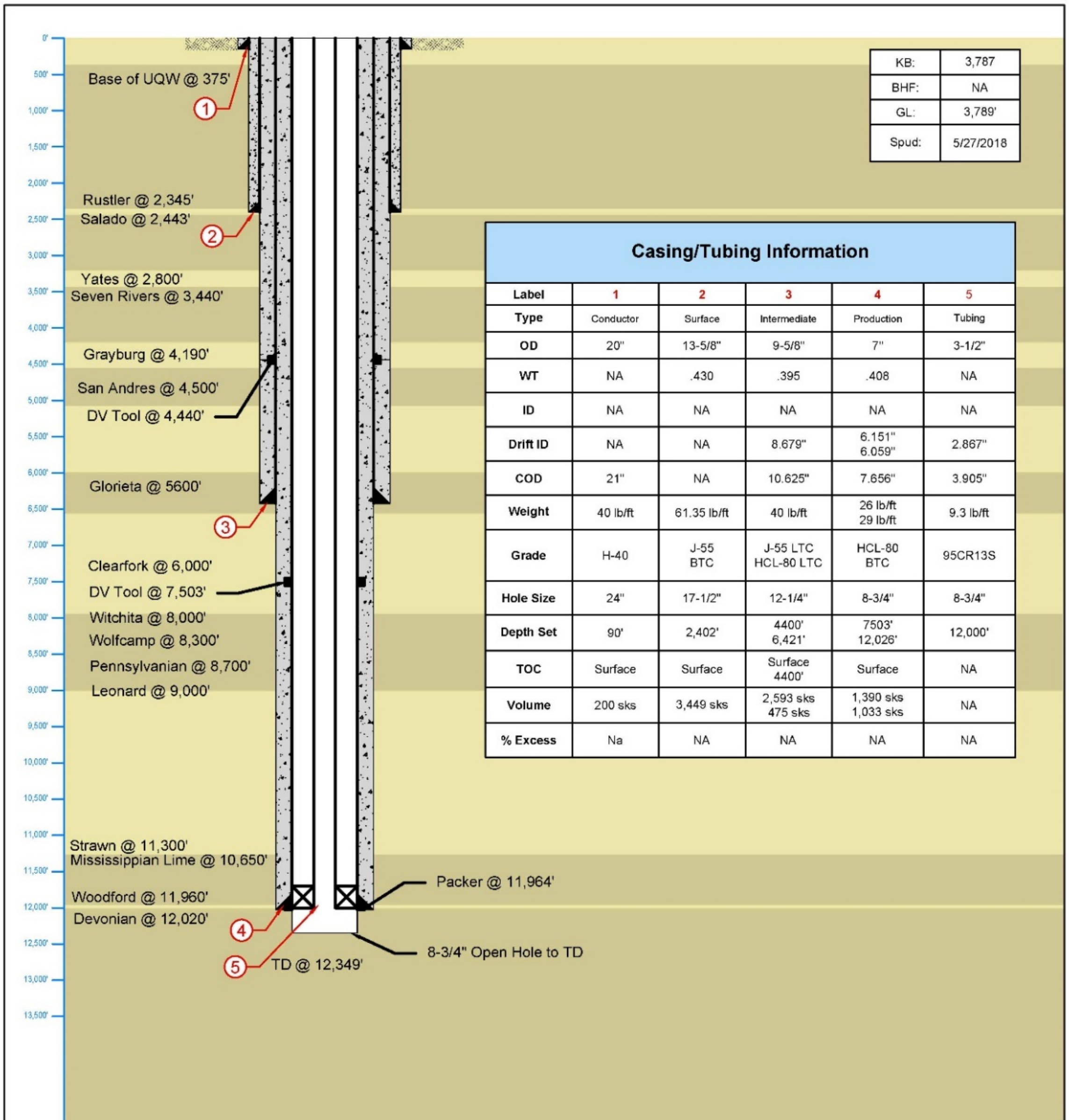
Leakage from Wells in the Monitoring Area

Oil and Gas Operations within Monitoring Area

Historical production within the area of the PAV #1 well has primarily been from the shallower San Andres and Wolfcamp formations. These formations are separated from the Silurian-Devonian interval by 6,400 and 3,300 feet, respectively. Within the plume area of the PAV #1 well, eighty-four (84) wells have been drilled and completed or plugged. 71 of these wells are active, 1 is shut-in, 12 are plugged and abandoned. Seven (7) wells, not including the PAV #1 well, penetrate the injection interval within the MMA. The casing and cementing of each of the seven wells meets the TRRC regulations as specified in TAC § 3.13(a)(4). Five (5) of these wells have been properly plugged and abandoned per TRRC regulations as specified in § 3.14(d). One (1) active injection well (Cochise 1W) is plugged across the Devonian interval and currently injects into the much shallower San Andres. One (1) shut-in oil well (McGinty 2 #2), located more than 1.4 miles from the PAV #1, has not produced since 2015. The plume model shows that the CO_2 will not reach that wellbore until the end of the 25-year injection period. The operator of the well has signed an agreement (effective May 16, 2022) with Stakeholder to plug and abandon this well by December 31, 2022, and in so doing, will plug the well to the standards required by the TRRC.

All of the wells which penetrate the injection interval within the MMA were properly cased and cemented to prevent annular leakage of CO_2 to the surface. The plugged wells are also adequately protected against migration from the Devonian by the placement of the plugs within the wellbores. Additionally, the PAV #1 well was designed to prevent migration from the injection interval to the surface through the casing and cement placed in the well, as shown in Figure 28. Mechanical integrity tests ("MIT") required under TRRC rules are run annually to verify the well and wellhead can hold the appropriate amount of pressure. If the MIT were to indicate a leak, the well would be isolated and the leak mitigated quickly to prevent leakage to the atmosphere.

A map of all wells within the MMA is shown in Figure 29. Figure 30 shows only those wells which penetrate the injection interval. The MMA review maps, a summary of all the wells in the MMA and detailed wellbore schematics for those wells which penetrate the injection interval are provided in Appendix D.



Casing/Tubing Information

Label	1	2	3	4	5
Type	Conductor	Surface	Intermediate	Production	Tubing
OD	20"	13-5/8"	9-5/8"	7"	3-1/2"
WT	NA	.430	.395	.408	NA
ID	NA	NA	NA	NA	NA
Drift ID	NA	NA	8.679"	6.151" 6.059"	2.867"
COD	21"	NA	10.625"	7.656"	3.905"
Weight	40 lb/ft	61.35 lb/ft	40 lb/ft	26 lb/ft 29 lb/ft	9.3 lb/ft
Grade	H-40	J-55 BTC	J-55 LTC HCL-80 LTC	HCL-80 BTC	95CR13S
Hole Size	24"	17-1/2"	12-1/4"	8-3/4"	8-3/4"
Depth Set	90'	2,402'	4400' 6,421'	7503' 12,026'	12,000'
TOC	Surface	Surface	Surface 4400'	Surface	NA
Volume	200 sks	3,449 sks	2,593 sks 475 sks	1,390 sks 1,033 sks	NA
% Excess	Na	NA	NA	NA	NA

LONQUIST & CO. LLC PETROLEUM ENGINEERS / ENERGY ADVISORS HOUSTON | CALGARY AUSTIN | WICHITA | DENVER	Stakeholder Midstream	Pozo Acido Viejo No. 1	
	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location: 33.1700484, -103.0023776	**Site:**	**Survey:**
	API No: 42-501-36935	**Field:**	**Well Type/Status:** AGI
Texas License F-9147	**RRC District No:**	**Project No:** 1549.2	**Date:** 11/22/2021
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Figure 28 – Pozo Acido Viejo #1 Wellbore Schematic

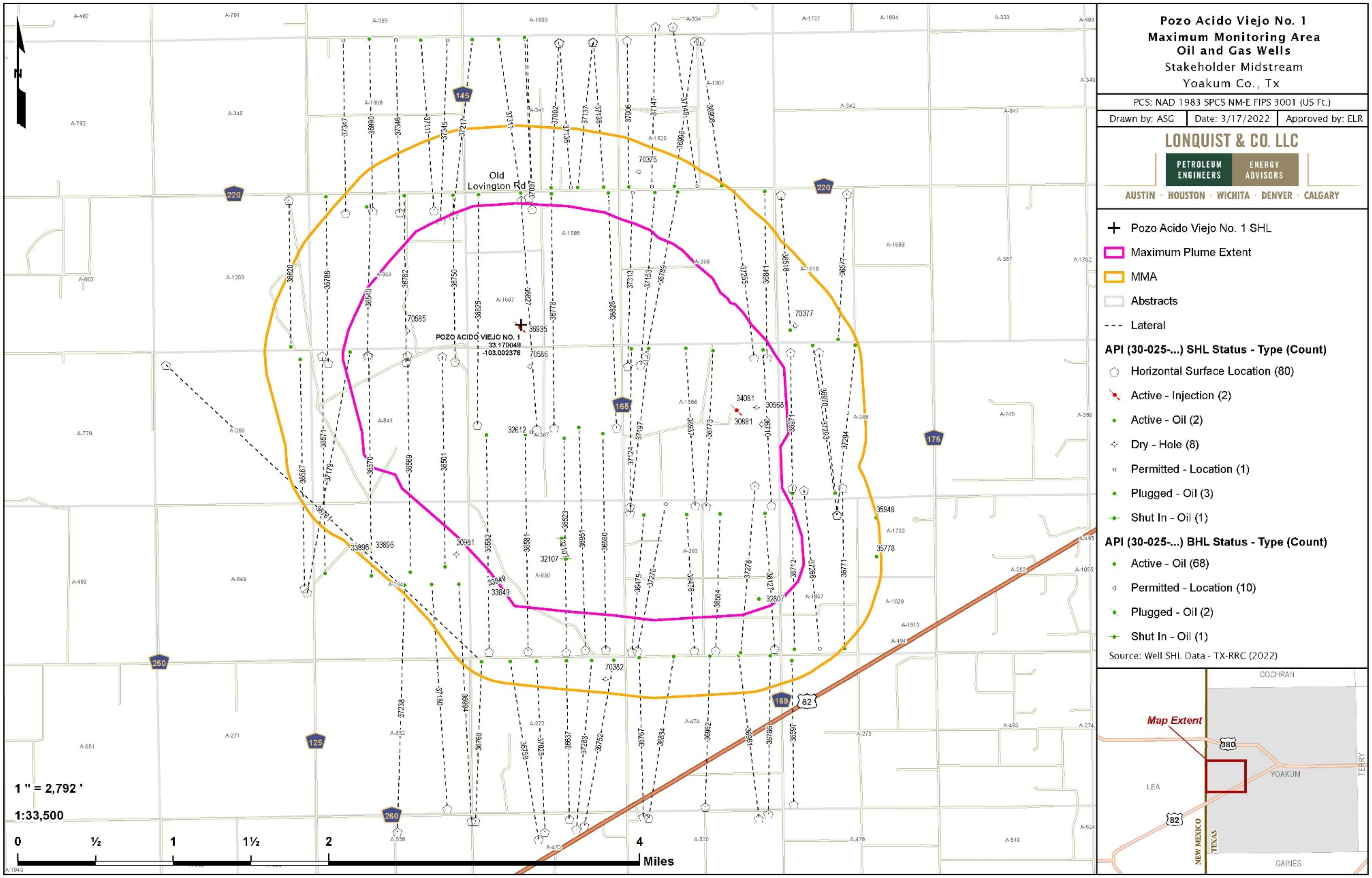


Figure 29 – Oil and Gas Wells within the MMA

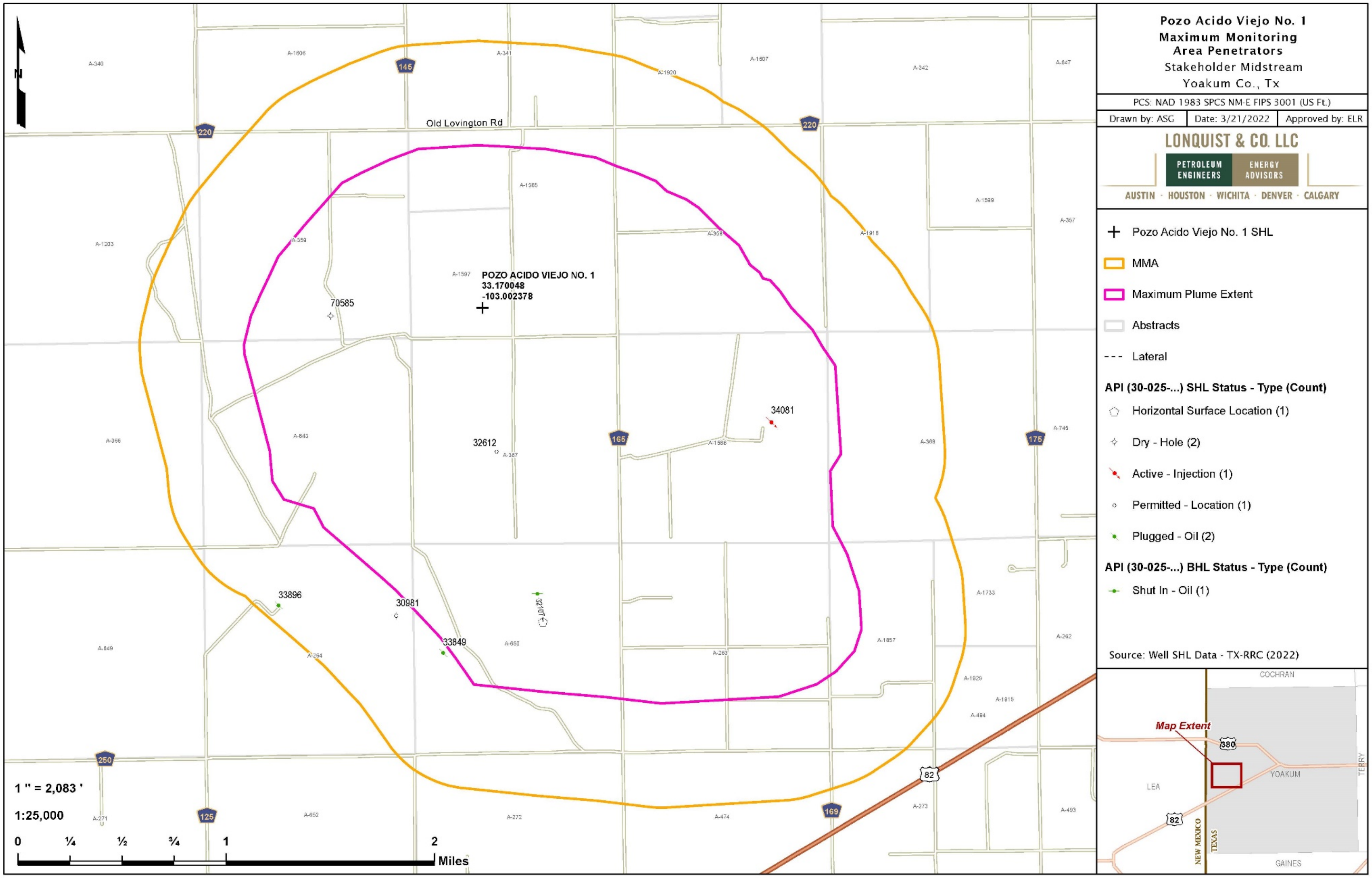


Figure 30 – Penetrating Oil and Gas Wells within the MMA

Future Drilling

Potential leak pathways caused by future drilling in the area are not expected to occur. The deeper formations, such as the Devonian, have proven to-date to be less productive or non-productive in this area, which is why the location was selected for injection. Also, the PAV #1 well is carried in the TRRC's Bronco (Siluro-Devonian) Field which is designated by the TRRC as an H_2S field. An H_2S field designation alerts potential oil and gas operators to the presence of H_2S. Any drilling permits issued by the TRRC in the area of the PAV #1 well include a list of formations for which oil and gas operators are required to comply with TRRC Rule 13 (entitled "Casing, Cementing, Drilling, Well Control, and Completion Requirements"). 16 TAC § 3.13. By way of example, see the PAV #1 well drilling permit provided in Appendix B. TRRC Rule 13 requires oil and gas operators to set steel casing and cement across and above all formations permitted for injection under TRRC Rule 9 or immediately above all formations permitted for injection under Rule 46 for any well proposed within a one-quarter mile radius of an injection well. In this instance, any new well permitted and drilled to the PAV #1 well's injection zone located within a one-quarter mile radius of the PAV #1 well will be required under TRRC Rule 13 to set steel casing and cement above the PAV #1 well injection zone. Additionally, Rule 13 requires operators to case and cement across and above *all* potential flow zones and/or zones with corrosive formation fluids. The TRRC maintains a list of such known zones by RRC district and county and provides that list with each drilling permit issued, which is also shown in the above-mentioned permit in Appendix B.

If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release.

Groundwater wells

There are thirty-two groundwater wells located within the MMA, as identified by the Texas Water Development Board. All of the identified groundwater wells in the area have total depths less than or equal to 400 feet, as shown in Figure 31 and Table 7. Additionally, Stakeholder has a water well on the facility property with a total depth of approximately 180 feet.

The surface and intermediate casings of the PAV #1 well, as shown in Figure 28, are designed to protect the shallow freshwater aquifers consistent with applicable RRC regulations and the GAU letter issued for this location. See GAU letter attached included within Appendix B. The wellbore casings and cements also serve to prevent CO_2 leakage to the surface along the borehole.

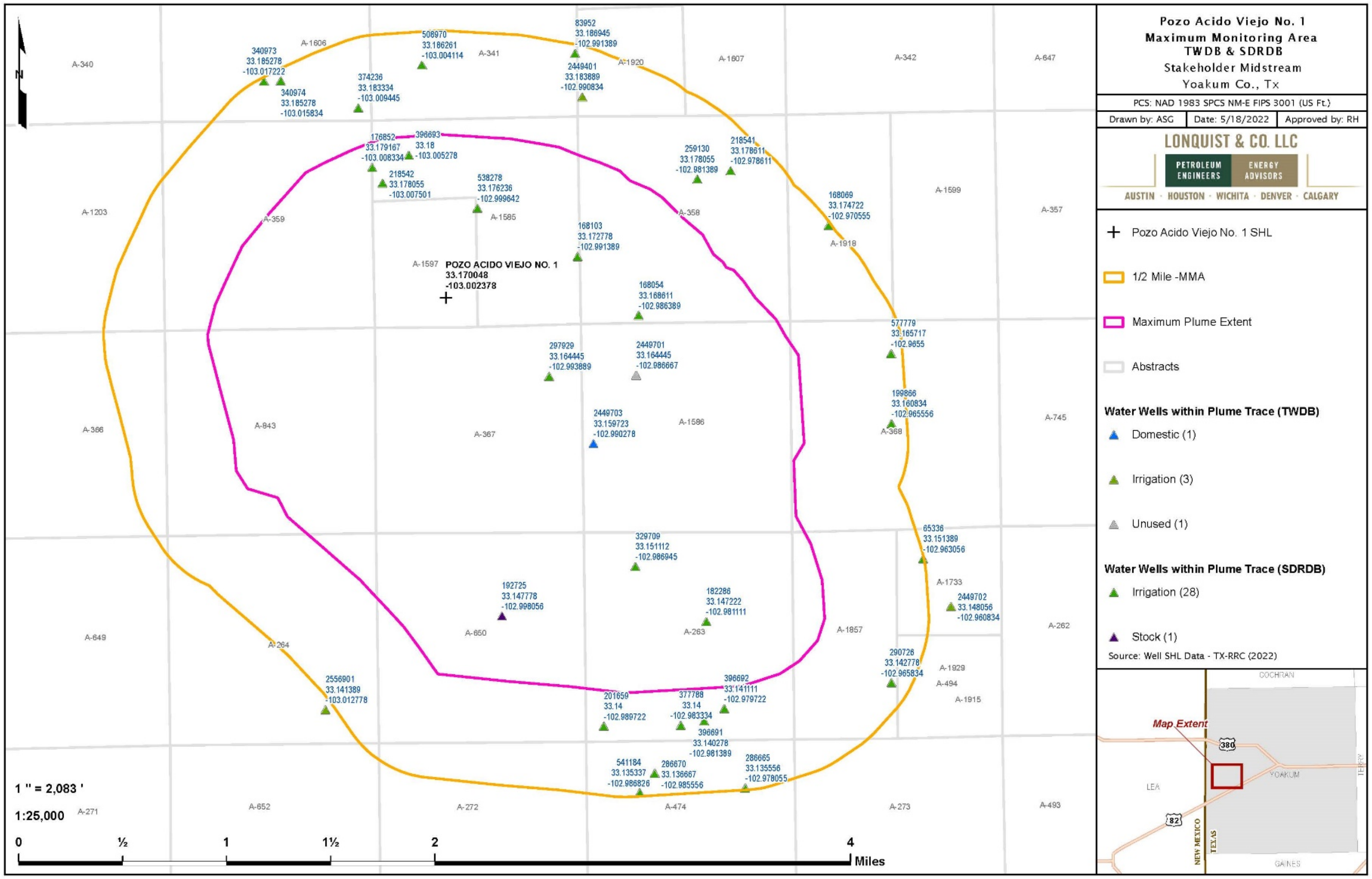


Figure 31 – Groundwater Wells within MMA

Table 7 – Groundwater Well Summary

State Well ID	OwnerName	PrimaryWat	WellDepth	Elevation	Data Source
2449701	Gene Smith	Unused	167	3775	TWDB
2449703	Larry Morrow	Domestic	200	3774	TWDB
2449401	Robert Box	Irrigation	165	3790	TWDB
65336	Larry Morrow	Irrigation	190	-	SDRDB
83952	D.L. Hartman Partnership	Irrigation	220	-	SDRDB
168054	Teichroeb, Peter	Irrigation	208	-	SDRDB
168069	Teichroeb, Peter	Irrigation	208	-	SDRDB
168103	Teichroeb, Peter	Irrigation	206	-	SDRDB
176852	Darrel Lowrey	Irrigation	183	-	SDRDB
182286	Buford Duff	Irrigation	205	-	SDRDB
192725	LANNY SMITH	Stock	185	-	SDRDB
199866	Henry letkeman	Irrigation	354	-	SDRDB
201659	Warren, Jim	Irrigation	240	-	SDRDB
218541	RANDY FORBUS	Irrigation	174	-	SDRDB
218542	BRAD MCWHIRTER	Irrigation	217	-	SDRDB
259130	RANDY FORBUS	Irrigation	176	-	SDRDB
286665	BRIAN SNODGRASS	Irrigation	309	-	SDRDB
286670	BRIAN SNODGRASS	Irrigation	342	-	SDRDB
290726	JEROME HEAD	Irrigation	342	-	SDRDB
297929	3D LandCo	Irrigation	186	-	SDRDB
329709	MELRA BEARDEN	Irrigation	200	-	SDRDB
340973	Ben Dyck	Irrigation	400	-	SDRDB
340974	Ben Dyck	Irrigation	360	-	SDRDB
374236	Ben Dyck	Irrigation	320	-	SDRDB
377788	WARREN FAMILY FARMS	Irrigation	335	-	SDRDB
396691	McWhirter Famliy Farms	Irrigation	293	-	SDRDB
396692	Mc Whirter Family Farms	Irrigation	288	-	SDRDB
396693	Brad McWhirter	Irrigation	266	-	SDRDB
508970	BRAD McWHIRTER	Irrigation	204	-	SDRDB
538278	BRAD McWHIRTER	Irrigation	238	-	SDRDB
541184	BRIAN SNODGRASS	Irrigation	285	-	SDRDB
577779	Henry Letkeman	Irrigation	195	-	SDRDB

Leakage Through Faults or Fractures

Dynamic modeling at the PAV #1 well location indicates migration of the plume will not intersect a fault. Regional faults act as structural traps creating a seal against the migration of hydrocarbons, as demonstrated by the Bronco field. Therefore, should an unmapped fault exist within the plume boundary, vertical migration is unlikely. Shale gouge within the fault plane from a thick Woodford shale section will prevent vertical transmission of injected fluid along the fault and contain it below the Woodford. Faulting in this region terminates vertically below the Pennsylvanian-age rock. Secondary confining shales within the Wolfcampian and younger strata provide additional, redundant confining layers that would prevent CO_2 from migrating into freshwater aquifers.

Fractures are responsible for porosity development within the injection intervals. However, the subsequent exposure events did not produce the same solution diagenesis in the Woodford shale. Upward migration of injected gas through confining bed fractures is unlikely.

Leakage Through Confining Layers

The Silurian-Devonian injection zones have competent sealing rocks above and below the porous sub-areally exposed carbonate. The properties of the overlying transgressive Woodford shale (widespread deposition, high illite clay and organic matter composition, and low porosity and permeability) make an excellent sealing rock to the underlying Silurian formation. The underlying low porosity and permeability Fusselman carbonate minimizes the likelihood of downward migration of injected fluids. The relative buoyancy of injected gas to the in-situ reservoir fluid makes migration below the lower confining layer unlikely.

Leakage from Natural or Induced Seismicity

The location of PAV #1 is in an area of the Permian Basin that is inactive from a seismicity perspective, whether induced or natural. A review of historical seismic events on the USGS's Advanced National Seismic System site (from 1971 to present) and the Bureau of Economic Geology's TexNet catalog (from 2017 to present), as shown in Figure 32, indicates the nearest seismic event occurred more than 60 miles away.

A regional analysis of the probabilistic fault slip potential across the Permian Basin (Snee & Zoback 2016), as seen in Figure 33, further demonstrates that the PAV #1 well is located in a seismically inactive area and confirms that this area has little to no potential for an induced seismicity event.

Therefore, there is no indication that seismic activity poses a risk for loss of CO_2 to the surface within the MMA.

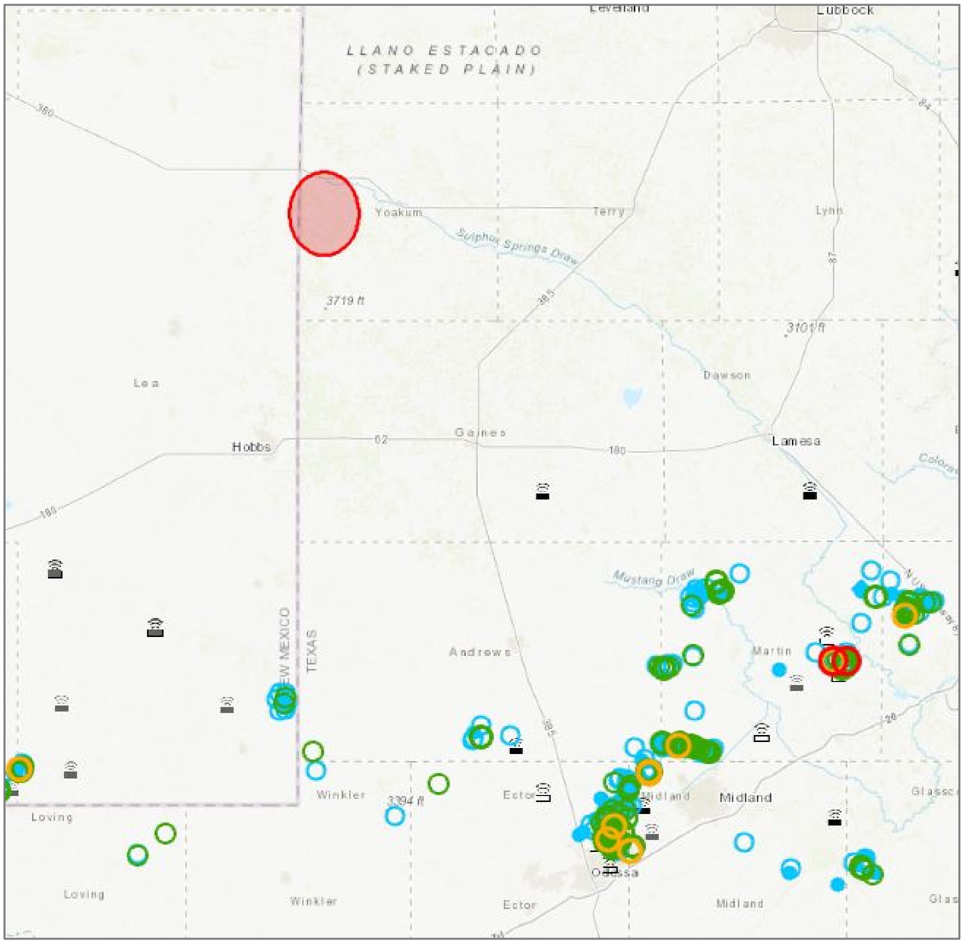


Figure 32 – Seismicity Review (TexNet – 3/21/2022)

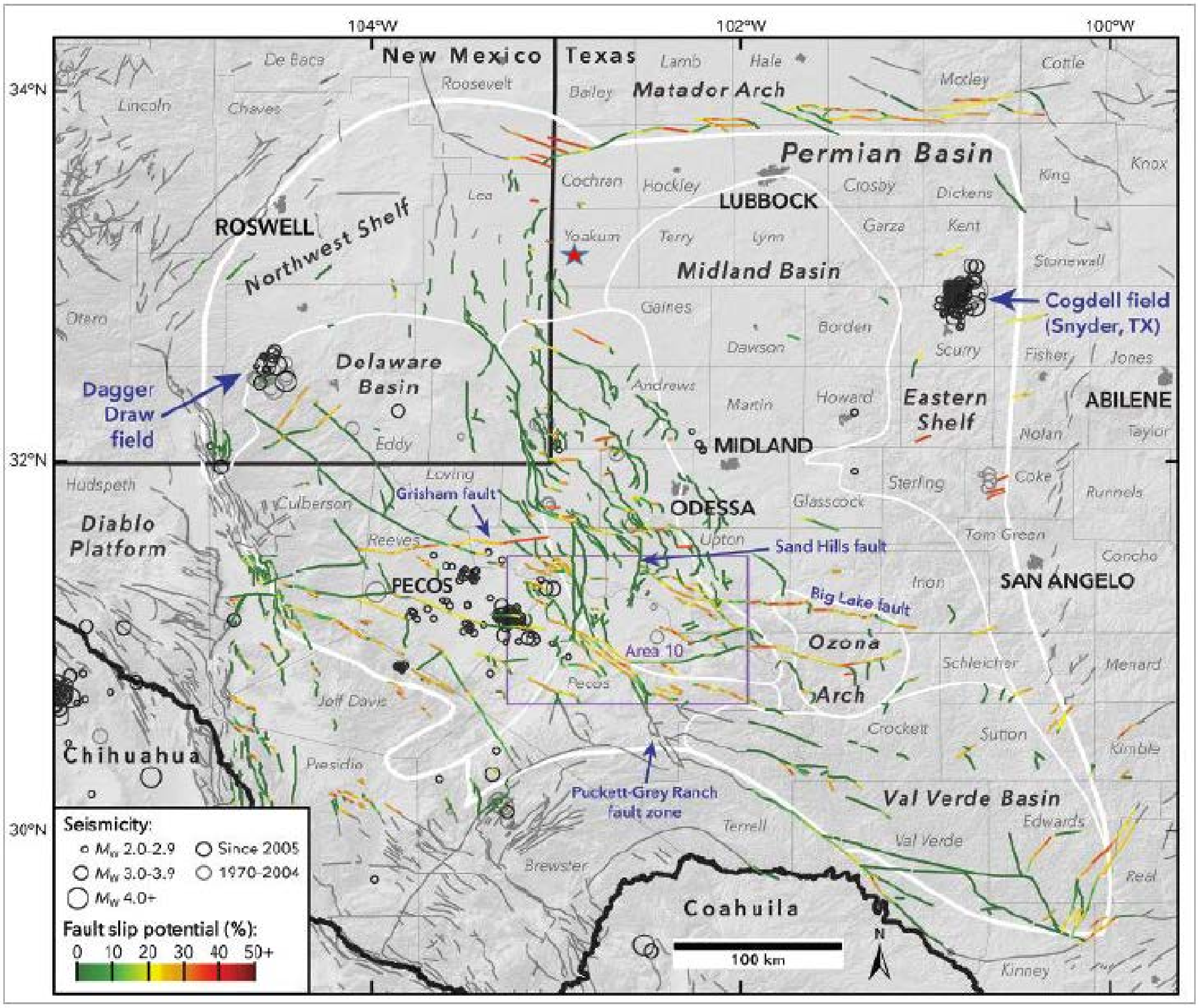


Figure 33 – Probabilistic Fault Slip Potential Analysis with PAV #1 location (Snee & Zobak 2016)

SECTION 5 – MONITORING FOR LEAKAGE

This section discusses the strategy that Stakeholder will employ for detecting and quantifying surface leakage of CO_2 through the pathways identified in Section 4 to meet the requirements of 40 CFR §98.448(a)(3). As the injectate stream contains both H_2S and CO_2, the H_2S will be a proxy for CO_2 leakage and therefore the monitoring systems in place to detect H_2S will also indicate a release of CO_2. Table 8 summarizes the monitoring of potential leakage pathways to the surface. Monitoring will occur during the planned 25-year injection period, or cessation of injection operations, plus a proposed 5-year post-injection period.

- Leakage from surface equipment
- Leakage through existing and future wells within MMA
- Leakage through faults and fractures
- Leakage through the confining layer
- Leakage through natural or induced seismicity

Because the acid gas injection stream also contains H_2S, any leakage would be detected by the H_2S alarms located around the facility and would be quickly addressed and would minimize the release of CO_2 into the atmosphere.

Table 8 – Summary of Leakage Monitoring Methods

Leakage Pathway	Monitoring Method
Leakage from surface equipment	Fixed H_2S monitors throughout the AGI facility
	Daily visual inspections
	Personal H_2S monitors
	Distributed Control System Monitoring (Volumes and Pressures)
Leakage through existing wells	Fixed H_2S monitor at the AGI well
	SCADA Continuous Monitoring at the AGI Well
	Annual Mechanical Integrity Tests ("MIT") of the AGI Well
	Visual Inspections
	Quarterly CO_2 Measurements within MMA
Leakage through groundwater wells	Annual Groundwater Samples on Property
Leakage from future wells	H_2S Monitoring during offset drilling operations
Leakage through faults and fractures	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage through confining layer	SCADA Continuous Monitoring at the AGI Well (volumes and pressures)
	Fixed In-field H_2S monitors
Leakage from natural or induced seismicity	Seismic monitoring station to be installed

Leakage from Surface Equipment

As the Campo Viejo Facility and the PAV #1 well are designed to handle H_2S, leakage from surface equipment is unlikely to occur and would be quickly detected and addressed. The facility design minimizes leak points through the equipment used and the type of connections are designed to minimize corrosion points. The H_2S in the injectate serves as a proxy for the release of CO_2. The facility and well site contain a number of H_2S alarms, set with a high alarm setpoint of 10 ppm of H_2S, which are shown in Figures 26 and 27 above. Additionally, all Stakeholder field personnel are required to wear H_2S monitors, which trigger the alarm at 5 ppm H_2S.

The AGI facility is continuously monitored through automated systems. In addition, field personnel conduct daily visual field inspections of gauges, monitors and leak indicators such as vapor plumes. The effectiveness of the internal and external corrosion control program is monitored through the periodic inspection of the system, analysis of liquids collected from the line, and inspection of the cathodic protection system. These inspections, in addition to the automated systems, allow Stakeholder to quickly respond to any leakage situation. Monitoring will occur for the duration of injection and the post-injection period. Should leakage be detected during active injection operations, the volume of CO_2 released will be calculated based on operating conditions at the time of the event, per 40 CFR §98.448(a)(5).

Leakage from Existing and Future Wells within Monitoring Area

Stakeholder continuously monitors and collects injection volumes, pressures, temperatures and gas composition data, through their SCADA systems, for the PAV #1 well. This data is reviewed by qualified personnel and will follow response and reporting procedures when data is outside acceptable performance limits. PAV #1 has a pressure and temperature gauge placed in the injection stream at its wellhead, and a pressure gauge on the casing annulus. A change of pressure on the annulus would indicate the presence of a possible leak. Mechanical integrity tests ("MITs") performed annually would also indicate the presence of a leak. Upon a negative MIT, the well would immediately be isolated and the leak mitigated.

The seven offset penetrating wells within the MMA are adequately cased and cemented to prevent potential leakage of CO_2 from the PAV #1 well plume. Additionally, the plugged wells were done so in a way to prevent migration of CO_2 as provided in Appendix E. As discussed previously, Rule 13 would ensure that new wells in the field would be constructed in a manner to prevent migration from the injection interval.

In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the MMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as minimum, quarterly atmospheric monitoring near identified penetrations within the MMA. Upon approval of the MRV and through the post-injection monitoring period, Stakeholder will have these monitoring systems in place.

Groundwater Quality Monitoring

Stakeholder will monitor the groundwater quality in fluids above the confining interval by sampling the well on the facility property and analyzing the sample with a third-party laboratory on an annual basis. Any significant changes to the water analysis would be investigated to determine if such change was a result of leakage from the PAV #1 well.

Leakage through Faults, Fractures or Confining Seals

Stakeholder continuously monitors the operations of the PAV #1 well through automated systems. Any deviation from normal operating conditions indicating movement into a potential pathway such as a fault or breakthrough of the confining seal would trigger an alert. Any such alert would be reviewed by field personnel and action taken to shut in the well, if necessary. Field H_2S monitoring systems would alert field personnel for any release of H_2S/CO_2 caused by such leakage.

Leakage through Natural or Induced Seismicity

While the likelihood of a natural or induced seismicity event is extremely low, Stakeholder plans to install a seismic monitoring station in the general area of the PAV #1 well. This monitoring station will be tied into the Bureau of Economic Geology's TexNet Seismic Monitoring system. If a seismic event of 3.0 magnitude or greater is detected, Stakeholder will review the injection volumes and pressures at the PAV #1 well to determine if any significant changes occur that would indicate potential leakage.

SECTION 6 – BASELINE DETERMINATIONS

This section identifies the strategies Stakeholder will undertake to establish the expected baselines for monitoring CO_2 surface leakage per 40 CFR §98.448(a)(4). Stakeholder will use the existing SCADA monitoring systems to identify changes from expected performance that may indicate leakage of CO_2.

Visual Inspections

Daily inspections will be conducted by field personnel at the Campo Viejo Facility and the PAV #1 well. These inspections will aid with identifying and addressing issues timely to minimize the possibility of leakage. If any issues are identified, such as vapor clouds or ice formations, corrective actions would be taken to address such issues.

H_2S Detection

H_2S will be initially injected into the AGI well at a concentration of approximately ten (10) percent or 100,000 ppm. The concentration will drop to approximately six (6) percent as additional volumes are added. H_2S gas detectors are located throughout the AGI facility and well site and are set to trigger the alarm at 10 ppm. Additionally, all field personnel are required to wear personal H_2S monitors, which are set to trigger the alarm at 5 ppm. Any alarm would trigger an immediate response to protect personnel and verify that the monitors are working properly. If monitors are working correctly, immediate actions would be taken to secure the facility.

CO_2 Detection

Any CO_2 release would be accompanied by H_2S and therefore the H_2S monitors at the facility would also serve as a CO_2 release warning system. In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the AMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as atmospheric monitoring near identified penetrations within the AMA.

Operational Data

Baseline measurements of injection volumes and pressures will be taken upon implementation of this MRV plan. Any significant deviations over time will be analyzed for indication of leakage of CO_2.

Continuous Monitoring

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as per Texas regulations and Stakeholder's TRRC-approved H_2S Contingency Plan. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

Groundwater Monitoring

An initial sample will be taken from the groundwater well on Stakeholder's property upon approval of Stakeholder's MRV and prior to increasing injection. The sample will be analyzed by a third-party laboratory to establish the baseline properties of the groundwater.

SECTION 7 – SITE SPECIFIC CONSIDERATIONS FOR MASS BALANCE EQUATION

This section identifies how Stakeholder will calculate the mass of CO_2 injected, emitted, and sequestered. This also includes site-specific variables for calculating the CO_2 emissions from equipment leaks and vented emissions of CO_2 between the injection flow meter and the injection well, per 40 CFR §98.448(a)(5).

Mass of CO_2 Received

Per 40 CFR §98.443, the mass of CO_2 received must be calculated using the specified CO_2 received equations "unless you follow the procedures in 40 CFR §98.444(a)(4)." 40 CFR §98.444(a)(4) states that "if the CO_2 you receive is wholly injected and is not mixed with any other supply of CO_2, you may report the annual mass of CO_2 injected that you determined following the requirements under paragraph (b) of this section as the total annual mass of CO_2 received instead of using Equation RR-1 or RR-2 of this subpart to calculate CO_2 received." The CO_2 received for this injection well is wholly injected and not mixed with any other supply and the annual mass of CO_2 injected will equal the amount received. Any future streams would be metered separately before being combined into the calculated stream.

Mass of CO_2 Injected

Per 40 CFR §98.444(b), since the flow rate of CO_2 injected will be measured with a volumetric flow meter, the total annual mass of CO_2, in metric tons, will be calculated by multiplying the mass flow by the CO_2 concentration in the flow according to Equation RR-4:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * C_{CO_{2,p,u}}$$

where:

$CO_{2,u}$ = Annual CO_2 mass injected (metric tons) as measured by flow meter u

$Q_{p,u}$ = Quarterly mass flow rate measurement for flow meter u in quarter p (metric tons per quarter)

$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. percent CO_2, expressed as a decimal fraction)

p = Quarter of the year

u = Flow meter

Mass of CO_2 Produced

The PAV #1 well is not part of an enhanced oil recovery project; therefore, no CO_2 will be produced.

Mass of CO_2 Emitted by Surface Leakage

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as a major upset event. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

In the unlikely event that CO_2 was released as a result of surface leakage, the mass emitted would be calculated for each surface pathway according to methods outlined in the plan and totaled using Equation RR-10 as follows:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x}$$

Where:

CO_2 = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year

X = Leakage pathway

Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

Mass of CO_2 Sequestered

The mass of CO_2 sequestered in subsurface geologic formations will be calculated based off Equation RR-12, as this well will not actively produce oil or natural gas or any other fluids, as follows:

$$CO_2 = CO_{2I} - CO_{2E} - CO_{2FI}$$

Where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead

CO_{2FI} will be calculated in accordance with Subpart W reporting of GHGs. Because no venting would occur due to the high H_2S concentrations of the injectate stream, the calculations would be based on the blowdown emissions that would be sent to flares and would be reported as part of the required GHG reporting for the gas plant.

- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

SECTION 8 – IMPLEMENTATION SCHEDULE FOR MRV PLAN

The PAV #1 well currently reports GHGs under Subpart UU but Stakeholder has elected to submit an MRV plan under, and otherwise comply with, Subpart RR. The MRV plan will be implemented upon receiving EPA approval. The Annual Subpart RR Report will be filed on March 31st of the year following the reporting year.

SECTION 9 – QUALITY ASSURANCE

This section identifies how Stakeholder plans to manage quality assurance and control, to meet the requirements of 40 CFR §98.444.

Monitoring QA/QC

CO_2 *Injected*

- The flow rate of the CO_2 being injected will be measured with a volumetric flow meter, consistent with industry best practices. These flow rates will be compiled quarterly.
- The composition of the CO_2 stream will be measured upstream of the volumetric flow meter with a continuous gas composition analyzer or representative sampling consistent with industry best practices.
- The gas composition measurements of the injected stream will be averaged quarterly.
- The CO_2 measurement equipment will be calibrated according to manufacturer recommendations.

CO_2 *Emissions from Leaks and Vented Emissions*

- Gas detectors will be operated continuously, except for maintenance and calibration.
- Gas detectors will be calibrated according to manufacturer recommendations and API standards.
- Calculation methods from subpart W will be used to calculate CO_2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

Measurement Devices

- Flow meters will be continuously operated except for maintenance and calibration.
- Flow meters will be calibrated according to the requirements in 40 CFR §98.3(i).
- Flow meters will be operated per an appropriate standard method as published by a consensus-based standards organization.
- Flow meter calibrations will be traceable to the National Institute of Standards and Technology (NIST).

All measured volumes of CO_2 will be converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and an absolute pressure of 1 atmosphere.

Missing Data

In accordance with 40 CFR §98.445, Stakeholder will use the following procedures to estimate missing data if unable to collect the data needed for the mass balance calculations:

- If a quarterly quantity of CO_2 injected is missing, the amount will be estimated using a representative quantity of CO_2 injected from the nearest previous period of time at a similar injection pressure.
- Fugitive CO_2 emissions from equipment leaks from facility surface equipment will be estimated and reported per the procedures specified in subpart W of 40 CFR §98.

MRV Plan Revisions

If any of the changes outlined in 40 CFR §98.448(d) occur, Stakeholder will revise and submit an amended MRV plan within 180 days to the Administrator for approval.

SECTION 10 – RECORDS RETENTION

Stakeholder will retain records as required by 40 CFR §98.3(g). These records will be retained for at least three years and include:

- Quarterly records of the CO_2 injected
    - Volumetric flow at standard conditions
    - Volumetric flow at operating conditions
    - Operating temperature and pressure
    - Concentration of the CO_2 stream
- Annual records of the information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

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Teeple, Andrew P., Ging, Patricia B., Thomas, Jonathan V., Wallace, David S., and Payne, Jason D., 2021. Hydrogeologic Framework, Geochemistry, Groundwater-Flow System, and Aquifer Hydraulic Properties Used in the Development of a Conceptual Model of the Ogallala, Edwards-Trinity (High Plains), and Dockum Aquifers In and Near Gaines, Terry, and Yoakum Counties, Texas: USGS Scientific Investigations Report 2021-5009.

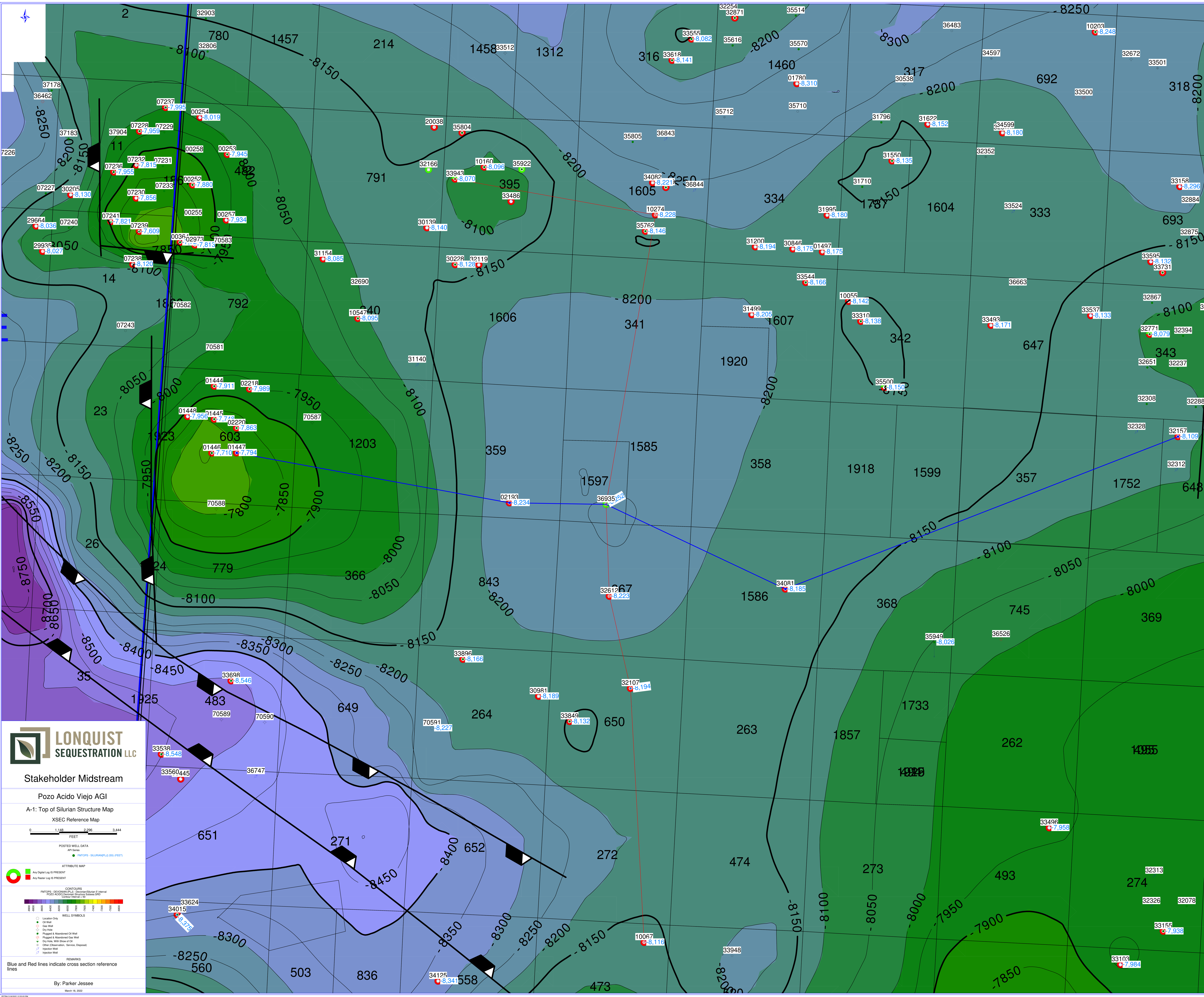
APPENDICES

APPENDIX A – GEOLOGY

APPENDIX A-1: SILURIAN STRUCTURE MAP

APPENDIX A-2: N-S CROSS SECTION

APPENDIX A-3: W-E CROSS SECTION



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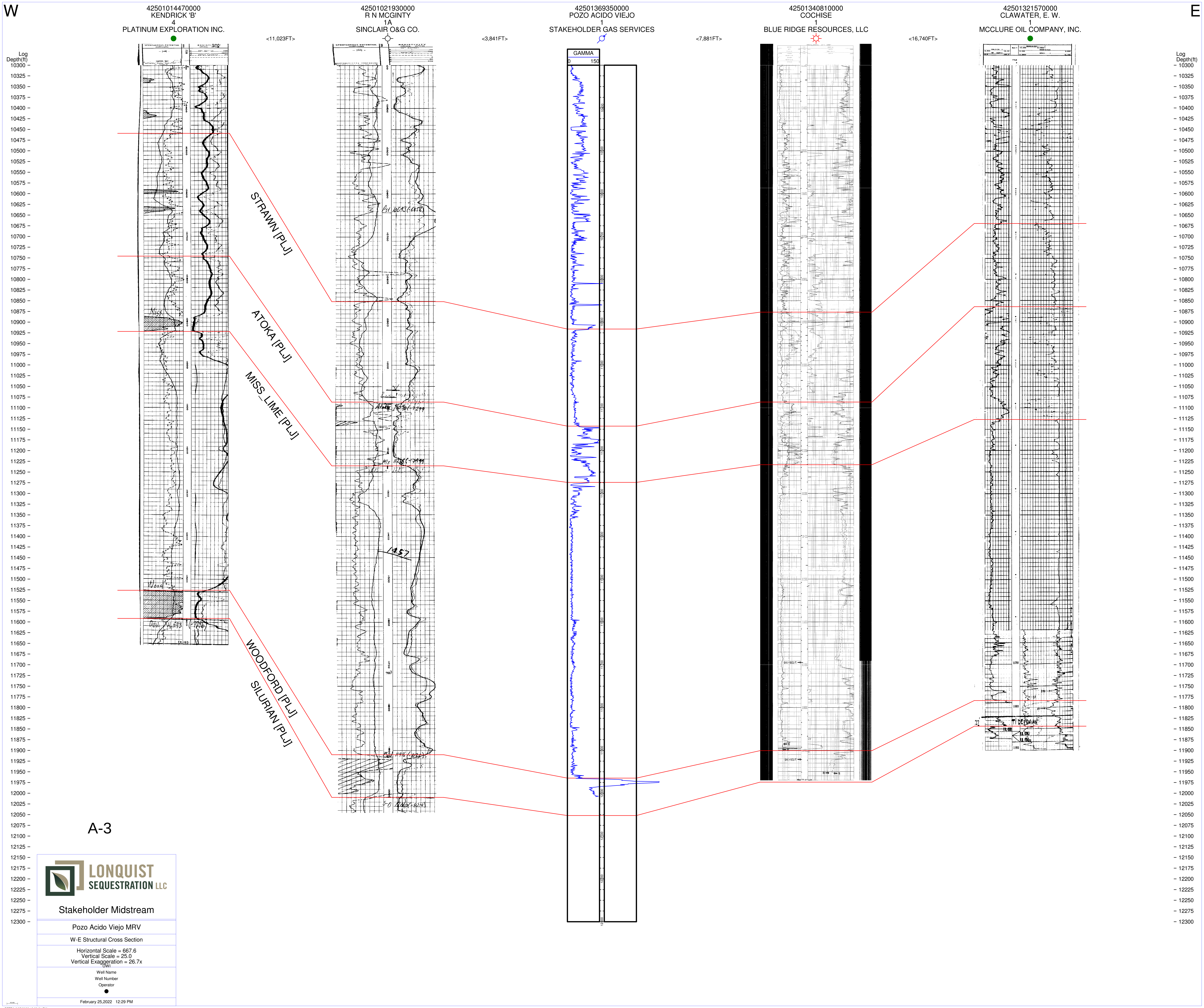
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Stakeholder Midstream
Pozo Acido Viejo MRV
W-E Structural Cross Section
Horizontal Scale = 667.6
Vertical Scale = 25.0
Vertical Exaggeration = 26.7x
UWI
Well Name
Well Number
Operator
February 25,2022 12:29 PM

APPENDIX B – TRRC FORMS PAV #1

APPENDIX B-1: UIC CLASS II ORDER

APPENDIX B-2: GAU GROUNDWATER PROTECTION DETERMINATION

APPENDIX A-3: DRILLING PERMIT

APPENDIX A-4: COMPLETION REPORT

B-1

RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

OIL & GAS DOCKET NO. 8A-0310710

THE APPLICATION OF STAKEHOLDER GAS SERVICES, LLC (811207) PURSUANT TO SWR 46 AND 36 INJECTION PERMIT FOR A PERMIT TO INJECT FLUID CONTAINING HYDROGEN SULIDE INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS FOR THE POZO ACIDO VIEJO LEASE, WELL NO. 1, BRONCO (SILURO-DEVONIAN) FIELD, YOAKUM COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice in the above-numerated docket heard on June 29, 2018, the presiding Technical Examiner and the Administrative Law Judge (collectively the Examiners) have made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application submitted by Stakeholder Gas Services, LLC is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiners' report and recommendation, the findings of fact and conclusions of law contained therein, and any exceptions and replies thereto, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to dispose of fluids containing hydrogen sulfide into its Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, pursuant to Statewide Rule 36(c)(10)(A).

It is further **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to conduct disposal operations in the Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, subject to the following terms and conditions.

SPECIAL CONDITIONS

1. Open hole completions shall have a plug back depth no deeper than the bottom of the permitted injection interval.

2. The operator shall provide to the UIC section an electric log and a mud log of the subject well or a copy of the log submitted with the permitted application with the top(s)and bottom(s) of the permitted formations indicated on the log.

3. Injection shall be no deeper than 100 feet above the estimated base of the Ellenberger thickness at the well location, if known. The top and bottom of the authorized injection interval may be modified based on electric log or mud log indications of the top(s) and bottom(s) of the permitted formations.

4. Waste shall be injected into the strata in the subsurface depth interval from 12,020 feet to 12,349 feet.

5. The injection volume shall not exceed 6,900 Mcf/day.

6. The maximum surface injection pressure shall not exceed 6,010 psig.

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.

2. The District Office must be notified 48 hours prior to:

   a. running tubing and setting packer;
   b. beginning any workover or remedial operation;
   c. conducting any required pressure tests or surveys.

3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.

4. Prior to beginning injection and subsequently after any workover, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed annually and the results submitted in accordance with the instructions of Form H-5.

5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.

6. Within 30 days after completion, conversion to disposal, or any workover which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit and the permit number must be included on the new Form W-2 or G-1.

7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.

8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.

9. Unless otherwise required by conditions of the permit, completion and operation of the well shall be in accordance with the information represented on the application (Form W-14).

10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

11. The operator shall be responsible for complying with the following requirements so as to assure that discharges of oil and gas waste will not occur:

    A. Prior to beginning operation, all collecting pits, skimming pits, or washout pits must be permitted under the requirements of Statewide Rule 8.

    B. Prior to beginning operation, a catch basin constructed of concrete, steel, or fiberglass must be installed to catch oil and gas waste which may spill as a result of connecting and disconnecting hoses or other apparatus while transferring oil and gas waste from tank trucks to the disposal facility.

    C. Prior to beginning operation, all fabricated waste storage and pretreatment facilities (tanks, separators, or flow lines) shall be constructed of steel, concrete, fiberglass, or other materials approved by the Director or Director's delegate and shall be maintained so as to prevent discharges of oil and gas waste.

    D. Prior to beginning operation, dikes shall be placed around all waste storage, pretreatment, or disposal facilities. The containment area shall be dewatered within 24 hours by being disposed of in an authorized disposal facility.

    E. Prior to beginning operation, the facility shall have security to prevent unauthorized access. Access shall be secured by a 24-hour attendant, a fence and locked gate when unattended, or a key-controlled access system. For a facility without a 24-hour attendant, fencing shall be required unless terrain or vegetation prevents truck access except through entrances with lockable gates.

    F. Prior to beginning operation, each storage tank shall be equipped with a device (visual gauge or alarm) to alert drivers when each tank is within 130 barrels from being full.

12. Form P-18, Skim Oil report, must be filed in duplicate with the District Office by the 15th day of the month following the month covered by the report.

13. If the facility will have staff on-site for periods of time necessitating bathroom

accommodations, these accommodations must be designed, installed and maintained by a person licensed to do so and the accommodations must comply with all local, county and state health regulations.

14. The permit Number shall be____________. (21146)

Provided further that should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

Pursuant to **§2001.144(a)(4)(A),** of the Texas Government Code, and the agreement of the applicant, this Final Order is effective when a Master Order relating to this Final Order is signed.

Done this 21st day of August, 2018.

RAILROAD COMMISSION OF TEXAS

(Order approved and signatures affixed by Hearings Divisions' unprotested Master Order Dated August 21, 2018)

B-2

GROUNDWATER PROTECTION DETERMINATION

Form GW-2

Groundwater Advisory Unit

Date Issued:	01 November 2017	**GAU Number:**	182849

Attention:	STAKEHOLDER MIDSTREAM, 777 E SONTERRA STE 100 SAN ANTONIO, TX 78258	**API Number:**	50100000
		County:	YOAKUM
		Lease Name:	Pozo Acido Viejo
		Lease Number:	
Operator No.:	811202	**Well Number:**	1
		Total Vertical Depth:	12600
		Latitude:	33.169934
		Longitude:	-103.001911
		Datum:	NAD27

Purpose: Injection into Producing Zone (H1)

Location: Survey-Gibson, J H; Abstract-1597; Block-D; Section-452

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

The interval from the land surface to a depth of 375 feet must be protected.

The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 2250 feet at the site of the referenced well.

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 10/30/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary.
If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

B-3

Railroad Commission of Texas

PERMIT TO DRILL, RE-COMPLETE, OR RE-ENTER ON REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

CONDITIONS AND INSTRUCTIONS

Permit Invalidation. It is the operator's responsibility to make sure that the permitted location complies with Commission density and spacing rules in effect on the spud date. The permit becomes invalid automatically if, because of a field rule change or the drilling of another well, the stated location is not in compliance with Commission field rules on the spud date. If this occurs, application for an exception to Statewide Rules 37 and 38 must be made and a special permit granted prior to spudding. Failure to do so may result in an allowable not being assigned and/or enforcement procedures being initiated.

Notice Requirements. Per H.B 630, signed May 8, 2007, the operator is required to provide notice to the surface owner no later than the 15th business day after the Commission issues a permit to drill. Please refer to subchapter Q Sec. 91.751-91.755 of the Texas Natural Resources Code for applicability.

Permit expiration. This permit expires two (2) years from the date of issuance shown on the original permit. The permit period will not be extended.

Drilling Permit Number. The drilling permit number shown on the permit MUST be given as a reference with any notification to the district (see below), correspondence, or application concerning this permit.

Rule 37 Exception Permits. This Statewide Rule 37 exception permit is granted under either provision Rule 37 (h)(2)(A) or 37(h)(2)(B). Be advised that a permit granted under Rule 37(h)(2)(A), notice of application, is subject to the General Rules of Practice and Procedures and if a protest is received under Section 1.3, “Filing of Documents,” and/or Section 1.4, “Computation of Time,” the permit may be deemed invalid.

Before Drilling

Fresh Water Sand Protection. The operator must set and cement sufficient surface casing to protect all usable-quality water, as defined by the Railroad Commission of Texas (RRC) Groundwater Advisory Unit (GWAU). Before drilling a well, the operator must obtain a letter from the Railroad Commission of Texas stating the depth to which water needs protection, Write: Railroad Commission of Texas, Groundwater Advisory Unit (GWAU), P.O. Box 12967, Austin, TX 78711-3087. File a copy of the letter with the appropriate district office.

Accessing the Well Site. If an OPERATOR, well equipment TRANSPORTER or WELL service provider must access the well site from a roadway on the state highway system (Interstate, U.S. Highway, State Highway, Farm-to-Market Road, Ranch-to-Market Road, etc.), an access permit is required from TxDOT. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

Water Transport to Well Site. If an operator intends to transport water to the well site through a temporary pipeline laid above ground on the state’s right-of-way, an additional TxDOT permit is required. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

*NOTIFICATION

The operator is **REQUIRED** to notify the district office when setting surface casing, intermediate casing, and production casing, or when plugging a dry hole. The district office **MUST** also be notified if the operator intends to re-enter a plugged well or re-complete a well into a different regulatory field. Time requirements are given below. The drilling permit number **MUST** be given with such notifications.

During Drilling

Permit at Drilling Site. A copy of the Form W-1 Drilling Permit Application, the location plat, a copy of Statewide Rule 13 alternate surface casing setting depth approval from the district office, if applicable, and this drilling permit must be kept at the permitted well site throughout drilling operations.

***Notification of Setting Casing.** The operator MUST call in notification to the appropriate district office (phone number shown the on permit) a minimum of eight (8) hours prior to the setting of surface casing, intermediate casing, AND production casing. The individual giving notification MUST be able to advise the district office of the drilling permit number.

***Notification of Re-completion/Re-entry.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of eight (8) hours prior to the initiation of drilling or re-completion operations. The individual giving notification MUST be able to advise the district office of the drilling permit number.

Completion and Plugging Reports

Hydraulic Fracture Stimulation using Diesel Fuel: Most operators in Texas do not use diesel fuel in hydraulic fracturing fluids. Section 322 of the Energy Policy Act of 2005 amended the Underground Injection Control (UIC) portion of the federal Safe Drinking Water Act (42 USC 300h(d)) to define "underground Injection" to *EXCLUDE* " ...the underground injection of fluids or propping agents (*<u>other than diesel fluels</u>*) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities." (italic and underlining added.) Therefore, hydraulic fracturing may be subject to regulation under the federal UIC regulations if diesel fuel is injected or used as a propping agent. EPA defined "diesel fuel" using the following five (5) Chemical Abstract Service numbers: 68334-30-5 Primary Name: Fuels, diesel; 68476-34-6 Primary Name: Fuels, diesel, No. 2; 68476-30-2 Primary Name: Fuel oil No. 2; 68476-31-3 Primary Nmae: Fuel oil, No. 4; and 8008-20-6 Primary Name: Kerosene. As a result, an injection well permit would be required before performing hydraulic fracture stimulation using diesel fuel as defined by EPA on any well in Texas. Hydraulic fracture stimulation using diesel fuel as defined by EPA on a well in Texas without an injection well permit could result in enforcement action.

Producing Well. Statewide Rule 16 states that the operator of a well shall file with the Commission the appropriate completion report within thirty (30) days after completion of the well or within ninety (90) days after the date on which the drilling operation is completed, whichever is earlier. Completion of the well in a field authorized by this permit voids the permit for all other fields included in the permit unless the operator indicates on the initial completion report that the well is to be a dual or multiple completion and promptly submits an application for multiple completion. All zones are required to be completed before the expiration date on the existing permit. Statewide Rule 40(d) requires that upon successful completion of a well in the same reservoir as any other well previously assigned the same acreage, proration plats and P-15s (if required) must be submitted with no double assignment of acreage.

Dry or Noncommercial Hole. Statewide Rule 14(b)(2) prohibits suspension of operations on each dry or non-commercial well without plugging unless the hole is cased and the casing is cemented in compliance with Commission rules. If properly cased, Statewide Rule 14(b)(2) requires that plugging operations must begin within a period of one (1) year after drilling or operations have ceased. Plugging operations must proceed with due diligence until completed. An extension to the one-year plugging requirement may be granted under the provisions stated in Statewide Rule 14(b)(2).

Intention to Plug. The operator must file a Form W-3A (Notice of Intention to Plug and Abandon) with the district office at least five (5) days prior to beginning plugging operations. If, however, a drilling rig is already at work on location and ready to begin plugging operations, the district director or the director's delegate may waive this requirement upon request, and verbally approve the proposed plugging procedures.

***Notification of Plugging a Dry Hole.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of four (4) hours prior to beginning plugging operations. The individual giving the notification MUST be able to advise the district office of the drilling permit number and all water protection depths for that location as stated in the Texas Commission on Environmental Quality letter.

DIRECT INQUIRIES TO: DRILLING PERMIT SECTION, OIL AND GAS DIVISION

PHONE
(512) 463-6751

MAIL:
PO Box 12967
Austin, Texas, 78711-2967

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER	DATE PERMIT ISSUED OR AMENDED	DISTRICT
834810	Jan 09, 2018	* 8A
API NUMBER 42-501-36935	FORM W-1 RECEIVED Jan 04, 2018	COUNTY YOAKUM
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Vertical	ACRES 200

OPERATOR 811207

STAKEHOLDER GAS SERVICES, LLC

401 E SONTERRA BLVD STE 215
SAN ANTONIO, TX 78258-0000

NOTICE
This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored.
District Office Telephone No:
(432) 684-5581

LEASE NAME	WELL NUMBER
POZO ACIDO VIEJO	1
LOCATION 10.3 miles W direction from PLAINS, TX	TOTAL DEPTH 14000

Section, Block and/or Survey
SECTION 452 BLOCK D ABSTRACT 1597
SURVEY GIBSON, J H / READ, W K

DISTANCE TO SURVEY LINES	DISTANCE TO NEAREST LEASE LINE
1862.8 ft. W 754.6 ft. S	754.6 ft.
DISTANCE TO LEASE LINES 777.2 ft. E 754.6 ft. S	DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below

FIELD(s) and LIMITATIONS:

* SEE FIELD DISTRICT FOR REPORTING PURPOSES *

FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH	WELL # NEAREST WE	DIST
BRONCO (SILURO-DEVONIAN)	200.00	12,000	1	8A
POZO ACIDO VIEJO	754.6		0	

RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.

THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS

This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.

This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data

YOAKUM (501) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
RED BED-SANTA ROSA	1,100	1,100		1	12/17/2013
YATES	2,800	3,450		2	12/17/2013
SAN ANDRES	4,500	5,500	high flows, H2S, corrosive	3	12/17/2013
GLORIETA	5,600	6,000		4	12/17/2013
CLEARFORK	6,000	7,900	Active CO2 Flood	5	12/17/2013
WICHITA	8,000	8,200		6	12/17/2013
LEONARD	9,000	9,700		7	12/17/2013
WOLFCAMP	8,300	10,700		8	12/17/2013
PENNSYLVANIAN	8,700	8,700		9	12/17/2013
STRAWN	11,300	11,500		10	12/17/2013
MISSISSIPPIAN	10,650	10,800		11	12/17/2013
DEVONIAN	11,200	13,100		12	12/17/2013
DEVONIAN-SILURIAN	11,500	11,500		13	12/17/2013

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator’s responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information.
http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info

B-4

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

Tracking No.: 201485

Status: Approved

This facsimile W-2 was generated electronically from data submitted to the RRC.

API No. 42- 501-36935

7. RRC District No. 8A

Oil Well Potential Test, Completion or Recompletion Report, and Log

8. RRC Lease No. 70951

1. FIELD NAME (as per RRC Records or Wildcat) BRONCO (SILURO-DEVONIAN)	2. LEASE NAME POZO ACIDO VIEJO	9. Well No. 1
3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report) STAKEHOLDER GAS SERVICES, LLC	RRC Operator No. 811207	10. County of well site YOAKUM
4. ADDRESS 401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000		11. Purpose of filing Initial Potential [ ] Retest [ ] Reclass [ ] Well record only (Explain In remarks) [X]
5. If Operator has changed within last 60 days, name former operator		
6a. Location (Section, Block, and Survey) 452 , D , GIBSON, J H / READ, W K , A-1597	6b. Distance and direction to nearest town in this county. PLAINS, TX	

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no. FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

13. Type of electric or other log run	14. Completion or recompletion date
None	01/08/2019

SECTION I- POTENTIAL TEST DATA IMPORTANT: Test should be for 24 hours unless otherwise specified infield rules.

15. Date of test	16. No. of hours tested	17. Production method (Flowing, Gas Lift, Jetting, Pumping- Size & Type of pump)	18. Choke size

	Oil - BBLS	Gas - MCF	Water - BBLS	Gas - Oil Ratio / Oil Gravity-API-60°	Flowing Tubing Pressure / Casing Pressure
19. Production during Test Period				0	PSI
20. Calculated 24-Hour Rate					PSI

21. Was swab used during this test?	22. Oil produced prior to test (New & Reworked wells)	23. Injection Gas-Oil Ratio
Yes [ ] No [X]		

REMARKS: N/A

INSTRUCTIONS: File an original and one copy of the completed FormW-2 in the appropriate RRC District Office within 30 days after completing a well and within 10 days after a potential test. If an operator does not properly report the results of a potential test within the 10-day period, the effective date of the allowable assigned to the well will not extend back more than 10 days before the W-2 was received in the District Office. (Statewide Rules 16 and 51) To report a completion or recompletion, fill in both sides of this form. To report a retest, fill in only the front side.

WELL TESTERS CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test by observation of (a) meter readings or (b) the top and bottom gauges of each tank into which production was run during the test. I further certify that the potential test data shown above is true, correct, and complete, to the best of my knowledge.

Signature: Well Tester — Name of Company — RRC Representative

OPERATOR'S CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct and complete, to the best of my knowledge.

Type or printed name of operator's representative

Consultant

Title of Person

(806) 665-0338 01/31/2020

Telephone: Area Code Number Month Day Year

Rebecca Dunn

Signature

SECTION III **DATA ON WELL COMPLETION AND LOG (Not Required on Retest)**

24. Type of Completion

New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

25. Permit to Drill, Plug Back or Deepen — DATE: 01/09/2018 — PERMIT NO.: 834810

Rule 37 Exception — CASE NO.:

Water Injection Permit — PERMIT NO.:

Salt Water Disposal Permit — PERMIT NO.:

Other — DATE: 08/21/2018 — PERMIT NO.: 21146

CO2,H2S, OTHER

26. Notice of Intention to Drill this well was filed in Name of

STAKEHOLDER GAS SERVICES, LLC

27. Number of producing wells on this lease in this field (reservoir) including this well

0

28. Total number of acres in this lease

200.0

29. Date Plug Back, Deepening, Workover or Drilling Operations: Commenced 05/25/2018 Completed 06/23/2018

30. Distance to nearest well, Same Lease &Reservoir

31. Location of well, relative to nearest lease boundaries 777.2 Feet From East Line and 754.6 Feet from South Line of the POZO ACIDO VIEJO Lease

32. Elevation (DF. RKB, RT. GR ETC.)

3787 GL

33. Was directional survey made other than inclination (Form W-12)? [ ] Yes [X] No

34. Top of Pay

35. Total Depth 12349

36. P. B. Depth

37. Surface Casing Determined by Field Rules [ ] Recommendation of T.D.W.R. [X] Railroad Commission (Special) [ ]

Dt. of Letter 11/01/2017

Dt. of Letter

38. Is well multiple completion? [ ] Yes [X] No

39. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

40. Intervals Drilled by: Rotary Tools X Cable Tools

41. Name of Drilling Contractor

42. Is Cementing Affidavit Attached? [X] Yes [ ] No

43. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
20		90		C HSR 169	24	SURF	200.0
13 3/8		2402		C HSR 1600	17 1/2	SURF	3449.0
9 5/8		6421	4400	C HSR 1250	12 1/4	0	2593.0
9 5/8		6421		C HSR 358	12 1/4	4400	475.0
7		12026	7503	C HSR 717	8 3/4	250	1390.0
7		12026		C & H HSR 535	8 3/4	7503	1033.0

44. LINER RECORD

Size	Top	Bottom	Sacks Cement	Screen
N/A				

45. TUBING RECORD

Size	Depth Set	Packer Set
3 1/2	11964	11964

46. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
From 12026	To 12349 OH
From	To
From	To
From	To

47. ACID, SHOT, FRACTURE, CEMENT SQUEEZE. ETC.

Depth Interval		Amount and Kind of Material Used
12026.0	12349.0	2000 GALS 15% HCL

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
RED BED-SANTA ROSA	1100.0	WOLFCAMP	8300.0
YATES	2800.0	PENNSYLVANIAN	8700.0
SAN ANDRES - HIGH FLOWS, H2S, CORROSIVE	4500.0	STRAWN	11300.0
GLORIETA	5600.0	MISSISSIPPIAN	10650.0
CLEARFORK - ACTIVE CO2 FLOOD	6000.0	DEVONIAN	12020.0

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)			
Formations	Depth	Formations	Depth
WICHITA	8000.0	DEVONIAN-SILURIAN	11050.0
LEONARD	9000.0		
REMARKS: ACID GAS INJECTION WELL INTO THE DEVONIAN. OIL & GAS DOCKET NO 8A-0310710 - FINAL ORDER			

APPENDIX C – GAS COMPOSITION

LABORATORYSERVICES Natural Gas Analysis

www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

9252G	30110	Campo Viejo North Acid Gas
Sample Point Code	Sample Point Name	Sample Point Location

Laboratory Services	2021047959	0410	D Armstrong - Spot
Source Laboratory	Lab File No	Container Identity	Sampler
USA	USA	USA	Texas
District	Area Name	Field Name	Facility Name
Nov 4, 2021 10:45	Nov 4, 2021 10:45	Nov 5, 2021 08:15	Nov 8, 2021
Date Sampled	Date Effective	Date Received	Date Reported

53.00		Torrance	1222 @ 89
Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions

Stakeholder Midstream	Campo Viejo
Operator	Lab Source Description

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	9.7450	9.745	
Nitrogen (N2)	0.5770	0.6329	
CO2 (CO2)	89.2490	98.89586	
Methane (C1)	0.1900	0.208	
Ethane (C2)	0.0120	0.01366	0.0030
Propane (C3)	0.0280	0.03069	0.0080
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1990	0.21889	0.0860
TOTAL	100.0000	109.7450	0.0970

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Oct 10, 2021

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 Â°F		14.73 PSI @ 60.00 Â°F	
Dry	Saturated	Dry	Saturated
75.4	75.00	75.6	75.2

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
1.4926	1.4844

Molecular Weight
42.9928

C6+ Group Properties

Assumed Composition

C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S
97450.6 PPM

PROTREND STATUS:
Passed By Validator on Nov 8, 2021

DATA SOURCE:
Imported

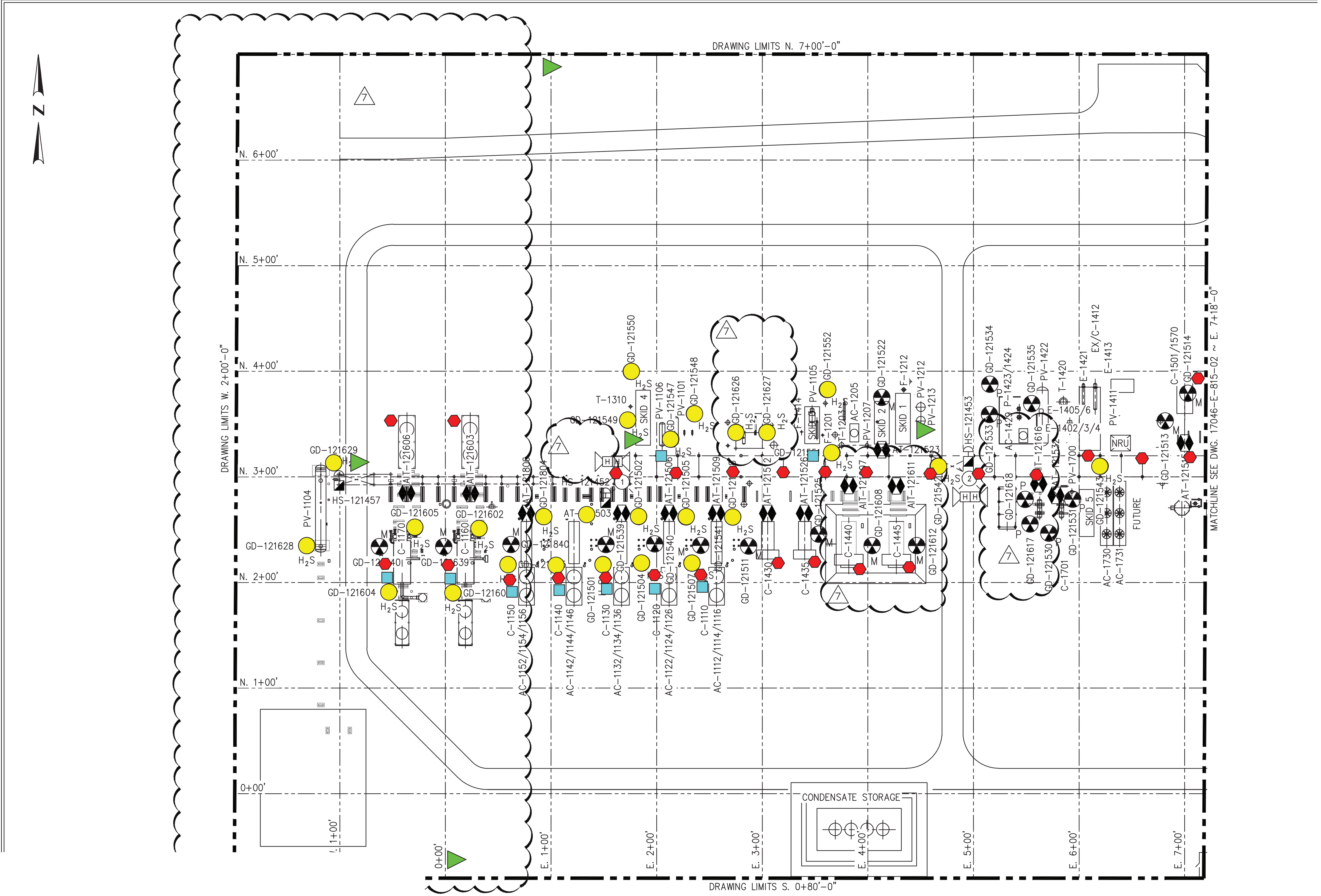
PASSED BY VALIDATOR REASON:
Close enough to be considered reasonable.

VALIDATOR:
Dustin Armstrong

VALIDATOR COMMENTS:
OK

C-1

APPENDIX D – FACILITY SAFETY PLOT PLANS



LEGEND:

- FIRE EXTINGUISHER
- SCBA / ESCAPE PACK
- WIND SOCK
- FIRE DETECTOR
- GAS DETECTOR HYDROGEN SULFIDE
- GAS DETECTOR METHANE
- GAS DETECTOR PROPANE
- ESD BUTTON
- RED, BLUE, AMBER & WHITE STROBE LIGHTS
- HORN

D-1

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:52:32-06'00'
P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #7 TO #7 BY SAULSBURY
SI JOB NUMBER: 10864
PROJ. MANAGER M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17045-E-817-01	TONE MODULE CONTROLLER WIRING DIAGRAM

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500
OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
3	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19
4	ISSUED FOR CONSTRUCTION - SI JOB #10665	DE	AK	AK	03/06/20
5	REVISED AS NOTED - SI JOB #10665	DE	AK	AK	04/02/20
7	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22

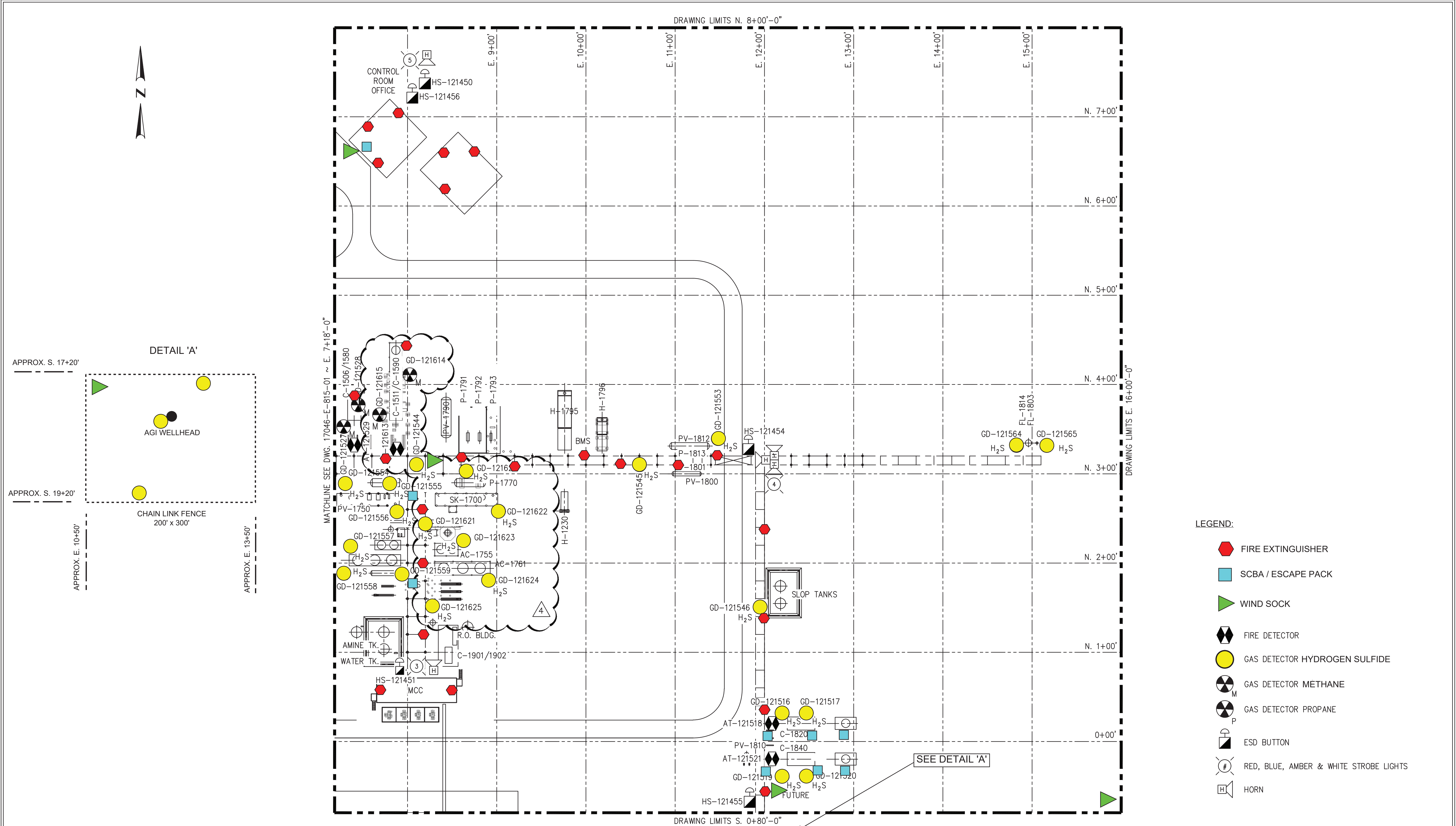
SAFETY PLOT PLAN
SHEET 1 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-01	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-01

xpansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-01.dwg



J:\Stakeholder Midstream\10864 - Campo Viejo 70MM Expansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-02.dwg

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS — SRIKANTH KONDURU — 112034 — LICENSED — PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:53:03-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #4 TO #4 BY SAULSBURY	
SI JOB NUMBER:	10864
PROJ. MANAGER	M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17046-E-815-01	SAFETY PLOT PLAN

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500 OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
4	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22
0	ISSUED FOR CONSTRUCTION - OPD JOB #17046	SP	JP	GS	5-18-18
1	REVISED AS NOTED - OPD JOB #17046	JWB	JP	GS	6-22-18
2	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19

SAFETY PLOT PLAN
SHEET 2 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-02	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-02

APPENDIX E – MMA/AMA REVIEW MAPS

APPENDIX E-1: 25-YEAR PLUME EXTENT, 50-YEAR PLUME EXTENT AND MAXIMUM MONITORING AREA MAP

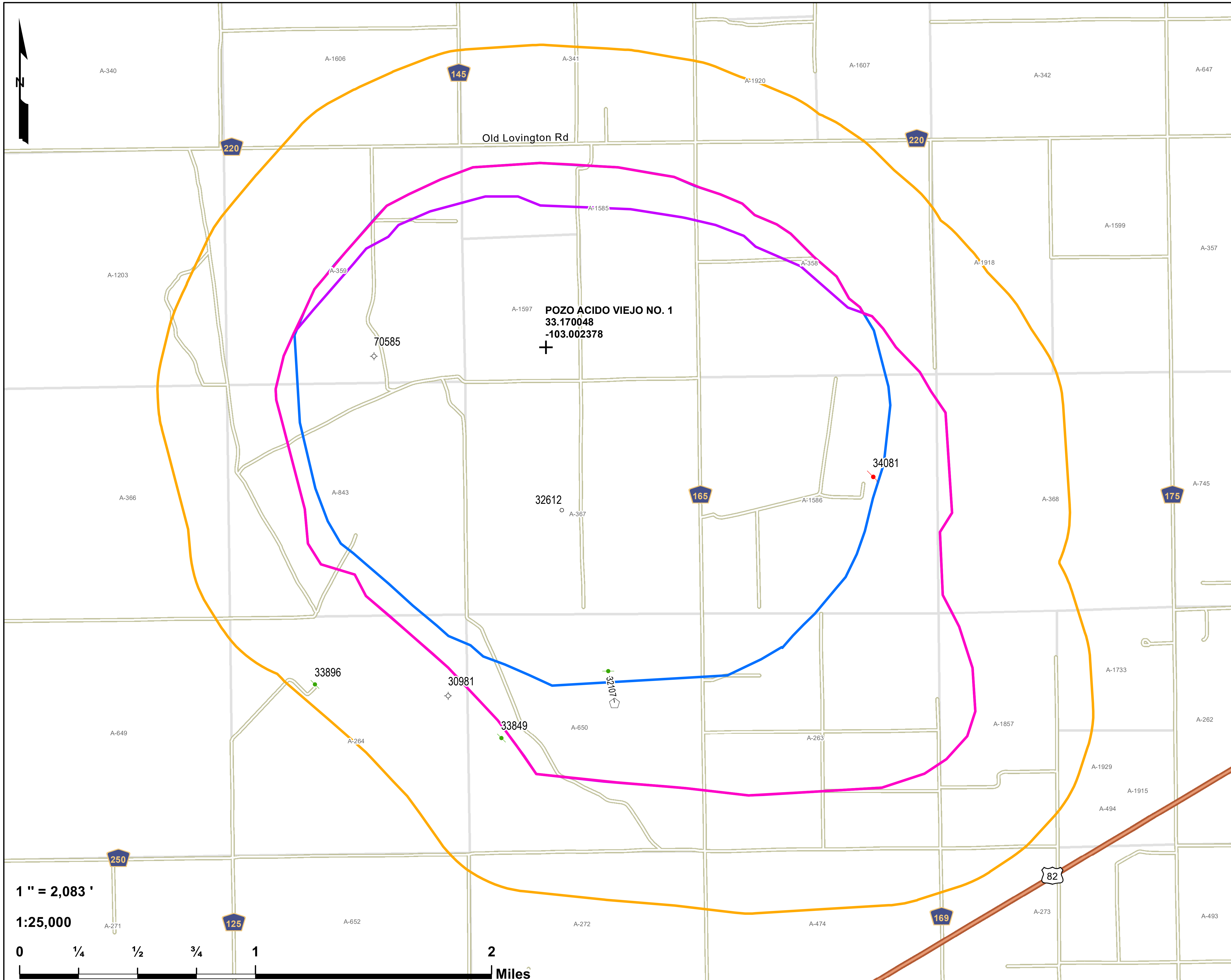
APPENDIX E-2: OIL AND GAS WELLS WITHIN THE MMA MAP

APPENDIX E-3: INJECTION INTERVAL PENETRATING WELLS WITHIN THE MMA MAP

APPENDIX E-4: OIL AND GAS WELLS WITHIN THE MMA LIST

APPENDIX E-5: GROUNDWATER WELLS WITHIN THE MMA

APPENDIX E-6: WELLBORE SCHEMATICS FOR INJECTION INTERVAL PENETRATING WELLS



Pozo Acido Viejo No. 1
25-year Plume
50-year Plume and MMA

E-1

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Pozo 20 MMCF Higher H2S 25 Yr Plume Trace
- Pozo 20 MMCF Higher H2S 50 YR Plume Trace
- Abstracts
- Lateral

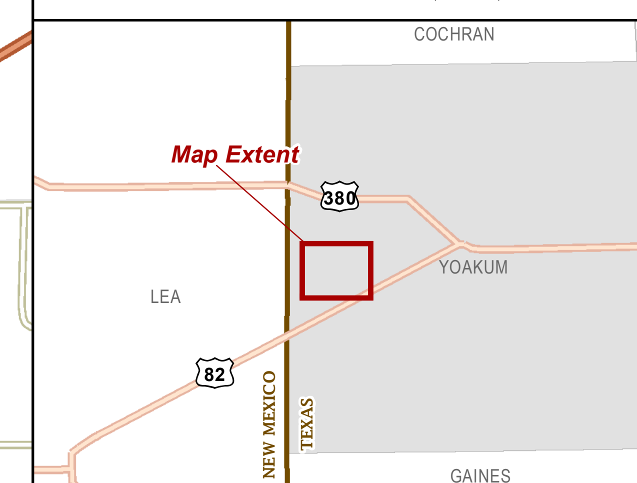
API (30-025-...) SHL Status - Type (Count)

- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



Pozo Acido Viejo No. 1
MMA
Oil and Gas Wells

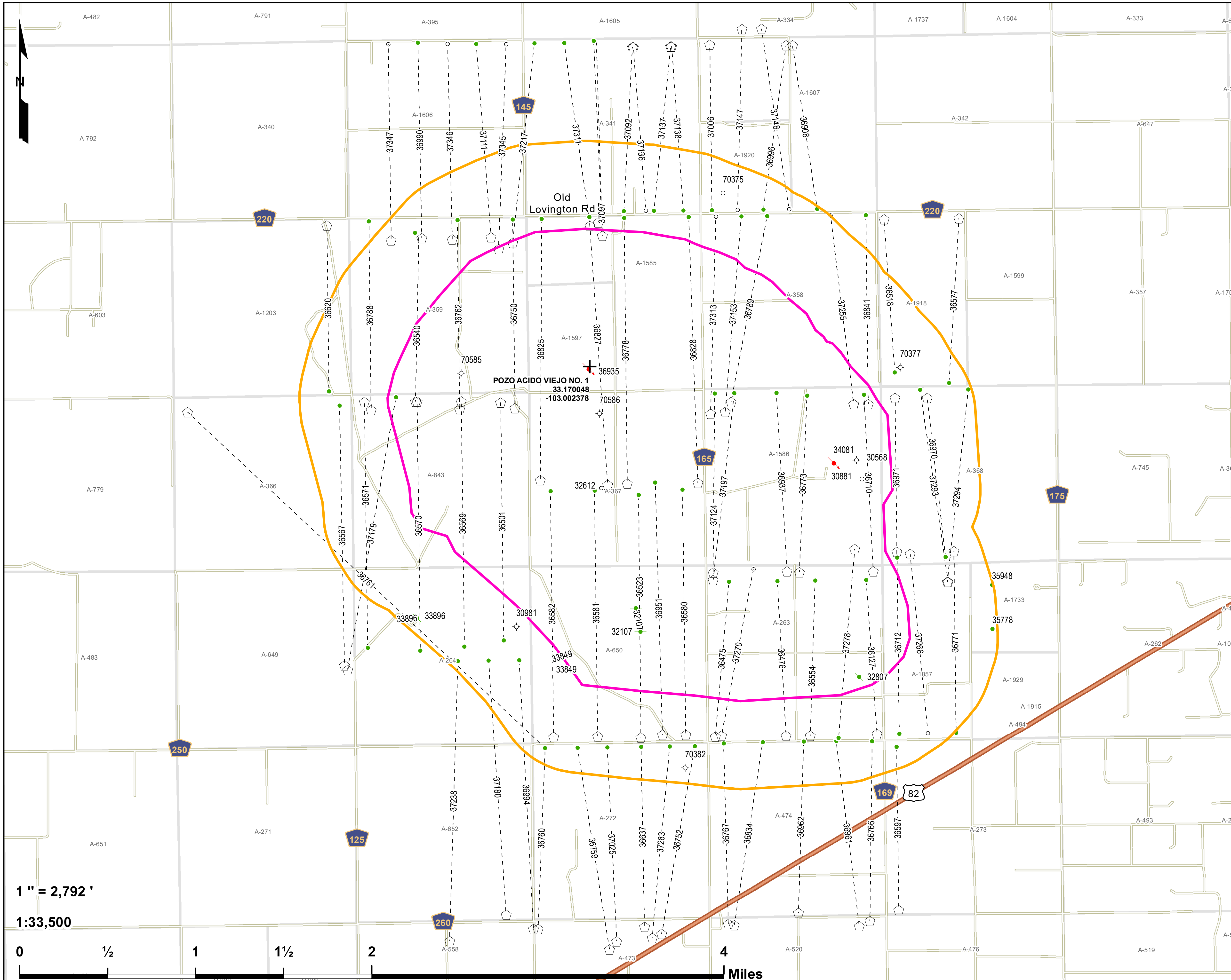
E-2

Stakeholder Midstream
Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/17/2022	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY



+ Pozo Acido Viejo No. 1 SHL
Maximum Plume Extent
MMA
Abstracts
Lateral

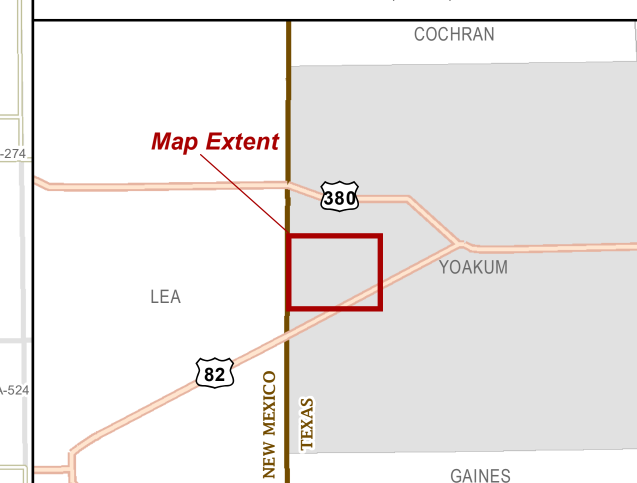
API (30-025-...) SHL Status - Type (Count)

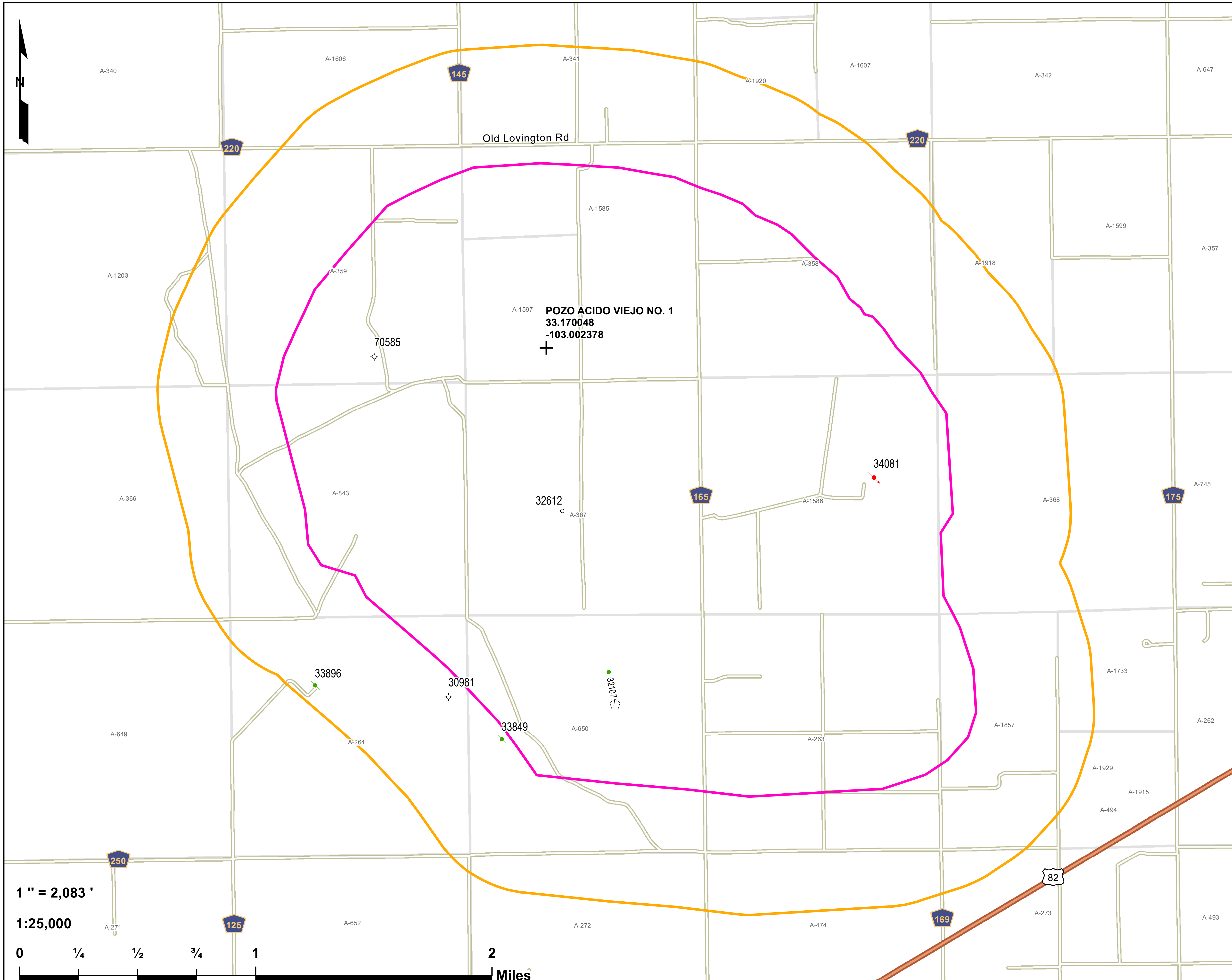
- Horizontal Surface Location (80)
- Active - Injection (2)
- Active - Oil (2)
- Dry - Hole (8)
- Permitted - Location (1)
- Plugged - Oil (3)
- Shut In - Oil (1)

API (30-025-...) BHL Status - Type (Count)

- Active - Oil (68)
- Permitted - Location (10)
- Plugged - Oil (2)
- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)





Pozo Acido Viejo No. 1

MMA Penetrators

E-3

Stakeholder Midstream

Yoakum Co., Tx

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)		
Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Abstracts
- Lateral

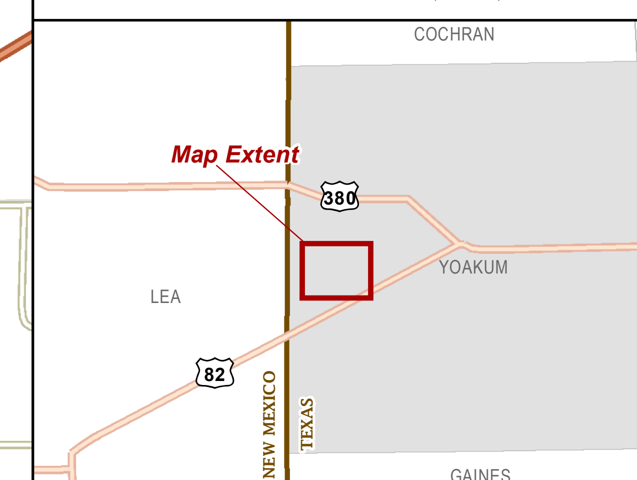
API (30-025-...) SHL Status - Type (Count)

- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



Pozo Acido Viejo No. 1
Wells within MMA

API	WELL NAME	WELL NO.	STATUS	OPERATOR	FIELD	TVD (Ft.)
4250136908	OLD SWITCHEROO 418	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250137148	OLD SWITCHEROO 418	4H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250130568	LIBERTY NATIONAL BANK	1	Dry - Hole	Commission`s hardcopy map	-	5374
4250130881	LIBERTY NATIONAL BANK	2	Dry - Hole	Commission`s hardcopy map	-	5400
4250130981	WEST PLAINS	1	Dry - Hole	Commission`s hardcopy map	-	12020
4250132107	MCGINTY 2	2	Shut In - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	12028
4250132612	TENNECO FEE	1	Plugged - Dry Hole	DAVIS OIL COMPANY	WILDCAT	12130
4250132807	HIGGINBOTHAM BROS. & CO.	1	Plugged - Oil	HENDERSON, VICTOR W.	BRAHANEY	5320
4250133849	MCGINTY	1	Plugged - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	11928
4250133896	GAYLE	1	Plugged - Oil	HARVARD PETROLEUM CORPORATION	HARVARD, W. (DEVONIAN)	12402
4250134081	COCHISE	1W	Active - Injection	STEWARD ENERGY II, LLC	BRAHANEY	11979
4250135778	CHAPPLE, H.	3	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5308
4250135948	CHAPPLE, H.	4	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5302
4250136127	WHAT A MELLON 519	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5310
4250136475	WHAT A MELLON 519	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5316
4250136476	WHAT A MELLON 519	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250136501	SKINNY DENNIS 468	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5319
4250136518	COUSIN WILLARD 450	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136523	SMOKIN TRAIN 520	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5273
4250136540	BLAZIN SKIES 453	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5240
4250136554	WHAT A MELLON 519	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5300
4250136567	ONE EYED JOHN 522	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5239
4250136569	SKINNY DENNIS 468	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136570	SKINNY DENNIS 468	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136571	SKINNY DENNIS 468	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5322
4250136577	COUSIN WILLARD 450	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5312
4250136580	SMOKIN TRAIN 520	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136581	SMOKIN TRAIN 520	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136582	SMOKIN TRAIN 520	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5260
4250136597	HIGGINBOTHAM "A"	6H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5214
4250136620	HAIR SPLITTER 454	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5286
4250136637	WHITEPORT 537	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5251
4250136710	COCHISE UNIT 470	1H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5237
4250136712	HUFFINES 518	1H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5243
4250136750	BLAZIN SKIES 453	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5215
4250136752	WHITEPORT 537	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136759	WHITEPORT 537	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5241
4250136760	WHITEPORT 537	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5309
4250136761	HAIR SPLITTER 454	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5272
4250136762	BLAZIN SKIES 453	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136766	DESPERADO E 538	1H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5223
4250136767	DESPERADO W 538	4H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5261
4250136771	HUFFINES 518	2H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5234
4250136773	COCHISE UNIT 470	2H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5310

List Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

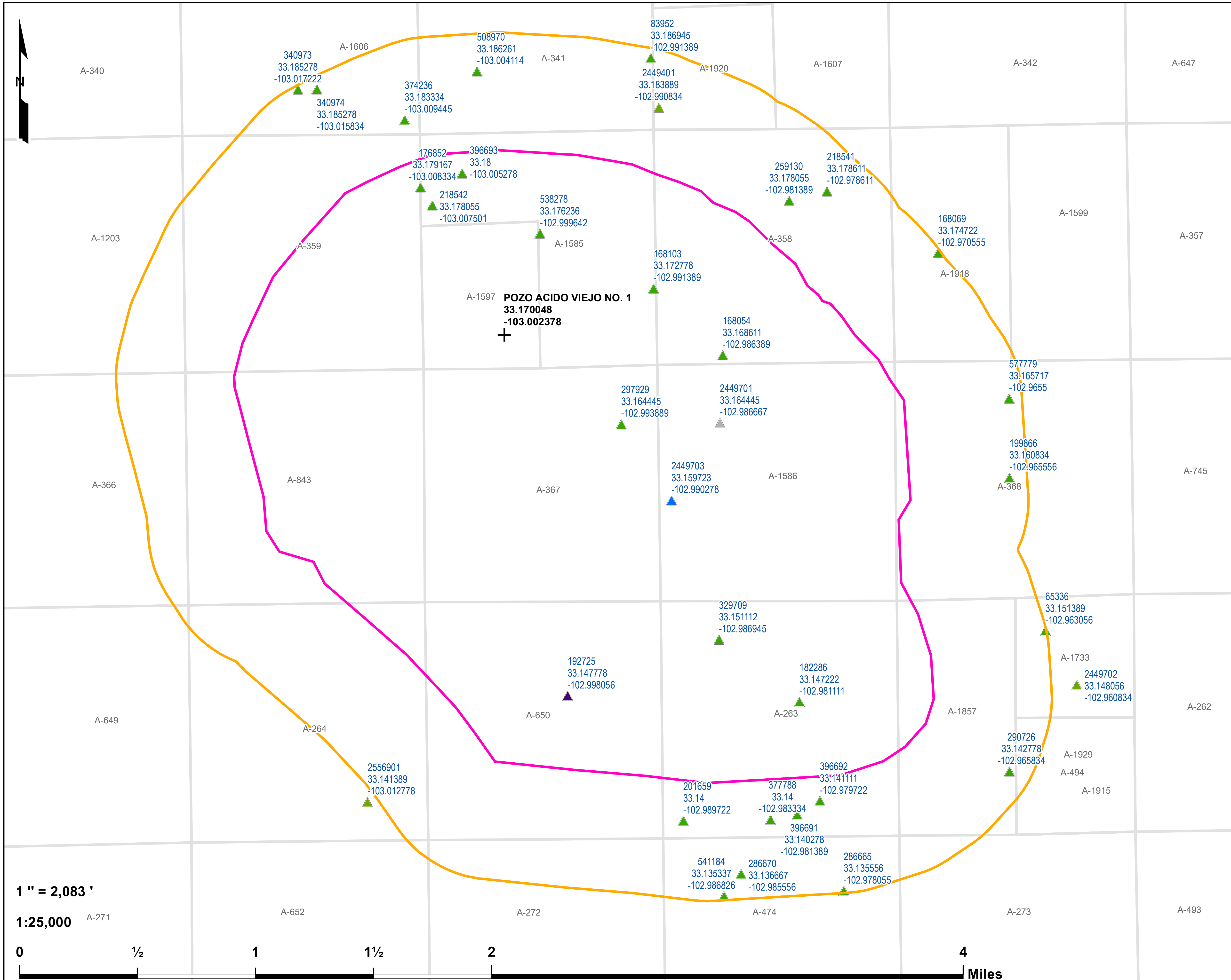
4250136778	BANJO BILL 452	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5229
4250136788	BLAZIN SKIES 453	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5248
4250136789	NEVERMIND 451	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5267
4250136825	UNDER THE BRIDGE 452A	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250136827	UNDER THE BRIDGE 452	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136828	BANJO BILL 452 A	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5298
4250136834	DESPERADO E 538	3H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5215
4250136841	NEVERMIND 451	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5308
4250136935	POZO ACIDO VIEJO	1	Active - Injection	STAKEHOLDER GAS SERVICES, LLC	BRONCO (SILURO-DEVONIAN)	12349
4250136937	SANDMAN 470	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250136951	SMOKIN TRAIN 520	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5182
4250136961	DESPERADO E 538	2H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5205
4250136962	DESPERADO E 538	5H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5213
4250136970	DIANNE CHAPIN 471	3H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5342
4250136971	DIANNE CHAPIN 471	4H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5341
4250136990	SIXTEEN STONE 416	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250136994	FANDANGO 536	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5160
4250136996	OLD SWITCHEROO 418	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250137006	OLD SWITCHEROO 418	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5323
4250137025	WHITEPORT 537	25H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5342
4250137092	CHICKEN ROASTER 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5318
4250137097	LIGHTNING CRASHES 417	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250137111	SIXTEEN STONE 416	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5301
4250137124	SANDMAN 470	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5357
4250137136	CHICKEN ROASTER 417	6H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137137	CHICKEN ROASTER 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5327
4250137138	CHICKEN ROASTER 417	7H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5325
4250137147	OLD SWITCHEROO 418	2H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137153	NEVERMIND 451	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5311
4250137179	SKINNY DENNIS 468	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5289
4250137180	FANDANGO 536	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250137197	SANDMAN 470	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5232
4250137217	LIGHTNING CRASHES 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5332
4250137238	FANDANGO 536	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250137255	NEVERMIND 451	2H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137266	HUFFINES 518	3H	Permitted - Location	WALSH PETROLEUM, INC.	BRAHANEY	5500
4250137270	WHAT A MELLON 519	35H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137278	WHAT A MELLON 519	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5423
4250137283	WHITEPORT 537	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5394
4250137293	DIANNE CHAPIN 471	7H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5389
4250137294	DIANNE CHAPIN 471	6H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5392
4250137311	LIGHTNING CRASHES 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5344
4250137313	NEVERMIND 451	4H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137345	SIXTEEN STONE 416	1H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137346	SIXTEEN STONE 416	3H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600

Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

4250137347	SIXTEEN STONE 416	5H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250170375	A. J Granger	1	Dry - Hole	Commission`s hardcopy map	-	5500
4250170377	Cora Reed	1	Dry - Hole	Commission`s hardcopy map	-	5350
4250170382	R. M. Jones	1	Dry - Hole	Commission`s hardcopy map	-	5510
4250170585	R. N. McGinty	1	Dry - Hole	Commission`s hardcopy map	-	12046
4250170586	T. W. READ	1	Dry - Hole	Commission`s hardcopy map	-	5445

Source: Texas Railroad Commission (2022)



Pozo Acido Viejo No. 1 Maximum Monitoring Area TWDB & SDRDB

Stakeholder Midstream

Yoakum Co., Tx

E-6

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 5/18/2022	Approved by: RH

LONQUIST & CO. LLC

PETROLEUM ENGINEERS | ENERGY ADVISORS

AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

+ Pozo Acido Viejo No. 1 SHL

1/2 Mile -MMA

Maximum Plume Extent

Abstracts

Water Wells within Plume Trace (TWDB)

Domestic (1)

Irrigation (3)

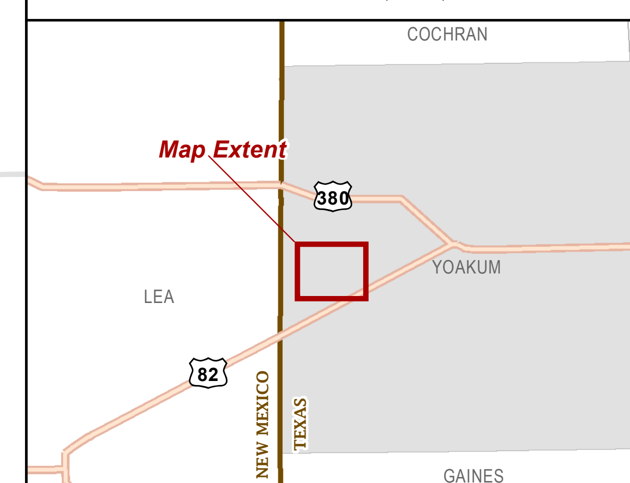
Unused (1)

Water Wells within Plume Trace (SDRDB)

Irrigation (28)

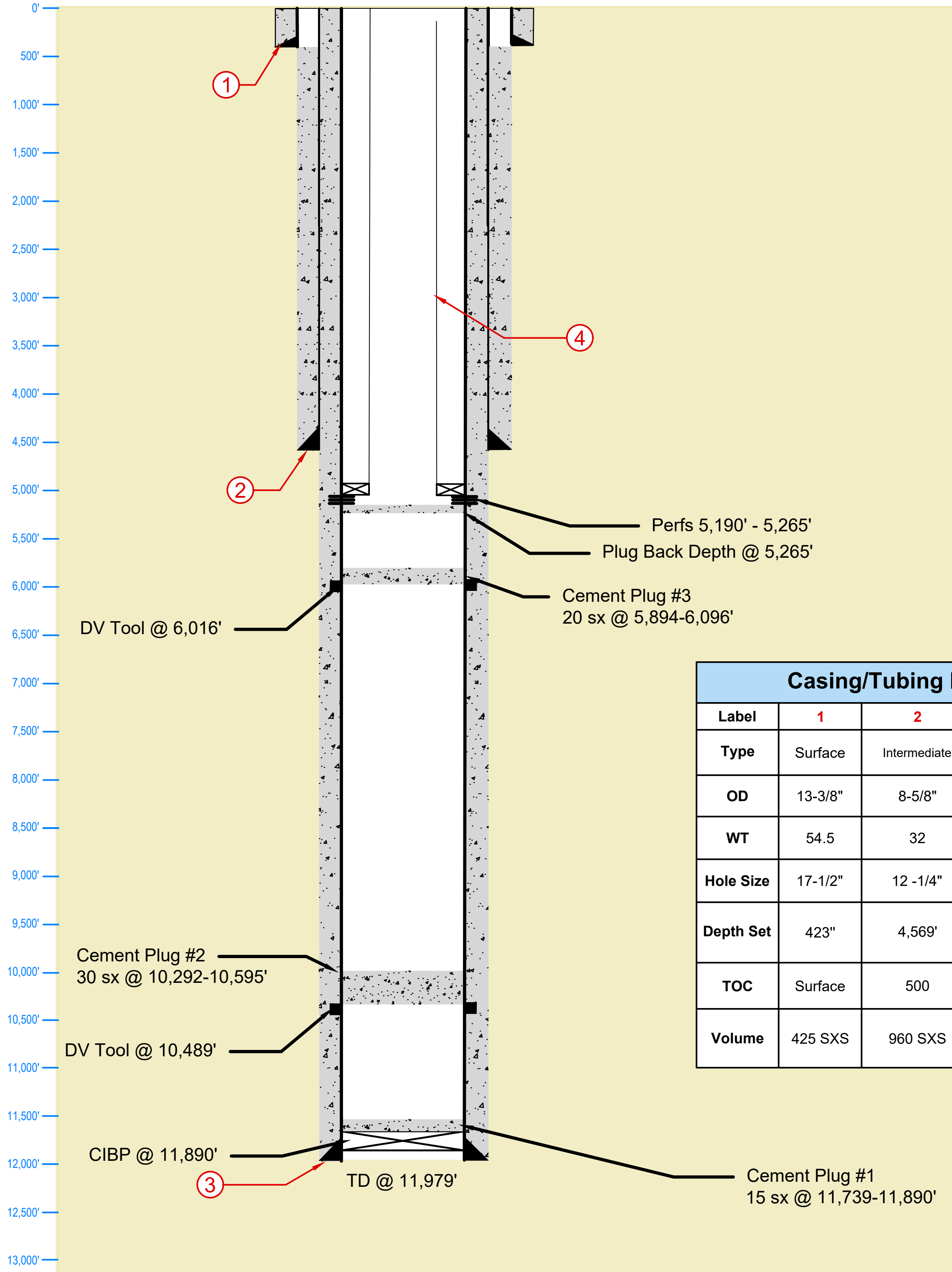
Stock (1)

Source: Well SHL Data - TX-RRC (2022)



KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6a

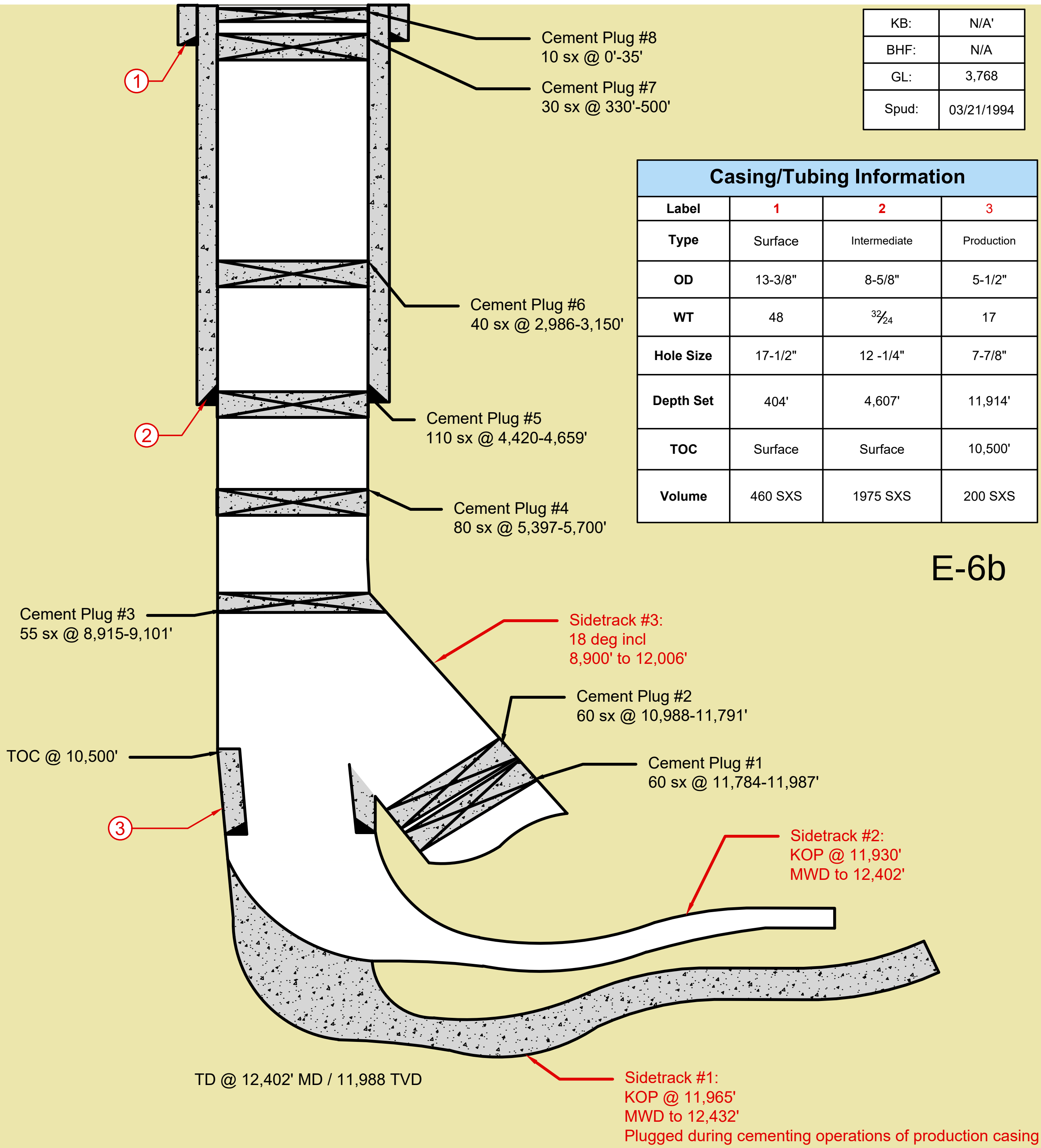


Casing/Tubing Information				
Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	54.5	32	17	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	423"	4,569'	11,965'	5,200'
TOC	Surface	500	Surface	N/A
Volume	425 SXS	960 SXS	2445 SXS	N/A

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
HOUSTON | CALGARY
AUSTIN | WICHITA | DENVER

Cochise 1W

Texas License F-9147	**Country:** USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-34081	**Field:** BRAHANEY	**Well Type/Status:** SWD
	RRC District No:	**Project No:**	**Date:** 03/14/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	



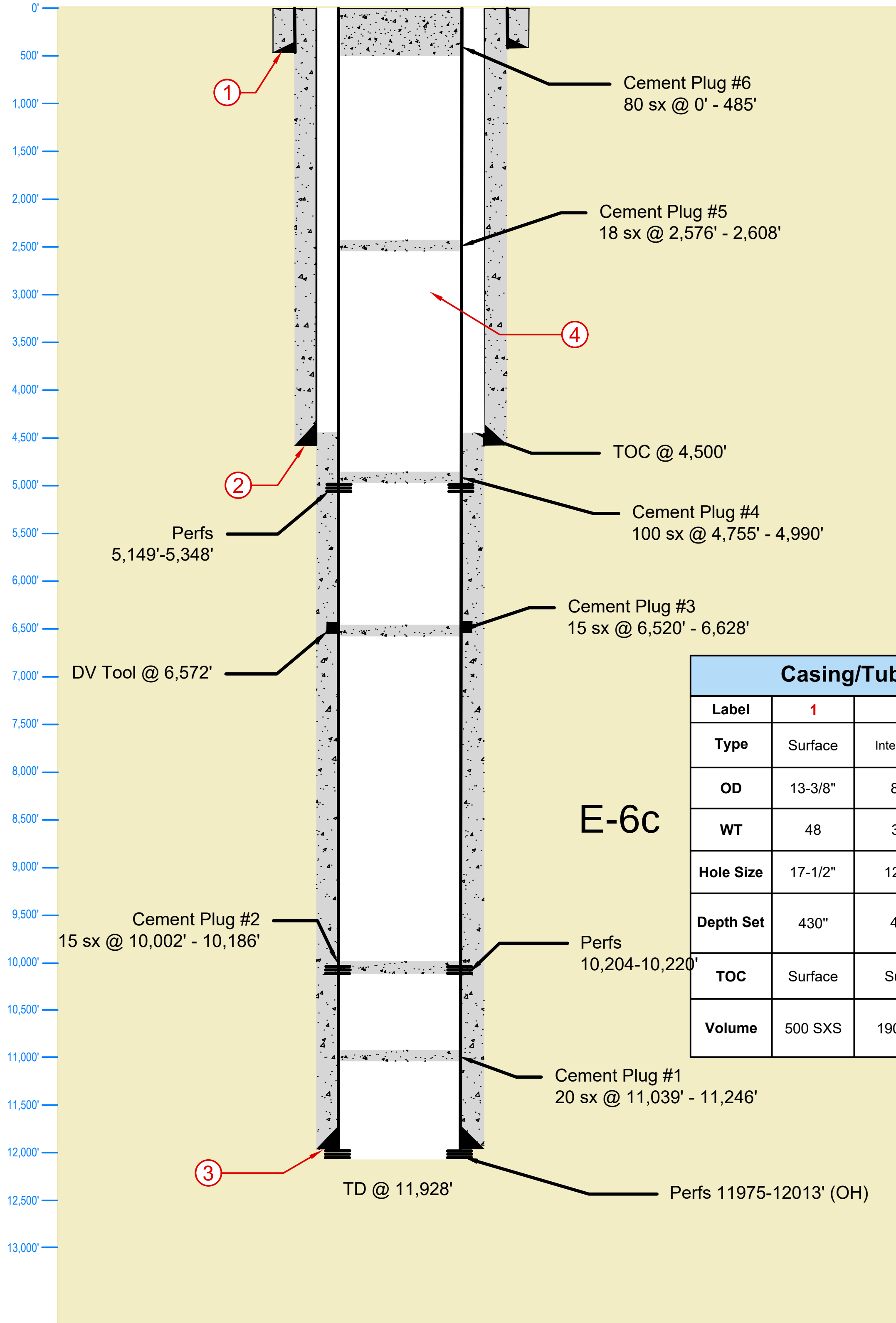
KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	03/21/1994

Casing/Tubing Information

Label	1	2	3
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	32/24	17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	404'	4,607'	11,914'
TOC	Surface	Surface	10,500'
Volume	460 SXS	1975 SXS	200 SXS

E-6b

LONQUIST FIELD SERVICE HOUSTON | CALGARY AUSTIN | WICHITA | DENVER		Gayle #1	
	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-33896	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/22/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** KAS	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	



KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6c

Casing/Tubing Information

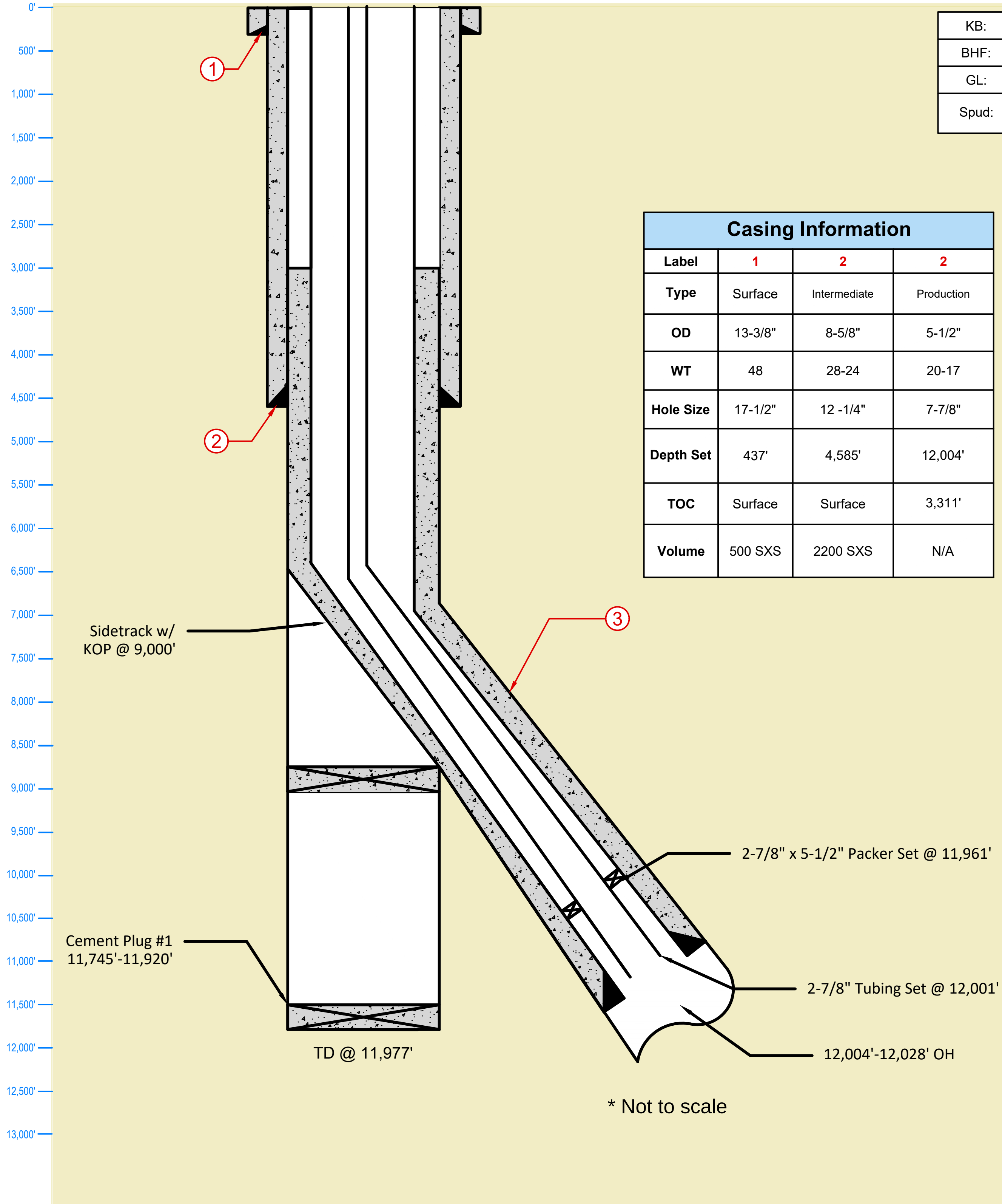
Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	48	38/32	17/20	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	430"	4,600'	4,500"	11,975'
TOC	Surface	Surface	Surface	N/A
Volume	500 SXS	1900 SXS	1300 SXS	N/A

MCGINTY #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-33849	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/21/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

KB:	3,768'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6d



Casing Information

Label	1	2	2
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	28-24	20-17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	437'	4,585'	12,004'
TOC	Surface	Surface	3,311'
Volume	500 SXS	2200 SXS	N/A

* Not to scale

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McGinty 2 #2

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32107	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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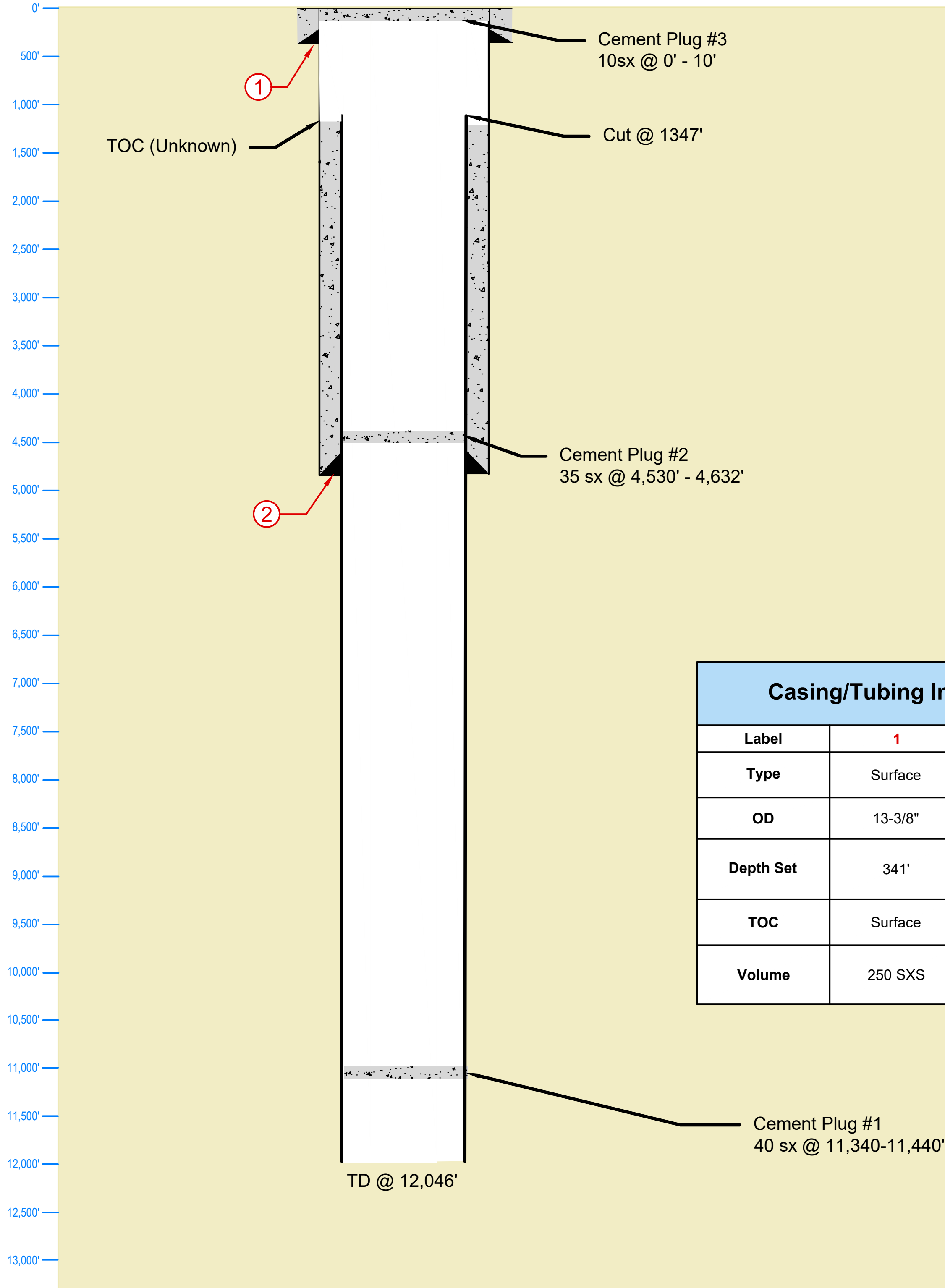

KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6e

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	9-5/8"
Depth Set	341'	4,581'
TOC	Surface	Surface
Volume	250 SXS	1500 SXS

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R.N. McGinty #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No:	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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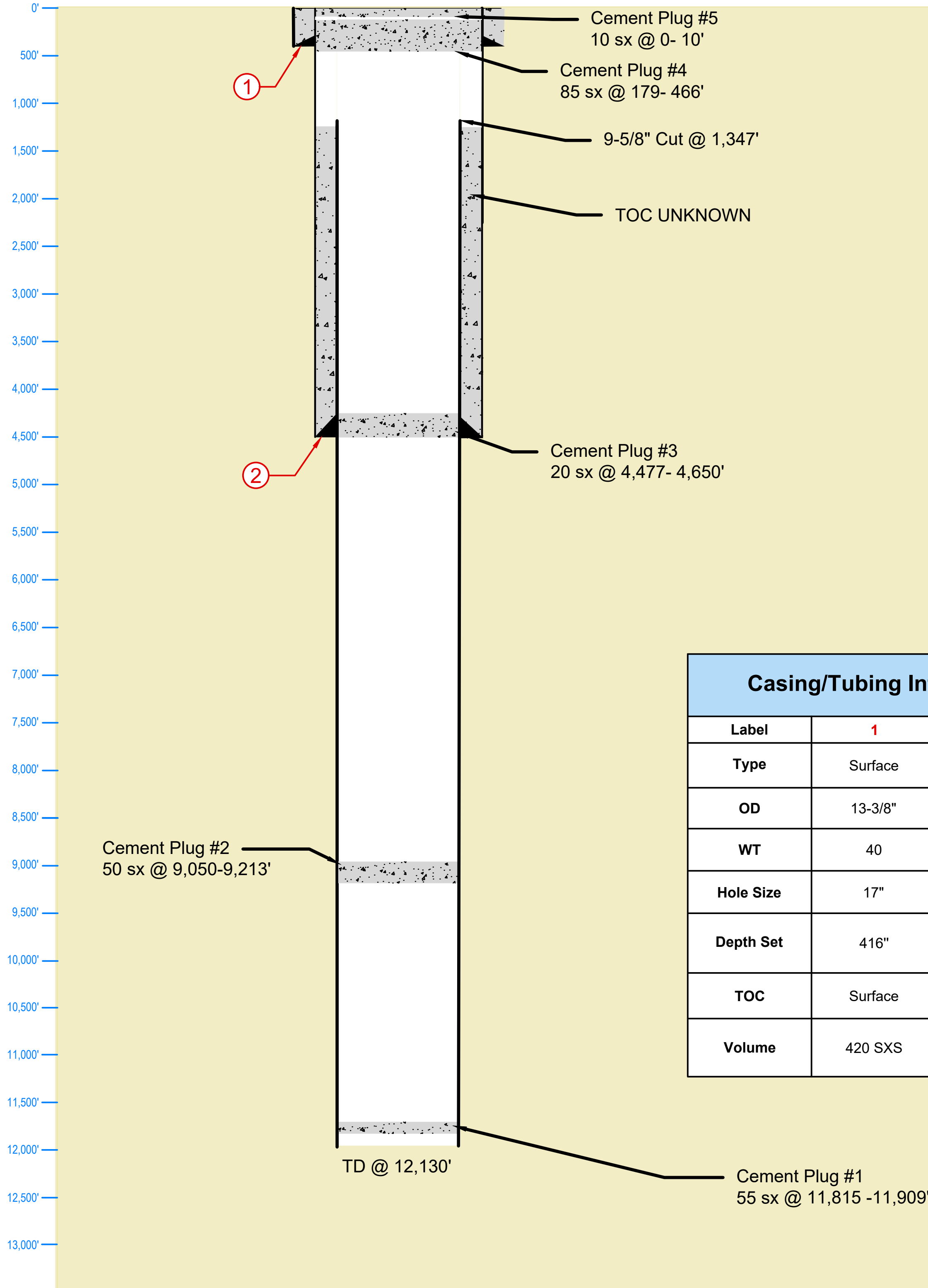

KB:	N/A'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6f

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	8-5/8"
WT	40	36
Hole Size	17"	11"
Depth Set	416"	4,600'
TOC	Surface	Surface
Volume	420 SXS	1250 SXS

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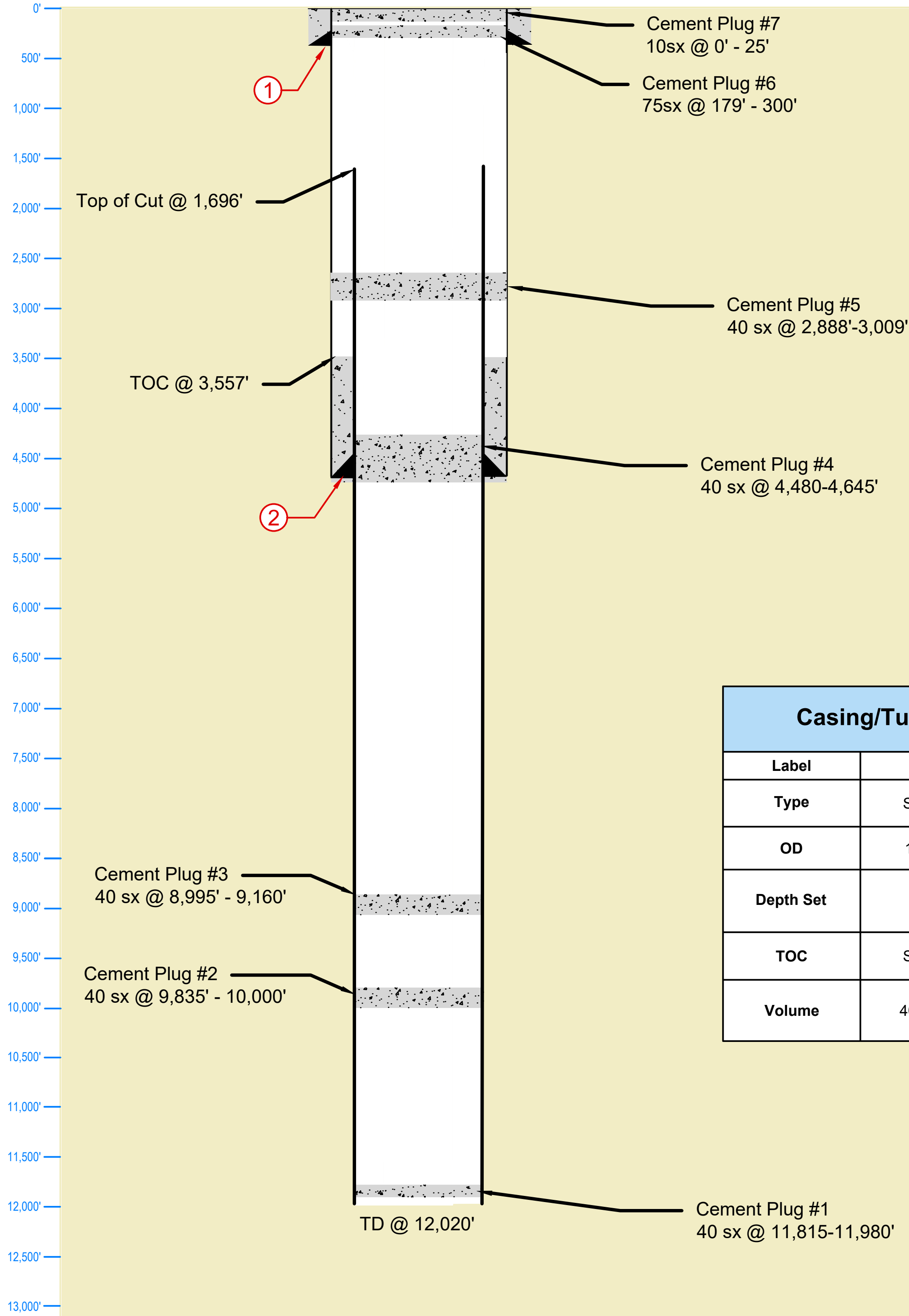
Fax: 512.732.9816

Tenneco Fee #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32612	**Field:** BRAHANEY	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	



KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6g

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	12-3/4"	8-5/8"
Depth Set	358'	4,595'
TOC	Surface	3,557'
Volume	400 SXS	200 SXS

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West Plains Unit #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 4250130981	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/17/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Request for Additional Information: Campo Viejo Gas Processing Plant
April 25, 2022

Instructions: Please enter responses into this table and make corresponding revisions to the MRV Plan as necessary. Any long responses, references, or supplemental information may be attached to the end of the table as an appendix. This table may be uploaded to the Electronic Greenhouse Gas Reporting Tool (e-GGRT) in addition to any MRV Plan resubmissions.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
1.	N/A	N/A	We suggest adding a list of acronyms and abbreviations to the MRV plan to improve readability.	Acronyms and Abbreviations section added after Introduction (p 3-4)
2.	N/A	N/A	'Dolomite' and 'dolostone' appear to be used interchangeably throughout the MRV plan. We suggest choosing one to improve consistency. Otherwise, please clarify the difference between these terms.	'Dolostone' changed to 'dolomite' throughout the plan.
3.	Intro	1	"…million standard cubic **foot** per day…" We believe that 'foot' in the copied phrase above should be plural, please correct it if so.	Corrected to "feet per day"
4.	Intro	2	"…to sequester significant additional amounts of CO_2, ultimately helping to reduce flared gas volumes and their associated emissions in the region." Can you please provide further characterization of the source of these potential additional amounts of CO_2? Are you planning on capturing CO_2 off flares and injecting it? Is it flare gas that will be injected, or will the flare gas be processed, with the separated CO_2 and H_2S injected? Please clarify.	Additional language has been added to characterize the source of potential additional CO2 volumes. Language relating to flare gas has been amended to clarify that Stakeholder will only inject oil and gas waste derived TAG resulting from gas processing operations, and thus properly disposed of in a UIC Class II well.
5.	Intro	2	"Stakeholder plans to inject CO_2 **for another approximately** 22 years." There is a grammatical error in the above phrase, we suggest removing 'another' to correct it.	Changed to "for approximately 22 more years"

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
6.	2	7	"The injection interval for PAV #1 is located thousands of feet below…" Please state the specific depth.	Sentence changed to: "The injection interval for PAV #1 is located over 3,320' below the active producing formations in the area and 9,770 feet below the base of the lowest useable quality water table, as Shown in Figure 2." (pg 9)
7.	2	14	There is no scale for the small, inset map in Figure 8, please add one to provide readers a better idea of the proximity of PAV #1 and the C9 well.	Figure 8 has been updated to include the map scale. (pg 16)
8.	2	15	"Average porosities from these cores indicate 7.1%…" We suggest changing the above phrase to read 'The average porosity of these cores is 7.1%...' to improve readability.	Changed to "The average porosity of these cores is 7.1% with an average permeability of 45.28 millidarcies (Ruppel and Holtz, 1994)." (pg 17)
9.	2	19	"Through literature review and industry standards, we are able to determine the expected **frac** gradient." We suggest writing out the word 'fracture' in the above phrase to improve readability.	Changed to "fracture." (pg 21)
10.	2	30	"The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 62,500 grid blocks per layer." By our calculations, there would be 19,740 grid blocks per layer in a grid that is 140x141 blocks. Please explain this apparent discrepancy.	Sentence corrected to "The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 19,740 grid blocks per layer." (pg 32)
11.	2	30	"This results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square mile area." Can you please provide the dimensions of the individual grid squares as well? Or do these dimensions vary throughout the model?	Sentence changed to "Each grid block has dimensions of 250 feet by 250 feet which results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square-mile area." (pg 32)
12.	2	32-33	We suggest clearly labeling the maximum extent of the plume in Figures 22 and 23.	Dimensions added to plumes to describe the maximum extent of the plume in both figures. (pg 34)

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
13.	2	32-33	We suggest editing the captions of Figures 22 and 23 to correct inconsistencies in formatting and description – specifically for comma usage and 'saturation plume' versus 'gas saturation plume'.	Figure 23 caption changed to "Areal View Gas Saturation Plume, Year 50 (End of Simulation)" (pg 34)
14.	3	36	""As the only potential leak ways in the MMA are the wells which penetrate the injection interval, the MMA adequately covers the area which should be monitored for CO2 leakage" Section 4 identifies several potential leakage pathways beyond wells. Please clarify.	Sentence expanded to address unlikely pathways: "The only probable leakage paths in the MMA are the wells which penetrate the injection interval and the surface equipment; therefore, the MMA adequately covers the area which should be monitored for CO2 leakage. Leakage from groundwater wells, faults and fractures, through the confining layer and seismicity events are highly improbable as discussed in the subsequent section and would be covered by the MMA." (pg 37)
15.	4	40	"Five (5) of these wells have been properly plugged and abandoned." Can you please provide characterization of the procedures by which these wells were plugged and abandoned or any relevant regulatory body that oversaw these procedures? Presumably, these were plugged and abandoned according to TRRC regulations.	Added clarification as follows "The casing and cementing of each of the seven wells meets the TRRC regulations as specified in TAC § 3.13(a)(4). Five (5) of these wells have been properly plugged and abandoned per TRRC regulations as specified in § 3.14(d)." (pg 41)
16.	4	40	"This well would very likely be plugged by such time and thus would not be a likely leakage pathway." Has the owner/operator of this well indicated when they plan to plug and abandon the McGinty 2 #2 well? If not, will this situation continue to be monitored?	Changed this sentence to "The operator of the well has signed an agreement (effective May 16, 2022) with Stakeholder to plug and abandon this well by December 31, 2022 and in so doing, will plug the well to the standards required by the TRRC." (pg 41)
17.	4	44	"There are three groundwater wells located **within in** the MMA," There is an extra word in the phrase above, please correct this error.	"In" removed from the phrase. (pg 45)
18.	4	46	"The location of PAV #1 is in an area of the Permian Basin that is very quiet from a seismicity perspective…" We suggest using a term other than 'very quiet' to convey this point to improve readability.	Changed "very quiet" to "inactive." (pg 48)

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
19.	4	46	"The location of PAV #1 is in an area of the Permian Basin that is very quiet from a seismicity perspective, induced or natural. A review of historical seismic events on the USGS's Advanced National Seismic System site and the Bureau of Economic Geology's TexNet catalog, as shown in Figure 32, indicates the nearest seismic event to have occurred over 60 miles away." The MRV plan indicates that the nearest seismic event was over 60 miles away. Is there a timeframe associated with this review of seismic events (e.g., past 10 years)? Additionally, please include more information about the potential risk of induced seismicity in or near the project area.	Added search timeframes to sentence: "A review of historical seismic events on the USGS's Advanced National Seismic System site (from 1971 to present) and the Bureau of Economic Geology's TexNet catalog (from 2017 to present), as shown in Figure 32, indicates the nearest seismic event occurred more than 60 miles away." (pg 48) Discussion, with new Figure 33, added to discuss risk of induced seismicity based on Snee & Zobak 2016 paper. (pg 49)
20.	5	48-49	The MRV plan lists monitoring strategies for "Leakage from surface equipment", "Leakage through existing and future wells within MMA", "Leakage through faults and fractures", and "Leakage through the seal". Please ensure that the MRV plan has a monitoring strategy for all potential leakage pathways identified in Section 4. For example, please indicate how the facility would monitor for leakage due to seismic events.	Section added to discuss the installation and monitoring of a seismic monitoring station in the vicinity of the PAV #1 well and subsequent review of volumes and pressures prior to and after a detected 3.0 magnitude or greater seismic event. (pg 53) Sections added in monitoring plan to address groundwater monitoring. (pg 52)
21.	6	50	In the MRV plan, the strategies for establishing baselines focus on visual inspection, H2S detection, and CO2 detection. Would the facility also determine baselines for operational data, such as injection rates and pressures?	Section added in Baseline to discuss baseline for operational data. (pg 54)

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
22.	7	52	"Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey." You must still calculate the mass of CO_2 emitted via surface leakage using Equation RR-10. The mass of CO_2 will be calculated for each surface pathway according to methods outlined in the plan and totaled using Equation RR-10. Please edit the MRV plan to reflect this.	Added discussion regarding methodology used by applying Equation RR-10. (pg 57)
23.	7	52	"**Mass of CO_2 Emitted by Surface Leakage and Equipment Leaks"** We recommend removing the reference to equipment leaks from this subtitle. Equipment leaks are covered under the term 'surface leakage' and CO_{2FI} in Equation RR-12.	"Equipment Leaks" removed from title. (pg 57)
24.	7	52	"No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant." Vented emissions are specific to CO_{2FI} in Equation RR-12 and are not considered surface leakage. We suggest moving this statement to reflect this.	Discussions of venting moved to subsection discussing Equation RR-12. (pg 58)
25.	9,10	54,55	Sections 9 and 10 state that CO_2 composition and CO_2 injected will be measured using a volumetric flow meter, which is inconsistent with Section 7 where the MRV plan states that CO_2 injection will be measured using a mass flow meter. Please clarify.	Section 7 was revised to indicate that CO2 injection will be measured using a volumetric flow meter. (56)

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
26.	9	54	We suggest adding that calculation methods from subpart W will be used to calculate CO2 emissions from leaks and vented emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead to the section titled "CO2 Emissions from Leaks and Vented Emissions" for increased clarity. You may also consider adding this information in Section 7.	Added bullet point to the "CO2 Emissions from Leaks and Vented Emissions" subsection stating: "Calculation methods from subpart W will be used to calculate CO2 emissions from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead." This was also added to Section 7. (pg 58,60)
27.	4		Added by Stakeholder.	Updated the map and list of groundwater wells to include those wells from the Submitted Driller's report layer from the Texas Water Development Board. Language updated to reflect correct numbers. (pg 46-79)
28.	5		Added by Stakeholder.	Table 8 updated to include groundwater monitoring (pg 51)

Subpart RR Monitoring, Reporting, and Verification (MRV) Plan
Pozo Acido Viejo #1

Yoakum County, Texas

Prepared for *Stakeholder Gas Services, LLC*
San Antonio, TX

By

Lonquist Sequestration, LLC
Austin, TX

March 2022

INTRODUCTION

Stakeholder Gas Services, LLC ("Stakeholder") currently has a Class II acid gas injection ("AGI") permit, issued by the Texas Railroad Commission ("TRRC") in August 2018, for its Pozo Acido Viejo #1 well ("PAV #1"), API No. 42-501-36935. This permit currently authorizes Stakeholder to inject up to 6.9 million standard cubic foot per day ("MMSCF/d") of treated acid gas ("TAG") into the Bronco (Siluro-Devonian) Field at a depth of 12,020 to 12,349 feet with a maximum allowable surface pressure of 6,010 psi. Since being permitted, injection has proceeded without incident. This AGI well is associated with Stakeholder's Campo Viejo gas treating and processing plant ("Campo Viejo Facility") located in a rural, sparsely populated area of Yoakum County, Texas, approximately 10 miles west of the town of Plains.

Figure 1 – Location of PAV #1 Well

Stakeholder is submitting this Monitoring, Reporting, and Verification ("MRV") plan to the EPA for approval under 40 CFR §98.440(a), Subpart RR, of the Greenhouse Gas Reporting Program ("GHGRP"). In addition to submitting this MRV plan to the EPA, Stakeholder also is applying to the TRRC for an amendment to the PAV #1 well's Class II permit to increase its authorized injection volume. Approval of the permit amendment will allow Stakeholder to increase capacity at the Campo Viejo Facility and to sequester significant additional amounts of CO_2, ultimately helping to reduce flared gas volumes and their associated emissions in the region. Throughout this document, both in written reference and in modeling inputs, Stakeholder has used the applied-for expanded permit capacity of 20 MMSCF/d. Stakeholder plans to inject CO_2 for another approximately 22 years.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

SECTION 1 – FACILITY INFORMATION

This section contains key information regarding the Acid Gas and CO_2 injection facility.

Reporter number:

- Gas Plant Facility Name: Campo Viejo Gas Processing Plant
- Greenhouse Gas Reporting Program ID: 573525
    - Currently reporting under Subpart UU
- Operator: Stakeholder Gas Services, LLC

Underground Injection Control (UIC) Permit Class: Class II

The TRRC regulates oil and gas activities in Texas and has primacy to implement the Underground Injection Control ("UIC") Class II program. TRRC classifies the PAV #1 well as a UIC Class II well. A Class II permit was issued to Stakeholder under TRRC Rule 46 (entitled "Fluid Injection into Productive Reservoirs") and Rule 36 (entitled "Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas").

UIC Well Identification Number:

Pozo Acido Viejo #1, API No. 42-501-36935, UIC #000117488.

SECTION 2 – PROJECT DESCRIPTION

This Project Description discusses the geologic setting, planned injection volumes and process, and the reservoir modeling performed for the PAV #1 well. Stakeholder, with the assistance of Lonquist and Co., LLC, originally provided a geological overview as part of Stakeholder's original Class II application with the TRRC in 2018. Lonquist has updated the geology and the plume modeling within the reservoir for this MRV Plan.

The PAV #1 well is located and designed to protect against migration of CO_2 into productive oil and gas formations, freshwater aquifers and against surface releases. The injection interval for PAV #1 is located thousands of feet below the active producing formations in the area and below the base of the lowest useable quality water table, as Shown in Figure 2. This well injects both H_2S and CO_2, therefore the well and the facility are designed to minimize any leakage to the surface.

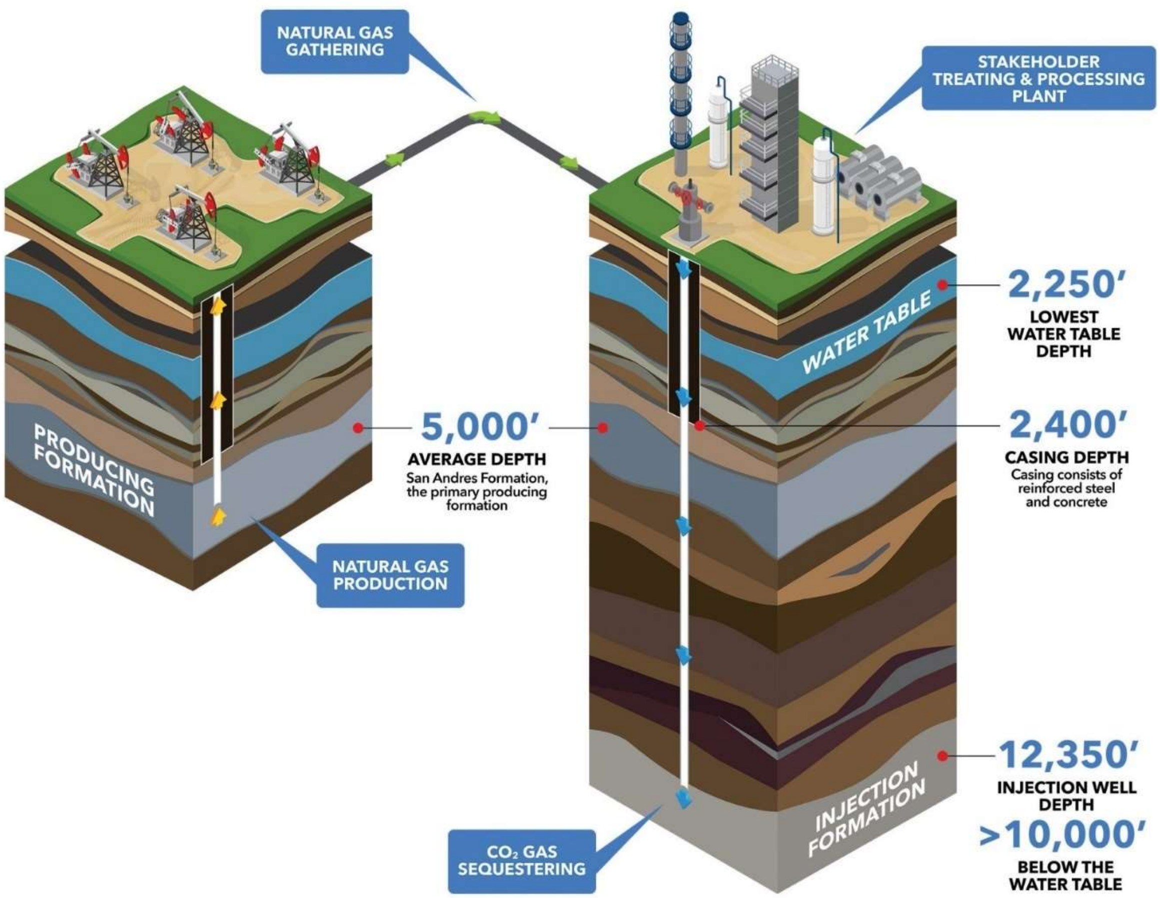


Figure 2 – Illustrative overview of PAV #1 and Campo Viejo Facility

Regional Geology

The PAV #1 well is located on the southern portion of the Northwestern Shelf within the larger Permian Basin as seen in Figure 3. The Northwestern Shelf is a broad marine shelf located in the northern portion of the Permian Basin.

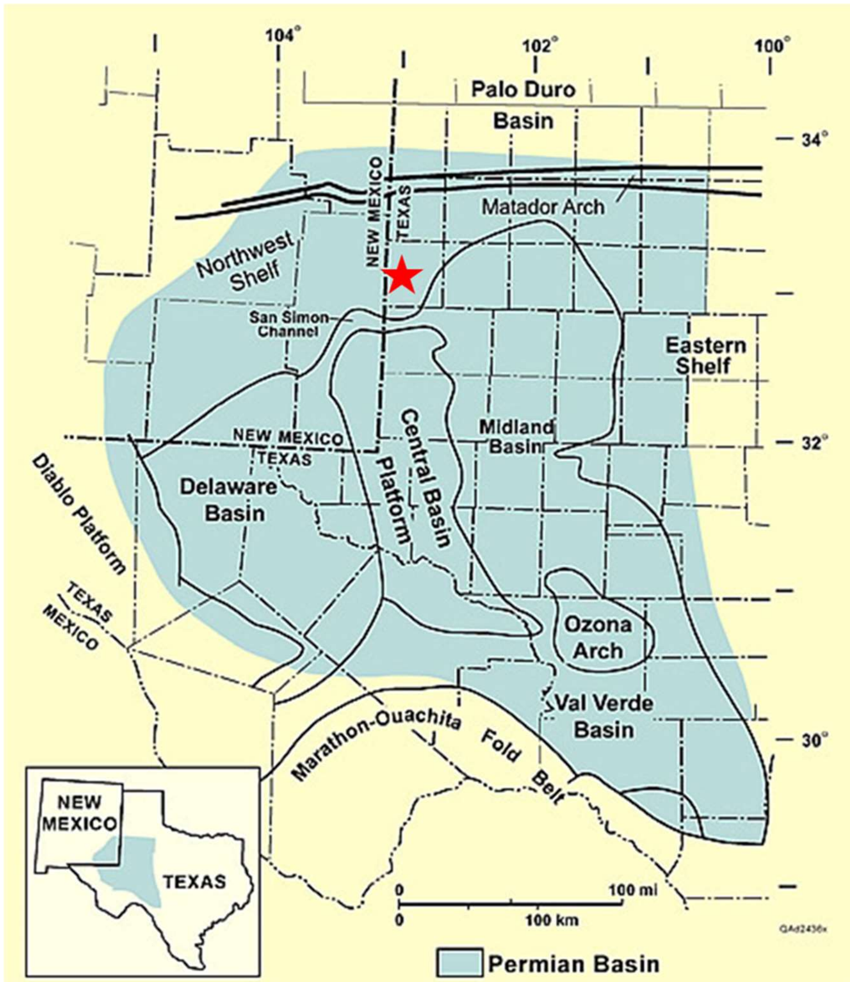


Figure 3 – Regional Map of the Permian Basin. Red Star is approximate location of PAV #1 well

Figure 4 depicts the stratigraphic column found at the PAV #1 well location with a red star referencing the injection formation and green stars indicating the productive intervals in the area. The primary injection interval is found within the Wristen group, of Silurian-age, as seen in Figure 5. The TRRC refers to this sequence under the general terms "Devonian", "Silurian-Devonian" or "Siluro-Devonian".

Period	Epoch	Formation		General Lithology
Permian	Ochoan	Dewey Lake		Redbeds/Anhydrite
		Rustler		Halite
		Salado		Halite/Anhydrite
	Guadalupian	Tansil		Anhydrite/Dolomite
		Yates		Anhydrite/Dolomite
		Seven Rivers		Dolomite/Anhydrite
		Queen		Sandy Dolomite/Anhydrite/Sandstone
		Grayburg		Dolomite/Anhydrite/Shale/Sandstone
	Leonardian	★ San Andres		Dolomite/Anhydrite
		Glorieta		Sandy Dolomite
		Yeso	Paddock	Dolomite/Anhydrite/Sandstone
			Blinebry	
			Tubb	
			Drinkard	
		Abo		Dolomite/Anhydrite/Shale
	Wolfcampian	★ Wolfcamp		Limestone/Dolomite
Pennsylvanian	Virgilian	Cisco		Limestone/Dolomite
	Missourian	Canyon		Limestone/Shale
	Des Moinesian	Strawn		Limestone/Sandstone
	Atokan	Bend		Limestone/Sandstone/Shale
	Morrowan	Morrow		
Mississippian		Mississippian Lime		Limestone
Devonian		Woodford		Shale
Silurian		★ Wristen Group		Dolomite/Limestone
		Fusselman		Dolomite/Chert
Ordovician	Upper			
		Montoya		Dolomite/Chert
	Middle	Simspson Gp		Limestone/Sandstone/Shale
	Lower	Ellenburger		Dolomite

Figure 4 – Stratigraphic column of the Northwest Shelf. Red star indicates injection interval. Green star indicates productive intervals.

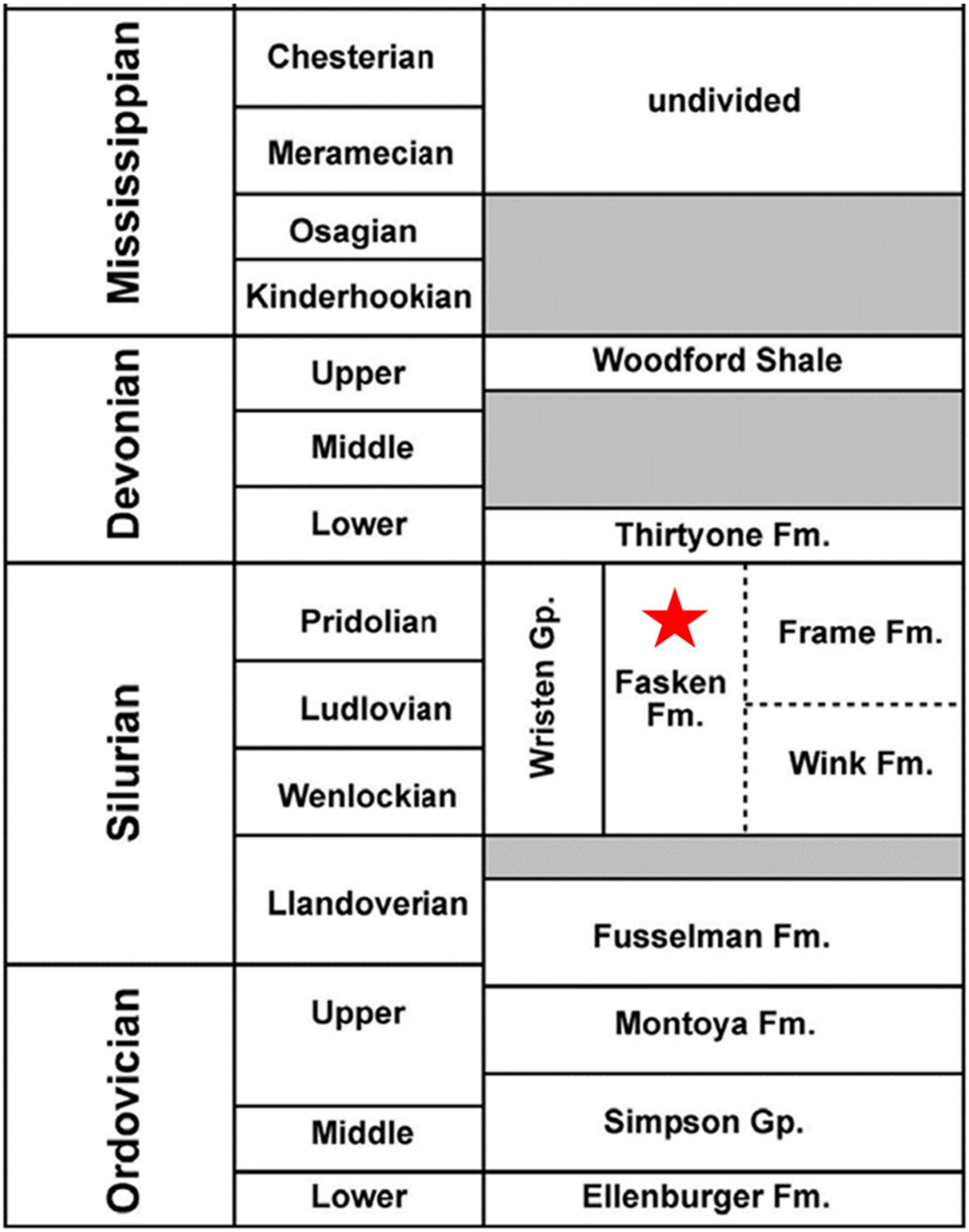


Figure 5 – Stratigraphic column depicting the composition of the Silurian group. Red star indicates injection interval (Broadhead, 2005)

The Wristen group was deposited in a basin platform setting across the northern half of the Permian Basin. The depositional environment over Yoakum County during the Silurian period was a shallow inner platform, the margin of which exists to the south, in southern Andrews County, Texas. The Silurian-age lithology on the inner platform is dominated by grain-rich skeletal carbonates. Carbonate buildups are common within the shallow inner platform, mainly skeletal wackestone, indicating a lower-energy deposition on the inner platform. The carbonate shelf margin to the south acted as a barrier from basin-ward wave energy (Ruppel and Holtz, 1994).

Depositional cycles within the inner platform indicate it was controlled by episodic sea level rise and fall, resulting in sub-areal exposure and diagenesis. The diagenesis of the Silurian-age carbonate rocks initiated secondary porosity development and increased permeability. Dolomite and solution-related features are the most prominent diagenetic characteristics found within the Silurian. The Wristen Group is composed of three formations; Fasken, Frame, and Wink formations. The Frame and Wink formations are found near the ramp boundary to the south, while the Fasken formation is found predominantly in the inner platform, where the PAV #1 well is located. The Fasken formation is predominately dolostone grading to limestone, occurring as cycles, down section. This dolomitization is due in part to sub-areal exposure, during which karsts and secondary porosity developed. Additional dolomitization was possible during successive sea level fluctuations via movement of magnesium-rich solution through karsts and vugs, which acted as channels for fluid flow (Ruppel and Holtz, 1994).

Figure 6 shows a regional isopach map of the Silurian (combined Fasken and Fusselman formations) with a red star depicting the PAV #1 well location. Thickness of the Silurian-age rock is approximately 1,000 feet at the PAV #1 well location.

North of Andrews County there is little differentiation between the Fasken and Fusselman formations which are both carbonate deposits with the potential for sub-areal exposure and porosity development. The injection interval defined here is based on petrophysical characteristics rather than stratigraphic nomenclature. For purposes of this MRV Plan, the Fasken is defined as the porous and permeable carbonate rock at the top of the Silurian section and the Fusselman is the low permeability rock that comprises the carbonate section between the Fasken and the Montoya formation.

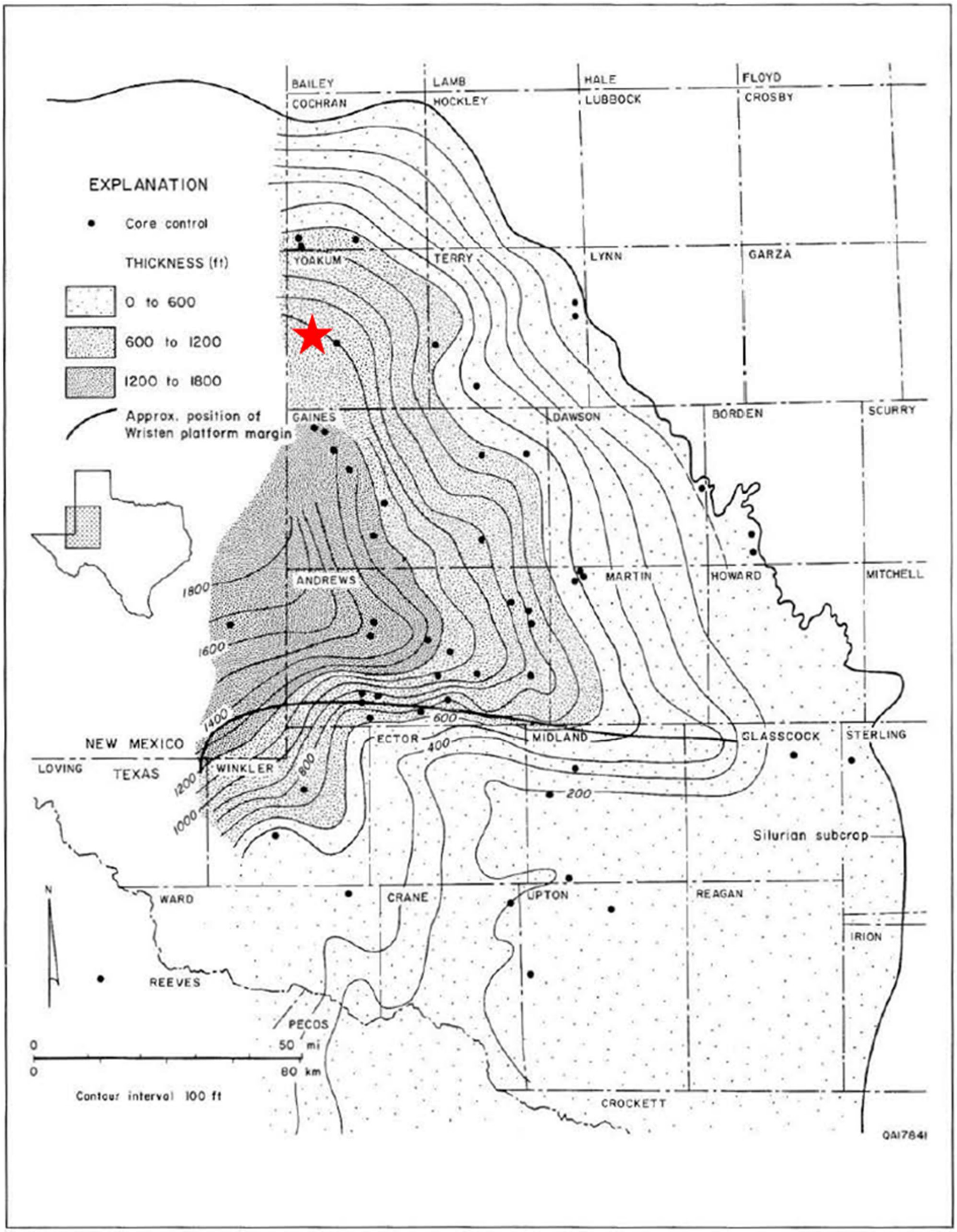


Figure 6 – Thickness map of the Silurian system which composes the Fusselman and Wristen group

Regional Faulting

A major uplift that began in the Pennsylvanian to the south, the Central Basin Platform, ceased in Wolfcampian time, which caused a regional unconformity of the underlying formations (Hoak, Sundberg, and Ortoleva). Faulting on the Northwest Shelf can be seen through high angle basement faults that tend to die within the Pennsylvanian strata. These faults predominately represent contractional (thrust) faults that were initiated during the Pennsylvanian as a result of regional tectonics. Hydrocarbon traps within the Wristen group are primarily anticlinal structures dependent upon reservoir development (Broadhead, 2005).

<u>Site Characterization</u>

The PAV #1 well is located in Section 452, Block D, John H. Gibson Survey, in Yoakum County, Texas. Stakeholder owns the 200-acre surface tract where the plant and PAV #1 well are located. The following discusses the geological character of this site.

Stratigraphy and Lithologic Characteristics

Figure 7 depicts an open hole log from an offset well (API No. 42-501-33943) to the PAV #1 well indicating the injection and primary upper confining zone.

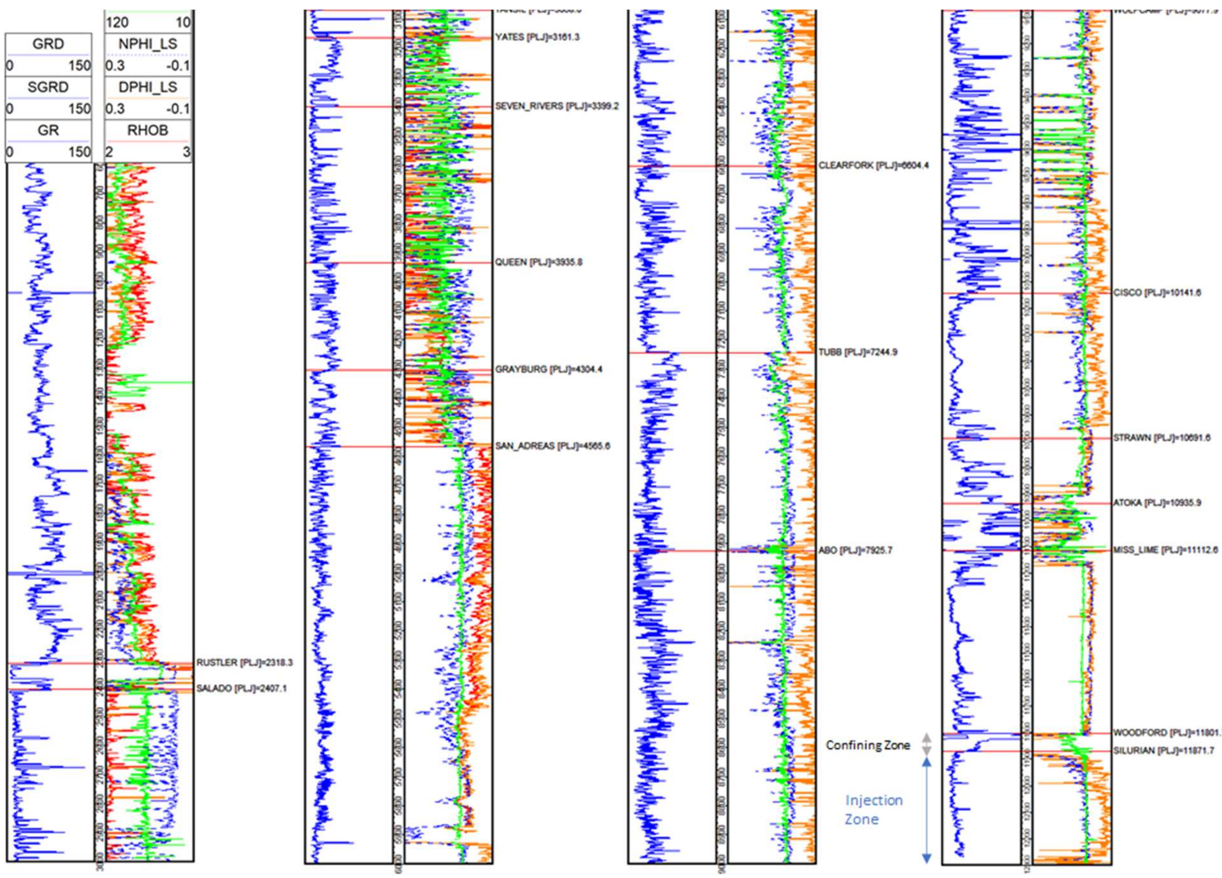


Figure 7 – Type Log (42-501-33943) with tops, confining and injection zones depicted

Upper Confining Interval - Woodford Shale

The Woodford is a late Devonian-aged organic-rich shale deposited as a result of a widespread marine transgression. The flooding event occurred over the majority of the Permian basin, which produced a low-relief blanket-like shale deposit of the Woodford. Two major lithofacies found within the Woodford are black shale and siltstone. Nutrient-rich surface waters promoted the decay of abundant organic matter within the Woodford, resulting in a high total organic carbon ("TOC") percentage. The Woodford shale acts as the primary source and sealant rock for the Wristen Group (Comer, 1991).

Figure 8 is a description of a core sample taken in Lea County, New Mexico just southwest of the PAV #1 well location. This sample is referenced as C9 in the reference map with the blue star representing the PAV #1 well. In the core description, black shale with abundant illitic clays is observed in the upper section, and medium gray dolomitic siltstone found in the basal section. The mineralogic and lithologic properties recorded in this description serve as excellent sealant characteristics to prohibit any injected fluids from migrating above the injection interval.

The Woodford at the PAV #1 well location is encountered at 11,965 ft and is approximately 87 ft thick.

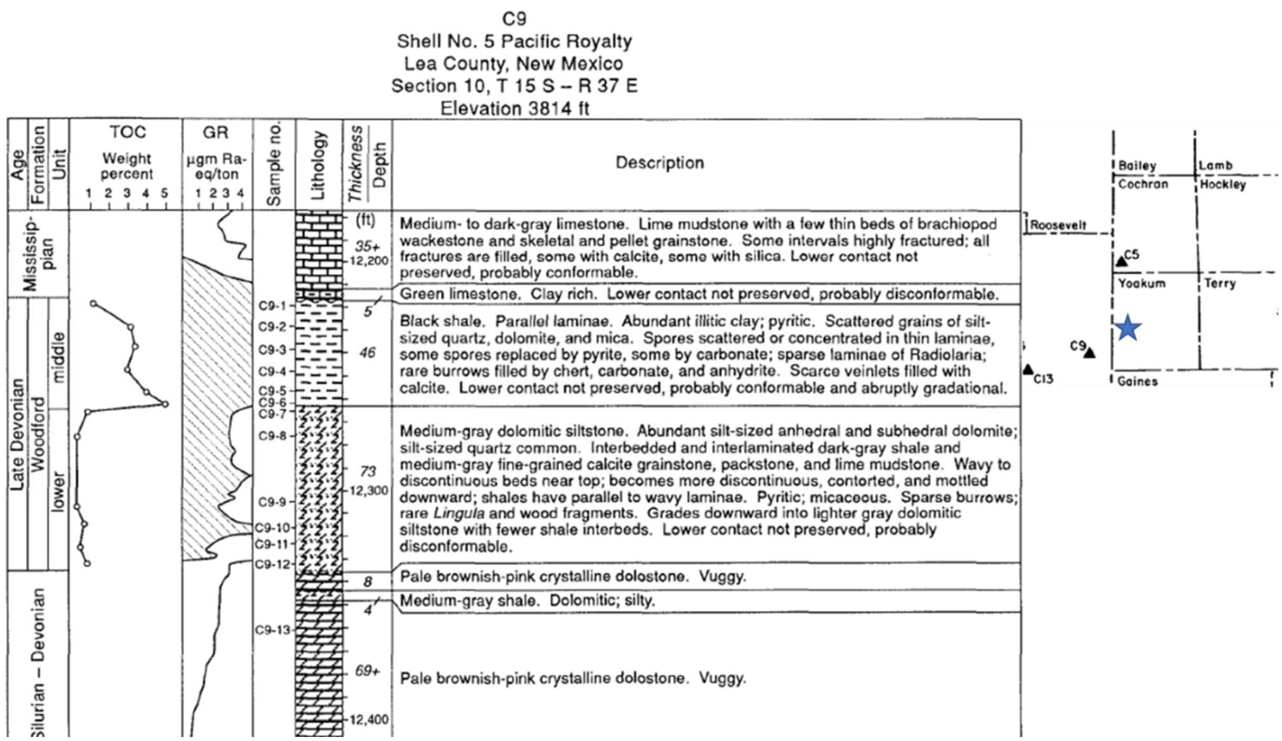


Figure 8 – Core description of the Woodford Shale and Upper Silurian (Ruppel and Holtz, 1994)

Injection Interval – Fasken Formation

The PAV #1 well reaches total depth in the Fasken formation (Silurian in age), directly below the Woodford formation. Dolostones at the top of the Fasken formation underwent multiple leaching and diagenetic episodes which developed secondary porosity. This is evidenced in offset wells by the practice of only drilling through the top 30 feet of the Fasken, in anticipation of encountering the best reservoir quality. In Figure 8, the uppermost Silurian section is described as 'vuggy dolostone' in the core description. Beds below the top of the Fasken section may also have similar petrophysical attributes if exposed to multiple diagenetic events. Solution-collapse and karst breccia horizons can be found within inner platform deposits, some occurring as much as 100 ft below the Fasken top (Ruppel and Holtz, 1994).

<u>Porosity/Permeability Development</u>

Porosity in the Fasken formation at the PAV #1 well location is typically moldic and intercrystalline associated with leaching of allochem-rich intervals. Porosity is directly related to these leaching events which occurred during and post-deposition, resulting in vugs and karst-like features. Figure 9 provides reservoir information from core data within fields in the Wristen buildup and platform carbonate play. Average porosities from these cores indicate 7.1% with an average permeability of 45.28 millidarcies (Ruppel and Holtz, 1994). The porosity and permeability described in the offset core data indicate the Fasken formation provides sufficient accessible pore space for the amount of fluid injection proposed.

Using the above values as reference points, an offset porosity log (API No. 42-501-33942) was evaluated. Figure 10 is the product of the petrophysical analysis performed on the offset open hole log shown in Figure 7. A permeability curve was generated from the effective porosity curve using the table in Figure 9 to establish the porosity-permeability relationship. In Figure 10, the majority of the injection interval's porosity and permeability is found at the top of the Fasken formation, which correlates with the diagenetic processes described above. These curves are extrapolated to the injection site and used to establish reservoir characteristics in the plume model.

	Fusselman Shallow Platform Carbonate play	Wristen Buildups and Platform Carbonate play	Thirtyone Ramp Carbonate play	Thirtyone Deep-Water Chert play
	Porosity (%)			
Number of data points	33	30	16	35
Mean	7.93	7.10	6.41	14.85
Minimum	1.00	2.70	3.50	2.00
Maximum	17.70	14.00	9.50	30.00
Standard deviation	4.01	2.67	1.75	6.76
	Permeability (md)			
Number of data points	21	24	12	33
Mean	11.61	45.28	1.51	8.56
Minimum	0.60	2.90	0.40	1.00
Maximum	84.80	400.00	30.00	100.00
Standard deviation	22.48	99.17	8.36	22.23
	Initial water saturation (%)			
Number of data points	24	28	10	31
Mean	26.96	31.55	24.70	31.46
Minimum	10.00	20.00	16.00	10.00
Maximum	50.00	55.00	40.00	45.00
Standard deviation	9.31	10.45	7.39	8.33
	Residual oil saturation (%)			
Number of data points	8	13	5	22
Mean	34.06	30.54	21.30	29.17
Minimum	30.00	20.00	9.00	14.00
Maximum	50.00	35.00	35.00	48.20
Standard deviation	6.99	4.61	11.66	9.76
	Oil viscosity (cp)			
Number of data points	11	12	5	21
Mean	0.69	1.16	0.33	0.68
Minimum	0.13	0.32	0.04	0.07
Maximum	1.08	2.00	1.00	1.03
Standard deviation	0.81	0.75	0.40	0.42
	Oil formation volume factor			
Number of data points	21	22	6	32
Mean	1.57	1.22	1.65	1.50
Minimum	1.05	1.05	1.31	1.30
Maximum	1.91	1.55	1.66	1.73
Standard deviation	0.28	0.14	0.48	0.16
	Bubble-point pressure (psi)			
Number of data points	9	9	5	19
Mean	2,272	1,055	3,750	2,752
Minimum	798	450	2,660	1,755
Maximum	4,050	2,600	4,440	4,656
Standard deviation	1,300	689	756	667

Figure 9 – Table of reservoir properties found within the Wristen buildups and platform plays (Ruppel and Holtz, 1994)

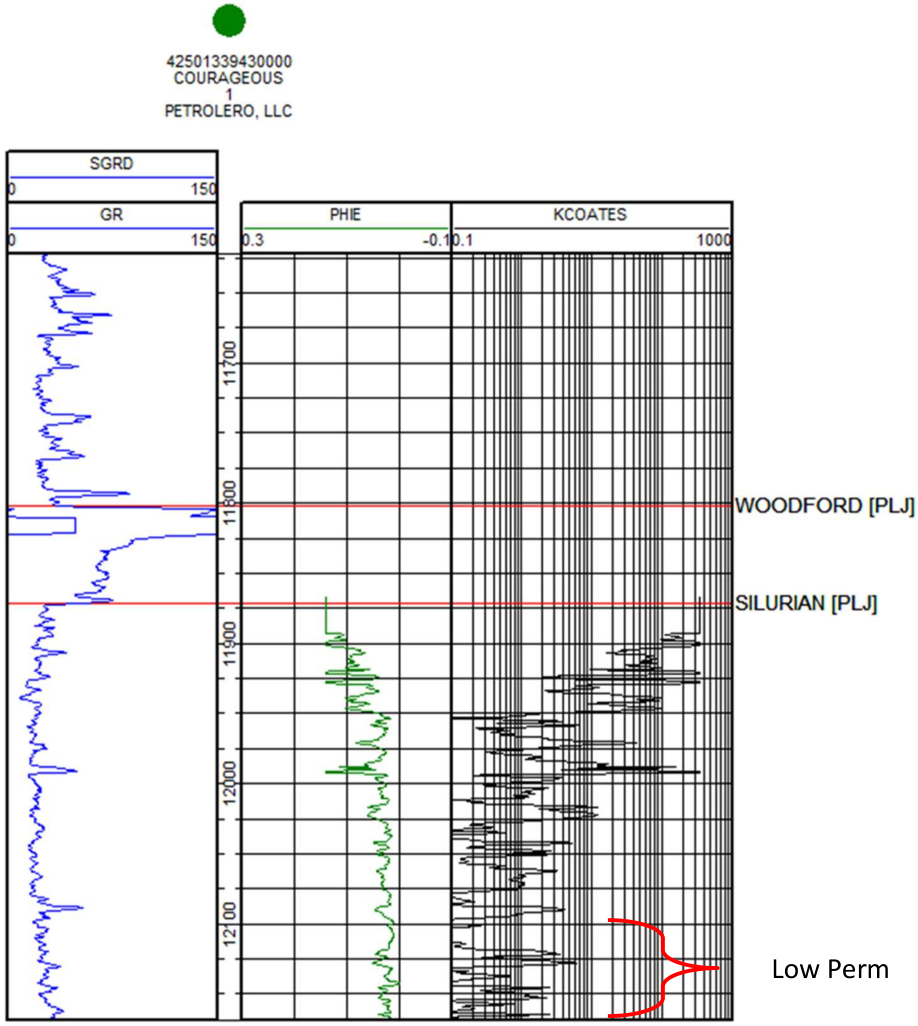


Figure 10 – Offset open hole log (42-501-33943) with effective porosity (green) and permeability (black)

Formation Fluid

Four wells were identified through a review of chemical analyses of oil-field brines from the U.S. Geological Survey National Produced Waters Geochemical Database v2.1 within the Devonian, Silurian-Devonian, or Fusselman formations within 20 miles of the PAV #1 well. The location of these wells is shown in Figure 11. Water chemistry analyses conducted on oil-field brines in Gaines County, as reported to the Texas Water Development Board, provided additional data on Devonian and Silurian reservoir fluids. Results from the synthesis of these two sources are provided in Table 1. The fluids have greater than 20,000 parts per million ("ppm") total dissolved solids, therefore these aquifers are considered saline. These analyses indicate the in-situ reservoir fluid of the Devonian, Silurian, and Fusselman formations are compatible with the proposed injection fluids.

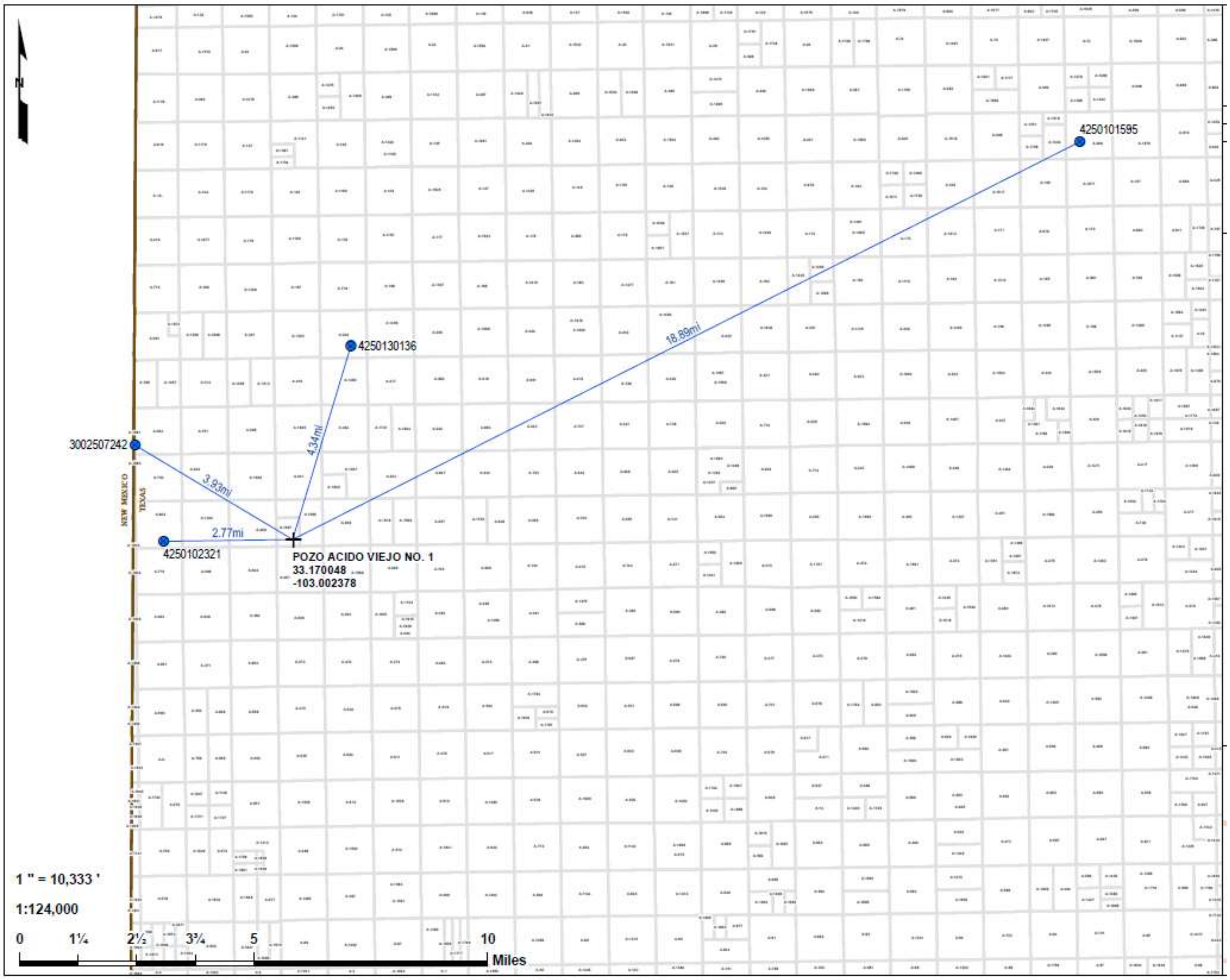


Figure 11 – Offset wells used for Formation Fluid Characterization

Table 1 – Analysis of Silurian-Devonian age formation fluids from nearby oil-field brine samples

Measurement	Average	Low	High
Total Dissolved Solids (ppm)	51,933	23,100	81,770
pH	7.2	7.0	7.3
Sodium (ppm)	18,550	7,426	25,377
Calcium (ppm)	2,195	1,010	2,760
chloride (ppm)	27,250	12,810	43,800

Fracture Pressure Gradient

Fracture pressure gradient was estimated using Eaton's equation. Eaton's equation is commonly accepted as the standard practice for the determination of fracture gradients. Poisson's ratio ("ν"), overburden gradient ("OBG"), and pore gradient ("PG") are all variables that can be changed to match the site-specific injection zone. Through literature review and industry standards, we are able to determine the expected frac gradient. First, 1.05 psi/ft and 0.465 psi/ft were assumed for both the overburden and pore gradients, respectively. These values are considered best practice values when there are no site-specific numbers available. For limestone/dolomite rock, the Poisson's ratio to be assumed to be 0.3 through literature review (Molina, Vilarras, Zeidouni 2016). Using these values in the equation below, a fracture gradient of 0.72 psi/ft was calculated. A 10% safety factor was then applied to this number resulting in maximum allowed bottom hole pressure of 0.64 psi/ft. This was done to ensure that the injection pressure would never exceed the fracture pressure of the injection zone.

For the upper confining interval, a similar fracture gradient as the limestone was calculated. Shale has an increased chance to vertically fracture if the injection interval is fractured (Molina, Vilarras, Zeidouni 2016), so assuming a Poisson's ratio equal to the injection interval was used as a conservative estimate. The lower confining zone was assumed to be of a similar matrix to that of the injection interval, with the key difference being that the formation is much tighter (lower porosity/permeability). The Poisson's ratio was assumed to be slightly higher in this rock. As seen in Table 2, the fracture gradient is slightly higher than the upper zones.

Table 2 – Fracture Gradient Assumptions

	Injection Interval	Upper Confining	Lower Confining
Overburden Gradient (psi/ft)	1.05	1.05	1.05
Pore Gradient (psi/ft)	0.465	0.465	0.465
Poisson's Ratio	0.30	0.30	0.31
Fracture Gradient psi/ft	0.72	0.72	0.73
FG + 10% Safety Factor (psi/ft)	**0.64**	**0.64**	**0.66**

The following steps were taken to calculate fracture gradient:

$$FG = \frac{\nu}{1-\nu}(OBG - PG) + PG$$

$$FG = \frac{0.3}{1-0.3}(1.05 - 0.465) + 0.465 = 0.72$$

$$FG\ with\ SF = 0.72\ \times (1 - 0.1) = \mathbf{0.64}$$

Lower Confining Zone – Fusselman Formation

The low-permeability Fusselman Formation will act as the lower confining unit for the injection interval. Figure 10 shows the tight limestone rock in the lower section that was not exposed to leaching diagenesis. Porosity in the lower section can range from 2-3% with permeabilities below 1 millidarcy. These petrophysical characteristics represent ideal sealing properties to prohibit any migration of injected fluid outside of the injection interval.

Local Structure

Regional structure in the area of the PAV #1 well is dictated by carbonate buildups and structural events causing anticlinal to synclinal features throughout the area. The PAV #1 well is specifically located at the base of a syncline with anticlinal features to the north, west, and east. Figure 12 is a structure map of the Silurian formation of subsea depths with the star representing the location of the PAV #1 well. The red and blue lines represent the cross-section reference lines.

Faulting can be seen to the west of the PAV #1 well location, which set up the hydrocarbon trap for the Bronco field. Figures 13 and 14 are north-south and west-east structural cross sections showing the structural dips. As seen in these figures, the Woodford is laterally present above the injection interval, alleviating risk of erosion of the upper sealant formation.

Larger versions of Figures 12, 13 and 14 are provided in Appendix A.

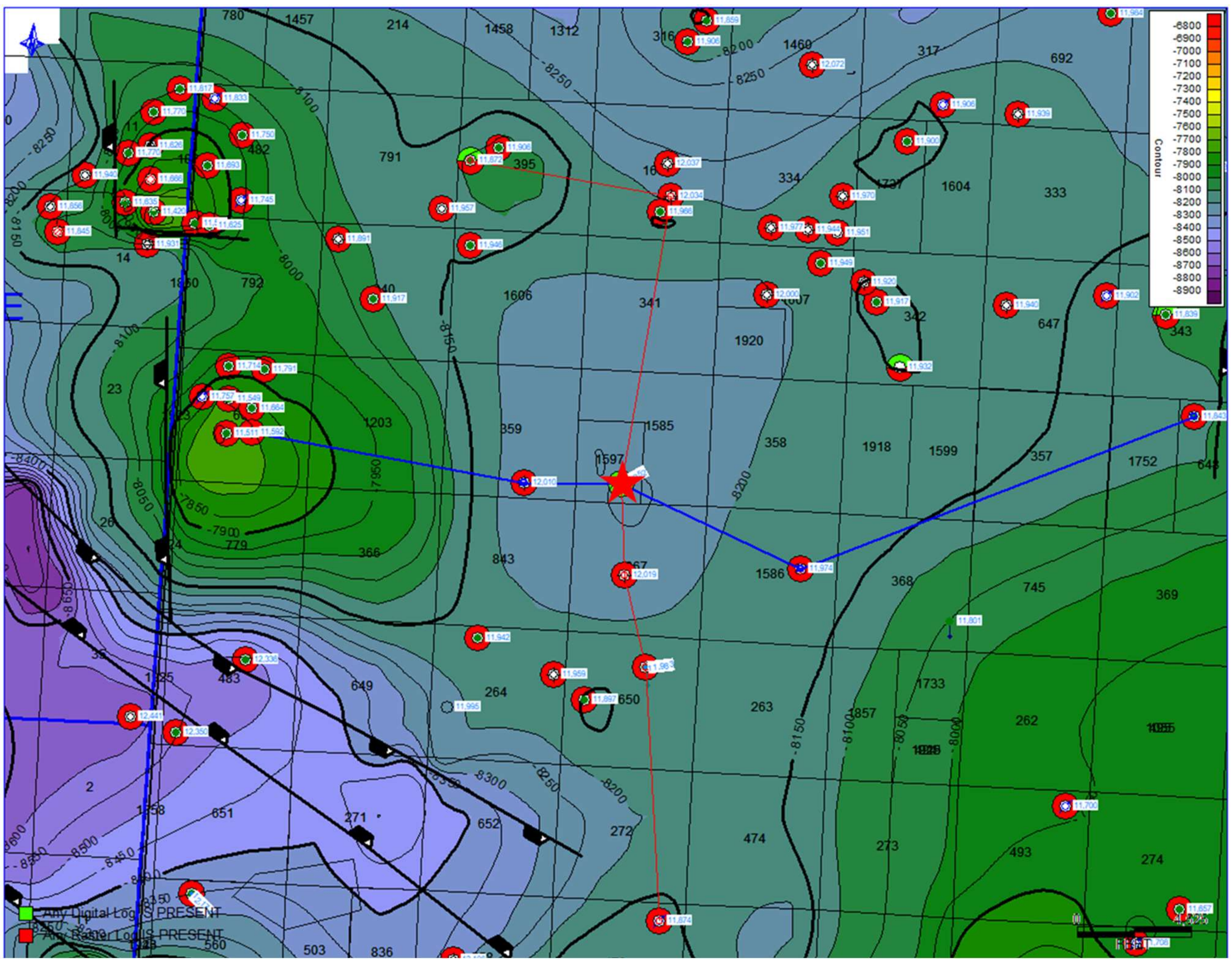


Figure 12 – Silurian Structure Map (subsea depths)

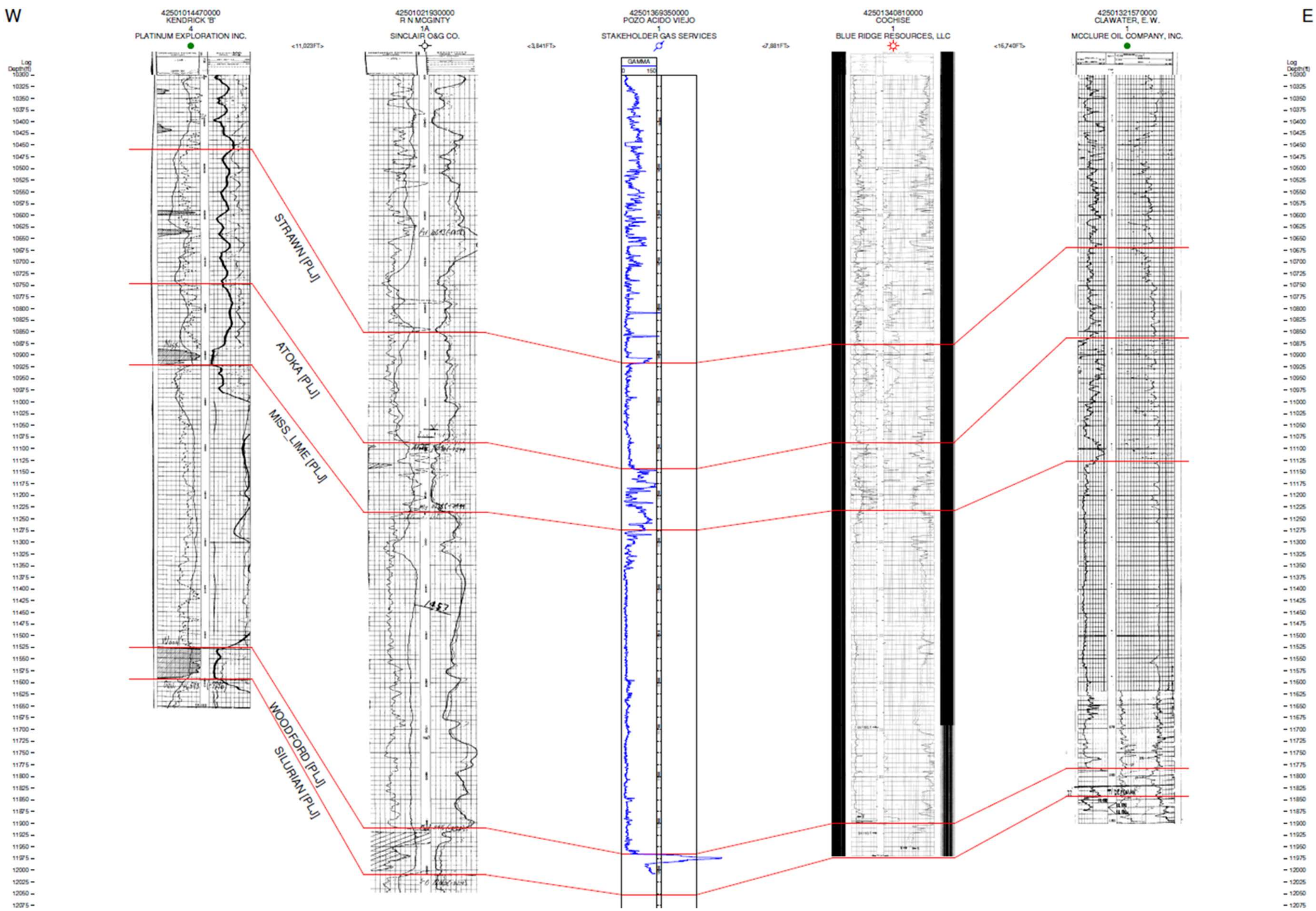


Figure 13 – Structural West-East Cross Section

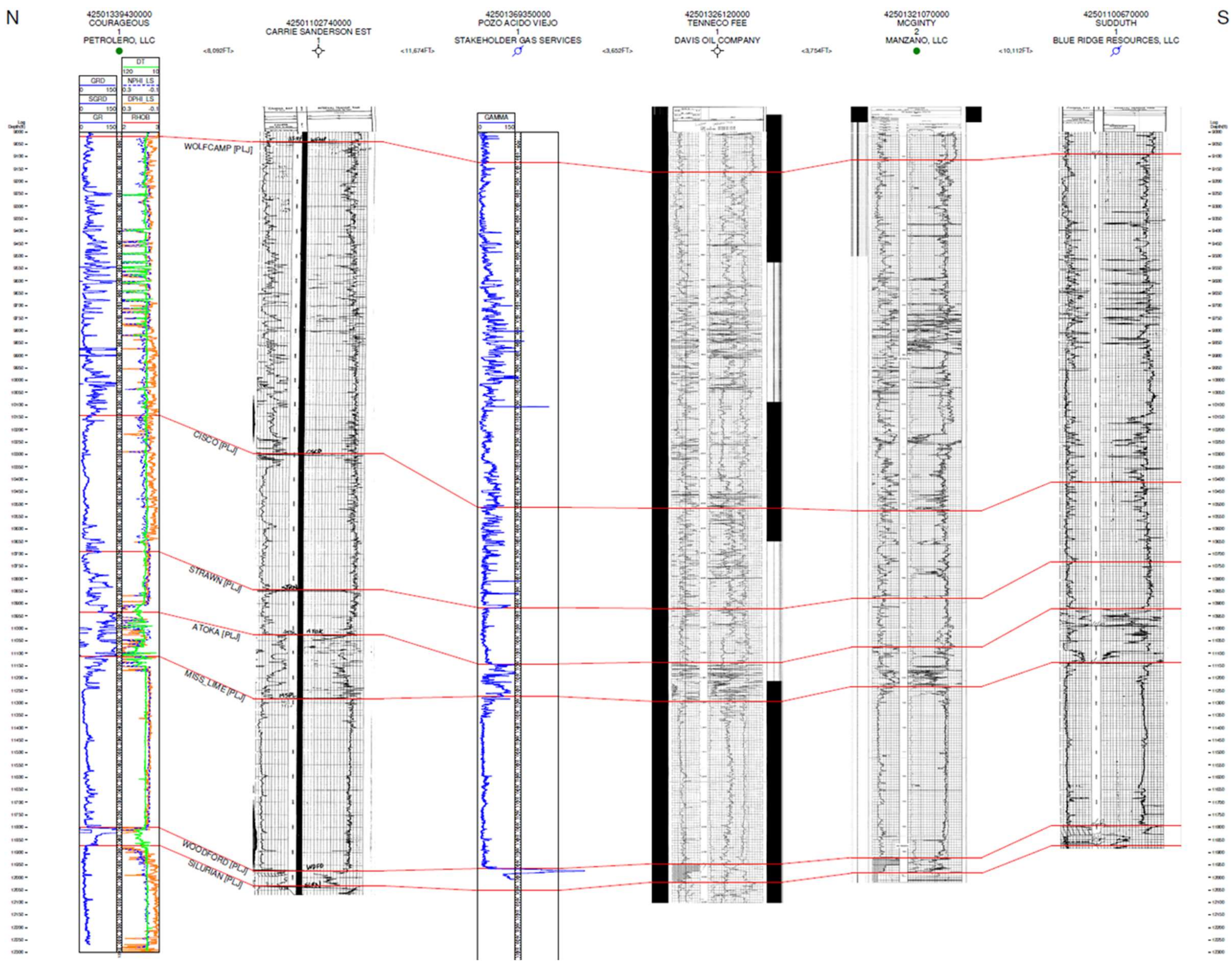


Figure 14 – Structural North-South Cross Section

Injection and Confinement Summary

The lithologic and petrophysical characteristics of the Fasken formation at the PAV #1 well location indicate the formation has sufficient thickness, porosity, permeability, and lateral continuity to accept the proposed injection fluids. The Woodford formation shale at the PAV #1 well has low permeability and is of sufficient thickness and lateral continuity to serve as the upper confining zone. Beneath the injection interval, the low permeability, low porosity Fusselman formation is unsuitable for fluid migration and serves as the lower confining zone. Although few wells penetrate the lower confining zone in the area of the PAV #1, it can be expected that lateral deposition of the tight carbonate found in the lower confining zone to be extensive around the PAV #1 location based on lack of exposure events in that time of deposition. Additionally deeper, laterally continuous formations, including the Montoya and Simpson Group, provide additional confinement.

Groundwater Hydrology

Yoakum County falls within the boundary of the Sandy Land Underground Water Conservation District. Three aquifers are identified by the Texas Water Development Board's *Aquifers of Texas* report in the vicinity of the proposed PAV #1 well: the Dockum Aquifer, Edwards-Trinity Aquifer, and Ogallala Aquifer (George, Mace and Petrossian, 2011). Table 3 references the aquifers' positions in geologic time and the associated geologic formations. A schematic cross section in Figure 15, near the proposed PAV #1 well, illustrates the structure and stratigraphy of these water-bearing formations. Groundwater flow direction is the same for the three aquifers, generally from northwest to southeast, Figure 16 (Teeple, et al., 2021).

Table 3 – Geologic and hydrogeologic units with accompanying lithologic descriptions near Gaines, Terry and Yoakum Counties, Texas (Teeple, et al. 2021)

Era	Period	Epoch or series	Geologic unit group or formation	Lithologic descriptions	Hydrogeologic unit
Cenozoic	Tertiary	Pliocene	Ogallala Formation	Gravel, sand, silt, and clay	High Plains aquifer system (Ogallala aquifer)
		Miocene			
Mesozoic	Cretaceous[1]	Comanchean Series	Washita Group[2]	Shale and limestone	Edwards-Trinity (High Plains) aquifer system
			Fredericksburg Group	Clay, shale, and limestone	
			Trinity Group	Sand and gravel	
	Triassic	Upper	Dockum Group	Siltstone, mudstone, shale, and sandstone	Dockum aquifer

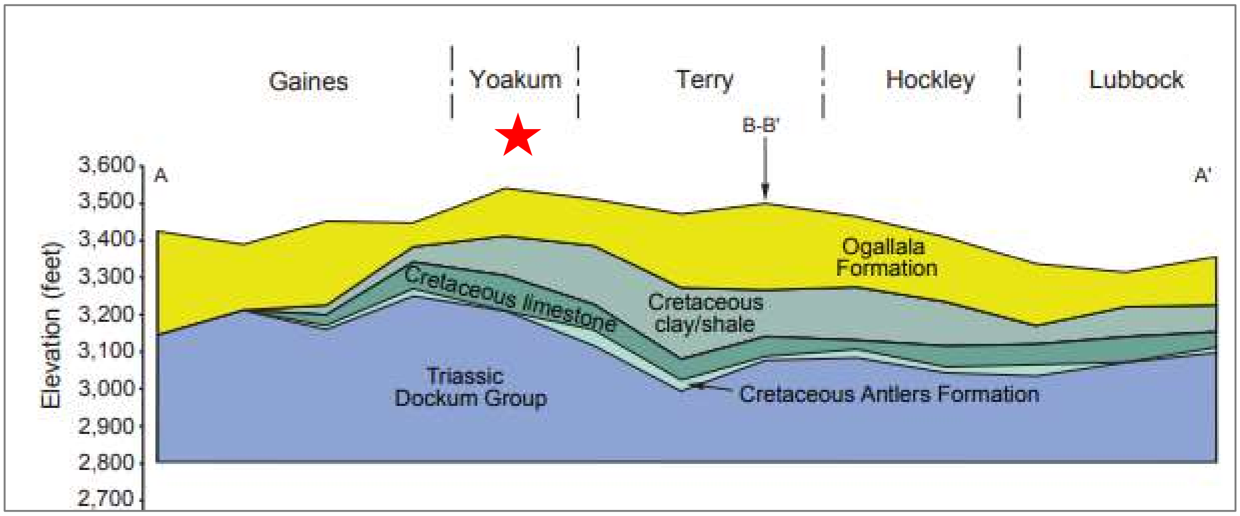


Figure 15 – NW-SE Cross Section of aquifers in the PAV #1 well area (George, Mac and Petrossian, 2011)

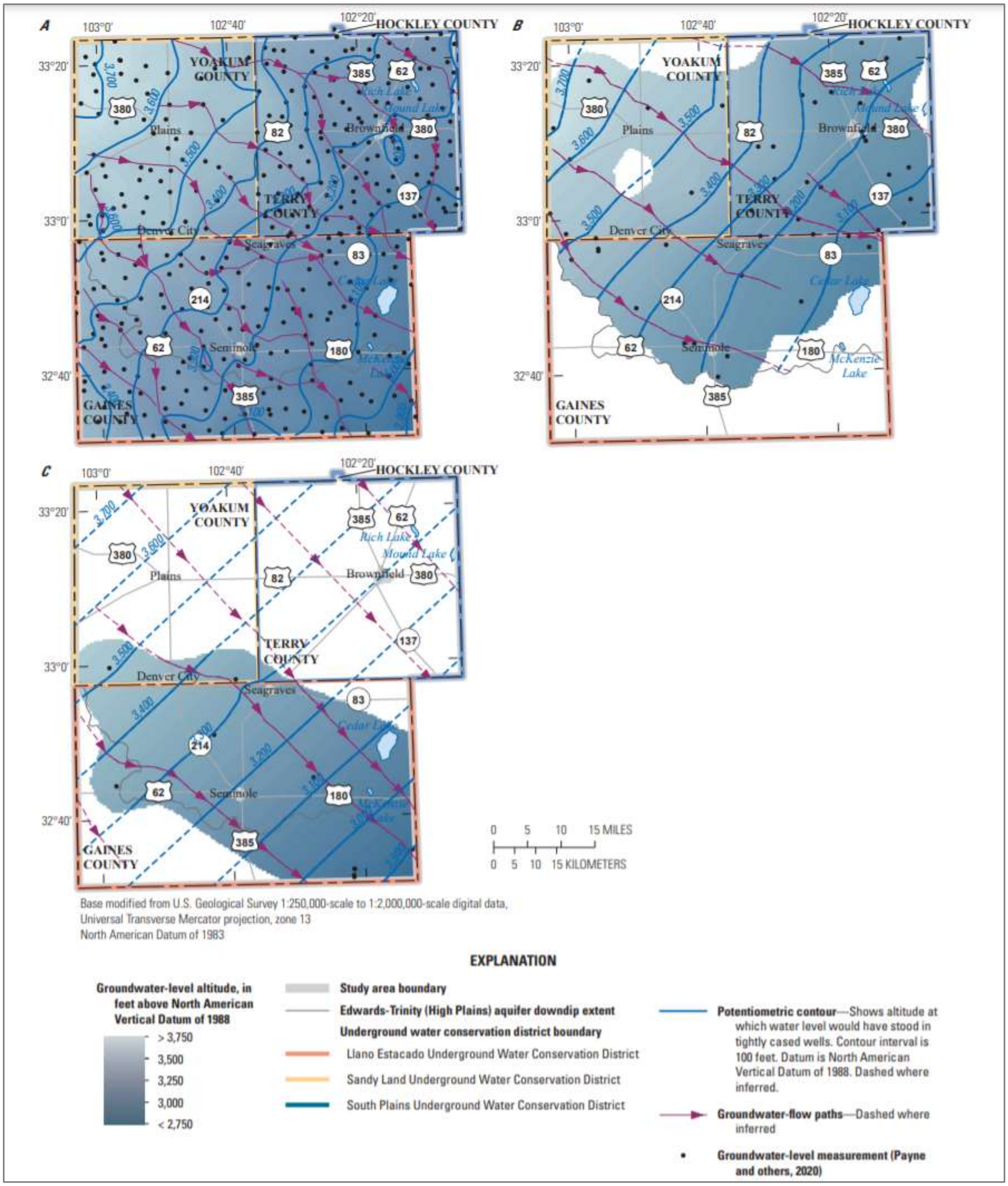


Figure 16 – Potentiometric surfaces from wells completed in A, Ogallala aquifer, B, the Edwards-Trinity aquifer and C, the Dockum aquifer (George, Mace and Petrossian, 2011).

The Dockum Aquifer is the oldest of the three aquifers, formed from Triassic-age Dockum Group sediments, and underlies the Cretaceous Trinity and Fredericksburg Groups (Teeple, et al., 2021). Figure 17 shows the subsurface and outcrop extent of the Dockum Aquifer. As shown in Figure 18, the total dissolved solids in western Yoakum County exceed 5,000 milligrams per liter ("mg/L"), therefore the aquifer is considered brackish.

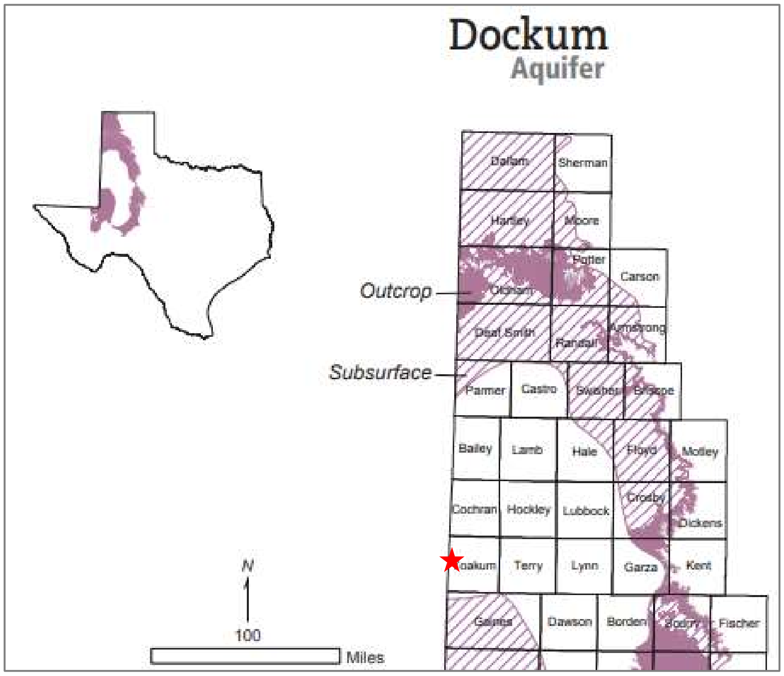


Figure 17 – Regional extent of the Dockum fresh water aquifer (TWDB)

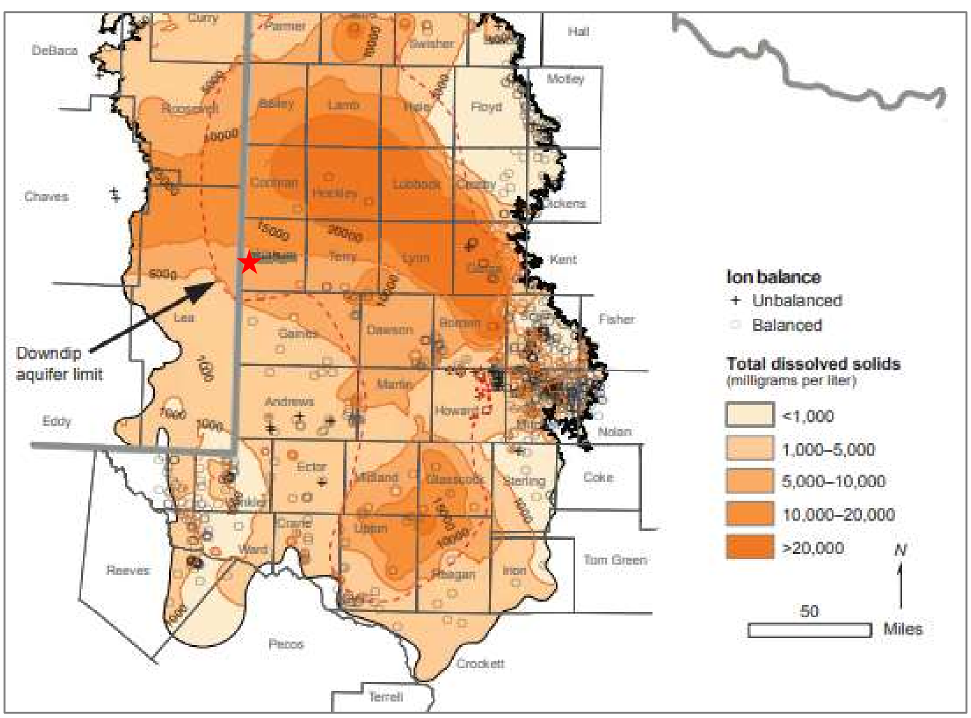


Figure 18 – Total dissolved solids in groundwater from the Dockum Aquifer (Ewing et al, 2008)

The Edwards-Trinity Aquifer is a collection of Cretaceous age sediments – primarily the Trinity Group Antlers formation sandstone and limestones of the Fredericksburg Group, specifically the Comanche Peak and Edwards formations. Figure 19 shows the subsurface and outcrop extent of the Edwards-Trinity Aquifer. Freshwater infiltration to this aquifer is primarily from the overlying Ogallala Aquifer. (George, Mace and Petrossian, 2011).

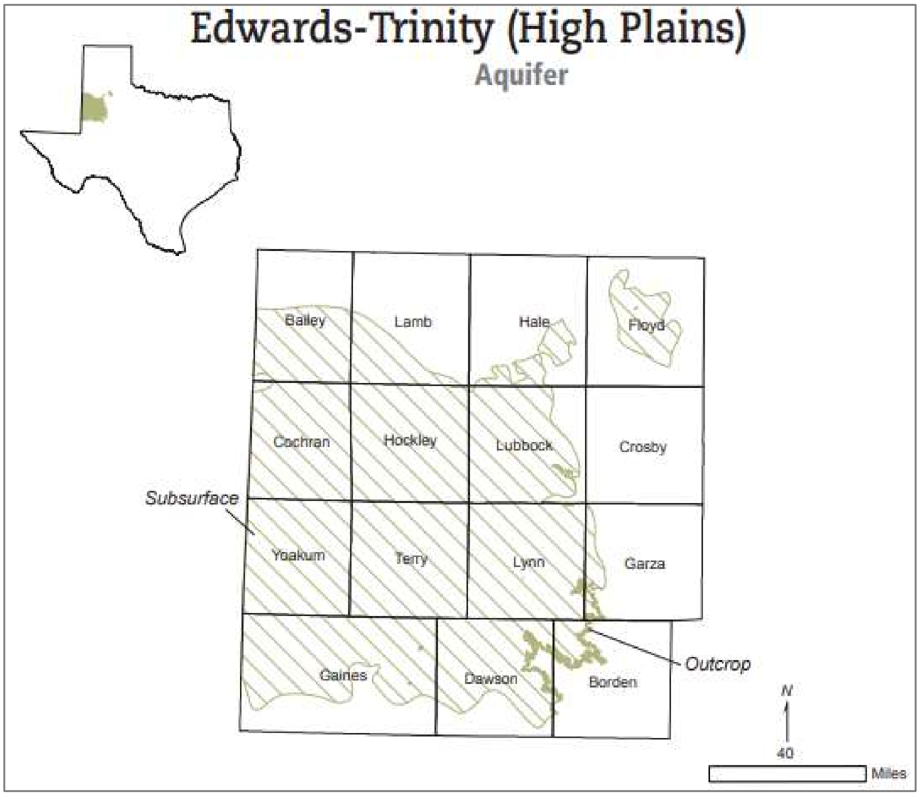


Figure 19 – Regional extent of the Edwards-Trinity fresh water aquifer (George, Mace and Petrossian, 2011)

The Ogallala aquifer consists of sand, gravel, clay and silt sediments (George, Mace and Petrossian, 2011) and produces the majority of the fresh water for Yoakum County. Figure 19 shows the subsurface and outcrop extent of the Ogallala Aquifer.

The base of the deepest aquifer is separated from the injection interval by more than 9,500' of rock, including 650' of Salado salt. Though unlikely for reasons outlined in the confinement and potential leaks sections, if migration of injected fluid did occur above the Woodford Shale, thousands of feet of tight sandstone, limestone, shale and anhydrite beds occur between the injection interval and the lowest water-bearing aquifer.

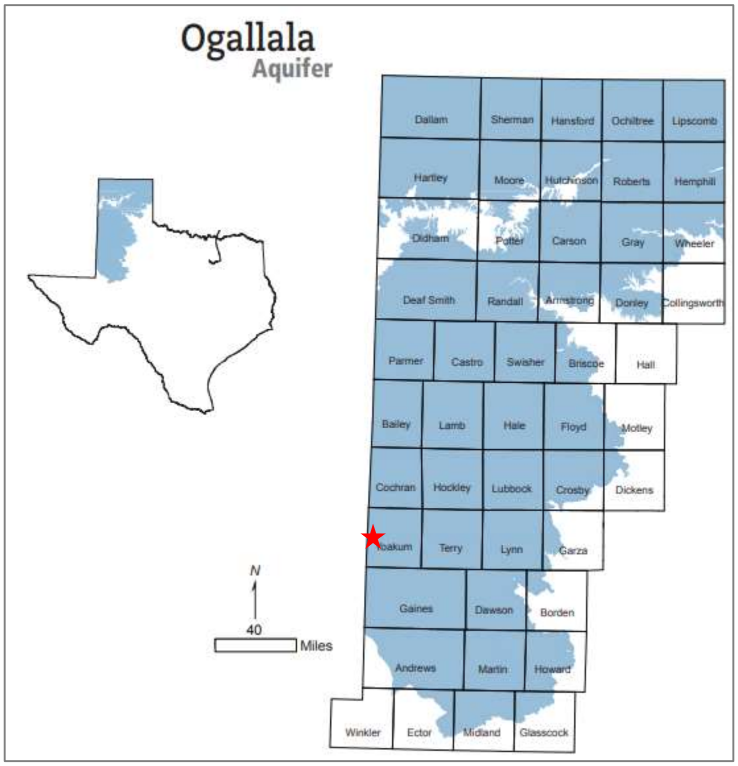


Figure 20 – Regional extent of the Ogallala fresh water aquifer (George, Mace and Petrossian, 2011)

The TRRC's Groundwater Advisory Unit ("GAU") identified the base of Underground Sources of Drinking Water ("USDW") at 2,250 feet at the location of the PAV #1 well. Therefore, there is approximately 9,470 feet separating the base of the USDW and the injection interval. A copy of the GAU's Groundwater Protection Determination letter issued by the TRRC as part of the Class II permitting process for the PAV #1 well is provided in Appendix B.

Description of the Injection Process

Current Operations

The Campo Viejo Facility and its associated PAV #1 well began operating in March of 2019. Since operations began, 2.8 billion cubic feet ("BCF") of treated acid gas ("TAG") has been injected, which equates to 143,483 metric tons of CO_2. Over the life of the injection period, the average daily injection rate has been 2.7 MMSCF/d. The approximate current composition of the TAG stream is as follows:

Table 4 – Gas Composition of Campo Viejo Facility outlet

Component	Mol %
CO2	89.25%
H2S	9.75%
N2	0.58%
Other	0.43%

The Campo Viejo Facility is designed to compress, treat, and process natural gas produced from the surrounding counties in Texas and New Mexico. The gas is dehydrated to remove the water content, then processed to separate natural gas liquids which are then sold, along with the pipeline quality natural gas, to various customers. TAG is then directly routed from the plant sweeteners to the PAV #1 well. The facility is manned 24 hours per day, 7 days per week.

Planned Operations

Stakeholder anticipates increasing the amount of CO_2 injected into PAV #1 well from the current rate up to 20 MMSCF/d. Additional growth is expected both at Stakeholder facilities and regionally as rising sour gas production and flaring reduction mandates create the need for additional CO_2 and H_2S disposal capacity. Stakeholder plans to inject into this AGI well for a total of 25 years from the start of injection in 2019.

Figure 21 shows a high-level view of the current process flow plus the prospective additional operations over time.

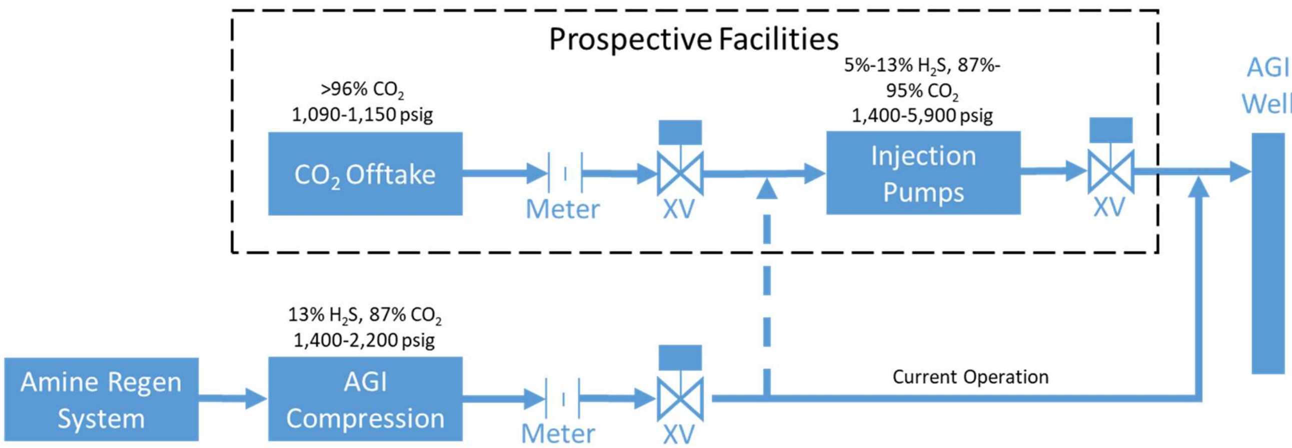


Figure 21 – Campo Viejo Facility Process Flow Diagram

Reservoir Characterization Modeling

The modeling software used to evaluate this project was Computer Modelling Group's GEM 2020.11 ("GEM") simulator. Computer Modelling Group ("CMG") has put together one of the most accurate and technically sound reservoir simulation software packages for conventional, unconventional, and secondary recovery. GEM utilizes equation-of-state ("EOS") algorithms along with some of the most advanced computational methods to evaluate compositional, chemical, and geochemical processes and characteristics to produce highly accurate and reliable simulation models for carbon injection and storage. The GEM model is recognized by the EPA for use in area of review delineation modeling as listed in the Class VI Well Area of Review Evaluation and Corrective Action Guidance document.

The Silurian (Fasken) formation is the target formation for PAV #1 well. The Petra software package was used to create the geologic model of the target formation. The faulting and geologic structure was then imported into GEM and used to create contours for the model grid.

Porosity and permeability estimates were determined using the porosity log from a nearby injector (API No. 42-501-33943) and a petrophysical analysis was performed to correlate porosity values by depth with core porosities as shown in the Holtz paper. The Coates permeability equation was then used to calculate permeability with depth. Both porosity and permeability are assumed to be laterally homogeneous in the reservoir.

The reservoir is assumed to be at hydrostatic equilibrium and initially saturated with 100% brine. An infinite acting reservoir was created to simulate boundary conditions. The gas injectate is composed of H_2S, CO_2, CH_4, and other components as shown in Table 5. Core data from literature review was used to determine residual gas saturation (Ruppel and Holtz, 1994). The modeled composition only takes into consideration the carbon dioxide and hydrogen sulfide as they comprise nearly 99% of total stream. For the initial injection period, these compositions are normalized up to 100%. For the proposed additional injection period, it is expected that a larger portion of the gas added is carbon dioxide, changing the composition to 94% CO_2 and 6% H_2S.

Table 5 – Modeled Initial Gas Composition

Component	Measured Current Composition (mol%)	2019-2022 Model Composition (mol%)	2022-2044 Model Composition (mol%)
H2S (H2S)	9.745	9.844	6.000
Nitrogen (N2)	0.577	0.000	0.000
CO2 (CO2)	89.249	90.156	94.000
Methane (C1)	0.190	0.000	0.000
Ethane (C2)	0.012	0.000	0.000
Propane (C3)	0.028	0.000	0.000
Hexanes Plus (C6+)	0.199	0.000	0.000

Core data from literature review was used to determine relative permeability curves between carbon dioxide and the connate brine within the Silurian-Devonian carbonates (Ruppel and Holtz, 1994). The key inputs used in the model include an irreducible water saturation of 25% and a maximum residual gas saturation of 21%.

The grid contains 140 blocks in the x-direction (E-W) and 141 blocks in the y-direction (N-S), totaling 62,500 grid blocks per layer. This results in the grid being 35,000 feet by 35,250 feet totaling just over a 44-square mile area. Each layer in the model was determined by identifying higher permeability zones as targets for injection from the logs and assigning each high permeability and intermediary low permeability zone its own layer. There are a total of 9 layers in the model, representing 5 layers of pay and 4 layers of intermediary low permeability zones. The properties of each of these layers are summarized in Table 6 below.

Table 6 – CMG Model Layer Properties

Layer #	Top (ft)	Thickness (ft)	Perm. (mD)	Porosity
1	11,867	83	168.3	10.4%
2	11,951	16	1.3	3.2%
3	11,968	6	14.1	5.8%
4	11,975	8	1.0	3.2%
5	11,984	14	53.1	6.4%
6	11,999	16	0.8	2.9%
7	12,016	9	6.8	5.1%
8	12,026	213	0.6	2.3%
9	12,240	5	122.1	8.0%

Simulation Modeling

The primary objectives of the model simulation were to:

1) Estimate the maximum areal extent and density drift of the acid gas plume after injection
2) Assess the impact of offset salt water disposal ("SWD") well injection on density drift of the plume
3) Determine the ability of the target formation to handle the required injection rate without fracturing the injection zone
4) Assess the likelihood of the acid gas plume migrating into potential leak pathways

The reservoir is assumed to be an aquifer filled with 100% brine. The salinity of the formation is estimated to be 100,000 ppm, typical for the region. The acid gas stream is primarily composed of CO_2 and H_2S as stated previously. Core data was used to help generate relative permeability curves. Cores, from the literature reviews as previous discussed, that most closely represent the vuggy carbonate seen in this region were identified and the Corey-Brooks equations were used to develop the curves. The lowest residual gas saturation found in the cores was then used for a conservative estimate of plume size. The initial reservoir pressure is 5,601 psi which is equivalent to a 0.465 psi/ft pressure gradient and was determined from offset injection well analysis. The fracture gradient of the injection zone was estimated to be 0.72 psi/ft, which was determined using Eaton's equation. A 10% safety factor was then applied to this number, putting the maximum bottom-hole pressure allowed in the model at 0.65 psi/ft which is equivalent to 7,829 psi.

The model also takes into account offset SWD injection volumes close to the PAV #1 well. A total of 19 offset wells currently injecting into the Devonian were identified within a 5-mile radius of PAV #1 well. Historical injection rates of each of these wells were analyzed and projected into the model. This simulation includes the effect of water injection on the density drift of the plume and bottom hole pressure.

The model runs for a total of 50 years comprised of 25 years of active injection and an additional 25 years of density drift. The model begins the injection period in 2019 when the PAV #1 well first became operational. An injection rate of 7.2 MMSCF/d is assumed during the first 3 years and 3 months (which is higher than the current actual permitted injection rate) to model the maximum available rate and therefore results in a more conservative plume size. After this initial period, it is assumed that the injection rate increases to 20 MMSCF/d for the remainder of the active injection period. At this point, the PAV #1 well stops injection while the offset injectors continue operations during the density drift period (also a conservative assumption).

The maximum plume extent during the 25-year injection period is shown in Figure 22. The final extent after 25 years of density drift after injection ceases is shown in Figure 23.

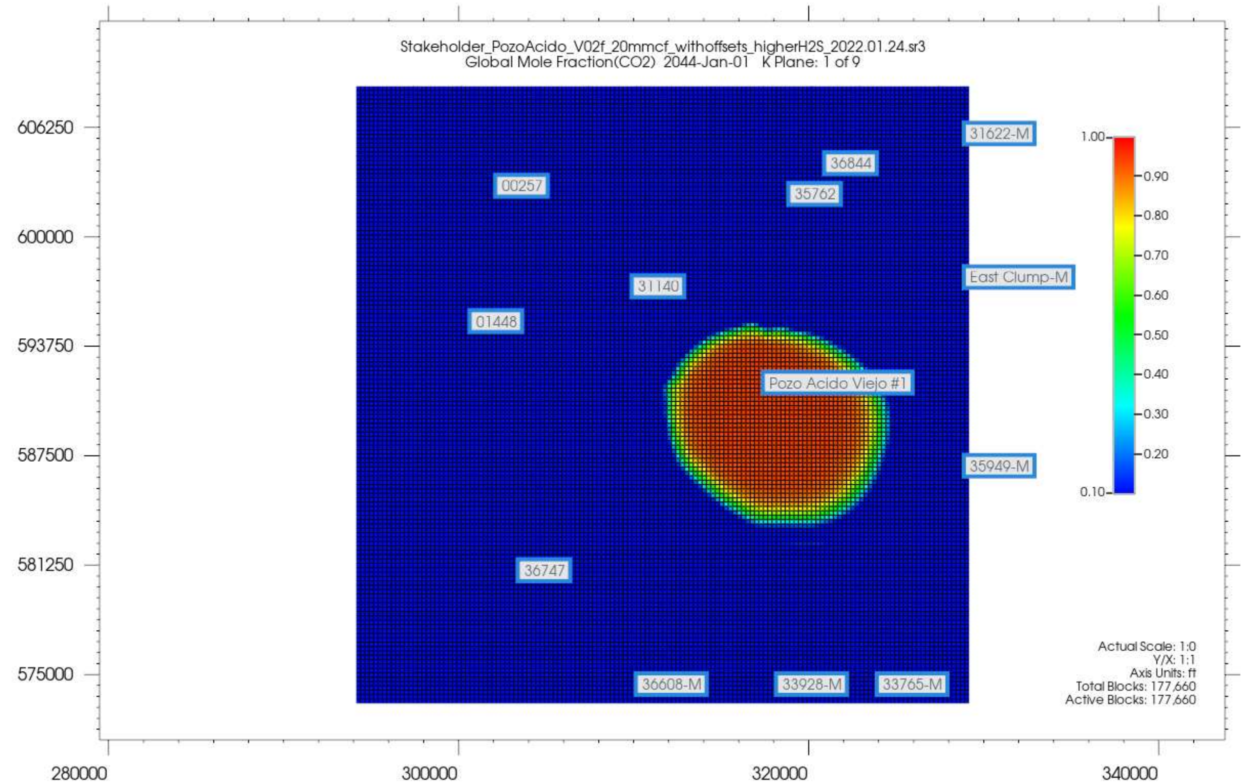


Figure 22 – Areal View Gas Saturation Plume, Year 25 (End of Injection)

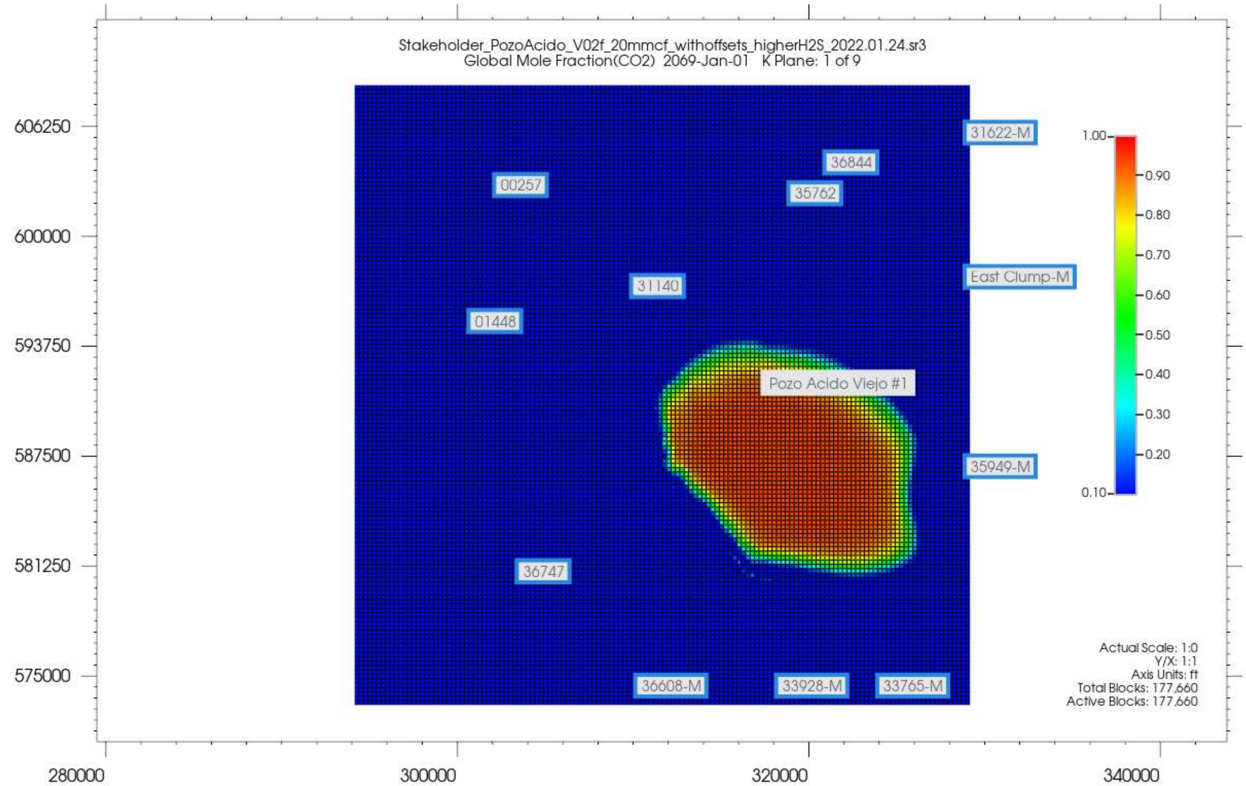


Figure 23 – Areal View, Saturation Plume, Year 50 (End of Simulation)

Figure 24 shows the surface injection rate and bottom hole pressure over the injection period and the period of density drift after injection ceases. The bottomhole pressure increases steadily throughout the injection period, reaching a maximum pressure of 5,920 psi as injection ceases. This buildup of 190 psi keeps the bottomhole pressure well below the fracture pressure of 7,829 psi. The maximum surface pressure associated with the maximum bottomhole pressure reached is 2,996 psi, well below the maximum allowable 6,010 psi per the TRRC UIC permit for this well.

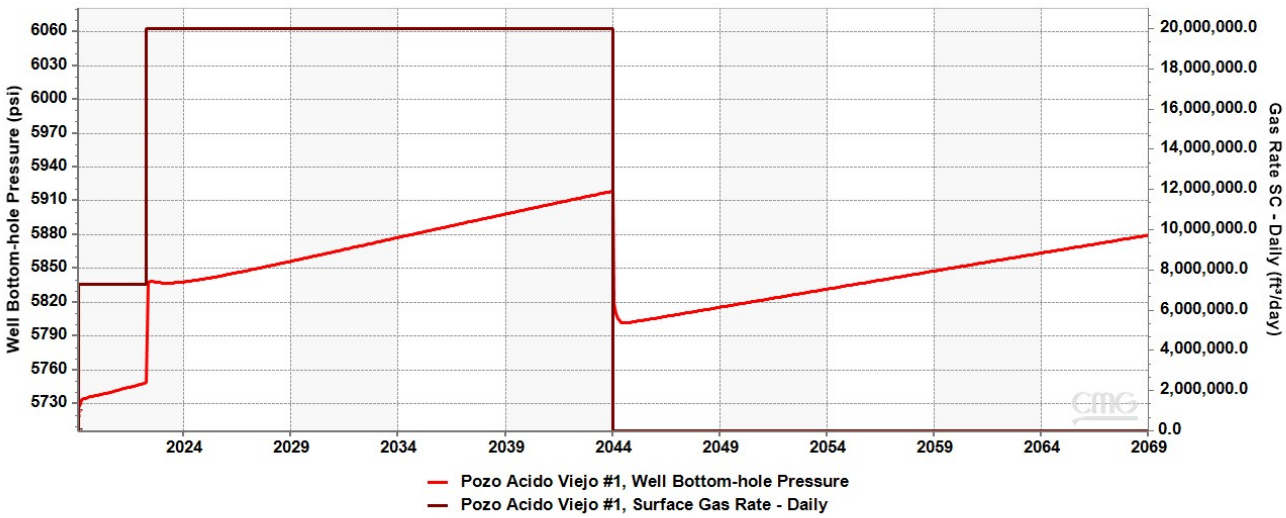


Figure 24 – Well Injection Rate and Bottomhole Pressure over Time

SECTION 3 – DELINATION OF MONITORING AREA

This section discusses the delineation of Maximum Monitoring Area (“MMA”) and Active Monitoring Area (“AMA”) as described in EPA 40 CFR §98.448(a)(1).

Maximum Monitoring Area

The MMA is defined as equal to or greater than the area expected to contain the free-phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile. Numerical simulation was used to predict the size and drift of the plume. With CMG’s GEM software package, reservoir modeling was used to determine the areal extent and density drift of the plume. The model takes into account the following considerations:

- Offset well logs to estimate geologic properties
- Petrophysical analysis to calculate the heterogeneity of the rock
- Geological interpretations to determine faulting and geologic structure
- Offset injection history to adequately predict the density drift of the plume

Acid gas injectate was analyzed by a third-party vendor to determine the initial composition used in the model. The report is provided in Appendix C. The molar composition of the gas is primarily CO_2 with some H_2S and CH_4. The change in molar composition was also incorporated into the model as future predominantly CO_2 streams are added for injection. As discussed in Section 2, the gas was injected into the Silurian formation, specifically, the Fasken formation. The geomodel was created based off the rock properties seen in the Fasken.

The plume boundary was defined by the weighted average gas saturation in the aquifer. A value of 3% gas saturation was used to determine the boundary of the plume. When injection ceases in year 25, the areal expanse of the plume will be 2,473 acres. The maximum distance between the wellbore and the edge of the plume is approximately 0.87 miles to the southeast. After 25 additional years of density drift, the areal extent of the plume is 3,193 acres with a maximum distance to the edge of the plume of approximately 1.35 miles to the southeast.

Figure 25 shows the 25-year plume boundary, the 50-year plume boundary and the MMA.

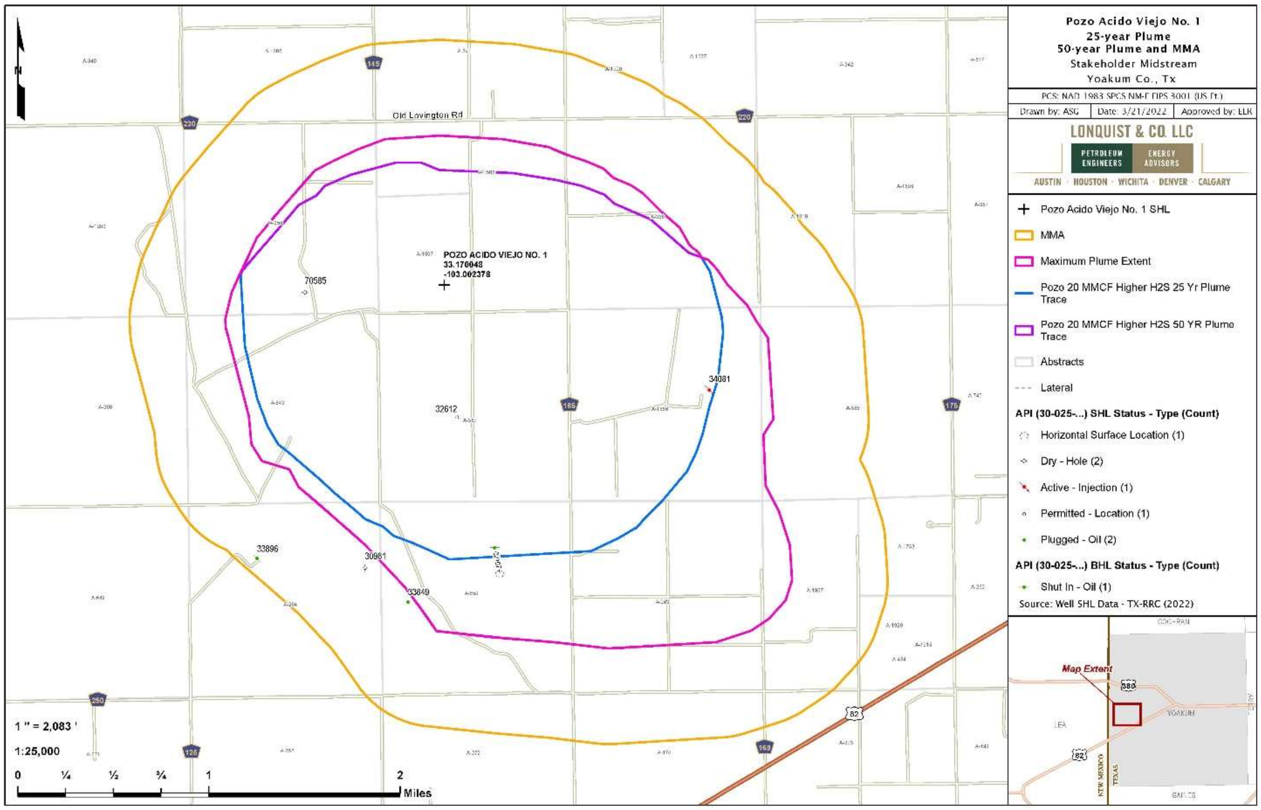


Figure 25 – 25-year plume, 50-year plume, Maximum Monitoring Area

Active Monitoring Area

The AMA is proposed to have the same boundary as the MMA. As the only potential leak ways in the MMA are the wells which penetrate the injection interval, the MMA adequately covers the area which should be monitored for CO_2 leakage. Further consideration was done in determining the plume boundary to give the most conservative estimate. Anisotropy of formation was taken into account to allow gas to flow into the highest permeability zones. The zone with the highest permeability would take on the most gas and allow for a larger areal extent of gas.

SECTION 4 – POTENTIAL PATHWAYS FOR LEAKAGE

This section identifies the potential pathways for CO_2 to leak to the surface within the MMA and the likelihood, magnitude and timing of such leakage. The potential leakage pathways are:

- Leakage from surface equipment
- Leakage through existing wells within MMA
- Leakage through faults and fractures
- Natural or Induced Seismicity
- Drilling through the MMA
- Leakage through the seal

Leakage from Surface Equipment

The surface facilities at the Campo Viejo Facility are designed for injecting acid gas containing H_2S, and therefore minimize leakage points such as valves and flanges following industry standards and best practices. H_2S gas detectors are located around the facility and the well site. These gas detectors trigger alarms at 10 parts per million ("ppm"). Additionally, all Stakeholder field personnel are required to wear H_2S monitors which are triggered at 5 ppm of H_2S. A shut-in valve is located at the wellhead and is locally controlled by pressure, with a high pressure and low pressure shut-off.

The facilities have been designed and constructed with additional safety systems to provide for safe operations. These systems include Emergency Shutdown ("ESD") valves to isolate portions of the plant and pipeline, pressure relief valves along the pipeline to prevent over pressurization, and flares to allow piping and equipment to be de-pressured rapidly under safe and controlled operating conditions in the event of a leak. Figures 26 and 27 display the facility safety plot plan, taken from the Campo Viejo H_2S Contingency Plan, and show the location of the H_2S monitors in the vicinity of the plant and the PAV #1 well. Should Stakeholder construct additional CO_2 facilities, as indicated in Figure 21, a separate meter will be installed for the additional stream in order to comply with the 40 CFR §98.448(a)(5) measurement. As this meter will be in close proximity to the existing facilities, it will utilize the existing monitoring programs discussed previously. Additionally, CO_2 monitors will be installed near the new meter and tied into the facility monitoring systems.

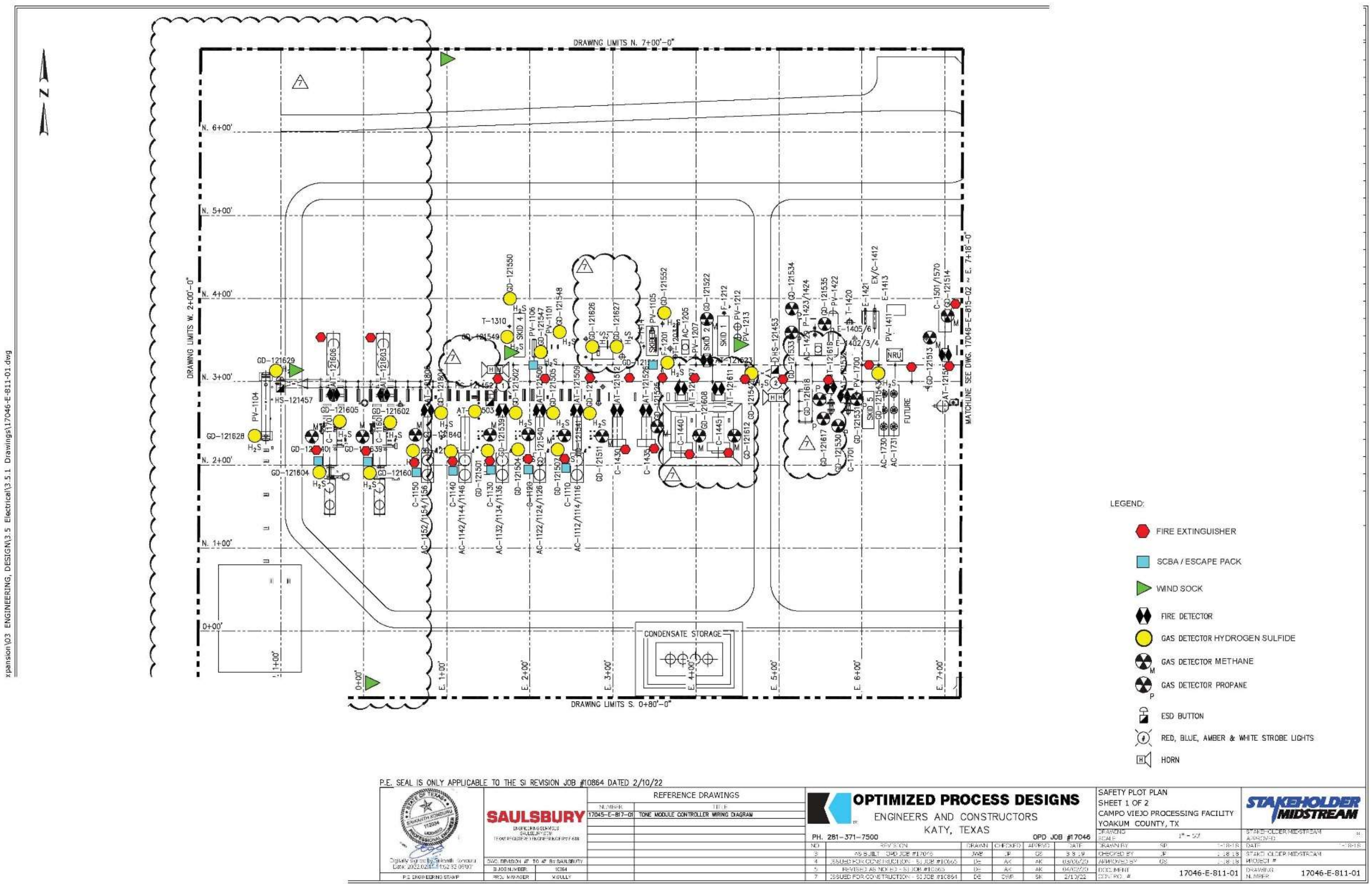


Figure 26 – Site Plan, Campo Viejo Facility – West Section

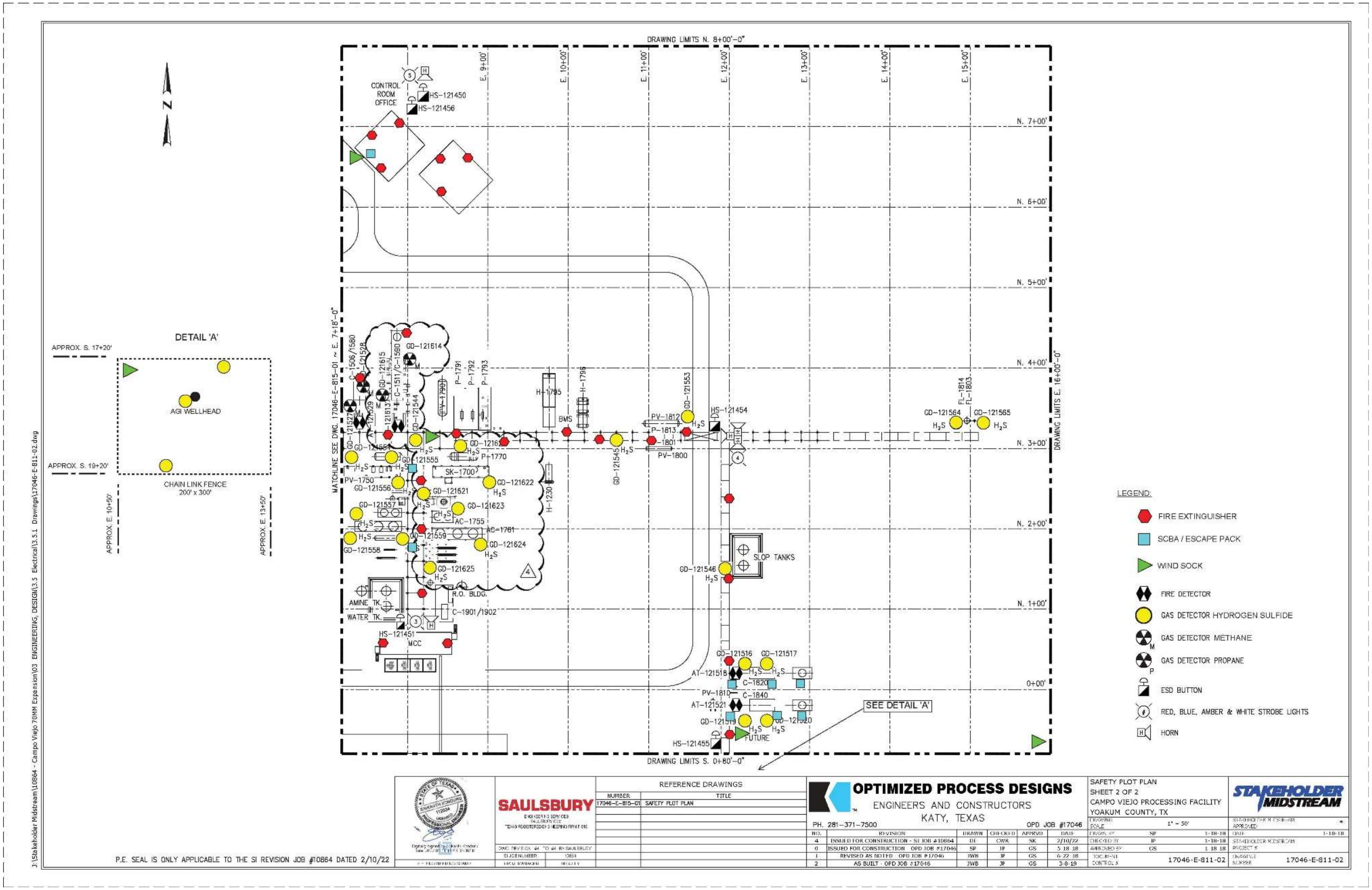


Figure 27 – Site Plan, Campo Viejo Facility and PAV #1 – East Section

With the level of monitoring at the Campo Viejo Facility and the PAV #1 well, any release of H_2S and CO_2 would be quickly identified and the safety systems would quickly minimize the volume of the release. The CO_2 injected into PAV #1 is injected with H_2S at a concentration of 10% (100,000 ppm). At this high level of H_2S concentration, even small leakage would trigger personal and facility H_2S monitors set to alarm at 5 ppm and 10 ppm respectively. If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release, as stated in Section 7 in accordance with 40 CFR §98.448(a)(5).

Larger scale versions of Figures 26 and 27 are provided in Appendix D.

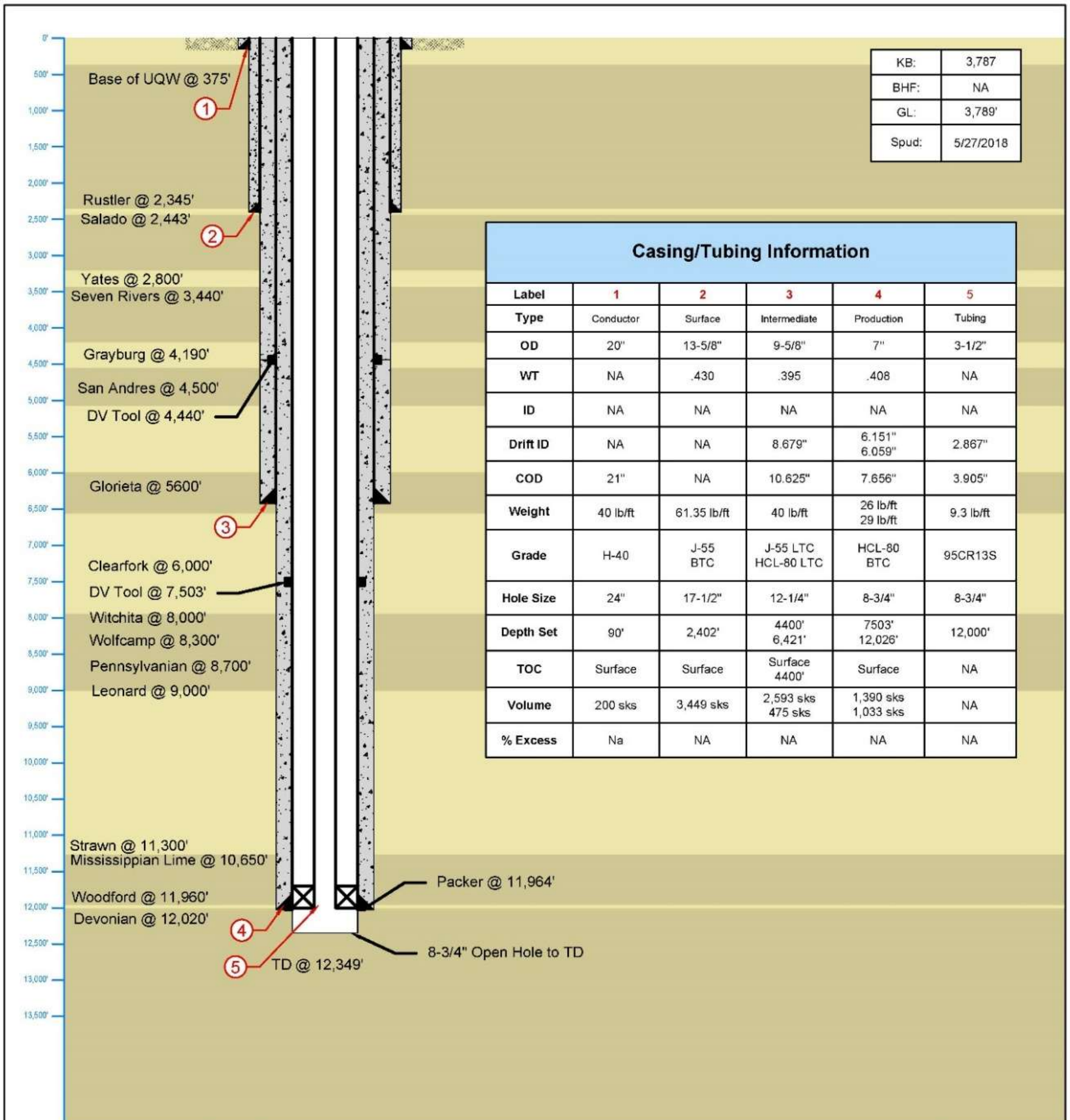
Leakage from Wells in the Monitoring Area

Oil and Gas Operations within Monitoring Area

Historical production within the area of the PAV #1 well has primarily been from the shallower San Andres and Wolfcamp formations. These formations are separated from the Silurian-Devonian interval by 6,400 and 3,300 feet, respectively. Within the plume area of the PAV #1 well, eighty-four (84) wells have been drilled and completed or plugged. 71 of these wells are active, 1 is shut-in, 12 are plugged and abandoned. Seven (7) wells, not including the PAV #1 well, penetrate the injection interval within the MMA. Five (5) of these wells have been properly plugged and abandoned. One (1) active injection well (Cochise 1W) is plugged across the Devonian interval and currently injects into the much shallower San Andres. One (1) shut-in oil well (McGinty 2 #2), located more than 1.4 miles from the PAV #1, has not produced since 2015. The plume model shows that the CO_2 will not reach that wellbore until the end of the 25-year injection period. This well would very likely be plugged by such time and thus would not be a likely leakage pathway.

All of the wells which penetrate the injection interval within the MMA were properly cased and cemented to prevent annular leakage of CO_2 to the surface. The plugged wells are also adequately protected against migration from the Devonian by the placement of the plugs within the wellbores. Additionally, the PAV #1 well was designed to prevent migration from the injection interval to the surface through the casing and cement placed in the well, as shown in Figure 28. Mechanical integrity tests ("MIT") required under TRRC rules are run annually to verify the well and wellhead can hold the appropriate amount of pressure. If the MIT were to indicate a leak, the well would be isolated and the leak mitigated quickly to prevent leakage to the atmosphere.

A map of all wells within the MMA is shown in Figure 29. Figure 30 shows only those wells which penetrate the injection interval. The MMA review maps, a summary of all the wells in the MMA and detailed wellbore schematics for those wells which penetrate the injection interval are provided in Appendix D.



KB:	3,787
BHF:	NA
GL:	3,789'
Spud:	5/27/2018

Casing/Tubing Information

Label	1	2	3	4	5
Type	Conductor	Surface	Intermediate	Production	Tubing
OD	20"	13-5/8"	9-5/8"	7"	3-1/2"
WT	NA	.430	.395	.408	NA
ID	NA	NA	NA	NA	NA
Drift ID	NA	NA	8.679"	6.151" 6.059"	2.867"
COD	21"	NA	10.625"	7.656"	3.905"
Weight	40 lb/ft	61.35 lb/ft	40 lb/ft	26 lb/ft 29 lb/ft	9.3 lb/ft
Grade	H-40	J-55 BTC	J-55 LTC HCL-80 LTC	HCL-80 BTC	95CR13S
Hole Size	24"	17-1/2"	12-1/4"	8-3/4"	8-3/4"
Depth Set	90'	2,402'	4400' 6,421'	7503' 12,026'	12,000'
TOC	Surface	Surface	Surface 4400'	Surface	NA
Volume	200 sks	3,449 sks	2,593 sks 475 sks	1,390 sks 1,033 sks	NA
% Excess	Na	NA	NA	NA	NA

LONQUIST & CO. LLC PETROLEUM ENGINEERS | ENERGY ADVISORS HOUSTON | CALGARY AUSTIN | WICHITA | DENVER	Stakeholder Midstream	Pozo Acido Viejo No. 1	
	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location: 33.1700484, -103.0023776	**Site:**	**Survey:**
	API No: 42-501-36935	**Field:**	**Well Type/Status:** AGI
Texas License F-9147	**RRC District No:**	**Project No:** 1549.2	**Date:** 11/22/2021
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

Figure 28 – Pozo Acido Viejo #1 Wellbore Schematic

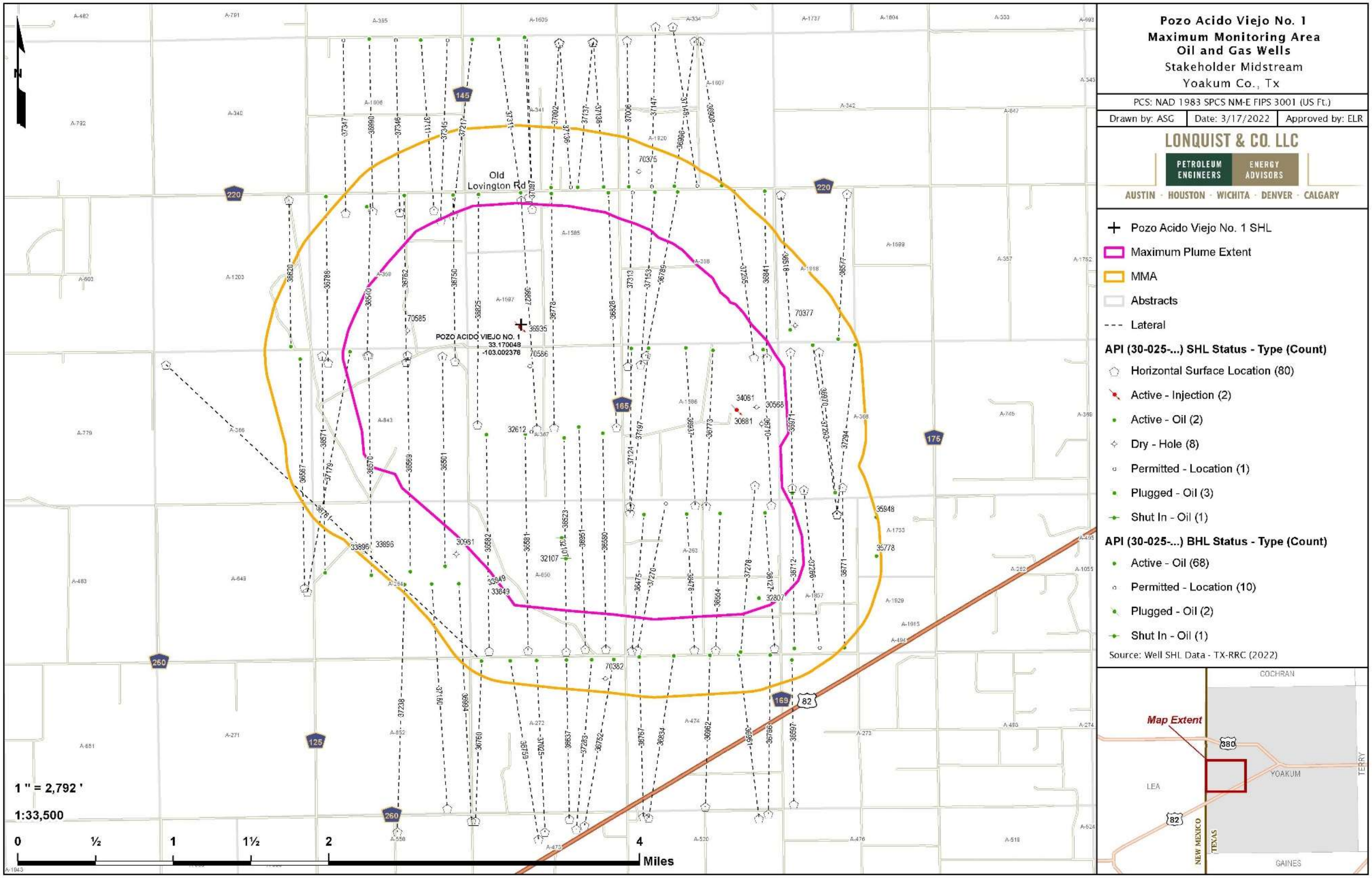


Figure 29 – Oil and Gas Wells within the MMA

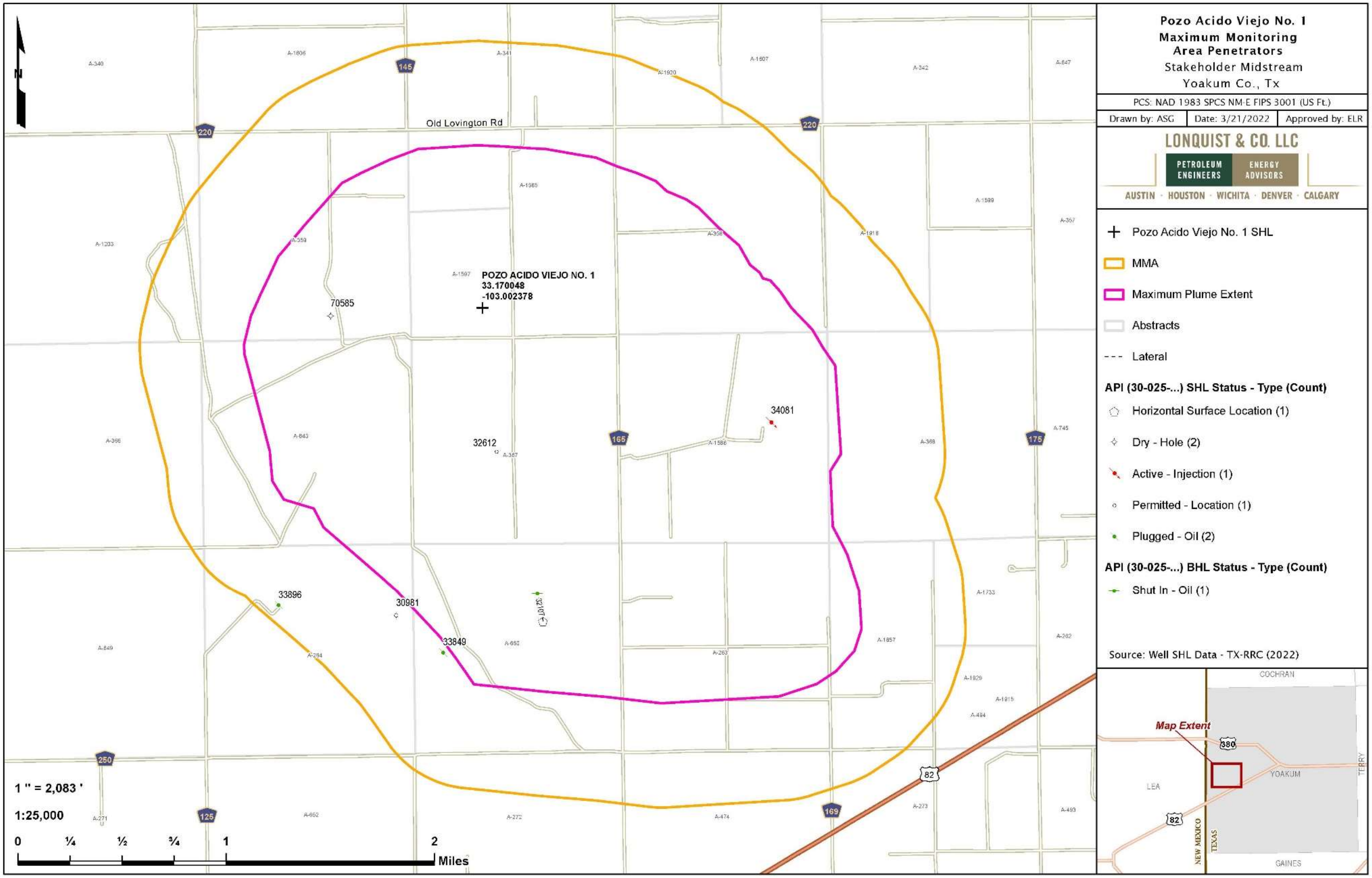


Figure 30 – Penetrating Oil and Gas Wells within the MMA

Future Drilling

Potential leak pathways caused by future drilling in the area are not expected to occur. The deeper formations, such as the Devonian, have proven to-date to be less productive or non-productive in this area, which is why the location was selected for injection. Also, the PAV #1 well is carried in the TRRC's Bronco (Siluro-Devonian) Field which is designated by the TRRC as an H_2S field. An H_2S field designation alerts potential oil and gas operators to the presence of H_2S. Any drilling permits issued by the TRRC in the area of the PAV #1 well include a list of formations for which oil and gas operators are required to comply with TRRC Rule 13 (entitled "Casing, Cementing, Drilling, Well Control, and Completion Requirements"). 16 TAC § 3.13. By way of example, see the PAV #1 well drilling permit provided in Appendix B. TRRC Rule 13 requires oil and gas operators to set steel casing and cement across and above all formations permitted for injection under TRRC Rule 9 or immediately above all formations permitted for injection under Rule 46 for any well proposed within a one-quarter mile radius of an injection well. In this instance, any new well permitted and drilled to the PAV #1 well's injection zone located within a one-quarter mile radius of the PAV #1 well will be required under TRRC Rule 13 to set steel casing and cement above the PAV #1 well injection zone. Additionally, Rule 13 requires operators to case and cement across and above *all* potential flow zones and/or zones with corrosive formation fluids. The TRRC maintains a list of such known zones by RRC district and county and provides that list with each drilling permit issued, which is also shown in the above-mentioned permit in Appendix B.

If any leakage were to be detected, the volume of CO_2 released will be quantified based on the operating conditions at the time of release.

Groundwater wells

There are three groundwater wells located within in the MMA, as identified by the Texas Water Development Board. All three groundwater wells in the area have total depths less than or equal to 200 feet. The closest water well (2449701) is located approximately 1 mile away from the PAV #1 well and has a total depth of 160 feet, as shown in Figure 31 and Table 7. The surface and intermediate casings of the PAV #1 well, as shown in Figure 28, are designed to protect the shallow freshwater aquifers consistent with applicable RRC regulations and the GAU letter issued for this location. See GAU letter attached included within Appendix B. The wellbore casings and cements also serve to prevent CO_2 leakage to the surface along the borehole.

Figure 31 – Groundwater Wells within MMA

Table 7 – Groundwater Well Summary

StateWell ID	OwnerName	PrimaryWat	Elevation	WellDepth	WaterLevel	AquiferCod
2449701	Gene Smith	Unused	3,775	167	Historical Observation Well	121OGLL - Ogallala Formation
2449703	Larry Morrow	Domestic	3,774	200	None	121OGLL - Ogallala Formation
2449401	Robert Box	Irrigation	3,790	165	GCD Current Observation Well	121OGLL - Ogallala Formation

Leakage Through Faults or Fractures

Dynamic modeling at the PAV #1 well location indicates migration of the plume will not intersect a fault. Regional faults act as structural traps creating a seal against the migration of hydrocarbons, as demonstrated by the Bronco field. Therefore, should an unmapped fault exist within the plume boundary, vertical migration is unlikely. Shale gouge within the fault plane from a thick Woodford shale section will prevent vertical transmission of injected fluid along the fault and contain it below the Woodford. Faulting in this region terminates vertically below the Pennsylvanian-age rock. Secondary confining shales within the Wolfcampian and younger strata provide additional, redundant confining layers that would prevent CO_2 from migrating into freshwater aquifers.

Fractures are responsible for porosity development within the injection intervals. However, the subsequent exposure events did not produce the same solution diagenesis in the Woodford shale. Upward migration of injected gas through confining bed fractures is unlikely.

Leakage Through Confining Layers

The Silurian-Devonian injection zones have competent sealing rocks above and below the porous sub-areally exposed carbonate. The properties of the overlying transgressive Woodford shale (widespread deposition, high illite clay and organic matter composition, and low porosity and permeability) make an excellent sealing rock to the underlying Silurian formation. The underlying low porosity and permeability Fusselman carbonate minimizes the likelihood of downward migration of injected fluids. The relative buoyancy of injected gas to the in-situ reservoir fluid makes migration below the lower confining layer unlikely.

Natural or Induced Seismicity

The location of PAV #1 is in an area of the Permian Basin that is very quiet from a seismicity perspective, induced or natural. A review of historical seismic events on the USGS's Advanced National Seismic System site and the Bureau of Economic Geology's TexNet catalog, as shown in Figure 32, indicates the nearest seismic event to have occurred over 60 miles away. Therefore, there is no indication that seismic activity poses a risk for loss of CO_2 to the surface in the area surrounding this location.

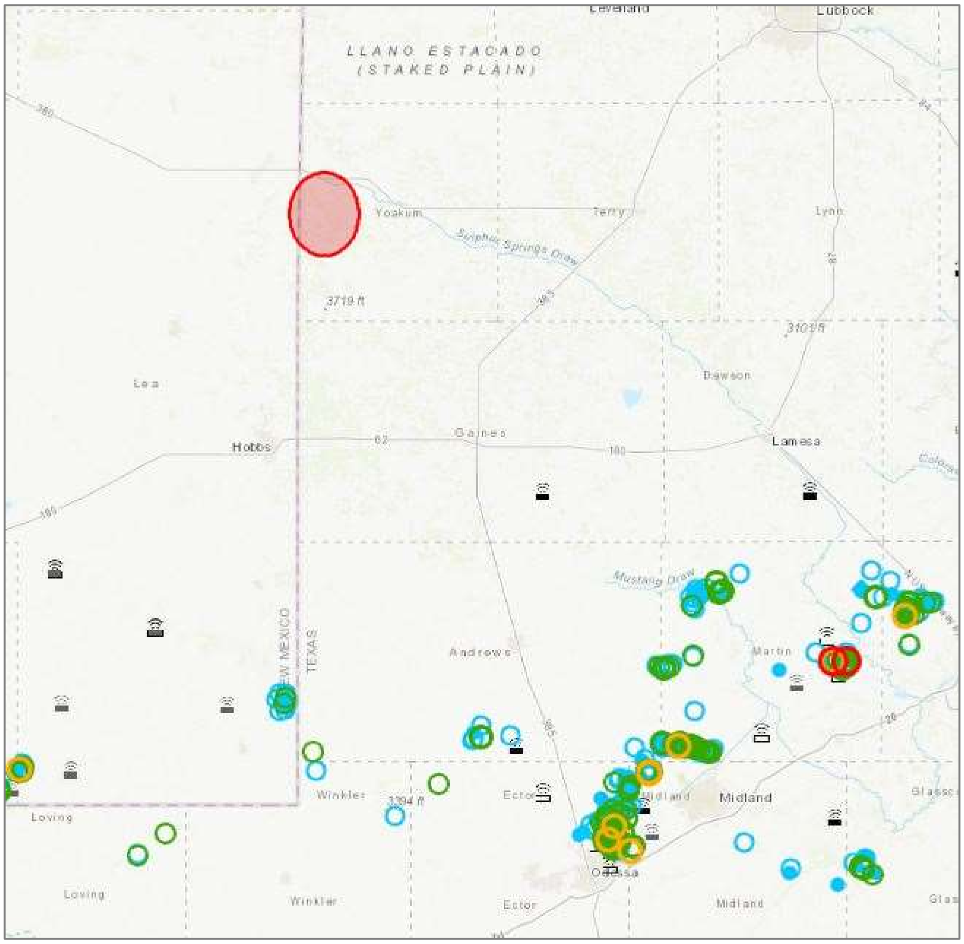


Figure 32 – Seismicity Review (TexNet – 3/21/2022)

SECTION 5 – MONITORING FOR LEAKAGE

This section discusses the strategy that Stakeholder will employ for detecting and quantifying surface leakage of CO_2 through the pathways identified in Section 4 to meet the requirements of 40 CFR §98.448(a)(3). As the injectate stream contains both H_2S and CO_2, the H_2S will be a proxy for CO_2 leakage and therefore the monitoring systems in place to detect H_2S will also indicate a release of CO_2. Table 8 summarizes the monitoring of potential leakage pathways to the surface. Monitoring will occur during the planned 25-year injection period, or cessation of injection operations, plus a proposed 5-year post-injection period.

- Leakage from surface equipment
- Leakage through existing and future wells within MMA
- Leakage through faults and fractures
- Leakage through the seal

Because the acid gas injection stream also contains H_2S, any leakage would be detected by the H_2S alarms located around the facility and would be quickly addressed and would minimize the release of CO_2 into the atmosphere.

Table 8 – Summary of Leakage Monitoring Methods

Leakage Pathway	Monitoring Method
Leakage from surface equipment	Fixed H_2S monitors throughout the AGI facility
	Daily visual inspections
	Personal H_2S monitors
	Distributed Control System Monitoring
Leakage through existing wells	Fixed H_2S monitor at the AGI well
	SCADA Continuous Monitoring at the AGI Well
	Annual Mechanical Integrity Tests ("MIT") of the AGI Well
	Visual Inspections
	H_2S Monitoring during offset drilling operations
Leakage through faults and fractures	SCADA Continuous Monitoring at the AGI Well
	Fixed In-field H_2S monitors
Leakage through seal	SCADA Continuous Monitoring at the AGI Well
	Fixed In-field H_2S monitors

Leakage from Surface Equipment

As the Campo Viejo Facility and the PAV #1 well are designed to handle H_2S, leakage from surface equipment is unlikely to occur and would be quickly detected and addressed. The facility design minimizes leak points through the equipment used and the type of connections are designed to minimize corrosion points. The H_2S in the injectate serves as a proxy for the release of CO_2. The facility and well site contain a number of

H_2S alarms, set with a high alarm setpoint of 10 ppm of H_2S, which are shown in Figures 26 and 27 above. Additionally, all Stakeholder field personnel are required to wear H_2S monitors, which trigger the alarm at 5 ppm H_2S.

The AGI facility is continuously monitored through automated systems. In addition, field personnel conduct daily visual field inspections of gauges, monitors and leak indicators such as vapor plumes. The effectiveness of the internal and external corrosion control program is monitored through the periodic inspection of the system, analysis of liquids collected from the line, and inspection of the cathodic protection system. These inspections, in addition to the automated systems, allow Stakeholder to quickly respond to any leakage situation. Monitoring will occur for the duration of injection and the post-injection period. Should leakage be detected during active injection operations, the volume of CO_2 released will be calculated based on operating conditions at the time of the event, per 40 CFR §98.448(a)(5).

Leakage from Existing and Future Wells within Monitoring Area

Stakeholder continuously monitors and collects injection volumes, pressures, temperatures and gas composition data, through their SCADA systems, for the PAV #1 well. This data is reviewed by qualified personnel and will follow response and reporting procedures when data is outside acceptable performance limits. PAV #1 has a pressure and temperature gauge placed in the injection stream at its wellhead, and a pressure gauge on the casing annulus. A change of pressure on the annulus would indicate the presence of a possible leak. Mechanical integrity tests ("MITs") performed annually would also indicate the presence of a leak. Upon a negative MIT, the well would immediately be isolated and the leak mitigated.

The seven offset penetrating wells within the MMA are adequately cased and cemented to prevent potential leakage of CO_2 from the PAV #1 well plume. Additionally, the plugged wells were done so in a way to prevent migration of CO_2 as provided in Appendix E. As discussed previously, Rule 13 would ensure that new wells in the field would be constructed in a manner to prevent migration from the injection interval.

In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the MMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as minimum, quarterly atmospheric monitoring near identified penetrations within the MMA. Upon approval of the MRV and through the post-injection monitoring period, Stakeholder will have these monitoring systems in place.

Leakage through Faults, Fractures or Confining Seals

Stakeholder continuously monitors the operations of the PAV #1 well through automated systems. Any deviation from normal operating conditions indicating movement into a potential pathway such as a fault or breakthrough of the confining seal would trigger an alert. Any such alert would be reviewed by field personnel and action taken to shut in the well, if necessary. Field H_2S monitoring systems would alert field personnel for any release of H_2S/CO_2 caused by such leakage.

SECTION 6 – BASELINE DETERMINATIONS

This section identifies the strategies Stakeholder will undertake to establish the expected baselines for monitoring CO_2 surface leakage per 40 CFR §98.448(a)(4). Stakeholder will use the existing SCADA monitoring systems to identify changes from expected performance that may indicate leakage of CO_2.

Visual Inspections

Daily inspections will be conducted by field personnel at the Campo Viejo Facility and the PAV #1 well. These inspections will aid with identifying and addressing issues timely to minimize the possibility of leakage. If any issues are identified, such as vapor clouds or ice formations, corrective actions would be taken to address such issues.

H_2S Detection

H_2S will be initially injected into the AGI well at a concentration of approximately ten (10) percent or 100,000 ppm. The concentration will drop to approximately six (6) percent as additional volumes are added. H_2S gas detectors are located throughout the AGI facility and well site and are set to trigger the alarm at 10 ppm. Additionally, all field personnel are required to wear personal H_2S monitors, which are set to trigger the alarm at 5 ppm. Any alarm would trigger an immediate response to protect personnel and verify that the monitors are working properly. If monitors are working correctly, immediate actions would be taken to secure the facility.

CO_2 Detection

Any CO_2 release would be accompanied by H_2S and therefore the H_2S monitors at the facility would also serve as a CO_2 release warning system. In addition to the fixed and personal monitors described previously, Stakeholder will also establish and operate an in-field monitoring program to detect any CO_2 leakage within the AMA. The scope of work will include H_2S and CO_2 monitoring at the AGI well site as well as atmospheric monitoring near identified penetrations within the AMA.

Continuous Monitoring

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as per Texas regulations and Stakeholder's TRRC-approved H_2S Contingency Plan. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

SECTION 7 – SITE SPECIFIC CONSIDERATIONS FOR MASS BALANCE EQUATION

This section identifies how Stakeholder will calculate the mass of CO_2 injected, emitted, and sequestered. This also includes site-specific variables for calculating the CO_2 emissions from equipment leaks and vented emissions of CO_2 between the injection flow meter and the injection well, per 40 CFR §98.448(a)(5).

Mass of CO_2 Received

Per 40 CFR §98.443, the mass of CO_2 received must be calculated using the specified CO_2 received equations "unless you follow the procedures in 40 CFR §98.444(a)(4)." 40 CFR §98.444(a)(4) states that "if the CO_2 you receive is wholly injected and is not mixed with any other supply of CO_2, you may report the annual mass of CO_2 injected that you determined following the requirements under paragraph (b) of this section as the total annual mass of CO_2 received instead of using Equation RR-1 or RR-2 of this subpart to calculate CO_2 received." The CO_2 received for this injection well is wholly injected and not mixed with any other supply and the annual mass of CO_2 injected will equal the amount received. Any future streams would be metered separately before being combined into the calculated stream.

Mass of CO_2 Injected

Per 40 CFR §98.444(b), since the flow rate of CO_2 injected will be measured with a mass flow meter, the total annual mass of CO_2, in metric tons, will be calculated by multiplying the mass flow by the CO_2 concentration in the flow according to Equation RR-4:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * C_{CO_{2,p,u}}$$

where:

$CO_{2,u}$ = Annual CO_2 mass injected (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly mass flow rate measurement for flow meter u in quarter p (metric tons per quarter).

$C_{CO2,p,u}$ = Quarterly CO_2 concentration measurement in flow for flow meter u in quarter p (wt. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

u = Flow meter.

Mass of CO_2 Produced

The PAV #1 well is not part of an enhanced oil recovery project; therefore, no CO_2 will be produced.

Mass of CO_2 Emitted by Surface Leakage and Equipment Leaks

Mass of CO_2 emitted by surface leakage and equipment leaks will not be measured directly as the injection stream for this well contains H_2S which would be extremely dangerous for personnel to perform a direct leak survey. Any leakage would be detected and managed as a major upset event. Gas detectors and continuous monitoring systems would trigger an alarm upon a release. The mass of the CO_2 released would be calculated for the operating conditions at the time, including pressure, flow rate, size of the leak point opening, and duration of the leak. This method is consistent with 40 CFR §98.448(a)(5), allowing the operator to calculate site-specific variables used in the mass balance equation.

No CO_2 emissions will occur from venting because of the high H_2S concentrations. Blowdown emissions are sent to flares and would be reported as part of the required reporting for the gas plant.

Mass of CO_2 Sequestered

The mass of CO_2 sequestered in subsurface geologic formations will be calculated based off Equation RR-12, as this well will not actively produce oil or natural gas or any other fluids, as follows:

$$CO_2 = CO_{2I} - CO_{2E} - CO_{2FI}$$

Where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

CO_{2E} and CO_{2FI} will be calculated as discussed above.

SECTION 8 – IMPLEMENTATION SCHEDULE FOR MRV PLAN

The PAV #1 well currently reports GHGs under Subpart UU but Stakeholder has elected to submit an MRV plan under, and otherwise comply with, Subpart RR. The MRV plan will be implemented upon receiving EPA approval. The Annual Subpart RR Report will be filed on March 31st of the year following the reporting year.

SECTION 9 – QUALITY ASSURANCE

This section identifies how Stakeholder plans to manage quality assurance and control, to meet the requirements of 40 CFR §98.444.

Monitoring QA/QC

CO_2 *Injected*

- The flow rate of the CO_2 being injected will be measured with a volumetric flow meter, consistent with industry best practices. These flow rates will be compiled quarterly.
- The composition of the CO_2 stream will be measured upstream of the volumetric flow meter with a continuous gas composition analyzer or representative sampling consistent with industry best practices.
- The gas composition measurements of the injected stream will be averaged quarterly.
- The CO_2 measurement equipment will be calibrated according to manufacturer recommendations.

CO_2 *Emissions from Leaks and Vented Emissions*

- Gas detectors will be operated continuously, except for maintenance and calibration.
- Gas detectors will be calibrated according to manufacturer recommendations and API standards.

Measurement Devices

- Flow meters will be continuously operated except for maintenance and calibration.
- Flow meters will be calibrated according to the requirements in 40 CFR §98.3(i).
- Flow meters will be operated per an appropriate standard method as published by a consensus-based standards organization.
- Flow meter calibrations will be traceable to the National Institute of Standards and Technology (NIST).

All measured volumes of CO_2 will be converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and an absolute pressure of 1 atmosphere.

Missing Data

In accordance with 40 CFR §98.445, Stakeholder will use the following procedures to estimate missing data if unable to collect the data needed for the mass balance calculations:

- If a quarterly quantity of CO_2 injected is missing, the amount will be estimated using a representative quantity of CO_2 injected from the nearest previous period of time at a similar injection pressure.
- Fugitive CO_2 emissions from equipment leaks from facility surface equipment will be estimated and reported per the procedures specified in subpart W of 40 CFR §98.

MRV Plan Revisions

If any of the changes outlined in 40 CFR §98.448(d) occur, Stakeholder will revise and submit an amended MRV plan within 180 days to the Administrator for approval.

SECTION 10 – RECORDS RETENTION

Stakeholder will retain records as required by 40 CFR §98.3(g). These records will be retained for at least three years and include:

- Quarterly records of the CO_2 injected
    - Volumetric flow at standard conditions
    - Volumetric flow at operating conditions
    - Operating temperature and pressure
    - Concentration of the CO_2 stream
- Annual records of the information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.

References

Broadhead, Ronald E., 2005. Regional Aspects of the Wristen petroleum system, southeastern New Mexico: New Mexico Bureau of Geology and Mineral Resources Open File Report, no. 485.

Comer, John B., 1991. Stratigraphic Analysis of the Upper Devonian Woodford Formation, Permian Basin, West Texas and Southeastern New Mexico: Bureau of Economic Geology Report of Investigations, no. 201.

George, Peter G., Mace, Robert E., and Petrossian, Rima, 2011. Aquifers of Texas: Texas Water Development Board Report, no 380.

Hoak, T., Sundberg, K., and Ortoleva, P. Overview of the Structural Geology and Tectonics of the Central Basin Platform, Delaware Basin, and Midland Basin, West Texas and New Mexico: Department of Energy Open File Report.

Molina, Oscar, Vilarras, Victor, and Zeidouni, Mehdi, 2016. Geologic carbon storage for shale gas recovery: 13^{th} International Conference on Greenhouse Gas Control Technologies, GHGT-13, 14-18.

Ruppel, Stephen C. and Holtz, Mark H., 1994. Depositional and Diagenetic Facies Patterns and Reservoir Development in Silurian and Devonian Rocks of the Permian Basin: Bureau of Economic Geology Report of Investigations, no. 216.

Teeple, Andrew P., Ging, Patricia B., Thomas, Jonathan V., Wallace, David S., and Payne, Jason D., 2021. Hydrogeologic Framework, Geochemistry, Groundwater-Flow System, and Aquifer Hydraulic Properties Used in the Development of a Conceptual Model of the Ogallala, Edwards-Trinity (High Plains), and Dockum Aquifers In and Near Gaines, Terry, and Yoakum Counties, Texas: USGS Scientific Investigations Report 2021-5009.

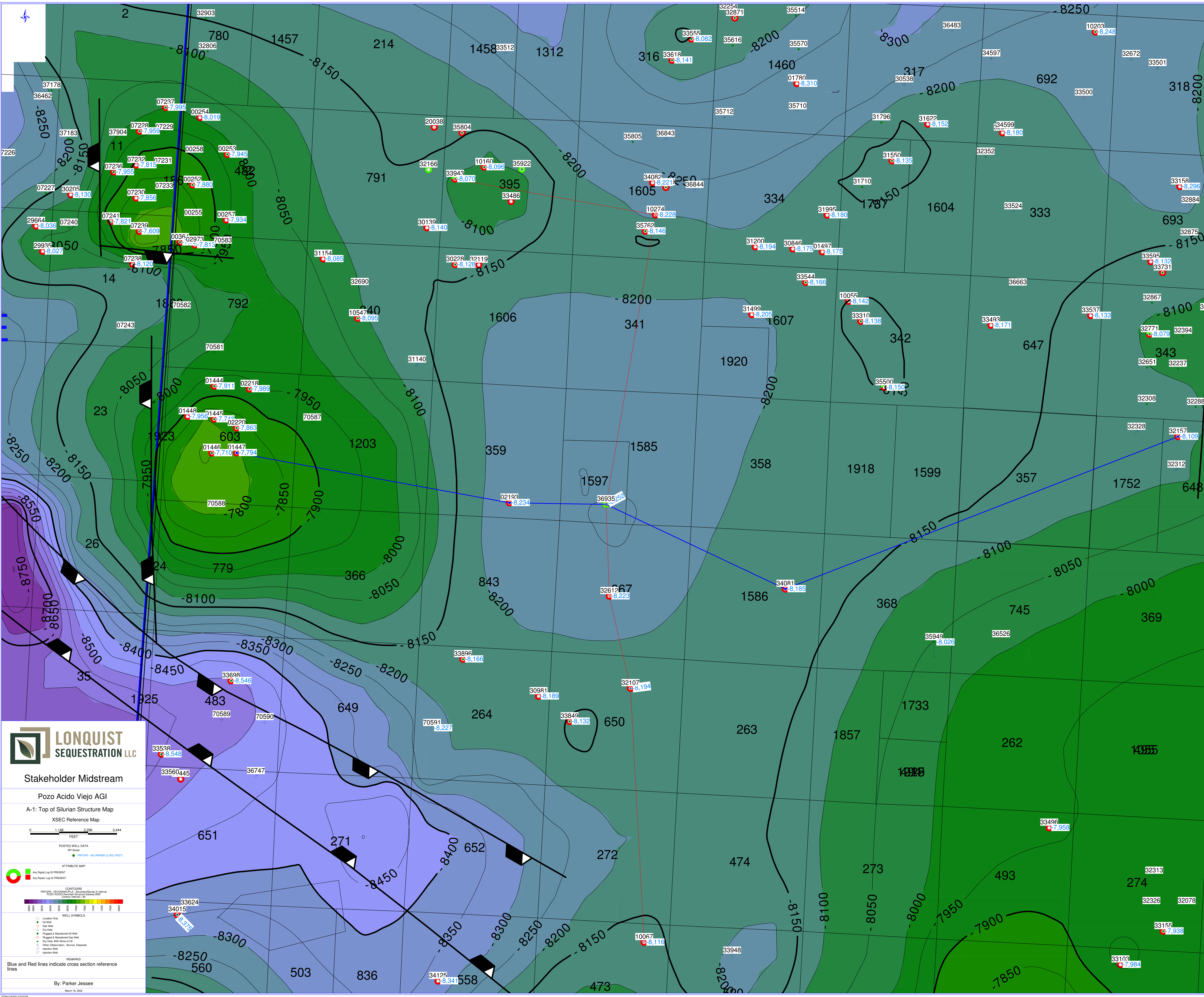
APPENDICES

APPENDIX A – GEOLOGY

APPENDIX A-1: SILURIAN STRUCTURE MAP

APPENDIX A-2: N-S CROSS SECTION

APPENDIX A-3: W-E CROSS SECTION



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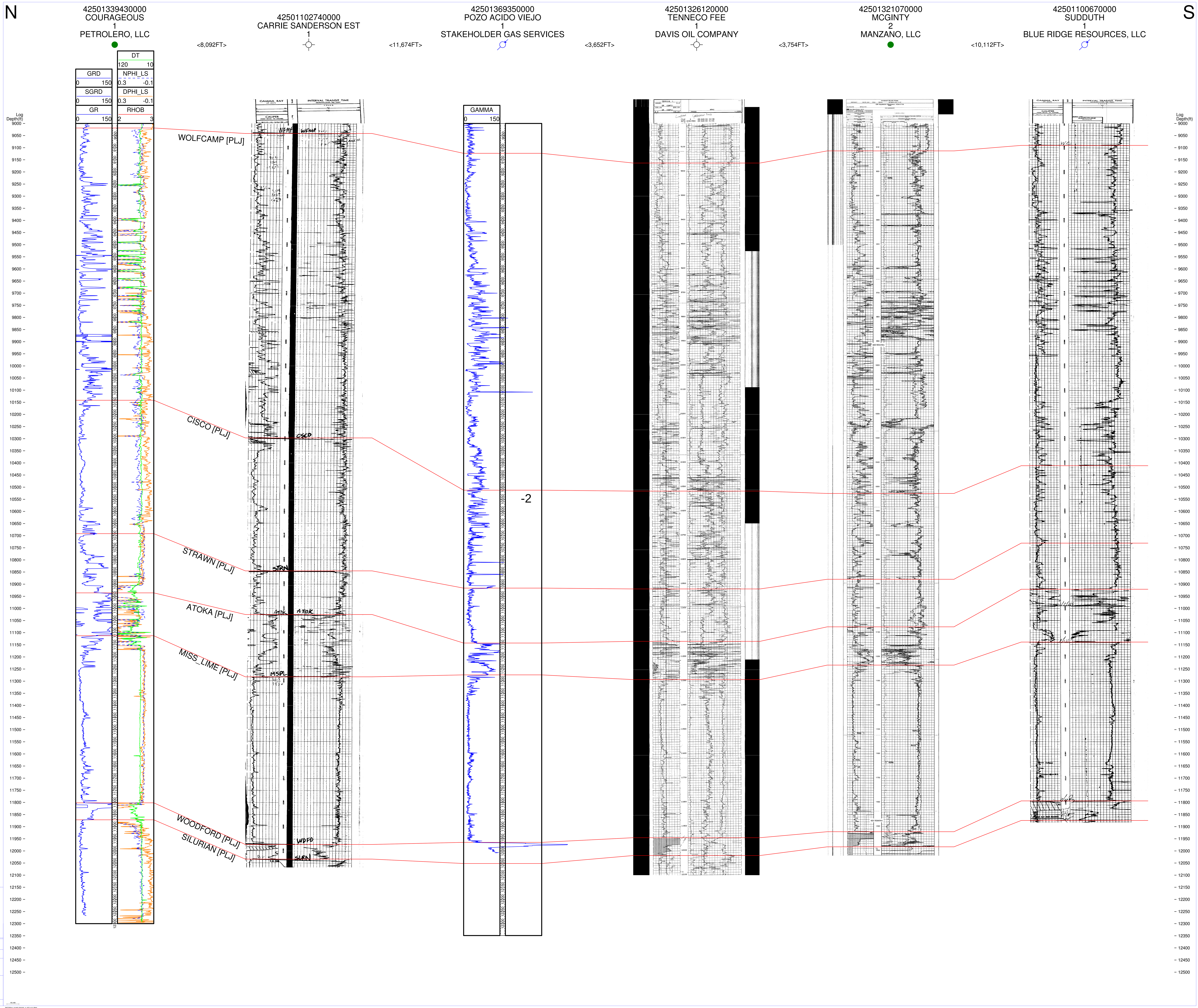


A-2

LONQUIST SEQUESTRATION LLC

Stakeholder Midstream

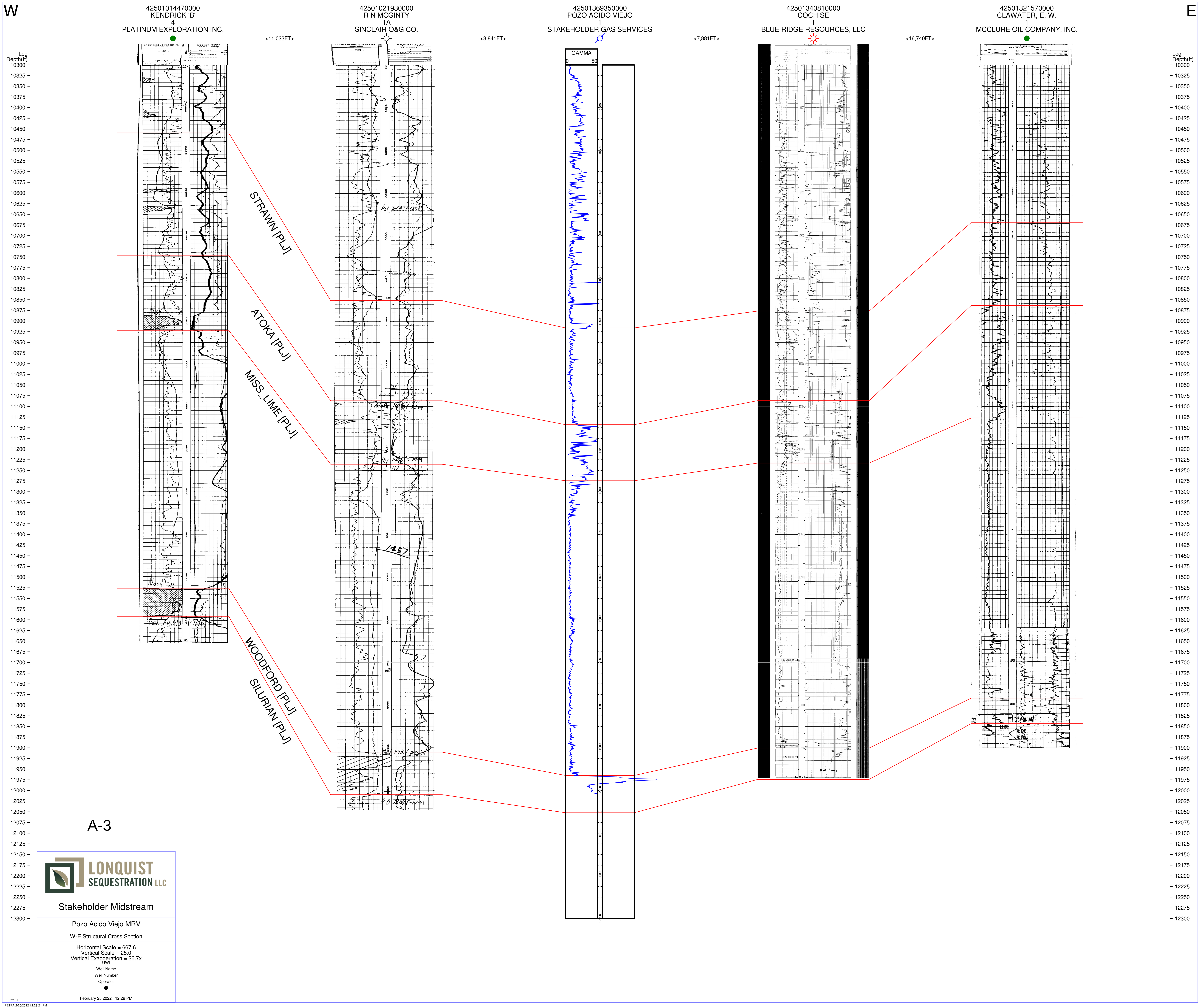
Pozo Acido Viejo MRV

N-S Structural Cross Section

Horizontal Scale = 466.0
Vertical Scale = 50.0
Vertical Exaggeration = 9.3x

Well Name
Well Number
Operator

February 25,2022 1:27 PM


W
E
42501014470000
KENDRICK 'B'
4
PLATINUM EXPLORATION INC.
42501021930000
R N MCGINTY
1A
SINCLAIR O&G CO.
42501369350000
POZO ACIDO VIEJO
1
STAKEHOLDER GAS SERVICES
42501340810000
COCHISE
1
BLUE RIDGE RESOURCES, LLC
42501321570000
CLAWATER, E. W.
1
MCCLURE OIL COMPANY, INC.
<11,023FT>
<3,841FT>
<7,881FT>
<16,740FT>
Log Depth(ft)
GAMMA
0
150
STRAWN [PLJ]
ATOKA [PLJ]
MISS_LIME [PLJ]
WOODFORD [PLJ]
SILURIAN [PLJ]
A-3
LONQUIST SEQUESTRATION LLC
Stakeholder Midstream
Pozo Acido Viejo MRV
W-E Structural Cross Section
Horizontal Scale = 667.6
Vertical Scale = 25.0
Vertical Exaggeration = 26.7x
UWI
Well Name
Well Number
Operator
February 25,2022 12:29 PM
PETRA 2/25/2022 12:29:21 PM

APPENDIX B – TRRC FORMS PAV #1

APPENDIX B-1: UIC CLASS II ORDER

APPENDIX B-2: GAU GROUNDWATER PROTECTION DETERMINATION

APPENDIX A-3: DRILLING PERMIT

APPENDIX A-4: COMPLETION REPORT

B-1

RAILROAD COMMISSION OF TEXAS
HEARINGS DIVISION

OIL & GAS DOCKET NO. 8A-0310710

THE APPLICATION OF STAKEHOLDER GAS SERVICES, LLC (811207) PURSUANT TO SWR 46 AND 36 INJECTION PERMIT FOR A PERMIT TO INJECT FLUID CONTAINING HYDROGEN SULIDE INTO A RESERVOIR PRODUCTIVE OF OIL OR GAS FOR THE POZO ACIDO VIEJO LEASE, WELL NO. 1, BRONCO (SILURO-DEVONIAN) FIELD, YOAKUM COUNTY, TEXAS

FINAL ORDER

The Commission finds that after statutory notice in the above-numerated docket heard on June 29, 2018, the presiding Technical Examiner and the Administrative Law Judge (collectively the Examiners) have made and filed a report and recommendation containing findings of fact and conclusions of law, for which service was not required; that the proposed application submitted by Stakeholder Gas Services, LLC is in compliance with all statutory requirements; and that this proceeding was duly submitted to the Railroad Commission of Texas at conference held in its offices in Austin, Texas.

The Commission, after review and due consideration of the examiners' report and recommendation, the findings of fact and conclusions of law contained therein, and any exceptions and replies thereto, hereby adopts as its own the findings of fact and conclusions of law contained therein, and incorporates said findings of fact and conclusions of law as if fully set out and separately stated herein.

Therefore, it is **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to dispose of fluids containing hydrogen sulfide into its Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, pursuant to Statewide Rule 36(c)(10)(A).

It is further **ORDERED** by the Railroad Commission of Texas that Stakeholder Gas Services, LLC is hereby authorized to conduct disposal operations in the Pozo Acido Viejo Lease, Well No. 1, Bronco (Siluro-Devonian) Field, Yoakum County, Texas, subject to the following terms and conditions.

SPECIAL CONDITIONS

1. Open hole completions shall have a plug back depth no deeper than the bottom of the permitted injection interval.

2. The operator shall provide to the UIC section an electric log and a mud log of the subject well or a copy of the log submitted with the permitted application with the top(s)and bottom(s) of the permitted formations indicated on the log.

3. Injection shall be no deeper than 100 feet above the estimated base of the Ellenberger thickness at the well location, if known. The top and bottom of the authorized injection interval may be modified based on electric log or mud log indications of the top(s) and bottom(s) of the permitted formations.

4. Waste shall be injected into the strata in the subsurface depth interval from 12,020 feet to 12,349 feet.

5. The injection volume shall not exceed 6,900 Mcf/day.

6. The maximum surface injection pressure shall not exceed 6,010 psig.

STANDARD CONDITIONS:

1. Injection must be through tubing set on a packer.

2. The District Office must be notified 48 hours prior to:

   a. running tubing and setting packer;
   b. beginning any workover or remedial operation;
   c. conducting any required pressure tests or surveys.

3. The wellhead must be equipped with a pressure observation valve on the tubing and for each annulus.

4. Prior to beginning injection and subsequently after any workover, an annulus pressure test must be performed. The test pressure must equal the maximum authorized injection pressure or 500 psig, whichever is less, but must be at least 200 psig. The test must be performed annually and the results submitted in accordance with the instructions of Form H-5.

5. The injection pressure and injection volume must be monitored at least monthly and reported annually on Form H-10 to the Commission's Austin office.

6. Within 30 days after completion, conversion to disposal, or any workover which results in a change in well completion, a new Form W-2 or G-1 must be filed to show the current completion status of the well. The date of the disposal well permit and the permit number must be included on the new Form W-2 or G-1.

7. Written notice of intent to transfer the permit to another operator by filing Form P-4 must be submitted to the Commission at least 15 days prior to the date of the transfer.

8. A well herein authorized cannot be converted to a producing well and have an allowable assigned without filing an amended Form W-1 and receiving Commission approval.

9. Unless otherwise required by conditions of the permit, completion and operation of the well shall be in accordance with the information represented on the application (Form W-14).

10. This permit will expire when the Form W-3, Plugging Record, is filed with the Commission. Furthermore, permits issued for wells to be drilled will expire three (3) years from the date of the permit unless drilling operations have commenced.

11. The operator shall be responsible for complying with the following requirements so as to assure that discharges of oil and gas waste will not occur:

    A. Prior to beginning operation, all collecting pits, skimming pits, or washout pits must be permitted under the requirements of Statewide Rule 8.

    B. Prior to beginning operation, a catch basin constructed of concrete, steel, or fiberglass must be installed to catch oil and gas waste which may spill as a result of connecting and disconnecting hoses or other apparatus while transferring oil and gas waste from tank trucks to the disposal facility.

    C. Prior to beginning operation, all fabricated waste storage and pretreatment facilities (tanks, separators, or flow lines) shall be constructed of steel, concrete, fiberglass, or other materials approved by the Director or Director's delegate and shall be maintained so as to prevent discharges of oil and gas waste.

    D. Prior to beginning operation, dikes shall be placed around all waste storage, pretreatment, or disposal facilities. The containment area shall be dewatered within 24 hours by being disposed of in an authorized disposal facility.

    E. Prior to beginning operation, the facility shall have security to prevent unauthorized access. Access shall be secured by a 24-hour attendant, a fence and locked gate when unattended, or a key-controlled access system. For a facility without a 24-hour attendant, fencing shall be required unless terrain or vegetation prevents truck access except through entrances with lockable gates.

    F. Prior to beginning operation, each storage tank shall be equipped with a device (visual gauge or alarm) to alert drivers when each tank is within 130 barrels from being full.

12. Form P-18, Skim Oil report, must be filed in duplicate with the District Office by the 15th day of the month following the month covered by the report.

13. If the facility will have staff on-site for periods of time necessitating bathroom

accommodations, these accommodations must be designed, installed and maintained by a person licensed to do so and the accommodations must comply with all local, county and state health regulations.

14. The permit Number shall be___________. (21146)

Provided further that should it be determined that such injection fluid is not confined to the approved interval, then the permission given herein is suspended and the fluid injection operation must be stopped until the fluid migration from such interval is eliminated. Failure to comply with all of the conditions of this permit may result in the operator being referred to enforcement to consider assessment of administrative penalties and/or the cancellation of the permit.

Pursuant to **§2001.144(a)(4)(A),** of the Texas Government Code, and the agreement of the applicant, this Final Order is effective when a Master Order relating to this Final Order is signed.

Done this 21st day of August, 2018.

RAILROAD COMMISSION OF TEXAS

(Order approved and signatures affixed by Hearings Divisions' unprotested Master Order Dated August 21, 2018)

B-2

GROUNDWATER PROTECTION DETERMINATION

Form GW-2

Groundwater Advisory Unit

Date Issued:	01 November 2017	**GAU Number:**	182849
Attention:	STAKEHOLDER MIDSTREAM, 777 E SONTERRA STE 100 SAN ANTONIO, TX 78258	**API Number:**	50100000
		County:	YOAKUM
		Lease Name:	Pozo Acido Viejo
		Lease Number:	
Operator No.:	811202	**Well Number:**	1
		Total Vertical Depth:	12600
		Latitude:	33.169934
		Longitude:	-103.001911
		Datum:	NAD27

Purpose: Injection into Producing Zone (H1)

Location: Survey-Gibson, J H; Abstract-1597; Block-D; Section-452

To protect usable-quality groundwater at this location, the Groundwater Advisory Unit of the Railroad Commission of Texas recommends:

The interval from the land surface to a depth of 375 feet must be protected.

The BASE OF UNDERGROUND SOURCES OF DRINKING WATER (USDW) is estimated to occur at a depth of 2250 feet at the site of the referenced well.

Note: Unless stated otherwise, this recommendation is intended to apply only to the subject well and not for area-wide use. This recommendation is for normal drilling, production, and plugging operations only. It does not apply to saltwater disposal operation into a nonproductive zone (RRC Form W-14).

This determination is based on information provided when the application was submitted on 10/30/2017. If the location information has changed, you must contact the Groundwater Advisory Unit, and submit a new application if necessary.
If you have questions, please contact us at 512-463-2741 or gau@rrc.texas.gov.

Groundwater Advisory Unit, Oil and Gas Division

Railroad Commission of Texas

PERMIT TO DRILL, RE-COMPLETE, OR RE-ENTER ON REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

CONDITIONS AND INSTRUCTIONS

Permit Invalidation. It is the operator's responsibility to make sure that the permitted location complies with Commission density and spacing rules in effect on the spud date. The permit becomes invalid automatically if, because of a field rule change or the drilling of another well, the stated location is not in compliance with Commission field rules on the spud date. If this occurs, application for an exception to Statewide Rules 37 and 38 must be made and a special permit granted prior to spudding. Failure to do so may result in an allowable not being assigned and/or enforcement procedures being initiated.

Notice Requirements. Per H.B 630, signed May 8, 2007, the operator is required to provide notice to the surface owner no later than the 15th business day after the Commission issues a permit to drill. Please refer to subchapter Q Sec. 91.751-91.755 of the Texas Natural Resources Code for applicability.

Permit expiration. This permit expires two (2) years from the date of issuance shown on the original permit. The permit period will not be extended.

Drilling Permit Number. The drilling permit number shown on the permit MUST be given as a reference with any notification to the district (see below), correspondence, or application concerning this permit.

Rule 37 Exception Permits. This Statewide Rule 37 exception permit is granted under either provision Rule 37 (h)(2)(A) or 37(h)(2)(B). Be advised that a permit granted under Rule 37(h)(2)(A), notice of application, is subject to the General Rules of Practice and Procedures and if a protest is received under Section 1.3, "Filing of Documents," and/or Section 1.4, "Computation of Time," the permit may be deemed invalid.

Before Drilling

Fresh Water Sand Protection. The operator must set and cement sufficient surface casing to protect all usable-quality water, as defined by the Railroad Commission of Texas (RRC) Groundwater Advisory Unit (GWAU). Before drilling a well, the operator must obtain a letter from the Railroad Commission of Texas stating the depth to which water needs protection, Write: Railroad Commission of Texas, Groundwater Advisory Unit (GWAU), P.O. Box 12967, Austin, TX 78711-3087. File a copy of the letter with the appropriate district office.

Accessing the Well Site. If an OPERATOR, well equipment TRANSPORTER or WELL service provider must access the well site from a roadway on the state highway system (Interstate, U.S. Highway, State Highway, Farm-to-Market Road, Ranch-to-Market Road, etc.), an access permit is required from TxDOT. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

Water Transport to Well Site. If an operator intends to transport water to the well site through a temporary pipeline laid above ground on the state's right-of-way, an additional TxDOT permit is required. Permit applications are submitted to the respective TxDOT Area Office serving the county where the well is located.

*NOTIFICATION

The operator is **REQUIRED** to notify the district office when setting surface casing, intermediate casing, and production casing, or when plugging a dry hole. The district office **MUST** also be notified if the operator intends to re-enter a plugged well or re-complete a well into a different regulatory field. Time requirements are given below. The drilling permit number **MUST** be given with such notifications.

During Drilling

Permit at Drilling Site. A copy of the Form W-1 Drilling Permit Application, the location plat, a copy of Statewide Rule 13 alternate surface casing setting depth approval from the district office, if applicable, and this drilling permit must be kept at the permitted well site throughout drilling operations.

***Notification of Setting Casing.** The operator MUST call in notification to the appropriate district office (phone number shown the on permit) a minimum of eight (8) hours prior to the setting of surface casing, intermediate casing, AND production casing. The individual giving notification MUST be able to advise the district office of the drilling permit number.

***Notification of Re-completion/Re-entry.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of eight (8) hours prior to the initiation of drilling or re-completion operations. The individual giving notification MUST be able to advise the district office of the drilling permit number.

Completion and Plugging Reports

Hydraulic Fracture Stimulation using Diesel Fuel: Most operators in Texas do not use diesel fuel in hydraulic fracturing fluids. Section 322 of the Energy Policy Act of 2005 amended the Underground Injection Control (UIC) portion of the federal Safe Drinking Water Act (42 USC 300h(d)) to define "underground Injection" to *EXCLUDE* " ...the underground injection of fluids or propping agents (*other than diesel fluels*) pursuant to hydraulic fracturing operations related to oil, gas, or geothermal production activities." (italic and underlining added.) Therefore, hydraulic fracturing may be subject to regulation under the federal UIC regulations if diesel fuel is injected or used as a propping agent. EPA defined "diesel fuel" using the following five (5) Chemical Abstract Service numbers: 68334-30-5 Primary Name: Fuels, diesel; 68476-34-6 Primary Name: Fuels, diesel, No. 2; 68476-30-2 Primary Name: Fuel oil No. 2; 68476-31-3 Primary Nmae: Fuel oil, No. 4; and 8008-20-6 Primary Name: Kerosene. As a result, an injection well permit would be required before performing hydraulic fracture stimulation using diesel fuel as defined by EPA on any well in Texas. Hydraulic fracture stimulation using diesel fuel as defined by EPA on a well in Texas without an injection well permit could result in enforcement action.

Producing Well. Statewide Rule 16 states that the operator of a well shall file with the Commission the appropriate completion report within thirty (30) days after completion of the well or within ninety (90) days after the date on which the drilling operation is completed, whichever is earlier. Completion of the well in a field authorized by this permit voids the permit for all other fields included in the permit unless the operator indicates on the initial completion report that the well is to be a dual or multiple completion and promptly submits an application for multiple completion. All zones are required to be completed before the expiration date on the existing permit. Statewide Rule 40(d) requires that upon successful completion of a well in the same reservoir as any other well previously assigned the same acreage, proration plats and P-15s (if required) must be submitted with no double assignment of acreage.

Dry or Noncommercial Hole. Statewide Rule 14(b)(2) prohibits suspension of operations on each dry or non-commercial well without plugging unless the hole is cased and the casing is cemented in compliance with Commission rules. If properly cased, Statewide Rule 14(b)(2) requires that plugging operations must begin within a period of one (1) year after drilling or operations have ceased. Plugging operations must proceed with due diligence until completed. An extension to the one-year plugging requirement may be granted under the provisions stated in Statewide Rule 14(b)(2).

Intention to Plug. The operator must file a Form W-3A (Notice of Intention to Plug and Abandon) with the district office at least five (5) days prior to beginning plugging operations. If, however, a drilling rig is already at work on location and ready to begin plugging operations, the district director or the director's delegate may waive this requirement upon request, and verbally approve the proposed plugging procedures.

***Notification of Plugging a Dry Hole.** The operator MUST call in notification to the appropriate district office (phone number shown on permit) a minimum of four (4) hours prior to beginning plugging operations. The individual giving the notification MUST be able to advise the district office of the drilling permit number and all water protection depths for that location as stated in the Texas Commission on Environmental Quality letter.

DIRECT INQUIRIES TO: DRILLING PERMIT SECTION, OIL AND GAS DIVISION

PHONE
(512) 463-6751

MAIL:
PO Box 12967
Austin, Texas, 78711-2967

RAILROAD COMMISSION OF TEXAS

OIL & GAS DIVISION

PERMIT TO DRILL, DEEPEN, PLUG BACK, OR RE-ENTER ON A REGULAR OR ADMINISTRATIVE EXCEPTION LOCATION

PERMIT NUMBER 834810	DATE PERMIT ISSUED OR AMENDED Jan 09, 2018	DISTRICT * 8A
API NUMBER 42-501-36935	FORM W-1 RECEIVED Jan 04, 2018	COUNTY YOAKUM
TYPE OF OPERATION NEW DRILL	WELLBORE PROFILE(S) Vertical	ACRES 200

OPERATOR 811207 STAKEHOLDER GAS SERVICES, LLC 401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000	NOTICE This permit and any allowable assigned may be revoked if payment for fee(s) submitted to the Commission is not honored. **District Office Telephone No:** (432) 684-5581
LEASE NAME POZO ACIDO VIEJO	WELL NUMBER 1
LOCATION 10.3 miles W direction from PLAINS, TX	TOTAL DEPTH 14000

Section, Block and/or Survey

SECTION 452 BLOCK D ABSTRACT 1597

SURVEY GIBSON, J H / READ, W K

DISTANCE TO SURVEY LINES 1862.8 ft. W 754.6 ft. S	DISTANCE TO NEAREST LEASE LINE 754.6 ft.
DISTANCE TO LEASE LINES 777.2 ft. E 754.6 ft. S	DISTANCE TO NEAREST WELL ON LEASE See FIELD(s) Below

FIELD(s) and LIMITATIONS:

* SEE FIELD DISTRICT FOR REPORTING PURPOSES *

FIELD NAME LEASE NAME	ACRES NEAREST LEASE	DEPTH	WELL # NEAREST WE	DIST
BRONCO (SILURO-DEVONIAN) POZO ACIDO VIEJO	200.00 754.6	12,000	1 0	8A

RESTRICTIONS: Do not use this well for injection/disposal/hydrocarbon storage purposes without approval by the Environmental Services section of the Railroad Commission, Austin, Texas office. This is a hydrogen sulfide field. Hydrogen Sulfide Fields with perforations must be isolated and tested per State Wide Rule 36 and a Form H-9 filed with the district office. Fields with SWR 10 authority to downhole commingle must be isolated and tested individually prior to commingling production.

THE FOLLOWING RESTRICTIONS APPLY TO ALL FIELDS

This well shall be completed and produced in compliance with applicable special field or statewide spacing and density rules. If this well is to be used for brine mining, underground storage of liquid hydrocarbons in salt formations, or underground storage of gas in salt formations, a permit for that specific purpose must be obtained from Environmental Services prior to construction, including drilling, of the well in accordance with Statewide Rules 81, 95, and 97.

This well must comply to the new SWR 3.13 requirements concerning the isolation of any potential flow zones and zones with corrosive formation fluids. See approved permit for those formations that have been identified for the county in which you are drilling the well in.

RAILROAD COMMISSION OF TEXAS
OIL & GAS DIVISION
SWR #13 Formation Data

YOAKUM (501) County

Formation	Shallow Top	Deep Top	Remarks	Geological Order	Effective Date
RED BED-SANTA ROSA	1,100	1,100		1	12/17/2013
YATES	2,800	3,450		2	12/17/2013
SAN ANDRES	4,500	5,500	high flows, H2S, corrosive	3	12/17/2013
GLORIETA	5,600	6,000		4	12/17/2013
CLEARFORK	6,000	7,900	Active CO2 Flood	5	12/17/2013
WICHITA	8,000	8,200		6	12/17/2013
LEONARD	9,000	9,700		7	12/17/2013
WOLFCAMP	8,300	10,700		8	12/17/2013
PENNSYLVANIAN	8,700	8,700		9	12/17/2013
STRAWN	11,300	11,500		10	12/17/2013
MISSISSIPPIAN	10,650	10,800		11	12/17/2013
DEVONIAN	11,200	13,100		12	12/17/2013
DEVONIAN-SILURIAN	11,500	11,500		13	12/17/2013

The above list may not be all inclusive, and may also include formations that do not intersect all wellbores. Formation "TOP" information listed reflects an estimated range based on geologic variances across the county. To clarify, the "Deep Top" is not the bottom of the formation; it is the deepest depth at which the "TOP" of the formation has been or might be encountered. This is a dynamic list subject to updates and revisions. It is the operator’s responsibility to make sure that at the time of spudding the well the most current list is being referenced. Refer to the RRC website at the following address for the most recent information.
http://www.rrc.texas.gov/oil-gas/compliance-enforcement/rule-13-geologic-formation-info

B-4

RAILROAD COMMISSION OF TEXAS

Oil and Gas Division

Tracking No.: 201485

Status: Approved

This facsimile W-2 was generated electronically from data submitted to the RRC.

API No. 42- 501-36935

7. RRC District No. 8A

Oil Well Potential Test, Completion or Recompletion Report, and Log

8. RRC Lease No. 70951

1. FIELD NAME (as per RRC Records or Wildcat): BRONCO (SILURO-DEVONIAN)	2. LEASE NAME: POZO ACIDO VIEJO
9. Well No.	1
3. OPERATOR'S NAME (Exactly as shown on Form P-5, Organization Report): STAKEHOLDER GAS SERVICES, LLC	RRC Operator No.: 811207
10. County of well site	YOAKUM
4. ADDRESS	401 E SONTERRA BLVD STE 215 SAN ANTONIO, TX 78258-0000
5. If Operator has changed within last 60 days, name former operator	
6a. Location (Section, Block, and Survey): 452 , D , GIBSON, J H / READ, W K , A-1597	6b. Distance and direction to nearest town in this county: PLAINS, TX

11. Purpose of filing

- Initial Potential ☐
- Retest ☐
- Reclass ☐
- Well record only (Explain In remarks) X

12. If workover or reclass, give former field (with reservoir) & Gas ID or oil lease no. FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

13. Type of electric or other log run	14. Completion or recompletion date
None	01/08/2019

SECTION I- POTENTIAL TEST DATA IMPORTANT: Test should be for 24 hours unless otherwise specified infield rules.

15. Date of test	16. No. of hours tested	17. Production method (Flowing, Gas Lift, Jetting, Pumping- Size & Type of pump)	18. Choke size

	Oil - BBLS	Gas - MCF	Water - BBLS	Gas - Oil Ratio / Oil Gravity-API-60°	Flowing Tubing Pressure / Casing Pressure
19. Production during Test Period				Gas - Oil Ratio: 0	Flowing Tubing Pressure: PSI
20. Calculated 24-Hour Rate				Oil Gravity-API-60°:	Casing Pressure: PSI

21. Was swab used during this test?	22. Oil produced prior to test (New & Reworked wells)	23. Injection Gas-Oil Ratio
Yes ☐ No X		

REMARKS: N/A

INSTRUCTIONS: File an original and one copy of the completed FormW-2 in the appropriate RRC District Office within 30 days after completing a well and within 10 days after a potential test. If an operator does not properly report the results of a potential test within the 10-day period, the effective date of the allowable assigned to the well will not extend back more than 10 days before the W-2 was received in the District Office. (Statewide Rules 16 and 51) To report a completion or recompletion, fill in both sides of this form. To report a retest, fill in only the front side.

WELL TESTERS CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I conducted or supervised this test by observation of (a) meter readings or (b) the top and bottom gauges of each tank into which production was run during the test. I further certify that the potential test data shown above is true, correct, and complete, to the best of my knowledge.

Signature: Well Tester   Name of Company   RRC Representative

OPERATOR'S CERTIFICATION

I declare under penalties prescribed in Sec. 91.143, Texas Natural Resources Code, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that data and facts stated therein are true, correct and complete, to the best of my knowledge.

Type or printed name of operator's representative

Consultant

Title of Person

(806) 665-0338   01/31/2020

Telephone: Area Code Number   Month Day Year

Rebecca Dunn

Signature

SECTION III

DATA ON WELL COMPLETION AND LOG (Not Required on Retest)

24. Type of Completion
New Well [X] Deepening [ ] Plug Back [ ] Other [ ]

25. Permit to Drill, Plug Back or Deepen — DATE: 01/09/2018 — PERMIT NO.: 834810
Rule 37 Exception — CASE NO.:
Water Injection Permit — PERMIT NO.:
Salt Water Disposal Permit — PERMIT NO.:
Other — 08/21/2018 — PERMIT NO.: 21146
CO2,H2S, OTHER

26. Notice of Intention to Drill this well was filed in Name of
STAKEHOLDER GAS SERVICES, LLC

27. Number of producing wells on this lease in this field (reservoir) including this well
0

28. Total number of acres in this lease
200.0

29. Date Plug Back, Deepening, Workover or Drilling Operations: Commenced 05/25/2018 Completed 06/23/2018

30. Distance to nearest well, Same Lease &Reservoir

31. Location of well, relative to nearest lease boundaries: 777.2 Feet From East Line and 754.6 Feet from South Line of the POZO ACIDO VIEJO Lease

32. Elevation (DF. RKB, RT. GR ETC.)
3787 GL

33. Was directional survey made other than inclination (Form W-12)? Yes [ ] No [X]

34. Top of Pay

35. Total Depth
12349

36. P. B. Depth

37. Surface Casing Determined by: Field Rules [ ] Recommendation of T.D.W.R. [X] Dt. of Letter 11/01/2017 Railroad Commission (Special) [ ] Dt. of Letter

38. Is well multiple completion? Yes [ ] No [X]

39. If multiple completion, list all reservoir names (completions in this well) and Oil Lease or Gas ID No.

FIELD & RESERVOIR	GAS ID or OIL LEASE #	Oil-0 Gas-G	Well #
N/A			

40. Intervals Drilled by: Rotary Tools X Cable Tools

41. Name of Drilling Contractor

42. Is Cementing Affidavit Attached? Yes [X] No [ ]

43. CASING RECORD (Report All Strings Set in Well)

CASING SIZE	WT #/FT.	DEPTH SET	MULTISTAGE TOOL DEPTH	TYPE & AMOUNT CEMENT (sacks)	HOLE SIZE	TOP OF CEMENT	SLURRY VOL. cu. ft.
20		90		C HSR 169	24	SURF	200.0
13 3/8		2402		C HSR 1600	17 1/2	SURF	3449.0
9 5/8		6421	4400	C HSR 1250	12 1/4	0	2593.0
9 5/8		6421		C HSR 358	12 1/4	4400	475.0
7		12026	7503	C HSR 717	8 3/4	250	1390.0
7		12026		C & H HSR 535	8 3/4	7503	1033.0

44. LINER RECORD

Size	Top	Bottom	Sacks Cement	Screen
N/A				

45. TUBING RECORD

Size	Depth Set	Packer Set
3 1/2	11964	11964

46. Producing Interval (this completion) Indicate depth of perforation or open hole

From	To
From 12026	To 12349 OH
From	To
From	To
From	To

47. ACID, SHOT, FRACTURE, CEMENT SQUEEZE. ETC.

Depth Interval		Amount and Kind of Material Used
12026.0	12349.0	2000 GALS 15% HCL

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)

Formations	Depth	Formations	Depth
RED BED-SANTA ROSA	1100.0	WOLFCAMP	8300.0
YATES	2800.0	PENNSYLVANIAN	8700.0
SAN ANDRES - HIGH FLOWS, H2S, CORROSIVE	4500.0	STRAWN	11300.0
GLORIETA	5600.0	MISSISSIPPIAN	10650.0
CLEARFORK - ACTIVE CO2 FLOOD	6000.0	DEVONIAN	12020.0

48. FORMATION RECORD (LIST DEPTHS OF PRINCIPAL GEOLOGICAL MARKERS AND FORMATION TOPS)			
Formations	Depth	Formations	Depth
WICHITA	8000.0	DEVONIAN-SILURIAN	11050.0
LEONARD	9000.0		
REMARKS: ACID GAS INJECTION WELL INTO THE DEVONIAN. OIL & GAS DOCKET NO 8A-0310710 - FINAL ORDER			

APPENDIX C – GAS COMPOSITION

www.permianls.com
575.397.3713 2609 W Marland Hobbs NM 88240

C6+ Gas Analysis Report

Sample Point Code	Sample Point Name	Sample Point Location
9252G	30110	Campo Viejo North Acid Gas

Source Laboratory	Lab File No	Container Identity	Sampler
Laboratory Services	2021047959	0410	D Armstrong - Spot

District	Area Name	Field Name	Facility Name
USA	USA	USA	Texas

Date Sampled	Date Effective	Date Received	Date Reported
Nov 4, 2021 10:45	Nov 4, 2021 10:45	Nov 5, 2021 08:15	Nov 8, 2021

Ambient Temp (°F)	Flow Rate (Mcf)	Analyst	Press PSI @ Temp °F Source Conditions
53.00		Torrance	1222 @ 89

Operator	Lab Source Description
Stakeholder Midstream	Campo Viejo

Component	Normalized Mol %	Un-Normalized Mol %	GPM
H2S (H2S)	9.7450	9.745	
Nitrogen (N2)	0.5770	0.6329	
CO2 (CO2)	89.2490	98.89586	
Methane (C1)	0.1900	0.208	
Ethane (C2)	0.0120	0.01366	0.0030
Propane (C3)	0.0280	0.03069	0.0080
I-Butane (IC4)	0.0000	0	0.0000
N-Butane (NC4)	0.0000	0	0.0000
I-Pentane (IC5)	0.0000	0	0.0000
N-Pentane (NC5)	0.0000	0	0.0000
Hexanes Plus (C6+)	0.1990	0.21889	0.0860
TOTAL	100.0000	109.7450	0.0970

Method(s): Gas C6+ - GPA 2261, Extended Gas - GPA 2286, Calculations - GPA 2172

Analyzer Information

Device Type:	Gas Chromatograph	Device Make:	Shimadzu
Device Model:	GC-2014	Last Cal Date:	Oct 10, 2021

Gross Heating Values (Real, BTU/ft³)

14.696 PSI @ 60.00 Â°F		14.73 PSI @ 60.00 Â°F	
Dry	Saturated	Dry	Saturated
75.4	75.00	75.6	75.2

Calculated Total Sample Properties

GPA2145-16 *Calculated at Contract Conditions

Relative Density Real	Relative Density Ideal
1.4926	1.4844

Molecular Weight
42.9928

C6+ Group Properties

Assumed Composition

C6 - 60.000% C7 - 30.000% C8 - 10.000%

Field H2S
97450.6 PPM

PROTREND STATUS:
Passed By Validator on Nov 8, 2021

DATA SOURCE:
Imported

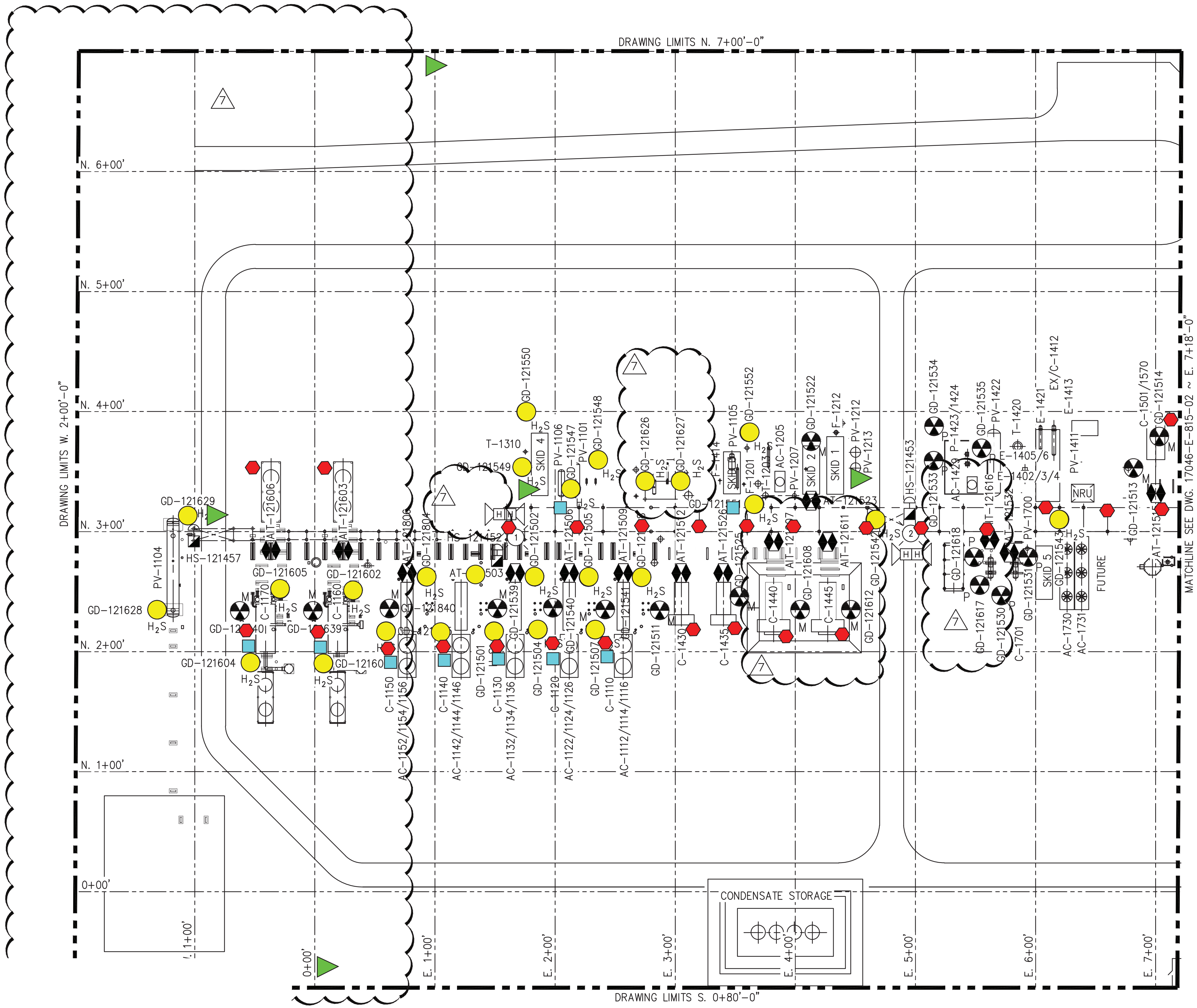
PASSED BY VALIDATOR REASON:
Close enough to be considered reasonable.

VALIDATOR:
Dustin Armstrong

VALIDATOR COMMENTS:
OK

C-1

APPENDIX D – FACILITY SAFETY PLOT PLANS



LEGEND:

- FIRE EXTINGUISHER
- SCBA / ESCAPE PACK
- WIND SOCK
- FIRE DETECTOR
- GAS DETECTOR HYDROGEN SULFIDE
- GAS DETECTOR METHANE
- GAS DETECTOR PROPANE
- ESD BUTTON
- RED, BLUE, AMBER & WHITE STROBE LIGHTS
- HORN

D-1

xpansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-01.dwg

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS SRIKANTH KONDURU 112034 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:52:32-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #7 TO #7 BY SAULSBURY
SI JOB NUMBER: 10864
PROJ. MANAGER M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17045-E-817-01	TONE MODULE CONTROLLER WIRING DIAGRAM

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500
OPD JOB #17046

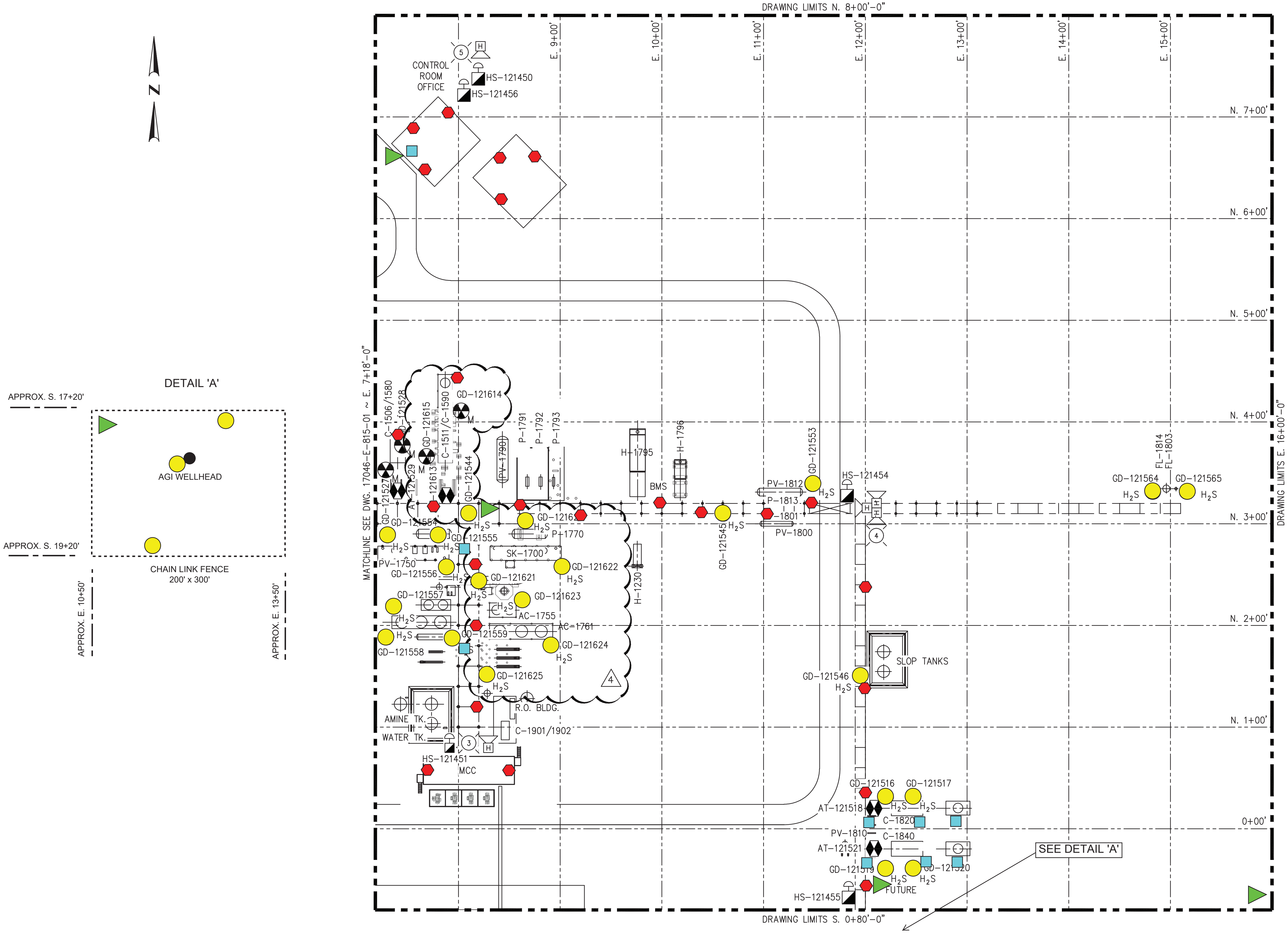
NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
3	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19
4	ISSUED FOR CONSTRUCTION - SI JOB #10665	DE	AK	AK	03/06/20
5	REVISED AS NOTED - SI JOB #10665	DE	AK	AK	04/02/20
7	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22

SAFETY PLOT PLAN
SHEET 1 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-01	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-01



LEGEND:

- FIRE EXTINGUISHER
- SCBA / ESCAPE PACK
- WIND SOCK
- FIRE DETECTOR
- GAS DETECTOR HYDROGEN SULFIDE
- GAS DETECTOR METHANE
- GAS DETECTOR PROPANE
- ESD BUTTON
- RED, BLUE, AMBER & WHITE STROBE LIGHTS
- HORN

J:\Stakeholder Midstream\10864 - Campo Viejo 70MM Expansion\03 ENGINEERING, DESIGN\3.5 Electrical\3.5.1 Drawings\17046-E-811-02.dwg

P.E. SEAL IS ONLY APPLICABLE TO THE SI REVISION JOB #10864 DATED 2/10/22

STATE OF TEXAS SRIKANTH KONDURU 112034 LICENSED PROFESSIONAL ENGINEER

Digitally signed by Srikanth Konduru
Date: 2022.02.11 14:53:03-06'00'

P.E. ENGINEERING STAMP

SAULSBURY
ENGINEERING SERVICES
SAULSBURY.COM
TEXAS REGISTERED ENGINEERING FIRM F-518

DWG. REVISION #4 TO #4 BY SAULSBURY
SI JOB NUMBER: 10864
PROJ. MANAGER M.GULLY

REFERENCE DRAWINGS

NUMBER	TITLE
17046-E-815-01	SAFETY PLOT PLAN

OPTIMIZED PROCESS DESIGNS
ENGINEERS AND CONSTRUCTORS
KATY, TEXAS
PH. 281-371-7500 OPD JOB #17046

NO.	REVISION	DRAWN	CHECKED	APPRVD	DATE
4	ISSUED FOR CONSTRUCTION - SI JOB #10864	DE	CWR	SK	2/10/22
0	ISSUED FOR CONSTRUCTION - OPD JOB #17046	SP	JP	GS	5-18-18
1	REVISED AS NOTED - OPD JOB #17046	JWB	JP	GS	6-22-18
2	AS BUILT - OPD JOB #17046	JWB	JP	GS	3-8-19

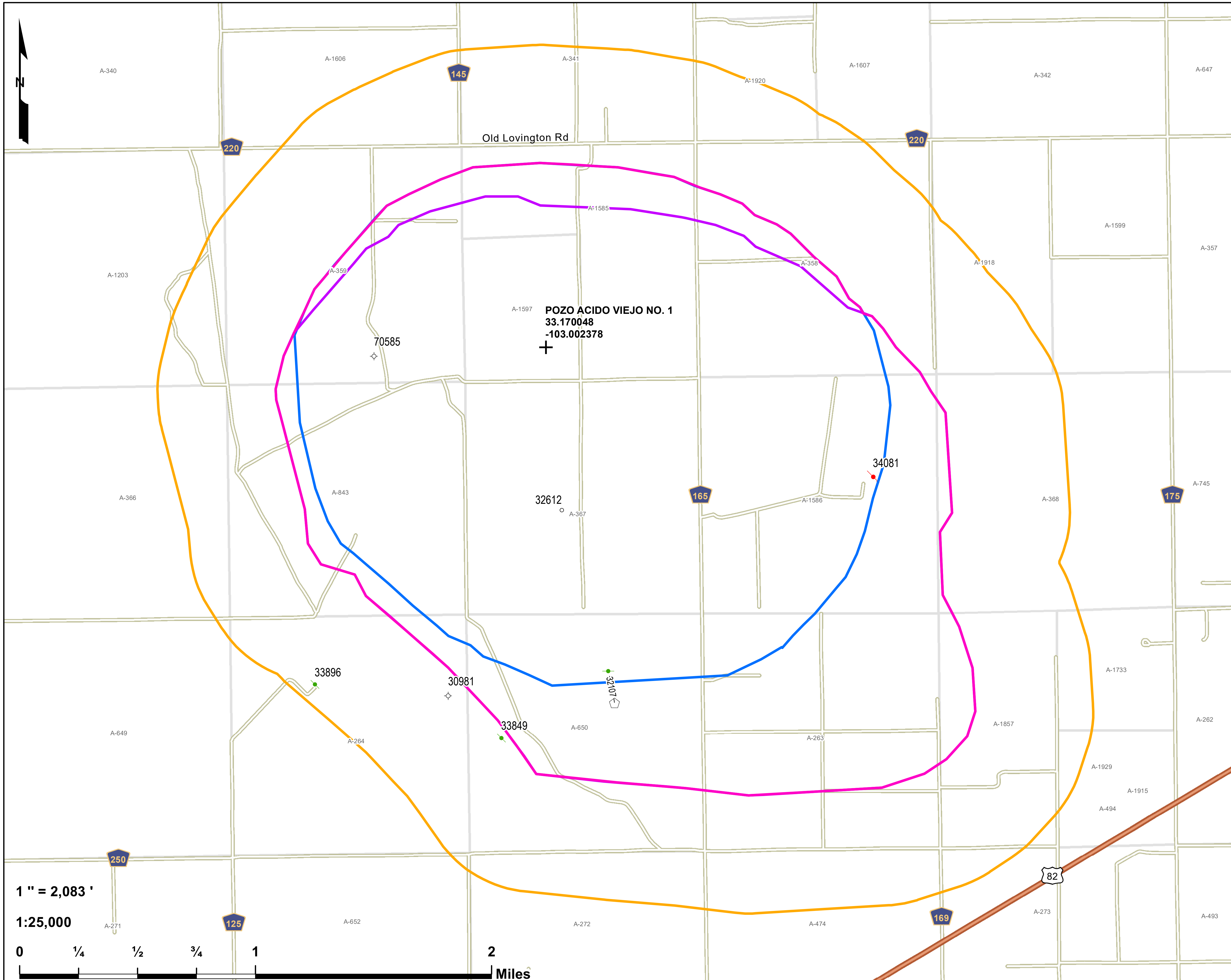
SAFETY PLOT PLAN
SHEET 2 OF 2
CAMPO VIEJO PROCESSING FACILITY
YOAKUM COUNTY, TX

DRAWING SCALE	1" = 50'	
DRAWN BY	SP	1-18-18
CHECKED BY	JP	1-18-18
APPROVED BY	GS	1-18-18
DOCUMENT CONTROL #	17046-E-811-02	

STAKEHOLDER MIDSTREAM

STAKEHOLDER MIDSTREAM APPROVED	*
DATE	1-18-18
STAKEHOLDER MIDSTREAM PROJECT #	
DRAWING NUMBER	17046-E-811-02

APPENDIX E – MMA/AMA REVIEW MAPS



Pozo Acido Viejo No. 1
25-year Plume
50-year Plume and MMA
Stakeholder Midstream
Yoakum Co., Tx

E-1

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY

Pozo Acido Viejo No. 1 SHL
MMA
Maximum Plume Extent
Pozo 20 MMCF Higher H2S 25 Yr Plume Trace
Pozo 20 MMCF Higher H2S 50 YR Plume Trace
Abstracts
Lateral

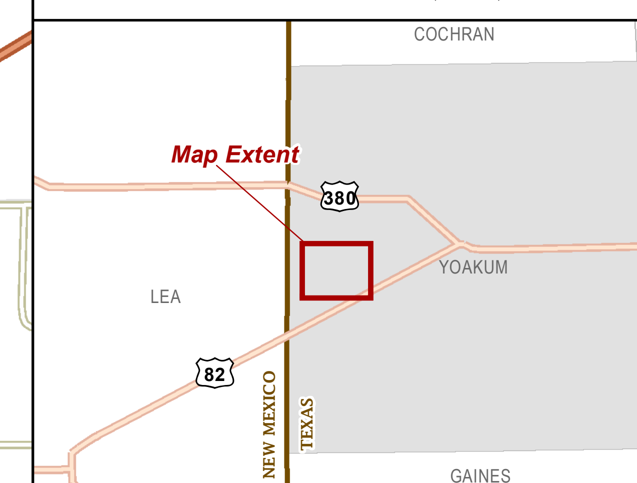
API (30-025-...) SHL Status - Type (Count)

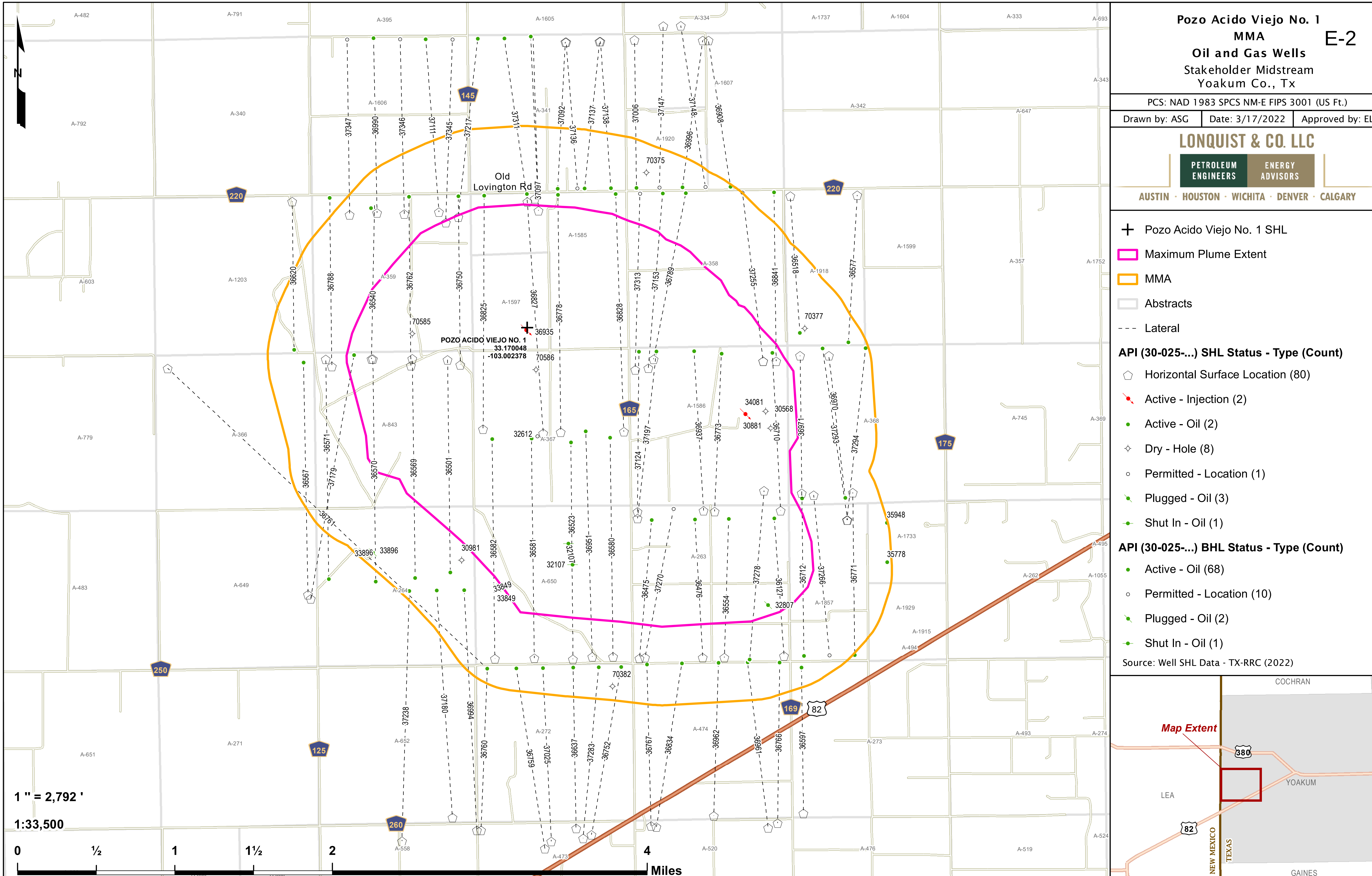
Horizontal Surface Location (1)
Dry - Hole (2)
Active - Injection (1)
Permitted - Location (1)
Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



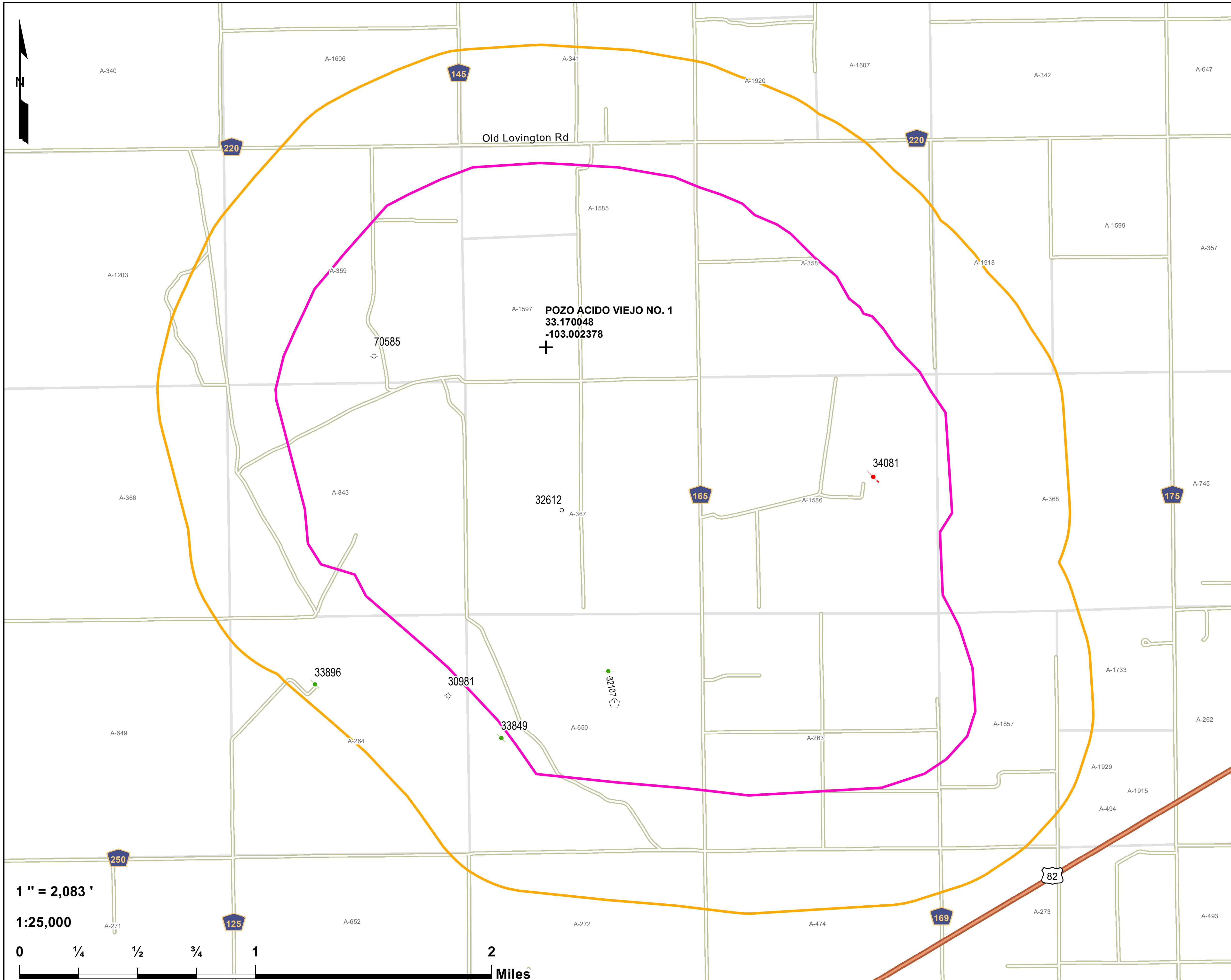

Pozo Acido Viejo No. 1
MMA
Oil and Gas Wells
Stakeholder Midstream
Yoakum Co., Tx
E-2
PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)
Drawn by: ASG
Date: 3/17/2022
Approved by: ELR
LONQUIST & CO. LLC
PETROLEUM ENGINEERS
ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY
Pozo Acido Viejo No. 1 SHL
Maximum Plume Extent
MMA
Abstracts
Lateral
API (30-025-...) SHL Status - Type (Count)
Horizontal Surface Location (80)
Active - Injection (2)
Active - Oil (2)
Dry - Hole (8)
Permitted - Location (1)
Plugged - Oil (3)
Shut In - Oil (1)
API (30-025-...) BHL Status - Type (Count)
Active - Oil (68)
Permitted - Location (10)
Plugged - Oil (2)
Shut In - Oil (1)
Source: Well SHL Data - TX-RRC (2022)
POZO ACIDO VIEJO NO. 1
33.170048
-103.002378
Old Lovington Rd
N
1 " = 2,792 '
1:33,500
0 ½ 1 1½ 2 4 Miles
Map Extent
COCHRAN
YOAKUM
LEA
TERRY
GAINES
NEW MEXICO
TEXAS

Pozo Acido Viejo No. 1
MMA Penetrators
Stakeholder Midstream
Yoakum Co., Tx

E-3

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)		
Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

LONQUIST & CO. LLC
PETROLEUM ENGINEERS | ENERGY ADVISORS
AUSTIN · HOUSTON · WICHITA · DENVER · CALGARY



- ✚ Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Abstracts
- Lateral

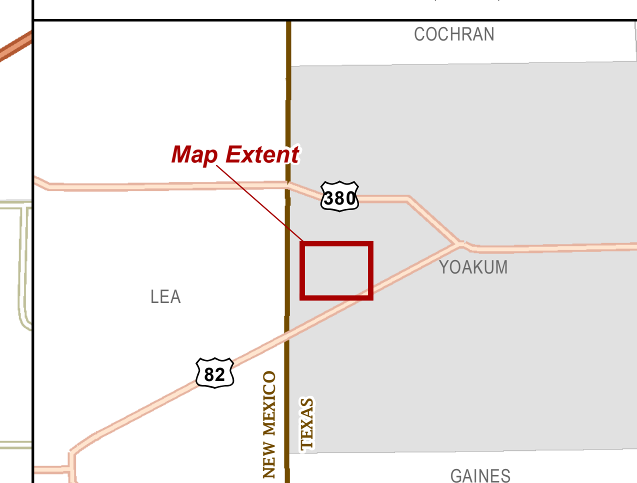
API (30-025-...) SHL Status - Type (Count)

- Horizontal Surface Location (1)
- Dry - Hole (2)
- Active - Injection (1)
- Permitted - Location (1)
- Plugged - Oil (2)

API (30-025-...) BHL Status - Type (Count)

- Shut In - Oil (1)

Source: Well SHL Data - TX-RRC (2022)



Pozo Acido Viejo No. 1
Wells within MMA

API	WELL NAME	WELL NO.	STATUS	OPERATOR	FIELD	TVD (Ft.)
4250136908	OLD SWITCHEROO 418	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250137148	OLD SWITCHEROO 418	4H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250130568	LIBERTY NATIONAL BANK	1	Dry - Hole	Commission`s hardcopy map	-	5374
4250130881	LIBERTY NATIONAL BANK	2	Dry - Hole	Commission`s hardcopy map	-	5400
4250130981	WEST PLAINS	1	Dry - Hole	Commission`s hardcopy map	-	12020
4250132107	MCGINTY 2	2	Shut In - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	12028
4250132612	TENNECO FEE	1	Plugged - Dry Hole	DAVIS OIL COMPANY	WILDCAT	12130
4250132807	HIGGINBOTHAM BROS. & CO.	1	Plugged - Oil	HENDERSON, VICTOR W.	BRAHANEY	5320
4250133849	MCGINTY	1	Plugged - Oil	STEWARD ENERGY II, LLC	HARVARD (DEVONIAN)	11928
4250133896	GAYLE	1	Plugged - Oil	HARVARD PETROLEUM CORPORATION	HARVARD, W. (DEVONIAN)	12402
4250134081	COCHISE	1W	Active - Injection	STEWARD ENERGY II, LLC	BRAHANEY	11979
4250135778	CHAPPLE, H.	3	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5308
4250135948	CHAPPLE, H.	4	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5302
4250136127	WHAT A MELLON 519	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5310
4250136475	WHAT A MELLON 519	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5316
4250136476	WHAT A MELLON 519	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5314
4250136501	SKINNY DENNIS 468	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5319
4250136518	COUSIN WILLARD 450	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136523	SMOKIN TRAIN 520	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5273
4250136540	BLAZIN SKIES 453	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5240
4250136554	WHAT A MELLON 519	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5300
4250136567	ONE EYED JOHN 522	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5239
4250136569	SKINNY DENNIS 468	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136570	SKINNY DENNIS 468	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250136571	SKINNY DENNIS 468	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5322
4250136577	COUSIN WILLARD 450	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5312
4250136580	SMOKIN TRAIN 520	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136581	SMOKIN TRAIN 520	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136582	SMOKIN TRAIN 520	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5260
4250136597	HIGGINBOTHAM "A"	6H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5214
4250136620	HAIR SPLITTER 454	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5286
4250136637	WHITEPORT 537	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5251
4250136710	COCHISE UNIT 470	1H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5237
4250136712	HUFFINES 518	1H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5243
4250136750	BLAZIN SKIES 453	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5215
4250136752	WHITEPORT 537	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5326
4250136759	WHITEPORT 537	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5241
4250136760	WHITEPORT 537	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5309
4250136761	HAIR SPLITTER 454	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5272
4250136762	BLAZIN SKIES 453	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5261
4250136766	DESPERADO E 538	1H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5223
4250136767	DESPERADO W 538	4H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5261
4250136771	HUFFINES 518	2H	Active - Oil	BURK ROYALTY CO., LTD.	BRAHANEY	5234
4250136773	COCHISE UNIT 470	2H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5310

List Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

4250136778	BANJO BILL 452	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5229
4250136788	BLAZIN SKIES 453	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5248
4250136789	NEVERMIND 451	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5267
4250136825	UNDER THE BRIDGE 452A	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250136827	UNDER THE BRIDGE 452	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5277
4250136828	BANJO BILL 452 A	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5298
4250136834	DESPERADO E 538	3H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5215
4250136841	NEVERMIND 451	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5308
4250136935	POZO ACIDO VIEJO	1	Active - Injection	STAKEHOLDER GAS SERVICES, LLC	BRONCO (SILURO-DEVONIAN)	12349
4250136937	SANDMAN 470	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250136951	SMOKIN TRAIN 520	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5182
4250136961	DESPERADO E 538	2H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5205
4250136962	DESPERADO E 538	5H	Active - Oil	RILEY PERMIAN OPERATING CO, LLC	PLATANG (SAN ANDRES)	5213
4250136970	DIANNE CHAPIN 471	3H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5342
4250136971	DIANNE CHAPIN 471	4H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5341
4250136990	SIXTEEN STONE 416	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250136994	FANDANGO 536	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5160
4250136996	OLD SWITCHEROO 418	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5315
4250137006	OLD SWITCHEROO 418	1H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5323
4250137025	WHITEPORT 537	25H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5342
4250137092	CHICKEN ROASTER 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5318
4250137097	LIGHTNING CRASHES 417	4H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5295
4250137111	SIXTEEN STONE 416	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5301
4250137124	SANDMAN 470	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5357
4250137136	CHICKEN ROASTER 417	6H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137137	CHICKEN ROASTER 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5327
4250137138	CHICKEN ROASTER 417	7H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5325
4250137147	OLD SWITCHEROO 418	2H	Permitted - Location	HADAWAY CONSULT AND ENGINEER,LLC	SABLE (SAN ANDRES)	6000
4250137153	NEVERMIND 451	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5311
4250137179	SKINNY DENNIS 468	35H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5289
4250137180	FANDANGO 536	2H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5317
4250137197	SANDMAN 470	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5232
4250137217	LIGHTNING CRASHES 417	6H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5332
4250137238	FANDANGO 536	3H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5195
4250137255	NEVERMIND 451	2H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137266	HUFFINES 518	3H	Permitted - Location	WALSH PETROLEUM, INC.	BRAHANEY	5500
4250137270	WHAT A MELLON 519	35H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137278	WHAT A MELLON 519	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5423
4250137283	WHITEPORT 537	15H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5394
4250137293	DIANNE CHAPIN 471	7H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5389
4250137294	DIANNE CHAPIN 471	6H	Active - Oil	WALSH PETROLEUM, INC.	BRAHANEY	5392
4250137311	LIGHTNING CRASHES 417	5H	Active - Oil	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5344
4250137313	NEVERMIND 451	4H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137345	SIXTEEN STONE 416	1H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250137346	SIXTEEN STONE 416	3H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600

Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
Wells within MMA

4250137347	SIXTEEN STONE 416	5H	Permitted - Location	STEWARD ENERGY II, LLC	PLATANG (SAN ANDRES)	5600
4250170375	A. J Granger	1	Dry - Hole	Commission`s hardcopy map	-	5500
4250170377	Cora Reed	1	Dry - Hole	Commission`s hardcopy map	-	5350
4250170382	R. M. Jones	1	Dry - Hole	Commission`s hardcopy map	-	5510
4250170585	R. N. McGinty	1	Dry - Hole	Commission`s hardcopy map	-	12046
4250170586	T. W. READ	1	Dry - Hole	Commission`s hardcopy map	-	5445

Source: Texas Railroad Commission (2022)

Pozo Acido Viejo No. 1
MMA Groundwater Wells
Stakeholder Midstream
Yoakum Co., Tx

E-5

PCS: NAD 1983 SPCS NM-E FIPS 3001 (US Ft.)

Drawn by: ASG	Date: 3/21/2022	Approved by: ELR

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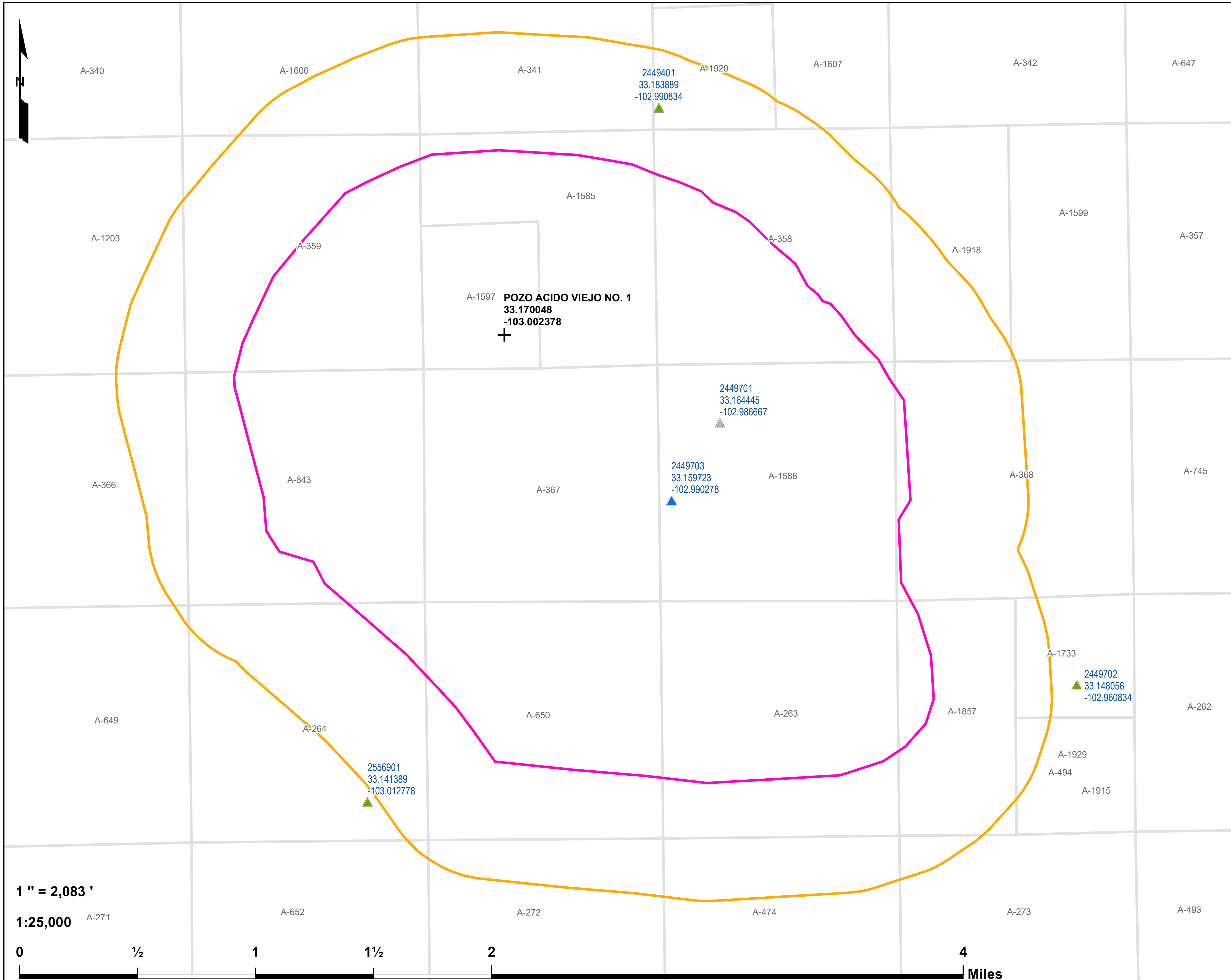
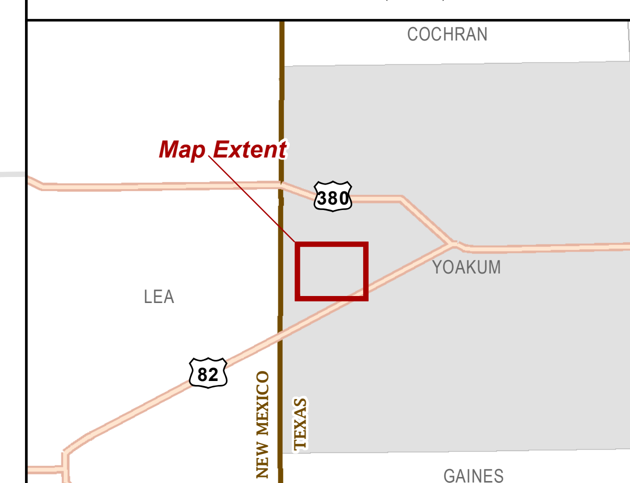


- Pozo Acido Viejo No. 1 SHL
- MMA
- Maximum Plume Extent
- Abstracts

Water Wells within Plume Trace

- Domestic (1)
- Irrigation (3)
- Unused (1)

Source: Well SHL Data - TX-RRC (2022)



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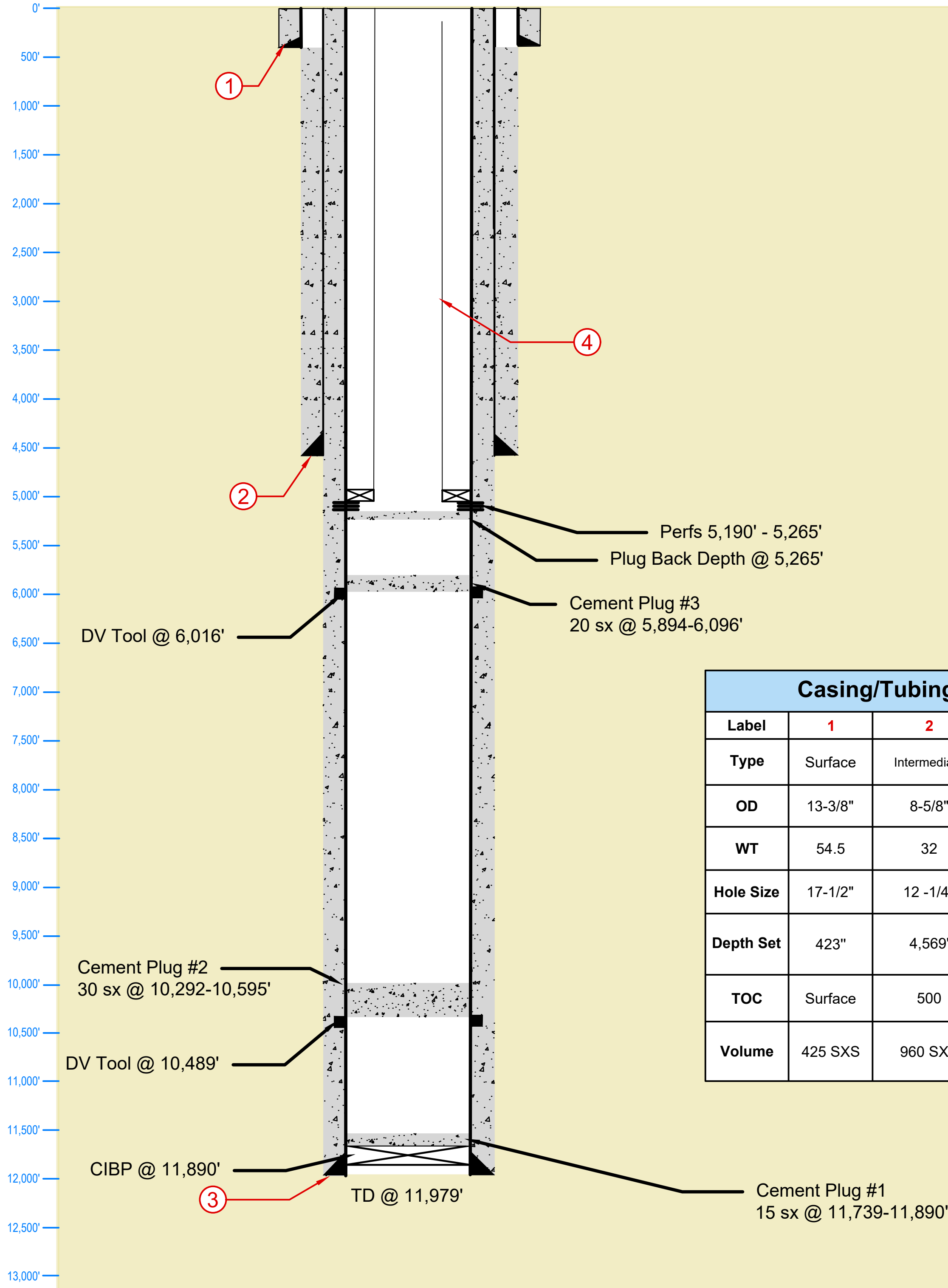
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6a



Casing/Tubing Information

Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	54.5	32	17	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	423"	4,569'	11,965'	5,200'
TOC	Surface	500	Surface	N/A
Volume	425 SXS	960 SXS	2445 SXS	N/A

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Cochise 1W

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-34081	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/14/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

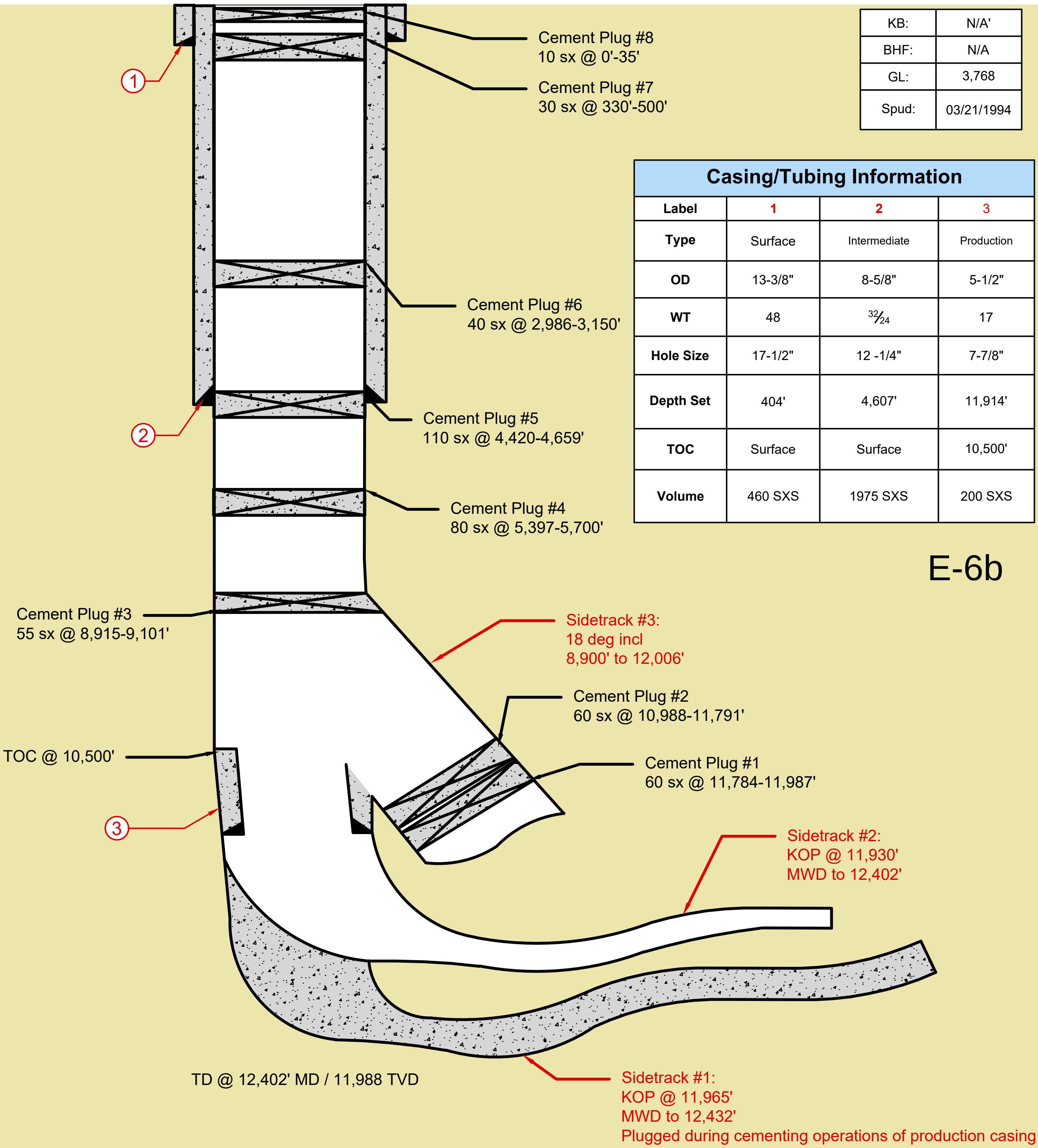
Texas License F-9147

12912 Hill Country Blvd. Ste F-200
Austin, Texas 78738
Tel: 512.732.9812
Fax: 512.732.9816

KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	03/21/1994

Casing/Tubing Information

Label	1	2	3
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	32/24	17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	404'	4,607'	11,914'
TOC	Surface	Surface	10,500'
Volume	460 SXS	1975 SXS	200 SXS



E-6b

Gayle #1

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Texas License F-9147

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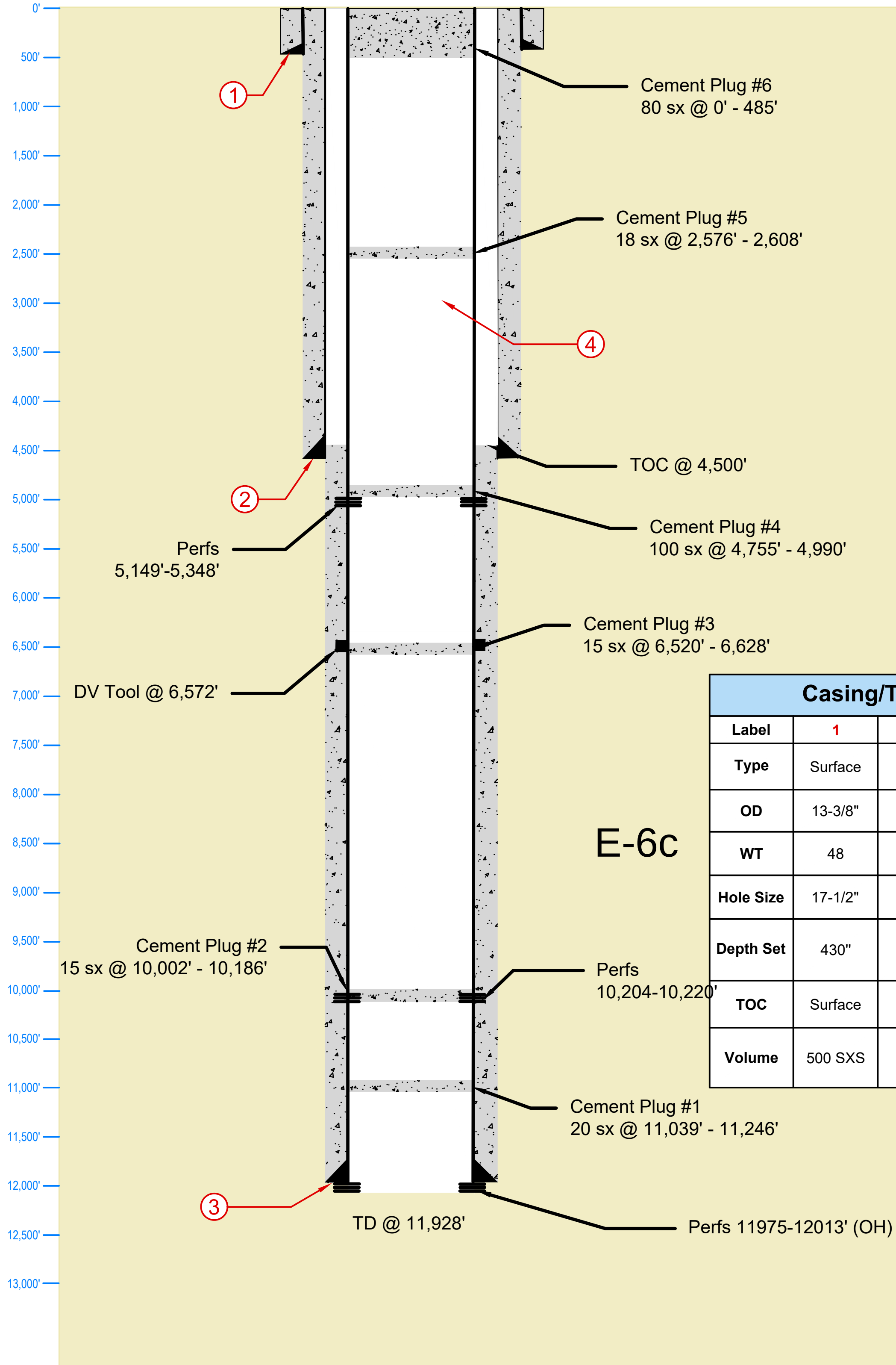
Tel: 512.732.9812
Fax: 512.732.9816

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-33896	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/22/2022
Drawn: KAS	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	



KB:	N/A'
BHF:	N/A
GL:	3,768
Spud:	N/A

E-6c

Casing/Tubing Information

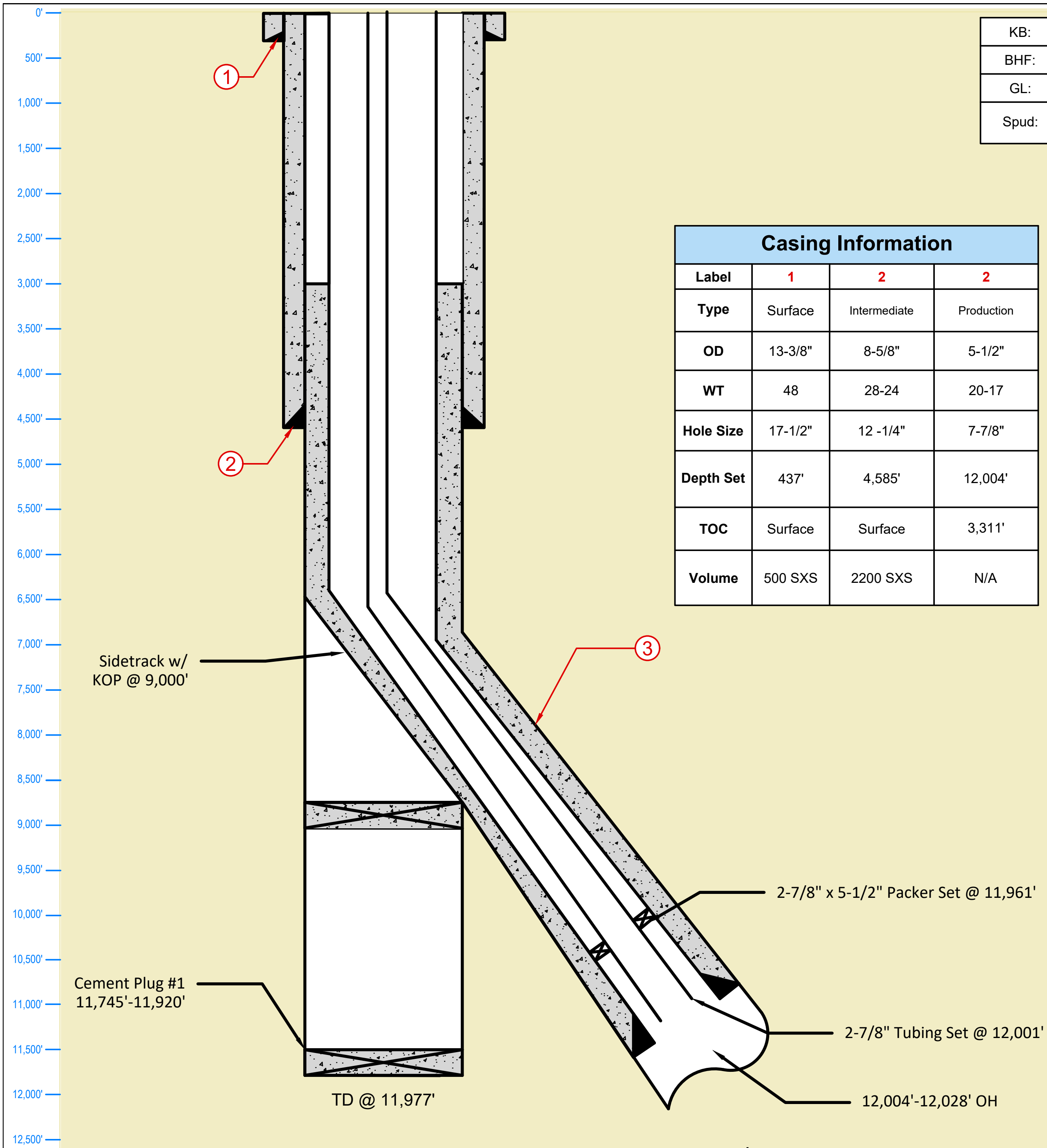
Label	1	2	3	4
Type	Surface	Intermediate	Production	Tubing
OD	13-3/8"	8-5/8"	5-1/2"	2-7/8"
WT	48	38/32	17/20	N/A
Hole Size	17-1/2"	12 -1/4"	7-7/8"	N/A
Depth Set	430"	4,600'	4,500"	11,975'
TOC	Surface	Surface	Surface	N/A
Volume	500 SXS	1900 SXS	1300 SXS	N/A

MCGINTY #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-33849	**Field:**	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/21/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

KB:	3,768'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6d



Casing Information

Label	1	2	2
Type	Surface	Intermediate	Production
OD	13-3/8"	8-5/8"	5-1/2"
WT	48	28-24	20-17
Hole Size	17-1/2"	12 -1/4"	7-7/8"
Depth Set	437'	4,585'	12,004'
TOC	Surface	Surface	3,311'
Volume	500 SXS	2200 SXS	N/A

* Not to scale

McGinty 2 #2

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Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No: 42-501-32107	**Field:** BRAHANEY	**Well Type/Status:** SWD
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	

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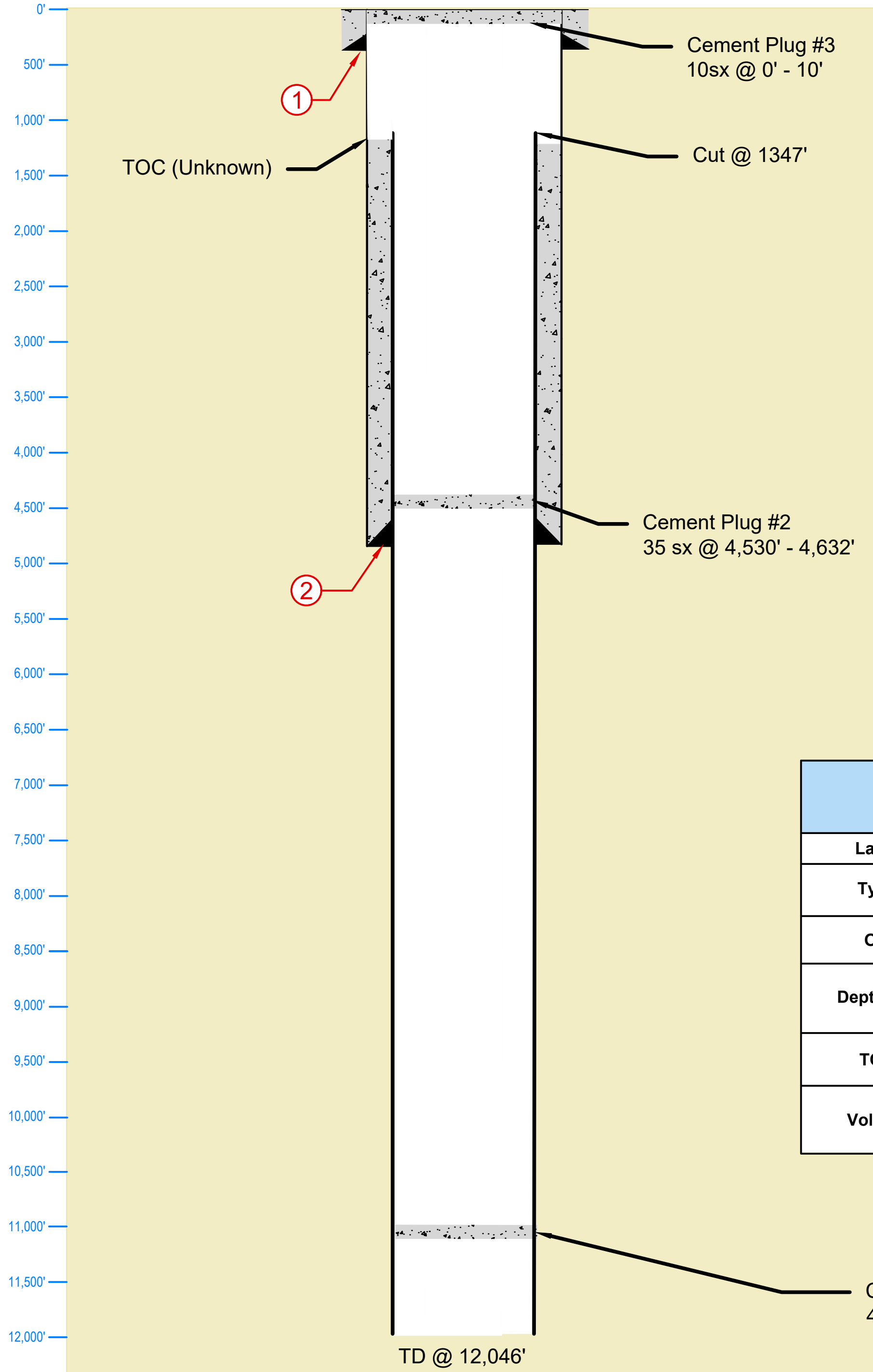

KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6e

Casing/Tubing Information		
Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	9-5/8"
Depth Set	341'	4,581'
TOC	Surface	Surface
Volume	250 SXS	1500 SXS

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Tel: 512.732.9812
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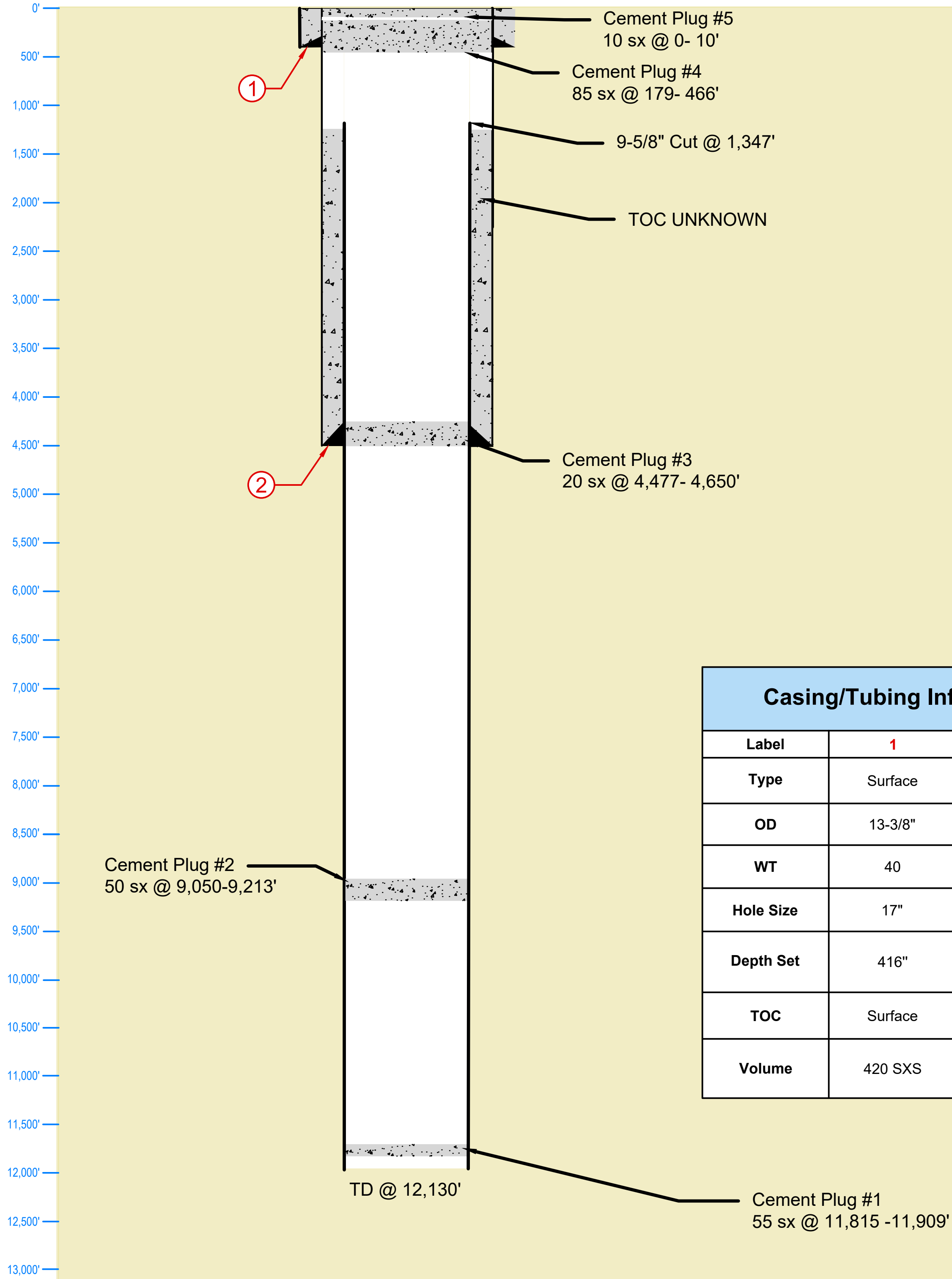
R.N. McGinty #1

Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
Location:	**Site:**	**Survey:**
API No:	**Field:**	**Well Type/Status:**
RRC District No:	**Project No:**	**Date:** 03/15/2022
Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
Rev No: 1	**Notes:**	



KB:	N/A'
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6f

Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	13-3/8"	8-5/8"
WT	40	36
Hole Size	17"	11"
Depth Set	416"	4,600'
TOC	Surface	Surface
Volume	420 SXS	1250 SXS

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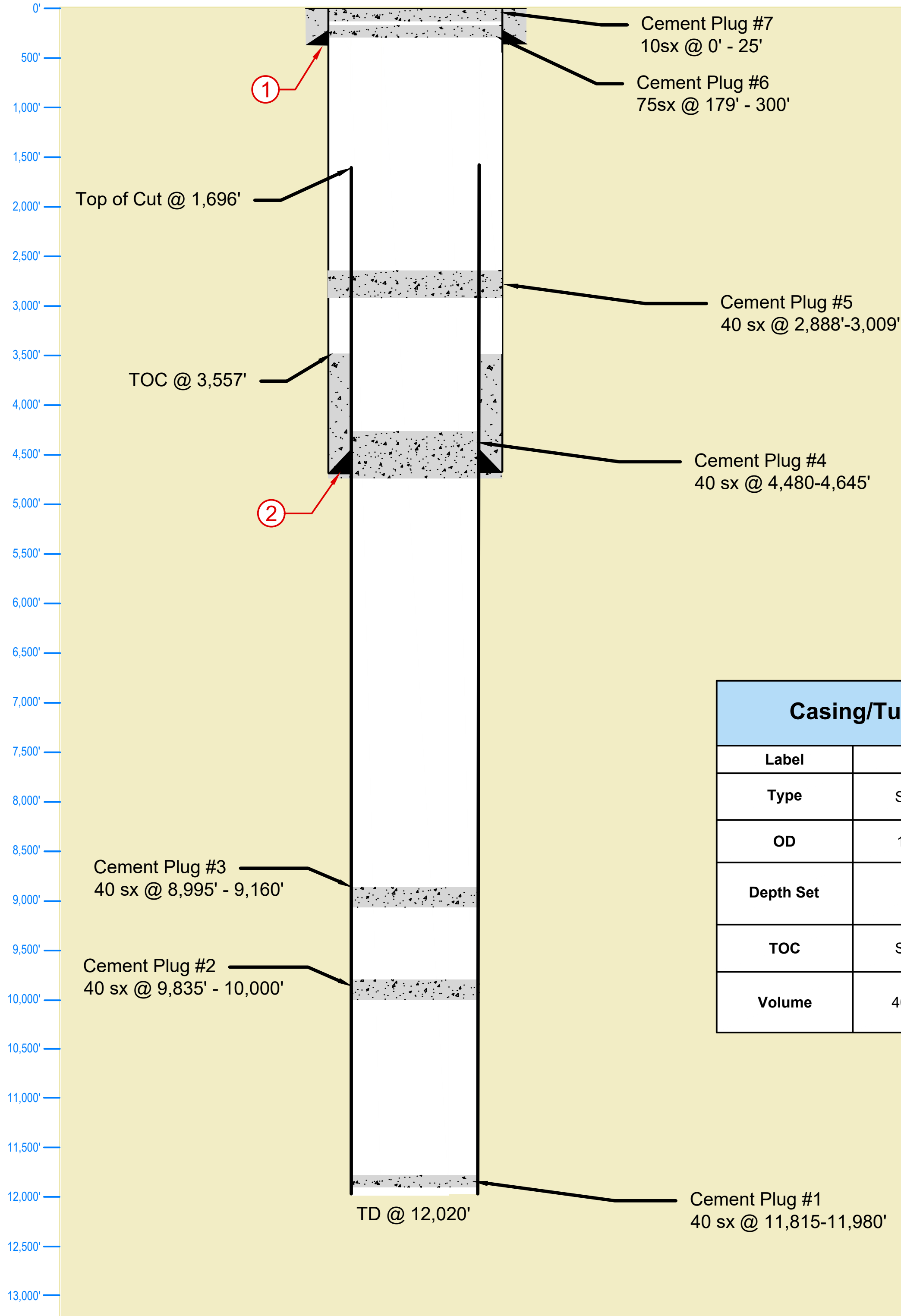
Tenneco Fee #1

	Country: USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 42-501-32612	**Field:** BRAHANEY	**Well Type/Status:**
Texas License F-9147	**RRC District No:**	**Project No:**	**Date:** 03/14/2022
12912 Hill Country Blvd. Ste F-200 Austin, Texas 78738 Tel: 512.732.9812 Fax: 512.732.9816	**Drawn:** ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

KB:	N/A
BHF:	N/A
GL:	N/A
Spud:	N/A

E-6g



Casing/Tubing Information

Label	1	2
Type	Surface	Intermediate
OD	12-3/4"	8-5/8"
Depth Set	358'	4,595'
TOC	Surface	3,557'
Volume	400 SXS	200 SXS

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West Plains Unit #1

Texas License F-9147	**Country:** USA	**State/Province:** Texas	**County/Parish:** Yoakum
	Location:	**Site:**	**Survey:**
	API No: 4250130981	**Field:**	**Well Type/Status:**
	RRC District No:	**Project No:**	**Date:** 03/17/2022
	Drawn: ASG	**Reviewed:** SLP	**Approved:** SLP
	Rev No: 1	**Notes:**	

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