December 1,

2022

1RP-4664 (Incident NO. nOY1709044723)

Groundwater Abatement Plan

Epperson 16-Inch Pipeline Release, Lea County, New Mexico

Prepared for:

TARGA

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1.0 INTRODUCTION

This groundwater abatement plan is submitted to the State of New Mexico Oil Conservation Division (OCD) on behalf of Targa Midstream Services, LLC (Targa) for remediation of phase-separated hydrocarbons (condensate) and dissolved organic compounds benzene, toluene, ethylbenzene, and xylenes (BTEX) in groundwater due to a release from the Epperson 16-inch gas pipeline (Site) which is located about 15 miles west of Tatum, in Lea County, New Mexico. The legal description is Unit F (SE/4, NW/4), Section 24, Township 11 South, Range 33 East. The geodetic position is North 33.346925° and West -103.574597°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

1.1 Background

Between June 10, 2016, and February 9, 2017, LAI personnel investigated the release by collecting and analyzing soil samples from eight (8) hand auger borings (HA-1 through HA-8), seven (7) direct push borings (SB-1 through SB-7) and eight (8) air rotary drilled borings (SB-8 through SB-15). The soil samples were collected and analyzed according to NMOCD guidelines (Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993) which allowed substituting a headspace vapor reading less than 100 parts per million (ppm) using a calibrated photoionization detector (PID) in lieu of laboratory analysis of BTEX. Laboratory analysis for BTEX was only performed on samples with a PID reading greater than 100 ppm. Samples were analyzed for total petroleum hydrocarbons (TPH) by EPA SW-846 Method 8015 including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35) and chloride by Method 300.

On March 29, 2017, Targa submitted an initial C-141 for the release to the New Mexico Oil Conservation Division (NMOCD) District 1, which assigned the release remediation permit number 1RP-4664 (Incident Number nOY1709044723). The spill delineation was documented in reports dated March 7, 2017 (1RP-4664 Spill Delineation Report, Epperson 16 Inch Pipeline Release Site #1, Lea County, New Mexico) and May 30, 2017 (1RP-4664 Addendum Spill Delineation Report, Epperson 16 Inch Pipeline Release Site #1, Lea County, New Mexico). On July 13, 2017, NMOCD District 1 (Ms. Olivia Yu) approved the addendum delineation report and the proposed remediation plan. Appendix A presents regulatory communications.

Between October 13, 2017, and November 20, 2020, Gandy Corporation (Gandy), Lovington, New Mexico, excavated soil to about 26 feet below ground surface (BGS). Approximately 4,930 cubic yards of soil was excavated from an area measuring approximately 15,076 square feet or about 0.35 acre. All but about 500 cubic yards of soil that was confirmed “clean” through laboratory analysis was disposed at the Gandy Marley (GM) Landfill located west of Tatum, New Mexico. The clean soil was retained at the Site for backfilling the excavation.

On July 7, 2020, and November 20,2020, LAI collected composite samples for about every 200 square feet following removal of additional soil from the west sidewall and east bottom of the excavation. The samples were analyzed for BTEX Permian Basin Environmental Lab (PBEL) in Midland, Texas, analyzed the samples for BTEX, TPH and chloride by EPA SW-846 Methods 8021B, 8014 and Method 300, respectively. The laboratory reported BTEX, TPH, and chloride concentrations below the NMOCD closure criteria (Table 1, 19.15.29 NMAC) in the final samples.

On February 9, 2021, Targa provided written notification to NMOCD prior to backfilling the excavation. OCD acknowledged the notification and approved excavation backfilling on February 18, 2021. Between

May 20, 2021, and June 2, 2021, LTP Enterprises (LTP) backfilled the excavation with caliche confirmed clean by laboratory analysis to within 1 foot of ground surface. The upper 1-foot bgs of the excavation was filled with topsoil. On July 9, 2021, the Site was seeded with a seed mix specified by the surface owner. LAI prepared the closure report that Targa uploaded to the NMOCD web portal on August 9, 2021.

2.0 STAGE 1 GROUNDWATER ABATEMENT PLAN

2.1 Physical Site Setting

2.1.1 Topography

The surveyed elevation is 4,228.40 feet above mean sea level (MSL). The topography slopes gently to the east and southeast. Figure 1a presents a detailed topographic map.

2.1.2 Soil

The soil underlying the Site is Kimbrough-Lea complex, dry, 0 to 3 percent slopes, consisting of three (3) inches of gravelly loam, underlain by seven (7) inches of loam and 70 inches of cemented material (caliche) in descending order. The soil originates from loamy eolian deposits derived from sedimentary rock. The soil is not considered prime farmland.

2.1.3 Geology

The surface geology underlying the Site is comprised of Holocene to mid-Pleistocene age eolian and piedmont-slope deposits that were derived mostly from reworking the underlying Blackwater Draw and Ogallala Formations, in descending order. The Blackwater Draw Formation contained fine to very-fine grained red eolian quartz sand and sandstone that rests on the resistant caprock “caliche” of the Ogallala Formation is comprised of fluvial sand, silt, clay, and localized gravel, with indistinct to massive cross beds. The Ogallala sand is generally fine- to medium-grained quartz sand.

Monitoring well boring logs for the Site indicate a general lithology of unconsolidated eolian sand over carbonate-indurated sand commonly referred to as “caliche” between about 17 and 22 feet thick. Beneath the caliche unit is a thickness of fine-grained pink quartz sand. Locally this sand is lithified into sandstone with clayey sand. The sandstone layer most likely represents an *in-situ* deposition layer at the interaction zone during former higher-standing water table conditions. The Ogallala Formation overlies the Triassic-age Chinle Formation of the Dockum group which is comprised of interbedded sand, clay, and mudstone. The monitoring wells terminated in sand above the Chinle Formation for monitoring light non-aqueous phase liquid (LNAPL).

2.1.4 Groundwater

Groundwater occurs in the Ogallala Formation between about 29 feet BGS (TMW-2 and TMW-3) and 31 feet BGS (TMW-1) with the groundwater flow direction to the east at a gradient of about 0.003 feet per foot on September 3, 2021. The groundwater flow direction appears consistent between sampling events.

2.1.5 Water Wells

No water wells were observed or identified on the New Mexico State Engineer (NMOSE) Water Rights Reporting System (NMWRRS) within 0.5 miles of the Site. A stock well (windmill) is located about 2,040 feet east and southeast (down gradient) from the Site. No NMOSE records are available for this well.

2.1.6 Surface Water

A stock pond is located near the stock well (windmill) approximately 2,040 feet east and southeast from the Site. There is no apparent hydraulic connection between the stock pond and Site.

2.1.7 Flood Plain

The Site is not located in a flood plain.

2.1.8 Karst

Karst data provided by the USGS describes the Site as “low risk” potential. Appendix B presents USGS data depicting karst risk potential.

2.1.9 Aquifers

Groundwater occurs in the Ogallala aquifer between about 29 and 31 feet BGS. The Triassic-age Dockum Group represented by the Chinle Formation forms the base of the Ogallala aquifer. The Chinle Formation is comprised of interbedded sand, clay, and mudstone.

2.2 Groundwater Investigation

2.2.1 Monitoring Wells

Targa installed three (3) monitoring wells (TMW-1, TMW-2, and TMW-3). Monitoring well TMW-1 was installed immediately downgradient (east) for the excavation about 30 feet east from the pipelines. Monitoring well TMW-2 was installed about 380 feet east and southeast from TMW-1. Monitoring well TMW-3 was installed about 360 feet south from TMW-2. Scarborough Drilling, Inc., Lamesa, Texas (License No. WD-1188) advanced borings with an air rotary rig between thirty-six (36) feet BGS (TMW-02 and TMW-03) and thirty-nine (39) feet BGS (TMW-01). The monitoring wells are constructed with 2-inch schedule 40 PVC casing and 20 feet of factory slotted (0.010 inch) screen. Graded silica sand was placed around the well screens to about 2 feet above the screens. The remainder of the borehole annulus above the sand was filled with hydrated sodium bentonite chips to about 1-foot BGS. The wells are secured with locking steel covers anchored in concrete. Table 1 presents the monitoring well completion details and gauging summary. Figure 1a presents the monitoring well locations. Appendix C presents NMOSE well permits. Appendix D presents the geologic logs and monitoring well completion records.

2.2.2 LNAPL

LAI personnel gauged LNAPL and groundwater in the monitoring wells during eight (8) gauging events on March 14, 2018, January 31, 2019, April 18, 2019, July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021. Measurements were collected at the top of the PVC casing that was surveyed for elevation referenced to U.S.G.S. datum. LNAPL in the form of natural gas condensate was recorded in well

TMW-01 on July 19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021, with apparent thicknesses of 0.60, 0.86, 0.55, and 0.57 feet, respectively. The Epperson 16-inch gas pipeline release is the suspected source for the LNAPL. Table 1 presents the LNAPL and groundwater gauging summary.

On July 22, 2019, LAI personnel collected a sample of LNAPL from monitoring well TMW-01 for detailed fingerprint analysis by Intertek Laboratory in Midland, Texas. The predominant carbon numbers reported by Intertek were C1 through C14 (86.28%) with C6, C7 and C8 (69.44%) as the predominant hydrocarbons which is consistent with natural gas condensate. Appendix E presents the Intertek Laboratory report.

2.2.3 Groundwater

Depth to groundwater was gauged on July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021. Depth to groundwater ranged from 32.05 feet below TOC (29.54 feet BGS) in well TMW-03 on February 24, 2020, and 34.07 feet below TOC (31.17 feet BGS) in well TMW-01 on July 18, 2019. The groundwater elevation for monitoring well TMW-01 was corrected for LNAPL assuming 0.7 specific gravity. The groundwater flow direction on July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021, was from west to east at gradients between about 0.0023 feet per foot (ft/ft) on September 3, 2021, and 0.0029 ft/ft on February 24, 2020, and September 3, 2021. The groundwater potentiometric surface elevation fluctuated between 0.12 feet (TMW-03) and 0.82 feet (TMW-1). The groundwater fluctuation in well TMW-01 may have been due to the excavation which was open at the time of measurement and recharge from precipitation. Figures 3a, 3b, 3c, and 3d present groundwater potentiometric maps for July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021, respectively.

2.2.4 Aquifer (Slug) Testing

On April 18, 2018, LAI personnel performed horizontal hydraulic conductivity (slug testing) in monitoring well TMW-1. The slug testing was performed using a sand-fill PVC pipe (slug) to simulate falling and rising head conditions in the well. The slug was lowered (falling head) and raised (rising head) while changes in aquifer head were measured by a pressure transducer placed below that slug that is connected to a laptop computer to record data. The data was evaluated with the Bouwer-Rice slug test solution (1976) for an unconfined aquifer using a partially penetrating well.

The falling head conductivity ranged from $1.765E^{-6}$ feet per second (ft/s) or 55.66104 ft/year and 1.098^{-5} ft/s or 346.2653 ft/year. The average falling head hydraulic conductivity was 7.6763^{-6} ft/s 242.1019 ft/year. The rising head conductivity ranged from 1.9740^{-6} ft/s or 62.25206 ft/year to 1.063^{-5} ft/s or 335.2277 ft/yr. The average rising head hydraulic conductivity was 6.111^{-6} ft/2 or 192.6593 ft/year. The mean hydraulic conductivity was 6.8937^{-6} ft/s, or 217.3806 feet/yr. Table 2 presents the horizontal hydraulic conductivity test summary. Appendix F presents the horizontal hydraulic conductivity (slug) test data and calculations.

2.2.5 Groundwater Samples

Groundwater samples were collected from monitoring well TMW-01 on March 14, 2018, and January 31, 2019. Groundwater samples were not collected from well TMW-01 on February 24, 2020, and September 3, 2021, due to LNAPL in the well. Groundwater samples were collected from TMW-02 and MW-03 on July

22, 2019, February 24, 2020, and September 3, 2021. Groundwater samples were collected using the low stress or low flow method, according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low rate until environmental parameters stabilize. Groundwater samples were collected from the discharge of the disposable Tygon® tubing which was discarded after each use. The environmental pump was thoroughly cleaned with a solution potable water and laboratory grade detergent (Alconox®) and rinsed with distilled water. The samples were carefully transferred to laboratory containers that were labeled, sealed with custody labels, packed in an ice filled chest and delivered under chain of custody control to PBEL or DHL Analytical, Inc. (DHL), both NELAP accredited laboratories located in Midland, Texas and Round Rock, Texas, respectively. A duplicate sample was collected from well MW-1 in March 2018 and January 2019 for laboratory quality assurance and quality control (QA/QC). The samples were analyzed for BTEX according to EPA SW-846 Method SW-8021B and chloride by EPA Method 300. Table 3 presents the laboratory analytical data summary. Appendix G presents the laboratory groundwater reports.

Benzene and toluene were reported at concentrations above the New Mexico Water Quality Control Commission (NMWQCC) human health standards of 0.005 mg/L and 1.0 mg/L, respectively, in groundwater samples from well TMW-01 on March 14, 2018, and January 31, 2019. Ethylbenzene, and xylenes were reported at concentrations above the NMWQCC human health standards of 0.7 mg/L and 0.62 mg/L, respectively, in groundwater samples from well TMW-01 on January 31, 2019. BTEX compounds were not reported above the analytical method reporting limits in groundwater samples from TMW-03 and TMW-04 during the groundwater sampling events. Chloride was less than the NMWQCC domestic water quality stand of 250 mg/L in groundwater samples from monitoring wells TMW-01 and TMW-02. Chloride was reported above 250 mg/L in groundwater samples from well TMW-03 and ranged from 265 mg/L (February 24, 2020) to 305 mg/L (September 03, 2021. A disposal pit and/or tank battery located on the adjacent property to the west of the Site is suspected as a possible source for the chloride. Appendix H presents a historical (1968) aerial photograph showing the location of the tank battery and disposal pit.

3.0 STAGE 1 GROUNDWATER ABATEMENT PLAN

The problem statement identified for this abatement plan is recovering LNAPL on groundwater and remediating dissolved benzene in groundwater at TMW-01. LNAPL and dissolved benzene are only present at wells TMW-01. A historic disposal pit located on an adjacent property to the west is the suspected source for chloride in groundwater samples from TMW-03. Chloride is not part of this Stage 2 groundwater abatement plan.

3.1 Abatement Options

LAI has considered multiple abatement options to develop the most effective strategy for remediating LNAPL and dissolved benzene. Option 1 is passive recovery of LNAPL from well TMW-01 using absorbent material (i.e., socks) to wick the LNAPL from the well or bailing the well to remove LNAPL. Option 2 is active recovery using an electric submersible pump to remove total fluids (LNAPL and water). Option 3 is active recovery using high vacuum extraction to remove total fluids (water and LNAPL) and soil vapors using the existing monitoring well, TMW-01, to extract LNAPL, groundwater and soil vapors using mobile (truck mounted) technology to provide hydraulic control for the dissolved phase hydrocarbons.

3.1.1 Passive Extraction

Passive extraction is an option however this technology is slowest for recovering LNAPL and does not address the dissolved phased hydrocarbons (BTEX) in groundwater or provide hydraulic control for capturing BTEX compounds in groundwater. For these reasons and others, including handling and disposal of oil saturated absorbents, is not a viable option.

3.1.2 Total Fluids Extraction (Pump and Dispose)

Total fluids extraction is an option that uses an electric submersible pump and controls to extract LNAPL, groundwater and provide hydraulic controls for dissolved contaminant (BTEX) capture. This technology will require installing a 6-inch diameter recovery well at a suitable depth to develop the capture radius (cone of depression) and accommodate downhole equipment (i.e., submersible pump, safety cable, electric lead, and discharge pipe). Further, this technology requires a stable source of electricity to provide electrical power to the pump and controls as well as freeze protection during freezing weather. Options for electricity vary from solar (passive) power and battery storage, portable diesel generator or stable power from an electric service provider. Drilling and completing a 6-inch diameter recovery well will require a permit from NMOSE and cost for materials and drilling rig. Solar power may not be suitable for powering the submersible pump and controls. A portable generator will require a tank and fuel for to power the electric submersible pump and controls. Electric service from a service provider may require an easement from the surface owner to bring electric service (i.e., multiple poles, wire, and transformer) from the nearest stable electric power source located about 0.89 mile east of the Site. Another cost may be to acquire an easement from NMOSE to pump water from the well, frac tank to contain liquids for off-site disposal. The following results may apply to the Site although a pumping test may be required to verify:

Recovery Well: RW-1
Duration: 72 hours
Assume average flow rate: 2.25 gpm
Radius of influence: 120 feet (conservative)
Approximate total fluids recovered (1 Year): 1,182,600 gallons/28,157 barrels
Approximate drawdown: 9.267 feet
Disposal Cost: recovered fluids in permitted SWD: $56,314.28*.
Requirements: stable or portable electricity and frac tanks for liquid containment.

3.1.3 High Vacuum Extraction

This option would involve using high vacuum and the existing 2-inch monitoring well (TMW-01) to remove liquids (LNAPL and groundwater) and vapors. The following results from a near-by site using a lower flow rate (110 CFM) and treating vapors with activated granular carbon (GAC):

Duration: 72 Hours
Average Flow rate: 110 CFM
Average Air concentration: 113ppmv (417 mg/m^3)
Average ROI: 30 feet

Total hydrocarbons recovered: 12.35 pounds of BTEX (4.117 lbs BTEX/day equivalent to approximately 1,503 lbs/year)
Requirements: stable or portable electricity and frac tank for liquid containment
Disposal Cost: depleted and replenish GAC

The ROI using a higher vacuum truck mounted SVE (EcoVac) system is expected to be at least 150 feet or greater with air flow between about 180 and 200 CFM and vapor destruction using internal combustion engines augmented with propane for vapor destruction. An example from a near-by Site in January 2022 showed the following results:

Duration: 34.25 Hours
Air Flow: 180 - 200 CFM
Air concentration: >100,000ppmv (beginning) to 48,000 ppmv (ending)
Average ROI: 220 feet
Volume Recovered:

- Vapor recovered: 2,662 lbs.
- Vapor Equivalent gallons: 439.2 gal.
- LNAPL recovered: 260 gal.
- Groundwater recovered: 709 gal.
- Total hydrocarbons recovered: 699.2 gal.

Requirements: mobilizing SVE system and frac tanks for liquid containment.
Disposal cost: recovered fluid (23 bbl) in permitted SWD: $46.14*

* Cost may vary by location and pricing.

3.2 Proposed Abatement Option

Based on the results of the scenarios presented above the most effective option is high vacuum extraction using a mobile truck mounted high vacuum (EcoVac) system to remove total fluids (LNAPL and groundwater) and vapors and provide hydraulic control. The SVE system is expected to operate one (1) week (2 - 3 days) per month for three (3) months to evaluate abatement progress and additional SVE events, if necessary.

3.3 Proposed Abatement Option Design

The proposed abatement option will use the existing monitoring well (TMW-01) as the extraction well and monitoring the downgradient wells (TMW-02 and TMW-03) for vacuum and drawdown to monitor the ROI and minimize potential for drawing in the chloride plume from TMW-03.

3.4 Monitoring and Maintenance Plan

Monitoring well TMW-01 for LNAPL thickness will be performed weekly following each SVE event. No maintenance plan is necessary since there will be no component to maintain, monitor or replace.

3.5 Groundwater Monitoring

Semi-annual (twice yearly) groundwater monitoring will be performed to monitor progress during abatement and for two (2) years following abatement. Three (3) monitoring wells (TMW-1, TMW-2, and

TMW-3) will be gauged for LNAPL and depth to groundwater and groundwater samples will be collected during each semi-annual (6 month) and analyzed for BTEX by EPA SW-846 Method 8021B and chloride.

3.6 Progress Reports

Abatement progress, including groundwater monitoring results, will be reported to the OCD semi-annually. The report will include the following:

- Description of all work performed for the reporting period.
- Results of groundwater monitoring data, including all procedures, field and laboratory data and documentation.
- Groundwater potentiometric map.
- Results of SVE abatement and volume (vapor, LNAPL and groundwater) recovered.
- An evaluation of cumulative abatement progress.
- Evaluation of the abatement progress during the applicable monitoring period; and
- Proposed changes or future activity.

3.7 Abatement Schedule

The following timeline is proposed for abatement activities:

Task Description	Timeline
Baseline LNAPL and groundwater monitoring event	30 days after plan approval
Initiate abatement plan (1st 2 – 3 – days) SVE event)	45 days after plan approval
2nd (2 – 3 days) SVE event	75 days after plan approval
3rd (2 – 3 days) SVE event	105 days after plan approval
Evaluate SVE progress	135 – 180 days after plan approval
LNAPL and groundwater monitoring event	180 days after plan approval

3.8 Notification

Notification will be submitted via email to NMOCD (Artesia and Santa Fe, New Mexico) at least 5 days, excluding weekends, before initiating any major field activity (i.e., groundwater sampling and SVE extraction) excluding routine monitoring such as weekly extraction well monitoring following SVE event, for NMOCD representative at the Site to observe scheduled activity. Notification will be provided to NMOCD as soon as possible to report any significant changes in LNAPL thickness and/or contaminant concentrations in groundwater.

3.10 Public Notice

Upon NMOCD approval of the proposed groundwater abatement plan, public notice will be published according to NMOCD requirements, in the Lovington Leader and Albuquerque Journal. Appendix I presents the public notice.

4.0 CONCLUSION

Based upon consideration of site-specific information and conditions, high vacuum SVE is the selected abatement option for extracting vapors and total fluids (LNAPL and groundwater), with two (2) internal combustion engines augmented with propane fuel for vapor destruction, to recover contaminants and provide hydraulic control for promoting the protection of public health, welfare, and the environment in the State of New Mexico. A final abatement report will be submitted to NMOCD as required by 19.15.30.19 NMAC.

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1.1 Background

Between June 10, 2016, and February 9, 2017, LAI personnel investigated the release by collecting and analyzing soil samples from eight (8) hand auger borings (HA-1 through HA-8), seven (7) direct push borings (SB-1 through SB-7) and eight (8) air rotary drilled borings (SB-8 through SB-15). The soil samples were collected and analyzed according to NMOCD guidelines (Guidelines for Remediation of Leaks, Spills and Releases, August 13, 1993) which allowed substituting a headspace vapor reading less than 100 parts per million (ppm) using a calibrated photoionization detector (PID) in lieu of laboratory analysis of BTEX. Laboratory analysis for BTEX was only performed on samples with a PID reading greater than 100 ppm. Samples were analyzed for total petroleum hydrocarbons (TPH) by EPA SW-846 Method 8015 including gasoline range organics (C6-C12), diesel range organics (>C12-C28) and oil range organics (>C28-C35) and chloride by Method 300.

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Between October 13, 2017, and November 20, 2020, Gandy Corporation (Gandy), Lovington, New Mexico, excavated soil to about 26 feet below ground surface (BGS). Approximately 4,930 cubic yards of soil was excavated from an area measuring approximately 15,076 square feet or about 0.35 acre. All but about 500 cubic yards of soil that was confirmed “clean” through laboratory analysis was disposed at the Gandy Marley (GM) Landfill located west of Tatum, New Mexico. The clean soil was retained at the Site for backfilling the excavation.

On July 7, 2020, and November 20,2020, LAI collected composite samples for about every 200 square feet following removal of additional soil from the west sidewall and east bottom of the excavation. The samples were analyzed for BTEX Permian Basin Environmental Lab (PBEL) in Midland, Texas, analyzed the samples for BTEX, TPH and chloride by EPA SW-846 Methods 8021B, 8014 and Method 300, respectively. The laboratory reported BTEX, TPH, and chloride concentrations below the NMOCD closure criteria (Table 1, 19.15.29 NMAC) in the final samples.

On February 9, 2021, Targa provided written notification to NMOCD prior to backfilling the excavation. OCD acknowledged the notification and approved excavation backfilling on February 18, 2021. Between May 20, 2021, and June 2, 2021, LTP Enterprises (LTP) backfilled the excavation with caliche confirmed clean by laboratory analysis to within 1 foot of ground surface. The upper 1-foot bgs of the excavation was filled with topsoil. On July 9, 2021, the Site was seeded with a seed mix specified by the surface owner. LAI prepared the closure report that Targa uploaded to the NMOCD web portal on August 9, 2021.

2.0 PHYSICAL SETTING

2.1 Topography

The surveyed elevation is 4,228.40 feet above mean sea level (MSL). The topography slopes gently to the east and southeast. Figure 1a presents a detailed topographic map.

2.2 Soil

The soil underlying the Site is Kimbrough-Lea complex, dry, 0 to 3 percent slopes, consisting of three (3) inches of gravelly loam, underlain by seven (7) inches of loam and 70 inches of cemented material (caliche) in descending order. The soil originates from loamy eolian deposits derived from sedimentary rock. The soil is not considered prime farmland.

2.3 Geology

The surface geology underlying the Site is comprised of Holocene to mid-Pleistocene age eolian and piedmont-slope deposits that were derived mostly from reworking the underlying Blackwater Draw and Ogallala Formations, in descending order. The Blackwater Draw Formation contained fine to very-fine grained red eolian quartz sand and sandstone that rests on the resistant caprock “caliche” of the Ogallala Formation is comprised of fluvial sand, silt, clay, and localized gravel, with indistinct to massive cross beds. The Ogallala sand is generally fine- to medium-grained quartz sand.

Monitoring well boring logs for the Site indicate a general lithology of unconsolidated eolian sand over carbonate-indurated sand commonly referred to as “caliche” between about 17 and 22 feet thick. Beneath the caliche unit is a thickness of fine-grained pink quartz sand. Locally this sand is lithified into sandstone with clayey sand. The sandstone layer most likely represents an *in-situ* deposition layer at the interaction zone during former higher-standing water table conditions. The Ogallala Formation overlies the Triassic-age Chinle Formation of the Dockum group which is comprised of interbedded sand, clay, and mudstone. The monitoring wells terminated in sand above the Chinle Formation for monitoring light non-aqueous phase liquid (LNAPL).

2.4 Groundwater

Groundwater occurs in the Ogallala Formation between about 29 feet BGS (TMW-2 and TMW-3) and 31 feet BGS (TMW-1) with the groundwater flow direction to the east at a gradient of about 0.003 feet per foot on September 3, 2021. The groundwater flow direction appears consistent between sampling events.

2.5 Water Wells

No water wells were observed or identified on the New Mexico State Engineer (NMOSE) Water Rights Reporting System (NMWRRS) within 0.5 miles of the Site. A stock well (windmill) is located about 2,040 feet east and southeast (down gradient) from the Site. No NMOSE records are available for this well.

2.6 Surface Water

A stock pond is located near the stock well (windmill) approximately 2,040 feet east and southeast from the Site.

2.7 Flood Plain

The Site is not located in a flood plain.

2.8 Karst

Karst data provided by the USGS describes the Site as "low risk" potential. Appendix B presents USGS data depicting karst risk potential.

2.9 Aquifers

Groundwater occurs in the Ogallala aquifer between about 29 and 31 feet BGS. The Triassic-age Dockum Group represented by the Chinle Formation forms the base of the Ogallala aquifer. The Chinle Formation is comprised of interbedded sand, clay, and mudstone.

3.0 GROUNDWATER INVESTIGATION

3.1 Monitoring Wells

Targa installed three (3) monitoring wells (TMW-1, TMW-2, and TMW-3). Monitoring well TMW-1 was installed immediately downgradient (east) for the excavation about 30 feet east from the pipelines. Monitoring well TMW-2 was installed about 380 feet east and southeast from TMW-1. Monitoring well TMW-3 was installed about 360 feet south from TMW-2. Scarborough Drilling, Inc., Lamesa, Texas (License No. WD-1188) advanced borings with an air rotary rig between thirty-six (36) feet BGS (TMW-02 and TMW-03) and thirty-nine (39) feet BGS (TMW-01). The monitoring wells are constructed with 2-inch schedule 40 PVC casing and 20 feet of factory slotted (0.010 inch) screen. Graded silica sand was placed around the well screens to about 2 feet above the screens. The remainder of the borehole annulus above the sand was filled with hydrated sodium bentonite chips to about 1-foot BGS. The wells are secured with locking steel covers anchored in concrete. Table 1 presents the monitoring well drilling and completion details, and gauging summary. Figure 2a presents the monitoring well locations. Appendix C presents NMOSE well permits. Appendix D presents the geologic logs and monitoring well completion records.

3.2 LNAPL

LAI personnel gauged LNAPL and groundwater in the monitoring wells during eight (8) gauging events on March 14, 2018, January 31, 2019, April 18, 2019, July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021. Measurements were collected at the top of the PVC casing that was surveyed for elevation referenced to U.S.G.S. datum. LNAPL in the form of natural gas condensate was recorded in well TMW-01 on July 19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021, with apparent thicknesses of 0.60, 0.86, 0.55, and 0.57 feet, respectively. The Epperson 16-inch gas pipeline release is the suspected source for the LNAPL. Table 1 presents the LNAPL and groundwater gauging summary. Figure 3 presents an LNAPL thickness map for September 3, 2021.

On July 22, 2019, LAI personnel collected a sample of LNAPL from monitoring well TMW-01 for detailed fingerprint analysis by Intertek Laboratory in Midland, Texas. The predominant carbon numbers reported

by Intertek were C1 through C14 (86.28%) with C6, C7 and C8 (69.44%) as the predominant hydrocarbons which is consistent with natural gas condensate. Appendix E presents the Intertek Laboratory report.

3.3 Depth to Groundwater and Groundwater Flow

Depth to groundwater was gauged on July 18 and 19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021. Depth to groundwater ranged from 32.05 feet below TOC (29.54 feet BGS) in well TMW-03 on February 24, 2020, and 34.07 feet below TOC (31.17 feet BGS) in well TMW-01 on July 18, 2019. The groundwater elevation for monitoring well TMW-01 was corrected for LNAPL assuming 0.7 specific gravity. The groundwater flow direction on July 18-19, 2019, August 8, 2019, February 24, 2020, and September 3, 2021, was from west to east at gradients between about 0.0023 feet per foot (ft/ft) on September 3, 2021, and 0.0029 ft/ft on February 24, 2020, and September 3, 2021. The groundwater potentiometric surface elevation fluctuated between 0.12 feet (TMW-03) and 0.82 feet (TMW-1). The groundwater fluctuation in well TMW-01 may have been due to the excavation which was open at the time of measurement and recharge from precipitation. Figure 4 presents the groundwater potentiometric map for September 3, 2021.

3.4 Aquifer Slug Testing

On April 18, 2018, LAI personnel performed horizontal hydraulic conductivity (slug testing) in monitoring well TMW-1. The slug testing was performed using a sand-fill PVC pipe (slug) to simulate falling and rising head conditions in the well. The slug was lowered (falling head) and raised (rising head) while changes in aquifer head were measured by a pressure transducer placed below that slug that is connected to a laptop computer to record data. The data was evaluated with the Bouwer-Rice slug test solution (1976) for an unconfined aquifer using a partially penetrating well.

The falling head conductivity ranged from $1.765E^{-6}$ feet per second (ft/s) or 55.66104 ft/year and 1.098^{-5} ft/s or 346.2653 ft/year. The average falling head hydraulic conductivity was 7.6763^{-6} ft/s 242.1019 ft/year. The rising head conductivity ranged from 1.9740^{-6} ft/s or 62.25206 ft/year to 1.063^{-5} ft/s or 335.2277 ft/yr. The average rising head hydraulic conductivity was 6.111^{-6} ft/s or 192.6593 ft/year. The mean hydraulic conductivity was 6.8937^{-6} ft/s, or 217.3806 feet/yr. Table 2 presents the horizontal hydraulic conductivity test summary. Appendix F presents the horizontal hydraulic conductivity (slug) test data and calculations.

3.5 Groundwater Samples

Groundwater samples were collected from monitoring well TMW-01 on March 14, 2018, and January 31, 2019. Groundwater samples were not collected from well TMW-01 on February 24, 2020, and September 3, 2021, due to LNAPL in the well. Groundwater samples were collected from TMW-02 and MW-03 on July 22, 2019, February 24, 2020, and September 3, 2021. Groundwater samples were collected using the low stress or low flow method, according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low rate until environmental parameters stabilize. Groundwater samples were collected from the discharge of the disposable Tygon® tubing which was discarded after each use. The environmental pump was thoroughly cleaned with a solution potable water and laboratory grade detergent (Alconox®) and rinsed with distilled water. The samples were carefully transferred to laboratory containers that were labeled, sealed with custody labels, packed in an ice filled chest and delivered under chain of custody

control to PBEL or DHL Analytical, Inc. (DHL), both NELAP accredited laboratories located in Midland, Texas and Round Rock, Texas, respectively. A duplicate sample was collected from well MW-1 in March 2018 and January 2019 for laboratory quality assurance and quality control (QA/QC). The samples were analyzed for BTEX according to EPA SW-846 Method SW-8021B and chloride by EPA Method 300. Table 3 presents the laboratory analytical data summary. Appendix G presents the laboratory groundwater reports.

Benzene and toluene were reported at concentrations above the New Mexico Water Quality Control Commission (NMWQCC) human health standards of 0.005 mg/L and 1.0 mg/L, respectively, in groundwater samples from well TMW-01 on March 14, 2018, and January 31, 2019. Ethylbenzene, and xylenes were reported at concentrations above the NMWQCC human health standards of 0.7 mg/L and 0.62 mg/L, respectively, in groundwater samples from well TMW-01 on January 31, 2019. BTEX compounds were not reported above the analytical method reporting limits in groundwater samples from TMW-03 and TMW-04 during the groundwater sampling events.

Chloride was less than the NMWQCC domestic water quality stand of 250 mg/L in groundwater samples from monitoring wells TMW-01 and TMW-02. Chloride was reported above 250 mg/L in groundwater samples from well TMW-03 and ranged from 265 mg/L (February 24, 2020) to 305 mg/L (September 03, 2021. A disposal pit and/or tank battery located on the adjacent property to the west of the Site is suspected as a possible source for the chloride. Figure 5 presents the chloride concentration in groundwater map for September 3, 2021. Appendix H presents a historical (1968) aerial photograph showing the location of the tank battery and disposal pit.

4.0 GROUNDWATER ABATEMENT PLAN

Abatement will be performed under the emergency abatement provision in 19.15.30.12A(7) NMAC. LNAPL on groundwater and dissolved BTEX in groundwater is limited to the area around the excavation and monitoring wells TMW-01. A historic disposal pit located on the adjacent property to the west is the suspected source for chloride in groundwater samples from TMW-03. Therefore, chloride will not be addressed as part of this groundwater abatement plan.

4.1 Abatement Option

Abatement will be performed using high vacuum extraction to remove total fluids (LNAPL and groundwater) and soil vapors. Liquid (LNAPL and groundwater) and vapor will be extracted using a truck mounted (EcoVac®) system with an anticipated radius of influence (ROI) of at least 150 feet and air flow between about 180 and 200 CFM. Vapors will be managed using an internal combustion engine augmented with propane for vapor destruction. An example from a near-by Site (January 2022) showed the following results:

Duration: 34.25 Hours
Air Flow: 180 - 200 CFM
Organic Vapor (Air) Concentration: >100,000 ppmv (beginning) to 48,000 ppmv (ending)
Average ROI: 220 feet
Volume Recovered:

- Vapor recovered: 2,662 lbs.

- Vapor Equivalent gallons: 439.2 gal.
- LNAPL recovered: 260 gal.
- Groundwater recovered: 709 gal.
- Total hydrocarbons recovered: 699.2 gal.

Requirements: mobilizing SVE system and frac tanks for liquid containment.
Disposal cost: recovered fluid (23 bbl) in permitted SWD: $46.14*
(truck mounted) technology to provide hydraulic control for the dissolved phase hydrocarbons.

The abatement will use existing monitoring well TMW-01 to remove liquids (LNAPL and groundwater) and vapors. Liquid will be transferred from a tank on the SVE truck to a portable (frac) tank and disposed in a NMOCD permitted saltwater (Class 2) disposal well. The SVE system is expected to operate one (1) week (2 - 3 days) per month for three (3) months to evaluate abatement progress and assess if additional SVE events are necessary.

4.2 Additional Monitoring Well

Targa will install an additional monitoring well (TMW-4) between TMW-1 and TMW-2. The monitoring well will be used to evaluate the ROI and for collecting groundwater samples. A State of New Mexico licensed driller will drill the well with an air rotary rig between approximately 35 and 40 feet bgs. A competent geologist will log the boring according to the Unified Soil Classification System (ASTM D2487). The well will be completed with 2-inch schedule 40 PVC threaded casing and 20 feet of 0.01-inch factory slotted screen installed above and below groundwater between about 20 and 40 feet bgs. Graded silica sand will be placed around the screen to about 2 feet above the screen. The remainder of the annulus, between the screen and borehole, will be filled with cement and bentonite grout. The well will be permitted by the State of New Mexico Office of the State Engineers (NMOSE) and secured with locking steel cover anchored in concrete. A State of New Mexico licensed professional land surveyor (LPLS) will survey the well for elevation and location. Figure 6 presents the proposed location for monitoring TMW-4.

4.3 Groundwater Monitoring

Semi-annual (twice yearly) groundwater monitoring will be performed to monitor SVE progress and for two (2) years following abatement. Four (4) monitoring wells (TMW-1, TMW-2, TMW-3, and TMW-4) will be gauged for LNAPL and depth to groundwater and samples for groundwater during each semi-annual (6 month) event. The groundwater samples will be analyzed for BTEX by EPA SW-846 Method 8021B and chloride by EPA Method 300.

4.4 Schedule

The following timeline is proposed for the LNAPL/groundwater abatement:

Task Description	Timeline
Additional Monitoring Well Installation	30 days after plan approval
Baseline LNAPL and groundwater monitoring event	30 days after plan approval
1st (2 – 3 – days) SVE event	60 days after plan approval

2nd (2 – 3 days) SVE event	90 days after plan approval
3rd (2 – 3 days) SVE event	120 days after plan approval
Evaluate SVE progress	140 – 180 days after plan approval
1st LNAPL and groundwater monitoring event	180 days after plan approval
2nd LNAPL and groundwater monitoring event	360 days after plan approval
3rd LNAPL and groundwater monitoring event	540 days after plan approval
4th LNAPL and groundwater monitoring event	720 days after plan approval

4.5 Reports

A report will be submitted to the NMOCD on an annual (one yearly) schedule. The report will include the following:

- Description of all work performed for the reporting period.
- Results of groundwater monitoring data, including all procedures, field and laboratory data and documentation.
- Groundwater potentiometric map.
- Results of SVE abatement and volume (vapor, LNAPL and groundwater) recovered.
- An evaluation of cumulative abatement progress.
- Evaluation of the abatement progress during the applicable monitoring period; and
- Proposed changes or future activity.

A final report will be submitted to the NMOCD upon completion of the abatement.

4.6 Notification

Notification will be provided to NMOCD (District 2 and Santa Fe) via email at least 5 days, excluding weekends and holidays, before initiating any major field activity (i.e., monitoring well installation, groundwater sampling and SVE extraction) for an NMOCD representative to observe the activity. Notification will also be provided to NMOCD as soon as possible to report any significant changes in LNAPL thickness and/or contaminant concentrations in groundwater.

Tables

Table 1
Monitoring Well Completion and Gauging Summary
Targa Midstream Services, L.P., Epperson 16" Pipeline Release
Lea County, New Mexico

Well Information		Groundwater Data					
Well ID		Date Gauged	Depth to Product (feet TOC)	LNAPL Thickness (feet)	Depth to Water (feet TOC)	Corrected Water Elevation (feet AMSL)	Depth to Water (feet BGS)
TMW-01		03/14/2018	--	--	33.25	4,198.17	30.35
Date Drilled:	03/13/2018	04/18/2019	--	--	33.31	4,198.11	30.41
Drilled Depth BGS (feet):	39	01/31/2019	--	--	33.45	4,197.97	30.55
Well Depth from TOC (feet):	40.55	07/18/2019	--	--	34.07	4,197.35	31.17
Well Diameter (inches):	2	07/19/2019	33.24	0.60	33.84	4,198.00	30.34
Screen Interval BGS (feet):	36.97 to 27.32	08/08/2019	33.17	0.86	34.03	4,197.99	30.27
Casing Stickup (feet):	2.9	02/24/2020	33.19	0.55	33.74	4,198.06	29.98
Ground Elevation AMSL (feet)	4,228.40	09/03/2021	33.33	0.57	33.90	4,197.92	31.00
TOC Elevation AMSL (feet)	4,231.42						
Notes:							
TMW-02		07/18/2019	--	--	32.29	4,197.01	29.76
Date Drilled:	07/16/2019	07/19/2019	--	--	32.22	4,197.08	29.69
Drilled Depth BGS (feet):	36	08/08/2019	--	--	32.21	4,197.09	29.68
Well Depth from TOC (feet):	38.31	02/24/2020	--	--	32.16	4,197.14	29.63
Well Diameter (inches):	2	09/03/2021	--	--	32.29	4,197.01	29.76
Screen Interval BGS (feet):	35.10 to 15.47						
Casing Stickup (feet):	2.53						
Ground Elevation AMSL (feet)	4,226.78						
TOC Elevation AMSL (feet)	4,229.30						
Notes:							
TMW-03		07/18/2019	--	--	32.13	4,197.01	29.62
Date Drilled:	07/16/2019	08/08/2019	--	--	32.13	4,197.01	29.62
Drilled Depth BGS (feet):	36	02/24/2020	--	--	32.05	4,197.09	29.54
Well Depth from TOC (feet):	38.34	09/03/2021	--	--	32.20	4,196.94	29.69
Well Diameter (inches):	2						
Screen Interval BGS (feet):	35.83 to 15.82						
Casing Stickup (feet):	2.51						
Ground Elevation AMSL (feet)	4,226.55						
TOC Elevation AMSL (feet)	4,229.14						
Notes:							

Notes: Wells drilled and installed by Scarborough Drilling, Inc., Lamesa, Texas, using 2 inch schedule 40 threaded PVC casing and screen.
Groundwater elevation corrected for LNAPL thickness assuming 0.7 specific gravity
bgs: below ground surface
TOC: top of casing
Elevations are above mean sea level referenced to 1984 Geodetic Datum.
All values are in feet, unless otherwise noted.

Tab1e 2
Summary of Horizontal Hydraulic Conductivity from Slug Tests
Targa Midstream Services, LLC, Epperson 16" Pipeline Release
Lea County, New Mexico

Test Name	K_r Value (ft/s)	m/s	ft per year	Notes
Epperson Falling Head 1	1.765E-06	5.37972E-07	55.66104	
Epperson Falling Head 2	1.098E-05	3.3467E-06	346.2653	
Epperson Falling Head 3	6.714E-06	2.04643E-06	211.7327	
Epperson Falling Head 4	9.464E-06	2.88463E-06	298.4567	
Epperson Falling Head 5	8.733E-06	2.66182E-06	275.4039	
Epperson Falling Head 6	8.406E-06	2.56215E-06	265.0916	
Epperson Rising Head 1	1.063E-05	3.24002E-06	335.2277	
Epperson Rising Head 2	2.594E-06	7.90651E-07	81.80438	
Epperson Rising Head 3	Missed	Missed	Missed	
Epperson Rising Head 4	1.974E-06	6.01675E-07	62.25206	
Epperson Rising Head 5	7.691E-06	2.34422E-06	242.5434	
Epperson Rising Head 6	7.666E-06	2.3366E-06	241.755	

Average Hydraulic Conductivity (ft/s)	6.965E-04			
feet per day:	6.018E+01			
Kd	0.18	Calculated from EPA factors for Benzene		
Bulk Porosity of Soil	0.283	back-calculate from bulk density (1.9 g/cm^3) typical for caliche		
Rf	2.208512367			
ground slope (vertical drop/horizontal distance)	0.003125			
Average Linear velocity (feet per day)	6.645E-01		convert all to yards:	
Diffusivity Coefficient (Benzene-water)	0.0009486	10.2*10^-6 cm^2/s, converted to ft^2/day	Velocity:	0.221508
Number of releasing days (assumption	1500		Diffusivity:	0.000105
Concentration at boundary	0.01			
Time since release (t) (assumption) (days)	1500			
Release Concentration (C_0) (assumption) (ppm)	20			

ξ = (velocity*time/distance) (dimensionless)
η = (Diffusivity/(velocity*distance) (dimensionless)
Solution to Function: C = C_0/2*(erfc((1-ξ)/(2*sqrt(ξ*η)))+exp(1/η)*erfc((1+ξ)/(2*sqrt(ξ*η))))
ξ/sqrt(ξ*η) 835.6296776

Table 2
1RP-4664
Groundwater Sample Analytical Data Summary
Targa Midstream Services, LLC, Epperson 16" Pipeline Release
Lea County, New Mexico
33°20'49.08" North and 103°34'28.98" West

Sample	Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
NMWQCC Standard:		0.005	1	0.7	0.62	250
TMW-1	03/14/2018	**12.4**	**9.76**	0.48	0.425	66.3
	01/31/2019	**11.6**	**9.45**	**1.3**	**3.51**	150
	02/24/2020	LNAPL Present - No Sample Collected				
	09/03/2021	LNAPL Present - No Sample Collected				
TMW-2	07/22/2019	<0.00100	<0.00100	<0.00100	<0.00300	47.0
	02/24/2020	<0.00100	<0.00100	<0.00100	<0.00300	47.7
	09/03/2021	<0.00100	<0.00100	<0.00100	<0.00300	52.8
TMW-3	07/22/2019	<0.00100	<0.00100	<0.00100	<0.00300	**276**
	02/24/2020	<0.00100	<0.00100	<0.00100	<0.00300	**265**
	09/03/2021	<0.00100	<0.00100	<0.00100	<0.00300	**305**
QA/QC (Duplicate)						
TMW-3	09/03/2021	<0.00100	<0.00100	<0.00100	<0.00300	**301**

Notes: Analysis performed by Permian Basin Environmental Lab, Midland, Texas
Samples analyzed by EPA method SW-8021B (BTEX) and E-300 (chloride)
mg/L: milligrams per liter - equivalent to parts per million (ppm)
--: no data available

Bold and highlighted denotes analyte concentration exceeds NMWQCC human health standard

Bold and highlighted denotes analyte concentration exceeds NMWQCC domestic water quality standard

Figures

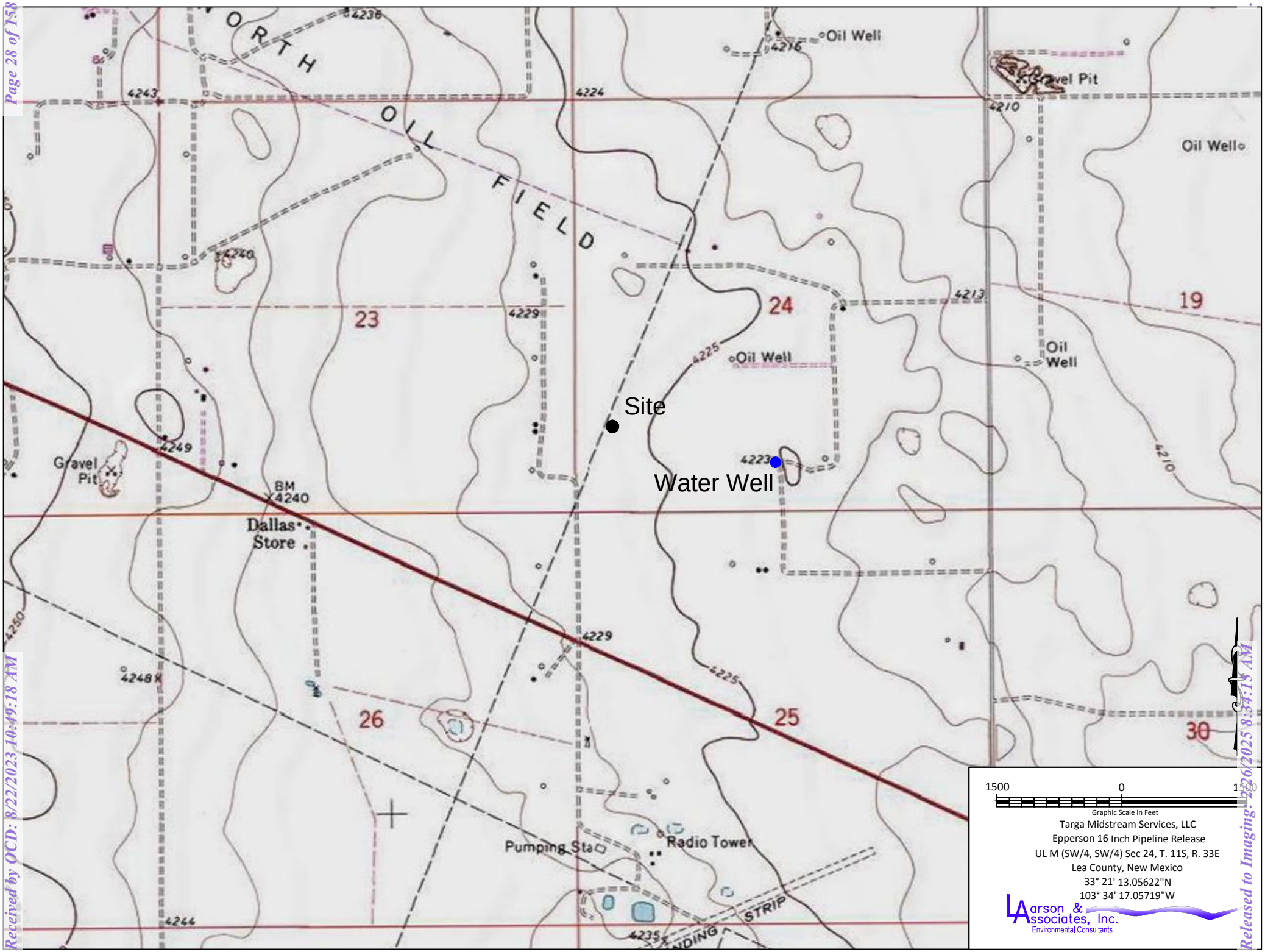

Figure 1 - Topographic Map

8.5" x 11"

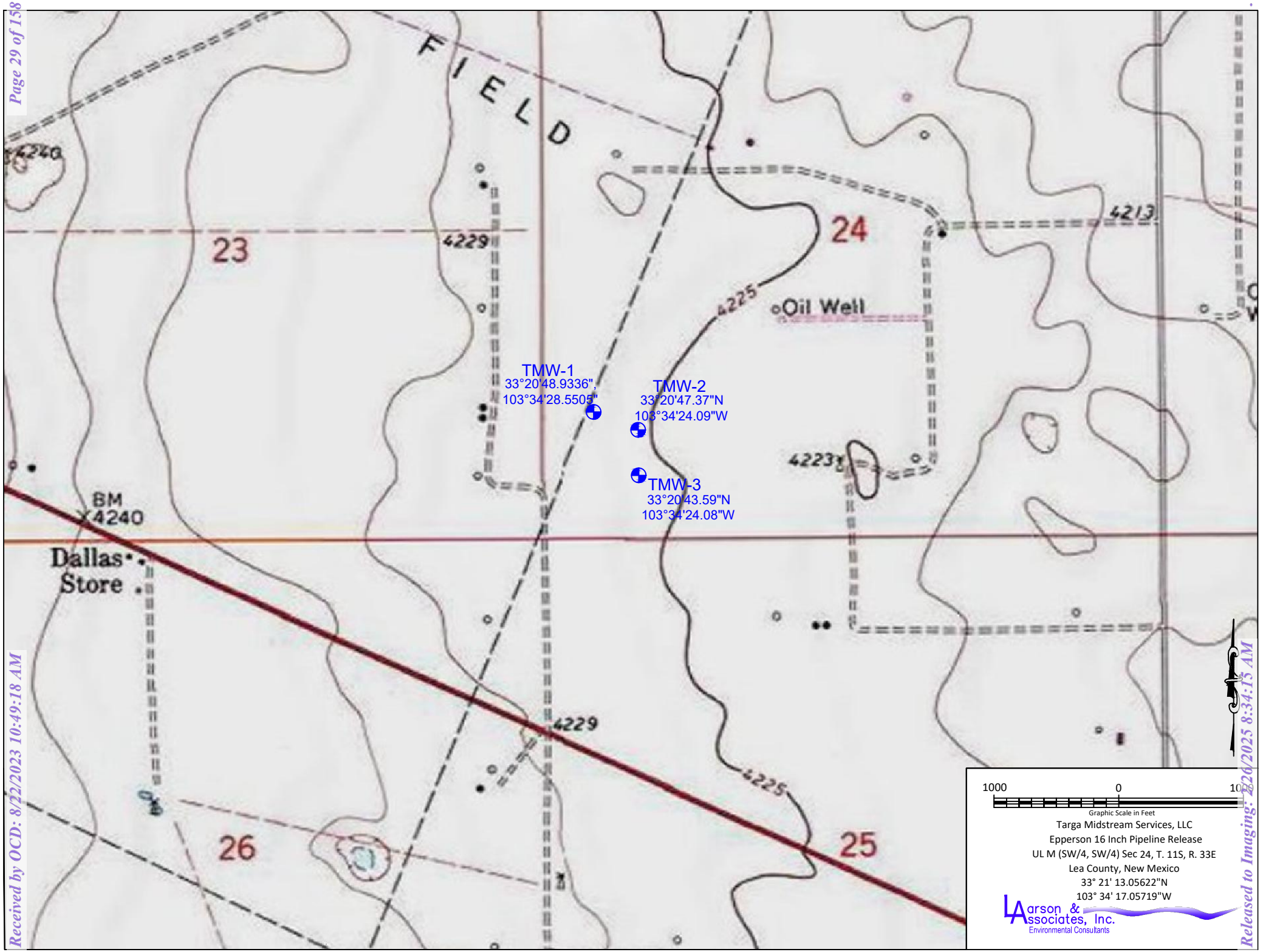

Figure 1a - Focused Topographic Map

8.5" x 11"

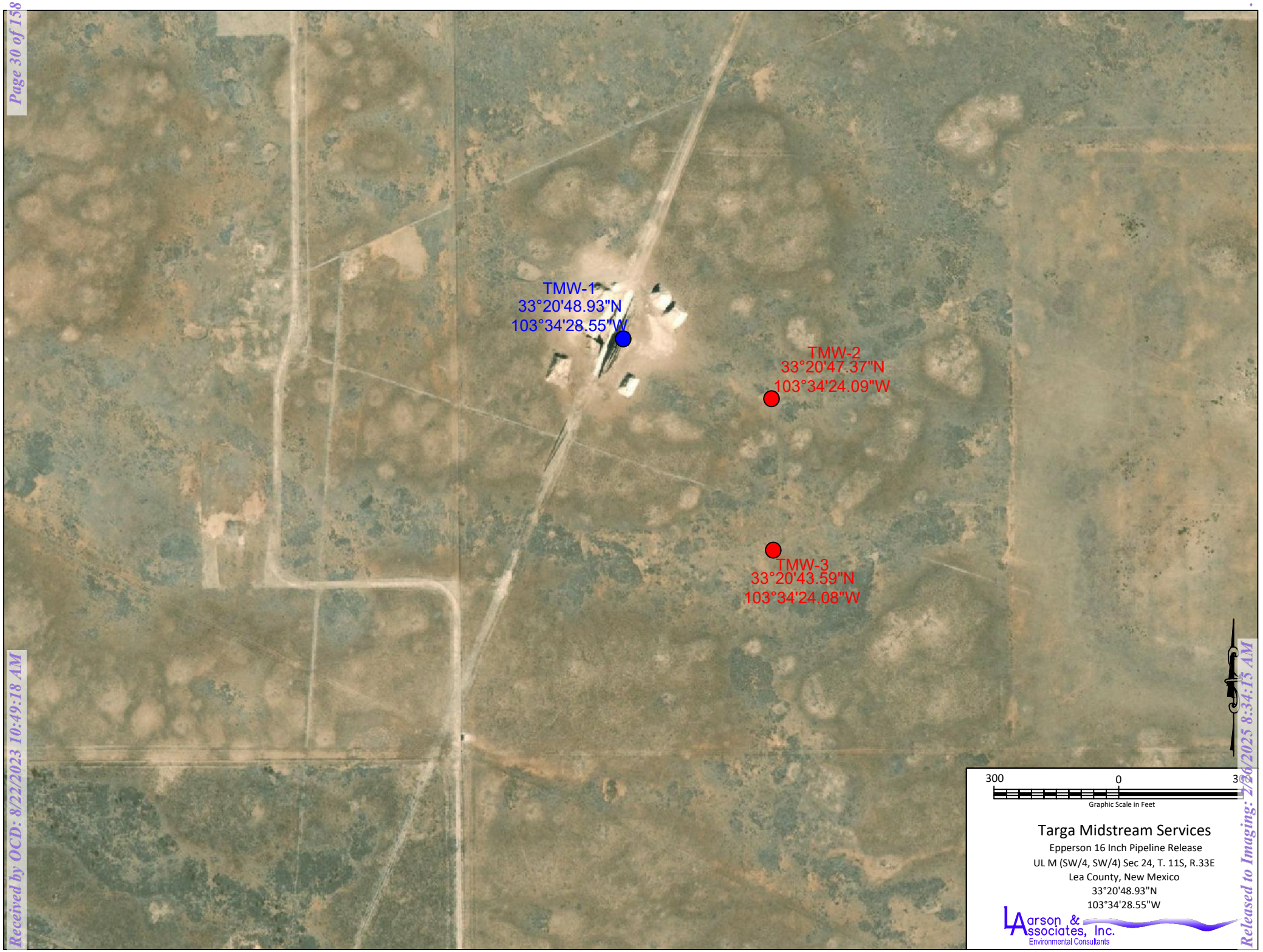

Figure 2 - Aerial Map

8.5" x 11"

Figure 2a - Focused Aerial Map

8.5" x 11"

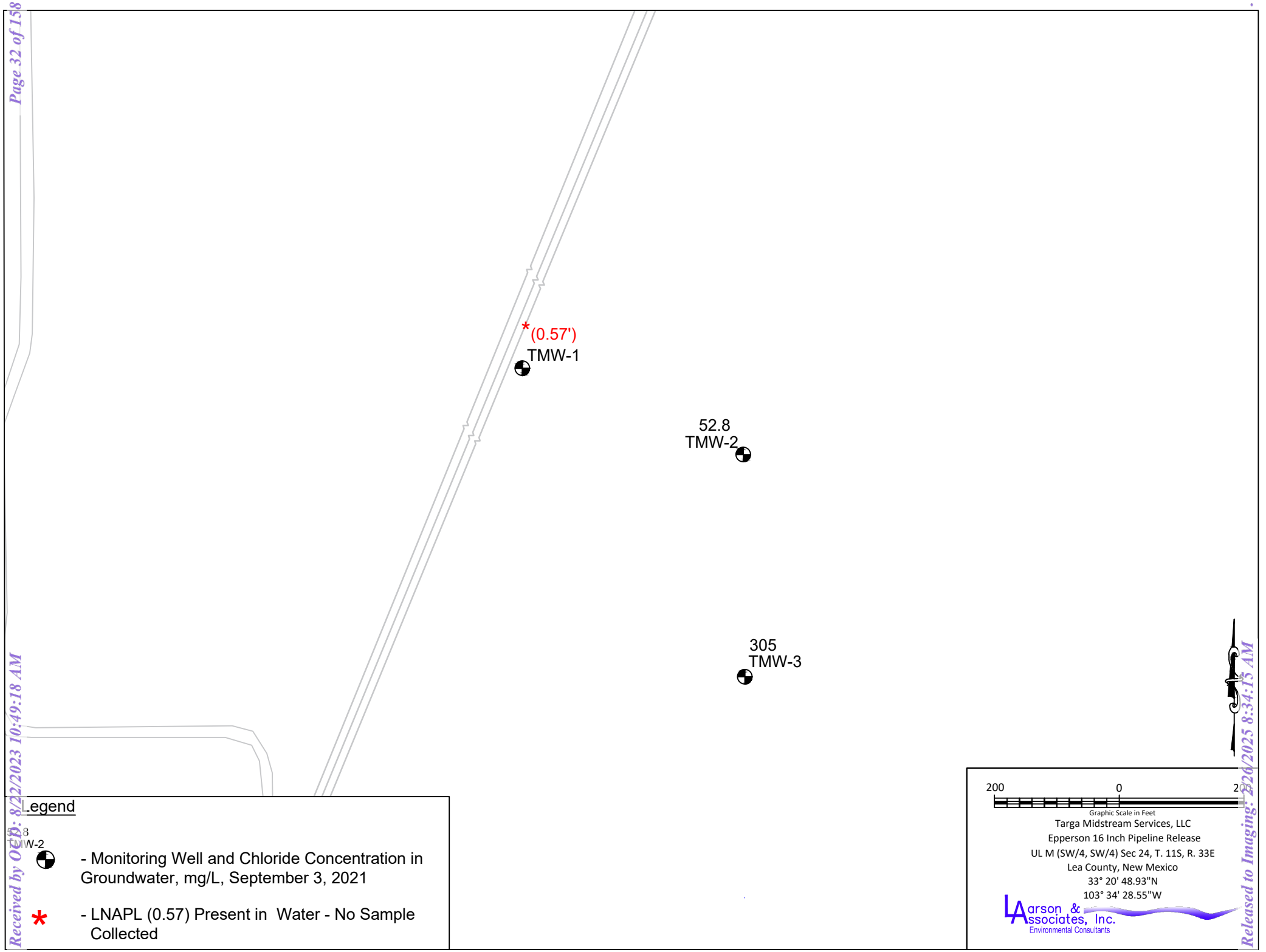

Figure 3 - LNAPL Thickness Map, September 3, 2021

8.5" x 11"

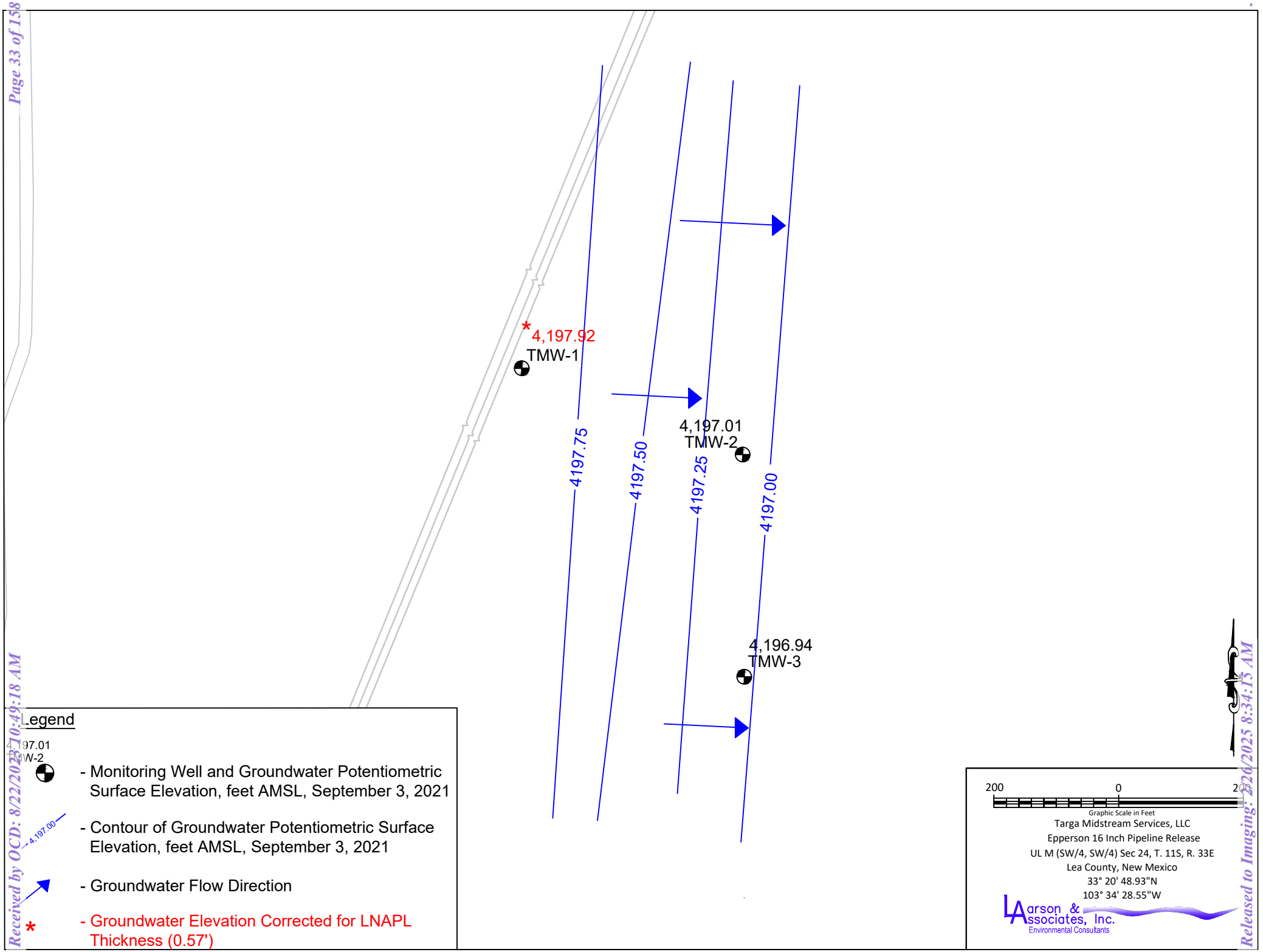

Figure 4 - Groundwater Potentiometric Map, September 3, 2021

8.5" x 11"

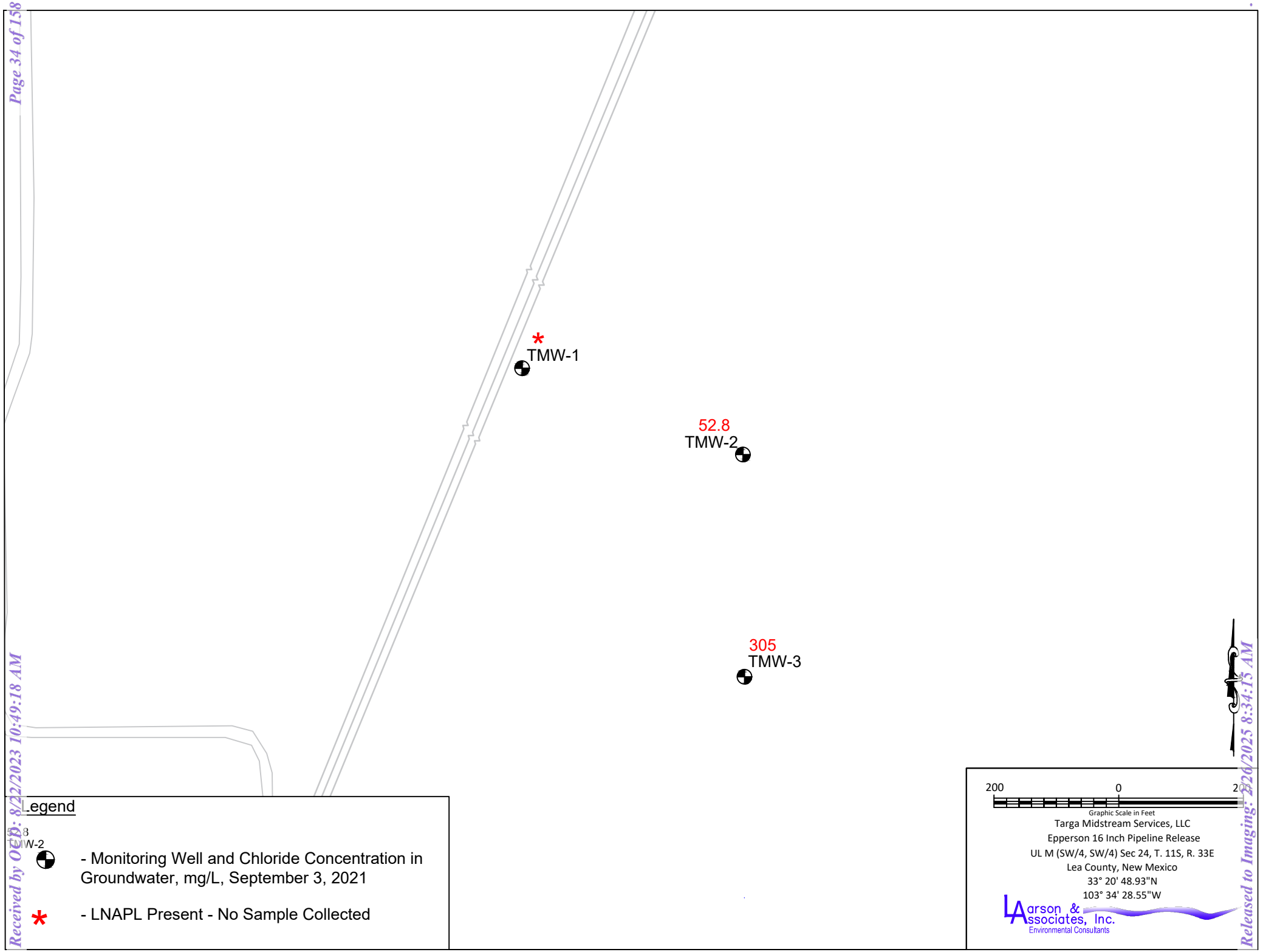

Figure 5 - Chloride Concentration in Groundwater Map, September 3, 2021

8.5" x 11"

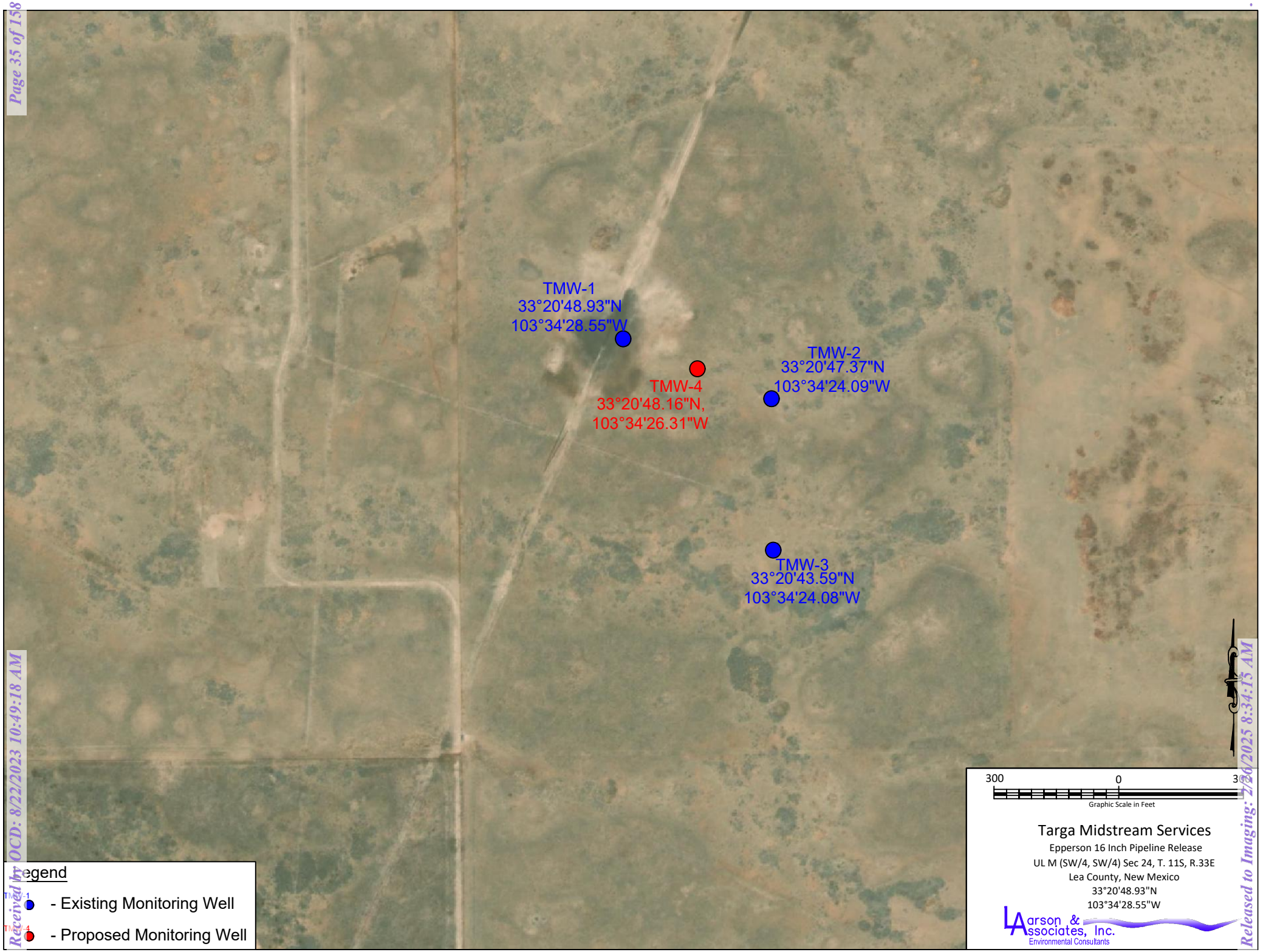

Figure 2 - Aerial Map

8.5" x 11"

Appendix A

Regulatory Communications

From: Yu, Olivia, EMNRD [Olivia.Yu@state.nm.us]
Sent: Thursday, July 13, 2017 4:28 PM
To: Mark Larson; Oberding, Tomas, EMNRD
Cc: 'Higginbotham, Christina'; 'Duncan, Randy'; 'England, Ralph E.'; 'Klein, Cindy D.'
Subject: RE: 1RP-4665 - Addendum Spill Delineation Report, Epperson 16" Pipeline Release Site #2
Attachments: Approved_1RP-4665 Addendum Delineation Report, Epperson 16 Inch Pipeline Release Site 2, May 30, 2017.pdf

Dear Mr. Larson:

Based on the provided data in the addendum dated May 30, 2017 for 1RP-4665, NMOCD approves of the proposed remediation of no further action, although several locations 2-3 ft. bgs are above permissible chloride levels of 600 mg/kg. Please be advised that exceedance of permissible levels are evaluated on a case-by-case basis. The approved addendum is attached.

Please submit a concise closure report and final C-141 for 1RP-4665.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Tuesday, June 27, 2017 12:41 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>; Oberding, Tomas, EMNRD <Tomas.Oberding@state.nm.us>
Cc: 'Higginbotham, Christina' <chigginbotham@targaresources.com>; 'Duncan, Randy' <RDuncan@targaresources.com>; 'England, Ralph E.' <REngland@targaresources.com>; 'Klein, Cindy D.' <CynthiaKlein@targaresources.com>
Subject: Re: 1RP-4664 - Addendum Spill Delineation Report, Epperson 16" Pipeline Release Site #1, May 30, 2017 and 1RP-4665 - Addendum Spill Delineation Report, Epperson 16" Pipeline Release Site #2

Olivia/Tomas,
On behalf of Traga Midstream Services, LLC (Targa) please use the link below to download the above referenced reports for 1RP-4664 9Epperson 16” Pipeline Release #1) and 1RP-4665 (Epperson 16” Pipeline Release #2). Targa requests OCD approval to commence remediation at 1RP-4664 and closure with no further action for 1RP-4665. Please contact Christina Higginbotham with Targa at (713) 584-1396 or me f you have questions.

Link: https://files.acrobat.com/a/preview/ec1deccd-256d-4710-a534-4bb079c9d97c

Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

Logo

"Serving the Permian Basin Since 2000"

From: Mark Larson
Sent: Wednesday, May 03, 2017 1:00 PM
To: 'Yu, Olivia, EMNRD'; 'Oberding, Tomas, EMNRD'; 'Higginbotham, Christina'
Subject: RE: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and Spill Delineation Report for 1RP-4665 (Epperson 16" Pipeline Release Site #2)

That will work! I am assuming 10:00 AM in New Mexico and 11:00AM in Texas? Call in number: 1-877-411-9748 Access Code: 3669914

From: Yu, Olivia, EMNRD [mailto:Olivia.Yu@state.nm.us]
Sent: Wednesday, May 03, 2017 12:48 PM
To: Mark Larson
Cc: 'Higginbotham, Christina'; Oberding, Tomas, EMNRD
Subject: RE: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and Spill Delineation Report for 1RP-4665 (Epperson 16" Pipeline Release Site #2)

Mr. Larson:

Does tomorrow, May 4, 2017, at 10 a.m. work? Dr. Oberding will also be calling in. Please provide a teleconference call number and code.

Thanks,
Olivia

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Wednesday, May 3, 2017 10:54 AM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'Higginbotham, Christina' <chigginbotham@targaresources.com>
Subject: RE: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and Spill Delineation Report for 1RP-4665 (Epperson 16" Pipeline Release Site #2)

Olivia,
Would be available for a conference call to discuss the questions you have concerning the delineation reports for 1RP-4664 and

1RP-4665? Christina Higginbotham with Targa would like to be on the call. Please let me know a convenient date/time for you.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

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"Serving the Permian Basin Since 2000"

From: Yu, Olivia, EMNRD [mailto:Olivia.Yu@state.nm.us]
Sent: Monday, May 01, 2017 4:34 PM
To: Mark Larson
Cc: 'England, Ralph E.'; 'Higginbotham, Christina'
Subject: RE: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1)

Mr. Larson:

Please address the following concerns regarding the delineation workplan for 1RP-4664. Please confirm.

- Given that depth to groundwater is < 50 ft. bgs, additional vertical delineation is required at SB 1, 8 and 12 for chlorides. Obtain and maintain 250 mg/kg chloride levels for 10 more ft. below. At SB1, if the groundwater table is expected to be breached, a temporary monitoring well may be required.
- The remediation plan requires a revision with consideration to chlorides.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Thursday, April 20, 2017 8:01 AM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'England, Ralph E.' <REngland@targaresources.com>; 'Higginbotham, Christina' <chigginbotham@targaresources.com>
Subject: RE: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1)

Olivia,
I apologize for the oversight. The GPS coordinates on the C-141 and drawings are correct. The GPS coordinates on the report cover and on Page 1 have been corrected. The investigation was performed to understand the extent of the release and based on the evaluation of the data it was determined it was appropriate to report the release to OCD. The remediation plan is included as Section 3 Recommendations. Please contact Ralph England with Targa at (575) 396-3221 Ext. 224 or REngland@targaresources.com or me if you have questions.

Link to 1RP-4664: https://files.acrobat.com/a/preview/d450c1c6-5a08-4d35-8929-029e8d1a9026

Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

cid:image001.jpg@01D2C273.FE86F250

"Serving the Permian Basin Since 2000"

From: Yu, Olivia, EMNRD [mailto:Olivia.Yu@state.nm.us]
Sent: Tuesday, April 18, 2017 11:41 AM
To: Mark Larson
Cc: 'England, Ralph E.'; 'Higginbotham, Christina'
Subject: Spill Delineation Report for 1RP-4664 (Epperson 16" Pipeline Release Site #1)

Dear Mr. Larson:

Please address these concerns regarding the delineation report for 1RP-4664:

1. The GPS location of the release on the C-141 and on Figure 2 does not correspond to the coordinates written on pg. 1, which refer to Site #2 release. Please correct or inform otherwise.
2. I overlooked the discovery date upon review of the initial C141. What is the rationale for submitting an initial C141 and delineation workplan in March 2017, when work began in June 2016?

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

From: Yu, Olivia, EMNRD
Sent: Tuesday, April 11, 2017 3:56 PM
To: 'Mark Larson' <Mark@laenvironmental.com>
Cc: 'England, Ralph E.' <REngland@targaresources.com>; 'Higginbotham, Christina' <chigginbotham@targaresources.com>
Subject: RE: Spill Delineation Reports for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and 1RP-4665 (Epperson 16" Pipeline Release Site #2) , Lea County, New Mexico

Mr. Larson:

Yes. I was able to download the 2 pdfs for 1RP-4664 and 1RP-4665, but I have not review them. They will be assessed in the order in which I received them. ETA is probably mid next week.

Olivia

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Tuesday, April 11, 2017 2:39 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'England, Ralph E.' <REngland@targaresources.com>; 'Higginbotham, Christina' <chigginbotham@targaresources.com>
Subject: Re: Spill Delineation Reports for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and 1RP-4665 (Epperson 16" Pipeline Release Site #2) , Lea County, New Mexico

Hello Olivia,
I'm following up to make confirm that you received and were able to down load and review the delineation reports for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and 1RP-4665 (Epperson 16" Pipeline Release #2) that were submitted on April 5, 2017? Please contact Ralph England with Targa at (575) 396-3221 Ext. 224 or REngland@targaresources.com or me if you have questions.

Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901

Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

Logo

"Serving the Permian Basin Since 2000"

From: Mark Larson
Sent: Wednesday, April 05, 2017 11:37 AM
To: 'Yu, Olivia, EMNRD'
Cc: 'England, Ralph E.'; 'Higginbotham, Christina'
Subject: RE: DSpill Delineation Reports for 1RP-4664 (Epperson 16" Pipeline Release Site #1) and 1RP-4665 (Epperson 16" Pipeline Release Site #2) , Lea County, New Mexico

Dear Ms. Yu,
Please use the links below to download electronic copies of the spill delineation reports for 1RP-4664 and 1RP-4665 submitted on behalf of Targa Midstream Services, LLC. Please contact Ralph England with Targa at (575) 396-3221 Ext. 224 or REngland@targaresources.com or me if you have questions.

Link to 1RP-4664: https://files.acrobat.com/a/preview/1cba9ad8-322b-40a5-957c-6e1e37f93dda
Link to 1RP-4665: https://files.acrobat.com/a/preview/e83e9e5f-3410-4309-9548-4bedd03d580d

Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

Logo

"Serving the Permian Basin Since 2000"

From: Yu, Olivia, EMNRD [mailto:Olivia.Yu@state.nm.us]
Sent: Friday, March 31, 2017 2:35 PM
To: Mark Larson
Cc: 'England, Ralph E.'
Subject: RE: Initial C-141 - Targa Midstream Services, Epperson 16" Pipeline Release Site #1 and Release Site #2, Lea County, New Mexico

Dear Mr. England:

NB: The PLSS for the releases were adjusted based on the GPS coordinates provided. Please confirm.

The RPs for these incidents are

4664	3/31/2017	A	Targa Midstream Srvcs.	Epperson 16" pipeline (release site #1)		11S-33E-24F	unknown
4665	3/31/2017	A	Targa Midstream Srvcs.	Epperson 16" pipeline (release site #2)		11S-33E-24M	unknown

Please note that a release characterization/delineation workplan as detailed in the attachment must be approved by NMOCD BEFORE any remediation work.

Thanks,

Olivia Yu
Environmental Specialist
NMOCD, District I
Olivia.yu@state.nm.us
575-393-6161 x113

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Wednesday, March 29, 2017 2:24 PM
To: Yu, Olivia, EMNRD <Olivia.Yu@state.nm.us>
Cc: 'England, Ralph E.' <REngland@targaresources.com>
Subject: Re: Initial C-141 - Targa Midstream Services, Epperson 16" Pipeline Release Site #1 and Release Site #2, Lea County, New Mexico

Dear Ms. Yu,
Please find attached initial C-141 for Targa Midstream Services, LLC. The C-141s are for two (2) releases (Release Site #1 and Release Site #2) from the Epperson 16" pipeline located west of Tatum, in Lea County, New Mexico. Please contact Ralph England (REngland@targaresources.com) or call (575) 396-3221, Ext. 224 or me if you have questions.

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

Logo

www.LAEnvironmental.com

"Serving the Permian Basin Since 2000"

From: Billings, Bradford, EMNRD
To: Mark Larson
Cc: Higginbotham, Christina
Subject: RE: 1RP-4664, Backfill Notification, Targa Midstream Services, LLC, Epperson 16 Inch Pipeline Release, Lea County, New Mexico
Date: Thursday, February 18, 2021 1:43:33 PM

02/18/2021

Chistina Higginbotham – TARGA
Mark Larson – LAE

RE; Backfill request on areas associated with 1RP-4664

After review of the supplied data and information, the following: Approval is given by the Oil Conservation Division (OCD) to proceed with backfill operations as requested. OCD thanks you for your efforts. Please make OCD aware of timing for backfill and completion.

Sincerely,

Bradford G. Billings
EMNRD/OCD

OCD approval does not relieve the operator of liability should their operations fail to adequately investigate and remediate contamination that may pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations

---

From: Mark Larson <Mark@laenvironmental.com>
Sent: Tuesday, February 9, 2021 8:51 AM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Eads, Cristina, EMNRD <Cristina.Eads@state.nm.us>
Subject: [EXT] Re: 1RP-4664, Backfill Notification, Targa Midstream Services, LLC, Epperson 16 Inch Pipeline Release, Lea County, New Mexico

Hello Mr. Billings and Ms. Eads,
This message is submitted to the New Mexico Oil Conservation Division (OCD) on behalf of Targa Midstream Services, LLC (Targa) to provide notification as required by 19.15.29.12D(1)(a) NMAC for backfilling the excavation at the Epperson 16 inch pipeline (1RP-4664) located in Lea County, New Mexico. Between October 2017 and November 2020, Gandy Marley Inc. (GMI), under supervision from Larson & Associates, Inc. (LAI), excavated approximately 4,432 cubic yards of soil that was disposed at the Gandy Marly Landfill located between Tatum and Roswell, New Mexico. LIA personnel collected confirmation soil samples from the excavation bottom and sidewalls that were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), total petroleum hydrocarbons (TPH) and chloride by EPA SW-846 Methods 8021B/8260, 8015 and 300, respectively. The final laboratory results are below the closure standards in Table 1 of 19.15.29.12 NMAC, therefore, Targa will backfill the excavation with clean material meeting the requirements by 19.15.29.13D(1). Please refer to

the attached analytical data tables and drawings. The closure report will be submitted upon completion of excavation backfilling. A remediation plan will be submitted separately for the groundwater impact. Please contact Christina Higginbotham with Targa Resources at (713) 584-1396 or email chigginbotham@targaresources.com or me if you have any questions.

Thank you,

Mark J. Larson, P.G.
President/Sr. Hydrogeologist
507 N. Marienfeld St., Suite 202
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

"Serving the Permian Basin Since 2000"

Appendix B

U.S.G.S Karst Information

New Mexico Kart or No Karst - QGIS

Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help

Browser

- Favorites
- Spatial Bookmarks
- Project Home
- Home
- C:\
- D:\
- L:\
- Z:\
- GeoPackage
- SpatiaLite
- PostGIS
- MSSQL
- Oracle
- DB2
- WMS/WMTS
- XYZ Tiles
- WCS
- WFS / OGC API - Features
- OWS
- ArcGisMapServer
- ArcGisFeatureServer
- GeoNode

Layers

- Karst or No Karst
  - High
  - Low
  - Medium
  -
- Bing Satellite

Coordinate 632467.2,3690728.7 Scale 1:2353 Magnifier 100% Rotation 0.0 ° Render EPSG:26913

Appendix C

NMOSE Well Permits

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT II OFFICE
TELEPHONE: (575) 622-6521 FAX: (575) 623-8559

TOM BLAINE, P.E.
STATE ENGINEER

Mailing Address:
1900 West Second Street
Roswell, NM 88201-1712

August 2, 2018

ATTN Mark Larson
Larson & Associates (for Targa Resources [c/o Ms. Christina Higginbotham])
507 North Marienfeld, Suite 205
Midland, TX 79701

RE: Application for Permit to Drill a Monitoring Well Land on Private Land (Pearce Trust)

File: None (no water right)

Receipt Number: 2-39290

Greetings:

Enclosed herein are the original forms for an Application to a Monitoring Well (with No Water Right), received in this office on **April 13, 2018**.

These forms are being returned without being processed for the following reasons:

--The coordinates provided on the application indicated that the well was to be completed on private property in the name of the Pearce Trust, but the filing did not include documentation from the landowner confirming that access had been granted to drill the requested well.

--When plotted, the coordinates provided resulted in a different legal description for the proposed well location than what was provided on the application.

Christina Higginbotham of Targa Resources was contacted via e-mail (enclosed) on April 19, 2018, and asked to confirm and/or correct the coordinates and/or legal description provided, and to provide proof of permission to access the private property for well construction. Christina replied to the e-mail on the same date, indicating that she would provide follow up. However, to date, no contact or subsequent actions appear to have been completed by the applicant or agents regarding this filing.

Therefore, the application is being returned to you for disposal with no further action by the State Engineer. The filing fee that accompanied the application is considered as earned and is nonrefundable.

Sincerely,

Bill Duemling
OSE District II Water Resources Manager I
(575) 291-2396
Enclosures (Returned Application for Monitoring Permit)

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 39290 DATE: 4/13/18 FILE NO.: L-Basin

TOTAL: 5.00 RECEIVED: Five dlls DOLLARS CHECK NO.: 14552 CASH: _____

PAYOR: Larson & Associates/Targa Resources ADDRESS: P.O. Box 50685 CITY: Midland STATE: TX

ZIP: 79710 RECEIVED BY: C. Guilen

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

___ 1. Change of Ownership of Water Right $ 2.00
___ 2. Application to Appropriate or Supplement Domestic 72-12-1 Well $ 125.00
___ 3. Application to Repair or Deepen 72-12-1 Well $ 75.00
___ 4. Application for Replacement 72-12-1 Well $ 75.00
___ 5. Application to Change Purpose of Use 72-12-1 Well $ 75.00
___ 6. Application for Stock Well/Temp. Use $ 5.00

___ 7. Application to Appropriate Irrigation, Municipal, or Commercial Use $ 25.00
___ 8. Declaration of Water Right $ 1.00
___ 9. Application for Supplemental Non 72-12-1 Well $ 25.00
___ 10. Application to Change Place or Purpose of Use Non 72-12-1 Well $ 25.00
___ 11. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water $ 50.00
___ 12. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water $ 50.00
___ 13. Application to Change Point of Diversion of Non 72-12-1 Well $ 25.00
___ 14. Application to Repair or Deepen Non 72-12-1 Well $ 5.00

L 15. Application for Test, Expl. Observ. Well $ 5.00
___ 16. Application for Extension of Time $ 25.00
___ 17. Proof of Application to Beneficial Use $ 25.00
___ 18. Notice of Intent to Appropriate $ 25.00

B. Surface Water Filing Fees

___ 1. Change of Ownership of a Water Right $ 5.00
___ 2. Declaration of Water Right $ 10.00
___ 3. Amended Declaration $ 25.00
___ 4. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water $ 200.00
___ 5. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water $ 200.00
___ 6. Application to Change Point of Diversion $ 100.00
___ 7. Application to Change Place and/or Purpose of Use $ 100.00
___ 8. Application to Appropriate $ 25.00
___ 9. Notice of Intent to Appropriate $ 25.00
___ 10. Application for Extension of Time $ 50.00
___ 11. Supplemental Well to a Surface Right $ 100.00
___ 12. Return Flow Credit $ 100.00
___ 13. Proof of Completion of Works $ 25.00
___ 14. Proof of Application of Water to Beneficial Use $ 25.00
___ 15. Water Development Plan $ 100.00
___ 16. Declaration of Livestock Water Impoundment $ 10.00
___ 17. Application for Livestock Water Impoundment $ 10.00

All fees are non-refundable.

C. Well Driller Fees

___ 1. Application for Well Driller's License $ 50.00
___ 2. Application for Renewal of Well Driller's License $ 50.00
___ 3. Application to Amend Well Driller's License $ 50.00

D. Reproduction of Documents

___ @ 0.25¢ $_____

___ Map(s) $_____

E. Certification $_____

F. Other $_____

G. Comments:

Mail –

Duemling, Bill, OSE

From: Higginbotham, Christina [chigginbotham@targaresources.com]
Sent: Thursday, April 19, 2018 10:16 AM
To: Duemling, Bill, OSE
Subject: RE: [EXTERNAL] Proposed Permit for Monitor Well TMW-1 on Pearce Trust Land located in Section 24, T. 11S, R.33E, NMPM

Thanks Bill. We will jump on this.

Christina Higginbotham, P.G. | Targa Resources | Sr. Environmental Specialist
811 Louisiana Street, Suite 2100, Houston, TX 77002 | office: (713) 584-1396| cell: (281) 620-7835
email: chigginbotham@targaresources.com

From: Duemling, Bill, OSE [mailto:bill.duemling@state.nm.us]
Sent: Thursday, April 19, 2018 10:28 AM
To: Higginbotham, Christina <chigginbotham@targaresources.com>
Subject: [EXTERNAL] Proposed Permit for Monitor Well TMW-1 on Pearce Trust Land located in Section 24, T. 11S, R.33E, NMPM

Hello Christina

In reviewing the subject application, a couple of items arose:

1. Documentation is needed from the owner of the land (Pearce Trust) where the monitor well is to be drilled to confirm that Targa Resources has permission to access the property for such use. A simple letter from Ricky Pearce e-mailed back to me would suffice.

2. In plotting the coordinates provided for proposed TMW-1, the resulting legal description was the NW/4 SE/4 NW/4 of Section 24, Township 11S, Range 33E, NMPM. (map attached) However, the application describes the proposed location as the SW/4 SW/4 of said Section 24. Please confirm the coordinates and/or legal description and advise of any changes needed.

Thank You

Bill Duemling
Office of the State Engineer, District II
Water Resources Manager I
1900 West Second Street; Roswell, NM 88201-1712
(575) 291-2396

File No.

NEW MEXICO OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And / Or Recovery	☐ Geo-Thermal
☐ Exploratory	☐ Construction Site De-Watering	☐ Other (Describe):
☒ Monitoring	☐ Mineral De-Watering	

A separate permit will be required to apply water to beneficial use.

☐ Temporary Request - Requested Start Date: Requested End Date:

Plugging Plan of Operations Submitted? ☐ Yes ☐ No

2018 APR 13 AM 11 05

1. APPLICANT(S)

Name: **Targa Respources, Inc.**	Name:
Contact or Agent: check here if Agent ☐ **Christina Higginbotham**	Contact or Agent: check here if Agent ☐
Mailing Address: **811 Louisiana, Suite 2100**	Mailing Address:
City: **Houston**	City:
State: **TX** Zip Code: **77002**	State: Zip Code:
Phone: **(281) 620-7835** ☐ Home ☒ Cell Phone (Work): **(713) 584-1396**	Phone: ☐ Home ☐ Cell Phone (Work):
E-mail (optional): **chigginbotham@targaresources.com**	E-mail (optional):

2-39290

FOR OSE INTERNAL USE

Application for Permit, Form wr-07, Rev 4/12/12

File Number:	Trn Number:
Trans Description (optional):	
Sub-Basin:	
PCW/LOG Due Date:	

2. **WELL(S)** Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

☐ UTM (NAD83) (Meters)
☐ Zone 12N
☐ Zone 13N

☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range)* OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
TMW-1	103°34'17.06"w	33°21'13.06"n	SW/4, SW4 S24 T11S R33E

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ Yes ☒ No **If yes, how many**_____

Other description relating well to common landmarks, streets, or other:

Well is on land owned by: **Ricky Pierce**

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. **Attached?** ☐ Yes ☐ No
If yes, how many_____

Approximate depth of well (feet): **35.00**	Outside diameter of well casing (inches): **2.00**
Driller Name: **Layne Scarborough**	Driller License Number: **WD-1188**

3. **ADDITIONAL STATEMENTS OR EXPLANATIONS**

Wells will be used to delineate and monitor groundwater contamination for up to 2 years.

FOR OSE INTERNAL USE Application for Permit, Form wr-07

File Number:	Trn Number:

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory:	**Pollution Control and/or Recovery:**	**Construction De-Watering:**	**Mine De-Watering:**
☐ Include a description of any proposed pump test, if applicable.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
Monitoring: ☒ Include the reason for the monitoring well, and, ☒ The duration of the planned monitoring.	☐ The method of measurement of water produced and discharged. ☐ The source of water to be injected. ☐ The method of measurement of water injected. ☐ The characteristics of the aquifer. ☐ The method of determining the resulting annual consumptive use of water and depletion from any related stream system. ☐ Proof of any permit required from the New Mexico Environment Department. ☐ An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	**Geo-Thermal:** ☐ Include a description of the geothermal heat exchange project, ☐ The amount of water to be diverted and re-injected for the project, ☐ The time frame for constructing the geothermal heat exchange project, and, ☐ The duration of the project. ☐ Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.	

ACKNOWLEDGEMENT

I, We (name of applicant(s)), **Christina Higginbotham**
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Chiti Higginbotham
Applicant Signature

Applicant Signature

2023 APR 13 PM 11:04 STATE OF NEW MEXICO OSE ROSWELL

ACTION OF THE STATE ENGINEER

This application is:

☐ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this _____ day of _____ 20 _____, for the State Engineer,

_____, State Engineer

By: _____ _____
Signature Print

Title: _____
Print

FOR OSE INTERNAL USE Application for Permit, Form wr-07

File Number:	Trn Number:

Larson & Associates, Inc.
Environmental Consultants

April 10, 2018

Office of the New Mexico State Engineer
1900 W 2nd Street
Roswell, NM 88201

ATT: Monitoring Well Permit Application

Dear NMOSE,
Larson & Associates, Inc. (LIA), on behalf of Targa Resources, submits the enclosed application and fee ($5.00) for monitoring well. Please contact Ms. Christina Higginbotham with Targa at (713) 584-1396 or chigginbotham@targaresources.com or me at (432) 687-0901, if you have questions.

Sincerely,

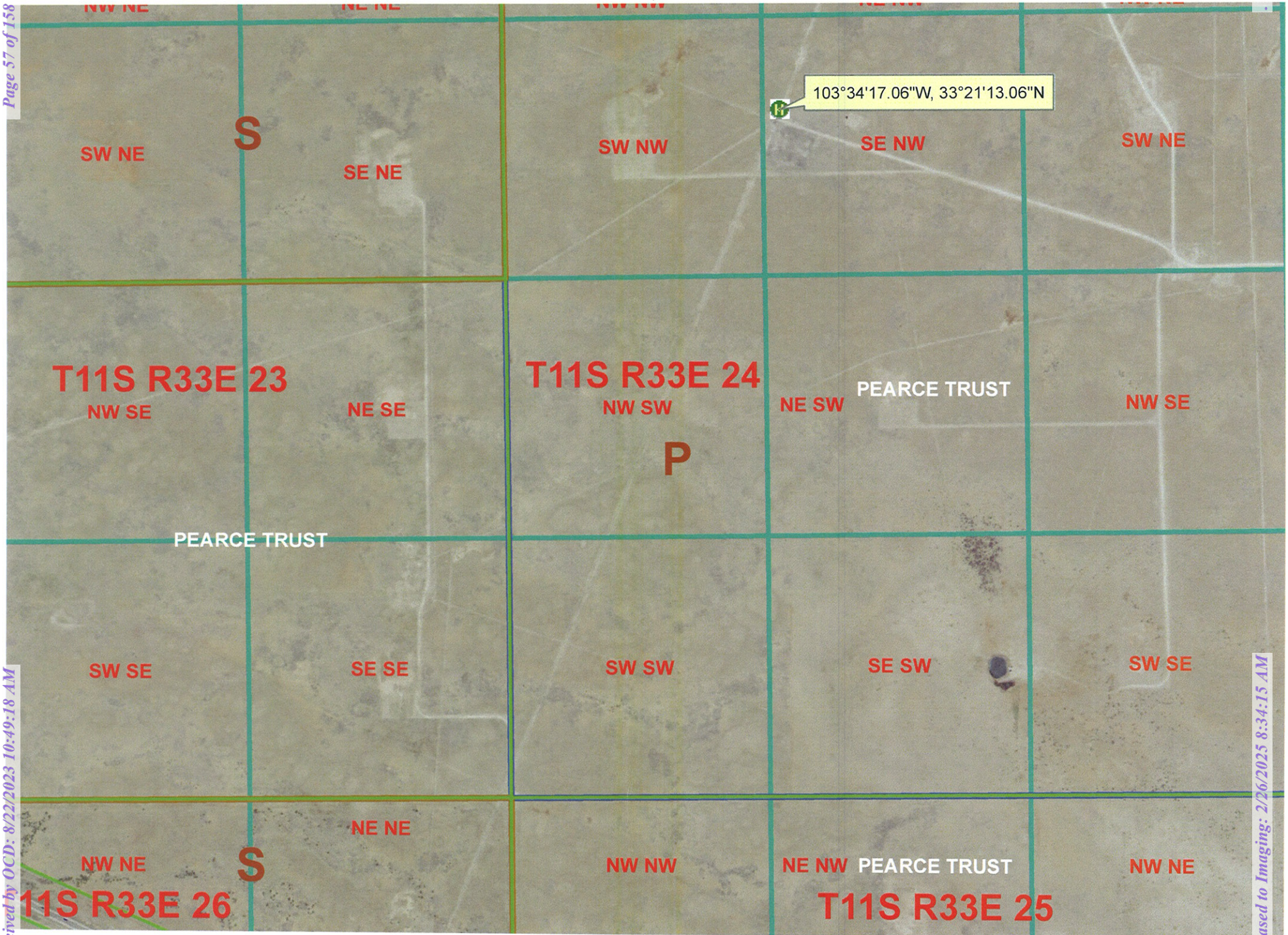
Larson & Associates, Inc.

Mark J. Larson, P.G.
President/Sr. Hydrogeologist

Encl.

cc: Christina Higginbotham

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2018 APR 13 AM 11:04



Locator Tool Report

General Information:

Application ID: 30 Date: 04-19-2018 Time: 09:19:09

WR File Number: L
Purpose: PLACE OF USE

Applicant First Name: TARGA RESOURCES
Applicant Last Name: MONITOR WELL APPLICATION

GW Basin: LEA COUNTY
County: LEA

Critical Management Area Name(s): NONE
Special Condition Area Name(s): NONE
Land Grant Name: NON GRANT

PLSS Description (New Mexico Principal Meridian):

SW 1/4 of NW 1/4 of SE 1/4 of NW 1/4 of Section 24, Township 11S, Range 33E.

Coordinate System Details:

Geographic Coordinates:

Latitude:	33 Degrees	21 Minutes	13.1 Seconds	N
Longitude:	103 Degrees	34 Minutes	17.1 Seconds	W

Universal Transverse Mercator Zone: 13N

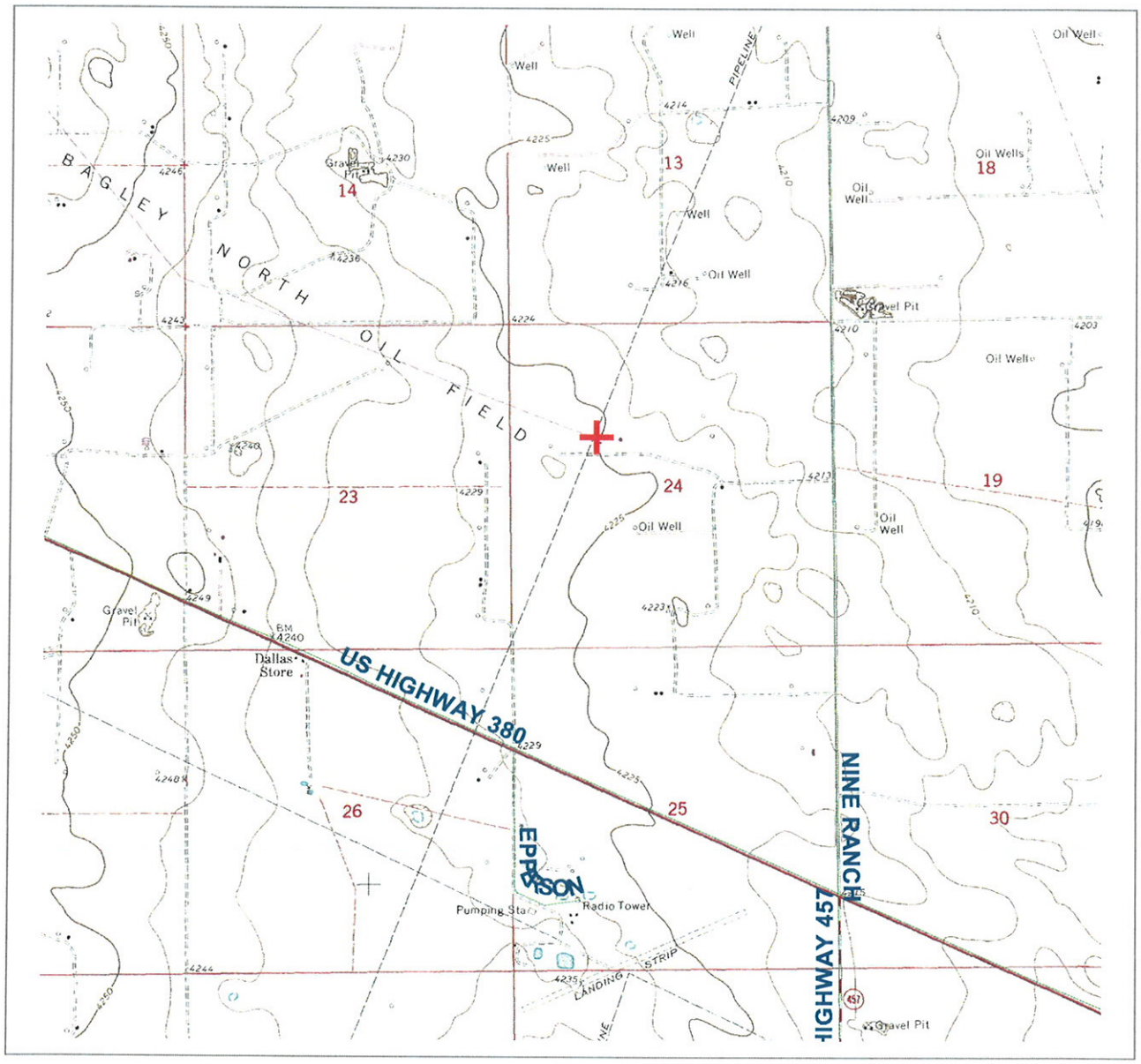
NAD 1983(92) (Meters)	N: 3,691,402	E: 632,924
NAD 1983(92) (Survey Feet)	N: 12,110,876	E: 2,076,518
NAD 1927 (Meters)	N: 3,691,199	E: 632,974
NAD 1927 (Survey Feet)	N: 12,110,208	E: 2,076,684

State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 261,229	E: 235,914
NAD 1983(92) (Survey Feet)	N: 857,050	E: 773,993
NAD 1927 (Meters)	N: 261,209	E: 223,363
NAD 1927 (Survey Feet)	N: 856,984	E: 732,817

NEW MEXICO OFFICE OF STATE ENGINEER

Locator Tool Report



WR File Number: L Scale: 1:33,169

Northing/Easting: UTM83(92) (Meter): N: 3,691,402 E: 632,924

Northing/Easting: SPCS83(92) (Feet): N: 857,050 E: 773,993

GW Basin: Lea County

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER

DISTRICT II OFFICE
TELEPHONE: (575) 622-6521 FAX: (575) 623-8559

TOM BLAINE, P.E.
STATE ENGINEER

Mailing Address:
1900 West Second Street
Roswell, NM 88201-1712

August 2, 2018

ATTN Mark Larson
Larson & Associates (for Targa Resources [c/o Ms. Christina Higginbotham])
507 North Marienfeld, Suite 205
Midland, TX 79701

RE: Application for Permit to Drill a Monitoring Well Land on Private Land (Pearce Trust)

File: None (no water right)

Receipt Number: 2-39290

Greetings:

Enclosed herein are the original forms for an Application to a Monitoring Well (with No Water Right), received in this office on **April 13, 2018**.

These forms are being returned without being processed for the following reasons:

--The coordinates provided on the application indicated that the well was to be completed on private property in the name of the Pearce Trust, but the filing did not include documentation from the landowner confirming that access had been granted to drill the requested well.

--When plotted, the coordinates provided resulted in a different legal description for the proposed well location than what was provided on the application.

Christina Higginbotham of Targa Resources was contacted via e-mail (enclosed) on April 19, 2018, and asked to confirm and/or correct the coordinates and/or legal description provided, and to provide proof of permission to access the private property for well construction. Christina replied to the e-mail on the same date, indicating that she would provide follow up. However, to date, no contact or subsequent actions appear to have been completed by the applicant or agents regarding this filing.

Therefore, the application is being returned to you for disposal with no further action by the State Engineer. The filing fee that accompanied the application is considered as earned and is nonrefundable.

Sincerely,

Bill Duemling
OSE District II Water Resources Manager I
(575) 291-2396
Enclosures (Returned Application for Monitoring Permit)

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 39290 DATE: 4/13/18 FILE NO.: L-Basin

TOTAL: 5.00 RECEIVED: Five d/ls DOLLARS CHECK NO.: 14552 CASH: _____

PAYOR: Larson & Associates/Targa Resources ADDRESS: P.O. Box 50685 CITY: Midland STATE: TX

ZIP: 79710 RECEIVED BY: C. Guilen

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. **Original** to payor; **pink** copy to Program Support/ASD; and **yellow** copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

A. Ground Water Filing Fees

___ 1. Change of Ownership of Water Right $ 2.00
___ 2. Application to Appropriate or Supplement Domestic 72-12-1 Well $ 125.00
___ 3. Application to Repair or Deepen 72-12-1 Well $ 75.00
___ 4. Application for Replacement 72-12-1 Well $ 75.00
___ 5. Application to Change Purpose of Use 72-12-1 Well $ 75.00
___ 6. Application for Stock Well/Temp. Use $ 5.00

___ 7. Application to Appropriate Irrigation, Municipal, or Commercial Use $ 25.00
___ 8. Declaration of Water Right $ 1.00
___ 9. Application for Supplemental Non 72-12-1 Well $ 25.00
___ 10. Application to Change Place or Purpose of Use Non 72-12-1 Well $ 25.00
___ 11. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Ground Water $ 50.00
___ 12. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Ground Water $ 50.00
___ 13. Application to Change Point of Diversion of Non 72-12-1 Well $ 25.00
___ 14. Application to Repair or Deepen Non 72-12-1 Well $ 5.00

L 15. Application for Test, Expl. Observ. Well $ 5.00
___ 16. Application for Extension of Time $ 25.00
___ 17. Proof of Application to Beneficial Use $ 25.00
___ 18. Notice of Intent to Appropriate $ 25.00

B. Surface Water Filing Fees

___ 1. Change of Ownership of a Water Right $ 5.00
___ 2. Declaration of Water Right $ 10.00
___ 3. Amended Declaration $ 25.00
___ 4. Application to Change Point of Diversion and Place and/or Purpose of Use from Surface Water to Surface Water $ 200.00
___ 5. Application to Change Point of Diversion and Place and/or Purpose of Use from Ground Water to Surface Water $ 200.00
___ 6. Application to Change Point of Diversion $ 100.00
___ 7. Application to Change Place and/or Purpose of Use $ 100.00
___ 8. Application to Appropriate $ 25.00
___ 9. Notice of Intent to Appropriate $ 25.00
___ 10. Application for Extension of Time $ 50.00
___ 11. Supplemental Well to a Surface Right $ 100.00
___ 12. Return Flow Credit $ 100.00
___ 13. Proof of Completion of Works $ 25.00
___ 14. Proof of Application of Water to Beneficial Use $ 25.00
___ 15. Water Development Plan $ 100.00
___ 16. Declaration of Livestock Water Impoundment $ 10.00
___ 17. Application for Livestock Water Impoundment $ 10.00

All fees are non-refundable.

C. Well Driller Fees

___ 1. Application for Well Driller's License $ 50.00
___ 2. Application for Renewal of Well Driller's License $ 50.00
___ 3. Application to Amend Well Driller's License $ 50.00

D. Reproduction of Documents

___ @ 0.25¢ $_____

___ Map(s) $_____

E. Certification $_____

F. Other $_____

G. Comments:

Mail –

Duemling, Bill, OSE

From: Higginbotham, Christina [chigginbotham@targaresources.com]
Sent: Thursday, April 19, 2018 10:16 AM
To: Duemling, Bill, OSE
Subject: RE: [EXTERNAL] Proposed Permit for Monitor Well TMW-1 on Pearce Trust Land located in Section 24, T. 11S, R.33E, NMPM

Thanks Bill. We will jump on this.

Christina Higginbotham, P.G. | Targa Resources | Sr. Environmental Specialist
811 Louisiana Street, Suite 2100, Houston, TX 77002 | office: (713) 584-1396| cell: (281) 620-7835
email: chigginbotham@targaresources.com

From: Duemling, Bill, OSE [mailto:bill.duemling@state.nm.us]
Sent: Thursday, April 19, 2018 10:28 AM
To: Higginbotham, Christina <chigginbotham@targaresources.com>
Subject: [EXTERNAL] Proposed Permit for Monitor Well TMW-1 on Pearce Trust Land located in Section 24, T. 11S, R.33E, NMPM

Hello Christina

In reviewing the subject application, a couple of items arose:

1. Documentation is needed from the owner of the land (Pearce Trust) where the monitor well is to be drilled to confirm that Targa Resources has permission to access the property for such use. A simple letter from Ricky Pearce e-mailed back to me would suffice.

2. In plotting the coordinates provided for proposed TMW-1, the resulting legal description was the NW/4 SE/4 NW/4 of Section 24, Township 11S, Range 33E, NMPM. (map attached) However, the application describes the proposed location as the SW/4 SW/4 of said Section 24. Please confirm the coordinates and/or legal description and advise of any changes needed.

Thank You

Bill Duemling
Office of the State Engineer, District II
Water Resources Manager I
1900 West Second Street; Roswell, NM 88201-1712
(575) 291-2396

File No.

NEW MEXICO OFFICE OF THE STATE ENGINEER

APPLICATION FOR PERMIT TO DRILL A WELL WITH NO CONSUMPTIVE USE OF WATER

(check applicable box):

For fees, see State Engineer website: http://www.ose.state.nm.us/

Purpose:	☐ Pollution Control And / Or Recovery	☐ Geo-Thermal
☐ Exploratory	☐ Construction Site De-Watering	☐ Other (Describe):
☒ Monitoring	☐ Mineral De-Watering	

A separate permit will be required to apply water to beneficial use.

☐ Temporary Request - Requested Start Date: Requested End Date:

Plugging Plan of Operations Submitted? ☐ Yes ☐ No

2019 APR 17 AM 11 05

1. APPLICANT(S)

Name: **Targa Respources, Inc.**	Name:
Contact or Agent: check here if Agent ☐ **Christina Higginbotham**	Contact or Agent: check here if Agent ☐
Mailing Address: **811 Louisiana, Suite 2100**	Mailing Address:
City: **Houston**	City:
State: **TX** Zip Code: **77002**	State: Zip Code:
Phone: **(281) 620-7835** ☐ Home ☒ Cell Phone (Work): **(713) 584-1396**	Phone: ☐ Home ☐ Cell Phone (Work):
E-mail (optional): **chigginbotham@targaresources.com**	E-mail (optional):

2-39290

FOR OSE INTERNAL USE Application for Permit, Form wr-07, Rev 4/12/12

File Number:	Trn Number:
Trans Description (optional):	
Sub-Basin:	
PCW/LOG Due Date:	

2. **WELL(S)** Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).
District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

☐ NM State Plane (NAD83) (Feet)
☐ NM West Zone
☐ NM East Zone
☐ NM Central Zone

☐ UTM (NAD83) (Meters)
☐ Zone 12N
☐ Zone 13N

☒ Lat/Long (WGS84) (to the nearest 1/10th of second)

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (*Quarters or Halves , Section, Township, Range)* OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
TMW-1	103°34'17.06"w	33°21'13.06"n	SW/4, SW4 S24 T11S R33E
TMW-2	103° 34' 24.0909"w	33° 20' 47.3733"n	SW/4 SW4 S24 T11S R33E
TMW-3	103° 34' 24.0792"w	33° 20' 43.5942"n	SW/4 SW4 S24 T11S R33E

NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)
Additional well descriptions are attached: ☐ Yes ☒ No **If yes, how many**_____

Other description relating well to common landmarks, streets, or other:

Well is on land owned by: **Ricky Pierce**

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. **Attached?** ☐ Yes ☐ No
If yes, how many_____

Approximate depth of well (feet): **35.00**	Outside diameter of well casing (inches): **2.00**
Driller Name: **Layne Scarborough**	Driller License Number: **WD-1188**

3. **ADDITIONAL STATEMENTS OR EXPLANATIONS**

Wells will be used to delineate and monitor groundwater contamination for up to 2 years.

FOR OSE INTERNAL USE Application for Permit, Form wr-07

File Number:	Trn Number:

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

Exploratory:	**Pollution Control and/or Recovery:**	**Construction De-Watering:**	**Mine De-Watering:**
☐ Include a description of any proposed pump test, if applicable.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for the pollution control or recovery operation. ☐ The estimated maximum period of time for completion of the operation. ☐ The annual diversion amount. ☐ The annual consumptive use amount. ☐ The maximum amount of water to be diverted and injected for the duration of the operation. ☐ The method and place of discharge.	☐ Include a description of the proposed dewatering operation, ☐ The estimated duration of the operation, ☐ The maximum amount of water to be diverted, ☐ A description of the need for the dewatering operation, and, ☐ A description of how the diverted water will be disposed of.	☐ Include a plan for pollution control/recovery, that includes the following: ☐ A description of the need for mine dewatering. ☐ The estimated maximum period of time for completion of the operation. ☐ The source(s) of the water to be diverted. ☐ The geohydrologic characteristics of the aquifer(s). ☐ The maximum amount of water to be diverted per annum. ☐ The maximum amount of water to be diverted for the duration of the operation. ☐ The quality of the water. ☐ The method of measurement of water diverted. ☐ The recharge of water to the aquifer. ☐ Description of the estimated area of hydrologic effect of the project. ☐ The method and place of discharge. ☐ An estimation of the effects on surface water rights and underground water rights from the mine dewatering project. ☐ A description of the methods employed to estimate effects on surface water rights and underground water rights. ☐ Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.
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ACKNOWLEDGEMENT

I, We (name of applicant(s)), **Christina Higginbotham**
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Applicant Signature

Applicant Signature

2019 APR 15 PM 11:04 STATE ENGINEER OFFICE ROSWELL, NEW MEXICO

ACTION OF THE STATE ENGINEER

This application is:

☐ approved ☐ partially approved ☐ denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this _____ day of _____ 20 _____, for the State Engineer,

_____, State Engineer

By: _____ _____
Signature Print

Title: _____
Print

FOR OSE INTERNAL USE Application for Permit, Form wr-07

File Number:	Trn Number:

Larson & Associates, Inc.
Environmental Consultants

April 10, 2018

Office of the New Mexico State Engineer
1900 W 2nd Street
Roswell, NM 88201

ATT: Monitoring Well Permit Application

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Sincerely,

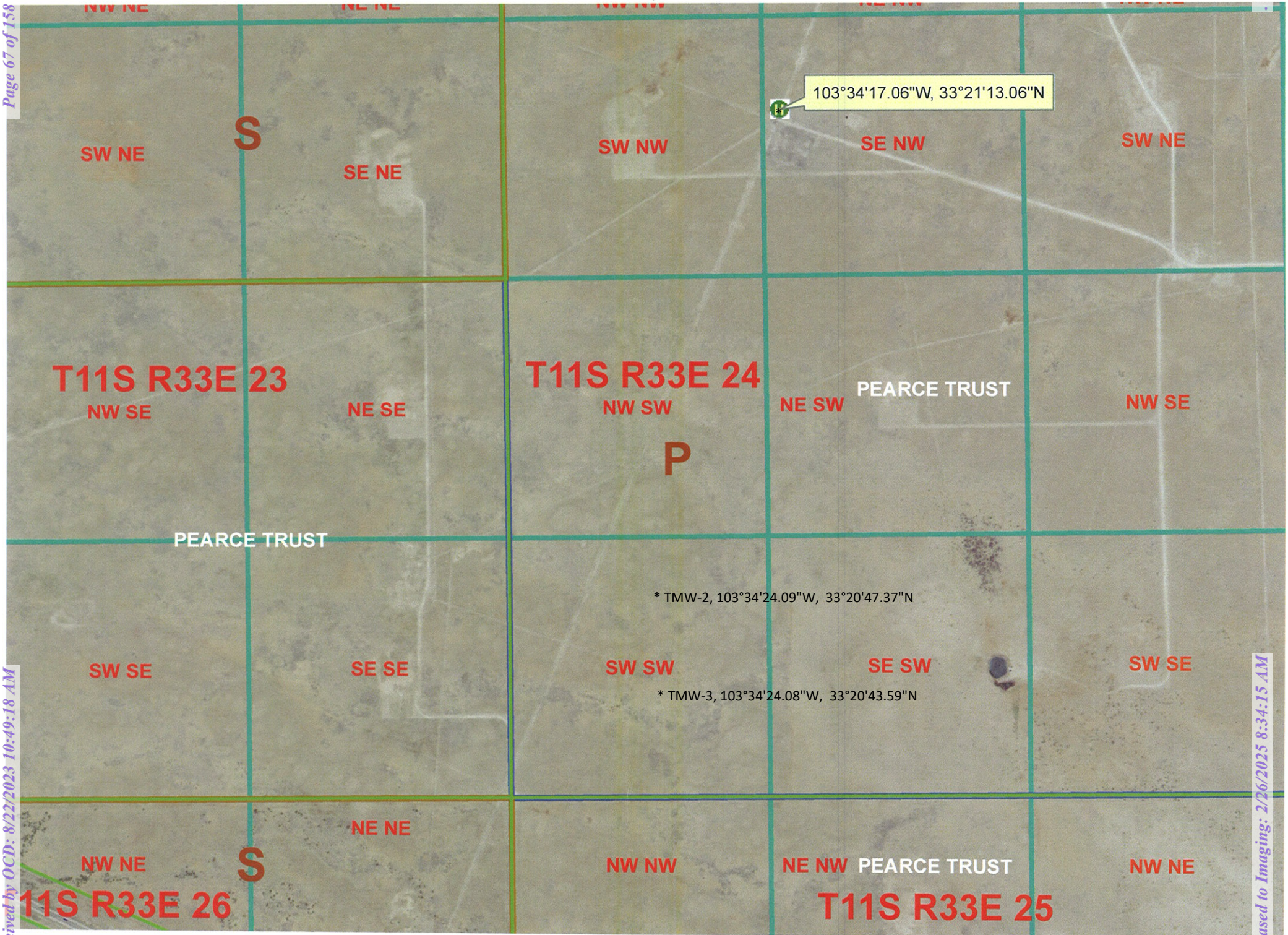
Larson & Associates, Inc.

Mark J. Larson, P.G.
President/Sr. Hydrogeologist

Encl.

cc: Christina Higginbotham

STATE ENGINEER OFFICE ROSWELL, NEW MEXICO 2018 APR 13 AM 11:04



Locator Tool Report

General Information:

Application ID: 30 Date: 04-19-2018 Time: 09:19:09

WR File Number: L
Purpose: PLACE OF USE

Applicant First Name: TARGA RESOURCES
Applicant Last Name: MONITOR WELL APPLICATION

GW Basin: LEA COUNTY
County: LEA

Critical Management Area Name(s): NONE
Special Condition Area Name(s): NONE
Land Grant Name: NON GRANT

PLSS Description (New Mexico Principal Meridian):

SW 1/4 of NW 1/4 of SE 1/4 of NW 1/4 of Section 24, Township 11S, Range 33E.

Coordinate System Details:

Geographic Coordinates:

Latitude:	33 Degrees	21 Minutes	13.1 Seconds	N
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Universal Transverse Mercator Zone: 13N

NAD 1983(92) (Meters)	N: 3,691,402	E: 632,924
NAD 1983(92) (Survey Feet)	N: 12,110,876	E: 2,076,518
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State Plane Coordinate System Zone: New Mexico East

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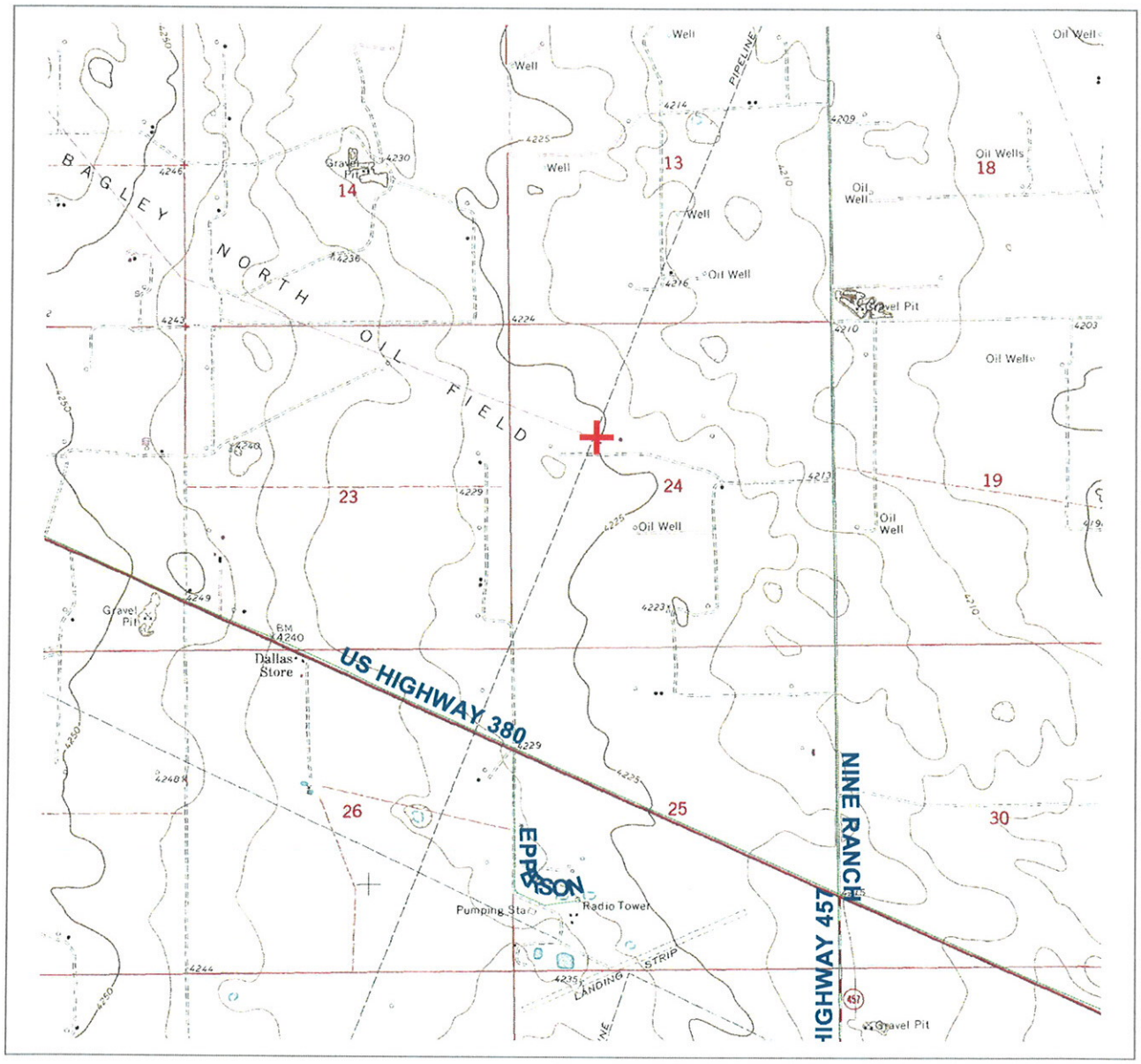
NAD 1927 (Survey Feet)	N: 856,984	E: 732,817

NEW MEXICO OFFICE OF STATE ENGINEER

Locator Tool Report



WR File Number: L Scale: 1:33,169

Northing/Easting: UTM83(92) (Meter): N: 3,691,402 E: 632,924

Northing/Easting: SPCS83(92) (Feet): N: 857,050 E: 773,993

GW Basin: Lea County

Appendix D

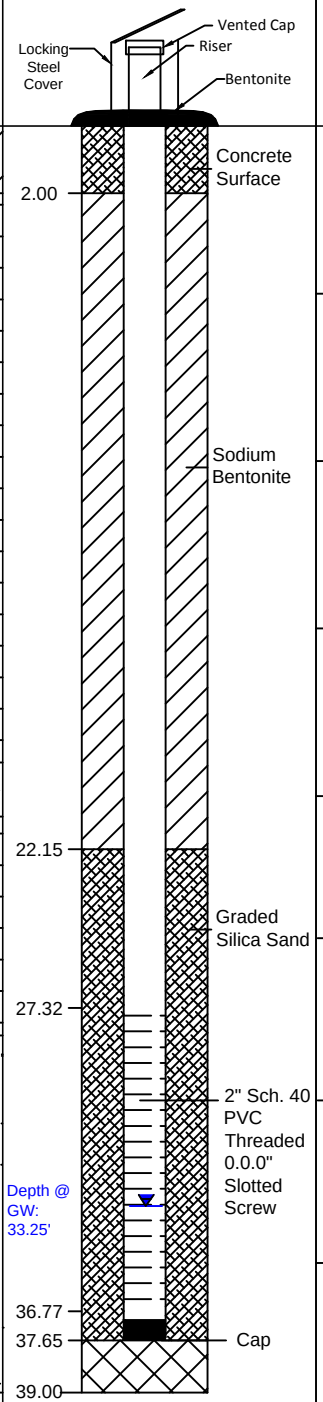
Geologic Logs and Well Completion Records

BORING RECORD

Start: 10:25 MST
Finish: 10:54

Surface Elevation: 4228.40
TOC Elecation: 4231.42

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	REMARKS DRILLING TIME
	0	Topsoil, Dark-Brown, Quartz, Fine Grained, 7.5YR 3x2	SC		10:25
	2	Caliche, Well Cemented, 7.5 YR, 8/1, (white), Coarse Grained Quartz Sand	Caliche		10:30
	5				
	10				10:36
	15				10:38
	19				
	20	Sandstone, 7.5YR, 8/2, Well Sorted, Pinkish White, Medium to Coarse Grained Quartz Sand	Sand Stone		10:39
	25	Caliche, 7.5YR, 8/3, Pink, Fine Coarse Grained Quartz Sand , Well Cemented	Caliche		10:44
	28	Sand, 7.5YR, 7/6, Reddish-Yellow, Very Fine Grained Quartz Sand	SW		10:50
	30				
	35				10:52
	40	TD: 39'			10:54



NUMBER | RECOVERY | DEPTH

SOIL :
SOIL :

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 16-0120-01 Epperson 2" Pipeline
HOLE DIAMETER : 5.5
LOCATION : Lea County, NM
LAI GEOLOGIST : M. Larson & A. Thielke
DRILLING CONTRACTOR : Scarbrough Drilling
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 3-13-2018

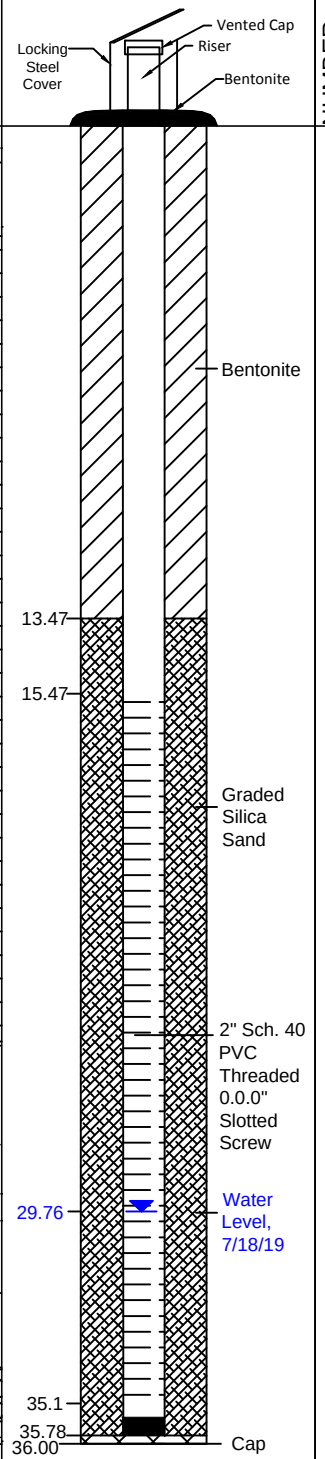
BORING NUMBER : TMW-1

BORING RECORD

Start: 10:15 MST
Finish: 10:57 MST

Surface Elevation: 4226.78
TOC Elecation: 4227.13

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	REMARKS BACKGROUND PID READING (SOIL : PPM)
	0	Silty Clay, 5YR, 3/2, Topsoil Dark Reddish Brown,	CL	0.00 ppm
	5	Caliche, 5YR, 8/1, Well Cemented, Sub-angular Clast Inclusions, White		0.00 ppm
	10	5YR, 7/2, Loosely Cemented, Pinkish Aray		0.00 ppm
	15	White, Well Cemented, 5YR, 8/1	Caliche	0.00 ppm
	20			0.00 ppm
	25	Sand, 5YR, 7/4, Very Fine, Quartz		0.00 ppm
Initial Water Level : 33.5'	30		SW	0.00 ppm
	35	Subangular Lithics, 0.5mm - 7mm in Diameter		0.00 ppm
		TD: 36'		



NUMBER | RECOVERY | DEPTH

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 07-16-2019
BORING NUMBER : TMW-2

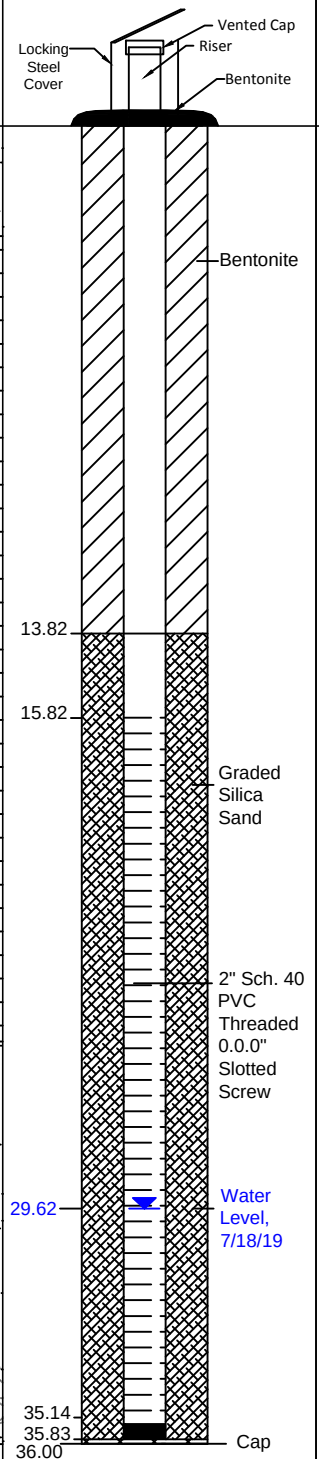
JOB NUMBER : Targa/ 16-0120-01
HOLE DIAMETER : 5.5
LOCATION : Epperson 16" - Tatum, NM
LAI GEOLOGIST : R. Owen
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

BORING RECORD

Start: 12:06 MST
Finish: 12:24 MST

Surface Elevation: 4226.55
TOC Elecation: 4226.14

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG	REMARKS BACKGROUND PID READING (SOIL : PPM)
	0	Silty Clay, 5YR, 3/2, Topsoil Dark Reddish Brown,	CL		0.00 ppm
	5	Caliche, 5YR, 8/1, Well Cemented, Sub-angular Clast Inclusions, White			0.00 ppm
	10	5YR, 7/2, Pinkish Gray			0.00 ppm
	15	5YR, 8/1, White, Well Cemented	Caliche		0.00 ppm
	20				0.00 ppm
	25	Sand, 5YR, 7/4, Very Fine, Quartz, Pink			0.00 ppm
Initial Water Level : 33.6'	30		SW		0.00 ppm
	35	Subangular Lithics, Inclusions 0.5mm - 7mm in Diameter			0.00 ppm
		TD: 36'			



NUMBER | RECOVERY | DEPTH

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
L LABORATORY TEST LOCATION
+ PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 07-16-2019
BORING NUMBER : TMW-3

JOB NUMBER : Targa/ 16-0120-01
HOLE DIAMETER : 5.5
LOCATION : Epperson 16" - Tatum, NM
LAI GEOLOGIST : R. Owen
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Appendix E

Interek Laboratory Report

Detailed Hydrocarbon Analysis Summary Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Location: DEFAULT
Yield: 84.16
Int Std: MEK
Int Std Amt: 0.15
Sample Wt: 5.01 Sample Den: 0.75

SUMMARY REPORT

Group Type	Total(Mass%)	Total(Vol%)	Total(Mol%)
Paraffins:	18.69	20.59	18.73
I-Paraffins:	24.16	26.30	22.79
Olefins:	1.64	1.79	1.36
Naphthenes:	33.92	33.31	34.26
Aromatics:	4.94	4.29	5.05
Total C15+:	0.00	0.00	0.00
Total Unknowns:	**	**	**

** 0.30% Unknowns were normalized into Iso-Paraffins, Aromatics, Napthenes and Olefins

Oxygenates:

Total:	0.82(Mass%)	0.82(Vol%)
Total Oxygen Content:	0.13(Mass%)	

Multisubstituted Aromatics: 1.62(Mass%) 1.41(Vol%)

Average Molecular Weight: 97.50

Relative Density: 0.70

Reid Vapor Pressure @ 100F: 0.39psi - 2.72kPa

Calculated Octane Number: 61.4

Motor Octane Number (Jenkins Calculation): 58.4

	IBP	T10	T50	T90	FBP
BP by Mass (Deg F)	120.65	161.24	242.13	T90	FBP
BP by Vol (Deg F)	121.51	161.24	242.13	T90	FBP

Percent Carbon: 85.14 Percent Hydrogen: 14.73

Bromine Number (Calc): 0.53

FORMULA RESULTS:

Formula Name	Result
Methane	0.00
Ethane	0.00
Propane	0.00
C4's	0.00
C5 Iso	0.09
C5 Paraffins	0.29
ITM_6008	0.47

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.1537
Sample Wt: 5.0063 Sample Den: 0.75

Totals by Group Type & Carbon Number (in Mass Percent)

	Paraffins	I-Paraffins	Olefins	Naphthenes	Aromatics	Unknowns	Total
C1	0.00	0.00	0.00	0.00	0.00	**	0.00
C2	0.00	0.00	0.00	0.00	0.00	**	0.00
C3	0.00	0.00	0.00	0.00	0.00	**	0.00
C4	0.00	0.00	0.00	0.00	0.00	**	0.00
C5	0.29	0.09	0.00	0.11	0.00	**	0.50
C6	4.69	3.74	0.01	6.94	0.43	**	15.81
C7	7.62	7.48	0.15	15.21	2.60	**	33.05
C8	4.12	7.78	0.15	8.04	0.49	**	20.58
C9	1.37	3.41	1.32	2.12	1.31	**	9.67
C10	0.59	1.65	0.01	1.46	0.12	**	3.99
C11	0.00	0.00	0.00	0.03	0.00	**	0.03
C12	0.00	0.00	0.00	0.00	0.00	**	0.00
C13	0.00	0.00	0.00	0.00	0.00	**	0.00
C14	0.00	0.00	0.00	0.00	0.00	**	0.00
Total:	18.69	24.16	1.64	33.92	4.94	**	83.34

Oxygenates 0.82 Total C15+: 0.00
Total Unknowns: ** Grand Total: 84.16

** 0.30% Unknowns were normalized into Iso-Paraffins, Aromatics, Napthenes and Olefins

Totals by Group Type & Carbon Number (in Volume Percent)

	Paraffins	I-Paraffins	Olefins	Naphthenes	Aromatics	Unknowns	Total
C1	0.00	0.00	0.00	0.00	0.00	**	0.00
C2	0.00	0.00	0.00	0.00	0.00	**	0.00
C3	0.00	0.00	0.00	0.00	0.00	**	0.00
C4	0.00	0.00	0.00	0.00	0.00	**	0.00
C5	0.35	0.11	0.00	0.11	0.00	**	0.58
C6	5.36	4.29	0.01	6.83	0.37	**	16.85
C7	8.40	8.25	0.16	15.04	2.26	**	34.12
C8	4.42	8.36	0.16	7.86	0.42	**	21.22
C9	1.44	3.58	1.46	2.04	1.14	**	9.80
C10	0.61	1.70	0.01	1.40	0.10	**	4.01
C11	0.00	0.00	0.00	0.02	0.00	**	0.02
C12	0.00	0.00	0.00	0.00	0.00	**	0.00
C13	0.00	0.00	0.00	0.00	0.00	**	0.00
C14	0.00	0.00	0.00	0.00	0.00	**	0.00
Total:	20.59	26.30	1.79	33.31	4.29	**	86.28

Oxygenates 0.82 Total C15+: 0.00
Total Unknowns: ** Grand Total: 87.10

** 0.32% Unknowns were normalized into Iso-Paraffins, Aromatics, Napthenes and Olefins

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.1537
Sample Wt: 5.0063 Sample Den: 0.75

Totals by Group Type & Carbon Number (in Mol Percent)

	Paraffins	I-Paraffins	Olefins	Naphthenes	Aromatics	Unknowns	Total
C1	0.00	0.00	0.00	0.00	0.00	**	0.00
C2	0.00	0.00	0.00	0.00	0.00	**	0.00
C3	0.00	0.00	0.00	0.00	0.00	**	0.00
C4	0.00	0.00	0.00	0.00	0.00	**	0.00
C5	0.41	0.13	0.00	0.16	0.00	**	0.70
C6	5.50	4.39	0.01	8.33	0.55	**	18.77
C7	7.68	7.53	0.15	15.64	2.85	**	33.85
C8	3.64	6.88	0.13	7.24	0.46	**	18.35
C9	1.08	2.69	1.06	1.70	1.11	**	7.76
C10	0.42	1.17	0.01	1.17	0.09	**	2.98
C11	0.00	0.00	0.00	0.02	0.00	**	0.02
C12	0.00	0.00	0.00	0.00	0.00	**	0.00
C13	0.00	0.00	0.00	0.00	0.00	**	0.00
C14	0.00	0.00	0.00	0.00	0.00	**	0.00
Total:	18.73	22.79	1.36	34.26	5.05	**	82.18

Oxygenates 0.81
Total C15+: 0.00
Total Unknowns: **
Grand Total: 82.99

** 0.24% Unknowns were normalized into Iso-Paraffins, Aromatics, Napthenes and Olefins

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.15
Hold
Sample Wt: 5.01 Sample Den: 0.75

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)
4.045	397.970	P4	n-butane	0.00	0.00	0.00	31.100	-0.500
5.324	474.590	I5	i-pentane	0.09	0.11	0.13	82.112	27.840
5.976	498.700	P5	n-pentane	0.29	0.35	0.41	96.908	36.060
7.019	537.630	I6	2,2-dimethylbutane	0.03	0.04	0.04	121.514	49.730
7.973	565.620	N5	cyclopentane	0.11	0.11	0.16	120.650	49.250
8.054	567.750	I6	2,3-dimethylbutane	0.24	0.27	0.28	136.364	57.980
8.228	572.210	I6	2-methylpentane	1.95	2.25	2.29	140.468	60.260
8.228	572.210	I6	2-methylpentane	1.95	2.25	2.29	140.468	60.260
8.758	584.930	I6	3-methylpentane	1.52	1.73	1.78	145.886	63.270
9.456	600.000	P6	n-hexane	4.69	5.36	5.50	155.714	68.730
9.666	605.440	O6	t-hexene-2	0.01	0.01	0.01	154.184	67.880
10.441	624.200	I7	2,2-dimethylpentane	0.16	0.18	0.16	174.542	79.190
10.526	626.120	N6	methylcyclopentane	2.66	2.68	3.19	161.240	71.800
10.725	630.590	I7	2,4-dimethylpentane	0.40	0.45	0.41	176.882	80.490
10.933	635.100	I7	2,2,3-trimethylbutane	0.04	0.04	0.04	177.584	80.880
11.661	650.090	A6	benzene	0.43	0.37	0.55	176.162	80.090
11.897	654.670	O7	3-methylhexene-1	0.11	0.12	0.11	183.020	83.900
12.081	658.170	N6	cyclohexane	4.28	4.15	5.14	177.296	80.720
12.603	667.710	I7	2-methylhexane	3.04	3.38	3.06	194.090	90.050
12.675	668.980	N7	1,1-dimethylcyclopentane	1.00	1.00	1.03	189.464	87.480
12.813	671.400	X6	t-amylmethylether	0.82	0.82	0.81	195.800	91.000
12.955	673.840	O7	5-methyl-t-hexene-2	0.00	0.00	0.00	190.598	88.110
13.083	676.020	I7	3-methylhexane	3.56	3.91	3.59	197.330	91.850
13.428	681.780	N7	1c,3-dimethylcyclopentane	1.26	1.28	1.30	195.386	90.770
13.592	684.450	N7	1t,3-dimethylcyclopentane	1.16	1.17	1.19	197.096	91.720
13.681	685.860	I7	3-ethylpentane	0.28	0.30	0.28	200.246	93.470
13.758	687.090	N7	1t,2-dimethylcyclopentane	1.94	1.94	1.99	197.366	91.870
14.602	700.000	P7	n-heptane	7.62	8.40	7.68	209.156	98.420
14.934	704.600	O7	t-heptene-2	0.01	0.01	0.01	208.310	97.950
15.135	707.310	O7	3-ethylpentene-2	0.01	0.01	0.01	204.818	96.010
15.960	718.050	N7	methylcyclohexane	9.33	9.14	9.59	213.674	100.930
16.181	720.800	I8	2,2-dimethylhexane	0.80	0.87	0.71	224.312	106.840
16.468	724.320	O7	O7-[1]	0.01	0.01	0.01	32.000	0.000
16.871	729.130	N7	ethylcyclopentane	0.52	0.52	0.54	218.246	103.470
16.978	730.380	I8	2,5-dimethylhexane	0.41	0.45	0.37	228.398	109.110
17.133	732.180	I8	2,4-dimethylhexane	0.55	0.59	0.49	228.974	109.430
17.591	737.390	N8	1c,2t,4-trimethylcyclopentane	0.72	0.71	0.65	242.132	116.740
17.708	738.690	I8	3,3-dimethylhexane	0.14	0.14	0.12	233.546	111.970

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.15
Hold
Sample Wt: 5.01 Sample Den: 0.75

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)
18.242	744.510	N8	1t,2c,3-trimethylcyclopentane	0.68	0.67	0.61	230.738	110.410
18.492	747.160	I8	2,3,4-trimethylpentane	0.08	0.08	0.07	236.246	113.470
18.939	751.810	A7	toluene	2.60	2.26	2.85	231.134	110.630
19.592	758.360	I8	2,3-dimethylhexane	0.59	0.63	0.52	240.098	115.610
19.699	759.410	I8	2-methyl-3-ethylpentane	0.14	0.15	0.13	240.098	115.610
19.953	761.880	O8	O8-[1]	0.01	0.01	0.01	32.000	0.000
20.238	764.600	I8	2-methylheptane	2.53	2.74	2.24	243.770	117.650
20.392	766.050	I8	4-methylheptane	0.83	0.89	0.73	243.878	117.710
20.540	767.430	I8	3,4-dimethylhexane	0.14	0.14	0.12	243.914	117.730
20.798	769.810	N8	1c,3-dimethylcyclohexane	0.09	0.09	0.08	246.848	119.360
21.057	772.180	I8	3-methylheptane	1.57	1.68	1.39	246.074	118.930
21.159	773.090	N8	1c,2t,3-trimethylcyclopentane	2.23	2.18	2.01	243.500	117.500
21.368	774.960	N8	1t,4-dimethylcyclohexane	0.84	0.83	0.75	246.848	119.360
21.992	780.420	N8	1,1-dimethylcyclohexane	0.29	0.28	0.26	247.190	119.550
22.307	783.100	I9	2,2,5-trimethylhexane	0.02	0.02	0.02	255.362	124.090
22.453	784.330	N8	3c-ethylmethylcyclopentane	0.19	0.19	0.17	249.980	121.100
22.715	786.510	N8	3t-ethylmethylcyclopentane	0.16	0.16	0.14	249.980	121.100
22.871	787.800	N8	2t-methylethylcyclopentane	0.33	0.33	0.30	249.980	121.100
23.116	789.810	O8	octene-1	0.05	0.05	0.04	256.100	124.500
23.454	792.530	N8	2t-ethylmethylcyclopentane	0.81	0.79	0.73	250.160	121.200
24.211	798.460	N8	1c,2c,3-trimethylcyclopentane	0.01	0.01	0.01	253.400	123.000
24.411	800.000	P8	n-octane	4.12	4.42	3.64	258.224	125.680
25.411	806.890	N8	i-propylcyclopentane	0.09	0.09	0.08	259.574	126.430
26.288	812.700	O8	c-octene-2	0.04	0.04	0.03	32.000	0.000
26.726	815.520	O8	O8-[2]	0.05	0.05	0.05	32.000	0.000
26.946	816.910	I9	2,3,4-trimethylhexane	0.04	0.04	0.03	282.308	139.060
27.317	819.240	N8	N8-[1]	0.05	0.05	0.05	32.000	0.000
27.837	822.430	N8	1c,2-dimethylcyclohexane	0.12	0.12	0.11	265.532	129.740
27.995	823.390	I9	2,3,5-trimethylhexane	0.21	0.22	0.16	268.430	131.350
28.243	824.890	I9	2,2-dimethylheptane	0.03	0.03	0.02	270.860	132.700
28.724	827.740	N8	ethylcyclohexane	1.40	1.34	1.26	269.222	131.790
28.920	828.890	N9	*1c,3c,5-trimethylcyclohexane	0.02	0.02	0.02	281.174	138.430
29.127	830.090	I9	2,2,3-trimethylhexane	0.54	0.57	0.43	271.220	132.900
29.618	832.910	I9	4,4-dimethylheptane	0.52	0.55	0.41	271.220	132.900
30.024	835.200	N9	1,1,4-trimethylcyclohexane	0.11	0.11	0.09	275.000	135.000
30.276	836.600	I9	2,5-dimethylheptane	0.31	0.33	0.25	276.800	136.000
30.493	837.800	I9	3,3-&3,5-dimethylheptane	0.11	0.12	0.09	278.636	137.020
30.843	839.710	I9	2,6-dimethylheptane	0.08	0.08	0.06	275.396	135.220

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.15
Hold
Sample Wt: 5.01 Sample Den: 0.75

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)
31.140	841.320	N9	1,1,3-trimethylcyclohexane	0.04	0.04	0.03	295.862	146.590
31.893	845.320	O9	2,4-dimethylheptene-1	0.03	0.03	0.02	32.000	0.000
32.139	846.590	N10	N10-[1]	0.70	0.68	0.63	32.000	0.000
32.431	848.110	N9	1c,3c,5c-trimethylcyclohexane	0.32	0.31	0.26	32.000	0.000
32.806	850.020	N8	N8-[1]	0.03	0.03	0.03	32.000	0.000
33.265	852.330	I9	I9-[1]	0.03	0.03	0.02	32.000	0.000
33.892	855.430	O9	2-methyloctene-1	1.09	1.20	0.87	32.000	0.000
34.119	856.540	A8	1,3-dimethylbenzene	0.31	0.27	0.29	282.416	139.120
34.367	857.740	A8	1,4-dimethylbenzene	0.18	0.16	0.17	281.048	138.360
34.367	857.740	A8	1,4-dimethylbenzene	0.18	0.16	0.17	281.048	138.360
34.924	860.400	I9	3,4-dimethylheptane	0.04	0.04	0.03	285.080	140.600
35.138	861.410	I9	3,4 -dimethylheptane	0.02	0.02	0.02	285.080	140.600
35.491	863.060	I9	I9-[2]	0.07	0.07	0.06	32.000	0.000
36.245	866.530	I9	4-methyloctane	0.30	0.32	0.24	288.392	142.440
36.509	867.740	I9	2-methyloctane	0.44	0.46	0.34	289.904	143.280
37.229	870.950	I9	4-ethylheptane	0.07	0.08	0.06	288.392	142.440
37.705	873.040	N9	1c,2t,3c-trimethylcyclohexane	0.10	0.10	0.08	304.160	151.200
38.072	874.630	I9	3-ethylheptane	0.48	0.50	0.38	289.400	143.000
38.072	874.630	I9	3-ethylheptane	0.48	0.50	0.38	289.400	143.000
38.668	877.180	I9	3-methyloctane	0.05	0.05	0.04	291.614	144.230
38.907	878.190	N9	1,1,2-trimethylcyclohexane	0.50	0.47	0.40	293.360	145.200
40.516	884.820	N9	N9-[1]	0.46	0.44	0.37	32.000	0.000
40.741	885.730	N9	N9-[2]	0.07	0.07	0.05	32.000	0.000
41.011	886.800	N9	N9-[3]	0.15	0.15	0.12	32.000	0.000
41.705	889.540	I9	I9-[3]	0.01	0.01	0.01	32.000	0.000
42.079	891.000	O9	nonene-1	0.05	0.05	0.04	274.100	134.500
42.836	893.900	N9	N9-[4]	0.02	0.02	0.02	32.000	0.000
43.451	896.220	N9	N9-[5]	0.02	0.02	0.02	32.000	0.000
44.051	898.450	I9	I9-[4]	0.03	0.03	0.02	32.000	0.000
44.473	900.000	P9	n-nonane	1.37	1.44	1.08	303.476	150.820
44.718	901.970	N9	N9-[6]	0.05	0.05	0.04	32.000	0.000
44.980	904.060	O9	t-nonene-3	0.04	0.04	0.03	32.000	0.000
45.984	911.960	A9	i-propylbenzene	0.10	0.08	0.08	306.338	152.410
46.176	913.450	O9	c-nonene-2	0.12	0.14	0.10	32.000	0.000
46.666	917.220	N9	N9-[7]	0.09	0.09	0.07	32.000	0.000
46.841	918.560	N9	i-propylcyclohexane	0.02	0.02	0.02	310.622	154.790
47.166	921.030	I10	I10-[1]	0.02	0.02	0.01	32.000	0.000
47.326	922.240	I10	2,4-dimethyloctane	0.05	0.05	0.04	312.620	155.900

Detailed Hydrocarbon Analysis Detail Report -

Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.15
Hold
Sample Wt: 5.01 Sample Den: 0.75

Components Listed in Chromatographic Order

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)
47.630	924.520	I10	2,2-dimethyloctane	0.03	0.04	0.02	314.420	156.900
47.871	926.320	N9	N9-[8]	0.05	0.05	0.04	32.000	0.000
48.112	928.110	N9	N9-[9]	0.04	0.04	0.03	32.000	0.000
48.566	931.460	I10	2,6-dimethyloctane	0.31	0.33	0.22	320.738	160.410
49.047	934.970	I10	2,5-dimethyloctane	0.07	0.08	0.05	317.300	158.500
49.374	937.340	N9	n-butylcyclopentane	0.05	0.04	0.04	313.916	156.620
49.737	939.940	N10	N10-[1]	0.11	0.10	0.08	32.000	0.000
50.395	944.620	I10	3,3-dimethyloctane	0.30	0.31	0.21	322.160	161.200
50.591	945.990	N10	N10-[2]	0.04	0.04	0.03	32.000	0.000
50.767	947.230	A9	n-propylbenzene	0.13	0.11	0.11	318.632	159.240
51.110	949.620	I10	3,6-dimethyloctane	0.05	0.05	0.03	321.440	160.800
51.364	951.380	I10	3-methyl-5-ethylheptane	0.13	0.14	0.09	316.760	158.200
51.364	951.380	I10	3-methyl-5-ethylheptane	0.13	0.14	0.09	316.760	158.200
51.701	953.700	N10	N10-[3]	0.02	0.02	0.01	32.000	0.000
51.936	955.310	A9	1,3-methylethylbenzene	0.30	0.26	0.25	322.394	161.330
52.185	957.010	A9	1,4-methylethylbenzene	0.12	0.10	0.10	323.618	162.010
52.339	958.050	N10	N10-[4]	0.07	0.06	0.05	32.000	0.000
53.020	962.640	A9	1,3,5-trimethylbenzene	0.19	0.17	0.16	328.532	164.740
53.241	964.110	I10	2,3-dimethyloctane	0.09	0.09	0.06	327.812	164.340
53.465	965.600	N10	N10-[5]	0.09	0.08	0.06	32.000	0.000
53.906	968.510	I10	5-methylnonane	0.02	0.02	0.01	329.180	165.100
54.220	970.560	A9	1,2-methylethylbenzene	0.13	0.11	0.11	329.324	165.180
54.323	971.230	I10	2-methylnonane	0.17	0.18	0.12	332.654	167.030
54.676	973.530	I10	3-ethyloctane	0.14	0.14	0.10	331.700	166.500
54.676	973.530	I10	3-ethyloctane	0.14	0.14	0.10	331.700	166.500
54.676	973.530	I10	3-ethyloctane	0.14	0.14	0.10	331.700	166.500
55.265	977.320	N10	N10-[6]	0.04	0.04	0.03	32.000	0.000
55.476	978.660	N10	N10-[7]	0.11	0.11	0.08	32.000	0.000
55.704	980.110	I10	I10-[2]	0.02	0.02	0.01	32.000	0.000
56.143	982.880	A9	1,2,4-trimethylbenzene	0.35	0.30	0.29	336.884	169.380
56.318	983.990	I10	I10-[3]	0.10	0.10	0.07	32.000	0.000
56.318	983.990	I10	I10-[3]	0.10	0.10	0.07	32.000	0.000
56.633	985.960	N10	i-butylcyclohexane	0.12	0.11	0.08	340.340	171.300
56.862	987.380	I10	I10-[4]	0.02	0.02	0.02	32.000	0.000
57.046	988.520	I10	I10-[5]	0.03	0.03	0.02	32.000	0.000
57.306	990.130	O10	decene-1	0.01	0.01	0.01	339.080	170.600
57.700	992.540	N10	1t-methyl-2-n-propylcyclohexane	0.03	0.03	0.02	339.800	171.000
57.849	993.450	A10	i-butylbenzene	0.05	0.04	0.04	343.022	172.790

Detailed Hydrocarbon Analysis Detail Report - Report Date: 7/26/2019 2:28:46 PM

RawFile: C:\Chem32\2\DATA\2019-07-23 2019-07-23 15-52-12\EPPERSON 16.D\EPPERSON 16.CDF
Acquired: 07/24/19 00:37:00
Sample: Epperson 16"
Analyzed: 7/26/2019 2:28:46 PM
Processed 159 Peaks
Reference File: C:\Dragon Software\Dragon DHA\References\ITM_6008\04-26-2019\ITM_6008_REF.DHA
Comments:
Yield: 84.10%
Int Std: MEK
Int Std Amt: 0.15
Hold
Sample Wt: 5.01 Sample Den: 0.75

Components Listed in Chromatographic Order **Page: 8**

Minutes	Index	Group	Component	Mass %	Volume %	Mol %	BP(F)	BP(C)
57.849	993.450	A10	i-butylbenzene	0.05	0.04	0.04	343.022	172.790
58.343	996.450	I10	I10-[6]	0.10	0.10	0.07	32.000	0.000
58.933	1000.000	P10	n-decane	0.59	0.61	0.42	345.470	174.150
59.282	1003.730	N10	N10-[8]	0.13	0.13	0.10	32.000	0.000
59.678	1007.950	A10	1,3-methyl-i-propylbenzene	0.07	0.06	0.05	347.144	175.080
59.985	1011.190	N11	N11-[1]	0.03	0.02	0.02	32.000	0.000

Appendix F

Slug Test Data and Calculations

1RP-4664

Summary of Horizontal Hydraulic Conductivity from Slug Tests

Targa Midstream Services, LLC, Epperson 16" Pipeline Release

Lea County, New Mexico

Test Name	K_r Value (ft/s)	m/s	ft per year	Notes
Epperson Falling Head 1	1.765E-06	5.37972E-07	55.66104	
Epperson Falling Head 2	1.098E-05	3.3467E-06	346.2653	
Epperson Falling Head 3	6.714E-06	2.04643E-06	211.7327	
Epperson Falling Head 4	9.464E-06	2.88463E-06	298.4567	
Epperson Falling Head 5	8.733E-06	2.66182E-06	275.4039	
Epperson Falling Head 6	8.406E-06	2.56215E-06	265.0916	
Epperson Rising Head 1	1.063E-05	3.24002E-06	335.2277	
Epperson Rising Head 2	2.594E-06	7.90651E-07	81.80438	
Epperson Rising Head 3	Missed	Missed	Missed	
Epperson Rising Head 4	1.974E-06	6.01675E-07	62.25206	
Epperson Rising Head 5	7.691E-06	2.34422E-06	242.5434	
Epperson Rising Head 6	7.666E-06	2.3366E-06	241.755	

Average Hydraulic Conductivity (ft/s)	6.965E-04			
feet per day:	6.018E+01			
Kd	0.18	Calculated from EPA factors for Benzene		
Bulk Porosity of Soil	0.283	back-calculate from bulk density (1.9 g/cm^3) typical for caliche		
Rf	2.208512367			
ground slope (vertical drop/horizontal distance)	0.003125			
Average Linear velocity (feet per day)	6.645E-01		convert all to yards:	
Diffusivity Coefficient (Benzene-water)	0.0009486	10.2*10^-6 cm^2/s, converted to ft^2/day	Velocity:	0.221508
Number of releasing days (assumption	1500		Diffusivity:	0.000105
Concentration at boundary	0.01			
Time since release (t) (assumption) (days)	1500			
Release Concentration (C_0) (assumption) (ppm)	20			

ξ = (velocity*time/distance) (dimensionless)

η = (Diffusivity/(velocity*distance) (dimensionless)

Solution to Function: C = C_0/2*(erfc((1-ξ)/(2*sqrt(ξ*η)))+exp(1/η)*erfc((1+ξ)/(2*sqrt(ξ*η))))

ξ/sqrt(ξ*η)	835.6296776

Report Date:	4/19/2018 10:27
Report User Name:	Larry
Report Computer Name:	LARRY-LAPTOP
Application:	WinSitu.exe
Application Version:	5.6.25.0

Log File Properties

File Name	Epperson Falling Head 1_2018-04-18_11-49-05-859.wsl
Create Date	4/18/2018 11:49

Device Properties

Device	Level TROLL 700			
Site	Default Site			
Device Name				
Serial Number	106161			
Firmware Version	2.04			
Hardware Version	1			
Device Address	1			
Device Comm Cfg	19200	8	Even	1
Used Memory	21			
Used Battery	18140			

Log Configuration

Log Name	Epperson Falling Head 1
Created By	Larry
Computer Name	LARRY-LAPTOP
Application	WinSitu.exe
Application Version	5.6.25.0
Create Date	4/18/2018 11:36:53 AM Central Daylight Time
Log Setup Time Zor	Central Daylight Time
Notes Size(bytes)	4096
Overwrite when ful	Disabled
Scheduled Start Tin	Manual Start
Scheduled Stop Tin	No Stop Time
Type	True Logarithmic
Max Interval	Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation

Level Measure	Depth	
Specific Gra		0.999

Other Log Settings

Pressure Offset:	-0.304317 (PSI)

Depth of Probe:	3.93175 (ft)
Head Pressure:	1.70282 (PSI)
Temperature:	18.3021 (C)

Log Notes:

Date and Time	Note
4/18/2018 11:36	Sensor SN: 106161 Factory calibration has expired.: 6/15/2016 8:
4/18/2018 11:36	Used Battery: 18140% Used Memory: 23% User Name: Larry
4/18/2018 11:37	Manual Start Command
4/18/2018 11:48	Used Battery: 0% Used Memory: 23% User Name: Larry
4/18/2018 11:48	Manual Stop Command

Log Data:

Record Count	106		
Sensors	1		
	1	106161	Pressure/Temp 30 PSI(

Time Zone: Central Daylight Time

Date and Time	Elapsed Time Seconds	Sensor: Pres(G) 69ft SN#: 106161 Pressure (PSI)	Sensor: Pre SN#: 10616 Temperatu	Sensor: Pre SN#: 10616 Depth (ft)
4/18/2018 11:37	0.000	1.928	18.186	4.452
4/18/2018 11:37	0.251	1.835	18.207	4.237
4/18/2018 11:37	0.857	1.744	18.204	4.026
4/18/2018 11:37	1.061	1.734	18.221	4.004
4/18/2018 11:37	1.265	1.733	18.236	4.001
4/18/2018 11:37	1.468	1.732	18.244	3.998
4/18/2018 11:37	1.671	1.73	18.254	3.994
4/18/2018 11:37	1.875	1.728	18.256	3.991
4/18/2018 11:37	2.079	1.727	18.263	3.987
4/18/2018 11:37	2.282	1.726	18.268	3.986
4/18/2018 11:37	2.501	1.723	18.27	3.979
4/18/2018 11:37	2.751	1.724	18.271	3.982
4/18/2018 11:37	3.001	1.723	18.269	3.979
4/18/2018 11:37	3.251	1.722	18.269	3.977
4/18/2018 11:37	3.501	1.722	18.27	3.977
4/18/2018 11:37	3.751	1.72	18.271	3.971
4/18/2018 11:37	4.001	1.722	18.273	3.976
4/18/2018 11:37	4.251	1.72	18.275	3.972
4/18/2018 11:37	4.913	1.719	18.244	3.969
4/18/2018 11:37	5.116	1.717	18.258	3.965

4/18/2018 11:37	5.321	1.719	18.27	3.97
4/18/2018 11:37	5.527	1.72	18.272	3.971
4/18/2018 11:37	5.731	1.719	18.346	3.97
4/18/2018 11:37	6.324	1.716	18.327	3.963
4/18/2018 11:37	6.529	1.717	18.319	3.965
4/18/2018 11:37	6.734	1.719	18.316	3.968
4/18/2018 11:37	6.939	1.718	18.313	3.966
4/18/2018 11:37	7.143	1.718	18.312	3.966
4/18/2018 11:37	7.56	1.718	18.298	3.966
4/18/2018 11:37	7.98	1.719	18.281	3.969
4/18/2018 11:37	8.461	1.716	18.265	3.962
4/18/2018 11:37	9	1.715	18.254	3.961
4/18/2018 11:37	9.48	1.717	18.253	3.964
4/18/2018 11:37	10.081	1.716	18.244	3.963
4/18/2018 11:37	10.681	1.716	18.238	3.962
4/18/2018 11:37	11.28	1.717	18.232	3.964
4/18/2018 11:37	11.94	1.717	18.231	3.966
4/18/2018 11:37	12.66	1.713	18.224	3.956
4/18/2018 11:37	13.441	1.716	18.221	3.962
4/18/2018 11:37	14.22	1.717	18.216	3.963
4/18/2018 11:37	15.06	1.716	18.214	3.963
4/18/2018 11:37	15.96	1.717	18.223	3.965
4/18/2018 11:37	16.92	1.715	18.213	3.961
4/18/2018 11:37	17.88	1.716	18.209	3.962
4/18/2018 11:37	18.96	1.717	18.203	3.965
4/18/2018 11:37	20.101	1.717	18.201	3.964
4/18/2018 11:37	21.3	1.718	18.212	3.966
4/18/2018 11:37	22.56	1.716	18.199	3.962
4/18/2018 11:38	24.06	1.717	18.205	3.964
4/18/2018 11:38	25.321	1.717	18.196	3.964
4/18/2018 11:38	26.821	1.717	18.187	3.964
4/18/2018 11:38	28.38	1.714	18.184	3.957
4/18/2018 11:38	30.06	1.717	18.187	3.964
4/18/2018 11:38	31.86	1.716	18.181	3.962
4/18/2018 11:38	33.8	1.717	18.193	3.964
4/18/2018 11:38	35.76	1.717	18.176	3.963
4/18/2018 11:38	37.86	1.716	18.168	3.962
4/18/2018 11:38	40.08	1.715	18.17	3.959
4/18/2018 11:38	42.48	1.714	18.163	3.957
4/18/2018 11:38	45	1.717	18.164	3.964
4/18/2018 11:38	47.64	1.716	18.158	3.962
4/18/2018 11:38	50.46	1.717	18.26	3.964
4/18/2018 11:38	53.531	1.714	18.159	3.958
4/18/2018 11:38	56.64	1.717	18.15	3.966
4/18/2018 11:38	60	1.718	18.148	3.966
4/18/2018 11:38	63.6	1.716	18.163	3.962
4/18/2018 11:38	67.2	1.716	18.136	3.961

4/18/2018 11:38	71.4	1.716	18.132	3.962
4/18/2018 11:38	75.6	1.717	18.13	3.964
4/18/2018 11:38	79.8	1.717	18.124	3.963
4/18/2018 11:39	84.6	1.716	18.122	3.963
4/18/2018 11:39	90	1.717	18.118	3.965
4/18/2018 11:39	94.8	1.718	18.113	3.966
4/18/2018 11:39	100.8	1.717	18.105	3.964
4/18/2018 11:39	106.8	1.717	18.099	3.963
4/18/2018 11:39	112.8	1.716	18.093	3.962
4/18/2018 11:39	119.4	1.716	18.097	3.963
4/18/2018 11:39	126.6	1.717	18.082	3.965
4/18/2018 11:39	134.4	1.716	18.084	3.963
4/18/2018 11:39	142.2	1.717	18.071	3.965
4/18/2018 11:40	150.6	1.718	18.066	3.966
4/18/2018 11:40	159.6	1.717	18.066	3.965
4/18/2018 11:40	169.2	1.717	18.064	3.965
4/18/2018 11:40	178.815	1.719	18.063	3.968
4/18/2018 11:40	189.6	1.717	18.049	3.964
4/18/2018 11:40	201	1.718	18.039	3.966
4/18/2018 11:41	213	1.716	18.029	3.962
4/18/2018 11:41	225.6	1.716	18.026	3.963
4/18/2018 11:41	238.822	1.719	18.037	3.97
4/18/2018 11:41	253.2	1.717	18.014	3.964
4/18/2018 11:42	268.2	1.717	18.01	3.965
4/18/2018 11:42	283.821	1.717	18.021	3.964
4/18/2018 11:42	300.6	1.715	18.002	3.96
4/18/2018 11:42	318.6	1.718	18.021	3.966
4/18/2018 11:43	337.2	1.717	17.989	3.965
4/18/2018 11:43	357.6	1.717	17.985	3.964
4/18/2018 11:43	378.6	1.716	18.007	3.962
4/18/2018 11:44	400.8	1.718	17.979	3.967
4/18/2018 11:44	424.8	1.718	17.978	3.967
4/18/2018 11:45	450	1.715	17.972	3.961
4/18/2018 11:45	476.4	1.717	17.966	3.966
4/18/2018 11:46	504.6	1.717	17.969	3.964
4/18/2018 11:46	534.6	1.717	17.966	3.964
4/18/2018 11:47	566.4	1.718	17.959	3.968
4/18/2018 11:47	600	1.718	17.956	3.966
4/18/2018 11:48	636	1.719	17.952	3.968

00:03 PM

G (21m/69ft)

s(G) 69ft
51

Depth (cm)	Elapsed Tin	Depth (cm)	MIN	MAX	Range
135.697	0	135.697	120.5789	135.697	15.11808
129.1438	0.251	129.1438			
122.7125	0.857	122.7125			
122.0419	1.061	122.0419			
121.9505	1.265	121.9505			
121.859	1.468	121.859			
121.7371	1.671	121.7371			
121.6457	1.875	121.6457			
121.5238	2.079	121.5238			
121.4933	2.282	121.4933			
121.2799	2.501	121.2799			
121.3714	2.751	121.3714			
121.2799	3.001	121.2799			
121.219	3.251	121.219			
121.219	3.501	121.219			
121.0361	3.751	121.0361			
121.1885	4.001	121.1885			
121.0666	4.251	121.0666			
120.9751	4.913	120.9751			
120.8532	5.116	120.8532			

121.0056	5.321	121.0056
121.0361	5.527	121.0361
121.0056	5.731	121.0056
120.7922	6.324	120.7922
120.8532	6.529	120.8532
120.9446	6.734	120.9446
120.8837	6.939	120.8837
120.8837	7.143	120.8837
120.8837	7.56	120.8837
120.9751	7.98	120.9751
120.7618	8.461	120.7618
120.7313	9	120.7313
120.8227	9.48	120.8227
120.7922	10.081	120.7922
120.7618	10.681	120.7618
120.8227	11.28	120.8227
120.8837	11.94	120.8837
120.5789	12.66	120.5789
120.7618	13.441	120.7618
120.7922	14.22	120.7922
120.7922	15.06	120.7922
120.8532	15.96	120.8532
120.7313	16.92	120.7313
120.7618	17.88	120.7618
120.8532	18.96	120.8532
120.8227	20.101	120.8227
120.8837	21.3	120.8837
120.7618	22.56	120.7618
120.8227	24.06	120.8227
120.8227	25.321	120.8227
120.8227	26.821	120.8227
120.6094	28.38	120.6094
120.8227	30.06	120.8227
120.7618	31.86	120.7618
120.8227	33.8	120.8227
120.7922	35.76	120.7922
120.7618	37.86	120.7618
120.6703	40.08	120.6703
120.6094	42.48	120.6094
120.8227	45	120.8227
120.7618	47.64	120.7618
120.8227	50.46	120.8227
120.6398	53.531	120.6398
120.8837	56.64	120.8837
120.8837	60	120.8837
120.7618	63.6	120.7618
120.7313	67.2	120.7313

120.7618	71.4	120.7618
120.8227	75.6	120.8227
120.7922	79.8	120.7922
120.7922	84.6	120.7922
120.8532	90	120.8532
120.8837	94.8	120.8837
120.8227	100.8	120.8227
120.7922	106.8	120.7922
120.7618	112.8	120.7618
120.7922	119.4	120.7922
120.8532	126.6	120.8532
120.7922	134.4	120.7922
120.8532	142.2	120.8532
120.8837	150.6	120.8837
120.8532	159.6	120.8532
120.8532	169.2	120.8532
120.9446	178.815	120.9446
120.8227	189.6	120.8227
120.8837	201	120.8837
120.7618	213	120.7618
120.7922	225.6	120.7922
121.0056	238.822	121.0056
120.8227	253.2	120.8227
120.8532	268.2	120.8532
120.8227	283.821	120.8227
120.7008	300.6	120.7008
120.8837	318.6	120.8837
120.8532	337.2	120.8532
120.8227	357.6	120.8227
120.7618	378.6	120.7618
120.9142	400.8	120.9142
120.9142	424.8	120.9142
120.7313	450	120.7313
120.8837	476.4	120.8837
120.8227	504.6	120.8227
120.8227	534.6	120.8227
120.9446	566.4	120.9446
120.8837	600	120.8837
120.9446	636	120.9446

Report D ######
Report U Larry
Report C LARRY-LAPTOP
Applicat WinSitu.exe
Applicat 5.6.25.0

Log File Properties
File Nam Epperson Rising Head 1_2018-04-18_12-03-06-640.wsl
Create D ######

Device Properties
Device Level TROLL 700
Site Default Site
Device N
Serial Nu 106161
Firmwar 2.04
Hardwa 1
Device A 1
Device C 19200 8 Even 1 (Modbus-RTU)
Used Me 23
Used Ba 0

Log Configuration
Log Nam Epperson Rising Head 1
Created Larry
Comput LARRY-LAPTOP
Applicat WinSitu.exe
Applicat 5.6.25.0
Create D 4/18/2018 11:51:12 AM Central Daylight Time
Log Setu Central Daylight Time
Notes Si 4096
Overwri Disabled
Schedul Manual Start
Schedul No Stop Time
Type True Logarithmic
Max Inte Days: 0 hrs: 00 mins: 01 secs: 00

Level Reference Settings At Log Creation
Lev Depth
0.999

Other Log Settings
Pressure -0.304317 (PSI)

Depth o 3.95894 (ft)
Head Pr 1.71459 (PSI)
Temper 17.9674 (C)

F50
Fixed Values
Aquifer Level (ft)
H*_0 Expected Magnitude of Displacement (ft)
y intercept of log(head) vs time graph
H^+_0 Apparent Magnitude of Displacement (ft)
r_nc (in)
r_c (in)
K_r (in/s)
R_e (Effective Radius Parameter, ft)
r*_w (r_w*(K_z/K_r)^0.5
K_z/K_r
r_w (Effective Radius of Well Screen, in)
b (Screen Length, in)
d (z position of end of screen closest to water table, in)
T_0 (Basic Time Lag, s) - Where normalized head = 0.386
ln(R_e/r*_w) Estimate (Fn(d,b,r*_w,C)
C (Empirical Coefficient, b, r*_w)

Log Notes:
Date an Note
Sensor SN: 106161 Factory calibra
Used Battery: 0% Used Memory: 2
Manual Start Command
Used Battery: 0% Used Memory: 2
Manual Stop Command

Log Data:
Record (105

Sensors 1

1 106161 Pressure/Temp 30 PSIG (21m/69ft)

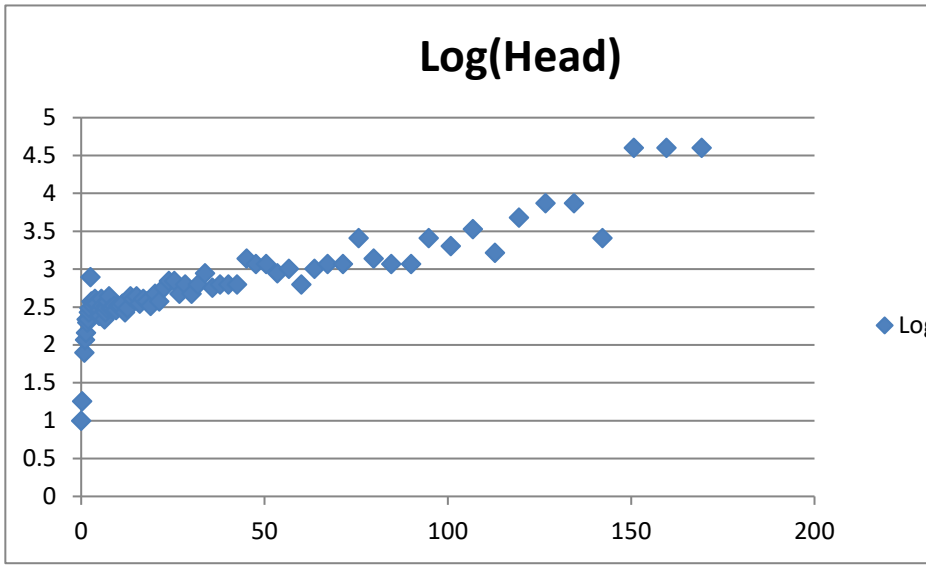
Time Zone: Central Daylight Time

Date an	Elapsed Seconds	Sensor: SN#: 10 Pressure	Sensor: SN#: 10 Temper	Sensor: Pres(G) 69ft SN#: 106161 Depth (f	Head (ft)
######	0	1.621	17.928	3.742	0.223
######	0.251	1.651	17.952	3.813	0.152
######	0.858	1.692	17.953	3.907	0.058
######	1.063	1.698	17.968	3.92	0.045
######	1.266	1.7	17.982	3.926	0.039
######	1.471	1.704	17.992	3.935	0.03
######	1.674	1.703	17.998	3.933	0.032
######	1.878	1.704	18.004	3.935	0.03
######	2.082	1.706	18.01	3.939	0.026
######	2.285	1.707	18.017	3.941	0.024
######	2.501	1.711	18.018	3.952	0.013
######	2.751	1.708	18.017	3.944	0.021
######	3.001	1.708	18.017	3.943	0.022
######	3.251	1.707	18.019	3.942	0.023
######	3.501	1.708	18.019	3.944	0.021
######	3.751	1.709	18.022	3.945	0.02
######	4.001	1.708	18.021	3.943	0.022
######	4.251	1.708	18.025	3.943	0.022
######	4.912	1.705	17.995	3.937	0.028
######	5.118	1.707	18.011	3.94	0.025

######	5.322	1.705	18.021	3.937	0.028
######	5.528	1.709	18.025	3.945	0.02
######	5.731	1.707	18.105	3.942	0.023
######	6.38	1.704	18.085	3.935	0.03
######	6.584	1.706	18.079	3.939	0.026
######	6.788	1.707	18.071	3.942	0.023
######	6.994	1.707	18.07	3.941	0.024
######	7.234	1.708	18.066	3.944	0.021
######	7.561	1.709	18.05	3.946	0.019
######	7.981	1.707	18.035	3.941	0.024
######	8.461	1.707	18.021	3.941	0.024
######	9.001	1.707	18.01	3.942	0.023
######	9.481	1.707	18.01	3.94	0.025
######	10.081	1.707	18.001	3.942	0.023
######	10.681	1.707	17.997	3.942	0.023
######	11.281	1.708	17.995	3.943	0.022
######	11.941	1.706	18.014	3.939	0.026
######	12.66	1.707	17.996	3.941	0.024
######	13.441	1.709	17.99	3.946	0.019
######	14.221	1.709	17.986	3.945	0.02
######	15.126	1.709	18.011	3.946	0.019
######	15.961	1.708	17.988	3.943	0.022
######	16.921	1.709	17.98	3.945	0.02
######	17.88	1.708	17.981	3.944	0.021
######	18.961	1.707	17.979	3.942	0.023
######	20.138	1.71	18.001	3.947	0.018
######	21.301	1.708	17.981	3.944	0.021
######	22.561	1.71	17.974	3.949	0.016
######	23.88	1.711	17.97	3.951	0.014
######	25.387	1.711	17.986	3.951	0.014
######	26.821	1.709	17.976	3.947	0.018
######	28.38	1.711	17.97	3.95	0.015
######	30.129	1.709	17.996	3.947	0.018
######	31.86	1.711	17.971	3.95	0.015
######	33.721	1.712	17.967	3.953	0.012
######	35.761	1.71	17.973	3.949	0.016
######	37.86	1.711	17.967	3.95	0.015
######	40.139	1.711	17.995	3.95	0.015
######	42.481	1.711	17.967	3.95	0.015
######	45.135	1.713	17.991	3.956	0.009
######	47.64	1.713	17.967	3.955	0.01
######	50.461	1.713	17.976	3.955	0.01
######	53.461	1.712	17.962	3.953	0.012
######	56.64	1.713	17.967	3.954	0.011
######	60	1.711	17.962	3.95	0.015
######	63.6	1.712	17.961	3.954	0.011
######	67.2	1.713	17.965	3.955	0.01

######	71.4	1.713	17.965	3.955	0.01
######	75.667	1.715	17.974	3.959	0.006
######	79.8	1.713	17.958	3.956	0.009
######	84.6	1.713	17.958	3.955	0.01
######	90	1.713	17.955	3.955	0.01
######	94.8	1.715	17.954	3.959	0.006
######	100.8	1.714	17.966	3.958	0.007
######	106.8	1.715	17.959	3.96	0.005
######	112.8	1.714	17.954	3.957	0.008
######	119.4	1.715	17.949	3.961	0.004
######	126.6	1.716	17.954	3.962	0.003
######	134.4	1.716	17.945	3.962	0.003
######	142.2	1.715	17.949	3.959	0.006
######	150.68	1.717	17.956	3.964	0.001
######	159.6	1.717	17.943	3.964	0.001
######	169.2	1.717	17.943	3.964	0.001
######	178.8	1.719	17.954	3.969	-0.004
######	189.6	1.717	17.937	3.963	0.002
######	201	1.717	17.942	3.964	0.001
######	213	1.717	17.935	3.965	0
######	225.69	1.719	17.944	3.97	-0.005
######	238.8	1.717	17.93	3.966	-0.001
######	253.2	1.719	17.928	3.969	-0.004
######	268.2	1.717	17.924	3.966	-0.001
######	283.8	1.719	17.926	3.969	-0.004
######	300.69	1.72	17.932	3.971	-0.006
######	318.6	1.717	17.919	3.965	0
######	337.2	1.719	17.918	3.97	-0.005
######	357.6	1.718	17.917	3.966	-0.001
######	378.6	1.718	17.913	3.966	-0.001
######	400.8	1.718	17.921	3.967	-0.002
######	424.8	1.719	17.907	3.968	-0.003
######	450	1.719	17.91	3.969	-0.004
######	476.4	1.716	17.915	3.963	0.002
######	504.6	1.717	17.908	3.965	0
######	534.6	1.717	17.906	3.964	0.001
######	566.4	1.718	17.912	3.967	-0.002
######	600	1.717	17.906	3.966	

3.965
0.487
0.153455231
1
1.781449978
0.441781243
N/A
1.767766953
0.5
2.5
36
36
0.266479166
2.670888542
1.581668286



Log(Head)	Normalized Head
1	1
1.255428138	0.6816
1.897470054	0.2601
2.066591278	0.2018
2.161954744	0.1749
2.336796239	0.1345
2.293787289	0.1435
2.336796239	0.1345
2.432159705	0.1166
2.48550076	0.1076
2.894078137	0.0583
2.574487072	0.0942
2.543485788	0.0987
2.513862803	0.1031
2.574487072	0.0942
2.6070012	0.0897
2.543485788	0.0987
2.543485788	0.0987
2.382773602	0.1256
2.45829668	0.1121

2.382773602	0.1256
2.6070012	0.0897
2.513862803	0.1031
2.336796239	0.1345
2.432159705	0.1166
2.513862803	0.1031
2.48550076	0.1076
2.574487072	0.0942
2.641183433	0.0852
2.48550076	0.1076
2.48550076	0.1076
2.513862803	0.1031
2.45829668	0.1121
2.513862803	0.1031
2.513862803	0.1031
2.543485788	0.0987
2.432159705	0.1166
2.48550076	0.1076
2.641183433	0.0852
2.6070012	0.0897
2.641183433	0.0852
2.543485788	0.0987
2.6070012	0.0897
2.574487072	0.0942
2.513862803	0.1031
2.677214231	0.0807
2.574487072	0.0942
2.755705721	0.0717
2.844692033	0.0628
2.844692033	0.0628
2.677214231	0.0807
2.798714671	0.0673
2.677214231	0.0807
2.798714671	0.0673
2.947419192	0.0538
2.755705721	0.0717
2.798714671	0.0673
2.798714671	0.0673
2.798714671	0.0673
3.139132663	0.0404
3.068919632	0.0448
3.068919632	0.0448
2.947419192	0.0538
3.00540422	0.0493
2.798714671	0.0673
3.00540422	0.0493
3.068919632	0.0448

3.068919632	0.0448
3.409337624	0.0269
3.139132663	0.0404
3.068919632	0.0448
3.068919632	0.0448
3.409337624	0.0269
3.306610465	0.0314
3.530838064	0.0224
3.217624153	0.0359
3.679542585	0.0179
3.871256056	0.0135
3.871256056	0.0135
3.409337624	0.0269
4.603379448	0.0045
4.603379448	0.0045
4.603379448	0.0045
#NUM!	-0.018
4.141461017	0.009
4.603379448	0.0045
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#NUM!	0
#NUM!	-0.022
#NUM!	-0.004
#NUM!	-0.004
#NUM!	-0.009
#NUM!	-0.013
#NUM!	-0.018
4.141461017	0.009
#NUM!	0
4.603379448	0.0045

Appendix G

Laboratory Groundwater Reports

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Targa Epperson 1
Project Number: 16-0120-01
Location:

Lab Order Number: 8C15002

NELAP/TCEQ # T104704516-17-8

Report Date: 03/19/18

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 1
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TMW-1	8C15002-01	Water	03/14/18 12:35	03-15-2018 08:40
TMW-1	8C15002-02	Water	03/14/18 12:35	03-15-2018 08:40

Larson & Associates, Inc.	Project: Targa Epperson 1	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

TMW-1

8C15002-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**66.3**	5.00	mg/L	10	P8C1605	03/16/18	03/18/18	EPA 300.0	

Larson & Associates, Inc.	Project: Targa Epperson 1	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

TMW-1

8C15002-02 (Water)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	**12.4**	0.100	mg/L	100	P8C1505	03/15/18	03/16/18	EPA 8021B	
Toluene	**9.76**	0.100	mg/L	100	P8C1505	03/15/18	03/16/18	EPA 8021B	
Ethylbenzene	**0.480**	0.100	mg/L	100	P8C1505	03/15/18	03/16/18	EPA 8021B	
Xylene (p/m)	ND	2.00	mg/L	100	P8C1505	03/15/18	03/16/18	EPA 8021B	
Xylene (o)	**0.425**	0.100	mg/L	100	P8C1505	03/15/18	03/16/18	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*101 %*	*80-120*		*P8C1505*	*03/15/18*	*03/16/18*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*104 %*	*80-120*		*P8C1505*	*03/15/18*	*03/16/18*	*EPA 8021B*	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 1
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C1505 - General Preparation (GC)										
Blank (P8C1505-BLK1)				Prepared & Analyzed: 03/15/18						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.0200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*0.0709*		"	*0.0600*		*118*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.0680*		"	*0.0600*		*113*	*80-120*			
LCS (P8C1505-BS1)				Prepared & Analyzed: 03/15/18						
Benzene	0.0845	0.00100	mg/L	0.100		84.5	80-120			
Toluene	0.0944	0.00100	"	0.100		94.4	80-120			
Ethylbenzene	0.118	0.00100	"	0.100		118	80-120			
Xylene (p/m)	0.210	0.0200	"				80-120			
Xylene (o)	0.113	0.00100	"				80-120			
Surrogate: 4-Bromofluorobenzene	*0.0584*		"	*0.0600*		*97.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.0491*		"	*0.0600*		*81.9*	*80-120*			
LCS Dup (P8C1505-BSD1)				Prepared & Analyzed: 03/15/18						
Benzene	0.0963	0.00100	mg/L	0.100		96.3	80-120	13.1	20	
Toluene	0.108	0.00100	"	0.100		108	80-120	13.1	20	
Ethylbenzene	0.109	0.00100	"	0.100		109	80-120	8.09	20	
Xylene (p/m)	0.208	0.0200	"				80-120		20	
Xylene (o)	0.112	0.00100	"				80-120		20	
Surrogate: 4-Bromofluorobenzene	*0.0676*		"	*0.0600*		*113*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.0546*		"	*0.0600*		*91.0*	*80-120*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 1
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P8C1605 - * DEFAULT PREP *** **										
Blank (P8C1605-BLK1)				Prepared: 03/16/18 Analyzed: 03/18/18						
Chloride	ND	0.500	mg/L							
LCS (P8C1605-BS1)				Prepared: 03/16/18 Analyzed: 03/18/18						
Chloride	40.1	0.500	mg/L	40.0		100	85-115			
LCS Dup (P8C1605-BSD1)				Prepared: 03/16/18 Analyzed: 03/18/18						
Chloride	40.3	0.500	mg/L	40.0		101	85-115	0.503	20	
Duplicate (P8C1605-DUP1)		**Source: 8C13010-01**		Prepared: 03/16/18 Analyzed: 03/18/18						
Chloride	58.4	25.0	mg/L		78.1			28.8	20	
Matrix Spike (P8C1605-MS1)		**Source: 8C13010-01**		Prepared: 03/16/18 Analyzed: 03/18/18						
Chloride	558	25.0	mg/L	500	78.1	96.0	80-120			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 1
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

BULK	Samples received in Bulk soil containers
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 3/19/2018

Brent Barron, Laboratory Director/Technical Director

~~DHE~~ RUSH

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 3-15-18 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: 18C15020

PROJECT LOCATION OR NAME: ~~16-0120-01~~ / Targa Eppers

LAI PROJECT #: 16-0120-01 COLLECTOR: Ashton

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: Mst

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	ANALYSES: BTEX ☒ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TCLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ M300	FIELD NOTES
TMW-1		3/14/18	12:35	W	1				X		X																X	
TMW-1		3/14/18	12:35	W	3	X			X		X																X	
PBEL																												
TOTAL																												

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
	3/14/18	
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
		CR 3/15/18 840

TURN AROUND TIME
NORMAL ☐
1 DAY ☒
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.6 ~~0.4~~ THERM #: 28 L1
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Location: None Given

Lab Order Number: 9G24008

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-18-9

Report Date: 07/30/19

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TMW-3	9G24008-01	Water	07/22/19 14:24	07-24-2019 11:55
TMW-2	9G24008-02	Water	07/22/19 14:44	07-24-2019 11:55

Larson & Associates, Inc.	Project: Epperson 16" Pipeline	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

TMW-3

9G24008-01 (Water)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*104 %*		*80-120*	*P9G2602*	*07/26/19*	*07/26/19*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*106 %*		*80-120*	*P9G2602*	*07/26/19*	*07/26/19*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**276**	5.00	mg/L	10	P9G2410	07/24/19	07/24/19	EPA 300.0	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

TMW-2

9G24008-02 (Water)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P9G2602	07/26/19	07/26/19	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*115 %*		*80-120*	*P9G2602*	*07/26/19*	*07/26/19*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*98.8 %*		*80-120*	*P9G2602*	*07/26/19*	*07/26/19*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**47.0**	5.00	mg/L	10	P9G2410	07/24/19	07/24/19	EPA 300.0	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9G2602 - General Preparation (GC)										
Blank (P9G2602-BLK1)				Prepared & Analyzed: 07/26/19						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*0.119*		"	*0.120*		*99.2*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.113*		"	*0.120*		*94.5*	*80-120*			
LCS (P9G2602-BS1)				Prepared & Analyzed: 07/26/19						
Benzene	0.112	0.00100	mg/L	0.100		112	80-120			
Toluene	0.110	0.00100	"	0.100		110	80-120			
Ethylbenzene	0.117	0.00100	"	0.100		117	80-120			
Xylene (p/m)	0.219	0.00200	"	0.200		110	80-120			
Xylene (o)	0.120	0.00100	"	0.100		120	80-120			
Surrogate: 4-Bromofluorobenzene	*0.114*		"	*0.120*		*95.1*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.112*		"	*0.120*		*93.7*	*80-120*			
LCS Dup (P9G2602-BSD1)				Prepared & Analyzed: 07/26/19						
Benzene	0.117	0.00100	mg/L	0.100		117	80-120	4.84	20	
Toluene	0.107	0.00100	"	0.100		107	80-120	2.54	20	
Ethylbenzene	0.113	0.00100	"	0.100		113	80-120	3.25	20	
Xylene (p/m)	0.209	0.00200	"	0.200		105	80-120	4.78	20	
Xylene (o)	0.116	0.00100	"	0.100		116	80-120	3.37	20	
Surrogate: 4-Bromofluorobenzene	*0.113*		"	*0.120*		*93.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.118*		"	*0.120*		*98.0*	*80-120*			
Calibration Blank (P9G2602-CCB1)				Prepared & Analyzed: 07/26/19						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.126*		"	*0.120*		*105*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.111*		"	*0.120*		*92.4*	*80-120*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9G2602 - General Preparation (GC)										
Calibration Blank (P9G2602-CCB2)				Prepared: 07/26/19 Analyzed: 07/29/19						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.120*		*"*	*0.120*		*99.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.106*		*"*	*0.120*		*88.5*	*80-120*			
Calibration Check (P9G2602-CCV1)				Prepared & Analyzed: 07/26/19						
Benzene	0.111	0.00100	mg/L	0.100		111	80-120			
Toluene	0.106	0.00100	"	0.100		106	80-120			
Ethylbenzene	0.105	0.00100	"	0.100		105	80-120			
Xylene (p/m)	0.228	0.00200	"	0.200		114	80-120			
Xylene (o)	0.112	0.00100	"	0.100		112	80-120			
Surrogate: 4-Bromofluorobenzene	*0.123*		*"*	*0.120*		*102*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.140*		*"*	*0.120*		*117*	*80-120*			
Calibration Check (P9G2602-CCV2)				Prepared & Analyzed: 07/26/19						
Benzene	0.117	0.00100	mg/L	0.100		117	80-120			
Toluene	0.114	0.00100	"	0.100		114	80-120			
Ethylbenzene	0.113	0.00100	"	0.100		113	80-120			
Xylene (p/m)	0.225	0.00200	"	0.200		113	80-120			
Xylene (o)	0.113	0.00100	"	0.100		113	80-120			
Surrogate: 4-Bromofluorobenzene	*0.122*		*"*	*0.120*		*102*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.120*		*"*	*0.120*		*100*	*80-120*			
Matrix Spike (P9G2602-MS1)		**Source: 9G24008-01**		Prepared & Analyzed: 07/26/19						
Benzene	0.110	0.00100	mg/L	0.100	ND	110	80-120			
Toluene	0.112	0.00100	"	0.100	ND	112	80-120			
Ethylbenzene	0.0990	0.00100	"	0.100	ND	99.0	80-120			
Xylene (p/m)	0.214	0.00200	"	0.200	ND	107	80-120			
Xylene (o)	0.115	0.00100	"	0.100	ND	115	80-120			
Surrogate: 4-Bromofluorobenzene	*0.131*		*"*	*0.120*		*109*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.149*		*"*	*0.120*		*124*	*80-120*			*S-GC*

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9G2602 - General Preparation (GC)										
Matrix Spike Dup (P9G2602-MSD1)	**Source: 9G24008-01**			Prepared & Analyzed: 07/26/19						
Benzene	0.109	0.00100	mg/L	0.100	ND	109	80-120	1.20	20	
Toluene	0.108	0.00100	"	0.100	ND	108	80-120	4.24	20	
Ethylbenzene	0.107	0.00100	"	0.100	ND	107	80-120	8.15	20	
Xylene (p/m)	0.228	0.00200	"	0.200	ND	114	80-120	6.69	20	
Xylene (o)	0.117	0.00100	"	0.100	ND	117	80-120	1.96	20	
Surrogate: 4-Bromofluorobenzene	*0.128*		*"*	*0.120*		*106*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.116*		*"*	*0.120*		*96.8*	*80-120*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P9G2410 - * DEFAULT PREP *** **										
Blank (P9G2410-BLK1)				Prepared & Analyzed: 07/24/19						
Chloride	ND	0.500	mg/L							
LCS (P9G2410-BS1)				Prepared & Analyzed: 07/24/19						
Chloride	20.5	0.500	mg/L	20.0		103	85-115			
LCS Dup (P9G2410-BSD1)				Prepared & Analyzed: 07/24/19						
Chloride	20.1	0.500	mg/L	20.0		100	85-115	2.23	20	
Calibration Blank (P9G2410-CCB1)				Prepared & Analyzed: 07/24/19						
Chloride	0.00		mg/L							
Calibration Check (P9G2410-CCV1)				Prepared & Analyzed: 07/24/19						
Chloride	9.47		mg/L	10.0		94.7	80-120			
Matrix Spike (P9G2410-MS1)		**Source: 9G19020-01**		Prepared & Analyzed: 07/24/19						
Chloride	368	12.5	mg/L	250	139	91.5	80-120			
Matrix Spike Dup (P9G2410-MSD1)		**Source: 9G19020-01**		Prepared & Analyzed: 07/24/19						
Chloride	403	12.5	mg/L	250	139	105	80-120	8.92	20	

Larson & Associates, Inc.	Project: Epperson 16" Pipeline	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

Notes and Definitions

S-GC	Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 7/30/2019

Brent Barron, Laboratory Director/Technical Director

№ 0712

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 7/24/2019 PAGE 1 OF 1

PO#: LAB WORK ORDER#: 9G24008

PROJECT LOCATION OR NAME: Epperson 16" Pipeline

LAI PROJECT #: 16-0120-01 COLLECTOR: RO/RN

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☒ MTBE ☐	TRPH 418.1 ☐	TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TBLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ SemiVOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐	FIELD NOTES
TMW-3	1	7/22/19	14:24	W	5	3			5		X																	X		
TMW-2	2	7/22/19	14:44	W	5	3			5		X																	X		
TOTAL																														

RELINQUISHED BY:(Signature) Rachel Owen DATE/TIME 7-24-19 / 11:55 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.0 6.0 THERM#: CF1 L2
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

DHL ANALYTICAL

February 07, 2019

Mark Larson
Larson & Associates
507 N. Marienfeld #200
Midland, TX 79701
TEL: (432) 687-0901
FAX (432) 687-0456

Order No.: 1902005

RE: Targa Epperson

Dear Mark Larson:

DHL Analytical, Inc. received 1 sample(s) on 2/1/2019 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAC except where noted in the Case Narrative. All non-NELAC methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-19-22

ACCREDITED IN ACCORDANCE WITH nelac

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson

Larson & Associates, Inc.

P.O. Box 50685

Midland, TX 79710

Project: Targa Epperson 16"

Project Number: 16-0120-01

Location:

Lab Order Number: 0B25003

NELAP ACCREDITED TNI LABORATORY

NELAP/TCEQ # T104704516-17-8

Report Date: 03/09/20

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2	0B25003-01	Water	02/24/20 10:50	02-25-2020 09:06
MW-3	0B25003-02	Water	02/24/20 10:27	02-25-2020 09:06

Larson & Associates, Inc.	Project: Targa Epperson 16"	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

MW-2

0B25003-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*96.8 %*	*80-120*		*P0B2704*	*02/27/20*	*02/27/20*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*97.9 %*	*80-120*		*P0B2704*	*02/27/20*	*02/27/20*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**47.7**	5.00	mg/L	10	P0C0401	03/04/20	03/04/20	EPA 300.0	

Larson & Associates, Inc.	Project: Targa Epperson 16"	Fax: (432) 687-0456
P.O. Box 50685	Project Number: 16-0120-01	
Midland TX, 79710	Project Manager: Mark Larson	

MW-3

0B25003-02 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P0B2704	02/27/20	02/27/20	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*98.4 %*		*80-120*	*P0B2704*	*02/27/20*	*02/27/20*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*97.7 %*		*80-120*	*P0B2704*	*02/27/20*	*02/27/20*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**265**	25.0	mg/L	50	P0C0401	03/04/20	03/04/20	EPA 300.0	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0B2704 - General Preparation (GC)										
Blank (P0B2704-BLK1)				Prepared & Analyzed: 02/27/20						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*0.113*		*"*	*0.120*		*94.3*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.117*		*"*	*0.120*		*97.5*	*80-120*			
LCS (P0B2704-BS1)				Prepared & Analyzed: 02/27/20						
Benzene	0.104	0.00100	mg/L	0.100		104	80-120			
Toluene	0.100	0.00100	"	0.100		100	80-120			
Ethylbenzene	0.101	0.00100	"	0.100		101	80-120			
Xylene (p/m)	0.211	0.00200	"	0.200		105	80-120			
Xylene (o)	0.0984	0.00100	"	0.100		98.4	80-120			
Surrogate: 4-Bromofluorobenzene	*0.115*		*"*	*0.120*		*95.6*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.121*		*"*	*0.120*		*101*	*80-120*			
LCS Dup (P0B2704-BSD1)				Prepared & Analyzed: 02/27/20						
Benzene	0.101	0.00100	mg/L	0.100		101	80-120	3.28	20	
Toluene	0.0985	0.00100	"	0.100		98.5	80-120	1.61	20	
Ethylbenzene	0.106	0.00100	"	0.100		106	80-120	4.77	20	
Xylene (p/m)	0.206	0.00200	"	0.200		103	80-120	2.28	20	
Xylene (o)	0.0982	0.00100	"	0.100		98.2	80-120	0.275	20	
Surrogate: 4-Bromofluorobenzene	*0.117*		*"*	*0.120*		*97.8*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.120*		*"*	*0.120*		*100*	*80-120*			
Calibration Blank (P0B2704-CCB1)				Prepared & Analyzed: 02/27/20						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.117*		*"*	*0.120*		*97.1*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.117*		*"*	*0.120*		*97.6*	*80-120*			

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P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0B2704 - General Preparation (GC)										
Calibration Blank (P0B2704-CCB2)				Prepared & Analyzed: 02/27/20						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.00		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.112*		*"*	*0.120*		*93.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.119*		*"*	*0.120*		*98.8*	*80-120*			
Calibration Check (P0B2704-CCV1)				Prepared & Analyzed: 02/27/20						
Benzene	0.0992	0.00100	mg/L	0.100		99.2	80-120			
Toluene	0.0955	0.00100	"	0.100		95.5	80-120			
Ethylbenzene	0.0968	0.00100	"	0.100		96.8	80-120			
Xylene (p/m)	0.195	0.00200	"	0.200		97.6	80-120			
Xylene (o)	0.0986	0.00100	"	0.100		98.6	80-120			
Surrogate: 4-Bromofluorobenzene	*0.124*		*"*	*0.120*		*103*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.121*		*"*	*0.120*		*101*	*80-120*			
Calibration Check (P0B2704-CCV2)				Prepared & Analyzed: 02/27/20						
Benzene	0.105	0.00100	mg/L	0.100		105	80-120			
Toluene	0.102	0.00100	"	0.100		102	80-120			
Ethylbenzene	0.104	0.00100	"	0.100		104	80-120			
Xylene (p/m)	0.206	0.00200	"	0.200		103	80-120			
Xylene (o)	0.0998	0.00100	"	0.100		99.8	80-120			
Surrogate: 4-Bromofluorobenzene	*0.119*		*"*	*0.120*		*98.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.122*		*"*	*0.120*		*102*	*80-120*			
Calibration Check (P0B2704-CCV3)				Prepared & Analyzed: 02/27/20						
Benzene	0.106	0.00100	mg/L	0.100		106	80-120			
Toluene	0.0964	0.00100	"	0.100		96.4	80-120			
Ethylbenzene	0.0966	0.00100	"	0.100		96.6	80-120			
Xylene (p/m)	0.189	0.00200	"	0.200		94.7	80-120			
Xylene (o)	0.0980	0.00100	"	0.100		98.0	80-120			
Surrogate: 4-Bromofluorobenzene	*0.116*		*"*	*0.120*		*96.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.123*		*"*	*0.120*		*102*	*80-120*			

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0B2704 - General Preparation (GC)										
Matrix Spike (P0B2704-MS1)		**Source: 0B25003-01**		Prepared & Analyzed: 02/27/20						
Benzene	0.113	0.00100	mg/L	0.100	ND	113	80-120			
Toluene	0.106	0.00100	"	0.100	ND	106	80-120			
Ethylbenzene	0.102	0.00100	"	0.100	ND	102	80-120			
Xylene (p/m)	0.213	0.00200	"	0.200	ND	106	80-120			
Xylene (o)	0.105	0.00100	"	0.100	ND	105	80-120			
Surrogate: 4-Bromofluorobenzene	*0.118*		*"*	*0.120*		*98.6*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.125*		*"*	*0.120*		*104*	*80-120*			

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Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0C0401 - * DEFAULT PREP *** **										
Blank (P0C0401-BLK1)				Prepared & Analyzed: 03/04/20						
Chloride	ND	0.500	mg/L							
LCS (P0C0401-BS1)				Prepared & Analyzed: 03/04/20						
Chloride	37.9	0.500	mg/L	40.0		94.9	85-115			
LCS Dup (P0C0401-BSD1)				Prepared & Analyzed: 03/04/20						
Chloride	38.0	0.500	mg/L	40.0		94.9	85-115	0.0790	20	
Calibration Blank (P0C0401-CCB1)				Prepared & Analyzed: 03/04/20						
Chloride	0.00		mg/L							
Calibration Check (P0C0401-CCV1)				Prepared & Analyzed: 03/04/20						
Chloride	16.4		mg/L	20.0		82.1	80-120			
Matrix Spike (P0C0401-MS1)	**Source: 0C04004-02**			Prepared & Analyzed: 03/04/20						
Chloride	181	2.50	mg/L	100	84.6	96.8	80-120			
Matrix Spike Dup (P0C0401-MSD1)	**Source: 0C04004-02**			Prepared & Analyzed: 03/04/20						
Chloride	182	2.50	mg/L	100	84.6	97.1	80-120	0.129	20	

Larson & Associates, Inc.
P.O. Box 50685
Midland TX, 79710

Project: Targa Epperson 16"
Project Number: 16-0120-01
Project Manager: Mark Larson

Fax: (432) 687-0456

Notes and Definitions

ROI	Received on Ice
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 3/9/2020

Brent Barron, Laboratory Director/Technical Director

KL

№ 0883

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 2/25/2020 PAGE 1 OF 1

PO#: _____ LAB WORK ORDER#: 0B25003

PROJECT LOCATION OR NAME: Targa Epperson 16"

LAI PROJECT #: 16-0120-01 COLLECTOR: RW/DS

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☐ MTBE ☐ TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ GASOLINE MOD 8015 ☐ DIESEL - MOD 8015 ☐ OIL - MOD 8015 ☐ VOC 8260 ☐ SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ 8082 PCBS ☐ TCLP - METALS (RCRA) ☐ TCLP VOC ☐ TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ TOTAL METALS (RCRA) ☐ OTHER LIST ☐ LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ RCI ☐ TOX ☐ FLASHPOINT ☐ TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ pH ☐ HEXAVALENT CHROMIUM ☐ EXPLOSIVES ☐ PECHLORATE ☐ CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐	FIELD NOTES
MW-2		2/24/20	10:50	W	6	3			6		X	X
MW-3		2/24/20	10:27	W	6	3			6		X	X

TOTAL

RELINQUISHED BY:(Signature) DSQ	DATE/TIME 2/25/2020 0900	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)

LABORATORY: PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.0, 6.0 THERM#: CF#12
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED

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DHL

- № 0479

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 1/31/19 PAGE 1 OF 1
PO#: LAB WORK ORDER#: 1902005
PROJECT LOCATION OR NAME: Turgu Epperson
LAI PROJECT #: 16-0120-01 COLLECTOR: KO

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

PRESERVATION: HCl (4 VOAs) | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE (1 poly) | UNPRESSERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | GASOLINE MOD 8015 ☐ TPH 1005 ☐ | DIESEL - MOD 8015 ☐ TPH 1006 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TBLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ CYANIDE ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐ | M30S

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 / NaOH	ICE	UNPRESSERVED	BTEX/MTBE	CHLORIDE	FIELD NOTES
TMW-1	01	1/31/19	12:31	W	5	X			X		X	X	4 VOAs, 1 poly
TOTAL													

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
Kyle Olsen	1/31/19 13:01	FedEx
FedEx	2/1/19 0955	[signature]

LABORATORY: DHL

3

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 3.0°C THERM#: #78
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☒ CARRIER BILL # FedEx
☐ HAND DELIVERED

CUSTODY SEAL
DATE 1/31
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • www.qecusa.com

FedEx Express NEW Package US Airbill

FedEx Tracking Number 8054 7630 4541

ORIGIN ID:HOBA
LARSON ASSOC
507 N MARIENFELL
MIDLAND, TX 79701
UNITED STATES US
(612) 988-8222
INV:
PO:

TO DHL ANALY
DHL ANALY
2300 DOUBL
ROUND ROC

TRK# 8054 7630 4541
0200

NOTE: Service order has changed. Please select carefully.

FedEx Express Freight US Airbill

1 From
Date 01/31/19
Sender's Name Kyle Olsen / John White Phone 432 687-0901
Company Larson & Associates
Address 507 N Marienfeld Suite 205
Dept./Floor/Suite/Room
City Midland State TX ZIP 79701

2 Your Internal Billing Reference 16-0120-01 Targa

3 To
Recipient's Name John DuPont Phone 512 388-8222
Company DHL Analytical
Address 2300 Double Creek Drive
We cannot deliver to P.O. boxes or P.O. ZIP codes.
Dept./Floor/Suite/Room
Address
Use this line for the HOLD location address or for continuation of your shipping address.
City Round Rock State TX ZIP 78664

HOLD Weekday
FedEx location address REQUIRED. NOT available for FedEx First Overnight.
HOLD Saturday
FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Next Business Day
- ☐ FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☑ FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days
- ☐ FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- ☐ FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- ☐ FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.
☐ FedEx Envelope* ☐ FedEx Pak* ☐ FedEx Box ☐ FedEx Tube ☑ Other

6 Special Handling and Delivery Signature Options
☐ SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.
☐ No Signature Required — Package may be left without obtaining a signature for delivery.
☐ Direct Signature — Someone at recipient's address may sign for delivery. Fee applies.
☐ Indirect Signature — If no one is available at recipient's address, package may be left with a neighboring address who may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods?
One box must be checked.
☑ No. ☐ Yes As per attached Shipper's Declaration. ☐ Yes Shipper's Declaration not required. ☐ Dry Ice Dry Ice, 9, UN 1845 ____ x ____ kg
Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.
☐ Cargo Aircraft Only

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. ☐
☑ Sender Acct. No. in Section 1 will be billed ☐ Recipient ☐ Third Party ☐ Credit Card ☐ Cash/Check

Total Packages 1 Total Weight 10 lbs.
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4

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name Larson & Associates Date Received: 2/1/2019

Work Order Number 1902005 Received by EL

Checklist completed by: _____ 2/1/2019 Reviewed by DL 2/1/2019
Signature | Date | Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	3.0 °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *07-Feb-19*

CLIENT: Larson & Associates
Project: Targa Epperson
Lab Order: 1902005

CASE NARRATIVE

Sample was analyzed using the methods outlined in the following references:

Method SW8260C - Volatile Aromatics by GCMS Analysis
Method E300 - Anions Analysis

LOG IN

The samples were received and log-in performed on 2/1/2019. A total of 1 sample was received and analyzed. The sample arrived in good condition and was properly packaged. The samples were collected in Mountain Standard Time Zone.

ANIONS ANALYSIS

For Anions Analysis, the recovery of Chloride for the Matrix Spike and Matrix Spike Duplicate (1901297-02 MS/MSD) was below the method control limits. This is flagged accordingly in the QC Summary Report. This anion was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *07-Feb-19*

CLIENT: Larson & Associates
Project: Targa Epperson
Lab Order: 1902005

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1902005-01	TMW-1		01/31/19 12:31 PM	2/1/2019

DHL Analytical, Inc.

07-Feb-19

Lab Order: 1902005
Client: Larson & Associates
Project: Targa Epperson

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1902005-01A	TMW-1	01/31/19 12:31 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	02/05/19 09:15 AM	89331
	TMW-1	01/31/19 12:31 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	02/05/19 09:15 AM	89331
1902005-01B	TMW-1	01/31/19 12:31 PM	Aqueous	E300	Anion Preparation	02/01/19 09:45 AM	89286

DHL Analytical, Inc.

07-Feb-19

Lab Order: 1902005
Client: Larson & Associates
Project: Targa Epperson

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1902005-01A	TMW-1	Aqueous	SW8260C	Volatile Aromatics by GC/MS	89331	100	02/05/19 05:01 PM	GCMS3_190205A
	TMW-1	Aqueous	SW8260C	Volatile Aromatics by GC/MS	89331	10	02/05/19 01:15 PM	GCMS3_190205A
1902005-01B	TMW-1	Aqueous	E300	Anions by IC method - Water	89286	100	02/01/19 07:27 PM	IC2_190201A

DHL Analytical, Inc.

Date: *07-Feb-19*

CLIENT:	Larson & Associates	**Client Sample ID:**	TMW-1
Project:	Targa Epperson	**Lab ID:**	1902005-01
Project No:	16-0120-01	**Collection Date:**	01/31/19 12:31 PM
Lab Order:	1902005	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
VOLATILE AROMATICS BY GC/MS		**SW8260C**					Analyst: **BTJ**
Benzene	11.6	0.0800	0.200		mg/L	100	02/05/19 05:01 PM
Ethylbenzene	1.30	0.200	0.600		mg/L	100	02/05/19 05:01 PM
Toluene	9.45	0.200	0.600		mg/L	100	02/05/19 05:01 PM
Total Xylenes	3.51	0.200	0.600		mg/L	100	02/05/19 05:01 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	100	02/05/19 05:01 PM
Surr: 4-Bromofluorobenzene	100	0	76-119		%REC	100	02/05/19 05:01 PM
Surr: Dibromofluoromethane	102	0	85-115		%REC	100	02/05/19 05:01 PM
Surr: Toluene-d8	101	0	81-120		%REC	100	02/05/19 05:01 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **JL**
Chloride	150	30.0	100		mg/L	100	02/01/19 07:27 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAC certified

DHL Analytical, Inc. **Date:** *07-Feb-19*

CLIENT: Larson & Associates
Work Order: 1902005
Project: Targa Epperson

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_190205A

The QC data in batch 89331 applies to the following samples: 1902005-01A

Sample ID **LCS-89331** Batch ID: **89331** TestNo: **SW8260C** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS3_190205A** Analysis Date: **2/5/2019 10:17:00 AM** Prep Date: **2/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0445	0.00200	0.0464	0	96.0	81	122			
Ethylbenzene	0.0450	0.00600	0.0464	0	97.0	73	127			
Toluene	0.0453	0.00600	0.0464	0	97.7	77	122			
Total Xylenes	0.134	0.00600	0.139	0	96.6	80	121			
Surr: 1,2-Dichloroethane-d4	50.6		50.00		101	72	119			
Surr: 4-Bromofluorobenzene	49.9		50.00		99.7	76	119			
Surr: Dibromofluoromethane	51.4		50.00		103	85	115			
Surr: Toluene-d8	49.9		50.00		99.7	81	120			

Sample ID **MB-89331** Batch ID: **89331** TestNo: **SW8260C** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS3_190205A** Analysis Date: **2/5/2019 10:42:00 AM** Prep Date: **2/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.00200	0.00200								
Ethylbenzene	<0.00600	0.00600								
Toluene	<0.00600	0.00600								
Total Xylenes	<0.00600	0.00600								
Surr: 1,2-Dichloroethane-d4	50.9		50.00		102	72	119			
Surr: 4-Bromofluorobenzene	50.3		50.00		101	76	119			
Surr: Dibromofluoromethane	51.1		50.00		102	85	115			
Surr: Toluene-d8	49.9		50.00		99.8	81	120			

Sample ID **1902005-01AMS** Batch ID: **89331** TestNo: **SW8260C** Units: **mg/L**
SampType: **MS** Run ID: **GCMS3_190205A** Analysis Date: **2/5/2019 5:27:00 PM** Prep Date: **2/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15.4	0.200	4.64	11.6	81.9	81	122			
Ethylbenzene	5.72	0.600	4.64	1.30	95.2	73	127			
Toluene	13.5	0.600	4.64	9.45	87.8	77	122			
Total Xylenes	16.7	0.600	13.9	3.51	94.9	80	121			
Surr: 1,2-Dichloroethane-d4	5160		5000		103	72	119			
Surr: 4-Bromofluorobenzene	5010		5000		100	76	119			
Surr: Dibromofluoromethane	5080		5000		102	85	115			
Surr: Toluene-d8	5020		5000		100	81	120			

Sample ID **1902005-01AMSD** Batch ID: **89331** TestNo: **SW8260C** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS3_190205A** Analysis Date: **2/5/2019 5:52:00 PM** Prep Date: **2/5/2019**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Larson & Associates
Work Order: 1902005
Project: Targa Epperson

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_190205A

Sample ID **1902005-01AMSD**	Batch ID: **89331**	TestNo: **SW8260C**	Units: **mg/L**		
SampType: **MSD**	Run ID: **GCMS3_190205A**	Analysis Date: **2/5/2019 5:52:00 PM**	Prep Date: **2/5/2019**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	15.6	0.200	4.64	11.6	85.6	81	122	1.09	20	
Ethylbenzene	5.83	0.600	4.64	1.30	97.5	73	127	1.81	20	
Toluene	13.6	0.600	4.64	9.45	90.5	77	122	0.946	20	
Total Xylenes	17.1	0.600	13.9	3.51	97.8	80	121	2.43	20	
Surr: 1,2-Dichloroethane-d4	5160		5000		103	72	119	0	0	
Surr: 4-Bromofluorobenzene	5060		5000		101	76	119	0	0	
Surr: Dibromofluoromethane	5090		5000		102	85	115	0	0	
Surr: Toluene-d8	5000		5000		100	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Larson & Associates
Work Order: 1902005
Project: Targa Epperson

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_190205A

Sample ID **ICV-190205**	Batch ID: **R102224**	TestNo: **SW8260C**	Units: **mg/L**
SampType: **ICV**	Run ID: **GCMS3_190205A**	Analysis Date: **2/5/2019 9:52:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0920	0.00200	0.0928	0	99.2	80	120			
Ethylbenzene	0.0939	0.00600	0.0928	0	101	80	120			
Toluene	0.0936	0.00600	0.0928	0	101	80	120			
Total Xylenes	0.281	0.00600	0.278	0	101	80	120			
Surr: 1,2-Dichloroethane-d4	49.8		50.00		99.7	72	119			
Surr: 4-Bromofluorobenzene	50.2		50.00		100	76	119			
Surr: Dibromofluoromethane	50.9		50.00		102	85	115			
Surr: Toluene-d8	49.2		50.00		98.4	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank
J	Analyte detected between MDL and RL
ND	Not Detected at the Method Detection Limit
RL	Reporting Limit
J	Analyte detected between SDL and RL
DF	Dilution Factor
MDL	Method Detection Limit
R	RPD outside accepted control limits
S	Spike Recovery outside control limits
N	Parameter not NELAC certified

CLIENT: Larson & Associates
Work Order: 1902005
Project: Targa Epperson

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190201A

The QC data in batch 89286 applies to the following samples: 1902005-01B

Sample ID	MB-89286	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	MBLK	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 11:03:45 AM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<1.00	1.00								

Sample ID	LCS-89286	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	LCS	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 11:16:45 AM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.96	1.00	10.00	0	99.6	90	110			

Sample ID	LCSD-89286	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	LCSD	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 11:29:45 AM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.57	1.00	10.00	0	95.7	90	110	3.95	20	

Sample ID	1901270-05AMS	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 3:07:16 PM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	395	10.0	200.0	192.7	101	90	110			

Sample ID	1901270-05AMSD	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 3:20:16 PM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	395	10.0	200.0	192.7	101	90	110	0.015	20	

Sample ID	1901297-02AMS	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	MS	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 3:46:16 PM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	649	10.0	200.0	477.4	85.8	90	110			S

Sample ID	1901297-02AMSD	Batch ID:	89286	TestNo:	E300	Units:	mg/L
SampType:	MSD	Run ID:	IC2_190201A	Analysis Date:	2/1/2019 3:59:16 PM	Prep Date:	2/1/2019

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	652	10.0	200.0	477.4	87.1	90	110	0.414	20	S

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

CLIENT: Larson & Associates
Work Order: 1902005
Project: Targa Epperson

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_190201A

Sample ID	**ICV-190201**	Batch ID:	**R102165**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**IC2_190201A**	Analysis Date:	**2/1/2019 10:24:45 AM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	25.4	1.00	25.00	0	101	90	110			

Sample ID	**CCV1-190201**	Batch ID:	**R102165**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**IC2_190201A**	Analysis Date:	**2/1/2019 6:22:15 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.2	1.00	10.00	0	102	90	110			

Sample ID	**CCV2-190201**	Batch ID:	**R102165**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**IC2_190201A**	Analysis Date:	**2/1/2019 8:06:15 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.66	1.00	10.00	0	96.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAC certified

PERMIAN BASIN
ENVIRONMENTAL LAB, LP
1400 Rankin Hwy
Midland, TX 79701

PBELAB

Analytical Report

Prepared for:

Mark Larson
Larson & Associates, Inc.
P.O. Box 50685
Midland, TX 79710

Project: Epperson 16" Pipeline
Project Number: 16-0120-01
Location: Lea County, NM

Lab Order Number: 1I07006

NELAP ACCREDITED TNI LABORATORY

Current Certification

Report Date: 09/13/21

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
TMW-2	1I07006-01	Water	09/03/21 00:00	09-07-2021 08:21
TMW-3	1I07006-02	Water	09/03/21 00:00	09-07-2021 08:21
DUP-1	1I07006-03	Water	09/03/21 00:00	09-07-2021 08:21

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

TMW-2

1I07006-01 (Water)

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Permian Basin Environmental Lab, L.P.									
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:06	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:06	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:06	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:06	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:06	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*94.4 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:06*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*103 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:06*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**52.8**	10.0	mg/L	10	P1I1302	09/13/21 10:01	09/13/21 11:38	EPA 300.0	

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

TMW-3

1I07006-02 (Water)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:27	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:27	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:27	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:27	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:27	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*94.8 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:27*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*104 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:27*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**305**	25.0	mg/L	25	P1I1302	09/13/21 10:01	09/13/21 12:35	EPA 300.0	

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

DUP-1

1I07006-03 (Water)

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Organics by GC									
Benzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:48	EPA 8021B	
Toluene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:48	EPA 8021B	
Ethylbenzene	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:48	EPA 8021B	
Xylene (p/m)	ND	0.00200	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:48	EPA 8021B	
Xylene (o)	ND	0.00100	mg/L	1	P1I0903	09/09/21 09:43	09/10/21 05:48	EPA 8021B	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:48*	*EPA 8021B*	
Surrogate: 1,4-Difluorobenzene		*104 %*	*80-120*		*P1I0903*	*09/09/21 09:43*	*09/10/21 05:48*	*EPA 8021B*	
General Chemistry Parameters by EPA / Standard Methods									
Chloride	**301**	25.0	mg/L	25	P1I1302	09/13/21 10:01	09/13/21 12:54	EPA 300.0	

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P1I0903 - * DEFAULT PREP *** **										
Blank (P1I0903-BLK1)				Prepared & Analyzed: 09/09/21						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*0.116*		*"*	*0.120*		*96.7*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.123*		*"*	*0.120*		*103*	*80-120*			
LCS (P1I0903-BS1)				Prepared & Analyzed: 09/09/21						
Benzene	0.104	0.00100	mg/L	0.100		104	80-120			
Toluene	0.105	0.00100	"	0.100		105	80-120			
Ethylbenzene	0.105	0.00100	"	0.100		105	80-120			
Xylene (p/m)	0.210	0.00200	"	0.200		105	80-120			
Xylene (o)	0.0944	0.00100	"	0.100		94.4	80-120			
Surrogate: 4-Bromofluorobenzene	*0.108*		*"*	*0.120*		*90.2*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.113*		*"*	*0.120*		*94.2*	*80-120*			
LCS Dup (P1I0903-BSD1)				Prepared & Analyzed: 09/09/21						
Benzene	0.106	0.00100	mg/L	0.100		106	80-120	2.14	20	
Toluene	0.109	0.00100	"	0.100		109	80-120	3.25	20	
Ethylbenzene	0.109	0.00100	"	0.100		109	80-120	4.09	20	
Xylene (p/m)	0.218	0.00200	"	0.200		109	80-120	3.75	20	
Xylene (o)	0.0981	0.00100	"	0.100		98.1	80-120	3.80	20	
Surrogate: 4-Bromofluorobenzene	*0.108*		*"*	*0.120*		*89.8*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.115*		*"*	*0.120*		*95.8*	*80-120*			
Calibration Blank (P1I0903-CCB1)				Prepared & Analyzed: 09/09/21						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.500		"							
Xylene (p/m)	1.64		"							
Xylene (o)	0.660		"							
Surrogate: 4-Bromofluorobenzene	*0.115*		*"*	*0.120*		*95.5*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.124*		*"*	*0.120*		*104*	*80-120*			

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P1I0903 - * DEFAULT PREP *** **										
Calibration Blank (P1I0903-CCB2)				Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.00		mg/L							
Toluene	0.00		"							
Ethylbenzene	0.00		"							
Xylene (p/m)	0.860		"							
Xylene (o)	0.00		"							
Surrogate: 4-Bromofluorobenzene	*0.114*		*"*	*0.120*		*95.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.124*		*"*	*0.120*		*104*	*80-120*			
Calibration Check (P1I0903-CCV1)				Prepared & Analyzed: 09/09/21						
Benzene	0.107	0.00100	mg/L	0.100		107	80-120			
Toluene	0.108	0.00100	"	0.100		108	80-120			
Ethylbenzene	0.104	0.00100	"	0.100		104	80-120			
Xylene (p/m)	0.208	0.00200	"	0.200		104	80-120			
Xylene (o)	0.0954	0.00100	"	0.100		95.4	80-120			
Surrogate: 4-Bromofluorobenzene	*0.113*		*"*	*0.120*		*94.3*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.115*		*"*	*0.120*		*95.7*	*80-120*			
Calibration Check (P1I0903-CCV2)				Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.102	0.00100	mg/L	0.100		102	80-120			
Toluene	0.101	0.00100	"	0.100		101	80-120			
Ethylbenzene	0.0970	0.00100	"	0.100		97.0	80-120			
Xylene (p/m)	0.196	0.00200	"	0.200		98.1	80-120			
Xylene (o)	0.0900	0.00100	"	0.100		90.0	80-120			
Surrogate: 4-Bromofluorobenzene	*0.103*		*"*	*0.120*		*85.9*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.114*		*"*	*0.120*		*95.3*	*80-120*			
Calibration Check (P1I0903-CCV3)				Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.107	0.00100	mg/L	0.100		107	80-120			
Toluene	0.105	0.00100	"	0.100		105	80-120			
Ethylbenzene	0.101	0.00100	"	0.100		101	80-120			
Xylene (p/m)	0.204	0.00200	"	0.200		102	80-120			
Xylene (o)	0.0944	0.00100	"	0.100		94.4	80-120			
Surrogate: 4-Bromofluorobenzene	*0.108*		*"*	*0.120*		*89.8*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.114*		*"*	*0.120*		*95.2*	*80-120*			

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

Organics by GC - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P1I0903 - * DEFAULT PREP *** **										
Matrix Spike (P1I0903-MS1)	**Source: 1I01012-01**			Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.107	0.00100	mg/L	0.100	0.00272	104	80-120			
Toluene	0.104	0.00100	"	0.100	0.000520	104	80-120			
Ethylbenzene	0.101	0.00100	"	0.100	ND	101	80-120			
Xylene (p/m)	0.201	0.00200	"	0.200	ND	100	80-120			
Xylene (o)	0.0915	0.00100	"	0.100	0.000600	90.9	80-120			
Surrogate: 4-Bromofluorobenzene	*0.106*		*"*	*0.120*		*88.4*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.119*		*"*	*0.120*		*99.0*	*80-120*			
Matrix Spike Dup (P1I0903-MSD1)	**Source: 1I01012-01**			Prepared: 09/09/21 Analyzed: 09/10/21						
Benzene	0.104	0.00100	mg/L	0.100	0.00272	101	80-120	2.61	20	
Toluene	0.104	0.00100	"	0.100	0.000520	103	80-120	0.454	20	
Ethylbenzene	0.101	0.00100	"	0.100	ND	101	80-120	0.416	20	
Xylene (p/m)	0.202	0.00200	"	0.200	ND	101	80-120	0.779	20	
Xylene (o)	0.0920	0.00100	"	0.100	0.000600	91.4	80-120	0.559	20	
Surrogate: 4-Bromofluorobenzene	*0.105*		*"*	*0.120*		*87.1*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*0.114*		*"*	*0.120*		*95.4*	*80-120*			

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab, L.P.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P1I1302 - * DEFAULT PREP *** **										
Blank (P1I1302-BLK1)				Prepared & Analyzed: 09/13/21						
Chloride	ND	1.00	mg/L							
LCS (P1I1302-BS1)				Prepared & Analyzed: 09/13/21						
Chloride	40.4	1.00	mg/L	40.0		101	90-110			
LCS Dup (P1I1302-BSD1)				Prepared & Analyzed: 09/13/21						
Chloride	40.4	1.00	mg/L	40.0		101	90-110	0.0594	10	
Calibration Blank (P1I1302-CCB1)				Prepared & Analyzed: 09/13/21						
Chloride	-0.0170		mg/L							
Calibration Check (P1I1302-CCV1)				Prepared & Analyzed: 09/13/21						
Chloride	19.8		mg/L	20.0		99.2	90-110			
Calibration Check (P1I1302-CCV2)				Prepared & Analyzed: 09/13/21						
Chloride	20.1		mg/L	20.0		100	90-110			
Matrix Spike (P1I1302-MS1)		**Source: 1I07006-01**		Prepared & Analyzed: 09/13/21						
Chloride	152	10.0	mg/L	100	52.8	98.9	80-120			
Matrix Spike Dup (P1I1302-MSD1)		**Source: 1I07006-01**		Prepared & Analyzed: 09/13/21						
Chloride	154	10.0	mg/L	100	52.8	101	80-120	1.67	20	

Larson & Associates, Inc.	Project: Epperson 16" Pipeline
P.O. Box 50685	Project Number: 16-0120-01
Midland TX, 79710	Project Manager: Mark Larson

Notes and Definitions

ROI	Received on Ice
pH1	The Regulatory Holding time for pH is < 1 Hour, Analysis should be done in the field.
BULK	Samples received in Bulk soil containers may be biased low in the nC6-C12 TPH Range
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Brent Barron Date: 9/13/2021

Brent Barron, Laboratory Director/Technical Director

№ 1824

CHAIN-OF-CUSTOD

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202
Midland, TX 79701
432-687-0901

DATE: 9/7/21 PAGE 1 OF 1

PO#: LAB WORK ORDER#: 110 1006

PROJECT LOCATION OR NAME: Ferguson 16" pipeline

LAI PROJECT #: 16-0120-01 COLLECTOR: TJ+TP

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

PRESERVATION: 3 VOA (HCl) | HNO_3 | H_2SO_4 ☐ NaOH ☐ | 2 POLY (ICE) | UNPRESERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	BTEX/MTBE	Chloride	FIELD NOTES
TMW-2	1	9/3/21		W	5	X			X		X	X	
TMW-3	2	"		"	5	X			X		X	X	
DUP-1	3	"		"	5	X			X		X	X	

TOTAL 3

RELINQUISHED BY:(Signature)	DATE/TIME 9/7/21 0821	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME 9/7/21 0821	RECEIVED BY: (Signature)

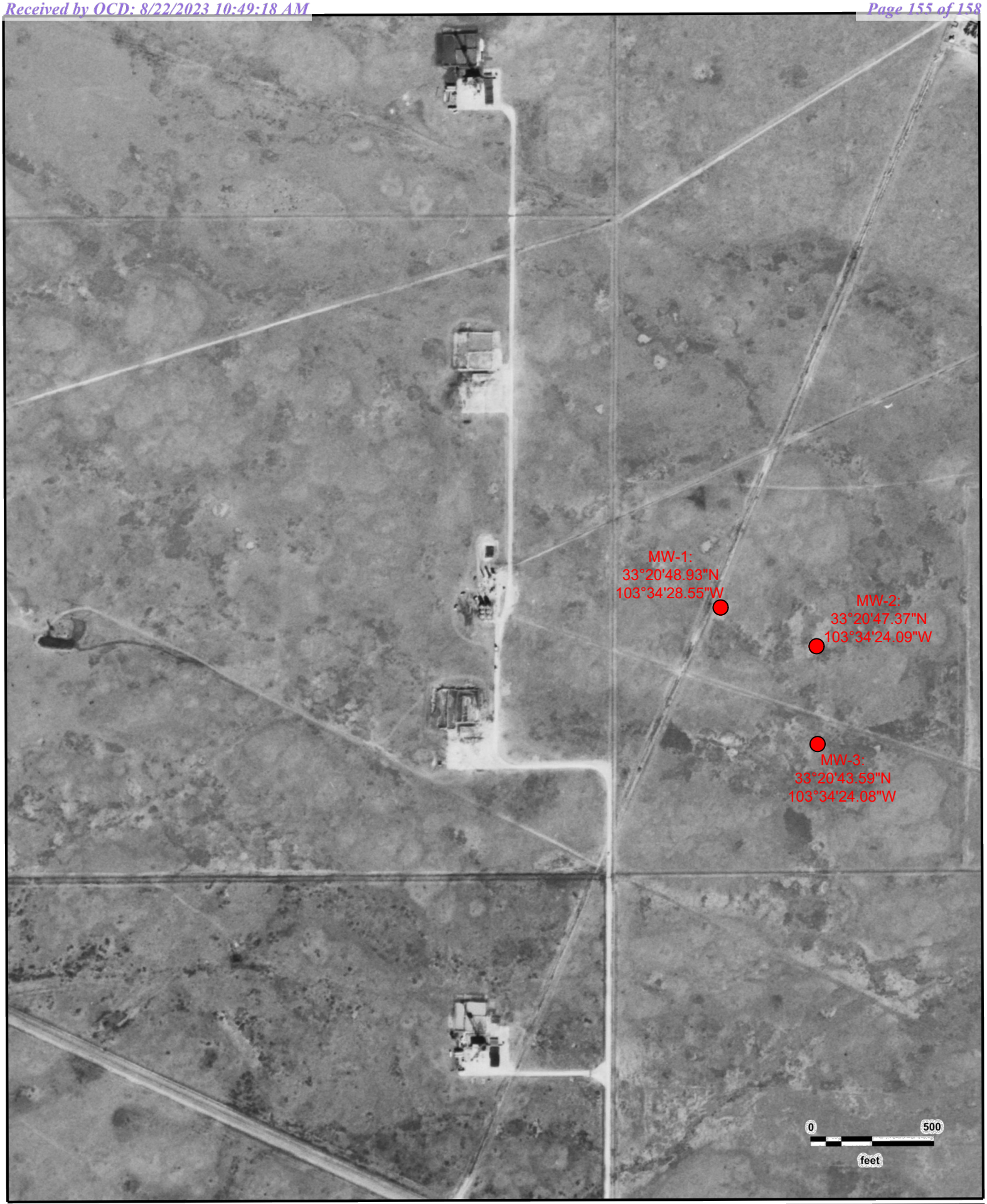
LABORATORY: PBEL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 6.0 - 7.0 THERM#: CF1,L2
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

Appendix H

Historical (1968) Aerial Photograph



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Epperson Site
USGS
02/03/1968

GeoSearch

Appendix I

Public Notice

Draft Public Notice

PUBLIC NOTICE OF 30-DAY PUBLIC COMMENT PERIOD FOR STAGE 2 ABATEMENT PLAN FOR THE EPPERSON 16-INCH PIPELINE RELEASE

Targa Midstream Services, LLC, a subsidiary of Targa Resources Corp., has issued for public comment a Stage 2 Abatement Plan for the Epperson 16-Inch Pipeline release located about 15-milez west of Tatum, in Lea County, New Mexico. On March 31, 2017, the New Mexico Oil Conservation Division (NMOCD) issued the release incident number nOY17709044723 and remediation permit number 1RP-4664. The Stage 2 Abatement Plan summarizes environmental investigations, monitoring, soil remediation, describes current conditions, and need for abatement, as wells as the proposed abatement plan and implementation details.

The NMOCD Director has reviewed the Stage 2 Abatement Plan and determined that the Plan is administratively complete. The NMOCD Director has complied with Subsection B of 19.15.30.15 of the New Mexico Administrative Code by reviewing the document and concluding that it satisfies the requirements of Subsection C of 19.15.30.13.

The public may view the Stage 2 Abatement Plan electronically on the NMOCD public database at https://wwwapps.emnrd.nm.gov/OCD/OCDPermitting/Data/Incidents/Incidents.aspx. Enter nOY1709044723 in the Incident ID box, then scroll to the bottom of the page and click on Continue. To find the Stage 2 Abatement Plan, click on application ID 78564 dated March 30, 2023. The Stage 2 Abatement Plan can also be viewed by contacting the NMOCD office listed below.

NMOCD is accepting written comments and requests for public hearing that include reasons why a hearing should be held. Before approving the Stage 2 Abatement Plan, NMOCD will consider comments and requests if received within 30 days after publication of this public notice.

Please submit written comments by _____ __, 2023 to Nelson Velez, Environmental Specialist, New Mexico Oil Conservation Division, 5200 Oakland Avenue, NE Suite 100, Albuquerque, NM 87113 or via email at nelson.velez@emnrd.nm.gov. The responsible party's address is Targa Resources Corp., Christina Higginbotham, 811 Louisiana Street, Suite 2100, Houston, Texas 77002.

This notice was published on or near _____ __, 2023 in the Albuquerque Journal and Hobbs News-Sun newspapers.

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
https://www.emnrd.nm.gov/ocd/contact-us

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 255450

CONDITIONS

Operator: TARGA MIDSTREAM SERVICES LLC 811 Louisiana Street Houston, TX 77002	OGRID: 24650
	Action Number: 255450
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Determination Letter of Approval submitted to Targa, dated 08/29/2023.	2/26/2025