Annual Report of Groundwater Monitoring and Remediation in 2019

Darr Angell #2 SRS LF 1999-62

SW1/4, SE1/4, Section 11, T15S, R37E and

NW1/4, NE1/4, Section, 14 T15S, R37E,

Lea County, New Mexico

NMOCD AP-007

Plains All American Pipeline LP

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1. Introduction

This *Annual Report of Groundwater Monitoring and Remediation in 2019* presents data collected at the Darr Angell No. 2 site (hereafter referred to as the "Site") by GHD Services, Inc. (GHD) on behalf of Plains All American Pipeline, L.P. (Plains) in compliance with the New Mexico Oil Conservation Division (NMOCD) correspondence dated May 1998, requiring submittal of an Annual Monitoring Report by April 1 of each year. This Site is part of NMOCD Abatement Plan number AP-007. This report presents results of quarterly gauging and sampling of monitor and recovery wells in February, May, July, and October. Remedial activities included recovery of LNAPL and impacted groundwater by total fluid pumps, soil vapor extraction, hand bailing, and enhanced fluid recovery (EFR).

The location of the Site is SW1/4, SE1/4, Section 11, Township 15 South, Range 37 East and NW1/4, NE1/4, Section 14, Township 15 South, Range 37 East. Latitude and longitude of the Site are 33.0242° North and 103.1667° West. Location of the Site is shown on a topographic map in Figure 1.

1.1 Site History

The Site was formerly the responsibility of Enron Oil Trading and Transportation (EOTT); however, the Site is currently the responsibility of Plains. A pipeline release was discovered by EOTT employees and details were submitted on a Release Notification and Corrective Action Form (C-141) to the NMOCD on July 29, 1999. The C-141 reported the release 60 barrels (bbl.) of crude oil with no recovery. The release occurred from an 8 inch EOTT pipeline and was attributed to external pipeline corrosion.

Initial remediation activities began in August 1999 and consisted of 40 soil borings installed within and around the area of surface staining. In April and May 2000, a contractor for EOTT excavated the impacted area to approximately 4.5 feet below ground surface (bgs). Impacted soils were stockpiled on site. Excavation resumed in April and May 2001 with the additional removal of approximately 3,000 cubic yards of impacted soil. This material was added to soil previously stockpiled on site. Monitor wells MW-1 through MW-10 and recovery wells RW-1 through RW-7 were installed between April 2000 and December 2002. Partial backfilling of the open excavation was conducted subsequent to NMOCD approval of a backfill request, submitted on March 11, 2002. Backfill materials consisted of previously excavated caliche which had been separated from other excavated material by mechanical screening.

Approximately 3100 cubic yards of excavated soils were placed into a treatment area, which was 2-3 feet deep, in October 2003. Quarterly mechanical tilling of this stockpile occurred throughout 2004. Analytical results detailed in the Site Restoration Work Plan and Proposed Soil Closure Strategy of January 2006 indicated concentrations of total petroleum hydrocarbons (TPH) within the soil treatment cell were below NMOCD regulatory standards. In a letter from the NMOCD of April 5, 2006 Plains received approval to backfill the excavation at the Site. The excavation was backfilled with remediated soils contained in the soil treatment cell and contoured to grade in June 2006. A Soil Closure Request was submitted to the NMOCD. Plains received an email approving the soil closure request for the Darr No. 2 location on February 19, 2010.

Nova began managing activities at the Site on May 29, 2004. GHD began monitoring, operation, maintenance, and reporting at the Site on May 2, 2011.

There are 11 groundwater monitor wells (MW-1, MW-2, MW-3, MW-4R, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, and MW-12) and 12 recovery wells (RW-1, RW-2, RW-3, RW-4, RW-5, RW-6, RW-7R, RW-8, RW-9, RW-10, RW-11, and RW-12) that were installed with NMOCD approval at the Site. Monitor well MW-5 was plugged and abandoned on September 14, 2005. Wells MW-4 and RW-7 were plugged and abandoned on October 7 and October 8, 2014, respectively. Monitor well MW-4R and recovery well RW-9 were installed on October 7, 2014. Recovery wells RW-7R, RW-8 and RW-10 were installed on October 8, 2014. Monitor well MW-12 and recovery wells RW-11 and RW-12 were installed on February 8, 2017. New wells were professionally surveyed on November 11, 2014 and June 28, 2017. A Site Details Map is presented as Figure 2.

2. Regulatory Framework

NMOCD guidelines require groundwater to be analyzed for potential contaminants as defined by the New Mexico Administrative Code 20.6.2.3103 Section A, which provides the New Mexico Water Quality Control Commission (NMWQCC) Human Health Standards and Toxic Pollutant Standards for groundwater. The constituents of concern (COCs) in impacted groundwater at the Site are LNAPL, and benzene, toluene, ethylbenzene, total xylenes (BTEX), and polycyclic aromatic hydrocarbons (PAH). NMWQCC Human Health and Toxic Pollutant Standards shown in the Table 2.1 are used to guide assessment and remediation at the Site.

Table 2.1 NMWQCC Human Health and Toxic Pollutant Standards

Analyte	NMWQCC Human Health or Toxic Pollutant Standard
Benzene	0.01 mg/L
Toluene	0.75 mg/L
Ethylbenzene	0.75 mg/L
Total Xylenes	0.62 mg/L
Benzo(a)pyrene	0.0002 mg/L
Combined Naphthalene and Monomethylnaphthalenes	0.03

Table 2.2 shows the site sampling schedule approved by the NMOCD in a correspondence dated April 28, 2004 and amended in NMOCD correspondence dated June 20, 2005.

Table 2.2 Sampling Schedule Approved by NMOCD

Location	Schedule	Location	Schedule	Location	Schedule
MW-1	Annually	MW-7	Annually	RW-2	Quarterly
MW-2	Quarterly	MW-8	Annually	RW-3	Quarterly
MW-3	Semi-Annually	MW-9	Annually	RW-4	Quarterly
MW-4	P&A	MW-10	Annually	RW-5	Quarterly
MW-5	P&A	MW-11	Quarterly	RW-6	Quarterly
MW-6	Annually	RW-1	Quarterly	RW-7	P&A

Monitor and recovery wells MW-4R, MW-12, RW-7R, RW-8, RW-9, RW-10, RW-11, and RW-12 are monitored on a quarterly basis to establish consistent historical data regarding dissolved-phase COCs and LNAPL thicknesses. These wells will be added to the site sampling schedule subsequent to approval by the NMOCD. A letter to the NMOCD requesting modification of the monitoring schedule was submitted along with the 2016 Annual Groundwater Monitoring Report in April 2017.

3. Groundwater Monitoring

Quarterly groundwater monitoring was conducted by GHD on February 25-27, May 20-21, July 23, and October 22, 2019. Wells were sampled in accordance with the sampling schedule described in Table 2.2. Wells containing measureable thicknesses of LNAPL (>0.01 feet) were not sampled. All wells were gauged during each quarterly event.

3.1 Groundwater Monitoring Methodology

All well caps were removed to allow groundwater levels to stabilize prior to gauging. Static fluid levels were measured with an oil-water interface probe to the nearest hundredth of a foot. After recording fluid levels, wells not containing LNAPL were purged of three casing volumes of groundwater. Samples of groundwater were collected using clean, disposable polyvinyl chloride (PVC) bailers. Laboratory-supplied sample containers were filled directly from the bailers. Duplicate samples of groundwater were collected from the last well to be sampled. Samples were placed on ice immediately after collection and chilled to a temperature of approximately 4°C (39°F). Proper chain-of-custody documentation accompanied samples to Pace Analytical in Mt. Juliet, Tennessee. Samples were analyzed for BTEX according to method EPA 8021B. Selected samples collected in October were analyzed for PAH compounds according to method EPA 8270C-SIM. Volumes of groundwater purged from wells monitored during the first, second, third, and fourth quarters of 2019 were 51 gallons, 54.5 gallons, 68 gallons, and 67 gallons, respectively. The total volume of groundwater purged from wells during quarterly monitoring events in 2019 was 240.5 gallons.

3.2 The Potentiometric Surface and Gradient

All fluid level measurements were recorded from professionally surveyed tops of casings. Elevations on the potentiometric surface were calculated using a specific gravity of 0.81 for LNAPL where it was present. Fluid levels and calculated elevations on the potentiometric surface are presented in Table 1. Maps of the potentiometric surface during quarterly monitoring events in February, May, July, and October are provided as Figures 3, 4, 5, and 6, respectively.

Monitor wells MW-1, MW-2, MW-3, MW-6, MW-10, MW-11, and RW-4 were gauged dry at least once during 2019. All were dry during the fourth quarterly monitoring event of the year. The bottoms of LNAPL columns were below the bottoms of casings in recovery wells RW-1, RW-2, and RW-6 during some quarterly monitoring events; therefore, elevations of the potentiometric surface in those wells could not be accurately calculated in those instances.

The groundwater flow direction is toward the southeast and is consistent with previous quarterly monitoring results. Gradients on the potentiometric surface were 0.0016 ft./ft., 0.0016 ft./ft., 0.0015

ft./ft., and 0.0014 ft./ft. during the first, second, third, and fourth quarterly monitoring events, respectively.

Elevations of the potentiometric surface fell in all wells in which elevations of the potentiometric surface could be determined on November 26, 2018 and October 22, 2019. Amounts of decline were between 0.60 foot and 0.79 foot. The average decline was 0.64 foot.

3.3 Presence of Light Non-aqueous Phase Liquids (LNAPL)

LNAPL was observed in recovery wells RW-1, RW-2, RW-3, RW-4, RW-5, RW-6, RW-7R, RW-8, RW-9, RW-10, RW-11, and RW-12 during 2019. Well RW-4 was dry by the end of 2019. Recovery wells RW-8 and RW-10 had greater thicknesses of LNAPL than other wells during 2019. LNAPL was observed in recovery well RW-12 for the first time during the second quarter of 2019; however, LNAPL was not observed in RW-12 at any other time during the year.

Charts of thicknesses of LNAPL versus time in monitor well MW-2 and recovery wells RW-1, RW-2, RW-3, RW-4, RW-5, RW-6, RW-7R, RW-8, RW-9, and RW-10, are in Appendix A. Of these wells, RW-3, RW-5, RW-7R, RW-8, RW-9, and RW-10 consistently had full thicknesses of LNAPL in the casings.

3.4 Dissolved-phase Hydrocarbons in Groundwater

Analytical results for monitoring conducted during 2018 and 2019 are included in Table 2. Results of analyses of BTEX during the first, second, third, and fourth quarterly monitoring events are shown on Figure 7, Figure 8, Figure 9, and Figure 10, respectively. Concentrations of PAH compounds that exceed NMWQCC Human Health or Toxic Pollutant Standards are also included on Figure 10.

Recovery well RW-11 was impacted by LNAPL during the first quarterly monitoring event and was impacted by dissolved benzene at levels exceeding the NMWQCC Human Health Standard of 0.01 mg/L during the second, third, and fourth quarterly events of 2019. Recovery well RW-12 contained dissolved benzene at levels above the NMWQCC Human Health Standard during the first, third, and fourth quarterly monitoring events. RW-12 was not sampled during the second quarterly event, because it was impacted by LNAPL. All other detections of dissolved benzene, toluene, ethylbenzene, and total xylenes were below the respective NMWQCC Human Health Standards. Charts showing dissolved benzene versus time in monitor well MW-3 and recovery wells RW-11 and RW-12 are in Appendix B. Certified laboratory reports are in Appendix C.

During the October groundwater monitoring event, samples for analyses of polycyclic aromatic hydrocarbons (PAHs) were collected from MW-12, RW-11, and RW-12. These wells were sampled in accordance with the NMOCD's email correspondence to Plains dated December 12, 2012, regarding PAHs which provided the following directive:

> *Annual sampling of wells that have BTEX concentrations above the respective NMWQCC standard; wells where LNAPL has been removed and is no longer present; and continued sampling of each well for at least two consecutive years until each of the PAHs are at a concentration of 0.001 mg/L or less (for PAHs that do not have a NMWQCC standard) and at or below NMWQCC standard for PAHs that have a standard (if applicable).*

Results indicated that concentrations of anthracene, dibenzofuran, fluorene, and phenanthrene in RW-11 and dibenzofuran in RW-12 exceeded the standard of 0.001 mg/L required by correspondence from NMOCD in 2012 referenced above. A cumulative summary of analytical results of PAH is in Table 3. Certified laboratory reports including results for PAH compounds are in Appendix C.

4. Corrective Action

Remediation at the Site consists recovery of LNAPL and impacted groundwater by hand-bailing and recovery of soil-vapor, LNAPL, and impacted groundwater by a trailer-mounted, automated system which operates total-fluid pumps in a number of wells. Fluids recovered by both methods are transferred to an above-ground storage tank (AST) from which fluids are periodically removed for disposal at a licensed facility per directives of Plains. Fluid levels in the AST are gauged periodically to calculate total volumes fluids recovered at the site. Total volumes recovered less amounts removed for disposal indicate that approximately 690 gallons of LNAPL were recovered during 2019 by operation of the remediation system and by hand-bailing. Approximately 17,014 gallons of groundwater were recovered by the remediation system and hand-bailing. The total volume of liquids recovered by the remediation system and hand-bailing at the Site during 2019 was approximately 17,704 gallons.

Wells MW-6, RW-1, RW-2, RW-3, RW-5, RW-6, RW-7R, RW-8, RW-9, and RW-10 were targeted for periodic abatement of LNAPL by hand. The total volume of LNAPL recovered in this manner during the year was 99.4 gallons.

Semi-monthly hand bailing of MW-3, RW-5, RW-7R, RW-11 and RW12 continued throughout 2019 to reduce concentrations of dissolved-phase contaminants. The total volume of groundwater recovered during BTEX abatement during the year was 110.2 gallons.

A trailer mounted automated groundwater remediation system was operated at the Site for a total of 159 days during 2019. Four total-fluids pumps are deployed at the Site and are moved to different wells periodically. Pumps remain in the locations shown on Figures 3-10 until the following quarterly monitoring event. Pumps were deployed at various times in recovery wells RW-3, RW-5, RW-6, RW-7R, RW-8, RW-9, and RW-10. GHD personnel conducted operation and maintenance (O&M) activities each week to maintain efficient soil vapor and fluid recovery. O&M activities included inspections of well-heads and flow lines, servicing total fluid pumps, adjustments of depths of total-fluids pumps, and gauging of recovered fluids in the storage tank, and general housekeeping tasks. Approximately 590.6 gallons of LNAPL (690 gallons total recovery by system and hand, less 99.4 gallons recovered by hand-bailing) and 16,663 gallons of groundwater (17,014 total recovery by system and hand, less 240.5 gallons recovered by quarterly purging, less 110.2 gallons recovered during BTEX abatement) were recovered by the automated trailer mounted remediation system during 2019. Samples of emissions from the remediation system were collected on June 19, August 30, and November 12, 2019 and used to calculate emission rates and total emissions from the remediation system. Using the designed effluent flow rate of 40 cubic feet per minute, the maximum rate of emissions during 2019 was 3.1289 lb. TPH/hour. Total mass of emissions during 2019 was 3.6374 tons TPH.

Enhanced Fluid Recovery (EFR) events were conducted in MW-6 (7/3), RW-3 (2/6), RW-5 (11/13), RW-6 (5/8, 8/7), and RW-9 (2/6) in 2019. A vacuum truck and drop hose capable of sealing the wellhead and reaching beyond the static water table were used to remove LNAPL and impacted groundwater to reduce concentrations of dissolved BTEX. These events recovered 5.8 gallons of LNAPL and 1848 gallons of impacted groundwater during 2019.

An approximate total of 695.8 gallons of LNAPL were recovered from the Site during 2019 by the remediation system, hand-bailing, and EFR events. Approximately 18,862 gallons of groundwater were recovered from the Site during the year by the remediation system, hand-bailing, and EFR events. Approximately 28,514 gallons of LNAPL have been recovered from the start of the LNAPL abatement program in December 2005.

All fluids recovered from purging, remediation system operation, EFR events, and BTEX and LNAPL abatement via hand bailing were transferred to the AST and later disposed at a licensed disposal facility as directed by Plains.

5. Summary of Findings

Based on groundwater assessment, monitoring and remedial activities performed by GHD at the Site in 2019, the following summary of findings is presented:

- Wells MW-1, MW-2, MW-3, MW-6, MW-10, MW-11, and RW-4 were gauged dry at least once during 2019.
- Bottoms of the LNAPL columns were below the bottoms of the casings in recovery wells RW-1, RW-2, and RW-6; therefore, thicknesses of LNAPL in those wells could not be accurately measured.
- Flow of groundwater is toward the southeast and is consistent with previous quarterly monitoring events. Gradients of the potentiometric surface were between 0.0014 ft./ft. and 0.0016 ft./ft. during all four quarterly monitoring events of the year.
- The average decline in the elevation of the potentiometric surface was 0.64 foot between November 26, 2018 and October 22, 2019.
- Dissolved benzene was detected at concentrations exceeding the NMWQCC Human Health Standard of 0.01 mg/L only in recovery wells RW-11 and RW-12 during 2019. All other detections of BTEX constituents were below their respective NMWQCC Human Health Standards.
- Concentrations of anthracene, dibenzofuran, fluorene, and phenanthrene in RW-11 and dibenzofuran in RW-12 exceeded the standard of 0.001 mg/L required by correspondence from NMOCD in 2012. All other detections of PAH compounds in groundwater were below applicable regulatory standards.
- Semi-monthly hand bailing from MW-3, RW-5, RW-7R, RW-11 and RW-12 to reduce BTEX concentrations recovered 110.2 gallons of groundwater during 2019.

- Hand-bailing from MW-6, RW-1, RW-2, RW-3, RW-5, RW-6, RW-7R, RW-8, RW-9, and RW-10 recovered 99.4 gallons of LNAPL.
- The trailer mounted automated remediation system operated for 159 days during 2019 and recovered 590.6 gallons of LNAPL and 16,663 gallons of groundwater. The maximum emission rate during 2019 was 3.1289 lb. TPH/hour. Total gaseous hydrocarbon emissions for 2019 were 3.6374 tons.
- EFR events conducted on February 6, May 8, July 3, August 7, and November 13 recovered 5.8 gallons of LNAPL and 1848 gallons of impacted groundwater.
- Approximately 695.8 gallons of LNAPL were recovered by the trailer-mounted remediation system and by hand-bailing during 2019. Total volume of LNAPL recovered by all methods since the start of the LNAPL abatement program in December 2005 is 28,514 gallons.

6. Recommendations

Based upon the data and conclusions presented in this report, the following are recommended for 2020:

- Continue quarterly groundwater monitoring events with annual reporting to the NMOCD.
- Continue annual sampling for PAHs during the fourth quarterly event according to directives of NMOCD. This will include all wells installed during 2020 which are not impacted by LNAPL.
- Continue remediation of the soil profile and groundwater by operating the trailer mounted soil vapor extraction system. Gaseous hydrocarbon emissions will be sampled quarterly to calculate emission rates and total emissions.
- Continue conducting EFR events on select wells with considerable LNAPL thickness as a more aggressive LNAPL abatement, as well as to reduce BTEX constituent concentrations.
- Continue hand bailing of LNAPL-impacted wells in which a pump has not been installed.
- Continue hand bailing from selected wells to reduce concentrations of dissolved-phase contaminants.
- A work plan proposing plugging and abandoning MW-1, MW-2, MW-3, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, and RW-4 was submitted to NMOCD on July 10, 2019. Those wells are dry or had insufficient fluid columns from which to collect samples of groundwater or recover LNAPL. The same work plan proposed installing MW-3R, MW-6R, MW-7R, MW-8R, MW-9R, MW-10R, MW-13, RW-4R, RW-13, and RW-14. The work plan will be implemented during 2020 out of necessity to maintain delineation of the contaminant plume and enhance the ability to recover LNAPL. Details regarding plugging and installation of these wells will be included in the annual report for 2020.

All of Which is Respectfully Submitted,

GHD

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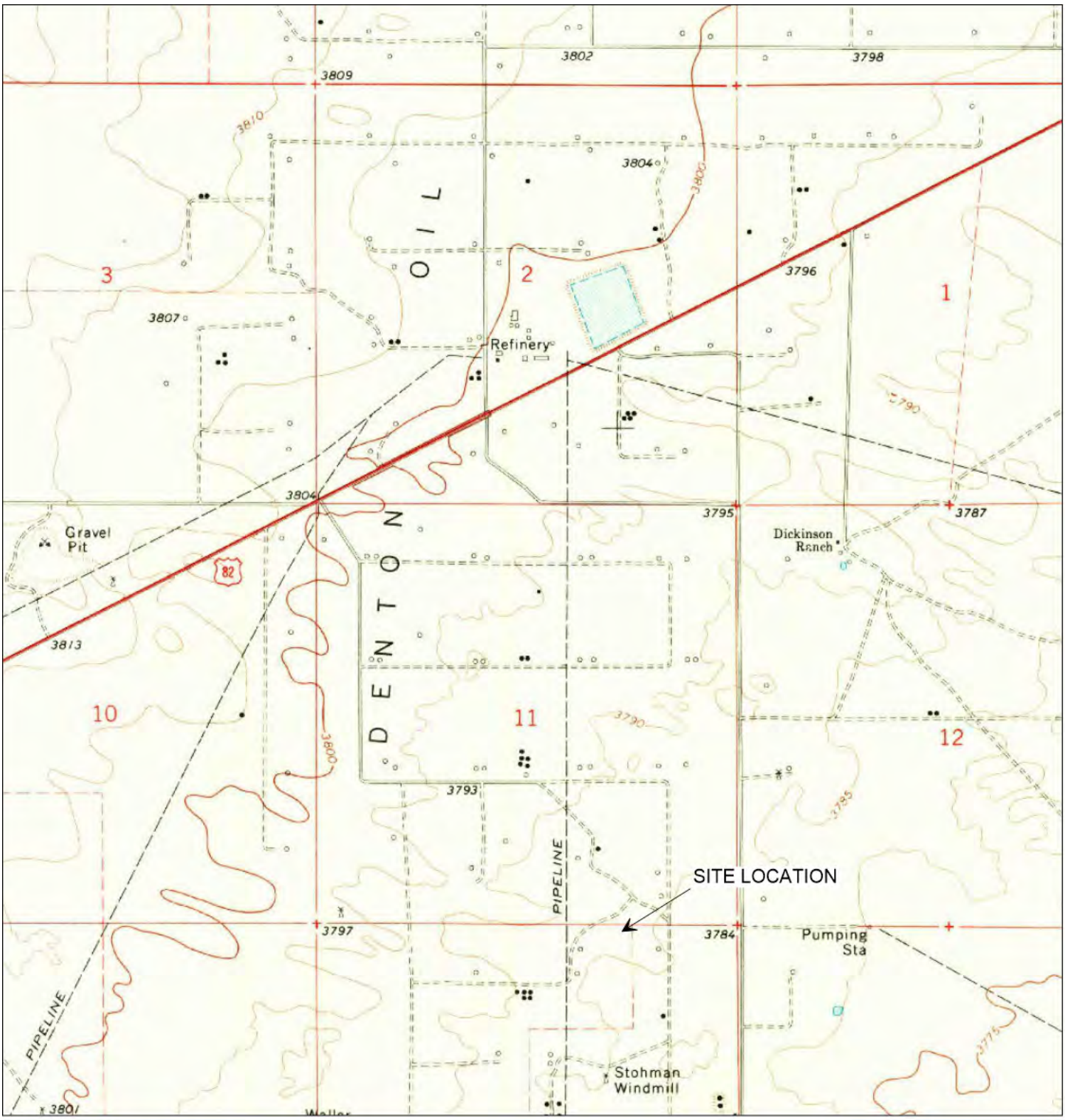
Senior Project Manager

Rebecca Haskell

Senior Project Manager

Figures



SOURCE: USGS 7.5 MINUTE QUADRANGLE
PRAIRIEVIEW, NEW MEXICO (1970)

LAT/LONG: 33.0242° NORTH, 103.1667° WEST
COORDINATE: NAD83 DATUM U.S. FOOT
STATE PLANE ZONE - NEW MEXICO EAST

PROJECT 11209891

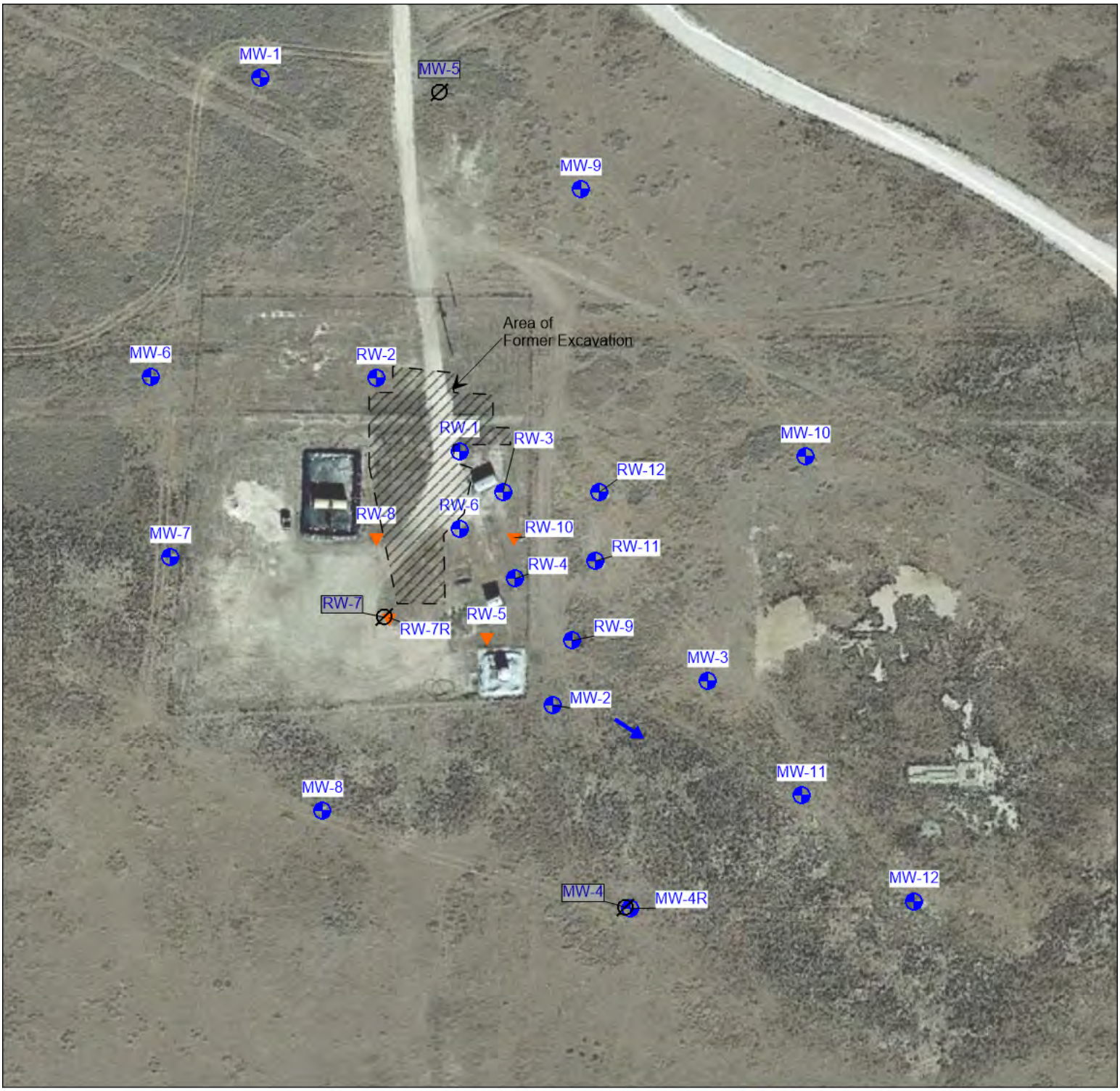
OCTOBER 15, 2018

0 FT 1000 FT 2000 FT

PLAINS ALL AMERICAN PIPELINE COMPANY
DARR ANGELL #2
SRS LF 1999-62, NMOCD REMEDIATION PERMIT AP-007
ANNUAL REPORT OF GROUNDWATER MONITORING
AND REMEDIATION IN 2019

SITE LOCATION MAP

FIGURE 1



Well Location
Plugged Well Location
Well Equipped with Remediation Pump
(Locations of Pumps May Change)

0 FT 50 FT 100 FT

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SITE DETAILS MAP

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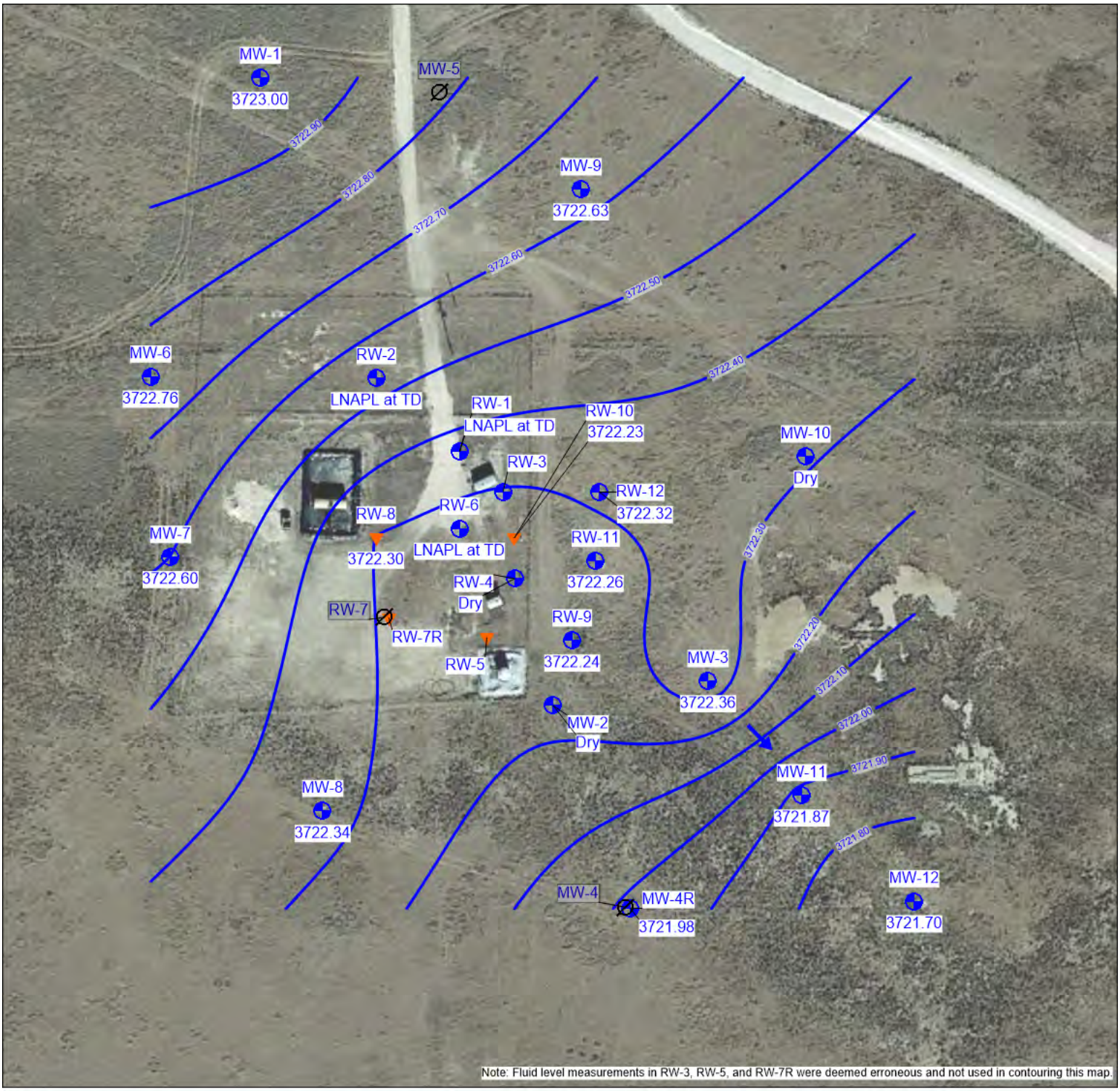
March 5, 2020

FIGURE 2



- Well Location
- Plugged Well Location
- Well Equipped with Remediation Pump
- 2589.91 Elevation of Potentiometric Surface (famsl)
- Direction of Groundwater Flow

0 FT 50 FT 100 FT

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AND REMEDIATION IN 2018

MAP OF THE POTENTIOMETRIC SURFACE FEBRUARY 25, 2019

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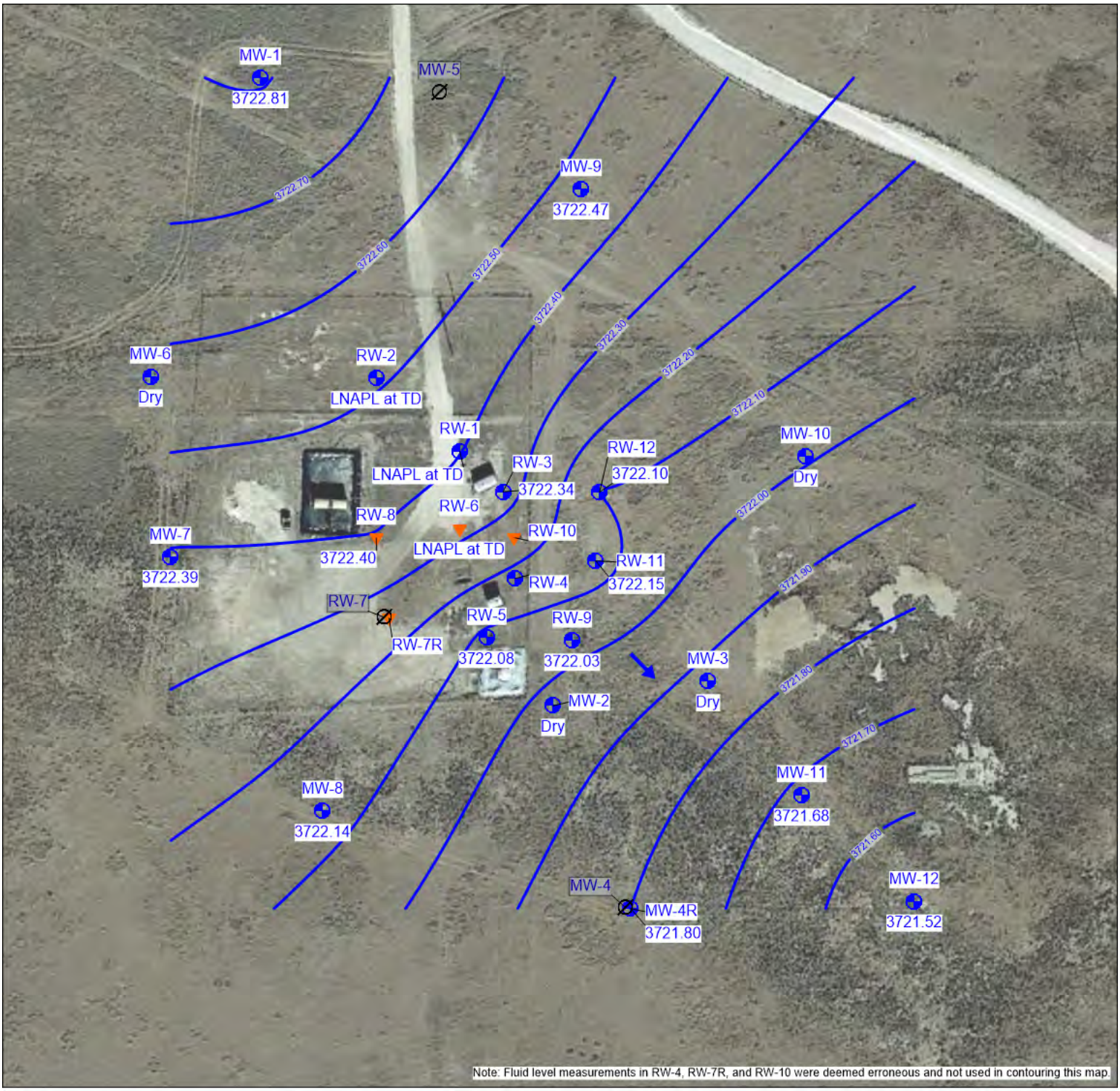
FEBRUARY 25, 2019

FIGURE 3



Well Location
Plugged Well Location
Well Equipped with Remediation Pump
2589.91 Elevation of Potentiometric Surface (famsl)
Direction of Groundwater Flow

0 FT 50 FT 100 FT

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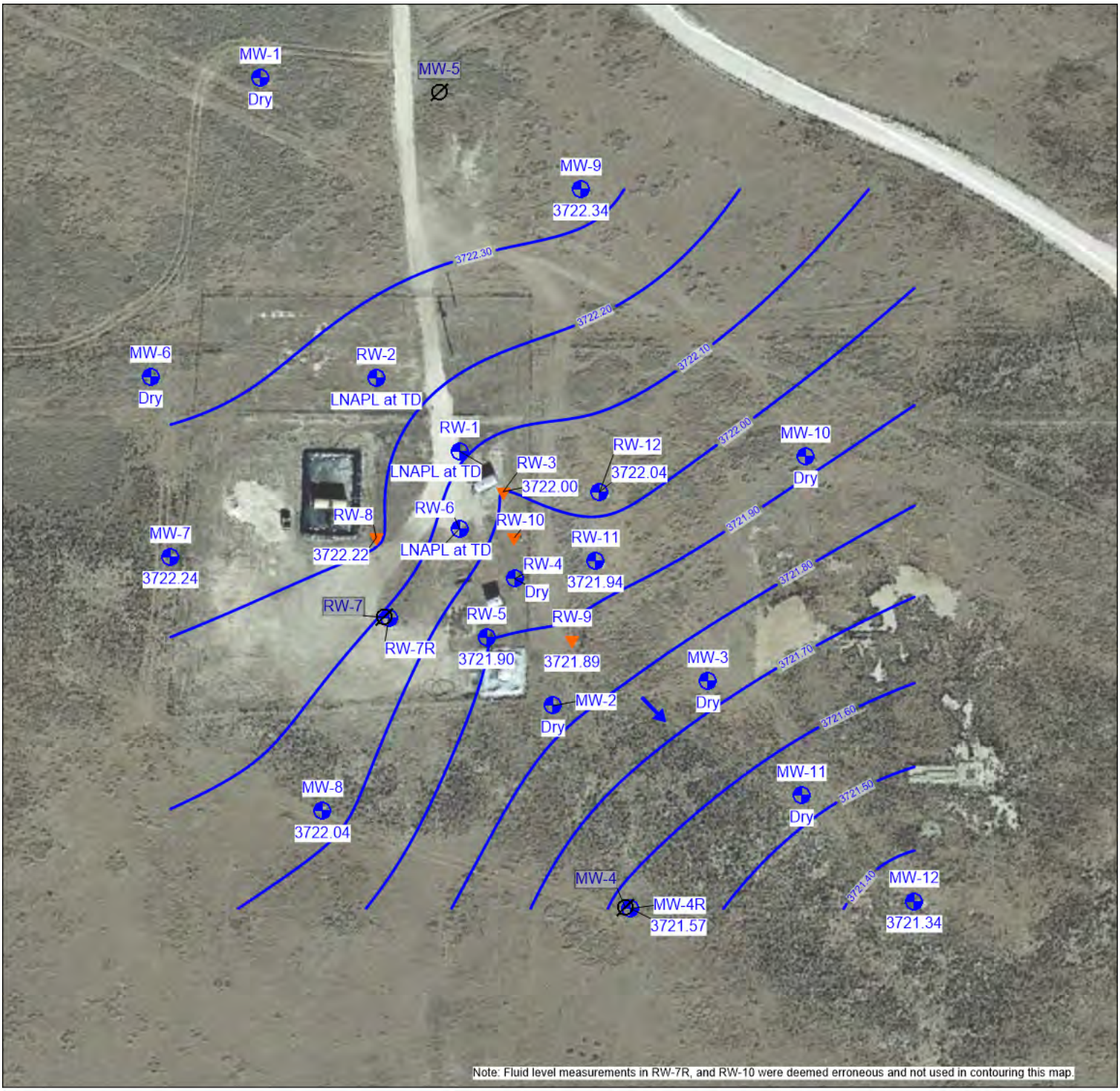
ANNUAL REPORT OF GROUNDWATER MONITORING
AND REMEDIATION IN 2019

MAP OF THE POTENTIOMETRIC SURFACE MAY 20, 2019

PROJECT 11209891

MAY 20, 2019

FIGURE 4



Well Location
Plugged Well Location
Well Equipped with Remediation Pump
2589.91 Elevation of Potentiometric Surface (famsl)
Direction of Groundwater Flow

0 FT 50 FT 100 FT

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MAP OF THE POTENTIOMETRIC SURFACE JULY 23, 2019

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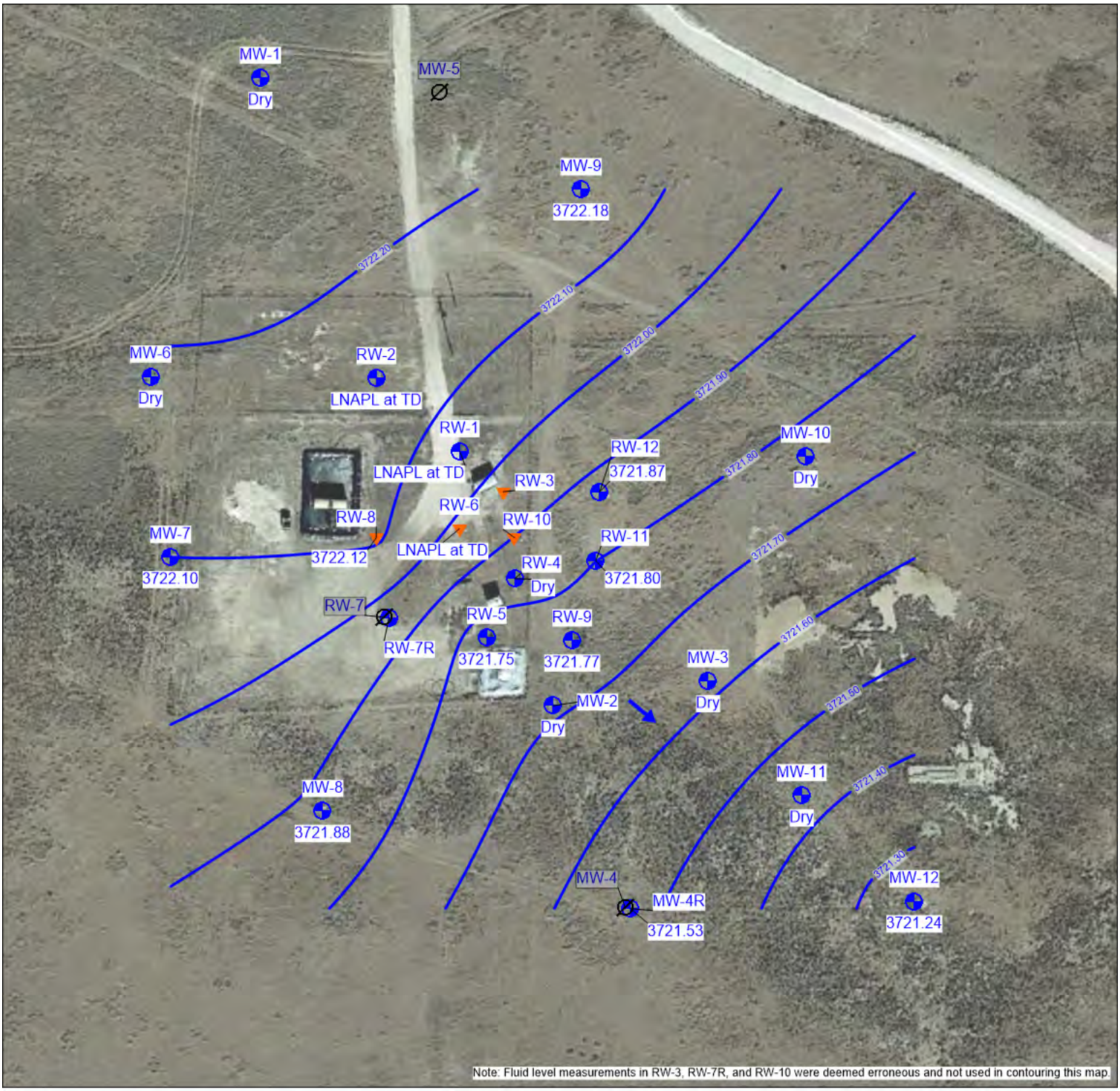
JULY 23, 2019

FIGURE 5



Well Location
Plugged Well Location
Well Equipped with Remediation Pump
2589.91 Elevation of Potentiometric Surface (famsl)
Direction of Groundwater Flow

0 FT 50 FT 100 FT

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MAP OF THE POTENTIOMETRIC SURFACE OCTOBER 22, 2019

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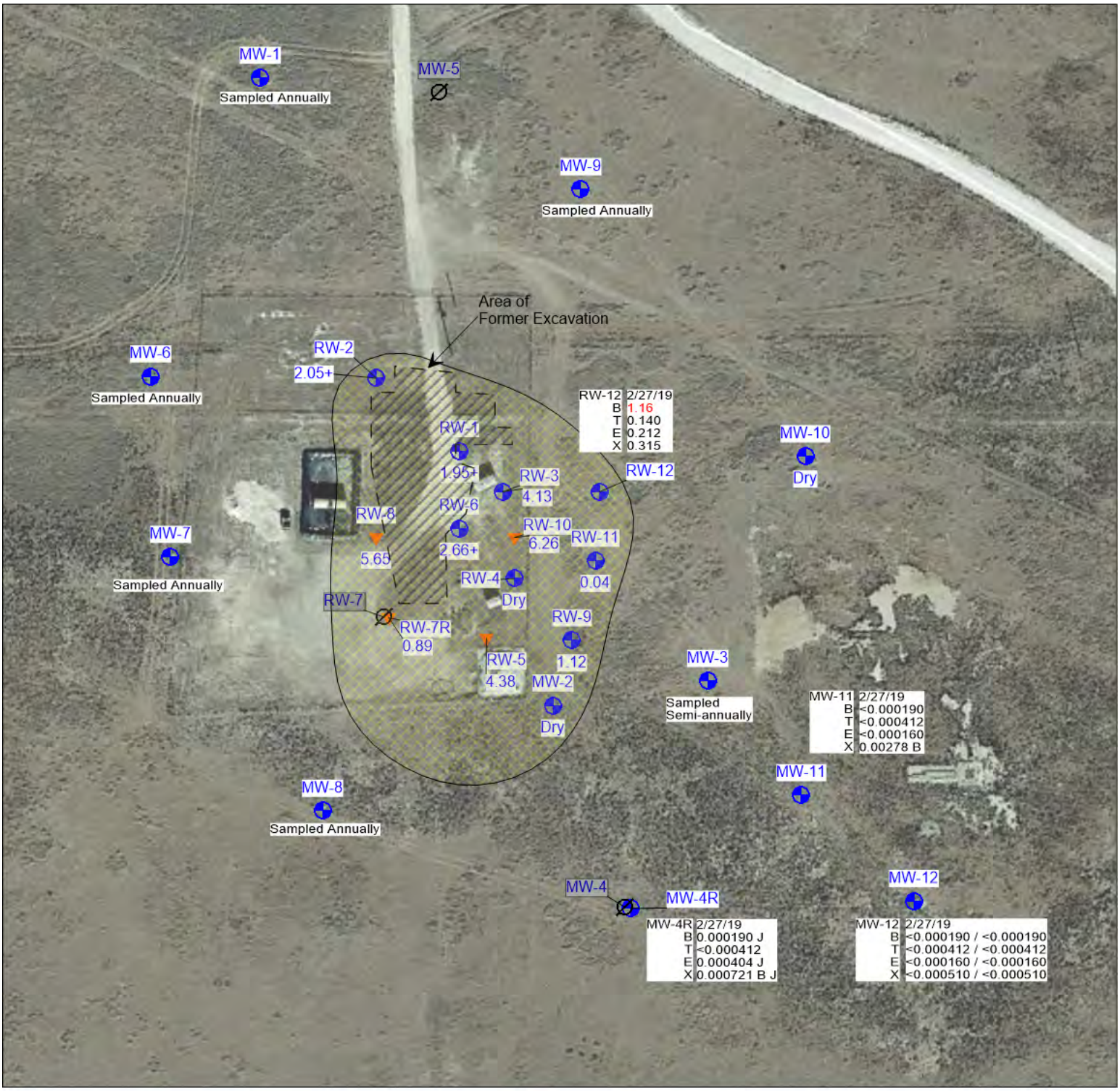
OCTOBER 22, 2019

FIGURE 6



SAMPLE LOCATION — MW-2 — 11/11/18 — DATE SAMPLED
BENZENE — B — 0.0231 — ANALYTICAL RESULT (mg/l). RED FONT INDICATES CONCENTRATION EXCEEDS NMWQCC HUMAN HEALTH STD.
TOLUENE — T — <0.00100
ETHYLBENZENE — E — 0.00240
XYLENES — X — 0.0113 / 0.0113 — SECOND RESULTS ARE FIELD DUPLICATES
SPECIFIC PAH — 0.00126 — PAHS--ONLY EXCEEDANCES OF NMWQCC OR NMOCD STANDARDS ARE POSTED

- Well Location
- Plugged Well Location
- Well Equipped with Remediation Pump
- 3.25 Thickness of LNAPL (ft.)
- Approximate Area Exceeding NMWQCC Human Health Standard for Benzene (0.01 mg/L)

0 FT 50 FT 100 FT

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DISSOLVED BTEX IN GROUNDWATER FEBRUARY 27, 2019

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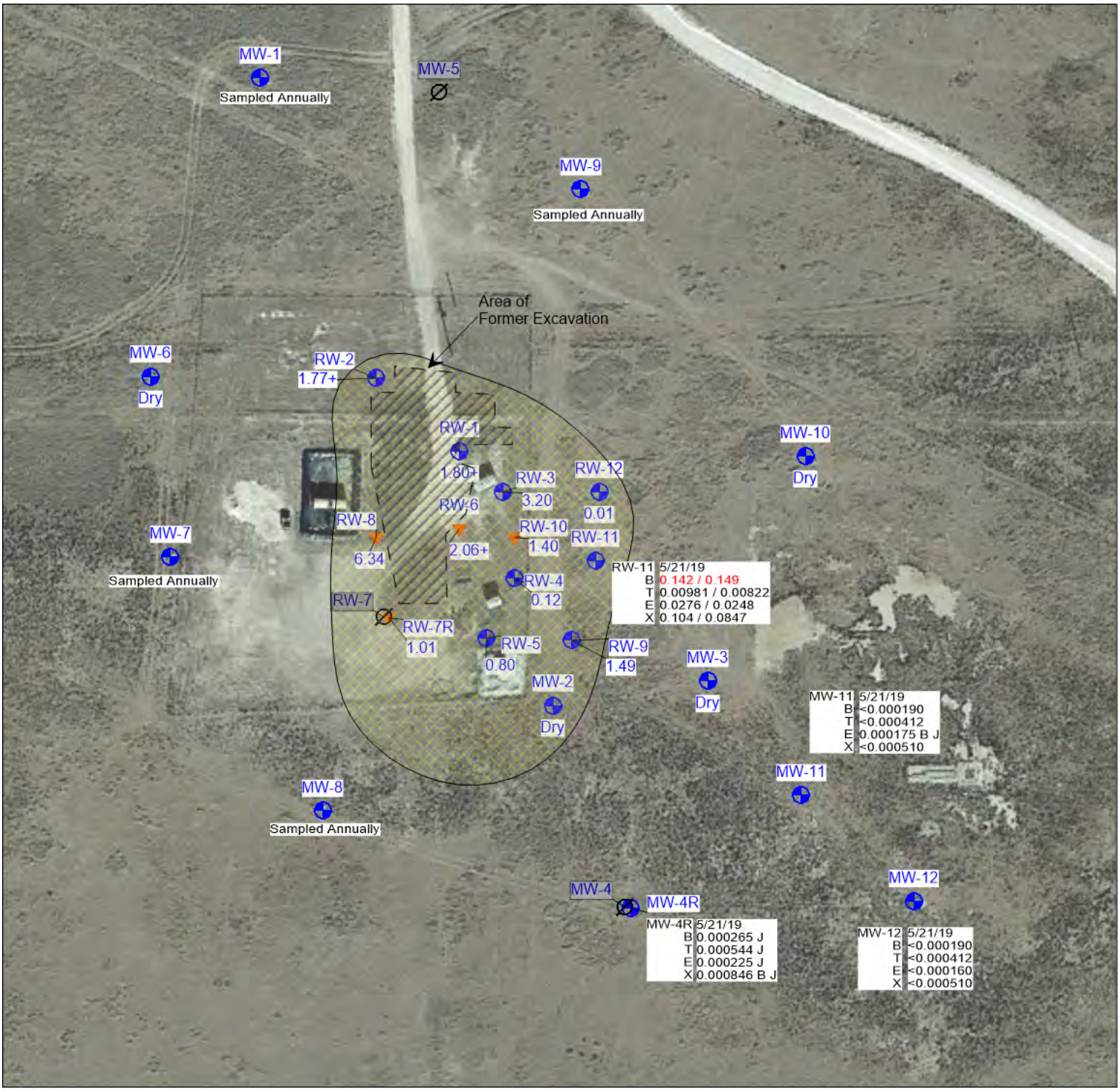
FEBRUARY 27, 2019

FIGURE 7



SAMPLE LOCATION — MW-2 11/11/18 — DATE SAMPLED
BENZENE — B 0.0231 — ANALYTICAL RESULT (mg/l), RED FONT INDICATES CONCENTRATION EXCEEDS NMWQCC HUMAN HEALTH STD.
TOLUENE — T <0.00100
ETHYLBENZENE — E 0.00240
XYLENES — X 0.0113 / 0.0113 — SECOND RESULTS ARE FIELD DUPLICATES
SPECIFIC PAH — 0.00126 — PAHS--ONLY EXCEEDANCES OF NMWQCC OR NMOCD STANDARDS ARE POSTED

- Well Location
- Plugged Well Location
- Well Equipped with Remediation Pump
- 3.25 Thickness of LNAPL (ft.)
- Approximate Area Exceeding NMWQCC Human Health Standard for Benzene (0.01 mg/L)

0 FT 50 FT 100 FT

GHD

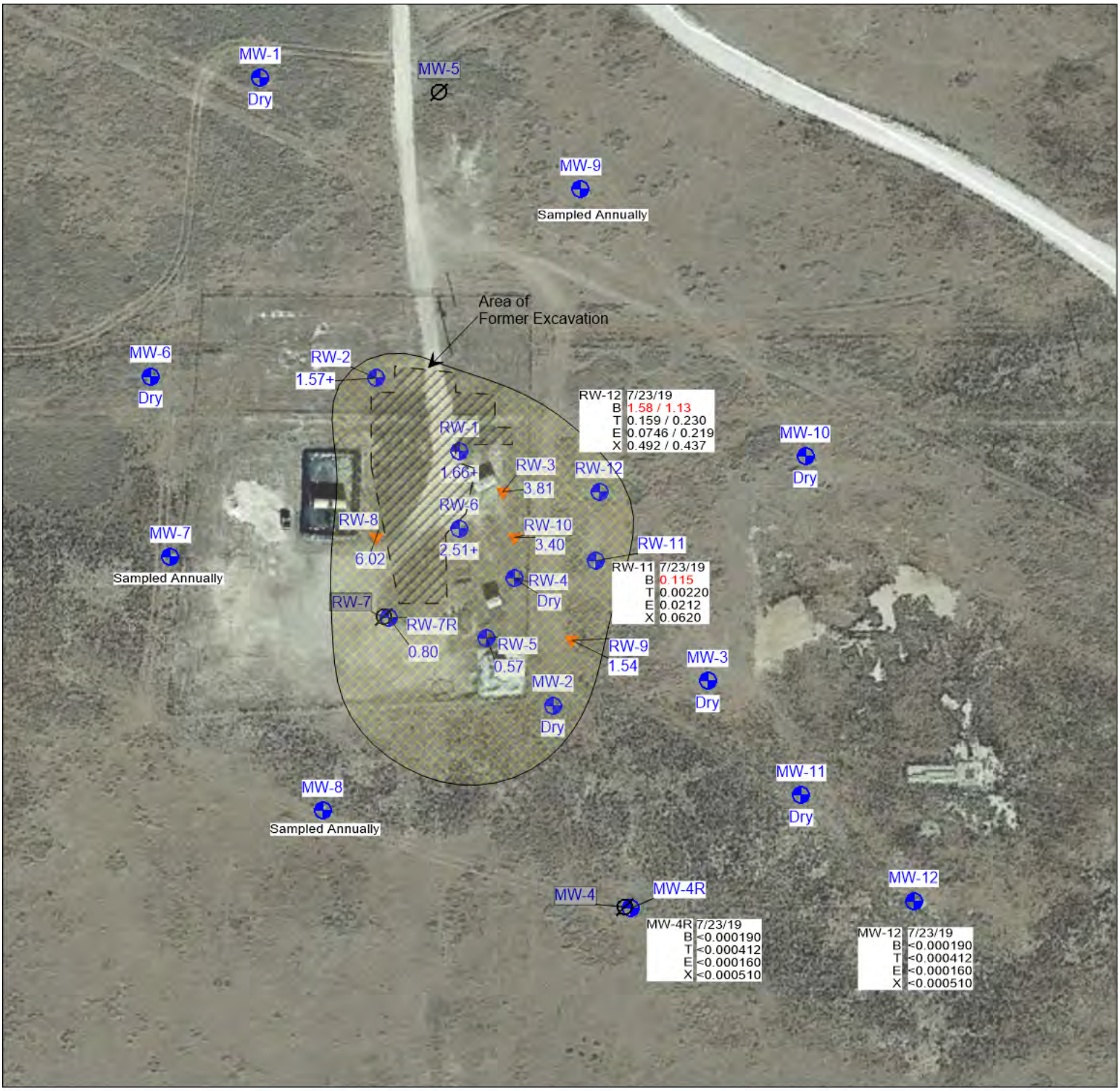
PLAINS ALL AMERICAN PIPELINE COMPANY
DARR ANGELL #2, SRS LF 1999-62
NMOCD AP-007
ANNUAL REPORT OF GROUNDWATER MONITORING AND REMEDIATION IN 2019

DISSOLVED BTEX IN GROUNDWATER MAY 21, 2019

PROJECT 11209891

MAY 21, 2019

FIGURE 8



SAMPLE LOCATION — MW-2 — 11/11/18 — DATE SAMPLED
BENZENE — B — 0.0231 — ANALYTICAL RESULT (mg/l). RED FONT INDICATES CONCENTRATION EXCEEDS NMWQCC HUMAN HEALTH STD.
TOLUENE — T — <0.00100
ETHYLBENZENE — E — 0.00240
XYLENES — X — 0.0113 / 0.0113 — SECOND RESULTS ARE FIELD DUPLICATES
SPECIFIC PAH — 0.00126 — PAHS--ONLY EXCEEDANCES OF NMWQCC OR NMOCD STANDARDS ARE POSTED

- Well Location
- Plugged Well Location
- Well Equipped with Remediation Pump
- 3.25 Thickness of LNAPL (ft.)
- Approximate Area Exceeding NMWQCC Human Health Standard for Benzene (0.01 mg/L)

0 FT 50 FT 100 FT

GHD

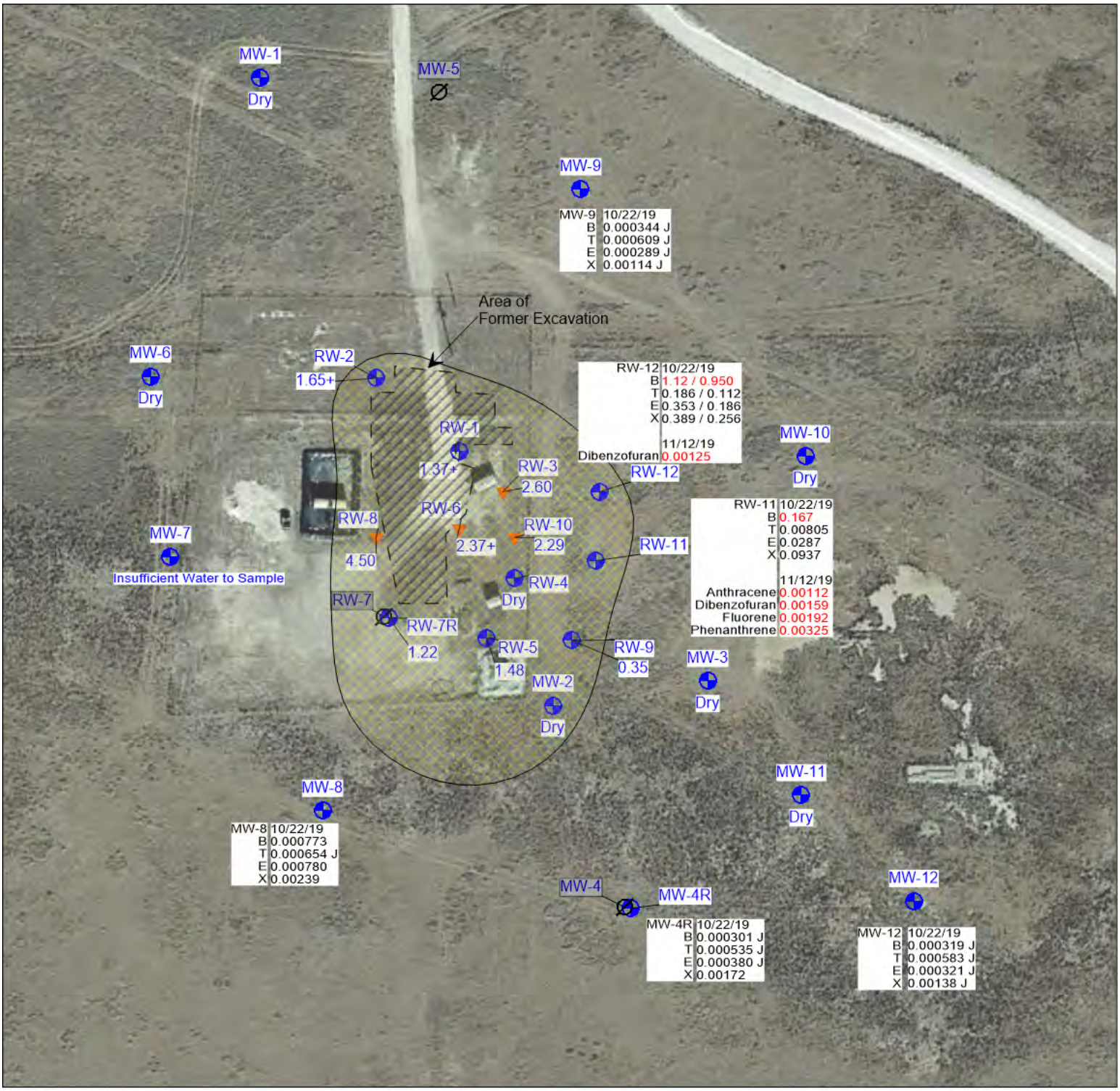
PLAINS ALL AMERICAN PIPELINE COMPANY
DARR ANGELL #2, SRS LF 1999-62
NMOCD AP-007
ANNUAL REPORT OF GROUNDWATER MONITORING AND REMEDIATION IN 2019

DISSOLVED BTEX IN GROUNDWATER JULY 23, 2019

PROJECT 11209891

JULY 23, 2019

FIGURE 9



SAMPLE LOCATION — MW-2 — 11/11/18 — DATE SAMPLED
BENZENE — B — 0.0231 — ANALYTICAL RESULT (mg/l). RED FONT INDICATES CONCENTRATION EXCEEDS NMWQCC HUMAN HEALTH STD.
TOLUENE — T — <0.00100
ETHYLBENZENE — E — 0.00240
XYLENES — X — 0.0113 / 0.0113 — SECOND RESULTS ARE FIELD DUPLICATES
SPECIFIC PAH — 0.00126 — PAHS--ONLY EXCEEDANCES OF NMWQCC OR NMOCD STANDARDS ARE POSTED

- Well Location
- Plugged Well Location
- Well Equipped with Remediation Pump
- 3.25 Thickness of LNAPL (ft.)
- Approximate Area Exceeding NMWQCC Human Health Standard for Benzene (0.01 mg/L)

0 FT 50 FT 100 FT

GHD

PLAINS ALL AMERICAN PIPELINE COMPANY
DARR ANGELL #2, SRS LF 1999-62
NMOCD AP-007
ANNUAL REPORT OF GROUNDWATER MONITORING AND REMEDIATION IN 2019

DISSOLVED BTEX IN GROUNDWATER OCTOBER 22 and NOVEMBER 12, 2019

PROJECT 11209891

OCTOBER 22, 2019

FIGURE 10

Tables

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
MW-01	3790.48	2/27/18	66.78		0.00	3723.70	68.07	40-65 (2 in.)				
MW-01	3790.48	5/29/18	67.00		0.00	3723.48	68.11					
MW-01	3790.48	8/29/18	67.10		0.00	3723.38	68.07					
MW-01	3790.48	11/26/18	67.31		0.00	3723.17	68.10					
MW-01	3790.48	2/25/19	67.48		0.00	3723.00	68.10					
MW-01	3790.48	5/20/19	67.67		0.00	3722.81	68.10					
MW-01	3790.48	7/23/19				Dry	68.01					
MW-01	3790.48	10/22/19				Dry						
MW-02	3790.80	2/27/18		67.38	0.83+	LNAPL at TD	68.21	40-65 (2 in.)				
MW-02	3790.80	5/29/18	68.22	67.51	0.71	3723.16						
MW-02	3790.80	8/29/18				Dry	68.47					Tip trace
MW-02	3790.80	11/26/18				Dry	68.25					Tip trace
MW-02	3790.80	2/25/19				Dry						
MW-02	3790.80	5/20/19				Dry						
MW-02	3790.80	7/23/19				Dry						
MW-02	3790.80	10/22/19				Dry						
MW-03	3790.29	2/27/18	67.57		0.00	3722.72	68.14	40-65 (2 in.)				
MW-03	3790.29	5/29/18	67.75		0.00	3722.54	68.10					
MW-03	3790.29	8/29/18				Dry	68.11					
MW-03	3790.29	11/26/18				Dry	68.10					
MW-03	3790.29	2/25/19	67.93		0.00	3722.36						
MW-03	3790.29	5/18/19									3.0	
MW-03	3790.29	5/20/19				Dry						
MW-03	3790.29	7/23/19				Dry	68.10					
MW-03	3790.29	10/22/19				Dry						
MW-04R	3789.17	2/27/18	66.52		0.00	3722.65	86.48	59.5-89.5 (2 in.)				
MW-04R	3789.17	5/29/18	66.67		0.00	3722.50	86.11					
MW-04R	3789.17	8/29/18	66.81		0.00	3722.36	86.24					
MW-04R	3789.17	11/26/18	67.03		0.00	3722.14	86.24					
MW-04R	3789.17	2/25/19	67.19		0.00	3721.98						
MW-04R	3789.17	2/27/19								0.0	8.5	
MW-04R	3789.17	5/20/19	67.37		0.00	3721.80						
MW-04R	3789.17	5/21/19								0.0	9.5	
MW-04R	3789.17	7/23/19	67.60		0.00	3721.57				0.0	7.0	
MW-04R	3789.17	10/22/19	67.64		0.00	3721.53					8.0	
MW-04R	3789.17	2/10/20	67.90		0.00	3721.27	85.97	59.5-89.5 (2 in.)			9.0	
MW-06	3790.75	2/27/18	67.24		0.00	3723.51	68.22	42-62 (2 in.)				
MW-06	3790.75	5/29/18	67.41		0.00	3723.34	68.18					
MW-06	3790.75	8/29/18	67.54		0.00	3723.21	68.22					

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
MW-06	3790.75	11/26/18	67.77		0.00	3722.98	68.15					
MW-06	3790.75	2/25/19	67.99		0.00	3722.76						
MW-06	3790.75	5/20/19				Dry						
MW-06	3790.75	7/3/19							2.89		336	
MW-06	3790.75	7/23/19				Dry	68.01					
MW-06	3790.75	10/22/19				Dry						
MW-07	3791.09	2/27/18	67.86		0.00	3723.23	69.19	42-62 (2 in.)				
MW-07	3791.09	5/29/18	67.88		0.00	3723.21	69.19					
MW-07	3791.09	8/29/18	68.13		0.00	3722.96	69.19					
MW-07	3791.09	11/26/18	68.35		0.00	3722.74	69.19					
MW-07	3791.09	2/25/19	68.49		0.00	3722.60						
MW-07	3791.09	5/20/19	68.70		0.00	3722.39						
MW-07	3791.09	7/23/19	68.85		0.00	3722.24						
MW-07	3791.09	10/22/19	68.99		0.00	3722.10						
MW-08	3790.04	2/27/18	67.03		0.00	3723.01	69.34	42-62 (2 in.)				
MW-08	3790.04	5/29/18	67.20		0.00	3722.84	69.25					
MW-08	3790.04	8/29/18	67.33		0.00	3722.71	69.34					
MW-08	3790.04	11/26/18	67.56		0.00	3722.48	69.34					
MW-08	3790.04	2/25/19	67.70		0.00	3722.34						
MW-08	3790.04	5/20/19	67.90		0.00	3722.14						
MW-08	3790.04	7/23/19	68.00		0.00	3722.04						
MW-08	3790.04	10/22/19	68.16		0.00	3721.88					.25	
MW-09	3789.79	2/27/18	66.44		0.00	3723.35	68.91	47-67 (2 in.)				
MW-09	3789.79	5/29/18	66.61		0.00	3723.18	68.88					
MW-09	3789.79	8/29/18	66.75		0.00	3723.04	68.91					
MW-09	3789.79	11/26/18	66.97		0.00	3722.82	68.91					
MW-09	3789.79	2/25/19	67.16		0.00	3722.63						
MW-09	3789.79	5/20/19	67.32		0.00	3722.47						
MW-09	3789.79	7/23/19	67.45		0.00	3722.34						
MW-09	3789.79	10/22/19	67.61		0.00	3722.18					0	
MW-10	3789.88	2/27/18	67.02		0.00	3722.86	67.71	47-67 (2 in.)				
MW-10	3789.88	5/29/18	67.20		0.00	3722.68	67.70					
MW-10	3789.88	8/29/18	67.33		0.00	3722.55	67.71					
MW-10	3789.88	11/26/18				Dry	67.70					
MW-10	3789.88	2/25/19				Dry						
MW-10	3789.88	5/20/19				Dry						
MW-10	3789.88	7/23/19				Dry						
MW-10	3789.88	10/22/19				Dry						
MW-11	3790.65	2/27/18	68.03		0.00	3722.62	69.18	45-65 (2 in.)				
MW-11	3790.65	5/29/18	68.29		0.00	3722.36	69.30					

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
MW-11	3790.65	8/29/18	68.42		0.00	3722.23	69.16					
MW-11	3790.65	11/26/18	68.64		0.00	3722.01	69.16					
MW-11	3790.65	2/25/19	68.78		0.00	3721.87						
MW-11	3790.65	2/27/19							0.0	0.0		
MW-11	3790.65	5/20/19	68.97		0.00	3721.68						
MW-11	3790.65	7/23/19				Dry	69.11					
MW-11	3790.65	10/22/19				Dry						
MW-12	3789.64	2/27/18	67.27		0.00	3722.37	85.96	(2 in.)				
MW-12	3789.64	5/29/18	67.47		0.00	3722.17	86.04					
MW-12	3789.64	8/29/18	67.57		0.00	3722.07	86.14					
MW-12	3789.64	11/26/18	67.77		0.00	3721.87	86.14					
MW-12	3789.64	2/25/19	67.94		0.00	3721.70						
MW-12	3789.64	2/27/19							0.0	9.5		
MW-12	3789.64	5/20/19	68.12		0.00	3721.52						
MW-12	3789.64	5/21/19							0.0	9.0		
MW-12	3789.64	7/23/19	68.30		0.00	3721.34						
MW-12	3789.64	7/23/19							0.0	7.0		
MW-12	3789.64	10/22/19	68.40		0.00	3721.24				7.0		
MW-12	3789.64	2/10/20	68.64		0.00	3721.00	85.76	45-65 (2 in.)		9.0		
RW-01	3789.85	2/27/18	67.30	65.40	1.90	3724.09	67.87	40-65 (4 in.)				
RW-01	3789.85	5/29/18		65.50	2.47+	LNAPL at TD	67.97					
RW-01	3789.85	8/29/18		65.68	2.24+	LNAPL at TD	67.92					
RW-01	3789.85	11/26/18		65.91	2.17+	LNAPL at TD	68.08					
RW-01	3789.85	1/29/19							1.0	0.0		
RW-01	3789.85	2/25/19	68.04	66.09	1.95	3723.39						
RW-01	3789.85	4/24/19	68.11	66.17	1.94	3723.31			1.0	1.0		
RW-01	3789.85	5/20/19	68.04	66.24	1.80	3723.27						
RW-01	3789.85	6/11/19							2.0	0.0		
RW-01	3789.85	6/18/19							1.0	0.0		
RW-01	3789.85	6/25/19							1.3	0.0		
RW-01	3789.85	7/3/19							3.0	0.0		
RW-01	3789.85	7/8/19							1.2	0.0		
RW-01	3789.85	7/23/19		66.42	1.66+	LNAPL at TD	68.01					
RW-01	3789.85	8/7/19							1.0	0.0		
RW-01	3789.85	8/13/19							1.0	0.0		
RW-01	3789.85	8/20/19							1.0	0.0		
RW-01	3789.85	8/28/19							0.5	0.0		
RW-01	3789.85	9/3/19							1.5	0.0		
RW-01	3789.85	9/10/19							1.0	0.0		
RW-01	3789.85	10/2/19							1.5			
RW-01	3789.85	10/22/19		66.55	1.37+	LNAPL at TD						
RW-01	3789.85	11/20/19							0.8			
RW-01	3789.85	12/10/19							1.0			

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
RW-01	3789.85	12/24/19							0.5	0.5		
RW-01	3789.85	1/8/20							1.0	0.0		
RW-01	3789.85	1/14/20							1.5	0.2		
RW-01	3789.85	2/10/20	68.14	66.76	1.38	3722.83	68.18	40-65 (4 in.)				
RW-02	3790.24	2/27/18	67.95	65.90	2.05	3723.95	68.29	40-65 (4 in.)				
RW-02	3790.24	5/29/18	67.97	65.86	2.11	3723.98						
RW-02	3790.24	8/29/18		66.03	2.25+	LNAPL at TD	68.28					
RW-02	3790.24	11/26/18		66.20	2.34+	LNAPL at TD	68.54					
RW-02	3790.24	1/29/19							1.4	0.0		
RW-02	3790.24	2/25/19	68.51	66.46	2.05	3723.39	68.30					
RW-02	3790.24	4/24/19	68.54	66.48	2.06	3723.37						
RW-02	3790.24	5/20/19		66.53	1.77+	LNAPL at TD	68.30					
RW-02	3790.24	6/11/19							2.0	0.0		
RW-02	3790.24	6/18/19							1.0	0.0		
RW-02	3790.24	6/25/19							1.2	0.0		
RW-02	3790.24	7/3/19							2.0	0.0		
RW-02	3790.24	7/8/19							0.7	0.0		
RW-02	3790.24	7/23/19		66.73	1.57+	LNAPL at TD	68.40					
RW-02	3790.24	8/7/19							0.5	0.0		
RW-02	3790.24	8/20/19							1.0	0.0		
RW-02	3790.24	8/13/19							1.0	0.0		
RW-02	3790.24	8/28/19							1.1	0.0		
RW-02	3790.24	9/3/19							1.0	0.0		
RW-02	3790.24	9/10/19							0.5	0.0		
RW-02	3790.24	10/2/19							0.9	0.1		
RW-02	3790.24	10/22/19		66.89	1.65+	LNAPL at TD						
RW-02	3790.24	11/20/19							1.0			
RW-02	3790.24	12/10/19							1.5			
RW-02	3790.24	12/23/19							0.5	0.5		
RW-02	3790.24	1/8/20							1.0	0.0		
RW-02	3790.24	1/14/20							0.0	1.0		
RW-02	3790.24	10/22/19		67.09	1.43+	LNAPL at TD	68.52					
RW-03	3790.24	2/27/18	70.02	66.44	3.58	3723.12	71.27	48-68 (4 in.)				
RW-03	3790.24	5/29/18	70.76	66.13	4.63	3723.23						
RW-03	3790.24	8/29/18	70.72	66.25	4.47	3723.14	71.27					
RW-03	3790.24	11/26/18	70.50	66.73	3.77	3722.79						
RW-03	3790.24	1/29/19							6.0	0.0		
RW-03	3790.24	2/6/19							0.5		315.0	
RW-03	3790.24	2/25/19	70.76	66.63	4.13	3722.83						
RW-03	3790.24	5/20/19	70.49	67.29	3.20	3722.34						
RW-03	3790.24	7/16/19	71.34	67.77	3.57	3721.79						
RW-03	3790.24	7/23/19	71.33	67.52	3.81	3722.00						
RW-03	3790.24	10/22/19	69.80	67.20	2.60	3722.55						Elev of pot surf incorrect

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
RW-03	3790.24	2/10/19	70.75	67.32	3.43	3722.27	71.30	48-68 (4 in.)				
RW-04	3790.20	2/27/18					66.81	49-69 (4 in.)				Casing Collpased?
RW-04	3790.20	5/29/18					66.08					Casing Collpased?
RW-04	3790.20	8/29/18	66.97	66.46	0.51	3723.64	66.81					
RW-04	3790.20	11/26/18				Dry	67.06					Sheen
RW-04	3790.20	2/25/19				Dry	Dry					
RW-04	3790.20	5/20/19	67.10	66.98	0.12	3723.20						
RW-04	3790.20	7/23/19				Dry	66.95					
RW-04	3790.20	10/22/19				Dry						
RW-04	3790.20	1/8/20										
RW-05	3789.81	2/27/18	71.06	66.00	5.06	3722.85	71.73	48-68 (4 in.)				
RW-05	3789.81	5/29/18	71.85	66.08	5.77	3722.63						
RW-05	3789.81	8/29/18	69.43	66.71	2.72	3722.58	71.84					
RW-05	3789.81	11/26/18	70.75	66.46	4.29	3722.53						
RW-05	3789.81	2/25/19	71.22	66.84	4.38	3722.14						
RW-05	3789.81	5/20/19	68.38	67.58	0.80	3722.08						
RW-05	3789.81	6/10/19	68.85	67.50	1.35	3722.05						
RW-05	3789.81	7/16/19	68.17	67.79	0.38	3721.95						
RW-05	3789.81	7/23/19	68.37	67.80	0.57	3721.90						
RW-05	3789.81	8/20/19							2.0	1.0		
RW-05	3789.81	8/13/19							0.5	0.5		
RW-05	3789.81	8/28/19							1.5	1.0		
RW-05	3789.81	9/3/19							0.4	2.3		
RW-05	3789.81	9/10/19							0.2	0.8		
RW-05	3789.81	10/2/19							0.8	0.8		
RW-05	3789.81	10/22/19	69.26	67.78	1.48	3721.75						
RW-05	3789.81	11/13/19	70.14	67.68	2.46	3721.66					504	
RW-05	3789.81	11/20/19							0.2	0.8		
RW-05	3789.81	12/10/19							0.4	2.6		
RW-05	3789.81	12/23/19							0.6	0.6		
RW-05	3789.81	1/8/20							1.5	0.5		
RW-05	3789.81	1/14/20							0.0	1.0		
RW-05	3789.81	2/10/20	69.87	67.90	1.97	3721.54	71.70	48-68 (4 in.)				
RW-06	3789.56	2/27/18										Not Gauged
RW-06	3789.56	5/29/18	70.48	65.83	4.65	3722.85		49-69 (4 in.)				
RW-06	3789.56	8/29/18	69.05	66.26	2.79	3722.77	68.86					
RW-06	3789.56	11/26/18	68.56	66.40	2.16	3722.75						
RW-06	3789.56	1/29/19							3.5	0.0		
RW-06	3789.56	2/25/19		66.20	2.66+	LNAPL at TD	68.86					
RW-06	3789.56	5/8/19							1.9		546.0	
RW-06	3789.56	5/20/19		66.80	2.06+	LNAPL at TD	68.86					
RW-06	3789.56	6/11/19							4.0	0.0		

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
RW-06	3789.56	6/18/19							2.0	0.0		
RW-06	3789.56	6/25/19							2.2	0.0		
RW-06	3789.56	7/8/19							1.0	0.0		
RW-06	3789.56	7/16/19		66.77	1.95+	LNAPL at TD	68.86					
RW-06	3789.56	7/23/19		66.35	2.51+	LNAPL at TD	68.70					
RW-06	3789.56	8/7/19									336.0	
RW-06	3789.56	8/13/19							1.2	0.0		
RW-06	3789.56	8/20/19							2.5	0.0		
RW-06	3789.56	8/28/19							2.5	0.0		
RW-06	3789.56	9/3/19							4.0	0.0		
RW-06	3789.56	9/10/19							3.0	0.0		
RW-06	3789.56	10/2/19							1.3	0.0		
RW-06	3789.56	10/22/19		66.49	2.37+	LNAPL at TD						
RW-06	3789.56	12/10/19							0.7	2.3		
RW-06	3789.56	1/14/20										pump being repaired
RW-06	3789.56	2/10/20		66.63	4.16+	LNAPL at TD	70.79	49-69 (4 in.)				
RW-07R	3790.58	2/27/18	68.24	66.68	1.56	3723.60	81.34	59.5-79.5 (4 in.)				
RW-07R	3790.58	5/29/18	68.73	66.95	1.78	3723.29						
RW-07R	3790.58	8/29/18	68.16	67.08	1.08	3723.29	81.34					
RW-07R	3790.58	11/26/18	68.21	67.28	0.93	3723.12						
RW-07R	3790.58	12/4/18	68.50	67.24	1.26	3723.10						
RW-07R	3790.58	2/25/19	68.39	67.50	0.89	3722.91						
RW-07R	3790.58	4/24/19	68.05	67.68	0.37	3722.83						
RW-07R	3790.58	5/20/19	68.62	67.61	1.01	3722.78						
RW-07R	3790.58	6/11/19							1.0	1.0		
RW-07R	3790.58	6/18/19							0.5	1.5		
RW-07R	3790.58	6/25/19							0.3	1.0		
RW-07R	3790.58	7/3/19							0.6	0.7		
RW-07R	3790.58	7/8/19							0.5	2.0		
RW-07R	3790.58	7/16/19	68.44	67.80	0.64	3722.66						
RW-07R	3790.58	7/23/19	68.60	67.80	0.80	3722.63						
RW-07R	3790.58	8/7/19							0.5	0.5		
RW-07R	3790.58	8/20/19							0.4	0.9		
RW-07R	3790.58	8/28/19							0.3	1.2		
RW-07R	3790.58	9/3/19							0.1	1.4		
RW-07R	3790.58	9/10/19							0.3	0.2		
RW-07R	3790.58	10/2/19							0.5	0.4		
RW-07R	3790.58	10/22/19	69.12	67.90	1.22	3722.45						Elev of pot surf incorrect
RW-07R	3790.58	11/20/19							1.3	1.7		
RW-07R	3790.58	12/24/19							0.4	0.6		
RW-07R	3790.58	1/14/20							1.0	0.2		
RW-07R	3790.58	1/29/20	69.10	68.15	0.95						462	
RW-07R	3790.58	2/10/20	68.48	68.26	0.22		81.23	59.5-79.5 (4 in.)				

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
RW-08	3790.01	2/27/18	71.55	65.61	5.94	3723.27	82.94	59.5-79.5 (4 in.)				
RW-08	3790.01	5/29/18	70.44	66.08	4.36	3723.10						
RW-08	3790.01	8/29/18	69.25	66.50	2.75	3722.99	82.94					
RW-08	3790.01	11/26/18	69.88	66.65	3.23	3722.75						
RW-08	3790.01	2/25/19	72.29	66.64	5.65	3722.30						
RW-08	3790.01	5/20/19	72.75	66.41	6.34	3722.40						
RW-08	3790.01	7/16/19	72.31	66.68	5.63	3722.26						
RW-08	3790.01	7/23/19	72.67	66.65	6.02	3722.22						
RW-08	3790.01	8/13/19							0.7	0.4		
RW-08	3790.01	10/22/19	71.54	67.04	4.50	3722.12						
RW-08	3790.01	2/10/20	73.08	67.00	6.08	3721.85	82.82	59.5-79.5 (4 in.)				
RW-09	3790.00	2/27/18	67.77	66.95	0.82	3722.89	82.49	59.5-79.5 (4 in.)				
RW-09	3790.00	5/29/18	68.20	67.05	1.15	3722.73						
RW-09	3790.00	8/29/18	67.49	67.36	0.13	3722.62	82.49					
RW-09	3790.00	11/26/18	68.05	67.50	0.55	3722.40						
RW-09	3790.00	2/6/19							0.5		315.0	
RW-09	3790.00	2/25/19	68.67	67.55	1.12	3722.24						
RW-09	3790.00	4/24/19	70.79	66.04	4.75	3723.06						
RW-09	3790.00	5/20/19	69.18	67.69	1.49	3722.03						
RW-09	3790.00	7/23/19	69.36	67.82	1.54	3721.89						
RW-09	3790.00	10/22/19	68.51	68.16	0.35	3721.77						
RW-09	3790.00	1/8/20							1.5	0		
RW-09	3790.00	2/10/20	68.90	68.38	0.52	3721.52	82.85	59.5-79.5 (4 in.)				
RW-10	3789.69	2/27/18	71.83	65.53	6.30	3722.96	82.56	59.5-79.5 (4 in.)				
RW-10	3789.69	5/29/18	72.95	65.70	7.25	3722.61						
RW-10	3789.69	8/29/18	72.83	65.78	7.05	3722.57	82.56					
RW-10	3789.69	11/26/18	72.95	66.08	6.87	3722.30						
RW-10	3789.69	12/4/18	73.41	66.02	7.39	3722.27						
RW-10	3789.69	1/29/19							8.0	1.0		
RW-10	3789.69	2/25/19	72.53	66.27	6.26	3722.23						
RW-10	3789.69	5/20/19	70.30	68.90	1.40	3720.52						
RW-10	3789.69	7/16/19	69.55	67.43	2.12	3721.86						
RW-10	3789.69	7/23/19	70.63	67.23	3.40	3721.81						
RW-10	3789.69	10/22/19	69.89	67.60	2.29	3721.65						Elev of pot surf incorrect
RW-10	3789.69	2/10/20	73.06	66.96	6.10	3721.57	82.60	59.5-79.5 (4 in.)				
RW-11	3789.77	2/27/18	66.84		0.00	3722.93	85.44	(4 in.)				
RW-11	3789.77	5/29/18	67.01		0.00	3722.76	85.40					
RW-11	3789.77	8/29/18	67.17	67.14	0.03	3722.62						
RW-11	3789.77	11/26/18	67.38	67.34	0.04	3722.42						
RW-11	3789.77	2/25/19	67.54	67.50	0.04	3722.26						
RW-11	3789.77	4/30/19	67.63	67.61	0.02	3722.16			0.1	2.9		

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments
RW-11	3789.77	5/20/19	67.62		0.00	3722.15						
RW-11	3789.77	5/21/19							0.0	36.0		
RW-11	3789.77	6/11/19							0.0	3.0		
RW-11	3789.77	6/25/19							0.0	3.0		
RW-11	3789.77	7/23/19	67.83		0.00	3721.94						
RW-11	3789.77	7/23/19							0.0	28.0		
RW-11	3789.77	8/13/19							0.0	3.0		
RW-11	3789.77	8/20/19							0.0	3.0		
RW-11	3789.77	8/28/19							0.0	3.0		
RW-11	3789.77	9/3/19							0.0	3.0		
RW-11	3789.77	9/10/19							0.0	3.0		
RW-11	3789.77	9/24/19							0.0	3.0		
RW-11	3789.77	10/2/19								3.0		
RW-11	3789.77	10/22/19	67.97		0.00	3721.80				28.0		
RW-11	3789.77	11/20/19								3.0		
RW-11	3789.77	12/10/19								3.0		
RW-11	3789.77	12/24/19								3.0		
RW-11	3789.77	1/14/20							0.0	3.0		
RW-11	3789.77	2/10/20	68.23		0.00	3721.54	85.40	(4 in.)	0.0	34.0		
RW-12	3789.78	2/27/18	66.76		0.00	3723.02	84.28	(4 in.)				
RW-12	3789.78	5/29/18	66.92		0.00	3722.86	84.24					
RW-12	3789.78	8/29/18	67.06		0.00	3722.72	85.31					
RW-12	3789.78	11/26/18	67.27		0.00	3722.51	85.31					
RW-12	3789.78	2/25/19	67.46		0.00	3722.32						
RW-12	3789.78	2/27/19							0.0	33.0		
RW-12	3789.78	4/30/19	67.54	67.53	0.01	3722.25						
RW-12	3789.78	4/30/19							0.0	3.0		
RW-12	3789.78	5/20/19	67.69	67.68	0.01	3722.10						
RW-12	3789.78	6/11/19							0.0	3.0		
RW-12	3789.78	6/25/19							0.0	3.0		
RW-12	3789.78	7/23/19	67.74			3722.04			0.0	26.0		
RW-12	3789.78	8/13/19							0.0	3.0		
RW-12	3789.78	8/20/19							0.0	3.0		
RW-12	3789.78	8/28/19							0.0	3.0		
RW-12	3789.78	9/3/19							0.0	3.0		
RW-12	3789.78	9/10/19							0.0	3.0		
RW-12	3789.78	9/24/19							0.0	3.0		
RW-12	3789.78	10/2/19								3.0		
RW-12	3789.78	10/22/19	67.91		0.00	3721.87				24.0		
RW-12	3789.78	11/20/19								3.0		
RW-12	3789.78	12/10/19								3.0		
RW-12	3789.78	12/24/19								3.0		
RW-12	3789.78	1/14/20							0.0	3.0		
RW-12	3789.78	2/10/20	68.23		0.00	3721.55	82.82	(4 in.)		29.0		

Table 1

Summary of Fluid Level Measurements and Fluids Removed
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Well ID	Elevation of Top of Casing (famsl)	Date	Depth to Groundwater (fbtoc)	Depth to LNAPL (fbtoc)	LNAPL Thickness (ft.)	Elevation of Potentiometric Surface (famsl)	Measured Depth of Well (fbtoc)	Well Screen Interval (ft bgs) Well Diameter (in)	Volume Product Removed (gal.)	Volume Groundwater Bailed (gal.)	Volume Groundwater Removed by EFR (gal.)	Comments

Notes:
1. famsl - feet above mean sea level
2. fbtoc - feet below top of casing
3. LNAPL - Light non-aqueous phase liquid.
4. fbgs - feet below ground surface.
5. MW-12, RW-11, and RW-12 were installed in February 20170.00 3722.55
6. Monitor well MW-11 was not surveyed until 06/28/17. The surveyed elevation has been entered for prior monitoring events only for the purpose of determining the relative trend in elevations of the potentiometric surface at that location.

Table 2

Summary of Analytical Results of BTEX in Ground Water
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Sample ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
		NMWQCC Human Health Standards			
		0.01	0.75	0.75	0.62
MW-1	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-3	8/30/18		Dry		
MW-3	11/27/18		Dry		
MW-4R	2/28/18	<0.00200	<0.00200	<0.00200	<0.00200
MW-4R	5/30/18	<0.00200	<0.00200	<0.00200	<0.00200
MW-4R	8/30/18	<0.000190	<0.000412	**0.000215 J**	<0.000510
MW-4R	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-4R	2/27/19	**0.000190 J**	<0.000412	**0.000404 J**	**0.000721 B J**
MW-4R	5/21/19	**0.000265 J**	**0.000544 J**	**0.000225 J**	**0.000846 B J**
MW-4R	7/23/19	<0.000190	<0.000412	<0.000160	<0.000510
MW-4R	10/22/19	**0.000301 J**	**0.000535 J**	**0.000380 J**	**0.00172**
MW-4R	2/14/20	<0.000190	<0.000412	<0.000160	<0.000510
MW-7	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-7	10/22/19				
MW-8	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-8	10/22/19	0.000773	0.000654 J	0.000780	0.00239
MW-9	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-9 (DUP-1)	11/27/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-9	10/22/19	0.000344 J	0.000609 J	0.000289 J	0.00114 J
MW-11	2/28/18	**0.00223**	<0.00200	**0.0031**	<0.00200
MW-11	5/30/18	<0.00200	<0.00200	**0.00277**	**0.0123**
MW-11 (DUP-1)	5/30/18	<0.00200	<0.00200	**0.0115**	**0.0538**
MW-11	8/30/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-11	11/27/18	<0.000190	<0.000412	**0.000446 J**	<0.000510
MW-11	2/27/19	<0.000190	<0.000412	<0.000160	**0.00278 B**
MW-11	5/21/19	<0.000190	<0.000412	**0.000175 B J**	<0.000510
MW-12	2/28/18	<0.00200	<0.00200	<0.00200	<0.00200
MW-12	5/30/18	<0.00200	<0.00200	<0.00200	<0.00200
MW-12	8/30/18	<0.000190	<0.000412	<0.000160	<0.000510
MW-12 (DUP-1)	8/30/18	**0.000197 J**	<0.000412	<0.000160	**0.00105 J**
MW-12	11/27/18	<0.000190	<0.000412	**0.000365 J**	**0.000844 J**
MW-12	2/27/19	<0.000190	<0.000412	<0.000160	<0.000510
MW-12 DUP-1	2/27/19	<0.000190	<0.000412	<0.000160	<0.000510
MW-12	5/21/19	<0.000190	<0.000412	<0.000160	<0.000510

Table 2

Summary of Analytical Results of BTEX in Ground Water
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Sample ID	Sample Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)
		NMWQCC Human Health Standards			
		0.01	0.75	0.75	0.62
MW-12	7/23/19	<0.000190	<0.000412	<0.000160	<0.000510
MW-12	10/22/19	**0.000319 J**	**0.000583 J**	**0.000321 J**	**0.00138 J**
MW-12	2/14/20	**0.00285**	<0.000412	<0.000160	<0.000510
RW-11	2/28/18	**0.0722**	**0.0208**	**0.0386**	**0.138**
RW-11 (DUP-1)	2/28/18	**0.0793**	**0.0230**	**0.0425**	**0.150**
RW-11	5/30/18	**0.0156**	**0.00297**	**0.00539**	**0.0243**
RW-11	8/30/18		LNAPL Present		
RW-11	11/27/18		LNAPL Present		
RW-11	2/25/19		LNAPL Present		
RW-11	5/21/19	**0.142**	**0.00981**	**0.0276**	**0.104**
RW-11 (DUP-1)	5/21/19	**0.149**	**0.00822**	**0.0248**	**0.0847**
RW-11	7/23/19	**0.115**	**0.00220**	**0.0212**	**0.0620**
RW-11	10/22/19	**0.167**	**0.00805**	**0.0287**	**0.0937**
RW-11	2/14/20	**0.207**	**0.00300**	**0.0728**	**0.291**
RW-12	2/28/18	**0.623**	**0.259**	**0.281**	**1.060**
RW-12	5/30/18	<0.00200	**0.00548**	**0.0176**	**0.0465**
RW-12	8/30/18	**1.39**	**0.105**	**0.0968**	**0.307**
RW-12	11/27/18	**1.37**	**0.144**	**0.216**	**0.254**
RW-12	2/27/19	**1.16**	**0.140**	**0.212**	**0.315**
RW-12	5/20/19		LNAPL Present		
RW-12	7/23/19	**1.58**	**0.159**	**0.0746**	**0.492**
RW-12(DUP-1)	7/23/19	**1.13**	**0.230**	**0.219**	**0.437**
RW-12	10/22/19	**1.12**	**0.186**	**0.353**	**0.389**
RW-12 (Dup1)	10/22/19	**0.950**	**0.112**	**0.186**	**0.256**
RW-12	2/14/20	**0.859**	**0.064**	**0.160**	**0.183**
Trip Blank	8/30/18	<0.000190	<0.000412	<0.000160	<0.000510
Trip Blank	2/27/19	<0.000190	<0.000412	<0.000160	<0.000510
Trip Blank	2/14/20	<0.000190	<0.000412	<0.000160	<0.000510

Notes:

1. Shaded cells indicate exceedance of LNAPL New Mexico Oil Conservation Division Regulatory Limit.
2. Bold indicates detection.
3. BTEX analyses by EPA Method 8021B.
4. Samples collected during March 2011 were collected by Nova Training and Environmental.

Table 3

Summary of Analytical Results for PAH Compounds in Groundwater
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Sample ID	Sample Date	Anthracene (mg/l)	Acenaphthene (mg/l)	Acenaphthylene (mg/l)	Benzo(a)anthracene (mg/l)	Benzo(a)pyrene (mg/l)	Benzo(b)fluoranthene (mg/l)	Benzo(g,h,i)perylene (mg/l)	Benzo(k)fluoranthene (mg/l)	Chrysene (mg/l)	Dibenzo(a,h)anthracene (mg/l)	Dibenzofuran (mg/l)	Fluoranthene (mg/l)	Fluorene (mg/l)	Indeno(1,2,3-cd)pyrene (mg/l)	Naphthalene (mg/l)	Phenanthrene (mg/l)	Pyrene (mg/l)	1-Methylnaphthalene (mg/l)	2-Methylnaphthalene (mg/l)
		NMWQCC Human Health Standards																		
		0.001	*0.001*	*0.001*	*0.001*	*0.0002*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.001*	*0.03*	*0.001*	*0.001*	*0.03*	*0.03*
MW-1	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-1	11/30/09	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-2	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	**0.130**	<0.000183	**0.178**	<0.000183	**0.704**	**0.230**	<0.000183	**1.68**	**2.31**
MW-2	11/30/09	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	<0.0229	**0.524**	<0.0229	**0.755**	<0.0229	**2.89**	**1.04**	<0.0229	**7.25**	**9.78**
MW-3	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	**0.0014**	<0.000183	**0.00126**	<0.000183	**0.0426**	**0.00103**	<0.000183	**0.0260**	<0.000183
MW-3	11/30/09	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	**0.00145**	<0.000184	**0.00155**	<0.000184	**0.0238**	**0.00134**	<0.000184	**0.0306**	<0.000184
MW-3	11/24/10	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	**0.00133**	<0.000184	**0.00132**	<0.000184	<0.000184	**0.00112**	<0.000184	0.0234	<0.000184
MW-3	12/1/11	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	**0.00163**	<0.000183	**0.00140**	<0.000183	**0.00893**	**0.00135**	<0.000183	**0.0191**	<0.000183
MW-3	12/6/12	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	<0.000191	**0.00080**	<0.000191	**0.00066**	<0.000191	<0.000191	**0.00063**	<0.000191	**0.0016**	<0.000191
MW-3	12/3/15	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199
MW-3	11/3/16	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	<0.000229	**0.000321**	<0.000229	<0.000229	<0.000229	**0.00184**	<0.000229	**0.000370**	**0.00230**	<0.000229
MW-4	11/30/09	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	**0.00118**	<0.000184	<0.000184	<0.000184	<0.000184
MW-4R	11/19/14	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198	<0.000198
MW-4R	12/3/15	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200	<0.000200
MW-6	12/1/08	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185
MW-6	11/30/09	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184
MW-7	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-7	11/30/09	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-8	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-8	11/30/09	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184
MW-9	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-9	11/30/09	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-10	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-10	11/30/09	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-11	12/1/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-11	11/30/09	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184
MW-11	12/3/15	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	<0.000199	**0.000336**	<0.000199
MW-11	11/3/16	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	**0.000303**	<0.000185	<0.000185
MW-11	12/1/17	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000184	<0.000368	<0.000184	<0.000184	---	---
MW-12	12/1/17	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000369	<0.000185	<0.000185	---	---
MW-12	11/27/18	<0.0000140	<0.0000100	<0.0000120	<0.00000410	<0.0000116	<0.00000212	<0.00000227	<0.0000136	<0.0000108	<0.00000396	**0.00000254 J**	<0.0000157	<0.00000850	<0.0000148	**0.0000280 J**	<0.00000820	<0.0000117	<0.00000821	<0.00000902

Table 3

Summary of Analytical Results for PAH Compounds in Groundwater
Plains Pipeline LP
Darr Angell No. 2
Lea County, Mexico
NMOCD AP-007

Sample ID	Sample Date	Anthracene (mg/l)	Acenaphthene (mg/l)	Acenaphthylene (mg/l)	Benzo(a)anthracene (mg/l)	Benzo(a)pyrene (mg/l)	Benzo(b)fluoranthene (mg/l)	Benzo(g,h,i)perylene (mg/l)	Benzo(k)fluoranthene (mg/l)	Chrysene (mg/l)	Dibenzo(a,h)anthracene (mg/l)	Dibenzofuran (mg/l)	Fluoranthene (mg/l)	Fluorene (mg/l)	Indeno(1,2,3-cd)pyrene (mg/l)	Naphthalene (mg/l)	Phenanthrene (mg/l)	Pyrene (mg/l)	1-Methylnaphthalene (mg/l)	2-Methylnaphthalene (mg/l)
		NMWQCC Human Health Standards																		
		0.001	***0.001***	***0.001***	***0.001***	***0.0002***	***0.001***	***0.001***	***0.001***	***0.001***	***0.001***	***0.001***	***0.001***	***0.001***	***0.001***	***0.03***	***0.001***	***0.001***	***0.03***	***0.03***
MW-12	10/22/19	<0.000014	<0.00001	<0.000012	<0.0000041	<0.0000116	<0.00000212	<0.00000227	<0.0000136	<0.0000108	<0.00000396	0.0000235 B J	<0.0000157	0.0000217 J	<0.0000148	0.000197 J	0.0000231 J	<0.0000117	0.000123 B J	0.000101 B J
RW-1	12/1/08	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	**0.208**	<0.00459	**0.274**	<0.00459	**1.01**	**0.346**	<0.00459	**2.42**	**3.20**
RW-1	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.00842**	<0.000922	**0.0117**	<0.000922	**0.102**	**0.0134**	<0.000922	**0.118**	**0.154**
RW-2	12/1/08	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	**0.0350**	<0.00184	**0.0507**	<0.00184	**0.224**	**0.0569**	<0.00184	**0.410**	**0.526**
RW-2	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0178**	<0.000922	**0.0254**	<0.000922	**0.157**	**0.0322**	<0.000922	**0.266**	**0.347**
RW-3	12/2/08	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0309**	<0.000922	**0.0447**	<0.000922	**0.203**	**0.0523**	<0.000922	**0.362**	**0.480**
RW-3	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0101**	<0.000922	**0.0114**	<0.000922	**0.113**	**0.0132**	<0.000922	**0.128**	**0.164**
RW-4	12/2/08	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	**0.122**	<0.00183	**0.173**	<0.00183	**0.637**	**0.216**	<0.00183	**1.58**	**2.14**
RW-4	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0184**	<0.000922	**0.0263**	<0.000922	**0.169**	**0.0337**	<0.000922	**0.276**	**0.367**
RW-5	12/1/08	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0654**	<0.000922	**0.0938**	<0.000922	**0.283**	**0.117**	<0.000922	**0.835**	**0.910**
RW-5	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0155**	<0.000922	**0.0201**	<0.000922	**0.147**	**0.0284**	<0.000922	**0.217**	**0.295**
RW-6	12/2/08	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	**0.138**	<0.00183	**0.188**	<0.00183	**0.693**	**0.244**	<0.00183	**1.77**	**2.44**
RW-6	11/30/09	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	**0.0253**	<0.000922	**0.0352**	<0.000922	**0.20**	**0.0492**	<0.000922	**0.36**	**0.481**
RW-11	12/1/17	**0.000374**	**0.00104**	**0.000469**	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	**0.000806**	<0.000183	**0.00281**	**0.000196**	**0.00301**	<0.000183	**0.0270**	**0.00629**	0.000216	**---**	**---**
RW-11	11/12/19	**0.00112**	<0.0000100	<0.00000700	**0.000318**	**0.0000296**	**0.0000490**	**0.0000273**	<0.0000255	**0.000157**	<0.00000454	**0.00159**	**0.000153**	**0.00192**	<0.00000739	**0.00242**	**0.00325**	**0.000402**	**0.00511**	**0.00334**
RW-12	12/1/17	<0.000183	**0.000248**	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	**0.000857**	<0.000183	**0.000194**	<0.000183	**0.0183**	**0.000635**	<0.000183	**---**	**---**
RW-12	11/27/18	**0.0000715**	**0.000281**	<0.0000120	<0.00000410	<0.0000116	<0.00000212	<0.00000227	<0.0000136	<0.0000108	<0.00000396	**0.00169**	<0.0000157	**0.000354**	<0.0000148	**0.0248**	**0.00118**	<0.0000117	**0.0185**	**0.0217**
RW-12	11/12/19	**0.0000849**	<0.00001	<0.00000700	<0.0000083	<0.0000158	<0.00000212	<0.00000227	<0.0000255	<0.0000144	<0.00000454	0.00125	<0.0000165	**0.000319**	<0.00000739	**0.0104**	**0.000714**	<0.0000155	**0.00597**	**0.00660**

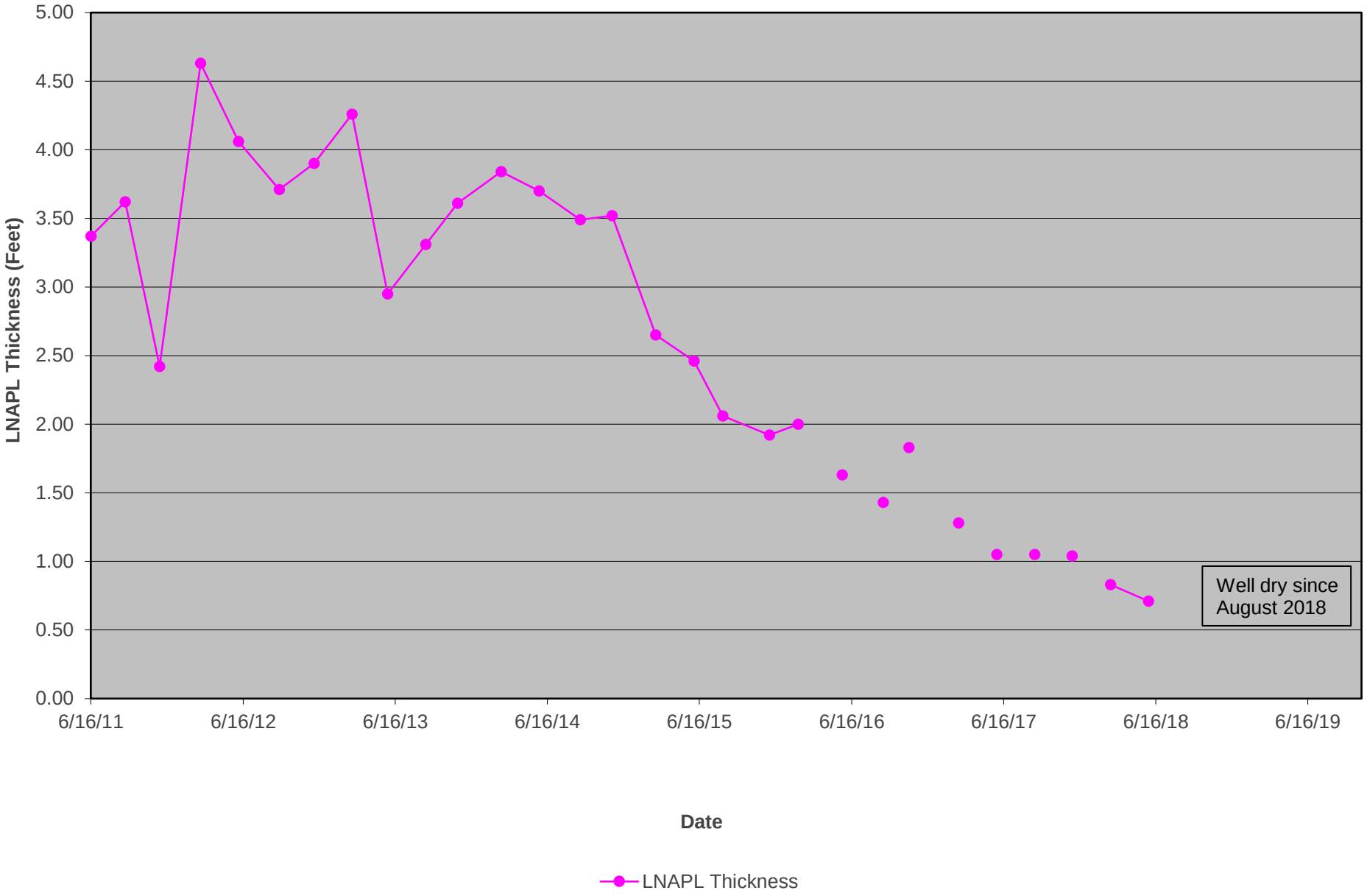
Notes:

1. Shaded cells indicate New Mexico Water Quality Control Commission Limit (NMWQCC) exceedance.
2. PAH analyses by EPA Method 8270.
3. Bold indicates detection.
4. Nova Training and Environmental collected samples dated between 2008 and 2010.
5. --- indicates 1- & 2-Methylnaphthalene was not originally analyzed for and not enough fluid was available to extract for re-run.

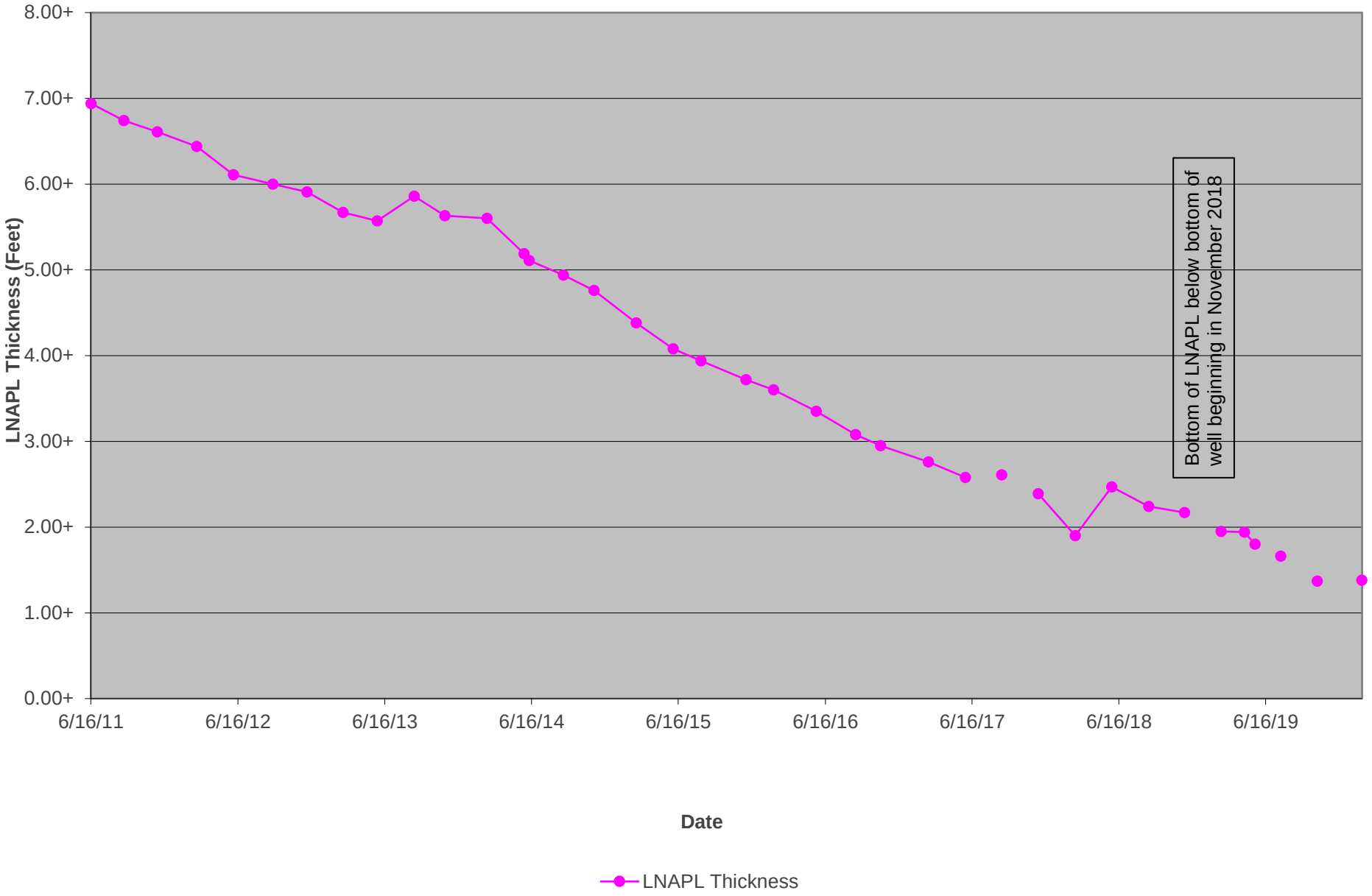
Appendices

Appendix A
Charts of Thicknesses of LNAPL in Monitor and Recovery Wells vs. Time

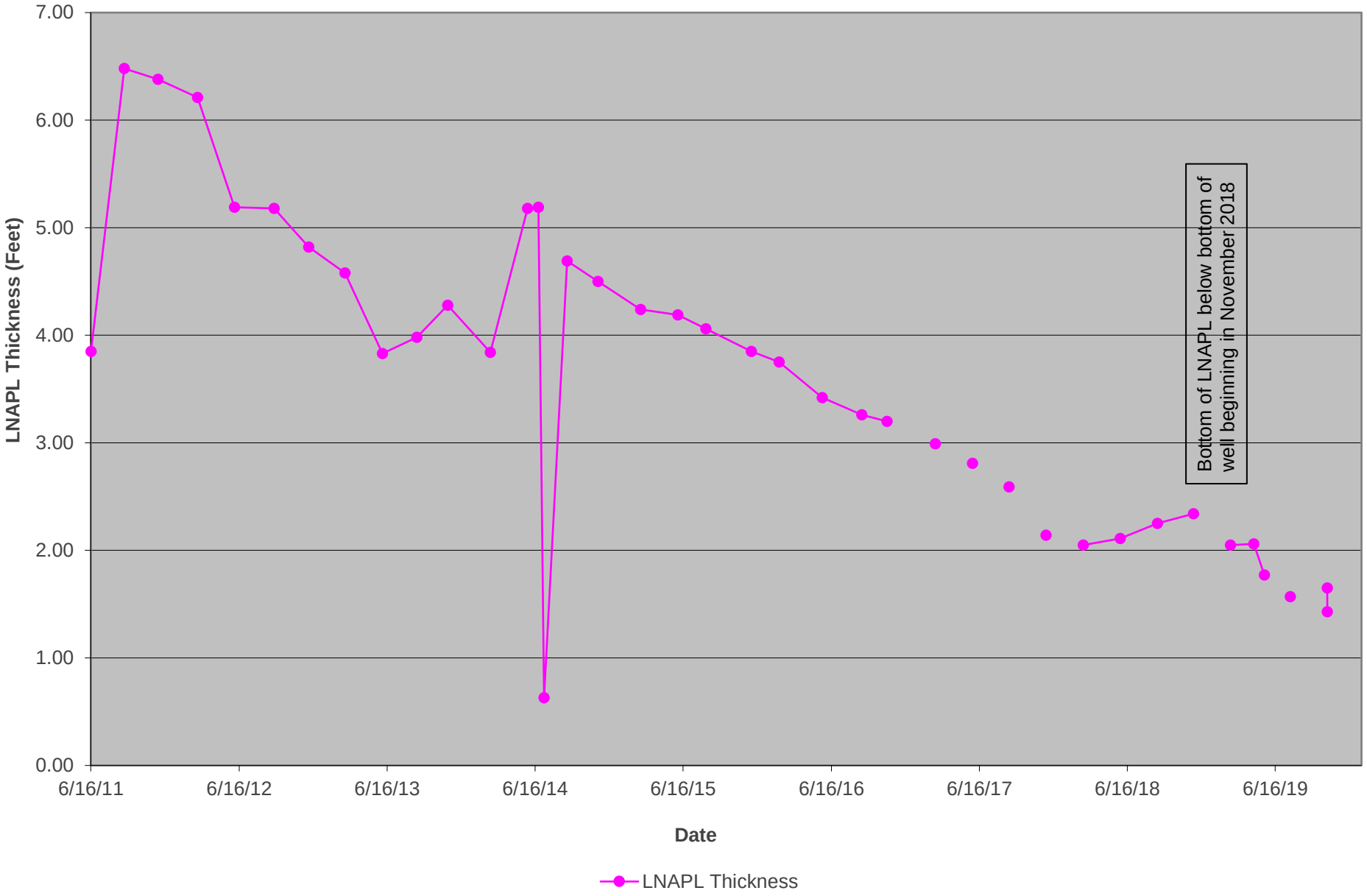
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
MW-2



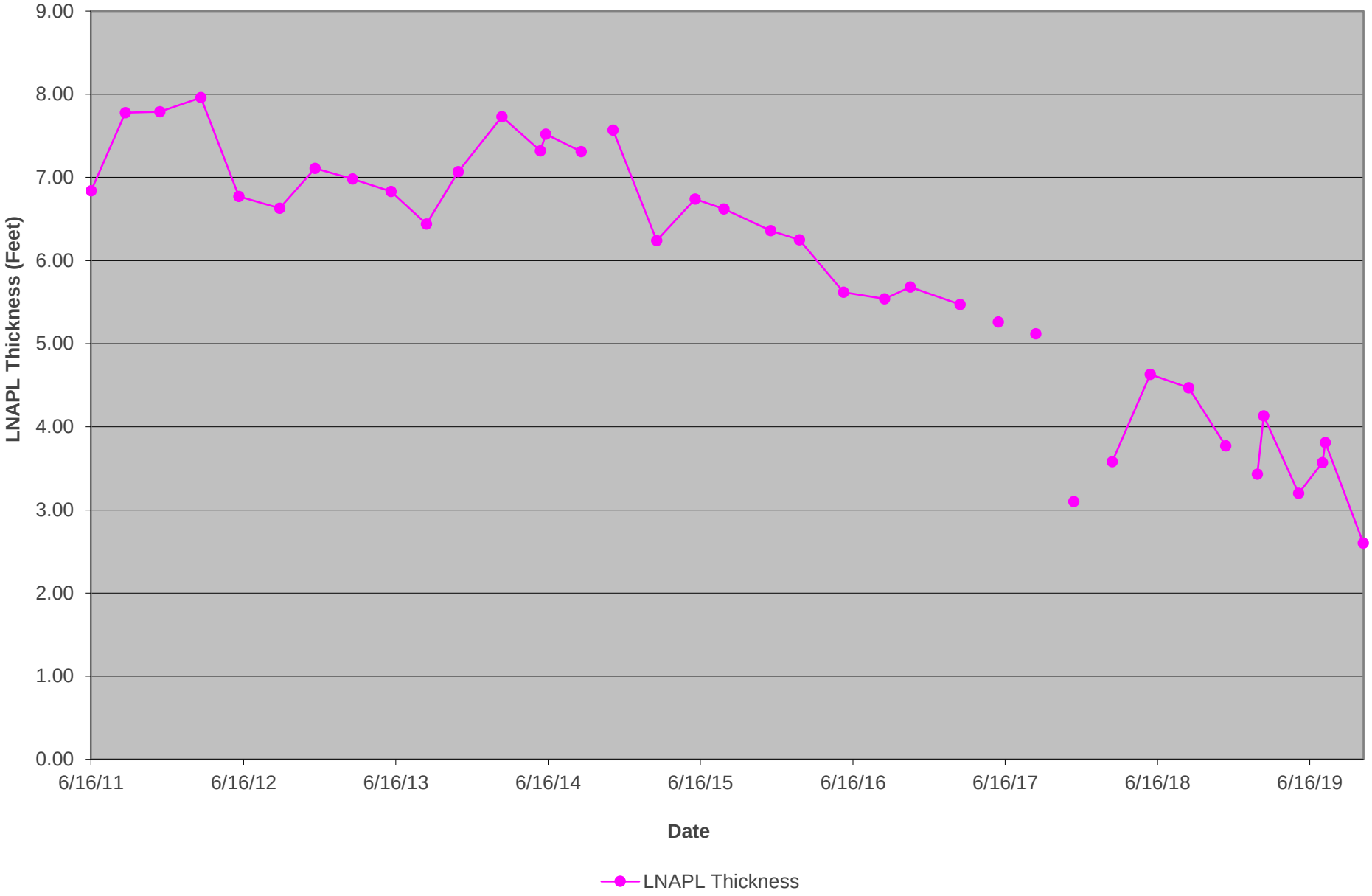
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-1



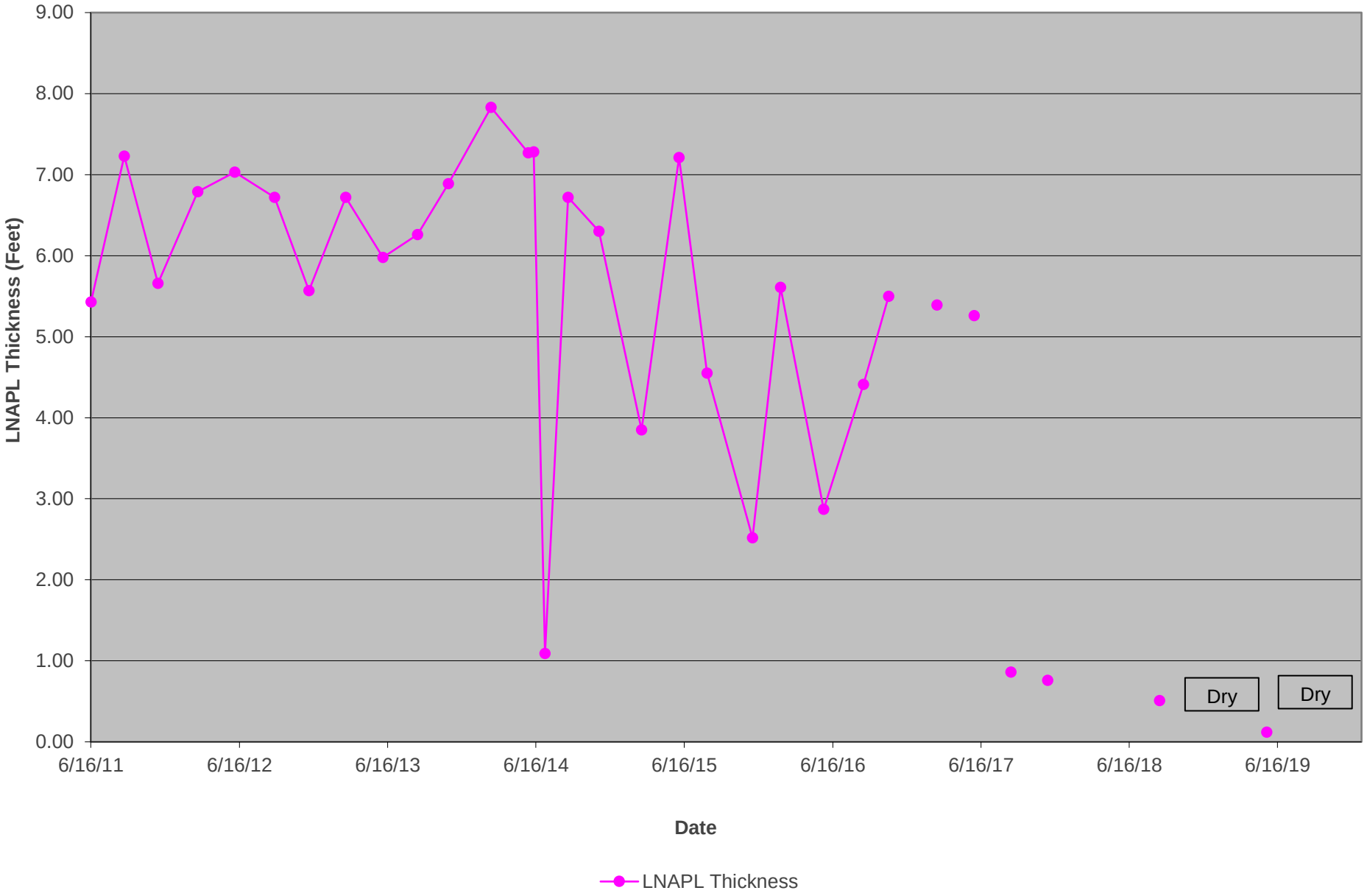
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-2

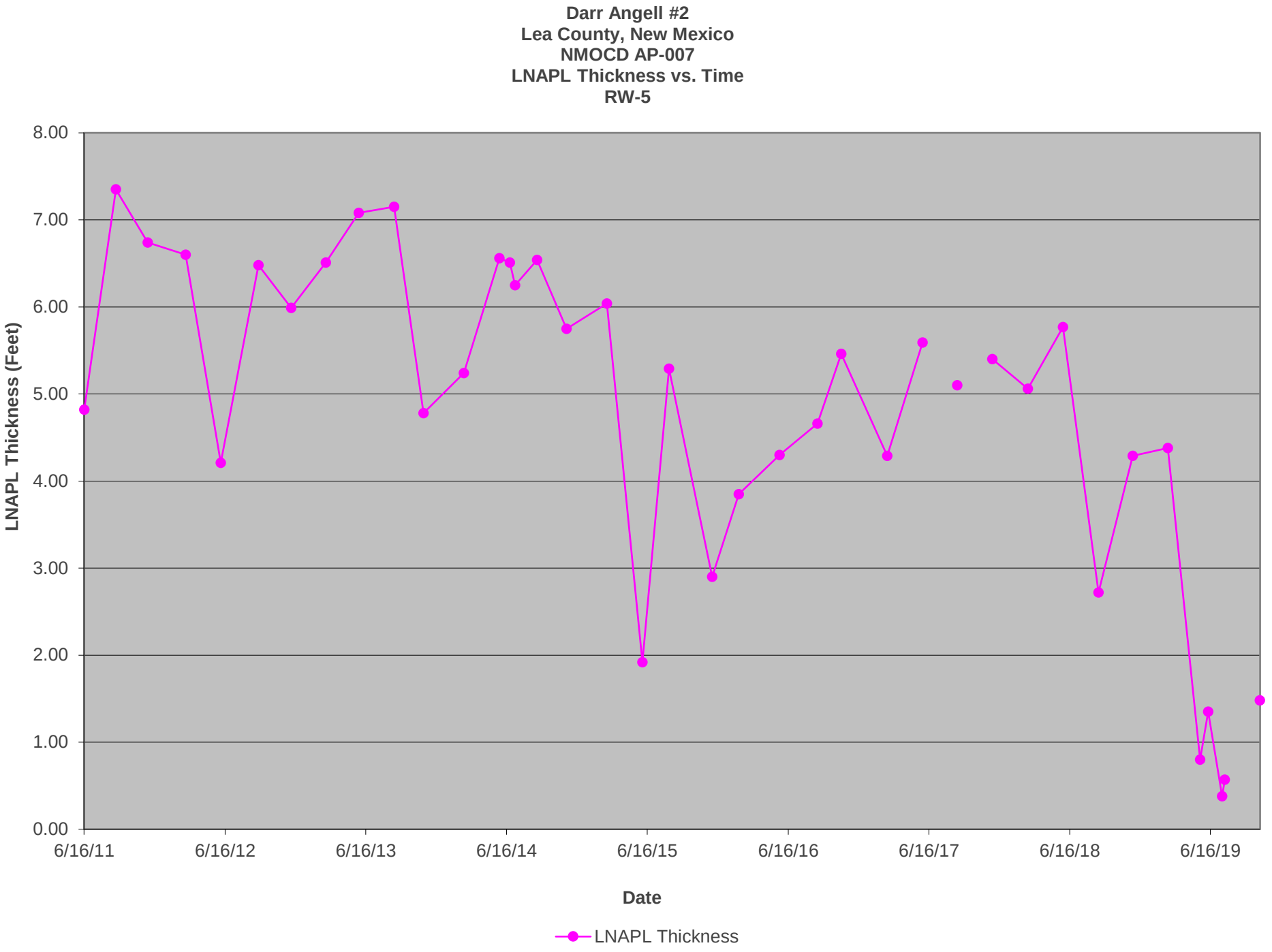


Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-3

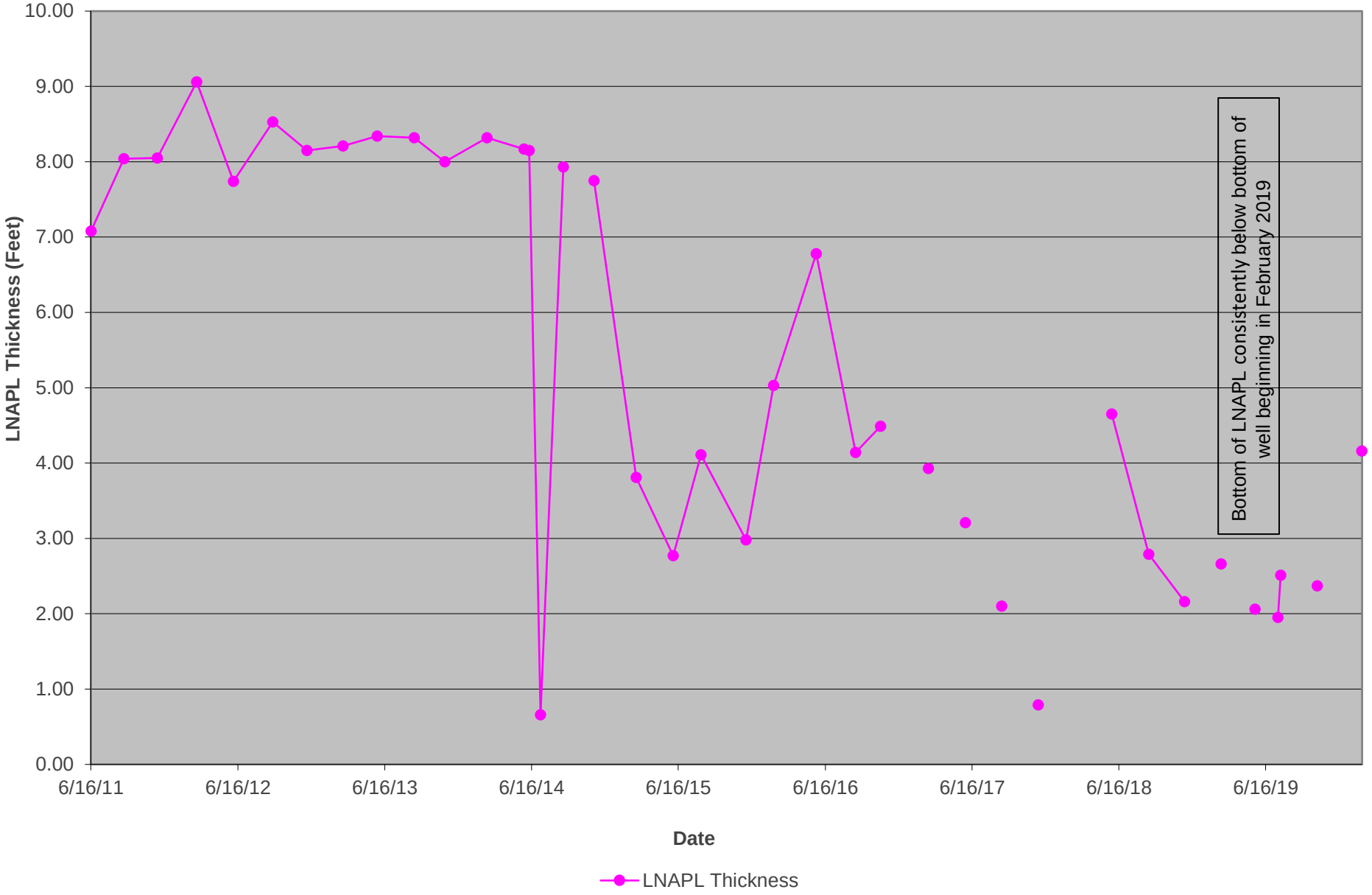


Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-4

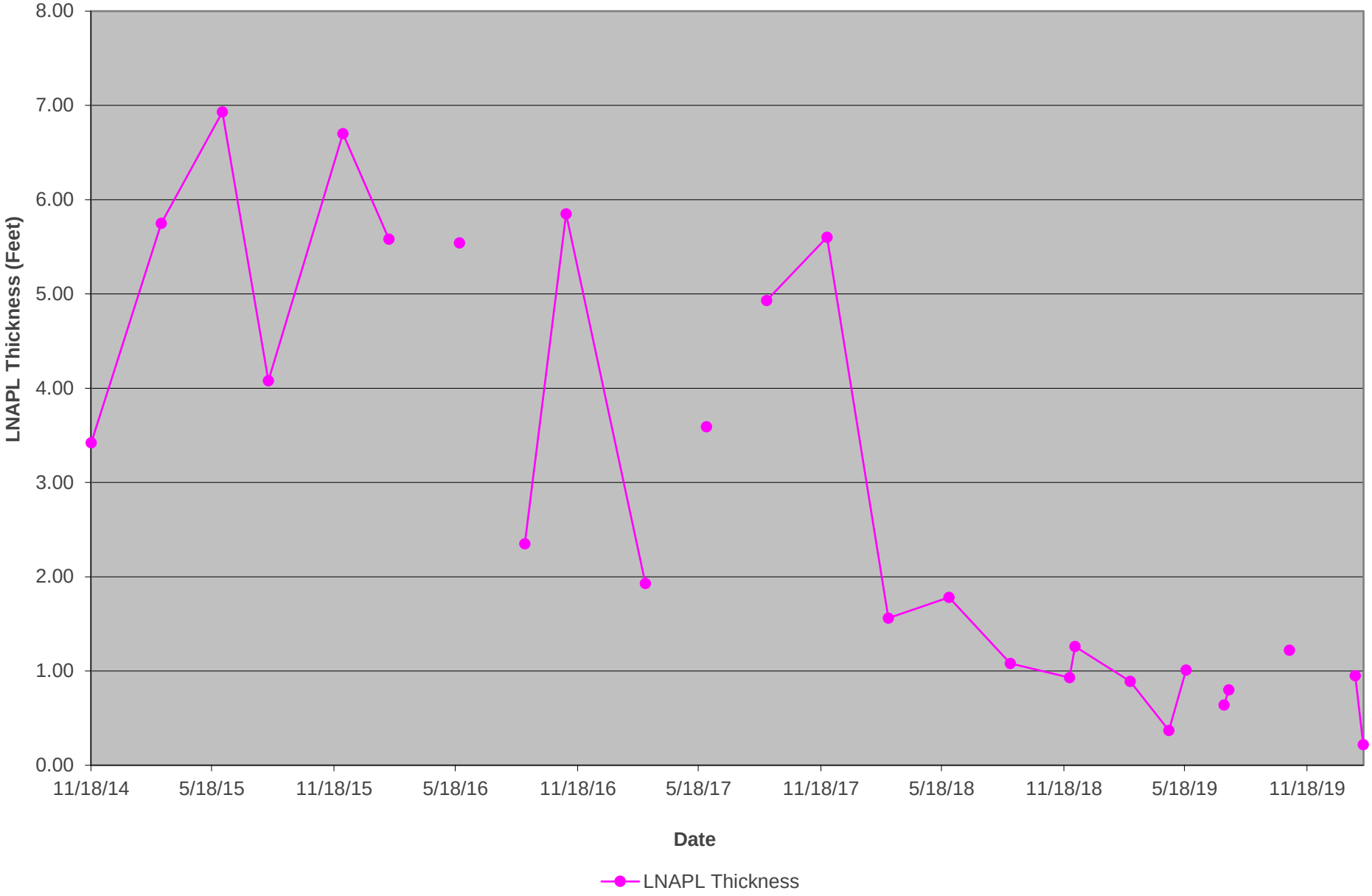


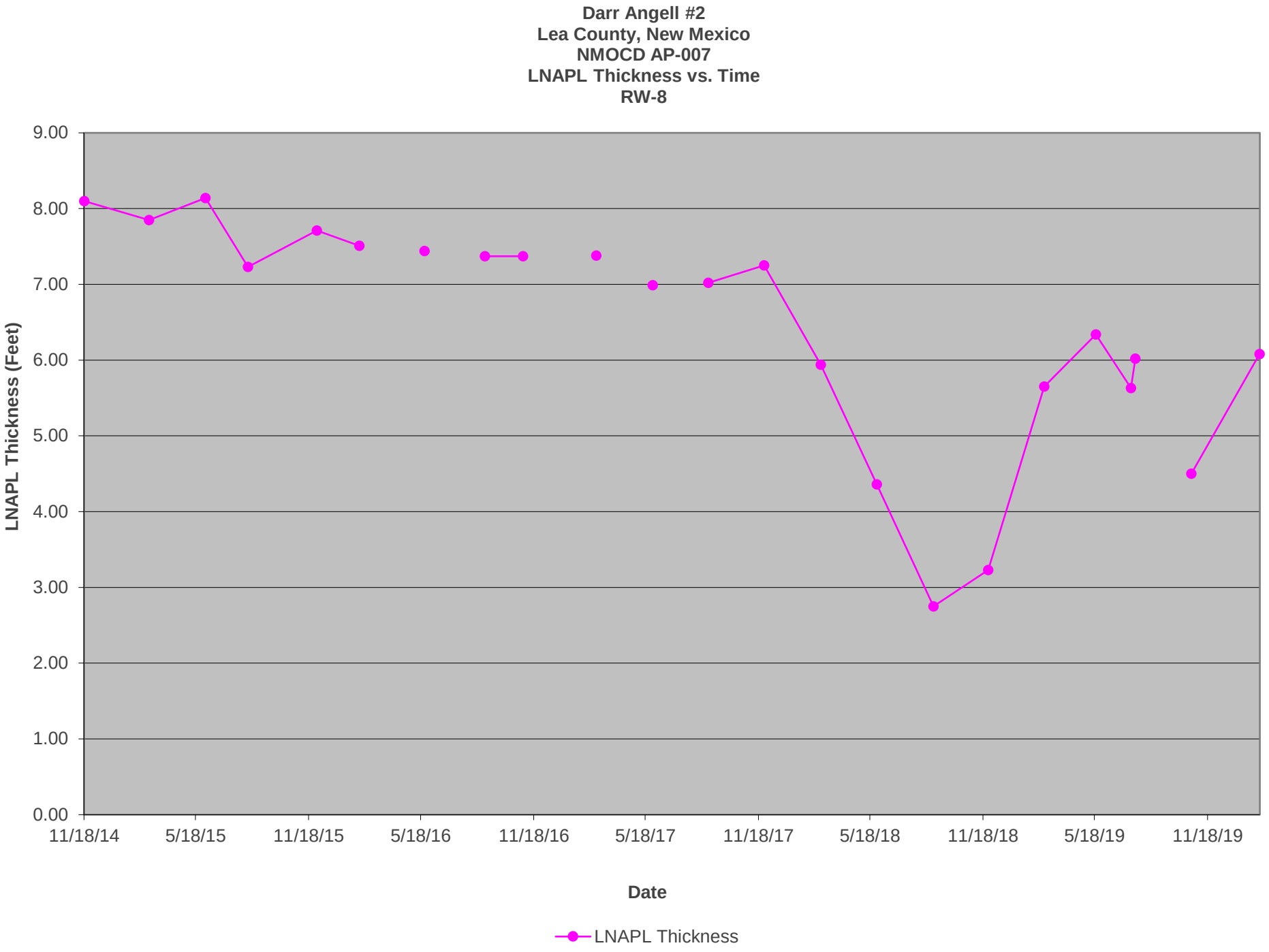

Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-5
LNAPL Thickness (Feet)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
6/16/11
6/16/12
6/16/13
6/16/14
6/16/15
6/16/16
6/16/17
6/16/18
6/16/19
Date
LNAPL Thickness

Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-6

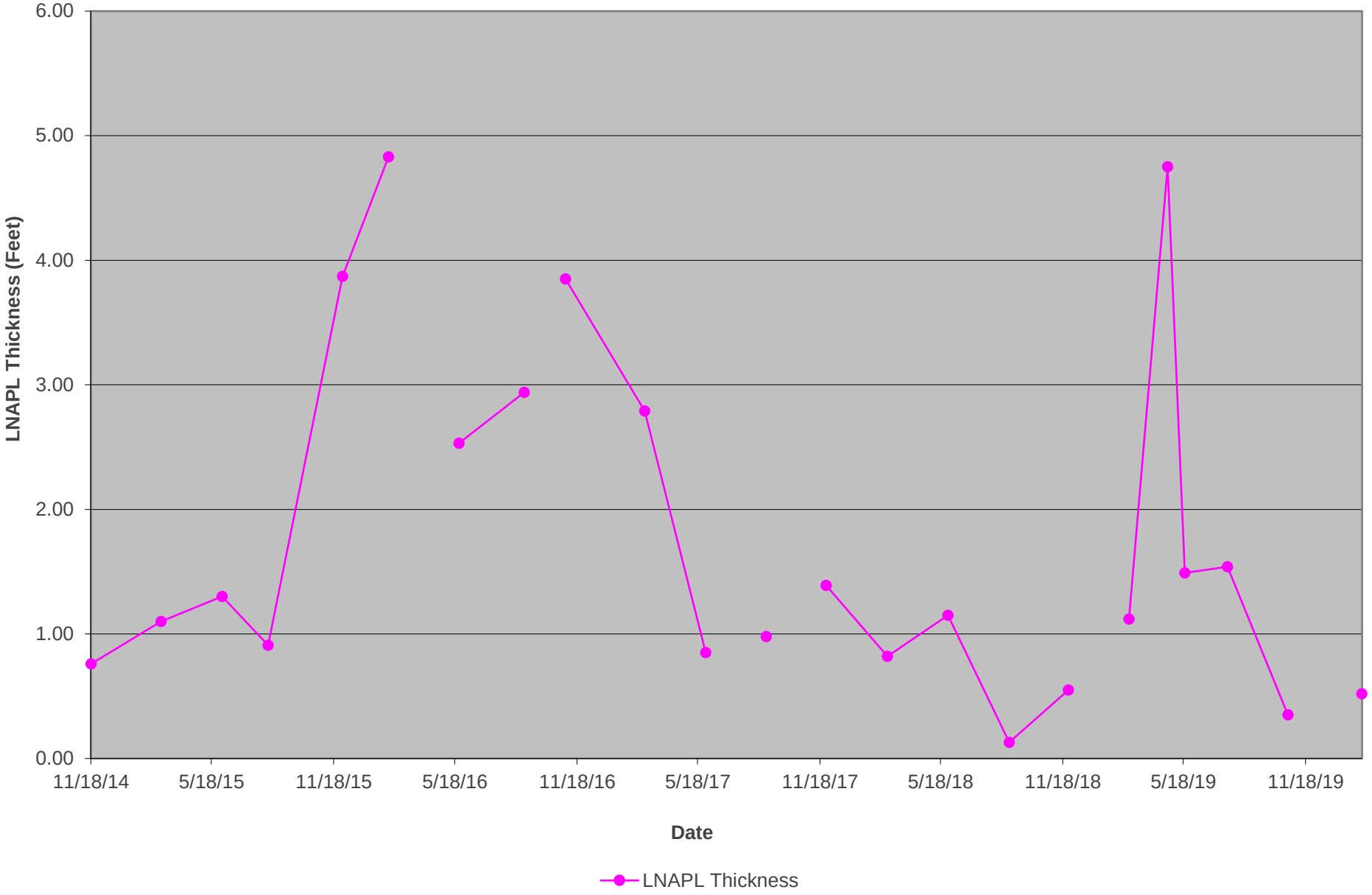


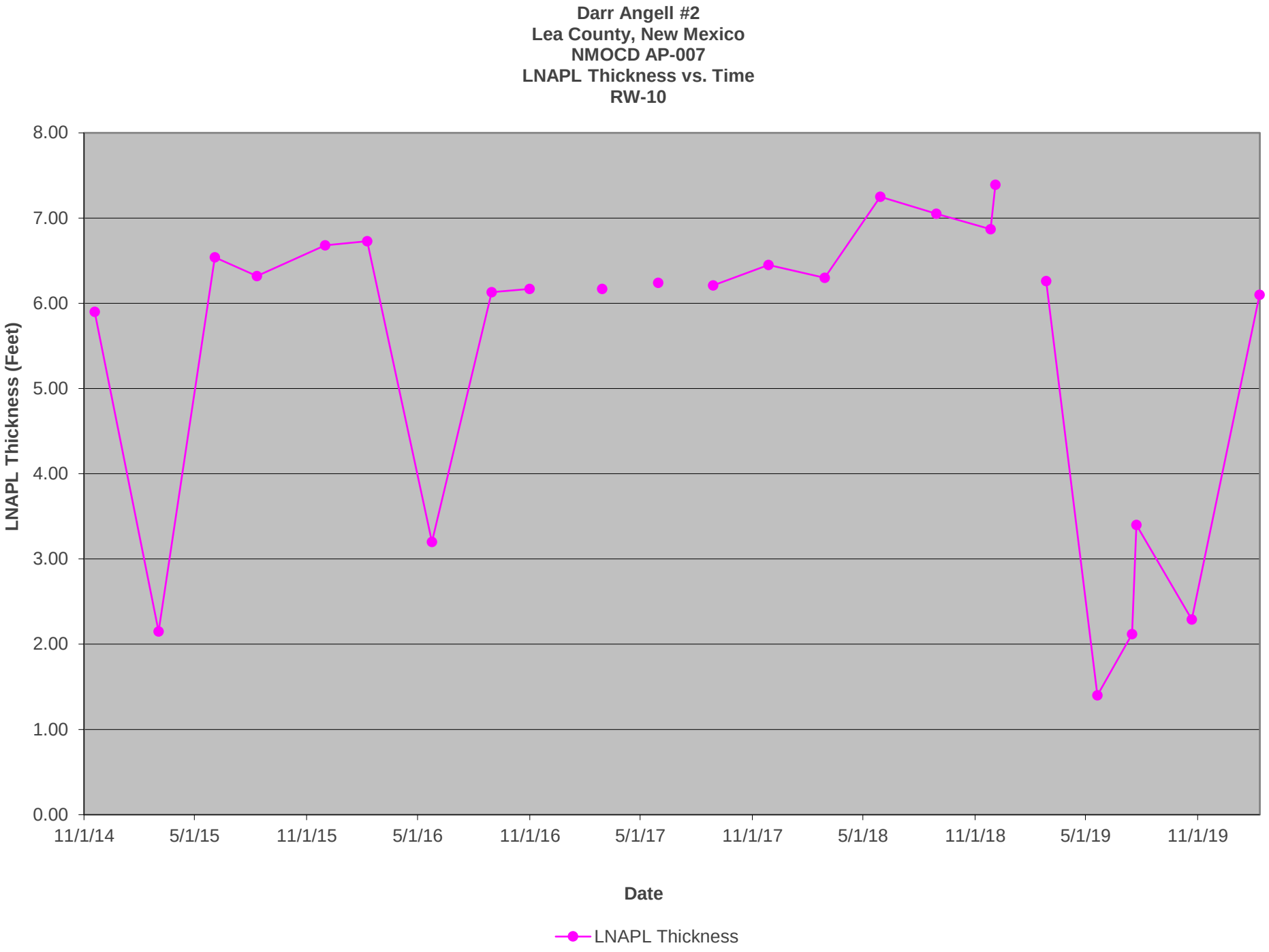
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-7R




Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-8
LNAPL Thickness (Feet)
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/18/14
5/18/15
11/18/15
5/18/16
11/18/16
5/18/17
11/18/17
5/18/18
11/18/18
5/18/19
11/18/19
Date
LNAPL Thickness

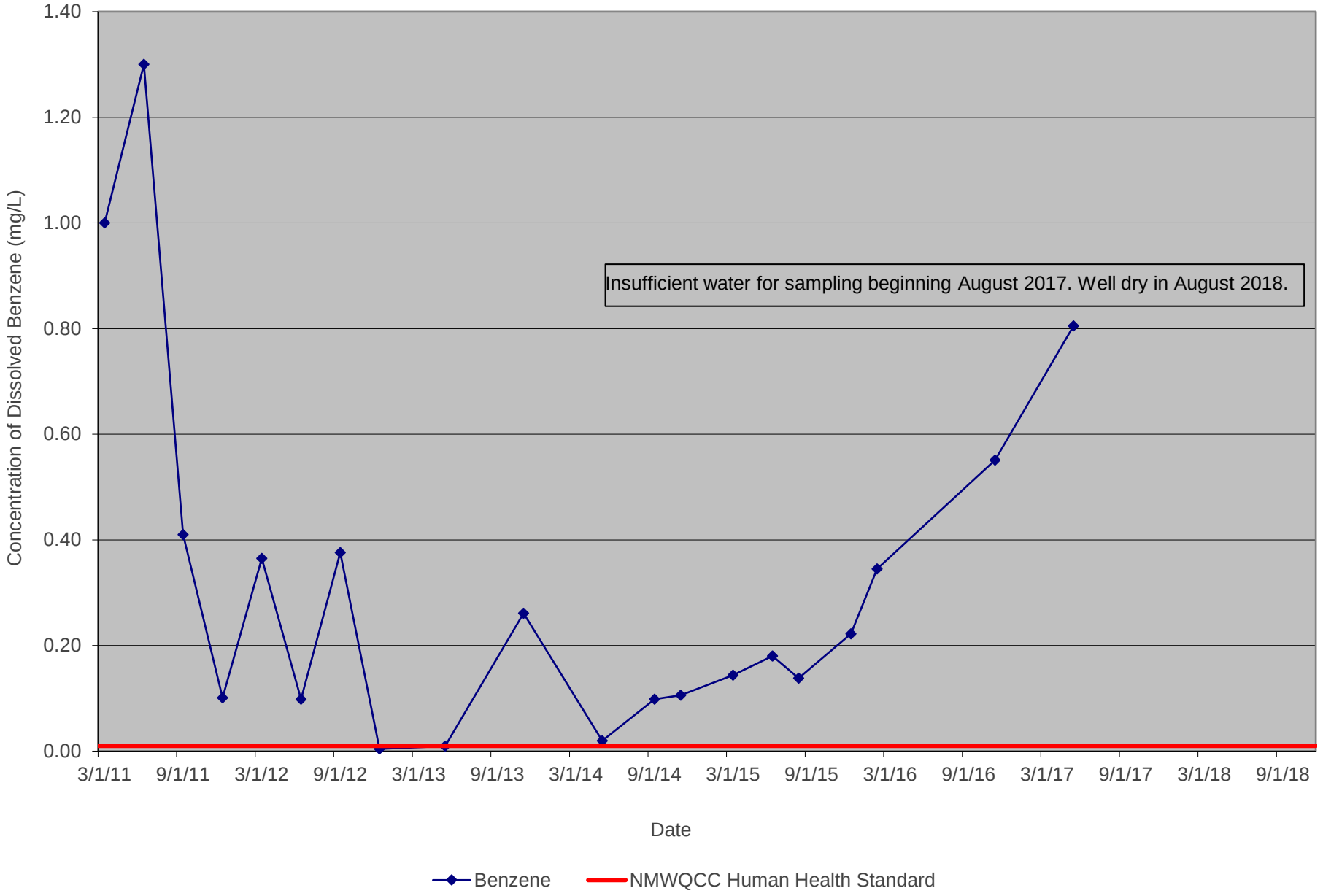
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-9



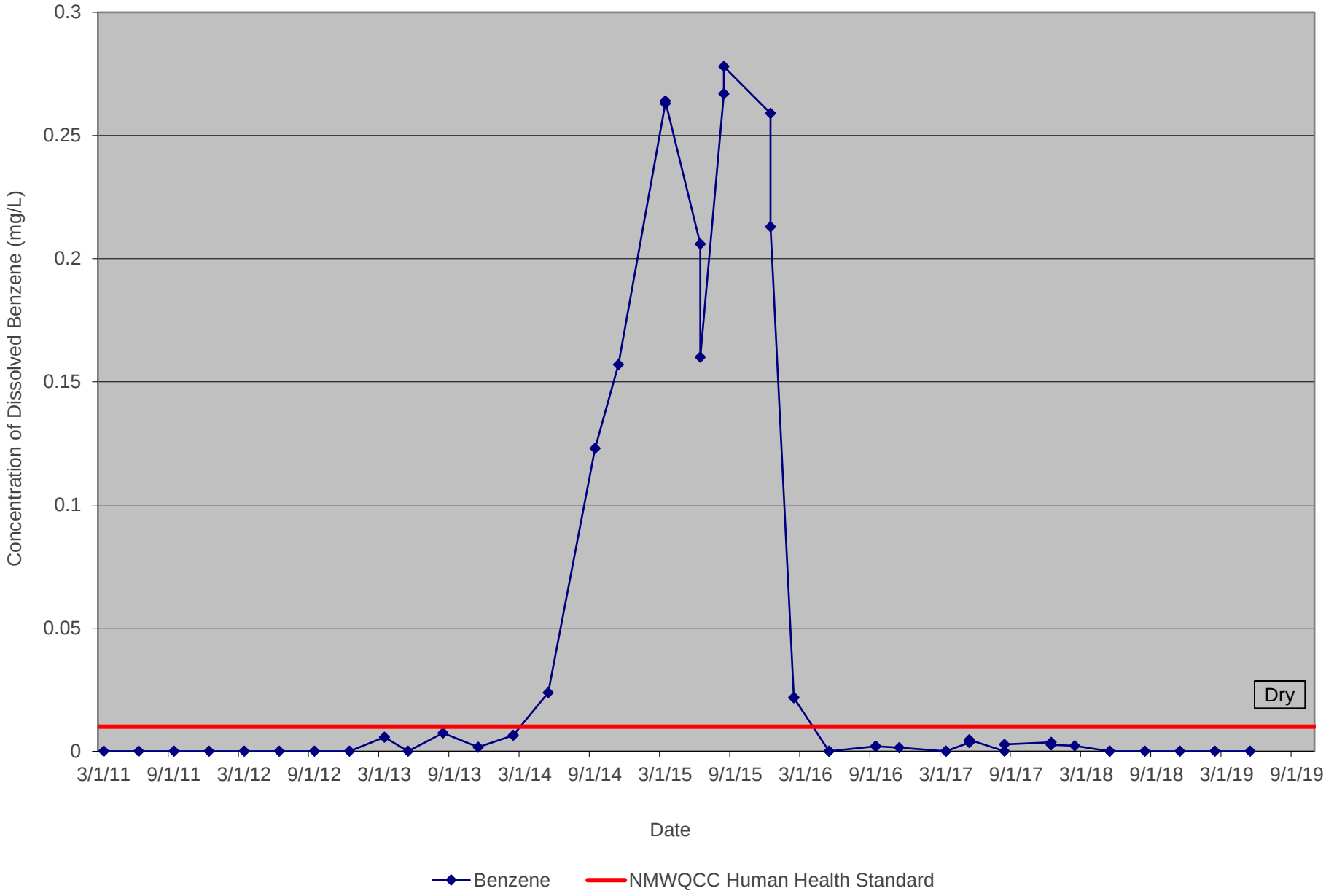

Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
LNAPL Thickness vs. Time
RW-10
LNAPL Thickness (Feet)
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
11/1/14
5/1/15
11/1/15
5/1/16
11/1/16
5/1/17
11/1/17
5/1/18
11/1/18
5/1/19
11/1/19
Date
LNAPL Thickness

Appendix B
Charts of Concentrations of Dissolved Benzene in Monitor and Recovery Wells vs. Time

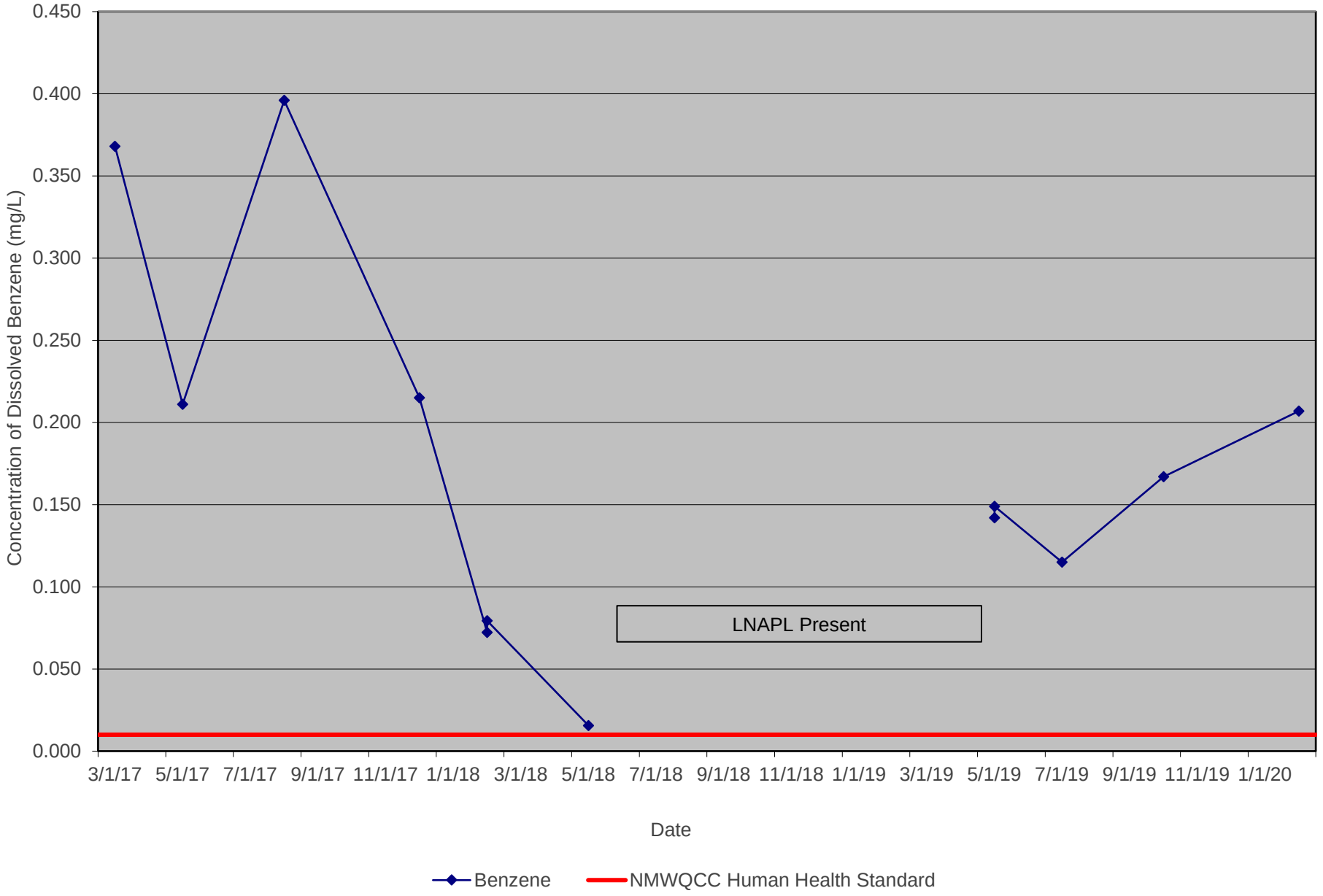
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
Concentration of Dissolved Benzene vs. Time
MW-3



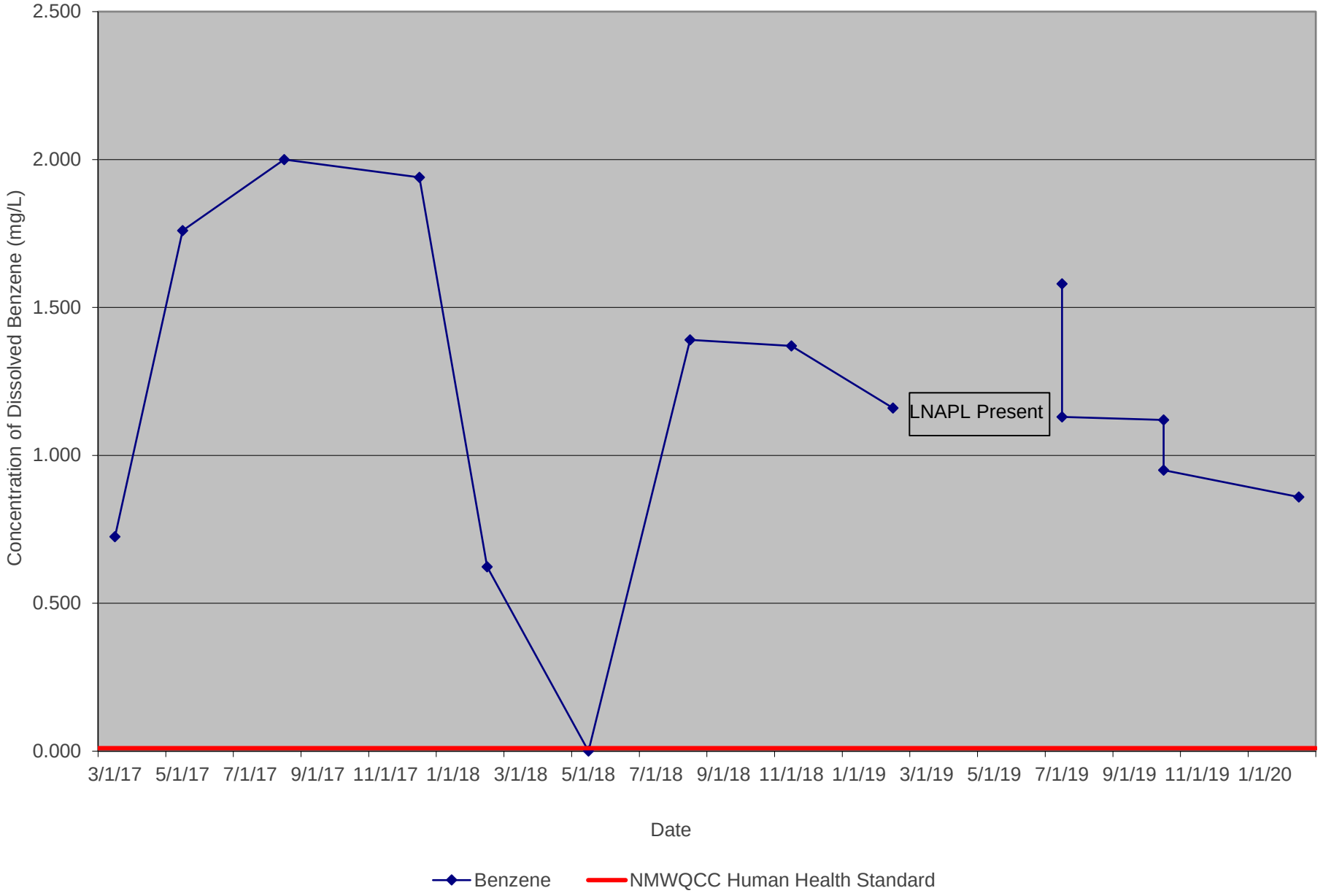
Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
Concentration of Dissolved Benzene vs. Time
MW-11



Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
Concentration of Dissolved Benzene vs. Time
RW-11



Darr Angell #2
Lea County, New Mexico
NMOCD AP-007
Concentration of Dissolved Benzene vs. Time
RW-12



Appendix C
Certified Laboratory Reports
(not included in draft or printed reports)

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

March 11, 2019

Plains All American, LP - GHD

Sample Delivery Group:	L1075016
Samples Received:	03/02/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	Chris G. Knight, John Schnable 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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RW-12-022719 L1075016-01 GW

Collected by	Collected date/time	Received date/time
	02/27/19 10:46	03/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 17:15	03/04/19 17:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1246510	25	03/08/19 22:56	03/08/19 22:56	ACG	Mt. Juliet, TN

MW-4R-022719 L1075016-02 GW

Collected by	Collected date/time	Received date/time
	02/27/19 11:50	03/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 17:39	03/04/19 17:39	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1246510	1	03/08/19 23:18	03/08/19 23:18	ACG	Mt. Juliet, TN

MW-12-022719 L1075016-03 GW

Collected by	Collected date/time	Received date/time
	02/27/19 12:48	03/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 18:03	03/04/19 18:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1246510	1	03/08/19 23:39	03/08/19 23:39	ACG	Mt. Juliet, TN

MW-11-022719 L1075016-04 GW

Collected by	Collected date/time	Received date/time
	02/27/19 13:55	03/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 18:27	03/04/19 18:27	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1246510	1	03/09/19 00:00	03/09/19 00:00	ACG	Mt. Juliet, TN

DUPE-01-022719 L1075016-05 GW

Collected by	Collected date/time	Received date/time
	02/27/19 00:00	03/02/19 08:45

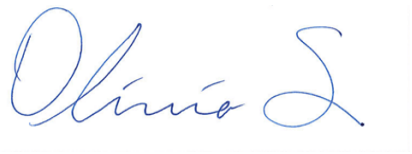
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 18:51	03/04/19 18:51	DWR	Mt. Juliet, TN

TRIP BLANK L1075016-06 GW

Collected by	Collected date/time	Received date/time
	02/27/19 00:00	03/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1244728	1	03/04/19 12:03	03/04/19 12:03	DWR	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Olivia Studebaker
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Olivia Studebaker
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 03/11/2019 14:25
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1075016-01, 02, 03, 04, 05 and 06
Reviewer Name: Olivia Studebaker	Prep Batch Number(s): WG1244728 and WG1246510

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?		X			1
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 03/11/2019 14:25
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1075016-01, 02, 03, 04, 05 and 06
Reviewer Name: Olivia Studebaker	Prep Batch Number(s): WG1244728 and WG1246510

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?			X		
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 03/11/2019 14:25
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1075016-01, 02, 03, 04, 05 and 06
Reviewer Name: Olivia Studebaker	Prep Batch Number(s): WG1244728 and WG1246510

ER #[1]	Description
1	8021B WG1244728 Total Xylene L1075016-02 and 04: Concentration in the Blank >MQL.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	1.16		0.00475	0.000500	0.0125	25	03/08/2019 22:56	WG1246510
Toluene	0.140		0.000412	0.00100	0.00100	1	03/04/2019 17:15	WG1244728
Ethylbenzene	0.212		0.000160	0.000500	0.000500	1	03/04/2019 17:15	WG1244728
Total Xylene	0.315		0.000510	0.00150	0.00150	1	03/04/2019 17:15	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*91.5*				*79.0-125*		*03/04/2019 17:15*	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*97.2*				*79.0-125*		*03/08/2019 22:56*	WG1246510

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.000190	J	0.000190	0.000500	0.000500	1	03/08/2019 23:18	WG1246510
Toluene	U		0.000412	0.00100	0.00100	1	03/04/2019 17:39	WG1244728
Ethylbenzene	0.000404	J	0.000160	0.000500	0.000500	1	03/04/2019 17:39	WG1244728
Total Xylene	0.000721	B J	0.000510	0.00150	0.00150	1	03/04/2019 17:39	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*96.4*				*79.0-125*		*03/04/2019 17:39*	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*101*				*79.0-125*		*03/08/2019 23:18*	WG1246510

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	03/08/2019 23:39	WG1246510
Toluene	U		0.000412	0.00100	0.00100	1	03/04/2019 18:03	WG1244728
Ethylbenzene	U		0.000160	0.000500	0.000500	1	03/04/2019 18:03	WG1244728
Total Xylene	U		0.000510	0.00150	0.00150	1	03/04/2019 18:03	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*96.4*				*79.0-125*		*03/04/2019 18:03*	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*102*				*79.0-125*		*03/08/2019 23:39*	WG1246510

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	03/09/2019 00:00	WG1246510
Toluene	U		0.000412	0.00100	0.00100	1	03/04/2019 18:27	WG1244728
Ethylbenzene	U		0.000160	0.000500	0.000500	1	03/04/2019 18:27	WG1244728
Total Xylene	0.00278	B	0.000510	0.00150	0.00150	1	03/04/2019 18:27	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*96.2*				*79.0-125*		*03/04/2019 18:27*	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*99.3*				*79.0-125*		*03/09/2019 00:00*	WG1246510

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	03/04/2019 18:51	WG1244728
Toluene	U		0.000412	0.00100	0.00100	1	03/04/2019 18:51	WG1244728
Ethylbenzene	U		0.000160	0.000500	0.000500	1	03/04/2019 18:51	WG1244728
Total Xylene	U		0.000510	0.00150	0.00150	1	03/04/2019 18:51	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*96.3*				*79.0-125*		*03/04/2019 18:51*	WG1244728

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	03/04/2019 12:03	WG1244728
Toluene	U		0.000412	0.00100	0.00100	1	03/04/2019 12:03	WG1244728
Ethylbenzene	U		0.000160	0.000500	0.000500	1	03/04/2019 12:03	WG1244728
Total Xylene	U		0.000510	0.00150	0.00150	1	03/04/2019 12:03	WG1244728
(S) a,a,a-Trifluorotoluene(PID)	*96.3*				*79.0-125*		*03/04/2019 12:03*	WG1244728

Method Blank (MB)

(MB) R3389451-3 03/04/19 11:15

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*95.6*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3389451-1 03/04/19 09:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0501	100	77.0-122	
Toluene	0.0500	0.0468	93.5	80.0-121	
Ethylbenzene	0.0500	0.0481	96.2	80.0-123	
Total Xylene	0.150	0.147	97.8	47.0-154	
(S) a,a,a-Trifluorotoluene(PID)			*95.9*	*79.0-125*	

Method Blank (MB)

(MB) R3390411-5 03/08/19 21:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
(S) a,a,a-Trifluorotoluene(PID)	*102*			*79.0-125*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3390411-1 03/08/19 19:45 • (LCSD) R3390411-2 03/08/19 20:07

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0436	0.0438	87.1	87.5	77.0-122			0.491	20
(S) a,a,a-Trifluorotoluene(PID)				*99.1*	*99.8*	*79.0-125*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

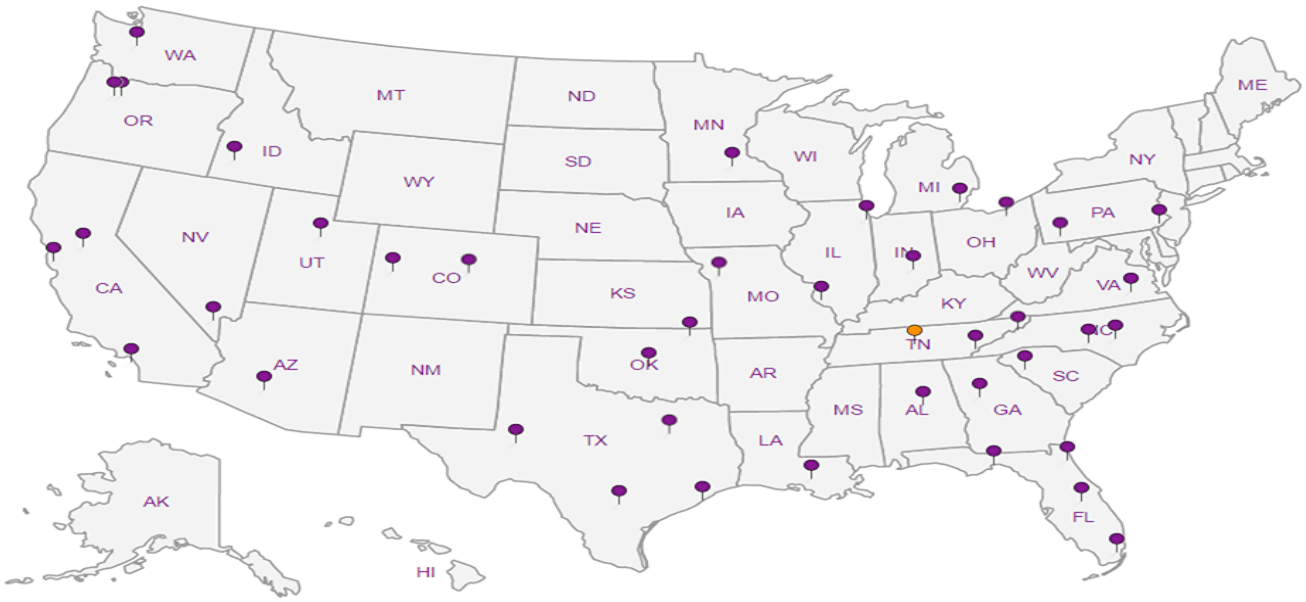
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Report to: Chris G. Knight, John Schnable

Email To: Christopher.Knight@ghd.com; John.Schnable@ghd.com

Project Description: Darr Angell #2- Lea County, New Mexico

City/State Collected:

Phone: 432-686-0086
Fax:

Client Project # 074685

Lab Project # PLAINSGHD-074685

Collected by (print):

Site/Facility ID # SRS#: LF 1999-62

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX 40mlAmb-HCl	Remarks	Sample # (lab only)
TRIP BLANK		GW				1	X		-
RW-12-022719	Grab	GW	---	2/27/19	1046	3	X		-01
MW-4R-022719	Grab	GW	---	2/27/19	1150	3	X		-02
MW-12-022719	Grab	GW	---	2/27/19	1248	3	X		-03
MW-11-022719	Grab	GW	---	2/27/19	1355	1	X		-04
Dupe-01-022719	Grab	GW	---	2/27/19		3	X		-05
Trip Blank		GW							-06

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1075016

G092

Acctnum: PLAINSGHD
Template: T139790
Prelogin: P695137
TSR: 134 - Mark W. Beasley
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 2991

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 3.9-2=3.7 °C Bottles Received: 14 =VB

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	3/1/19	0800	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Date: 3/2/19 Time: 845

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 03, 2019

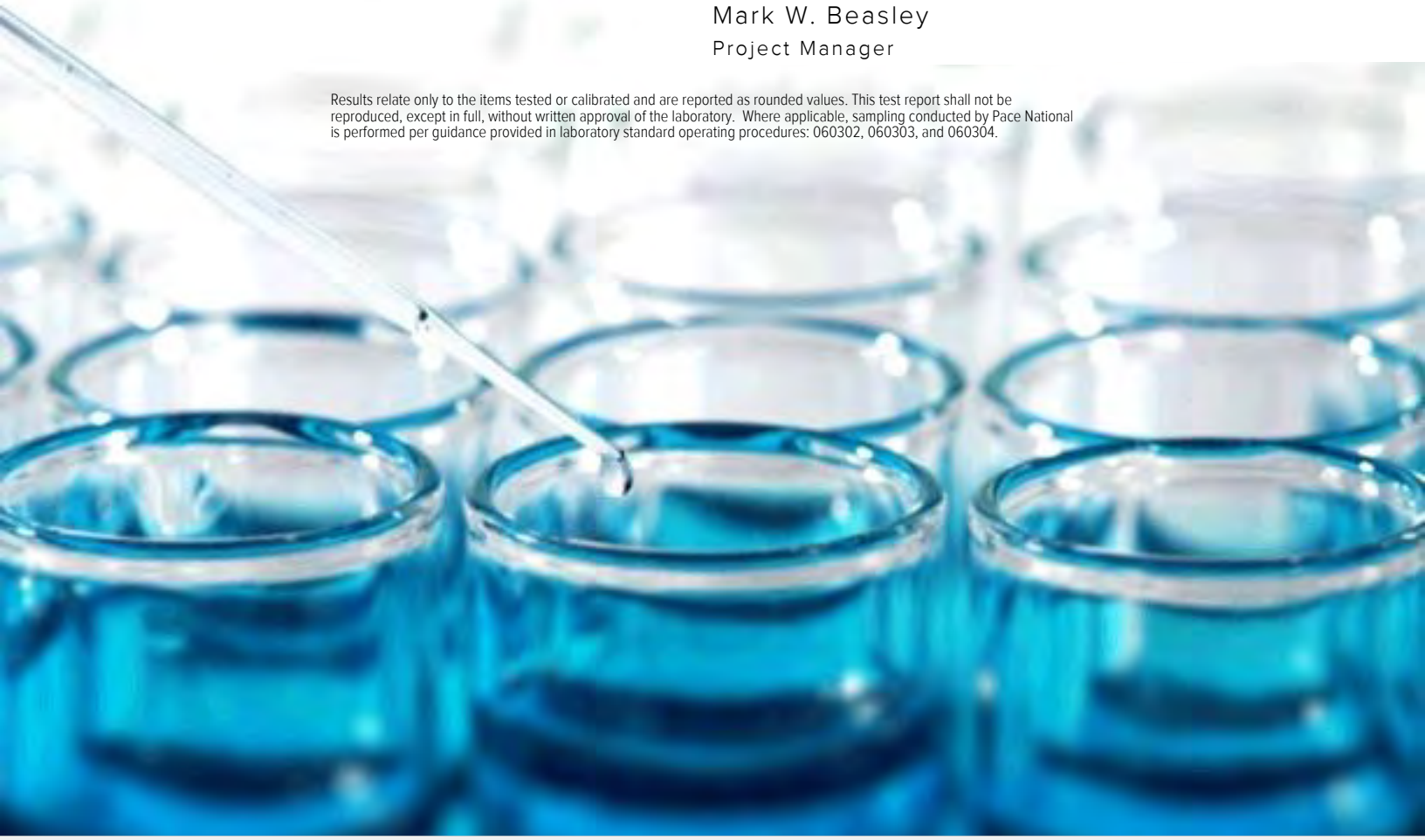
Plains All American, LP - GHD

Sample Delivery Group:	L1102383
Samples Received:	05/24/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	James Ornelas 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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MW-11 L1102383-01 GW

Collected by: Heath Boyd | Collected date/time: 05/21/19 07:43 | Received date/time: 05/24/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1288830	1	05/30/19 20:11	05/30/19 20:11	JAH	Mt. Juliet, TN

MW-12 L1102383-02 GW

Collected by: Heath Boyd | Collected date/time: 05/21/19 08:39 | Received date/time: 05/24/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1288830	1	05/30/19 20:35	05/30/19 20:35	JAH	Mt. Juliet, TN

RW-11 L1102383-03 GW

Collected by: Heath Boyd | Collected date/time: 05/21/19 10:12 | Received date/time: 05/24/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1288830	1	05/30/19 20:59	05/30/19 20:59	JAH	Mt. Juliet, TN

MW-4R L1102383-04 GW

Collected by: Heath Boyd | Collected date/time: 05/21/19 09:02 | Received date/time: 05/24/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1289067	1	06/01/19 16:51	06/01/19 16:51	BMB	Mt. Juliet, TN

DUP-01 L1102383-05 GW

Collected by: Heath Boyd | Collected date/time: 05/21/19 00:00 | Received date/time: 05/24/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1289067	5	06/01/19 17:11	06/01/19 17:11	BMB	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 06/03/2019 13:46
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1102383-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1288830 and WG1289067

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?		X			1
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 06/03/2019 13:46
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1102383-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1288830 and WG1289067

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?			X		
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 06/03/2019 13:46
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1102383-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1288830 and WG1289067

ER #[1]	Description
1	8021B WG1289067 Total Xylene L1102383-04: Concentration in the Blank >MQL.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	05/30/2019 20:11	WG1288830
Toluene	U		0.000412	0.00100	0.00100	1	05/30/2019 20:11	WG1288830
Ethylbenzene	0.000175	B J	0.000160	0.000500	0.000500	1	05/30/2019 20:11	WG1288830
Total Xylene	U		0.000510	0.00150	0.00150	1	05/30/2019 20:11	WG1288830
(S) a,a,a-Trifluorotoluene(PID)	*99.8*				*79.0-125*		*05/30/2019 20:11*	WG1288830

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	05/30/2019 20:35	WG1288830
Toluene	U		0.000412	0.00100	0.00100	1	05/30/2019 20:35	WG1288830
Ethylbenzene	U		0.000160	0.000500	0.000500	1	05/30/2019 20:35	WG1288830
Total Xylene	U		0.000510	0.00150	0.00150	1	05/30/2019 20:35	WG1288830
(S) a,a,a-Trifluorotoluene(PID)	*99.9*				*79.0-125*		*05/30/2019 20:35*	WG1288830

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.142		0.000190	0.000500	0.000500	1	05/30/2019 20:59	WG1288830
Toluene	0.00981		0.000412	0.00100	0.00100	1	05/30/2019 20:59	WG1288830
Ethylbenzene	0.0276		0.000160	0.000500	0.000500	1	05/30/2019 20:59	WG1288830
Total Xylene	0.104		0.000510	0.00150	0.00150	1	05/30/2019 20:59	WG1288830
(S) a,a,a-Trifluorotoluene(PID)	*99.2*				*79.0-125*		*05/30/2019 20:59*	WG1288830

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.000265	J	0.000190	0.000500	0.000500	1	06/01/2019 16:51	WG1289067
Toluene	0.000544	J	0.000412	0.00100	0.00100	1	06/01/2019 16:51	WG1289067
Ethylbenzene	0.000225	J	0.000160	0.000500	0.000500	1	06/01/2019 16:51	WG1289067
Total Xylene	0.000846	B J	0.000510	0.00150	0.00150	1	06/01/2019 16:51	WG1289067
(S) a,a,a-Trifluorotoluene(PID)	*98.0*				*79.0-125*		*06/01/2019 16:51*	WG1289067

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.149		0.000950	0.000500	0.00250	5	06/01/2019 17:11	WG1289067
Toluene	0.00822		0.00206	0.00100	0.00500	5	06/01/2019 17:11	WG1289067
Ethylbenzene	0.0248		0.000800	0.000500	0.00250	5	06/01/2019 17:11	WG1289067
Total Xylene	0.0847		0.00255	0.00150	0.00750	5	06/01/2019 17:11	WG1289067
(S) a,a,a-Trifluorotoluene(PID)	*95.5*				*79.0-125*		*06/01/2019 17:11*	WG1289067

Method Blank (MB)

(MB) R3416511-3 05/30/19 12:00

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	0.000169	J	0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*98.8*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3416511-1 05/30/19 10:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0484	96.8	77.0-122	
Toluene	0.0500	0.0528	106	80.0-121	
Ethylbenzene	0.0500	0.0538	108	80.0-123	
Total Xylene	0.150	0.169	113	47.0-154	
(S) a,a,a-Trifluorotoluene(PID)			*98.7*	*79.0-125*	

Method Blank (MB)

(MB) R3417212-4 06/01/19 14:52

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*96.6*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3417212-1 06/01/19 13:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0471	94.3	77.0-122	
Toluene	0.0500	0.0465	93.0	80.0-121	
Ethylbenzene	0.0500	0.0497	99.4	80.0-123	
Total Xylene	0.150	0.154	103	47.0-154	
(S) a,a,a-Trifluorotoluene(PID)			*96.2*	*79.0-125*	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

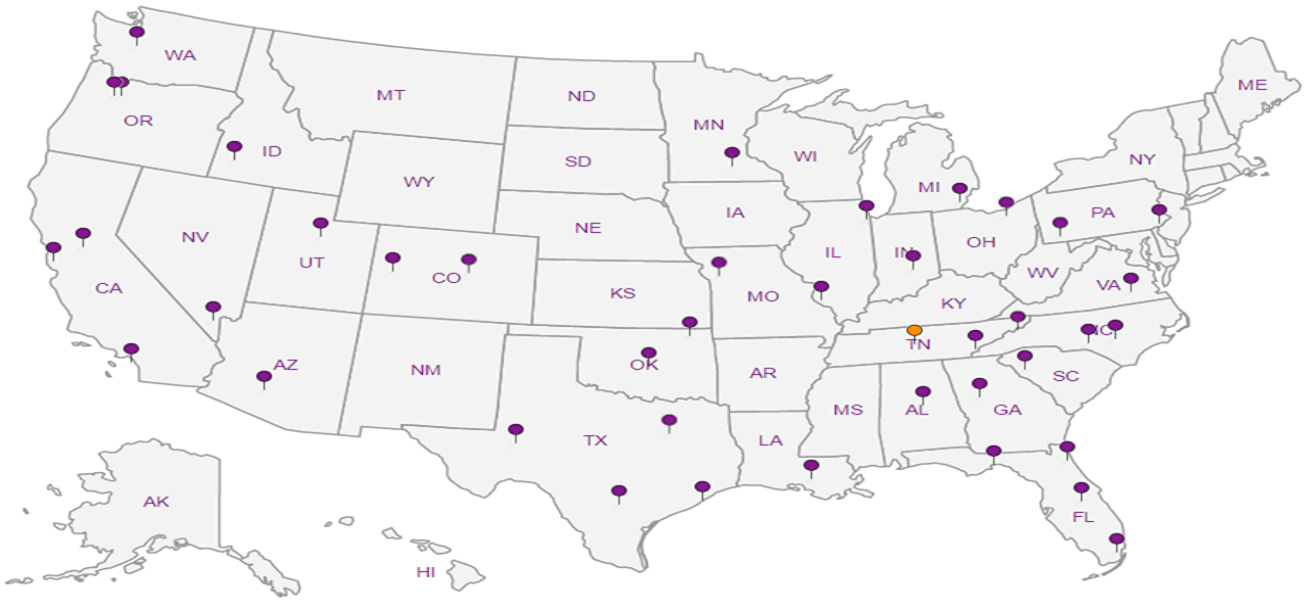
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Pres Chk

Report to: **Chris G. Knight, John Schnable**

Email To: **Christopher.Knight@ghd.com; John.Schnable@ghd.com**

Project Description: **Darr Angell #2- Lea County, New Mexico**

City/State Collected:

Phone: **432-686-0086**
Fax:

Client Project # **074685**

Lab Project # **PLAINSGHD-074685**

Collected by (print): Heath Boyd

Site/Facility ID # **SRS#: LF 1999-62**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX 40mlAmb-HCl	Remarks	Sample # (lab only)
MW-11	Grab	GW	DTW	5/21/19	743	3	3		-01
MW-12		GW			839		3		-02
RW-11		GW			1012		3		-03
MW-4R		GW			902		3		-04
Dup-01		GW	✓	✓	—		3		-05
		GW							
		GW							
		GW							
		GW							
TRIP BLANK		GW							

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 110 2383
B059

Acctnum: **PLAINSGHD**
Template: **T139790**
Prelogin: **P708919**
TSR: **134 - Mark W. Beasley**
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Report SDLs
Flag Estimated Concentrations

RAD SCREEN: <0.5 mR/hr

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 4882 8631 2344 2311

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	5/23/19	1400	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes (No) HCL / MeoH TBR

Temp: 1.4° +.1 °C 1.5° Bottles Received: 15

Date: 5/24/19 Time: 0830

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

June 25, 2019

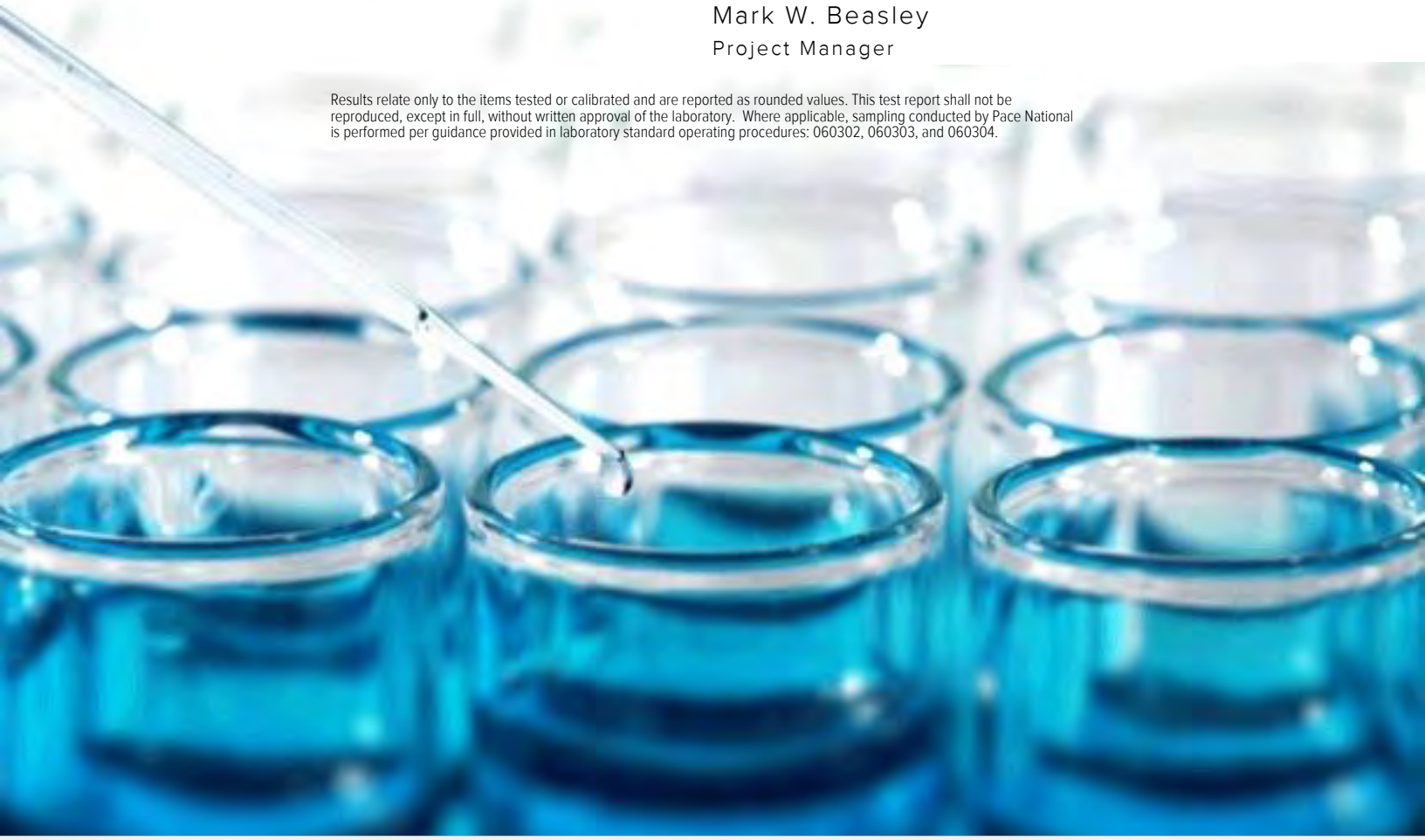
Plains All American, LP - GHD

Sample Delivery Group:	L1110887
Samples Received:	06/20/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	James Ornelas 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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DARR2-PUMP OFF-061919 L1110887-01 Air

Collected by: Justin Nixon
Collected date/time: 06/19/19 09:30
Received date/time: 06/20/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1299139	20	06/21/19 00:03	06/21/19 00:03	MBF	Mt. Juliet, TN
Volatile Organic Compounds (MS) by Method M18-Mod	WG1299904	400	06/22/19 00:41	06/22/19 00:41	AMC	Mt. Juliet, TN

DARR2-PUMP ON-061919 L1110887-02 Air

Collected by: Justin Nixon
Collected date/time: 06/19/19 09:55
Received date/time: 06/20/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1299139	80	06/21/19 00:45	06/21/19 00:45	MBF	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 06/25/2019 09:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1110887-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1299139 and WG1299904

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 06/25/2019 09:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1110887-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1299139 and WG1299904

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 06/25/2019 09:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1110887-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1299139 and WG1299904

ER #[1]	Description
	The Exception Report intentionally left blank, there are no exceptions applied to this SDG.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	4.00	12.8	204	652		20	WG1299139
Toluene	108-88-3	92.10	4.00	15.1	365	1370		20	WG1299139
Ethylbenzene	100-41-4	106	4.00	17.3	79.4	344		20	WG1299139
m&p-Xylene	1330-20-7	106	8.00	34.7	399	1730		20	WG1299139
o-Xylene	95-47-6	106	4.00	17.3	128	556		20	WG1299139
Methyl tert-butyl ether	1634-04-4	88.10	4.00	14.4	ND	ND		20	WG1299139
TPH (GC/MS) Low Fraction	8006-61-9	101	20000	82600	403000	1660000		400	WG1299904
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*104*				WG1299139
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*97.5*				WG1299904

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	16.0	51.1	39.0	125		80	WG1299139
Toluene	108-88-3	92.10	16.0	60.3	135	510		80	WG1299139
Ethylbenzene	100-41-4	106	16.0	69.4	111	480		80	WG1299139
m&p-Xylene	1330-20-7	106	32.0	139	344	1490		80	WG1299139
o-Xylene	95-47-6	106	16.0	69.4	66.8	290		80	WG1299139
Methyl tert-butyl ether	1634-04-4	88.10	16.0	57.7	ND	ND		80	WG1299139
TPH (GC/MS) Low Fraction	8006-61-9	101	4000	16500	19000	78600		80	WG1299139
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*98.1*				WG1299139

Method Blank (MB)

(MB) R3422972-3 06/20/19 11:00

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0460	0.200
Ethylbenzene	U		0.0506	0.200
MTBE	U		0.0505	0.200
Toluene	U		0.0499	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
TPH (GC/MS) Low Fraction	U		6.91	50.0
(S) 1,4-Bromofluorobenzene	*96.2*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3422972-1 06/20/19 09:30 • (LCSD) R3422972-2 06/20/19 10:14

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
MTBE	3.75	4.28	4.24	114	113	70.0-130			1.03	25
Benzene	3.75	4.57	4.46	122	119	70.0-130			2.55	25
Toluene	3.75	4.41	4.34	118	116	70.0-130			1.54	25
Ethylbenzene	3.75	4.42	4.38	118	117	70.0-130			0.928	25
m&p-Xylene	7.50	8.63	8.56	115	114	70.0-130			0.824	25
o-Xylene	3.75	4.32	4.33	115	115	70.0-130			0.0960	25
TPH (GC/MS) Low Fraction	203	235	234	116	116	70.0-130			0.386	25
(S) 1,4-Bromofluorobenzene				*99.0*	*99.5*	*60.0-140*				

1 Cp
2 Tc
3 Ss
4 Cn
5 Tr
6 Sr
7 Qc
8 Gl
9 Al
10 Sc

Method Blank (MB)

(MB) R3423605-3 06/21/19 10:24

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
TPH (GC/MS) Low Fraction	U		6.91	50.0
(S) 1,4-Bromofluorobenzene	*95.2*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3423605-1 06/21/19 08:53 • (LCSD) R3423605-2 06/21/19 09:37

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/MS) Low Fraction	203	238	239	118	118	70.0-130			0.192	25
(S) 1,4-Bromofluorobenzene				*98.5*	*99.2*	*60.0-140*				

1 Cp
2 Tc
3 Ss
4 Cn
5 Tr
6 Sr
7 Qc
8 Gl
9 Al
10 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

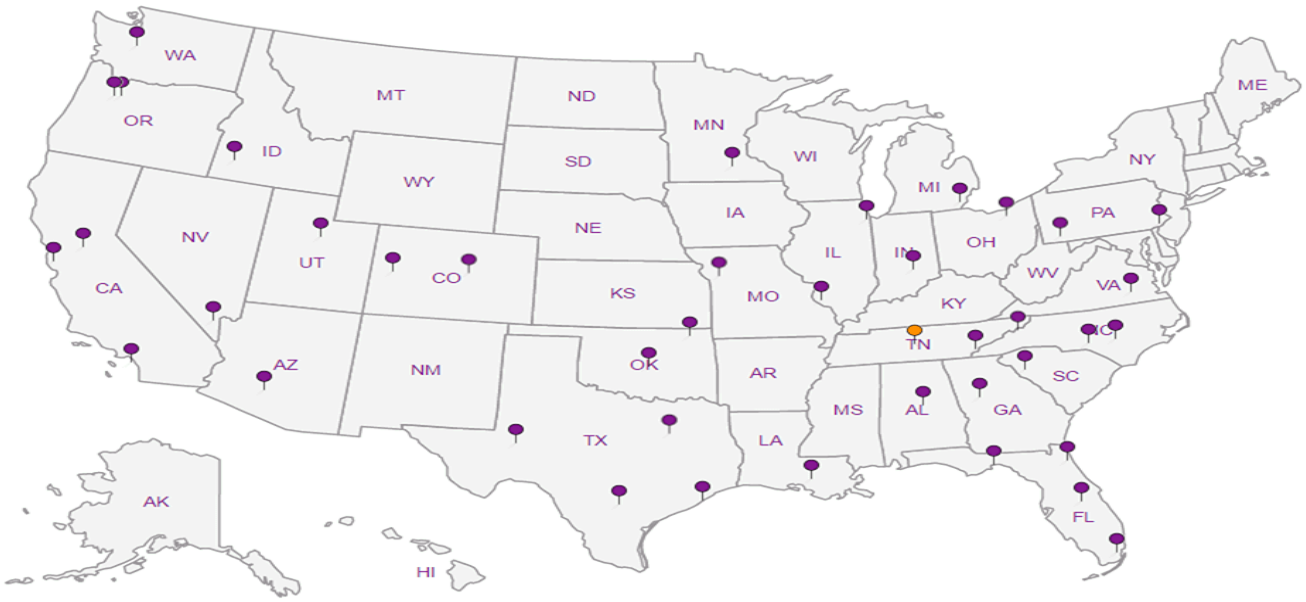
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Report to: Chris G. Knight, John Schnable

Email To: Christopher.Knight@ghd.com; John.Schnable@ghd.com

Project Description: Darr Angell #2- Lea County, New Mexico

City/State Collected:

Phone: 432-686-0086
Fax:

Client Project # 074685

Lab Project # PLAINSGHD-074685

Collected by (print): Justin Lixan

Site/Facility ID # SRS#: LF 1999-62

P.O. #

Collected by (signature):

Immediately Packed on Ice N____ Y____

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

M18-MOD Tedlar

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	M18-MOD Tedlar	Remarks	Sample # (lab only)
Darr2-pumpoff-061919	G	Air	—	6-19-19	930	1	X		-01
Darr2-pumpon-061919	G	Air	—	6-19-19	955	1	X		-02
		Air				1	X		
		Air				1	X		
		Air				1	X		

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1110887
A146

Acctnum: PLAINSGHD
Template: T140281
Prelogin: P708918
TSR: 134 - Mark W. Beasley
PB: 5-13-19 Gm
Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx X Courier __ _____

Tracking # 4430 3423 6719

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	6-19-19			Ø	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:	
				Amb 2 air	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:	Hold: / Condition: NCF / OK
				6-20-19 9:00	

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 02, 2019

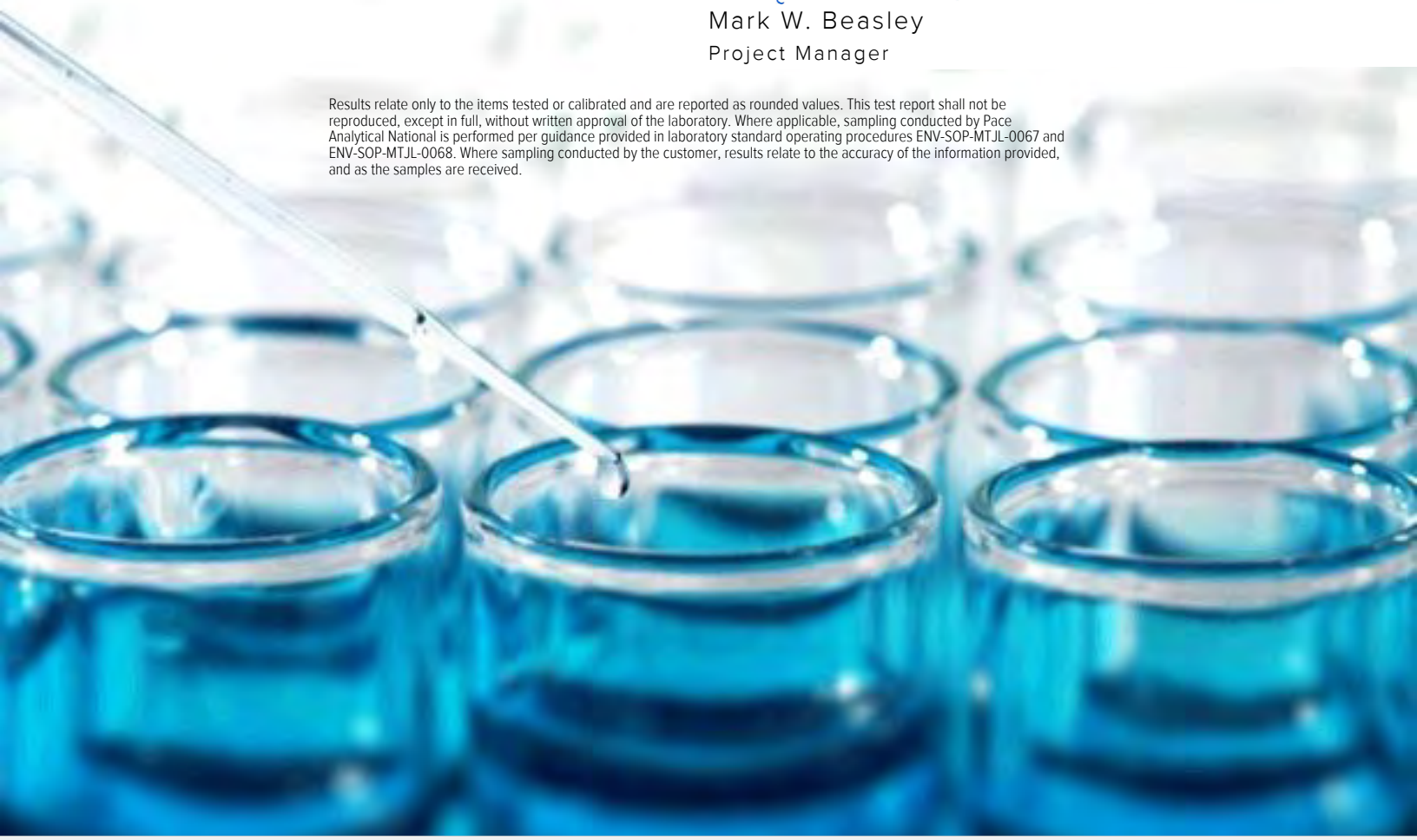
Plains All American, LP - GHD

Sample Delivery Group:	L1122862
Samples Received:	07/26/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	James Ornelas 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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MW-4R-072319 L1122862-01 GW

Collected by: Justin Nixon | Collected date/time: 07/23/19 15:35 | Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1319205	1	07/29/19 19:10	07/29/19 19:10	BMB	Mt. Juliet, TN

MW-12-072319 L1122862-02 GW

Collected by: Justin Nixon | Collected date/time: 07/23/19 10:00 | Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1319205	1	07/29/19 19:33	07/29/19 19:33	BMB	Mt. Juliet, TN

RW12-072319 L1122862-03 GW

Collected by: Justin Nixon | Collected date/time: 07/23/19 10:45 | Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1319205	10	07/29/19 20:21	07/29/19 20:21	BMB	Mt. Juliet, TN

RW-11-072319 L1122862-04 GW

Collected by: Justin Nixon | Collected date/time: 07/23/19 17:30 | Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1319205	1	07/29/19 19:57	07/29/19 19:57	BMB	Mt. Juliet, TN

DUP-1-072319 L1122862-05 GW

Collected by: Justin Nixon | Collected date/time: 07/23/19 00:00 | Received date/time: 07/26/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1319881	1	07/30/19 13:01	07/30/19 13:01	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1320778	25	08/01/19 06:47	08/01/19 06:47	ADM	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 08/02/2019 19:27
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1122862-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1319881, WG1319205 and WG1320778

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 08/02/2019 19:27
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1122862-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1319881, WG1319205 and WG1320778

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?			X		
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?			X		
		Were ion abundance data within the method-required QC limits?			X		
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 08/02/2019 19:27
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1122862-01, 02, 03, 04 and 05
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1319881, WG1319205 and WG1320778

ER #[1]	Description
	The Exception Report intentionally left blank, there are no exceptions applied to this SDG.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	07/29/2019 19:10	WG1319205
Toluene	U		0.000412	0.00100	0.00100	1	07/29/2019 19:10	WG1319205
Ethylbenzene	U		0.000160	0.000500	0.000500	1	07/29/2019 19:10	WG1319205
Total Xylene	U		0.000510	0.00150	0.00150	1	07/29/2019 19:10	WG1319205
(S) a,a,a-Trifluorotoluene(PID)	*102*				*79.0-125*		*07/29/2019 19:10*	WG1319205

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	U		0.000190	0.000500	0.000500	1	07/29/2019 19:33	WG1319205
Toluene	U		0.000412	0.00100	0.00100	1	07/29/2019 19:33	WG1319205
Ethylbenzene	U		0.000160	0.000500	0.000500	1	07/29/2019 19:33	WG1319205
Total Xylene	U		0.000510	0.00150	0.00150	1	07/29/2019 19:33	WG1319205
(S) a,a,a-Trifluorotoluene(PID)	*102*				*79.0-125*		*07/29/2019 19:33*	WG1319205

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	1.58		0.00190	0.000500	0.00500	10	07/29/2019 20:21	WG1319205
Toluene	0.159		0.00412	0.00100	0.0100	10	07/29/2019 20:21	WG1319205
Ethylbenzene	0.0746		0.00160	0.000500	0.00500	10	07/29/2019 20:21	WG1319205
Total Xylene	0.492		0.00510	0.00150	0.0150	10	07/29/2019 20:21	WG1319205
(S) a,a,a-Trifluorotoluene(PID)	*101*				*79.0-125*		*07/29/2019 20:21*	WG1319205

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.115		0.000190	0.000500	0.000500	1	07/29/2019 19:57	WG1319205
Toluene	0.00220		0.000412	0.00100	0.00100	1	07/29/2019 19:57	WG1319205
Ethylbenzene	0.0212		0.000160	0.000500	0.000500	1	07/29/2019 19:57	WG1319205
Total Xylene	0.0620		0.000510	0.00150	0.00150	1	07/29/2019 19:57	WG1319205
(S) a,a,a-Trifluorotoluene(PID)	*100*				*79.0-125*		*07/29/2019 19:57*	WG1319205

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	1.13		0.00475	0.000500	0.0125	25	08/01/2019 06:47	WG1320778
Toluene	0.230		0.000412	0.00100	0.00100	1	07/30/2019 13:01	WG1319881
Ethylbenzene	0.219		0.000160	0.000500	0.000500	1	07/30/2019 13:01	WG1319881
Total Xylene	0.437		0.000510	0.00150	0.00150	1	07/30/2019 13:01	WG1319881
(S) a,a,a-Trifluorotoluene(PID)	*95.5*				*79.0-125*		*07/30/2019 13:01*	WG1319881
(S) a,a,a-Trifluorotoluene(PID)	*103*				*79.0-125*		*08/01/2019 06:47*	WG1320778

Method Blank (MB)

(MB) R3436571-2 07/29/19 10:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*102*			*79.0-125*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3436571-1 07/29/19 09:28 • (LCSD) R3436571-3 07/29/19 20:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.0534	0.0470	107	94.1	77.0-122			12.7	20
Toluene	0.0500	0.0519	0.0455	104	90.9	80.0-121			13.2	20
Ethylbenzene	0.0500	0.0563	0.0497	113	99.4	80.0-123			12.5	20
Total Xylene	0.150	0.168	0.146	112	97.0	47.0-154			14.1	20
(S) a,a,a-Trifluorotoluene(PID)				*101*	*103*	*79.0-125*				

Method Blank (MB)

(MB) R3436079-3 07/30/19 11:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*102*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3436079-1 07/30/19 10:31

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Toluene	0.0500	0.0449	89.7	80.0-121	
Ethylbenzene	0.0500	0.0487	97.4	80.0-123	
Total Xylene	0.150	0.144	95.7	47.0-154	
(S) a,a,a-Trifluorotoluene(PID)			*102*	*79.0-125*	

Method Blank (MB)

(MB) R3436592-2 08/01/19 00:38

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
(S) a,a,a-Trifluorotoluene(PID)	*103*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3436592-1 07/31/19 23:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0517	103	77.0-122	
(S) a,a,a-Trifluorotoluene(PID)			*102*	*79.0-125*	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

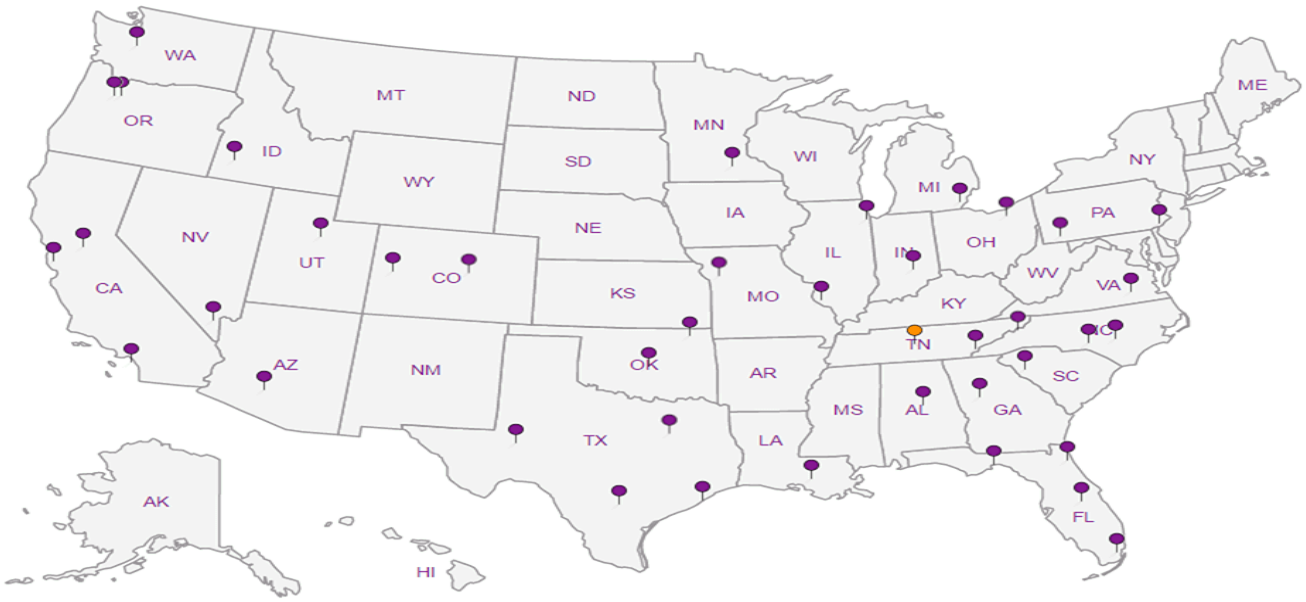
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Pres Chk

Report to: James Ornelas

Email To: Christopher.Knight@ghd.com; james.ornelas@ghd.com

Project Description: Darr Angell #2- Lea County, New Mexico

City/State Collected:

Phone: 432-686-0086
Fax:

Client Project # 074685

Lab Project # PLAINSGHD-074685

Collected by (print): Justin Nixon

Site/Facility ID # SRS#: LF 1999-62

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Quote #

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX 40ml Amb-HCl									Remarks	Sample # (lab only)
MW-4R-072319	G	GW		7-23-19	1535	3	X										-01
MW-12-072319		GW			1600	3	X										02
RW12-072319		GW			1645	3	X										03
RW-11-072319		GW			1730	3	X										04
Dup-1-072319		GW			-	3	X										05
		GW															
		GW															
		GW															
		GW															
TRIP BLANK		GW															

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

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L# L1122862
1243

Acctnum: PLAINSGHD
Template: T139790
Prelogin: P719649
TSR: 134 - Mark W. Beasley
PB:
Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Report SDLs
Flag estimated concentrations

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx X Courier _____

Tracking # 4510 1659 5774

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	7-25-19	1715		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
				5.3 to 5.3 15
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
				7/26/19 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

August 30, 2019

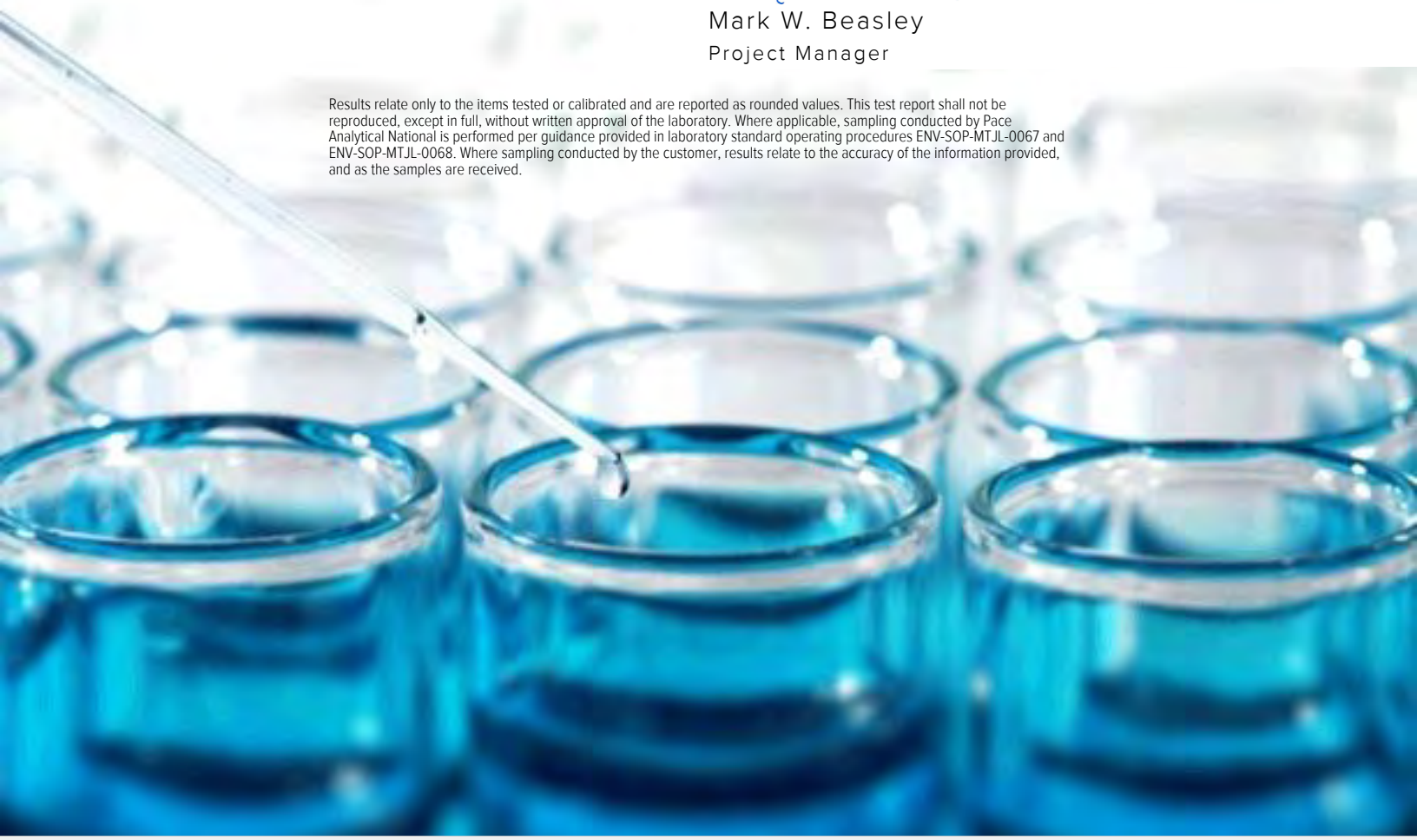
Plains All American, LP - GHD

Sample Delivery Group:	L1133471
Samples Received:	08/28/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	James Ornelas 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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DARR-2-EZHAUST-PUMPOFF-081419 L1133471-01 Air

Collected by	Collected date/time	Received date/time
	08/14/19 13:00	08/28/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1336161	2000	08/28/19 23:58	08/28/19 23:58	MBF	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 08/30/2019 14:38
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1133471-01
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1336161

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 08/30/2019 14:38
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1133471-01
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1336161

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 08/30/2019 14:38
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1133471-01
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1336161

ER #[1]	Description
	The Exception Report intentionally left blank, there are no exceptions applied to this SDG.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	400	1280	36600	117000		2000	WG1336161
Toluene	108-88-3	92.10	400	1510	49400	186000		2000	WG1336161
Ethylbenzene	100-41-4	106	400	1730	7050	30500		2000	WG1336161
m&p-Xylene	1330-20-7	106	800	3470	36800	160000		2000	WG1336161
o-Xylene	95-47-6	106	400	1730	10600	46100		2000	WG1336161
Methyl tert-butyl ether	1634-04-4	88.10	400	1440	ND	ND		2000	WG1336161
TPH (GC/MS) Low Fraction	8006-61-9	101	100000	413000	5060000	20900000		2000	WG1336161
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*101*				WG1336161

Method Blank (MB)

(MB) R3445016-3 08/28/19 10:33

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0460	0.200
Ethylbenzene	U		0.0506	0.200
MTBE	U		0.0505	0.200
Toluene	U		0.0499	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
TPH (GC/MS) Low Fraction	34.5	J	6.91	50.0
(S) 1,4-Bromofluorobenzene	*97.5*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3445016-1 08/28/19 09:08 • (LCSD) R3445016-2 08/28/19 09:51

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
MTBE	3.75	4.46	4.39	119	117	70.0-130			1.59	25
Benzene	3.75	4.64	4.59	124	122	70.0-130			1.13	25
Toluene	3.75	4.58	4.49	122	120	70.0-130			1.94	25
Ethylbenzene	3.75	4.74	4.65	126	124	70.0-130			1.87	25
m&p-Xylene	7.50	9.52	9.19	127	123	70.0-130			3.56	25
o-Xylene	3.75	4.73	4.60	126	123	70.0-130			2.73	25
TPH (GC/MS) Low Fraction	203	239	236	118	117	70.0-130			0.981	25
(S) 1,4-Bromofluorobenzene				*99.7*	*97.9*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

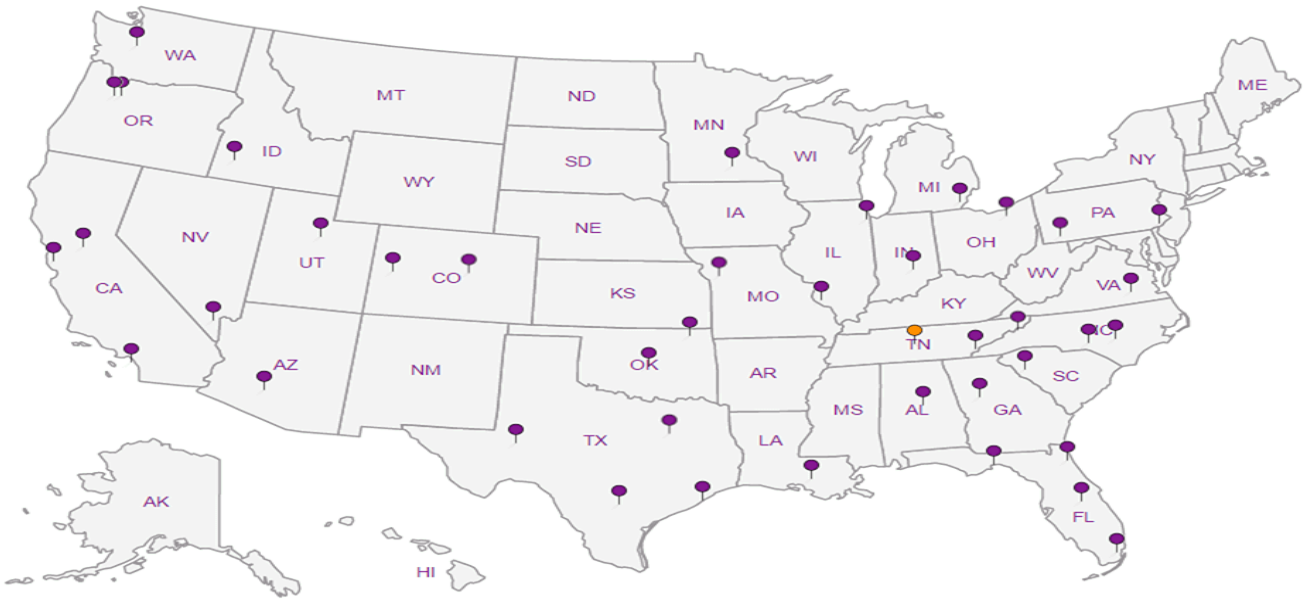
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Report to: ~~James Ornelas~~ John Schnable

Email To: Christopher.Knight@ghd.com; ~~james.ornelas@ghd.com~~ John.Schnable@GHD.com

Project Description: **Darr Angell #2- Lea County, New Mexico**

City/State Collected:

Phone: **432-686-0086**
Fax:

Client Project # **074685**

Lab Project # **PLAINSGHD-074685**

Collected by (print):

Site/Facility ID # **SRS#: LF 1999-62**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1133471

G229

Acctnum: **PLAINSGHD**
Template: **T140281**
Prelogin: **P720014**
TSR: **134 - Mark W. Beasley**
PB: To 7-17-19
Shipped Via: **FedEX Ground**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	M18-MOD Tedlar									Remarks	Sample # (lab only)
Darr-2-Exhaust-Pumpoff-081419	Grab	Air	—	8/14/19	1300	1	X										-01
		Air				1	X										
		Air				1	X										

SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 1082 5991 4540

Sample Receipt Checklist

COC Signed/Accurate:	X	N
Bottles arrive intact:	X	N
Correct bottles used:	X	N
Sufficient volume sent:	X	N
If Applicable		
VOA Zero Headspace:	Y	N
Preservation Correct/Checked:	Y	N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
	8/14/19	1800		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: °C Bottles Received:
				Amb 1
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: Time:
			Carol Kemp	8/28/19 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

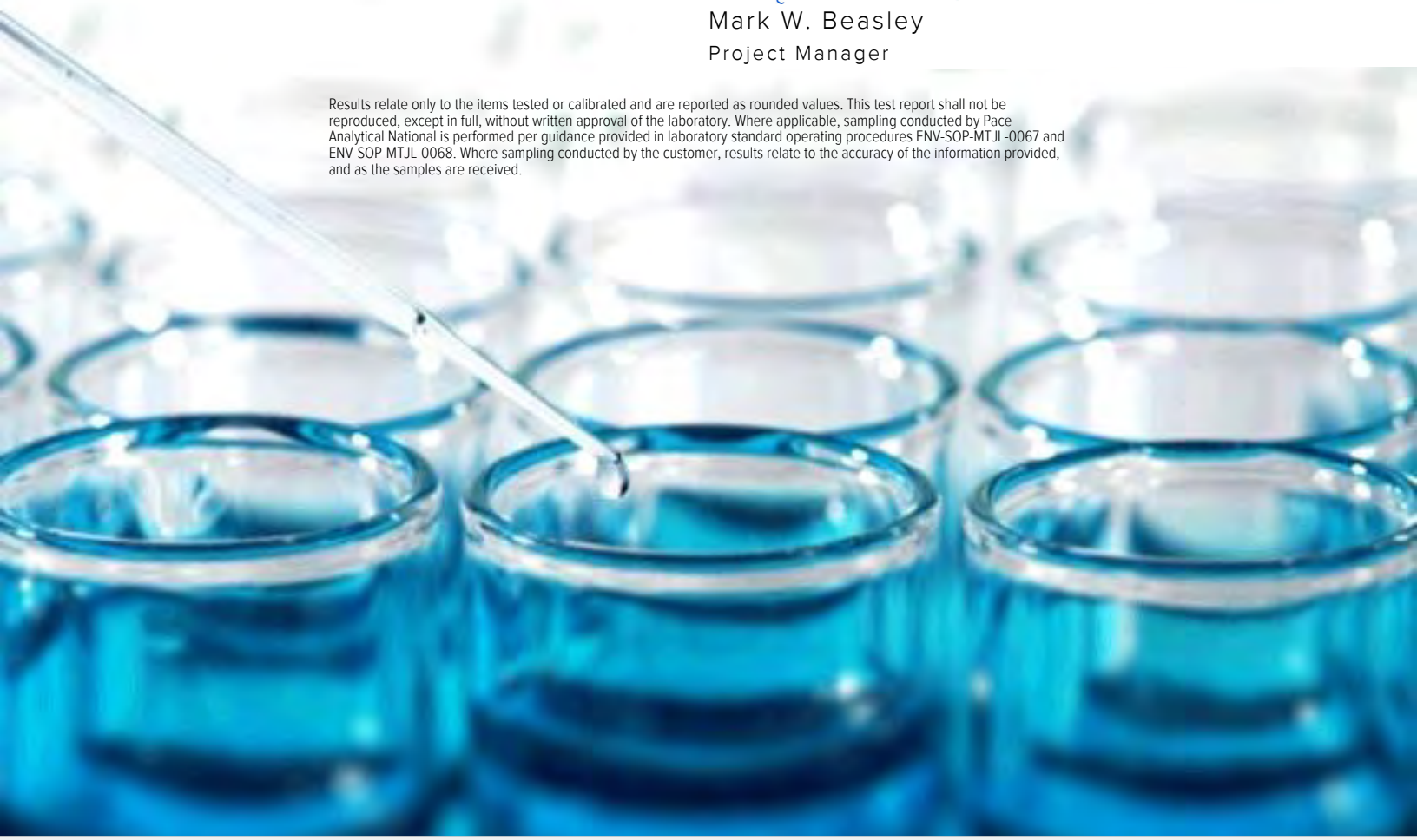
November 06, 2019

Plains All American, LP - GHD

Sample Delivery Group:	L1154397
Samples Received:	10/26/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	John Schnable 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



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MW-8-102219 L1154397-01 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 17:05 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 04:06	11/05/19 04:06	ACG	Mt. Juliet, TN

MW-9-102219 L1154397-02 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 17:30 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 04:26	11/05/19 04:26	ACG	Mt. Juliet, TN

MW-4R-102219 L1154397-03 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 17:45 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 04:47	11/05/19 04:47	ACG	Mt. Juliet, TN

MW-12-102219 L1154397-04 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 18:10 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 05:08	11/05/19 05:08	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1370550	1	10/29/19 17:41	10/30/19 03:54	AAT	Mt. Juliet, TN

RW11-102219 L1154397-05 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 18:30 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 05:28	11/05/19 05:28	ACG	Mt. Juliet, TN

RW12-102219 L1154397-06 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 19:05 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	10	11/05/19 05:49	11/05/19 05:49	ACG	Mt. Juliet, TN

DUP-1-102219 L1154397-07 GW

Collected by: Justin Nixon | Collected date/time: 10/22/19 00:00 | Received date/time: 10/26/19 08:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8021B	WG1374701	1	11/05/19 06:09	11/05/19 06:09	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8021B	WG1375386	25	11/05/19 17:56	11/05/19 17:56	ACG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

Sample Delivery Group (SDG) Narrative

VOC pH outside of method requirement.

Lab Sample ID	Project Sample ID	Method
L1154397-01	MW-8-102219	8021B

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 11/06/2019 14:32
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1154397-01, 02, 03, 04, 05, 06 and 07
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1370550, WG1374701 and WG1375386

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?		X			1
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 11/06/2019 14:32
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1154397-01, 02, 03, 04, 05, 06 and 07
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1370550, WG1374701 and WG1375386

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 11/06/2019 14:32
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1154397-01, 02, 03, 04, 05, 06 and 07
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1370550, WG1374701 and WG1375386

ER #[1]	Description
1	8021B WG1374701 L1154397-01: VOC pH outside of method requirement.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.000773		0.000190	0.000500	0.000500	1	11/05/2019 04:06	WG1374701
Toluene	0.000654	J	0.000412	0.00100	0.00100	1	11/05/2019 04:06	WG1374701
Ethylbenzene	0.000780		0.000160	0.000500	0.000500	1	11/05/2019 04:06	WG1374701
Total Xylene	0.00239		0.000510	0.00150	0.00150	1	11/05/2019 04:06	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*100*				*79.0-125*		*11/05/2019 04:06*	WG1374701

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.000344	J	0.000190	0.000500	0.000500	1	11/05/2019 04:26	WG1374701
Toluene	0.000609	J	0.000412	0.00100	0.00100	1	11/05/2019 04:26	WG1374701
Ethylbenzene	0.000289	J	0.000160	0.000500	0.000500	1	11/05/2019 04:26	WG1374701
Total Xylene	0.00114	J	0.000510	0.00150	0.00150	1	11/05/2019 04:26	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*100*				*79.0-125*		*11/05/2019 04:26*	WG1374701

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.000301	J	0.000190	0.000500	0.000500	1	11/05/2019 04:47	WG1374701
Toluene	0.000535	J	0.000412	0.00100	0.00100	1	11/05/2019 04:47	WG1374701
Ethylbenzene	0.000380	J	0.000160	0.000500	0.000500	1	11/05/2019 04:47	WG1374701
Total Xylene	0.00172		0.000510	0.00150	0.00150	1	11/05/2019 04:47	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*100*				*79.0-125*		*11/05/2019 04:47*	WG1374701

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result mg/l	Qualifier	SDL mg/l	Unadj. MQL mg/l	MQL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.000319	J	0.000190	0.000500	0.000500	1	11/05/2019 05:08	WG1374701
Toluene	0.000583	J	0.000412	0.00100	0.00100	1	11/05/2019 05:08	WG1374701
Ethylbenzene	0.000321	J	0.000160	0.000500	0.000500	1	11/05/2019 05:08	WG1374701
Total Xylene	0.00138	J	0.000510	0.00150	0.00150	1	11/05/2019 05:08	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*100*				*79.0-125*		*11/05/2019 05:08*	WG1374701

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	SDL mg/l	Unadj. MQL mg/l	MQL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000140	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Acenaphthene	U		0.0000100	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Acenaphthylene	U		0.0000120	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Benzo(a)anthracene	U		0.00000410	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Benzo(a)pyrene	U		0.0000116	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Benzo(b)fluoranthene	U		0.00000212	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Benzo(g,h,i)perylene	U		0.00000227	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Benzo(k)fluoranthene	U		0.0000136	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Chrysene	U		0.0000108	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Dibenz(a,h)anthracene	U		0.00000396	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Dibenzofuran	0.0000235	B J	0.00000105	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Fluoranthene	U		0.0000157	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Fluorene	0.0000217	J	0.00000850	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Naphthalene	0.000197	J	0.0000198	0.000250	0.000250	1	10/30/2019 03:54	WG1370550
Phenanthrene	0.0000231	J	0.00000820	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
Pyrene	U		0.0000117	0.0000500	0.0000500	1	10/30/2019 03:54	WG1370550
1-Methylnaphthalene	0.000123	B J	0.00000821	0.000250	0.000250	1	10/30/2019 03:54	WG1370550
2-Methylnaphthalene	0.000101	B J	0.00000902	0.000250	0.000250	1	10/30/2019 03:54	WG1370550
(S) Nitrobenzene-d5	*127*				*31.0-160*		*10/30/2019 03:54*	WG1370550
(S) 2-Fluorobiphenyl	*117*				*48.0-148*		*10/30/2019 03:54*	WG1370550
(S) p-Terphenyl-d14	*117*				*37.0-146*		*10/30/2019 03:54*	WG1370550

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.167		0.000190	0.000500	0.000500	1	11/05/2019 05:28	WG1374701
Toluene	0.00805		0.000412	0.00100	0.00100	1	11/05/2019 05:28	WG1374701
Ethylbenzene	0.0287		0.000160	0.000500	0.000500	1	11/05/2019 05:28	WG1374701
Total Xylene	0.0937		0.000510	0.00150	0.00150	1	11/05/2019 05:28	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*120*				*79.0-125*		*11/05/2019 05:28*	WG1374701

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	1.12		0.00190	0.000500	0.00500	10	11/05/2019 05:49	WG1374701
Toluene	0.186		0.00412	0.00100	0.0100	10	11/05/2019 05:49	WG1374701
Ethylbenzene	0.353		0.00160	0.000500	0.00500	10	11/05/2019 05:49	WG1374701
Total Xylene	0.389		0.00510	0.00150	0.0150	10	11/05/2019 05:49	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*118*				*79.0-125*		*11/05/2019 05:49*	WG1374701

Volatile Organic Compounds (GC) by Method 8021B

Analyte	Result	Qualifier	SDL	Unadj. MQL	MQL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l	mg/l		date / time	
Benzene	0.950		0.00475	0.000500	0.0125	25	11/05/2019 17:56	WG1375386
Toluene	0.112		0.000412	0.00100	0.00100	1	11/05/2019 06:09	WG1374701
Ethylbenzene	0.186		0.000160	0.000500	0.000500	1	11/05/2019 06:09	WG1374701
Total Xylene	0.256		0.000510	0.00150	0.00150	1	11/05/2019 06:09	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*109*				*79.0-125*		*11/05/2019 06:09*	WG1374701
(S) a,a,a-Trifluorotoluene(PID)	*105*				*79.0-125*		*11/05/2019 17:56*	WG1375386

Method Blank (MB)

(MB) R3468588-2 11/04/19 23:18

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
Toluene	U		0.000412	0.00100
Ethylbenzene	U		0.000160	0.000500
Total Xylene	U		0.000510	0.00150
(S) a,a,a-Trifluorotoluene(PID)	*99.8*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3468588-1 11/04/19 22:22

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0534	107	77.0-122	
Toluene	0.0500	0.0498	99.6	80.0-121	
Ethylbenzene	0.0500	0.0532	106	80.0-123	
Total Xylene	0.150	0.148	98.7	47.0-154	
(S) a,a,a-Trifluorotoluene(PID)			*114*	*79.0-125*	

L1154298-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1154298-05 11/04/19 23:39 • (MS) R3468588-3 11/05/19 06:30 • (MSD) R3468588-4 11/05/19 06:50

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.0500	0.000335	0.0624	0.0517	124	103	1	10.0-160			18.8	21
Toluene	0.0500	U	0.0554	0.0469	111	93.8	1	12.0-148			16.6	21
Ethylbenzene	0.0500	0.000173	0.0569	0.0484	113	96.5	1	22.0-149			16.1	21
Total Xylene	0.150	0.00102	0.158	0.133	105	88.0	1	13.0-155			17.2	21
(S) a,a,a-Trifluorotoluene(PID)					*112*	*110*		*79.0-125*				

Method Blank (MB)

(MB) R3468898-2 11/05/19 11:47

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000190	0.000500
(S) a,a,a-Trifluorotoluene(PID)	*103*			*79.0-125*

Laboratory Control Sample (LCS)

(LCS) R3468898-1 11/05/19 10:40

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0500	0.0597	119	77.0-122	
(S) a,a,a-Trifluorotoluene(PID)			*104*	*79.0-125*	

Method Blank (MB)

(MB) R3466490-3 10/29/19 21:40

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000140	0.0000500
Acenaphthene	U		0.0000100	0.0000500
Acenaphthylene	U		0.0000120	0.0000500
Benzo(a)anthracene	U		0.00000410	0.0000500
Benzo(a)pyrene	U		0.0000116	0.0000500
Benzo(b)fluoranthene	U		0.00000212	0.0000500
Benzo(g,h,i)perylene	U		0.00000227	0.0000500
Benzo(k)fluoranthene	U		0.0000136	0.0000500
Chrysene	U		0.0000108	0.0000500
Dibenz(a,h)anthracene	U		0.00000396	0.0000500
Fluoranthene	U		0.0000157	0.0000500
Fluorene	U		0.00000850	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500
Naphthalene	U		0.0000198	0.000250
Phenanthrene	U		0.00000820	0.0000500
Pyrene	U		0.0000117	0.0000500
1-Methylnaphthalene	0.0000124	J	0.00000821	0.000250
2-Methylnaphthalene	0.0000200	J	0.00000902	0.000250
Dibenzofuran	0.00000719	J	0.00000105	0.0000500
(S) Nitrobenzene-d5	*131*			*31.0-160*
(S) 2-Fluorobiphenyl	*114*			*48.0-148*
(S) p-Terphenyl-d14	*138*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3466490-1 10/29/19 20:58 • (LCSD) R3466490-2 10/29/19 21:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Dibenzofuran	0.00200	0.00210	0.00207	105	103	67.0-134			1.44	20
Anthracene	0.00200	0.00206	0.00207	103	103	67.0-150			0.484	20
Acenaphthene	0.00200	0.00209	0.00206	105	103	65.0-138			1.45	20
Acenaphthylene	0.00200	0.00231	0.00224	115	112	66.0-140			3.08	20
Benzo(a)anthracene	0.00200	0.00223	0.00214	111	107	61.0-140			4.12	20
Benzo(a)pyrene	0.00200	0.00223	0.00220	111	110	60.0-143			1.35	20
Benzo(b)fluoranthene	0.00200	0.00216	0.00205	108	102	58.0-141			5.23	20
Benzo(g,h,i)perylene	0.00200	0.00222	0.00218	111	109	52.0-153			1.82	20
Benzo(k)fluoranthene	0.00200	0.00224	0.00230	112	115	58.0-148			2.64	20
Chrysene	0.00200	0.00216	0.00214	108	107	64.0-144			0.930	20
Dibenz(a,h)anthracene	0.00200	0.00217	0.00214	108	107	52.0-155			1.39	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3466490-1 10/29/19 20:58 • (LCSD) R3466490-2 10/29/19 21:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluoranthene	0.00200	0.00231	0.00226	115	113	69.0-153			2.19	20
Fluorene	0.00200	0.00214	0.00210	107	105	64.0-136			1.89	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00224	0.00220	112	110	54.0-153			1.80	20
Naphthalene	0.00200	0.00191	0.00192	95.5	96.0	61.0-137			0.522	20
Phenanthrene	0.00200	0.00214	0.00211	107	105	62.0-137			1.41	20
Pyrene	0.00200	0.00229	0.00222	114	111	60.0-142			3.10	20
1-Methylnaphthalene	0.00200	0.00199	0.00201	99.5	100	66.0-142			1.00	20
2-Methylnaphthalene	0.00200	0.00189	0.00188	94.5	94.0	62.0-136			0.531	20
(S) Nitrobenzene-d5				*121*	*119*	*31.0-160*				
(S) 2-Fluorobiphenyl				*105*	*108*	*48.0-148*				
(S) p-Terphenyl-d14				*125*	*121*	*37.0-146*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

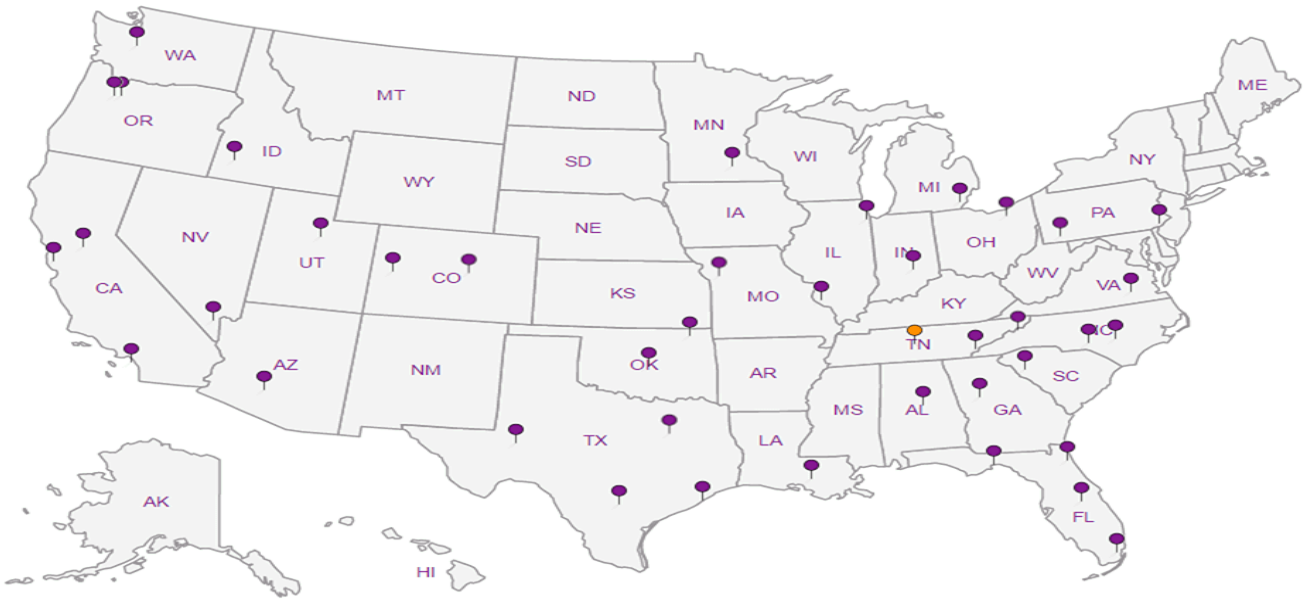
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:

Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to:
John Schnable

Email To: John.Schnable@ghd.com, Christopher.Knight@ghd.com;

Project Description: **Darr Angell #2- Lea County, Ne**

City/State Collected:

Please Circle: PT MT CT ET

Phone: **432-686-0086**
Fax:

Client Project # **074685**

Lab Project # **PLAINSGHD-074685**

Collected by (print): Justin Nixon

Site/Facility ID # **SRS#: LF 1999-62**

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N___ Y X

SDG # L1154399
E243

Acctnum: **PLAINSGHD**
Template: **T139790**
Prelogin: **P736583**
PM: **134 - Mark W. Beasley**
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX 40mlAmb-HCl	PAHSIMLVI 40mlAmb-NoPres-WT	Remarks	Sample # (lab only)
MW-8-102219	G	GW		10-22-19	17:05	3	X			-01
MW-9-102219	↓	GW		10-22-19	17:30	3	X			02
MW-4R-102219	↓	GW		10-22-19	17:45	3	X			03
MW-12-102219	↓	GW		10-22-19	18:10	5	X	X		04
RW-11-102219	↓	GW		10-22-19	18:30	3	X			05
RW-12-102219	↓	GW		10-22-19	19:05	3	X			06
Dup-1-102219	↓	GW		10-22-19	N/A	3	X			07
Trip blank	G	GW		10-22-19	N/A	10	X			
		GW								
TRIP BLANK		GW								

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks: Report to SDLs
Flag estimated Concentrations

pH ______ Temp ______
Flow ______ Other ______

Samples returned via:
__ UPS __ FedEx __ Courier ________

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: X NP __Y __N
COC Signed/Accurate: X __N
Bottles arrive intact: X __N
Correct bottles used: X __N
Sufficient volume sent: X Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: X Y __N
RAD Screen <0.5 mR/hr: X Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	
[signature]	10-25-19	14:00	[signature]	Trip Blank Received: Yes / (No) HCL / MeoH TBR
[signature]	10-25-19	17:00	[signature]	Temp: 2.8±0=2.8 °C Bottles Received: 23
			Received for lab by: (Signature) Carol Kemp	Date: 10/26/19 Time: 8:00

If preservation required by Login: Date/Time

Hold:

Condition: (NCF) / OK

Matt Shacklock

Pace Analytical®
National Center for Testing & Innovation

Login #: L1154397	Client: PLAINSGHD	Date: 10/26/19	Evaluated by: Jeremy

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Courie
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.	x	Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: Did not receive TRIP BLANK

Client informed by:		Call		Email		Voice Mail		Date: 10/28/19	Time: 1030
TSR Initials: MB	Client Contact:								

Login Instructions:

Disregard this TB – reference L1154385-14, L1154391-15, & L1154393-16 for trip blank data

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

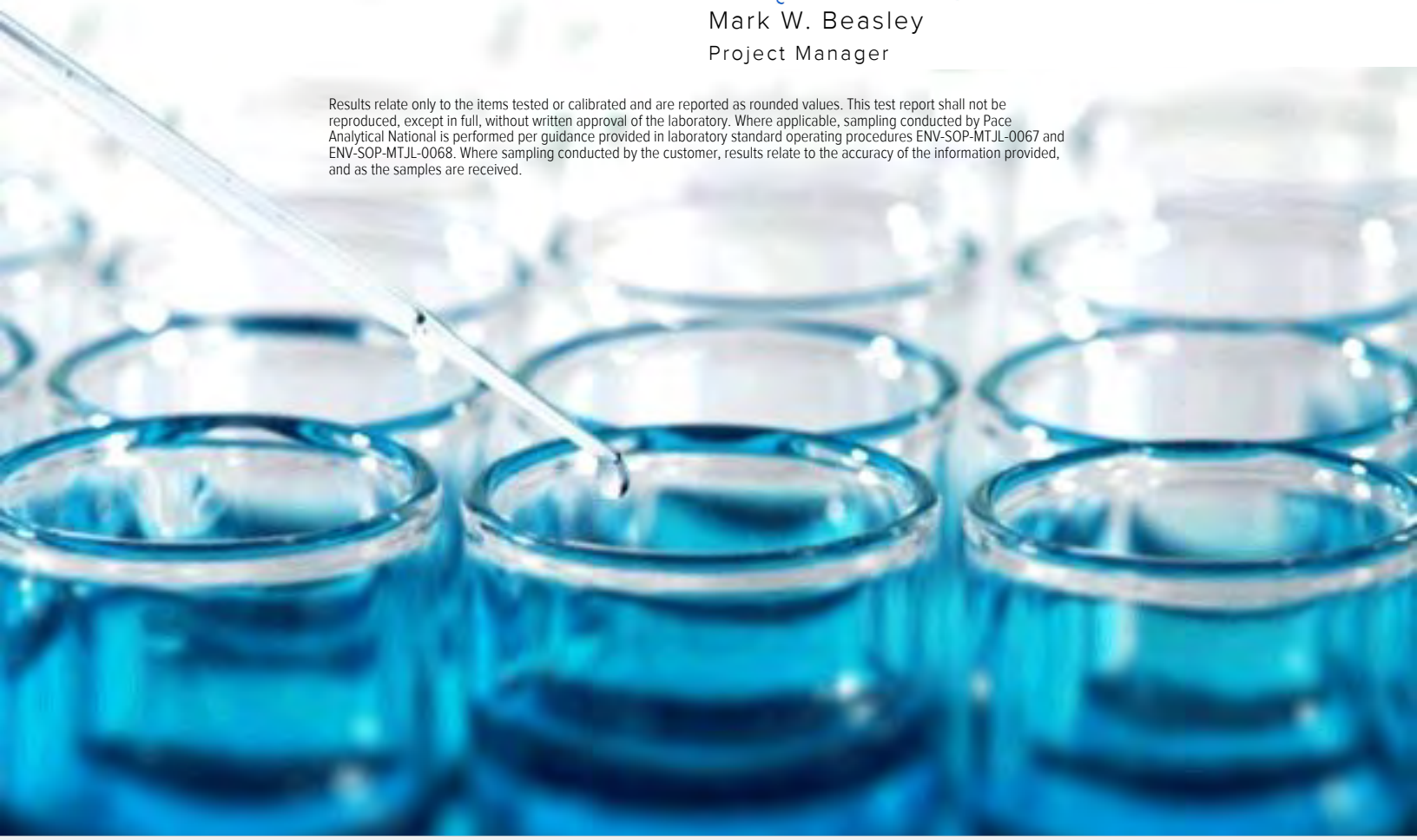
November 26, 2019

Plains All American, LP - GHD

Sample Delivery Group:	L1160934
Samples Received:	11/14/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	John Schnable 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



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RW-11-111219 L1160934-01 GW

Collected by: Justin Nixon
Collected date/time: 11/12/19 13:00
Received date/time: 11/14/19 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270 C-SIM	WG1382732	1	11/18/19 18:13	11/19/19 06:18	ADF	Mt. Juliet, TN

RW-12-111219 L1160934-02 GW

Collected by: Justin Nixon
Collected date/time: 11/12/19 13:30
Received date/time: 11/14/19 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Semi Volatile Organic Compounds (GC/MS) by Method 8270 C-SIM	WG1382732	1	11/18/19 18:13	11/19/19 06:40	ADF	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 11/26/2019 08:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1160934-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1382732

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?	X				
		Were MS/MSD analyzed at the appropriate frequency?	X				
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			1
		Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 11/26/2019 08:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1160934-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1382732

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

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3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 11/26/2019 08:18
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1160934-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1382732

ER #[1]	Description
1	8270 C-SIM WG1382732 Naphthalene: Percent Recovery is outside of established control limits.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Semi Volatile Organic Compounds (GC/MS) by Method 8270 C-SIM

Analyte	Result mg/l	Qualifier	SDL mg/l	Unadj. MQL mg/l	MQL mg/l	Dilution	Analysis date / time	Batch
Anthracene	0.00112		0.00000800	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Acenaphthene	U		0.0000100	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Acenaphthylene	U		0.00000700	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Benzo(a)anthracene	0.000318		0.00000830	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Benzo(a)pyrene	0.0000296	J	0.0000158	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Benzo(b)fluoranthene	0.0000490	J	0.00000212	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Benzo(g,h,i)perylene	0.0000273	J	0.00000227	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Benzo(k)fluoranthene	U		0.0000255	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Chrysene	0.000157		0.0000144	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Dibenz(a,h)anthracene	U		0.00000454	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Dibenzofuran	0.00159		0.00000105	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Fluoranthene	0.000153		0.0000165	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Fluorene	0.00192		0.00000898	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Indeno(1,2,3-cd)pyrene	U		0.00000739	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Naphthalene	0.00242		0.0000120	0.000250	0.000250	1	11/19/2019 06:18	WG1382732
Phenanthrene	0.00325		0.0000184	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
Pyrene	0.000402		0.0000155	0.0000500	0.0000500	1	11/19/2019 06:18	WG1382732
1-Methylnaphthalene	0.00511		0.0000189	0.000250	0.000250	1	11/19/2019 06:18	WG1382732
2-Methylnaphthalene	0.00334		0.0000155	0.000250	0.000250	1	11/19/2019 06:18	WG1382732
2-Chloronaphthalene	U		0.0000165	0.000250	0.000250	1	11/19/2019 06:18	WG1382732
(S) Nitrobenzene-d5	*103*				*11.0-135*		*11/19/2019 06:18*	WG1382732
(S) 2-Fluorobiphenyl	*88.5*				*32.0-120*		*11/19/2019 06:18*	WG1382732
(S) p-Terphenyl-d14	*94.5*				*23.0-122*		*11/19/2019 06:18*	WG1382732
(S) 2-Methylnaphthalene-D10	*83.0*				*50.0-150*		*11/19/2019 06:18*	WG1382732
(S) Fluoranthene-D10	*103*				*50.0-150*		*11/19/2019 06:18*	WG1382732

Semi Volatile Organic Compounds (GC/MS) by Method 8270 C-SIM

Analyte	Result mg/l	Qualifier	SDL mg/l	Unadj. MQL mg/l	MQL mg/l	Dilution	Analysis date / time	Batch
Anthracene	0.0000849		0.00000800	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Acenaphthene	U		0.0000100	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Acenaphthylene	U		0.00000700	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Benzo(a)anthracene	U		0.00000830	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Benzo(a)pyrene	U		0.0000158	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Benzo(b)fluoranthene	U		0.00000212	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Benzo(g,h,i)perylene	U		0.00000227	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Benzo(k)fluoranthene	U		0.0000255	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Chrysene	U		0.0000144	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Dibenz(a,h)anthracene	U		0.00000454	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Dibenzofuran	0.00125		0.00000105	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Fluoranthene	U		0.0000165	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Fluorene	0.000319		0.00000898	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Indeno(1,2,3-cd)pyrene	U		0.00000739	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Naphthalene	0.0104		0.0000120	0.000250	0.000250	1	11/19/2019 06:40	WG1382732
Phenanthrene	0.000714		0.0000184	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
Pyrene	U		0.0000155	0.0000500	0.0000500	1	11/19/2019 06:40	WG1382732
1-Methylnaphthalene	0.00597		0.0000189	0.000250	0.000250	1	11/19/2019 06:40	WG1382732
2-Methylnaphthalene	0.00660		0.0000155	0.000250	0.000250	1	11/19/2019 06:40	WG1382732
2-Chloronaphthalene	U		0.0000165	0.000250	0.000250	1	11/19/2019 06:40	WG1382732
(S) Nitrobenzene-d5	*134*				*11.0-135*		*11/19/2019 06:40*	WG1382732
(S) 2-Fluorobiphenyl	*80.5*				*32.0-120*		*11/19/2019 06:40*	WG1382732
(S) p-Terphenyl-d14	*91.5*				*23.0-122*		*11/19/2019 06:40*	WG1382732
(S) 2-Methylnaphthalene-D10	*112*				*50.0-150*		*11/19/2019 06:40*	WG1382732
(S) Fluoranthene-D10	*106*				*50.0-150*		*11/19/2019 06:40*	WG1382732

Method Blank (MB)

(MB) R3473468-2 11/19/19 00:22

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.00000800	0.0000500
Acenaphthene	U		0.0000100	0.0000500
Acenaphthylene	U		0.00000700	0.0000500
Benzo(a)anthracene	U		0.00000830	0.0000500
Benzo(a)pyrene	U		0.0000158	0.0000500
Benzo(b)fluoranthene	U		0.00000212	0.0000500
Benzo(g,h,i)perylene	U		0.00000227	0.0000500
Benzo(k)fluoranthene	U		0.0000255	0.0000500
Chrysene	U		0.0000144	0.0000500
Dibenz(a,h)anthracene	U		0.00000454	0.0000500
Fluoranthene	U		0.0000165	0.0000500
Fluorene	U		0.00000898	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.00000739	0.0000500
Naphthalene	0.0000325	J	0.0000120	0.000250
Phenanthrene	U		0.0000184	0.0000500
Pyrene	U		0.0000155	0.0000500
1-Methylnaphthalene	U		0.0000189	0.000250
2-Methylnaphthalene	0.0000161	J	0.0000155	0.000250
2-Chloronaphthalene	U		0.0000165	0.000250
Dibenzofuran	0.00000195		0.00000105	0.0000500
(S) Nitrobenzene-d5	*102*			*11.0-135*
(S) 2-Methylnaphthalene-d10	*83.5*			*50.0-150*
(S) 2-Fluorobiphenyl	*80.5*			*32.0-120*
(S) Fluoranthene-d10	*106*			*50.0-150*
(S) p-Terphenyl-d14	*95.5*			*23.0-122*

Laboratory Control Sample (LCS)

(LCS) R3473468-1 11/19/19 00:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.00200	0.00196	98.0	43.0-127	
Acenaphthene	0.00200	0.00169	84.5	42.0-120	
Acenaphthylene	0.00200	0.00172	86.0	43.0-120	
Benzo(a)anthracene	0.00200	0.00192	96.0	46.0-120	
Benzo(a)pyrene	0.00200	0.00195	97.5	44.0-122	
Benzo(b)fluoranthene	0.00200	0.00175	87.5	43.0-122	
Benzo(g,h,i)perylene	0.00200	0.00160	80.0	25.0-137	
Benzo(k)fluoranthene	0.00200	0.00199	99.5	39.0-128	

Laboratory Control Sample (LCS)

(LCS) R3473468-1 11/19/19 00:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chrysene	0.00200	0.00189	94.5	42.0-129	
Dibenz(a,h)anthracene	0.00200	0.00167	83.5	25.0-139	
Fluoranthene	0.00200	0.00199	99.5	48.0-131	
Fluorene	0.00200	0.00182	91.0	42.0-120	
Indeno(1,2,3-cd)pyrene	0.00200	0.00168	84.0	37.0-133	
Naphthalene	0.00200	0.00155	77.5	30.0-120	
Phenanthrene	0.00200	0.00181	90.5	42.0-120	
Pyrene	0.00200	0.00173	86.5	38.0-124	
1-Methylnaphthalene	0.00200	0.00162	81.0	43.0-120	
2-Methylnaphthalene	0.00200	0.00156	78.0	40.0-120	
2-Chloronaphthalene	0.00200	0.00163	81.5	39.0-120	
Dibenzofuran	0.00200	0.00174	87.0	70.0-130	
(S) Nitrobenzene-d5			*113*	*11.0-135*	
(S) 2-Methylnaphthalene-d10			*87.5*	*50.0-150*	
(S) 2-Fluorobiphenyl			*85.5*	*32.0-120*	
(S) Fluoranthene-d10			*108*	*50.0-150*	
(S) p-Terphenyl-d14			*98.0*	*23.0-122*	

L1160934-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1160934-02 11/19/19 06:40 • (MS) R3473468-3 11/19/19 07:01 • (MSD) R3473468-4 11/19/19 07:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.0000849	0.00207	0.00204	99.3	97.8	1	28.0-120			1.46	25
Acenaphthene	0.00200	U	0.00187	0.00186	93.5	93.0	1	16.0-120			0.536	25
Acenaphthylene	0.00200	U	0.00177	0.00176	88.5	88.0	1	16.0-121			0.567	26
Benzo(a)anthracene	0.00200	U	0.00184	0.00181	92.0	90.5	1	19.0-125			1.64	26
Benzo(a)pyrene	0.00200	U	0.00111	0.00121	55.5	60.5	1	10.0-126			8.62	32
Benzo(b)fluoranthene	0.00200	U	0.00106	0.00110	53.0	55.0	1	10.0-125			3.70	36
Benzo(g,h,i)perylene	0.00200	U	0.000279	0.000291	13.9	14.5	1	10.0-128			4.21	37
Benzo(k)fluoranthene	0.00200	U	0.00116	0.00130	58.0	65.0	1	10.0-124			11.4	32
Chrysene	0.00200	U	0.00173	0.00172	86.5	86.0	1	18.0-127			0.580	26
Dibenz(a,h)anthracene	0.00200	U	0.000270	0.000250	13.5	12.5	1	10.0-132			7.69	43
Fluoranthene	0.00200	U	0.00203	0.00199	102	99.5	1	37.0-122			1.99	23
Fluorene	0.00200	0.000319	0.00218	0.00217	93.0	92.5	1	20.0-120			0.460	26
Indeno(1,2,3-cd)pyrene	0.00200	U	0.000341	0.000369	17.0	18.4	1	10.0-130			7.89	38
Naphthalene	0.00200	0.0104	0.0107	0.0106	15.0	10.0	1	14.0-120		V	0.939	20
Phenanthrene	0.00200	0.000714	0.00254	0.00255	91.3	91.8	1	26.0-120			0.393	24
Pyrene	0.00200	U	0.00182	0.00175	91.0	87.5	1	29.0-120			3.92	24

L1160934-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1160934-02 11/19/19 06:40 • (MS) R3473468-3 11/19/19 07:01 • (MSD) R3473468-4 11/19/19 07:22

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1-Methylnaphthalene	0.00200	0.00597	0.00698	0.00687	50.5	45.0	1	10.0-145			1.59	24
2-Methylnaphthalene	0.00200	0.00660	0.00750	0.00737	45.0	38.5	1	10.0-143			1.75	24
2-Chloronaphthalene	0.00200	U	0.00158	0.00158	79.0	79.0	1	16.0-120			0.000	25
(S) Nitrobenzene-d5					*118*	*115*		*11.0-135*				
(S) 2-Methylnaphthalene-d10					*96.5*	*93.0*		*50.0-150*				
(S) 2-Fluorobiphenyl					*83.0*	*82.5*		*32.0-120*				
(S) Fluoranthene-d10					*112*	*111*		*50.0-150*				
(S) p-Terphenyl-d14					*92.0*	*90.5*		*23.0-122*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

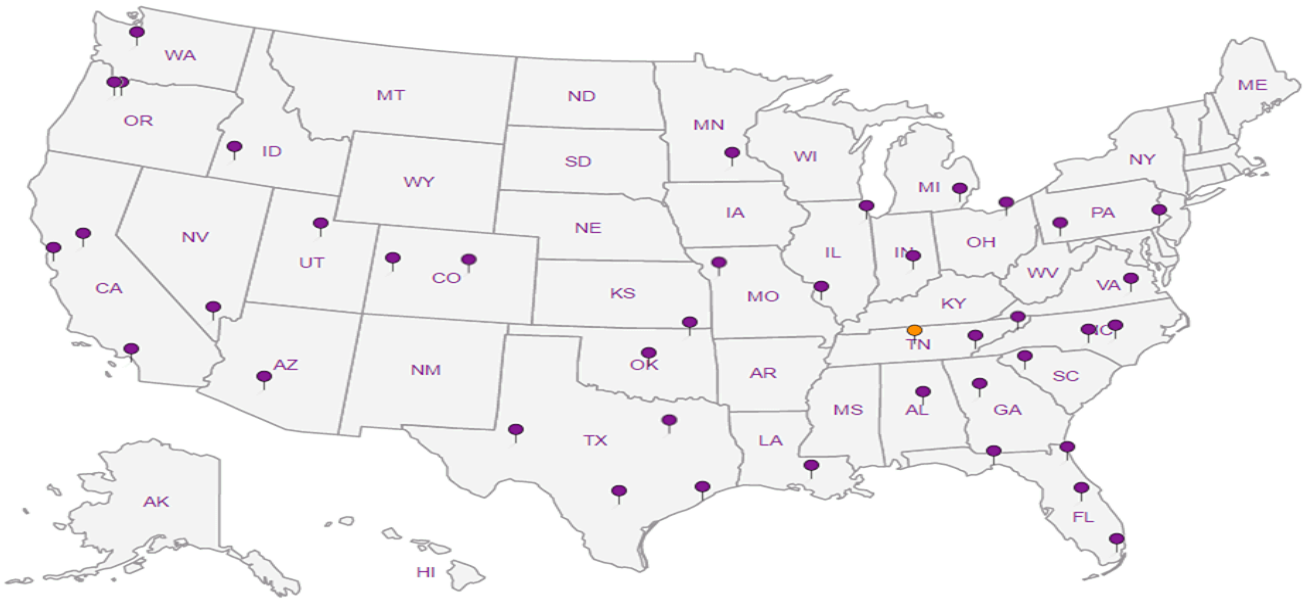
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

Report to: Chris G. Knight, John Schnable

Email To: Christopher.Knight@ghd.com; John.Schnable@ghd.com

Project Description: Darr Angell #2- Lea County, New Mexico

City/State Collected:

Phone: 432-686-0086
Fax:

Client Project # 074685

Lab Project # PLAINSGHD-074685

L # L1160934
H033

Table

Collected by (print): Justin Nixon

Site/Facility ID # SRS#: LF 1999-62

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Immediately Packed on Ice N___ Y X

Acctnum: PLAINSGHD
Template: T139790
Prelogin: P681709
TSR: 134 - Mark W. Beasley
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX 40mlAmb-HCl	PAHSIMLVI 40mlAmb-NoPres-WT								Remarks	Sample # (lab only)
RW-11-111219	G	GW		11-12-19	1300	1		X									-01
RW-12-111219	G	GW		11-12-19	1330	1		X									02
		GW															
		GW															
		GW															
		GW															
		GW															
		GW															
		GW															
		GW															

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other___

Remarks:

pH ___ Temp ___
Flow ___ Other ___

Samples returned via:
__ UPS __ FedEx __ Courier SWA

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: ✓NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N

RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)		
[signature]	11-12-19	630 pm	[signature]	Trip Blank Received: Yes / (No) HCL / MeoH TBR	
Relinquished by : (Signature) [signature]	Date: 11-13-19	Time: 15:00	Received by: (Signature) SWA	Temp: °C 1.8-.2=1.6 AL A3 / Bottles Received: 2	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 11-14-19 Time: 0930	Hold: / Condition: NCF / (OK)

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

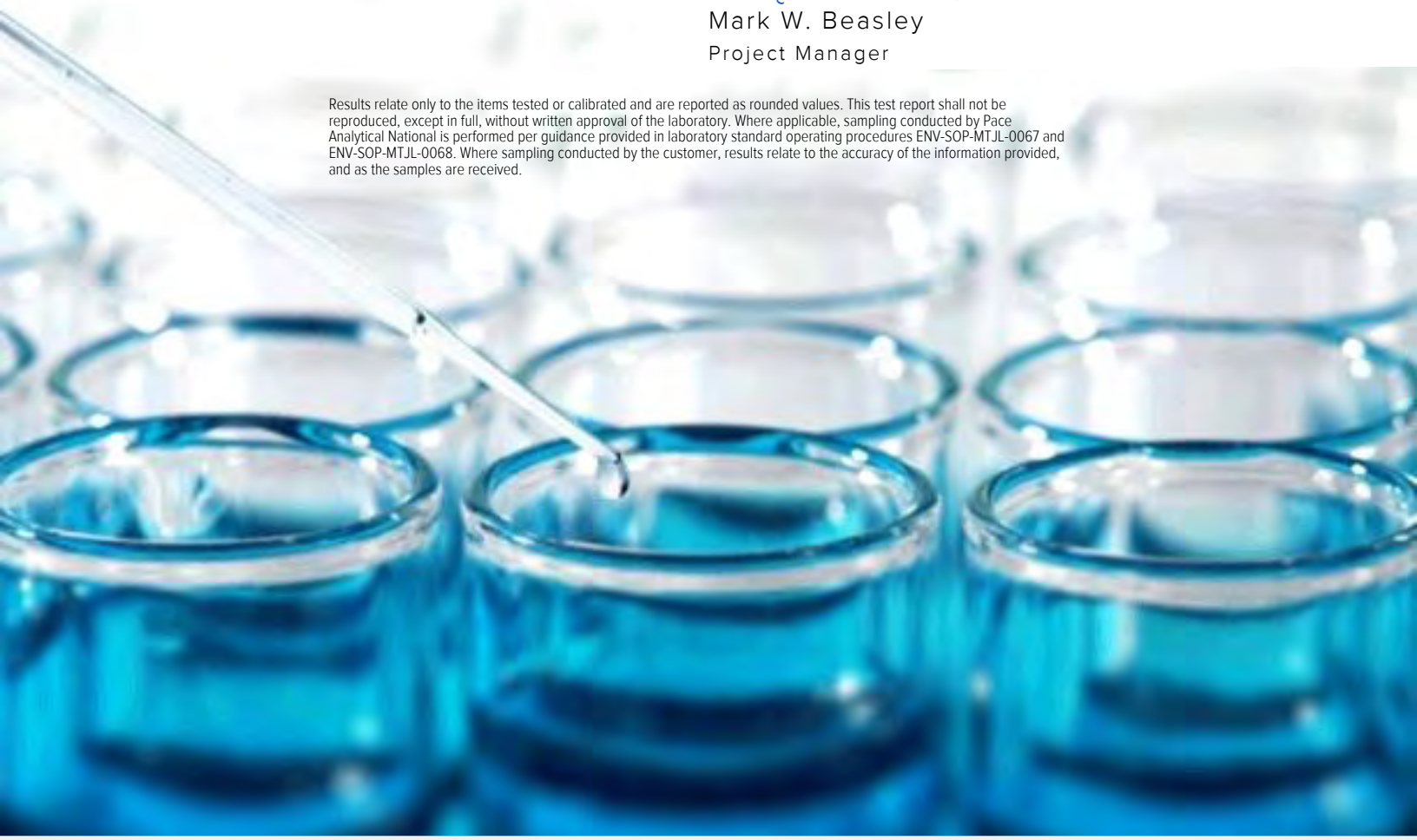
November 20, 2019

Plains All American, LP - GHD

Sample Delivery Group:	L1161076
Samples Received:	11/15/2019
Project Number:	074685
Description:	Darr Angell #2- Lea County, New Mexico
Site:	SRS#: LF 1999-62
Report To:	John Schnable 2135 S Loop 250 W Midland, TX 79703

Entire Report Reviewed By:

Mark W. Beasley
Project Manager



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PUMP OFF L1161076-01 Air

Collected by: Heath Boyd
Collected date/time: 11/12/19 14:00
Received date/time: 11/15/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1381132	2000	11/15/19 22:54	11/15/19 22:54	CAW	Mt. Juliet, TN

PUMP ON L1161076-02 Air

Collected by: Heath Boyd
Collected date/time: 11/12/19 14:30
Received date/time: 11/15/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (MS) by Method M18-Mod	WG1381132	2000	11/15/19 23:44	11/15/19 23:44	CAW	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Mark W. Beasley
Project Manager

This data package consists of this signature page, the laboratory review checklist, and the following reportable data as applicable:

R1 - Field chain-of-custody documentation;

R2 - Sample identification cross-reference;

R3 - Test reports (analytical data sheets) for each environmental sample that includes:

a. Items consistent with NELAC Chapter 5,

b. dilution factors,

c. preparation methods,

d. cleanup methods, and

e. if required for the project, tentatively identified compounds (TICs).

R4 - Surrogate recovery data including:

a. Calculated recovery (%R), and

b. The laboratory's surrogate QC limits.

R5 - Test reports/summary forms for blank samples;

R6 - Test reports/summary forms for laboratory control samples (LCSs) including:

a. LCS spiking amounts,

b. Calculated %R for each analyte, and

c. The laboratory's LCS QC limits.

R7 - Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:

a. Samples associated with the MS/MSD clearly identified,

b. MS/MSD spiking amounts,

c. Concentration of each MS/MSD analyte measured in the parent and spiked samples,

d. Calculated %Rs and relative percent differences (RPDs), and

e. The laboratory's MS/MSD QC limits

R8 - Laboratory analytical duplicate (if applicable) recovery and precision:

a. The amount of analyte measured in the duplicate,

b. The calculated RPD, and

c. The laboratory's QC limits for analytical duplicates.

R9 - List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.

R10 - Other problems or anomalies.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Mark W. Beasley
Project Manager

Laboratory Review Checklist: Reportable Data

Laboratory Name: Pace Analytical National	LRC Date: 11/20/2019 16:02
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1161076-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1381132

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	Chain-of-custody (C-O-C)					
		Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
		Were all departures from standard conditions described in an exception report?			X		
R2	OI	Sample and quality control (QC) identification					
		Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	Test reports					
		Were all samples prepared and analyzed within holding times?	X				
		Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		Were calculations checked by a peer or supervisor?	X				
		Were all analyte identifications checked by a peer or supervisor?	X				
		Were sample detection limits reported for all analytes not detected?	X				
		Were all results for soil and sediment samples reported on a dry weight basis?	X				
		Were % moisture (or solids) reported for all soil and sediment samples?			X		
		Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
		If required for the project, are TICs reported?			X		
R4	O	Surrogate recovery data					
		Were surrogates added prior to extraction?	X				
		Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
R5	OI	Test reports/summary forms for blank samples					
		Were appropriate type(s) of blanks analyzed?	X				
		Were blanks analyzed at the appropriate frequency?	X				
		Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		Were blank concentrations < MQL?	X				
R6	OI	Laboratory control samples (LCS):					
		Were all COCs included in the LCS?	X				
		Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		Were LCSs analyzed at the required frequency?	X				
		Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		Was the LCSD RPD within QC limits?	X				
R7	OI	Matrix spike (MS) and matrix spike duplicate (MSD) data					
		Were the project/method specified analytes included in the MS and MSD?			X		
		Were MS/MSD analyzed at the appropriate frequency?			X		
		Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
		Were MS/MSD RPDs within laboratory QC limits?			X		
R8	OI	Analytical duplicate data					
		Were appropriate analytical duplicates analyzed for each matrix?			X		
		Were analytical duplicates analyzed at the appropriate frequency?			X		
		Were RPDs or relative standard deviations within the laboratory QC limits?			X		
R9	OI	Method quantitation limits (MQLs):					
		Are the MQLs for each method analyte included in the laboratory data package?	X				
		Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	Other problems/anomalies					
		Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
		Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
		Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Supporting Data

Laboratory Name: Pace Analytical National	LRC Date: 11/20/2019 16:02
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1161076-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1381132

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	Initial calibration (ICAL)					
		Were response factors and/or relative response factors for each analyte within QC limits?	X				
		Were percent RSDs or correlation coefficient criteria met?	X				
		Was the number of standards recommended in the method used for all analytes?	X				
		Were all points generated between the lowest and highest standard used to calculate the curve?	X				
		Are ICAL data available for all instruments used?	X				
		Has the initial calibration curve been verified using an appropriate second source standard?	X				
S2	OI	Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
		Was the CCV analyzed at the method-required frequency?	X				
		Were percent differences for each analyte within the method-required QC limits?	X				
		Was the ICAL curve verified for each analyte?	X				
		Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
S3	O	Mass spectral tuning					
		Was the appropriate compound for the method used for tuning?	X				
		Were ion abundance data within the method-required QC limits?	X				
S4	O	Internal standards (IS)					
		Were IS area counts and retention times within the method-required QC limits?	X				
S5	OI	Raw data (NELAC Section 5.5.10)					
		Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
		Were data associated with manual integrations flagged on the raw data?	X				
S6	O	Dual column confirmation					
		Did dual column confirmation results meet the method-required QC?			X		
S7	O	Tentatively identified compounds (TICs)					
		If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
S8	I	Interference Check Sample (ICS) results					
		Were percent recoveries within method QC limits?			X		
S9	I	Serial dilutions, post digestion spikes, and method of standard additions					
		Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
S10	OI	Method detection limit (MDL) studies					
		Was a MDL study performed for each reported analyte?	X				
		Is the MDL either adjusted or supported by the analysis of DCSs?	X				
S11	OI	Proficiency test reports					
		Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
S12	OI	Standards documentation					
		Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
S13	OI	Compound/analyte identification procedures					
		Are the procedures for compound/analyte identification documented?	X				
S14	OI	Demonstration of analyst competency (DOC)					
		Was DOC conducted consistent with NELAC Chapter 5?	X				
		Is documentation of the analyst's competency up-to-date and on file?	X				
S15	OI	Verification/validation documentation for methods (NELAC Chapter 5)					
		Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
S16	OI	Laboratory standard operating procedures (SOPs)					
		Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Review Checklist: Exception Reports

Laboratory Name: Pace Analytical National	LRC Date: 11/20/2019 16:02
Project Name: Darr Angell #2- Lea County, New Mexico	Laboratory Job Number: L1161076-01 and 02
Reviewer Name: Mark W. Beasley	Prep Batch Number(s): WG1381132

ER #[1]	Description
	The Exception Report intentionally left blank, there are no exceptions applied to this SDG.

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	400	1280	19500	62300		2000	WG1381132
Toluene	108-88-3	92.10	400	1510	14100	53100		2000	WG1381132
Ethylbenzene	100-41-4	106	400	1730	2190	9490		2000	WG1381132
m&p-Xylene	1330-20-7	106	800	3470	7210	31300		2000	WG1381132
o-Xylene	95-47-6	106	400	1730	2240	9710		2000	WG1381132
Methyl tert-butyl ether	1634-04-4	88.10	400	1440	ND	ND		2000	WG1381132
TPH (GC/MS) Low Fraction	8006-61-9	101	100000	413000	4150000	17100000		2000	WG1381132
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.0*				WG1381132

Volatile Organic Compounds (MS) by Method M18-Mod

Analyte	CAS #	Mol. Wt.	RDL1 ppbv	RDL2 ug/m3	Result ppbv	Result ug/m3	Qualifier	Dilution	Batch
Benzene	71-43-2	78.10	400	1280	21600	69000		2000	WG1381132
Toluene	108-88-3	92.10	400	1510	15200	57300		2000	WG1381132
Ethylbenzene	100-41-4	106	400	1730	2340	10100		2000	WG1381132
m&p-Xylene	1330-20-7	106	800	3470	7120	30900		2000	WG1381132
o-Xylene	95-47-6	106	400	1730	2170	9410		2000	WG1381132
Methyl tert-butyl ether	1634-04-4	88.10	400	1440	ND	ND		2000	WG1381132
TPH (GC/MS) Low Fraction	8006-61-9	101	100000	413000	4330000	17900000		2000	WG1381132
(S) 1,4-Bromofluorobenzene	*460-00-4*	*175*	*60.0-140*		*99.2*				WG1381132

Method Blank (MB)

(MB) R3472424-3 11/15/19 11:23

Analyte	MB Result ppbv	MB Qualifier	MB MDL ppbv	MB RDL ppbv
Benzene	U		0.0460	0.200
Ethylbenzene	U		0.0506	0.200
MTBE	U		0.0505	0.200
Toluene	U		0.0499	0.200
m&p-Xylene	U		0.0946	0.400
o-Xylene	U		0.0633	0.200
TPH (GC/MS) Low Fraction	21.3	J	6.91	50.0
(S) 1,4-Bromofluorobenzene	*95.9*			*60.0-140*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3472424-1 11/15/19 09:40 • (LCSD) R3472424-2 11/15/19 10:32

Analyte	Spike Amount ppbv	LCS Result ppbv	LCSD Result ppbv	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
MTBE	3.75	3.73	3.81	99.5	102	70.0-130			2.12	25
Benzene	3.75	3.73	3.73	99.5	99.5	70.0-130			0.000	25
Toluene	3.75	3.78	3.86	101	103	70.0-130			2.09	25
Ethylbenzene	3.75	3.77	3.88	101	103	70.0-130			2.88	25
m&p-Xylene	7.50	7.78	7.78	104	104	70.0-130			0.000	25
o-Xylene	3.75	3.89	3.93	104	105	70.0-130			1.02	25
TPH (GC/MS) Low Fraction	203	221	227	109	112	70.0-130			2.68	25
(S) 1,4-Bromofluorobenzene				*101*	*101*	*60.0-140*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

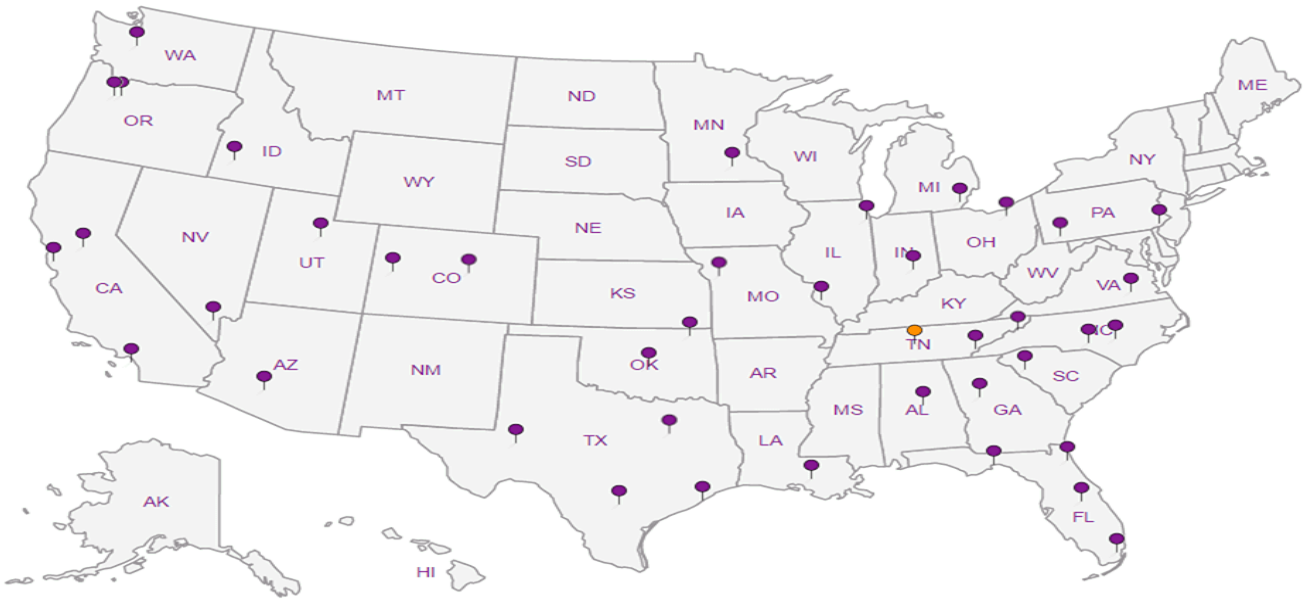
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Plains All American, LP - GHD

2135 S Loop 250 W
Midland, TX 79703

Billing Information:
Accounts Payable
505 N. Big Spring, Ste. 600
Midland, TX 79701
Attn: Camille Bryant

Report to: John Schnable

Email To: John.Schnable@ghd.com, Christopher.Knight@ghd.com; CJBryant@paalp.com

Project Description: Darr Angell #2- Lea County, Ne

City/State Collected: Lea County, NM

Please Circle: PT MT CT ET

Phone: 432-686-0086
Fax:

Client Project # 074685

Lab Project # PLAINSGHD-074685

Collected by (print): Heath Boyd

Collected by (signature):

Immediately Packed on Ice N X Y ___

Site/Facility ID # SRS#: LF 1999-62

P.O. #

Quote #

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	M18-MOD Tedlar	TVHC EPA 8015D	BTEX EPA 8021B							Remarks	Sample # (lab only)
Pump Off	Grab	Air		11-12-19	1400		1	X	X								01
Pump On	Grab	Air		11-12-19	1430		1	X	X								02
		Air															

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # 116076

Ta E086

Acctnum: PLAINSGHD

Template: T140281

Prelogin: P740764

PM: 134 - Mark W. Beasley

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: Report to SDLs
Flag estimated concentrations

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
John Schnable	11-14-19	14:45	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / (No)
HCL / MeoH
TBR

Temp: HMB °C Bottles Received: 2

Date: 11-15-19 Time: 0830

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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