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DA #2

**ANNUAL  
MONITORING REPORT**

**YEAR(S):**

2008



**2008  
ANNUAL MONITORING REPORT**

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**DARR ANGELL 2**

SW ¼, SE ¼ SECTION 11, TOWNSHIP 15 SOUTH, RANGE 37 EAST  
NW ¼, NE ¼ SECTION 14, TOWNSHIP 15 SOUTH, RANGE 37 EAST  
LEA COUNTY, NEW MEXICO  
PLAINS EMS NUMBER: LF-1999-62  
NMOCD Reference AP-007

PREPARED FOR:


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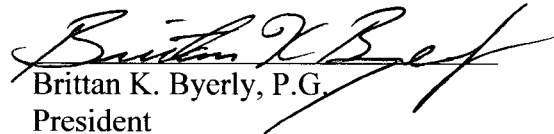


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**February 2009**

  
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2008 Annual Monitoring Report

2008 Tables 1, 2 and 3 – Groundwater Elevation, BTEX, TPH and PAH Concentration Data

2008 Figures 1, 2A-2D, and 3A-3D

Electronic Copies of Laboratory Reports

Historic Table 1 and 2 – Groundwater Elevation and BTEX, TPH, PAH Concentration Tables

Historic Table 1 and 2 – Groundwater Elevation and BTEX, TPH, PAH Concentration Tables

## **INTRODUCTION**

On behalf of Plains Marketing, L.P., (Plains), NOVA Safety and Environmental (NOVA) is pleased to submit this Annual Monitoring Report in compliance with the New Mexico Oil Conservation Division (NMOCD) letter of May 1998, requiring submittal of an Annual Monitoring Report by April 1 of each year. Beginning on May 29, 2004, project management responsibilities for the Darr Angell #2 Pipeline Release Site (the site) were assumed by NOVA. The site, formerly the responsibility of Enron Oil Trading and Transportation (EOTT), is now the responsibility of Plains. This report is intended to be viewed as a complete document with text, figures, tables and appendices. This report presents the results of the quarterly groundwater monitoring events conducted in calendar year 2008 only. However, historic data tables as well as 2008 laboratory analytical reports are provided on the enclosed disk. For reference, the Site Location Map is provided as Figure 1.

Groundwater monitoring was conducted during each quarter of 2008 to assess the levels and extent of dissolved phase constituents and Phase Separated Hydrocarbon (PSH). Each groundwater monitoring event consisted of measuring static water levels in monitor wells, checking for the presence of PSH on the water column and purging and sampling of each well exhibiting sufficient recharge. Monitor wells containing a thickness of PSH greater than 0.01 foot were sampled as per a NMOCD directive.

## **SITE DESCRIPTION AND BACKGROUND INFORMATION**

The site is located approximately 12.5 miles east of the town of Lovington, New Mexico near State Highway 82 in the SW  $\frac{1}{4}$  of the SE  $\frac{1}{4}$  Section 11, Township 15 South, Range 37 East and the NW  $\frac{1}{4}$  of the NE  $\frac{1}{4}$  Section 14, Township 15 South, Range 37 East. The site coordinates are latitude 33° 01' 47.0" North, longitude 103° 10' 10.7" West. According to Form C-141, the release was discovered by EOTT employees on July 29, 1999. The release was attributed to structural failure due to external corrosion on the 8-inch steel pipeline and resulted in the loss of approximately 60 barrels of crude oil with no recovery. The release was reported to the New Mexico Oil Conservation Division (NMOCD) on July 29, 1999. A copy of the Release Notification and Corrective Action (Form C-141) is provided in Appendix B.

Initial site characterization activities began in August 1999 and consisted of the advancement of forty soil borings within and around the area of surface staining. In April and May 2000, a previous contractor excavated the areas identified by the soil boring investigation as impacted to a depth of approximately 4.5 feet below ground surface (bgs). Impacted soil was stockpiled on-site. Excavation activities resumed in April and May 2001, with the removal of approximately 3,000 cubic yards (cy) of impacted soil. This material was added to soil previously stockpiled on-site. On various dates between April 2000 and December 2002, monitor wells MW-1 through MW-10 and recovery wells RW-1 through RW-7 were installed.

Partial backfilling of the open excavation occurred subsequent to NMOCD approval of a backfill request submitted on March 11, 2002. Backfill material consisted of previously excavated caliche which had been separated from other excavated material by mechanical screening. In October 2003, approximately 3,100 cy of excavated soil was placed into a treatment area two to

three feet in depth. Quarterly mechanical tilling of this stockpile occurred throughout 2004. Analytical results, detailed in the Site Restoration Work Plan and Proposed Soil Closure Strategy dated January 2006, indicate total petroleum hydrocarbon (TPH) concentrations within the soil treatment cell were below NMOCD regulatory standards.

In a letter from the NMOCD dated April 5, 2006, Plains received NMOCD approval to backfill the excavation at the Darr Angell #2 release site. In June 2006, the excavation was backfilled with remediated soil contained in the soil treatment soil and contoured to grade. A *Soil Closure Request* was submitted to the NMOCD and on February 19, 2008, Plains received an email approving the soil closure request.

Currently, there are ten monitor wells (MW-1 through MW-4 and MW-6 through MW-11) and seven recovery wells (RW-1 through RW-7) on-site. Monitor well MW-5 was plugged and abandoned with NMOCD approval on September 14, 2005. An automated product recovery system operated on-site throughout the reporting period. Manual product recovery was performed on those wells with PSH not included in the recovery system.

## FIELD ACTIVITIES

### Product Recovery Efforts

A measurable thickness of PSH was present in eight monitor or recovery wells (MW-2 and RW-1 through RW-7) during each quarter of the reporting period. Recovery wells RW-1 through RW-7 use total fluid pumps for PSH recovery and monitor well MW-2 is utilizing a total fluid skimmer pump for PSH recovery. The average thickness of PSH in monitor wells and recovery wells for wells exhibiting PSH is 6.81 feet. The maximum thickness of PSH in monitor and recovery wells was 9.96 feet as recorded in recovery well RW-6 on January 21, 2008. PSH data for the 2008 gauging events can be found in Table 1. Approximately 2,625 gallons (62 barrels) of PSH were recovered from the site during this reporting period. Approximately 16,193 gallons (385 barrels) of PSH have been recovered from the site utilizing manual and automated methods since project inception. Recovered PSH was reintroduced into the Plains Transportation System at the 34 Junction South Station, near Lovington, New Mexico.

### Groundwater Monitoring

Quarterly monitoring events for the reporting period were performed according to the following sampling schedule, which was approved by the NMOCD in correspondence dated April 28, 2004, and amended by NMOCD correspondence dated June 20, 2005.

NMOCD APPROVED SAMPLING SCHEDULE					
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	Semi-Annually	MW-10	Annually	RW-5	Quarterly
MW-5	Plugged / Abandoned	MW-11	Quarterly	RW-6	Quarterly
MW-6	Annually	RW-1	Quarterly	RW-7	Quarterly

The site monitor wells were gauged and sampled on February 27, May 29, September 5, and December 1, 2008. During each sampling event the monitor wells were purged of a minimum of three well volumes of water or until the wells were dry using a PVC bailer or electrical Grundfos Pump. Groundwater was allowed to recharge and samples were collected using disposable Teflon samplers. Water samples were placed in clean glass containers provided by the laboratory and placed on ice in the field. Purge water was collected in a polystyrene tank and disposed of at a licensed disposal facility.

Locations of the monitor wells and the inferred groundwater gradient, which were constructed from measurements collected during each quarterly monitoring event, are depicted on Figures 2A through 2D, the Inferred Groundwater Gradient Maps. Groundwater elevation data for 2008 is provided as Table 1. Historic groundwater elevation data beginning at project inception is provided on the enclosed data disk.

The most recent Inferred Groundwater Gradient map, Figure 2D, indicates a general gradient of approximately 0.003 feet/foot to the southeast as measured between monitor wells MW-1 and MW-4. This is consistent with data presented on Figures 2A through 2C from the earlier quarters. The corrected groundwater elevations ranged between 3725.84 and 3728.05 feet above mean sea level, reported in monitor wells MW-4 on December 1 and MW-1 September 5, 2008, respectively.

## **LABORATORY RESULTS**

Monitor well MW-2 and recovery wells RW-1 through RW-7 contained measurable PSH throughout the reporting period and were not sampled during the first three quarters of 2008. Plains, at the request of the NMOCD, collected groundwater samples below PSH levels in all monitor wells containing PSH during the 4<sup>th</sup> quarter sampling event.

Groundwater samples obtained during the quarterly sampling events of 2008 were delivered to TraceAnalysis, Inc. in Midland, Texas for determination of Benzene, Toluene, Ethylbenzene and Xylene (BTEX) constituent concentrations by EPA Method 8021B, and Polynuclear Aromatic Hydrocarbons (PAH) concentrations by EPA Method 8270C. Monitoring wells containing measurable amounts of PSH were analyzed for Total Petroleum Hydrocarbons (TPH) concentrations by EPA Method 8015M. A listing of BTEX and TPH constituent concentrations for 2008 are summarized in Table 2 and the PAH constituent concentrations for 2008 are summarized in Table 3. Copies of the laboratory reports generated for 2008 are provided on the enclosed data disk. The quarterly groundwater sample results for BTEX constituent concentrations are depicted on Figures 3A through 3D.

**Monitor well MW-1** is sampled on an annual schedule and analytical results indicate benzene, toluene, ethylbenzene and xylene concentrations were below laboratory method detection limits (MDL) and NMOCD regulatory standards of 0.01mg/L for benzene, 0.75 mg/L for toluene, 0.75 mg/L for ethylbenzene and 0.62 mg/L for xylene, during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last thirty-four consecutive quarters. PAH analysis during the 4<sup>th</sup>

quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-2** is monitored on a quarterly schedule. Monitor well MW-2 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 5.29 feet, 2.67 feet and 1.67 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 5.89 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 5.22 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.53 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 4.75 mg/L. Analytical results indicated a total TPH result of 197.50 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.704 mg/L), 1-methylnaphthalene (1.63 mg/L) and 2-methylnaphthalene (2.31 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.178 mg/L), phenanthrene (0.230 mg/L) and dibenzofuran (0.130 mg/L), which are below WQCC standards.

**Monitor well MW-3** is sampled on a semi-annual (Plains voluntarily samples monitor well MW-3 quarterly due to benzene concentrations in excess of NMOCD standards) schedule and analytical results indicate benzene concentrations ranged from 0.1240 mg/L during the 4<sup>th</sup> quarter to 0.7620 mg/L during the 1<sup>st</sup> quarter of the reporting period. Benzene concentrations were above the NMOCD regulatory standard during all four quarterly sampling events. Toluene concentrations were below the MDL and NMOCD regulatory standard during the all four quarterly sampling events. Ethylbenzene concentrations ranged from <0.005 mg/L during the 2<sup>nd</sup> and 4<sup>th</sup> quarters to 0.0064 mg/L during the 3<sup>rd</sup> quarter. Ethylbenzene concentrations were below the NMOCD regulatory standard during all four quarters of the reporting period. Xylene concentrations ranged from 0.0265 mg/L during the 4<sup>th</sup> quarter to 0.142 mg/L during the 1<sup>st</sup> quarter of the reporting period. Xylene concentrations were below NMOCD regulatory standards during all four quarters of 2008. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.0426 mg/L). Additional PAH constituents detected above MDLs include 1-methylnaphthalene (0.026 mg/L), fluorene (0.00126 mg/L), phenanthrene (0.00103 mg/L) and dibenzofuran (0.0014 mg/L), which are below WQCC standards.

**Monitor well MW-4** is sampled on a semi-annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 2<sup>nd</sup> and 4<sup>th</sup> quarter sampling events. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last thirty-six consecutive quarters. PAH analysis was not conducted due to insufficient water volume in the well.

**Monitor well MW-6** is sampled on an annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX

constituent concentrations have been below NMOCD regulatory standards for the last twenty-eight consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-7** is sampled on an annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last twenty-eight consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-8** is sampled on an annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last twenty-eight consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-9** is sampled on an annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last twenty-eight consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-10** is sampled on an annual schedule and analytical results indicate BTEX constituent concentrations were below the MDL and NMOCD regulatory standards for each BTEX constituent during the 4<sup>th</sup> quarter sampling event. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last twenty-five consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Monitor well MW-11** is sampled on a quarterly schedule and analytical results indicate benzene, toluene, ethylbenzene and xylene concentrations were below the MDL and NMOCD regulatory standards during all four quarters of the reporting period. The analytical results indicate BTEX constituent concentrations have been below NMOCD regulatory standards for the last five consecutive quarters. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated no elevated concentrations were detected above the respective MDLs.

**Recovery well RW-1** is monitored on a quarterly schedule. Recovery well RW-1 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 7.68 feet, 7.62 feet and 6.98 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 6.65 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 5.70 mg/L. Ethylbenzene concentrations were above



NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.42 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 4.16 mg/L. Analytical results indicated a total TPH result of 812.40 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (1.01 mg/L), 1-methylnaphthalene (2.42 mg/L) and 2-methylnaphthalene (3.20 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.274 mg/L), phenanthrene (0.346 mg/L) and dibenzofuran (0.208 mg/L), which are below WQCC standards.

**Recovery well RW-2** is monitored on a quarterly schedule. Recovery well RW-2 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 6.59 feet, 5.98 feet and 6.65 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 2.60 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 2.59 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 0.8850 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 2.21 mg/L. Analytical results indicated a total TPH result of 589.0 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.224 mg/L), 1-methylnaphthalene (0.410 mg/L) and 2-methylnaphthalene (0.526 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.0507 mg/L), phenanthrene (0.0569 mg/L) and dibenzofuran (0.035 mg/L), which are below WQCC standards.

**Recovery well RW-3** is monitored on a quarterly schedule. Recovery well RW-3 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 7.95 feet, 4.34 feet and 8.12 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 3.74 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 2.72 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.08 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 3.01 mg/L. Analytical results indicated a total TPH result of 289.90 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.203 mg/L), 1-methylnaphthalene (0.362 mg/L) and 2-methylnaphthalene (0.480 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.0447 mg/L), phenanthrene (0.0523 mg/L) and dibenzofuran (0.0309 mg/L), which are below WQCC standards.

**Recovery well RW-4** is monitored on a quarterly schedule. Recovery well RW-4 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 5.77 feet, 6.22 feet and 6.19 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 5.91 mg/L.

Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 2.76 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.05 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 3.11 mg/L. Analytical results indicated a total TPH result of 325.80 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.637 mg/L), 1-methylnaphthalene (1.58 mg/L) and 2-methylnaphthalene (2.14 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.173 mg/L), phenanthrene (0.216 mg/L) and dibenzofuran (0.122 mg/L), which are below WQCC standards.

**Recovery well RW-5** is monitored on a quarterly schedule. Recovery well RW-5 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 6.25 feet, 6.61 feet and 6.85 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 6.56 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.72 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.11 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.85 mg/L. Analytical results indicated a total TPH result of 127.90 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.283 mg/L), 1-methylnaphthalene (0.835 mg/L) and 2-methylnaphthalene (0.910 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.0938 mg/L), phenanthrene (0.117 mg/L) and dibenzofuran (0.0654 mg/L), which are below WQCC standards.

**Recovery well RW-6** is monitored on a quarterly schedule. Recovery well RW-6 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH. PSH thicknesses of 7.44 feet, 7.89 feet and 7.90 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. Benzene concentrations were above the NMOCD regulatory standard during the 4<sup>th</sup> quarter of the reporting period with a concentration of 7.93 mg/L. Toluene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 4.72 mg/L. Ethylbenzene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 1.77 mg/L. Xylene concentrations were above NMOCD regulatory standards during the 4<sup>th</sup> quarter of the reporting period with a concentration of 4.82 mg/L. Analytical results indicated a total TPH result of 244.60 mg/L. PAH analysis during the 4<sup>th</sup> quarter sampling event indicated elevated concentrations above WQCC Drinking Water Standards for naphthalene (0.693 mg/L), 1-methylnaphthalene (1.77 mg/L) and 2-methylnaphthalene (2.44 mg/L). Additional PAH constituents detected above MDLs include fluorene (0.188 mg/L), phenanthrene (0.244 mg/L) and dibenzofuran (0.138 mg/L), which are below WQCC standards.

**Recovery well RW-7** is monitored on a quarterly schedule. Recovery well RW-7 was not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period, due to the presence of PSH in the monitor well and was not sampled during the 4<sup>th</sup> quarter due to insufficient water volume in

the well. PSH thicknesses of 0.79 feet, 0.64 feet and 0.62 feet were reported during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of 2008, respectively. PAH analysis was not conducted due to insufficient water volume in the well.

Laboratory analytical results were compared to NMOCD regulatory limits based on the New Mexico groundwater standards found in section 20.6.2.3103 of the New Mexico Administrative Code.

## **SUMMARY**

This report presents the results of monitoring activities for the 2008 annual monitoring period. Currently, there are ten groundwater monitor wells (MW-1 through MW-11, excluding MW-5) and seven product recovery wells (RW-1 through RW-7) on-site. A measurable thickness of PSH was present in eight monitor or recovery wells (MW-2 and RW-1 through RW-7) during each quarter of the reporting period. Approximately 2,625 gallons (62 barrels) of PSH were recovered from the site during this reporting period. Approximately 16,193 gallons (385 barrels) of PSH have been recovered from the site utilizing manual and automated methods since project inception. Groundwater elevation contours generated from water level measurements acquired during the most recent quarter indicated a general gradient of 0.003 feet/foot to the southeast as measured between monitor wells MW-1 and MW-4.

Monitor well MW-2 and all recovery wells (RW-1 through RW-7) contained measurable PSH and were not sampled during the 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> quarters of the reporting period. Monitor wells MW-2 and recovery wells RW-1 through RW-6 contained measurable PSH and were sampled during the 4<sup>th</sup> quarter of the reporting period as per the NMOCD directive. Recovery well RW-7 was not sampled during the 4<sup>th</sup> quarter due to the lack of sufficient water volume in the wells.

The average thickness of PSH in recovery wells containing PSH during 2008 was 6.81 feet. A maximum PSH thickness of 9.96 feet reported in recovery well RW-6 on January 21, 2008. Data indicates that the operation of the automated recovery system at the Darr Angell #2 Release Site has been successful in reducing observed PSH thicknesses in on-site monitor and recovery wells.

Review of laboratory analytical results of the groundwater samples obtained during the 2008 monitoring period indicate the BTEX constituent concentrations are below applicable NMOCD standards in eight of the seventeen monitor and recovery wells currently on-site. The remaining nine monitor / recovery wells contained measurable thicknesses of PSH and were not sampled or exhibited analytical results above the NMOCD regulatory standard during at least one quarterly monitoring event of 2008. Dissolved phase impact appears to be limited to monitor wells MW-2 and MW-3 and to those recovery wells which exhibit PSH. Groundwater samples from monitor well MW-2 and recovery wells RW-1 through RW-6 exhibited elevated TPH concentrations for GRO and DRO. Analytical results on groundwater samples collected indicate PAH distributions mirrored those of BTEX distributions over the site.

## **ANTICIPATED ACTIONS**

Plains will modify the groundwater sampling schedule for monitor well MW-3 from the current semi-annual groundwater sampling schedule to a quarterly sampling schedule.

Quarterly groundwater monitoring and sampling will continue in 2009. An Annual Monitoring Report will be submitted to the NMOCD by April 1, 2010. The automated recovery system will be monitored and adjusted to maximize the efficiency of product removal and gradient control.

## **LIMITATIONS**

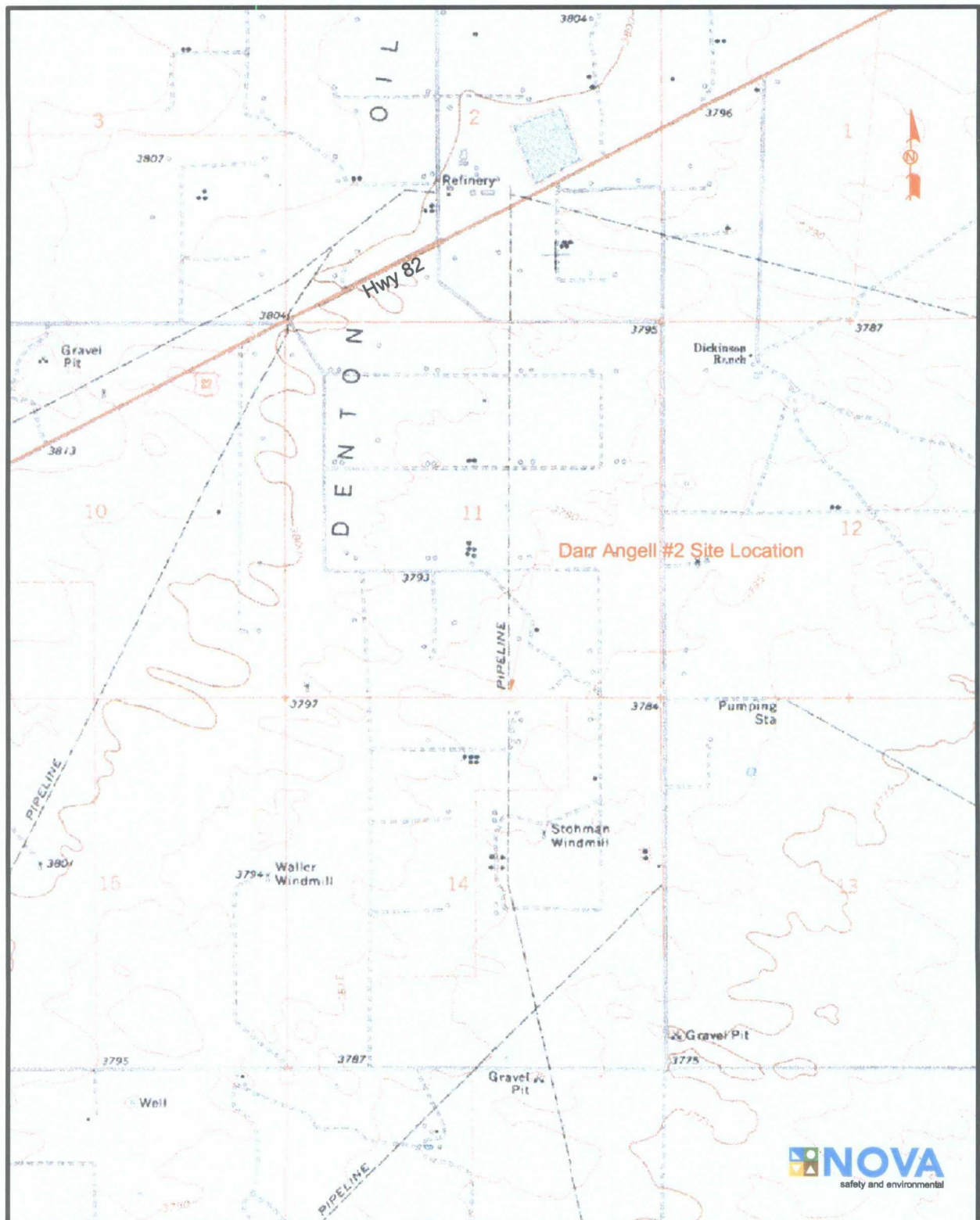
NOVA has prepared this Annual Monitoring Report to the best of its ability. No other warranty, expressed or implied, is made or intended. NOVA has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. NOVA has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. NOVA has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. NOVA also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Plains. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of NOVA and/or Plains.

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jpdann@paalp.com
- Copy 5:      NOVA Safety and Environmental  
2057 Commerce Street  
Midland, TX 79703  
rrounsaville@novatraining.cc

## FIGURES



**Site Location**

USGS Prairieview (NM) Topo  
 33° 01' 47.0" N 103° 10' 10.5" W  
 SW 1/4 of SE 1/4 of Sec 11 T15S R37E  
 NW 1/4 of NE 1/4 of Sec 14 T15S R37E

NMOCD Ref# AP-007

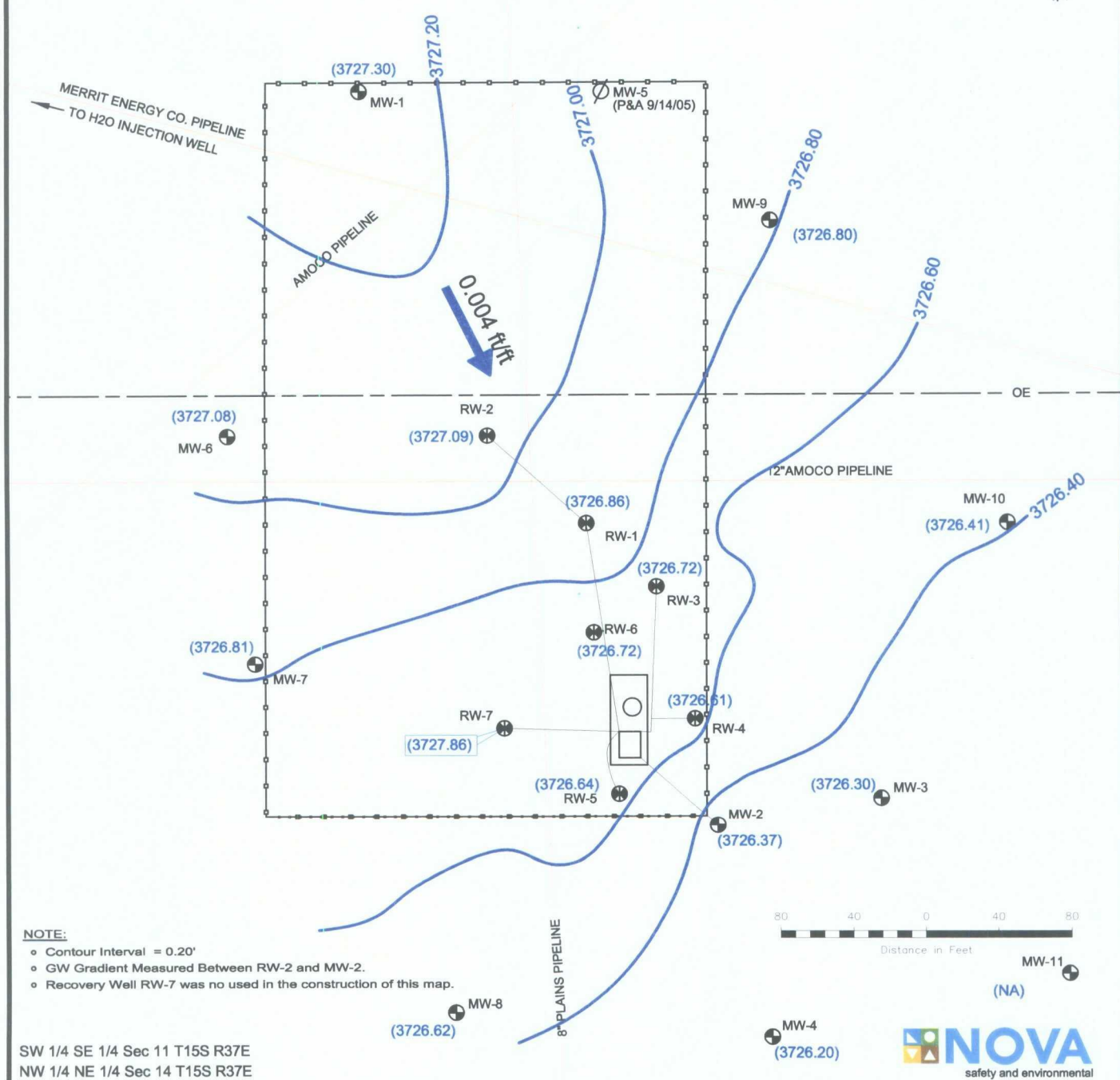
**Figure 1  
 Site Location Map**

Plains Marketing, L.P.  
 Darr Angell # 2  
 Lea County, NM

**NOVA Safety and Environmental**

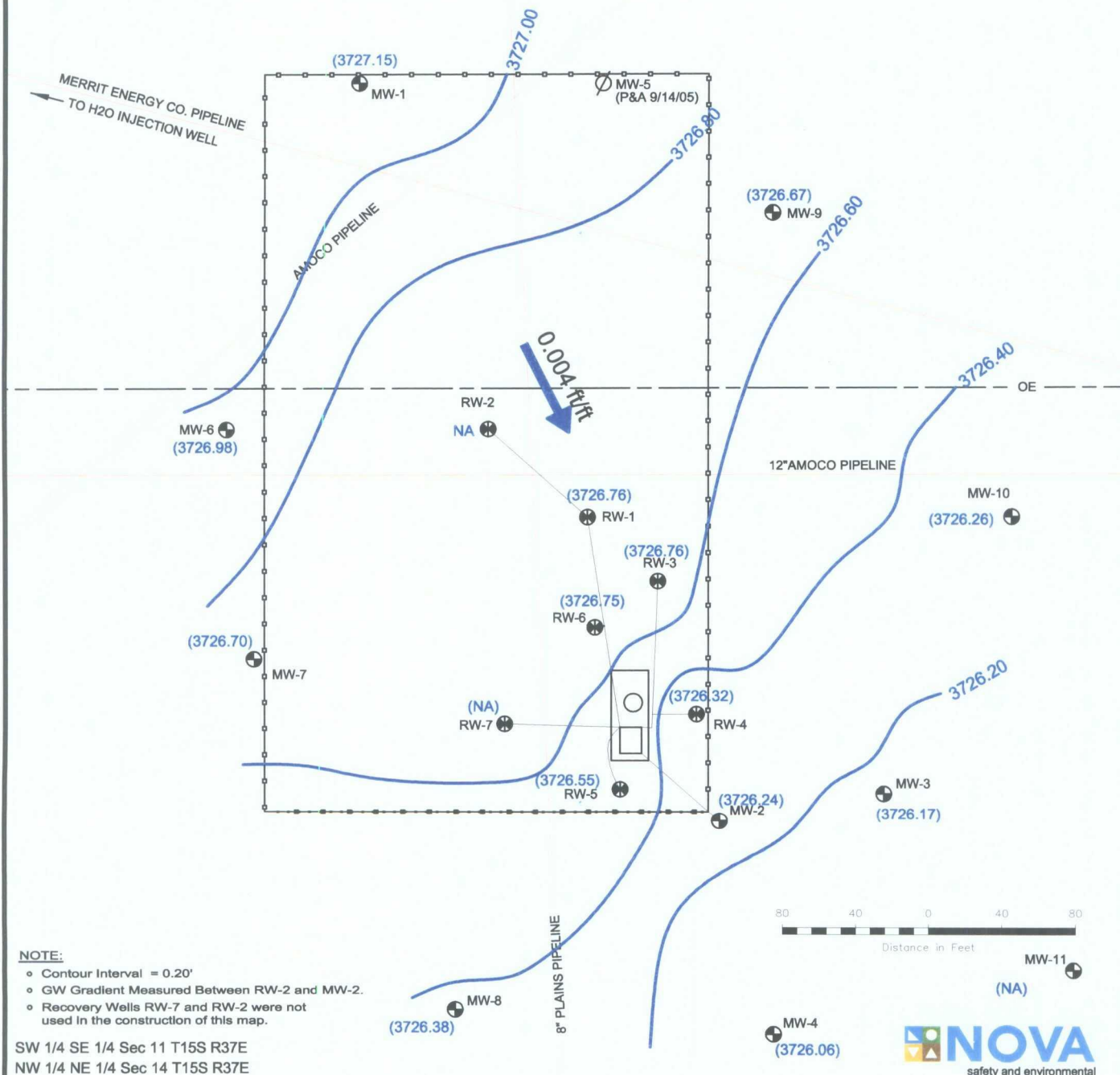
Scale: 1"=2000'	Prep By: CDS	Checked By: TKC
February 20, 2005		





<b>LEGEND:</b> Monitor Well Location Recovery Well Location Groundwater Elevation (In Feet) Groundwater Gradient Contour Line Groundwater Gradient and Magnitude		Bermed Containment Area Plugged and Abandoned Well	<b>Figure 2A</b> Inferred Groundwater Gradient Map (02/27/08)  Plains Marketing, L.P. Darr Angell # 2 Lea County, NM	<b>NOVA Safety and Environmental</b>	
NMOC Ref# AP-007			Scale: 1"=80'	CAD By: DGC	Checked By: RKR
			October 21 2008	Lat 33° 01' 47.0"N Lon. 103° 10' 10.5"W	





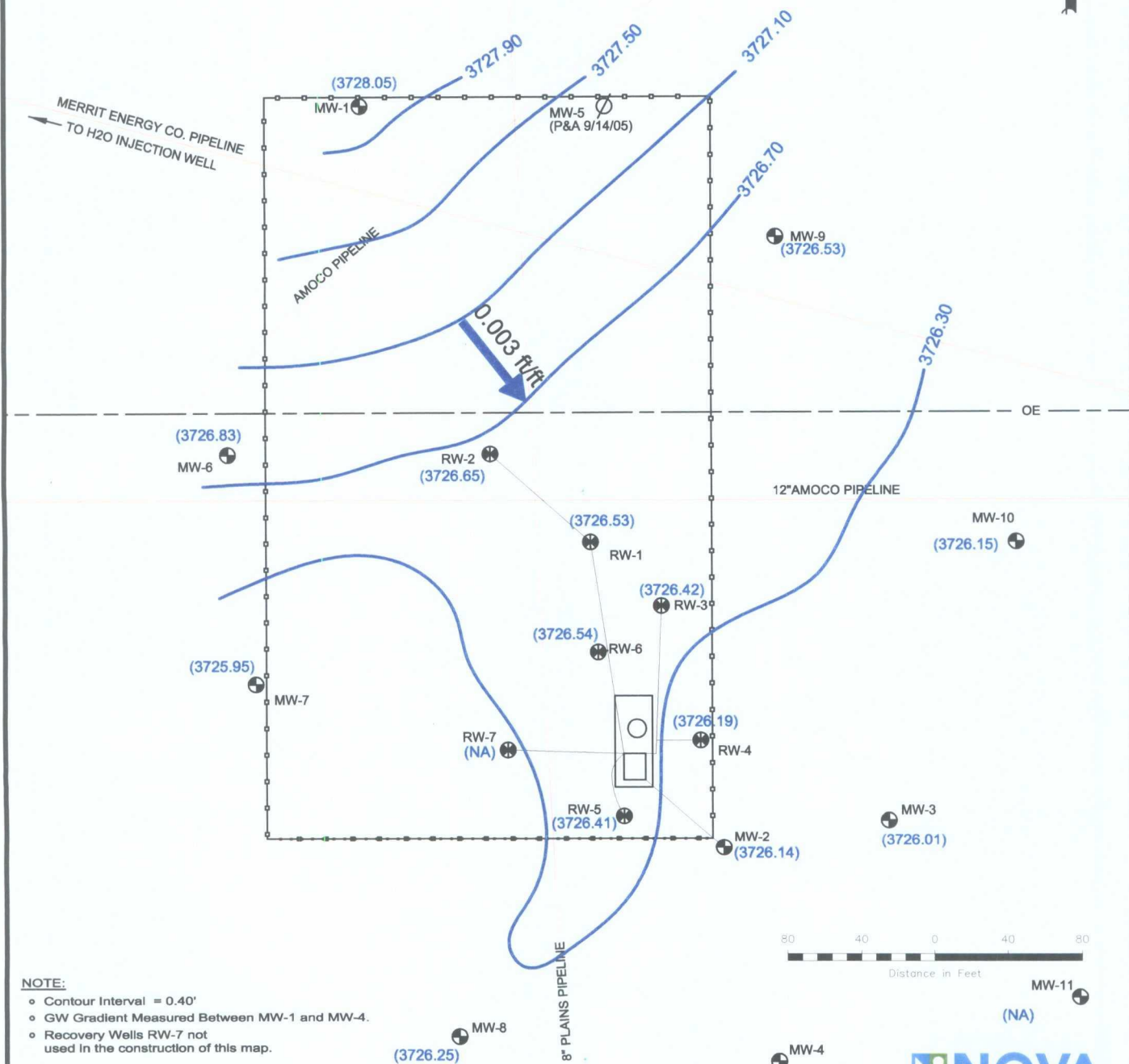
**NOTE:**

- Contour Interval = 0.20'
- GW Gradient Measured Between RW-2 and MW-2.
- Recovery Wells RW-7 and RW-2 were not used in the construction of this map.

SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E



<b>LEGEND:</b>		<b>Figure 2B</b> Inferred Groundwater Gradient Map (05/29/08)		<b>NOVA Safety and Environmental</b>	
	Monitor Well Location		Berm Containment Area	Scale: 1"=80'	CAD By: DGC
	Recovery Well Location		Plugged and Abandoned Well	October 21, 2008	Checked By: RKR
(3728.84)	Groundwater Elevation (In Feet)	Plains Marketing, L.P. Darr Angell # 2 Lea County, NM		Lat 33° 01' 47.0"N Lon. 103° 10' 10.5"W	
0.001 ft/ft	Groundwater Gradient Contour Line	NMOCD Ref# AP-007			
	Groundwater Gradient and Magnitude				



**NOTE:**

- Contour Interval = 0.40'
- GW Gradient Measured Between MW-1 and MW-4.
- Recovery Wells RW-1 to RW-7 not used in the construction of this map.

SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E

**LEGEND:**

- Monitor Well Location
- Recovery Well Location
- Groundwater Elevation (In Feet)
- Groundwater Gradient Contour Line
- Groundwater Gradient and Magnitude

- Bermed Containment Area
- Plugged and Abandoned Well

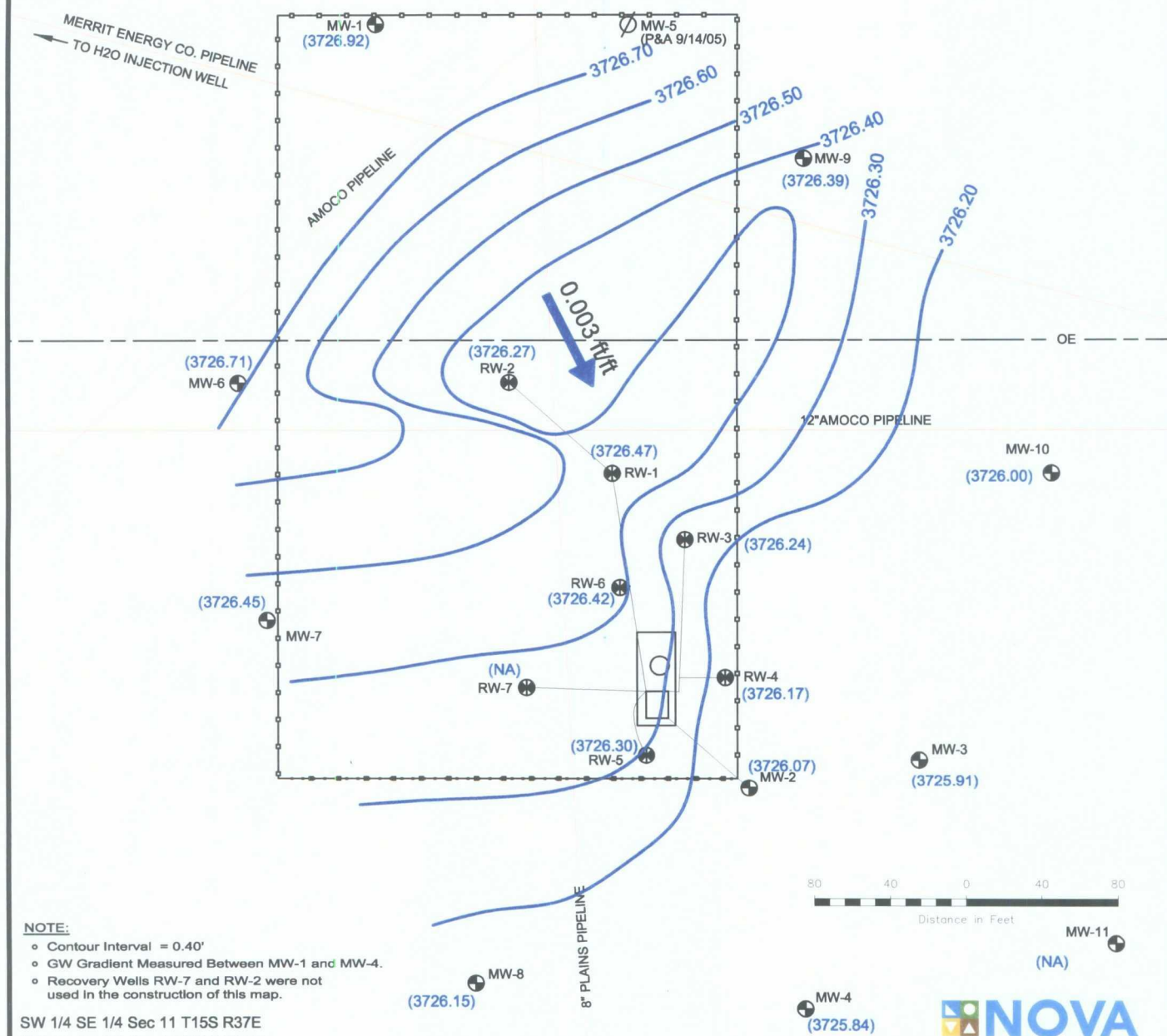
NMOCD Ref# AP-007

**Figure 2C**  
Inferred Groundwater  
Gradient Map  
(09/05/08)

Plains Marketing, L.P.  
Darr Angell # 2  
Lea County, NM

**NOVA Safety and Environmental**

Scale: 1"=80'	CAD By: DGC	Checked By: RKR
October 21, 2008	Lat 33° 01' 47.0"N Lon. 103° 10' 10.5"W	



**NOTE:**

- Contour Interval = 0.40'
- GW Gradient Measured Between MW-1 and MW-4.
- Recovery Wells RW-7 and RW-2 were not used in the construction of this map.

SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E



- LEGEND:**
- Monitor Well Location
  - Recovery Well Location
  - Groundwater Elevation (In Feet)
  - Groundwater Gradient Contour Line
  - Groundwater Gradient and Magnitude

- Bermed Containment Area
- Plugged and Abandoned Well

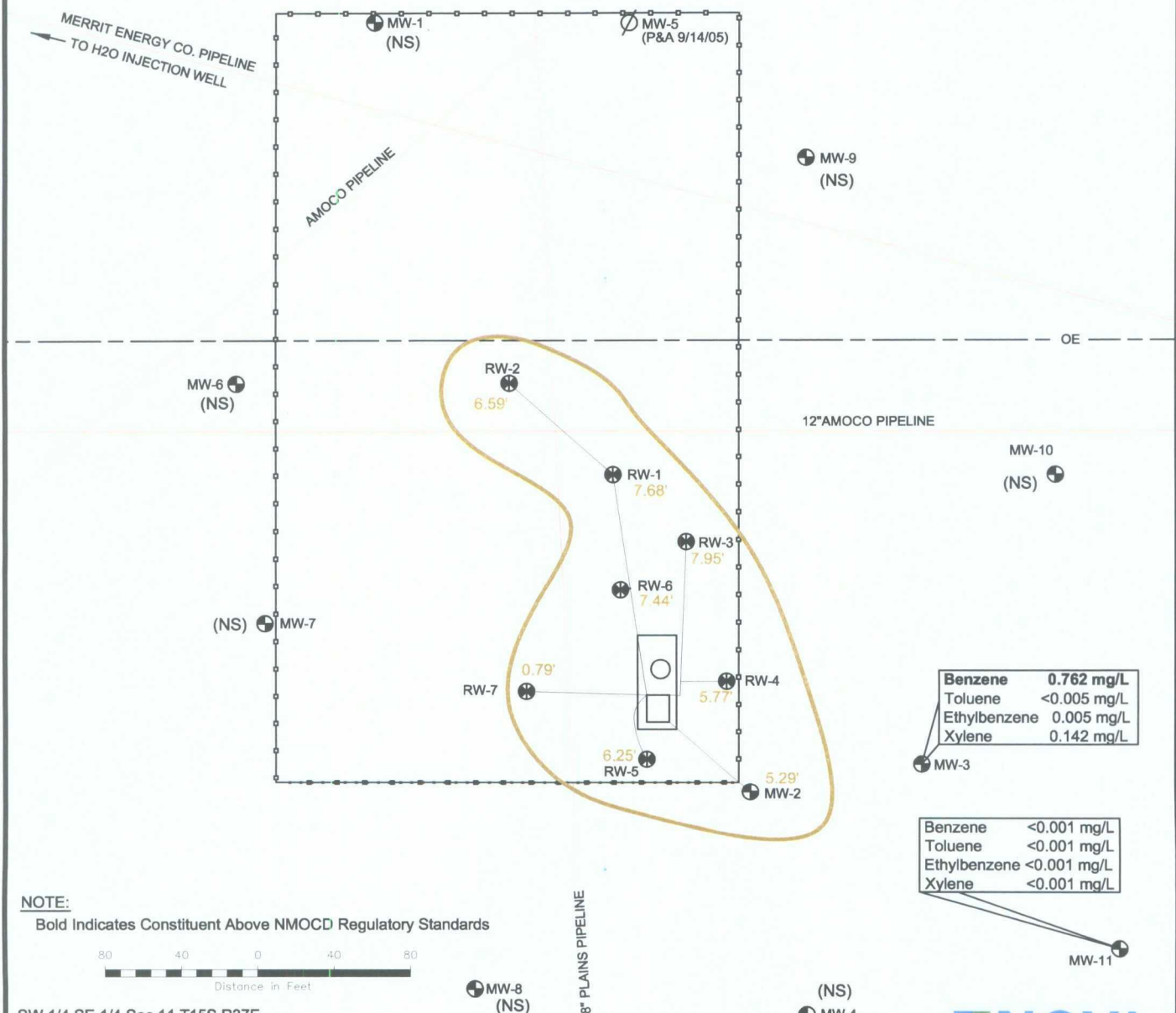
NMOCD Ref# AP-007

**Figure 2D**  
Inferred Groundwater  
Gradient Map  
(12/01/08)  
Plains Marketing, L.P.  
Darr Angell # 2  
Lea County, NM

**NOVA Safety and Environmental**

Scale: 1"=80'	CAD By: DGC	Checked By: RKR
December 15, 2008	Lat33° 01' 47.0"N Lon. 103° 10' 10.5"W	





Benzene	0.762 mg/L
Toluene	<0.005 mg/L
Ethylbenzene	0.005 mg/L
Xylene	0.142 mg/L

Benzene	<0.001 mg/L
Toluene	<0.001 mg/L
Ethylbenzene	<0.001 mg/L
Xylene	<0.001 mg/L

**NOTE:**  
Bold Indicates Constituent Above NMOCD Regulatory Standards



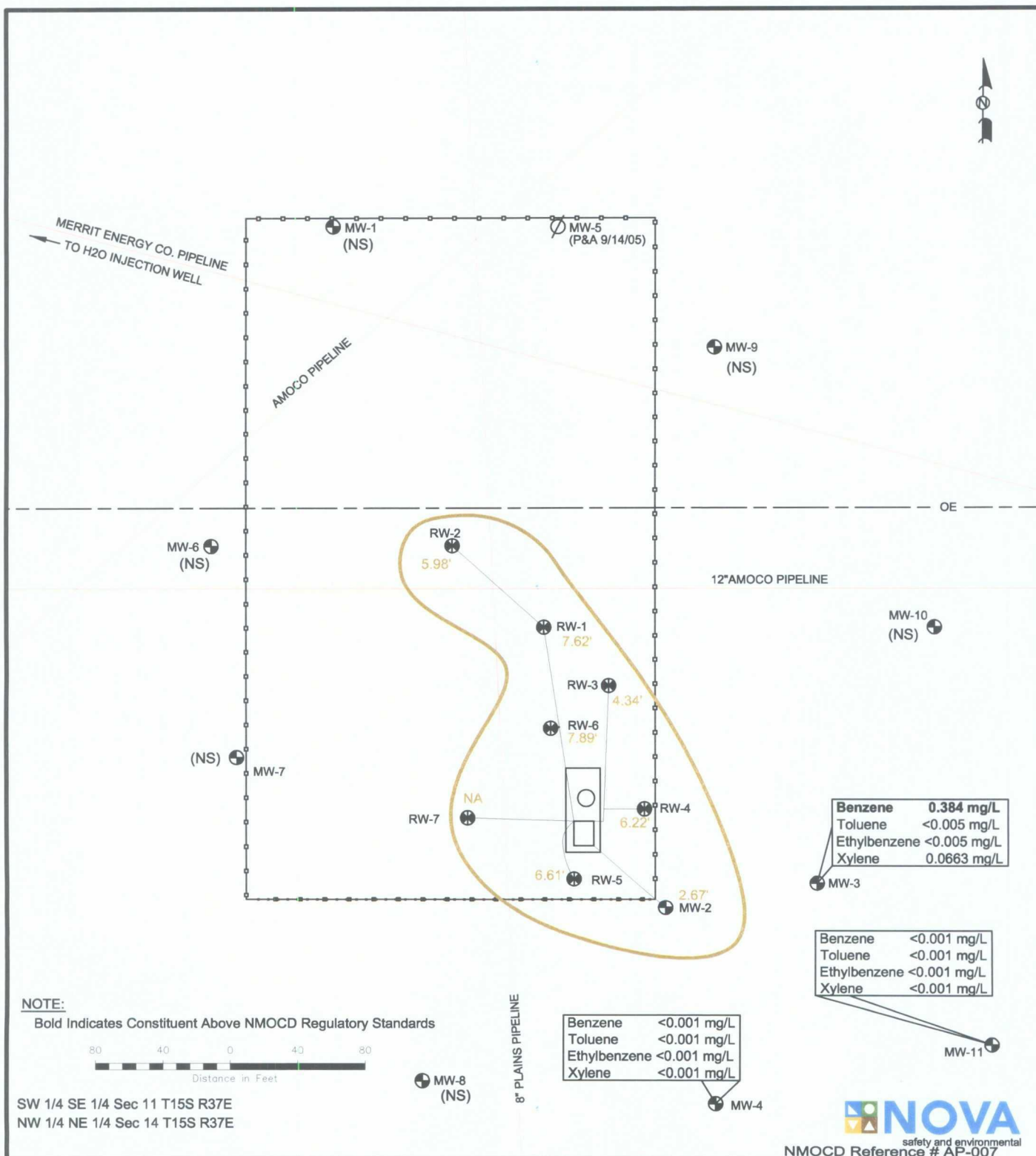
SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E



<b>LEGEND:</b>	
Monitor Well Location	Bermed Containment Area
Recovery Well Location	(NS) Not Sampled
Inferred PSH Extent	Plugged and Abandoned Well
<0.001 Constituent Concentration (mg/L)	NMOCD Ref# AP-007
Note: PSH Thickness in Feet	

Figure 3A  
Groundwater Concentration  
and Inferred PSH Extent  
Map (02/27/08)  
  
Plains Marketing, L.P.  
Darr Angell # 2  
Lea County, NM

NOVA Safety and Environmental		
Scale: 1"=80'	CAD By: DGC	Checked By: RKR
October 21, 2008	Lat33° 01' 47.0"N Lon. 103° 10' 10.5"W	



**NOTE:**

Bold Indicates Constituent Above NMOCD Regulatory Standards



SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E

**LEGEND:**

- Monitor Well Location
- Recovery Well Location
- Inferred PSH Extent
- <0.001** Constituent Concentration (mg/L)
- Note: PSH Thickness in Feet



Berm Containment Area

(NS)

Not Sampled



Plugged and Abandoned Well

NMOCD Ref# AP-007

8\"/>

Benzene <0.001 mg/L  
Toluene <0.001 mg/L  
Ethylbenzene <0.001 mg/L  
Xylene <0.001 mg/L

Benzene **0.384 mg/L**  
Toluene <0.005 mg/L  
Ethylbenzene <0.005 mg/L  
Xylene 0.0663 mg/L

Benzene <0.001 mg/L  
Toluene <0.001 mg/L  
Ethylbenzene <0.001 mg/L  
Xylene <0.001 mg/L

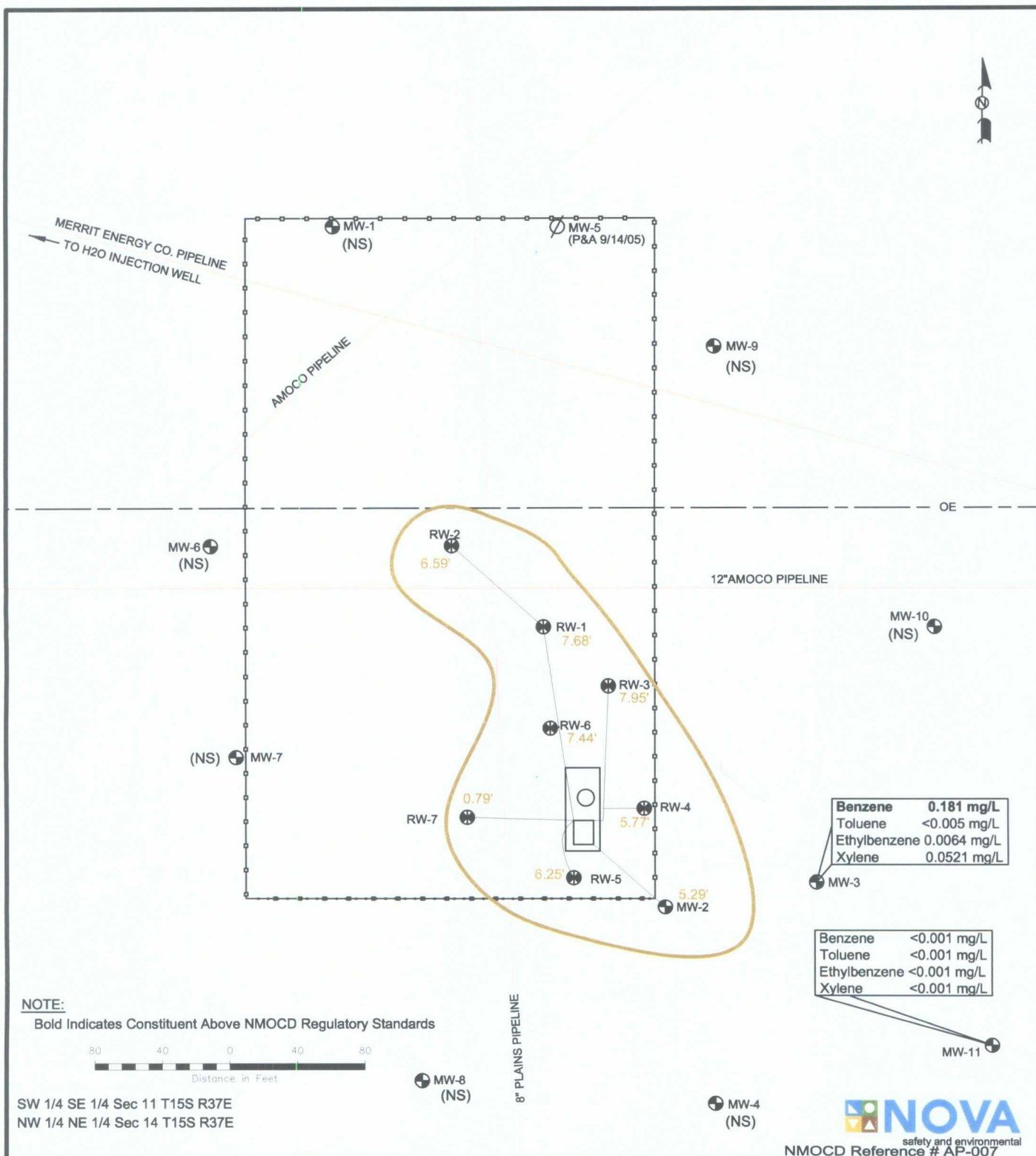
Figure 3B  
Groundwater Concentration  
and Inferred PSH Extent  
Map (05/29/08)

Plains Marketing, L.P.  
Darr Angell # 2  
Lea County, NM

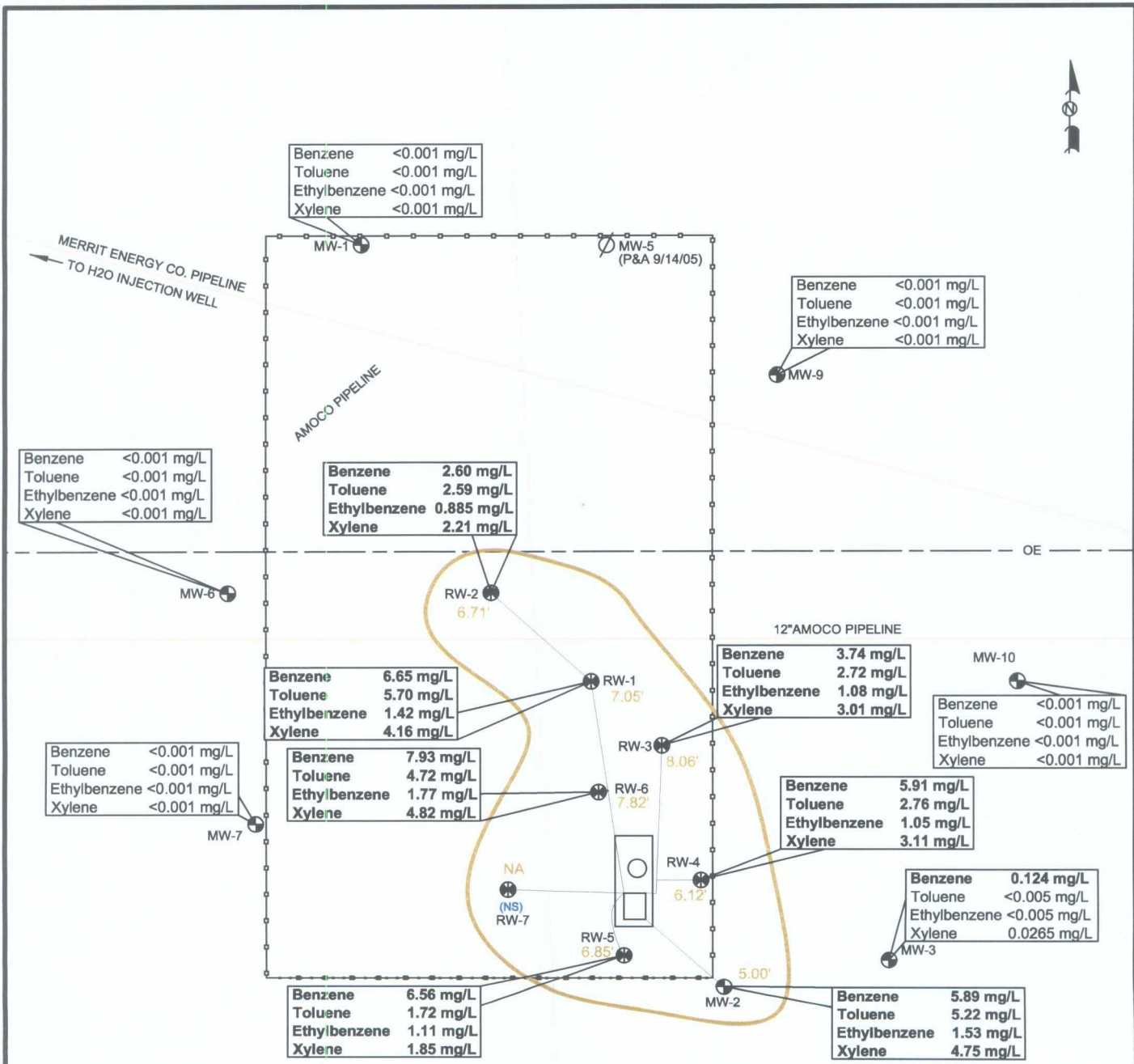
**NOVA**  
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NMOCD Reference # AP-007

NOVA Safety and Environmental

Scale: 1\"/>







**NOTE:**  
Bold Indicates Constituent Above NMOCD Regulatory Standards



SW 1/4 SE 1/4 Sec 11 T15S R37E  
NW 1/4 NE 1/4 Sec 14 T15S R37E

**LEGEND:**  
● Monitor Well Location  
● Recovery Well Location  
— Inferred PSH Extent  
<0.001 Constituent Concentration (mg/L)  
*Note: PSH Thickness in Feet*

■ Bermed Containment Area  
(NS) Not Sampled  
⊘ Plugged and Abandoned Well  
NMOCD Ref# AP-007

**Figure 3D**  
Groundwater Concentration  
and Inferred PSH Extent  
Map (12/01/08)  
Plains Marketing, L.P.  
Darr Angell # 2  
Lea County, NM

**NOVA**  
safety and environmental  
NMOCD Reference # AP-007

**NOVA Safety and Environmental**

Scale: 1"=80'	CAD By: DGC	Checked By: RKR
October 21, 2008	Lat33° 01' 47.0"N Lon. 103° 10' 10.5"W	

## TABLES



TABLE 1

## 2008 - GROUNDWATER ELEVATION DATA

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

WELL NUMBER	DATE MEASURED	TOP OF CASING ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUND WATER ELEVATION
MW - 1	02/27/08	3788.04	-	60.74	0.00	3727.30
MW - 1	05/29/08	3788.04	-	60.89	0.00	3727.15
MW - 1	09/05/08	3788.04	-	59.99	0.00	3728.05
MW - 1	12/01/08	3788.04	-	61.12	0.00	3726.92
MW - 2	02/27/08	3788.41	61.25	66.54	5.29	3726.37
MW - 2	05/29/08	3788.41	61.77	64.44	2.67	3726.24
MW - 2	09/02/08	3788.41		pump in well		3788.41
MW - 2	09/05/08	3788.41	62.02	63.69	1.67	3726.14
MW - 2	09/23/08	3788.41		pump in well		3788.41
MW - 2	09/29/08	3788.41		pump in well		3788.41
MW - 2	10/07/08	3788.41		pump in well		3788.41
MW - 2	10/27/08	3788.41		pump in well		3788.41
MW - 2	11/03/08	3788.41		pump in well		3788.41
MW - 2	12/01/08	3788.41	61.59	66.59	5.00	3726.07
MW - 2	12/01/08	3788.41	61.59	66.59	5.00	3726.07
MW - 2	12/29/08	3788.41		pump in well		3788.41
MW - 3	02/27/08	3787.94	-	61.64	0.00	3726.30
MW - 3	05/29/08	3787.94	-	61.77	0.00	3726.17
MW - 3	09/05/08	3787.94	-	61.93	0.00	3726.01
MW - 3	12/01/08	3787.94	-	62.03	0.00	3725.91
MW - 4	02/27/08	3787.76	-	61.56	0.00	3726.20
MW - 4	05/29/08	3787.76	-	61.70	0.00	3726.06
MW - 4	09/05/08	3787.76	-	61.82	0.00	3725.94
MW - 4	12/01/08	3787.76	-	61.92	0.00	3725.84
MW - 6	02/27/08	3788.31	-	61.23	0.00	3727.08
MW - 6	05/29/08	3788.31	-	61.33	0.00	3726.98
MW - 6	09/05/08	3788.31	-	61.48	0.00	3726.83
MW - 6	12/01/08	3788.31	-	61.60	0.00	3726.71
MW - 7	02/27/08	3788.65	-	61.84	0.00	3726.81
MW - 7	05/29/08	3788.65	-	61.95	0.00	3726.70
MW - 7	09/05/08	3788.65	-	62.70	0.00	3725.95
MW - 7	12/01/08	3788.65	-	62.20	0.00	3726.45
MW - 8	02/27/08	3787.60	-	61.09	0.00	3726.51
MW - 8	05/29/08	3787.60	-	61.22	0.00	3726.38
MW - 8	09/05/08	3787.60	-	61.35	0.00	3726.25
MW - 8	12/01/08	3787.60	-	61.45	0.00	3726.15
MW - 9	02/27/08	3787.27	-	60.47	0.00	3726.80
MW - 9	05/29/08	3787.27	-	60.60	0.00	3726.67
MW - 9	09/05/08	3787.27	-	60.74	0.00	3726.53
MW - 9	12/01/08	3787.27	-	60.88	0.00	3726.39
MW - 10	02/27/08	3787.50	-	61.09	0.00	3726.41
MW - 10	05/29/08	3787.50	-	61.24	0.00	3726.26
MW - 10	09/05/08	3787.50	-	61.35	0.00	3726.15
MW - 10	12/01/08	3787.50	-	61.50	0.00	3726.00

TABLE 1

## 2008 - GROUNDWATER ELEVATION DATA

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

WELL NUMBER	DATE MEASURED	TOP OF CASING ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUND WATER ELEVATION
MW - 11	02/27/08		-	62.26	0.00	
MW - 11	05/29/08			62.37	0.00	
MW - 11	09/05/08			62.49	0.00	
MW - 11	12/01/08		-	62.61	0.00	
RW - 1	02/27/08	3787.45	59.34	67.02	7.68	3726.96
RW - 1	05/29/08	3787.45	59.55	67.17	7.62	3726.76
RW - 1	09/02/08	3787.45		pump in well		3787.45
RW - 1	09/05/08	3787.45	59.87	66.85	6.98	3726.53
RW - 1	09/15/08	3787.45		pump in well		
RW - 1	09/23/08	3787.45		pump in well		
RW - 1	09/29/08	3787.45		pump in well		
RW - 1	10/07/08	3787.45		pump in well		
RW - 1	10/27/08	3787.45		pump in well		
RW - 1	11/03/08	3787.45		pump in well		
RW - 1	12/01/08	3787.45	59.92	66.97	7.05	3726.47
RW - 1	12/29/08	3787.45		pump in well		3787.45
RW - 2	02/27/08	3787.83	59.75	66.34	6.59	3727.09
RW - 2	05/29/08	3787.83	60.41	66.39	5.98	3726.52
RW - 2	09/02/08	3787.83		pump in well		3787.83
RW - 2	09/05/08	3787.83	60.18	66.83	6.65	3726.65
RW - 2	09/15/08	3787.83		pump in well		
RW - 2	09/23/08	3787.83		pump in well		
RW - 2	09/29/08	3787.83		pump in well		
RW - 2	10/07/08	3787.83		pump in well		
RW - 2	10/27/08	3787.83		pump in well		
RW - 2	11/03/08	3787.83		pump in well		
RW - 2	12/01/08	3787.83	60.55	67.26	6.71	3726.27
RW - 2	12/29/08	3787.83		pump in well		3787.83
RW - 3	02/27/08	3787.81	59.90	67.85	7.95	3726.72
RW - 3	05/29/08	3787.81	60.58	64.92	4.34	3726.58
RW - 3	09/02/08	3787.81		pump in well		3787.81
RW - 3	09/05/08	3787.81	60.17	68.29	8.12	3726.42
RW - 3	09/15/08	3787.81		pump in well		
RW - 3	09/23/08	3787.81		pump in well		
RW - 3	09/29/08	3787.81		pump in well		
RW - 3	10/07/08	3787.81		pump in well		
RW - 3	10/27/08	3787.81		pump in well		
RW - 3	11/03/08	3787.81		pump in well		
RW - 3	12/02/08	3787.81	60.36	68.42	8.06	3726.24
RW - 3	12/29/08	3787.81		pump in well		3787.81
RW - 4	02/27/08	3787.74	60.26	66.03	5.77	3726.61
RW - 4	05/29/08	3787.74	60.49	66.71	6.22	3726.32
RW - 4	09/02/08	3787.74		pump in well		3787.74
RW - 4	09/05/08	3787.74	60.62	66.81	6.19	3726.19
RW - 4	09/15/08			pump in well		
RW - 4	09/23/08			pump in well		
RW - 4	09/29/08			pump in well		
RW - 4	10/07/08			pump in well		
RW - 4	10/27/08			pump in well		
RW - 4	11/03/08			pump in well		
RW - 4	12/02/08	3787.74	60.65	66.77	6.12	3726.17
RW - 4	12/29/08	3787.74		pump in well		3787.74

TABLE 1

## 2008 - GROUNDWATER ELEVATION DATA

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

WELL NUMBER	DATE MEASURED	TOP OF CASING ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUND WATER ELEVATION
RW - 5	01/07/08	3787.38	59.86	65.22	5.36	3726.72
RW - 5	02/27/08	3787.38	59.80	66.05	6.25	3726.64
RW - 5	05/29/08	3787.38	59.84	66.45	6.61	3726.55
RW - 5	09/02/08	3787.38		pump in well		3787.38
RW - 5	09/05/08	3787.38	59.94	66.79	6.85	3726.41
RW - 5	09/15/08			pump in well		
RW - 5	09/23/08			pump in well		
RW - 5	09/29/08			pump in well		
RW - 5	10/07/08			pump in well		
RW - 5	10/27/08			pump in well		
RW - 5	11/03/08			pump in well		
RW - 5	12/01/08	3787.38	60.04	66.99	6.95	3726.30
RW - 5	12/29/08	3787.38		pump in well		3787.38
RW - 6	01/07/08	3787.22	59.19	67.11	7.92	3726.84
RW - 6	01/14/08	3787.22	59.17	67.15	7.98	3726.85
RW - 6	01/21/08	3787.22	59.22	69.18	9.96	3726.51
RW - 6	02/04/08	3787.22	59.21	67.19	7.98	3726.81
RW - 6	02/12/08	3787.22	59.25	67.22	7.97	3726.77
RW - 6	02/18/08	3787.22	59.26	62.23	2.97	3727.51
RW - 6	02/26/08	3787.22	59.25	67.21	7.96	3726.78
RW - 6	02/27/08	3787.22	59.38	66.82	7.44	3726.72
RW - 6	03/04/08	-	-	-	-	-
RW - 6	03/11/08	3787.22	59.25	67.23	7.98	3726.77
RW - 6	03/17/08	3787.22	59.26	67.23	7.97	3726.76
RW - 6	03/21/08	3787.22	59.29	67.27	7.98	3726.73
RW - 6	03/31/08	3787.22	59.29	67.25	7.96	3726.74
RW - 6	04/07/08	3787.22	59.28	62.14	2.86	3727.51
RW - 6	04/14/08	3787.22	59.29	67.27	7.98	3726.73
RW - 6	04/21/08	3787.22	59.28	67.00	7.72	3726.78
RW - 6	04/28/08	3787.22	59.29	67.29	8.00	3726.73
RW - 6	05/05/08	3787.22	59.35	67.33	7.98	3726.67
RW - 6	05/12/08	3787.22	59.29	67.28	7.99	3726.73
RW - 6	05/19/08	3787.22	59.30	67.29	7.99	3726.72
RW - 6	05/29/08	3787.22	59.29	67.18	7.89	3726.75
RW - 6	06/03/08	3787.22	59.29	67.27	7.98	3726.73
RW - 6	06/09/08	3787.22	59.32	67.11	7.79	3726.73
RW - 6	06/16/08	3787.22	59.29	67.29	8.00	3726.73
RW - 6	06/26/08	3787.22	59.32	67.31	7.99	3726.70
RW - 6	07/07/08	3787.22	59.33	67.34	8.01	3726.69
RW - 6	07/21/08			Broken Interface Probe		
RW - 6	07/30/08	3787.22	59.34	67.36	8.02	3726.68
RW - 6	08/06/08	3787.22	59.38	67.36	7.98	3726.64
RW - 6	08/11/08	3787.22	59.42	67.41	7.99	3726.60
RW - 6	08/20/08	3787.22	59.45	67.44	7.99	3726.57
RW - 6	08/25/08	3787.22	59.45	67.42	7.97	3726.57
RW - 6	09/02/08	3787.22	59.48	67.43	7.95	3726.55
RW - 6	09/05/08	3787.22	59.50	67.40	7.90	3726.54
RW - 6	09/15/08	3787.22	59.51	67.47	7.96	3726.52
RW - 6	09/23/08	3787.22	59.51	67.45	7.94	3726.52
RW - 6	09/29/08	3787.22	59.74	nd	0.00	0.00
RW - 6	10/07/08	3787.22	59.76	nd	0.00	0.00
RW - 6	10/13/08	3787.22	59.52	67.44	7.92	3726.51
RW - 6	10/27/08	3787.22	59.56	67.44	7.88	3726.48
RW - 6	11/03/08	3787.22	59.56	67.41	7.85	3726.48
RW - 6	11/12/08	3787.22	59.58	67.43	7.85	3726.46
RW - 6	11/19/08	3787.22	59.58	67.43	7.85	3726.46

TABLE 1

## 2008 - GROUNDWATER ELEVATION DATA

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

WELL NUMBER	DATE MEASURED	TOP OF CASING ELEVATION	DEPTH TO PRODUCT	DEPTH TO WATER	PSH THICKNESS	CORRECTED GROUND WATER ELEVATION
RW - 6	12/01/08	3787.22	59.63	67.45	7.82	3726.42
RW - 6	12/02/08	3787.22	59.63	67.45	7.82	3726.42
RW - 6	12/10/08	3787.22	59.64	67.45	7.81	3726.41
RW - 6	12/15/08	3787.22	59.66	67.43	7.77	3726.39
RW - 6	12/29/08	3787.22	59.63	67.43	7.80	3726.42
RW - 7	01/07/08	3787.40	59.42	nd	-	-
RW - 7	01/14/08	3787.40	59.47	60.18	0.71	3727.82
RW - 7	01/21/08	3787.40	59.3	60.22	0.92	3727.96
RW - 7	02/04/08	3787.40	59.34	nd		
RW - 7	02/12/08	3787.40	59.84	nd		
RW - 7	02/18/08	3787.40	59.26	nd		
RW - 7	02/27/08	3787.40	59.42	60.21	0.79	3727.86
RW - 7	03/04/08	-	-	-	-	-
RW - 7	03/11/08	3787.40	59.48	nd	-	-
RW - 7	03/17/08	3787.40	59.42	nd	-	-
RW - 7	03/21/08	3787.40	59.55	nd	-	-
RW - 7	03/31/08	3787.40	59.56	nd	-	-
RW - 7	04/07/08	3787.40	57.55	nd	-	-
RW - 7	04/14/08	3787.40	59.58	nd	-	-
RW - 7	04/21/08	3787.40	59.51	nd	-	-
RW - 7	04/28/08	3787.40	59.57	nd	-	-
RW - 7	05/05/08	3787.40	59.55	nd	-	-
RW - 7	05/12/08	3787.40	59.6	nd	-	-
RW - 7	05/19/08	3787.40	59.63	nd	-	-
RW - 7	05/29/08	3787.40	59.64	nd	-	-
RW - 7	06/03/08	3787.40	59.71	nd	-	-
RW - 7	06/09/08	3787.40	59.67	nd	-	-
RW - 7	06/16/08	3787.40	59.49	nd	-	-
RW - 7	06/26/08	3787.40	59.61	nd		
RW - 7	07/07/08	3787.40	59.69	nd		
RW - 7	07/21/08		Broken Interface Probe			
RW - 7	07/30/08	3787.40	59.64			
RW - 7	08/06/08	3787.40	59.69	nd		
RW - 7	08/11/08	3787.40	59.6	nd		
RW - 7	08/20/08	3787.40	59.66	nd		
RW - 7	08/25/08	3787.40	59369	nd		
RW - 7	09/02/08	3787.40	59.69	nd		
RW - 7	09/05/08	3787.40	59.61	60.23	0.62	
RW - 7	09/15/08	3787.40	59.61	nd		
RW - 7	09/23/08	3787.40	59.67	nd		
RW - 7	09/29/08	3787.40	59.51	67.43	7.92	
RW - 7	10/07/08	3787.40	59.46	67.39	7.93	
RW - 7	10/13/08	3787.40	59.74	nd	0.00	
RW - 7	10/27/08	3787.40	N/D	59.79	0.00	
RW - 7	11/03/08	3787.40	59.77	N/D	0.00	
RW - 7	11/12/08	3787.40	59.78	N/D	0.00	
RW - 7	11/19/08	3787.40	59.74	N/D	0.00	
RW - 7	12/01/08	3787.40	59.79	N/D	0.00	
RW - 7	12/02/08	3787.40	59.79	N/D	0.00	
RW - 7	12/10/08	3787.40	59.73	N/D	0.00	
RW - 7	12/15/08	3787.40	59.76	N/D	0.00	
RW - 7	12/29/08	3787.40	59.74	nd	0.00	

\* Complete Historical Tables are presented on the attached CD.

TABLE 2

## 2008 - CONCENTRATIONS OF BTEX AND TPH IN GROUNDWATER

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

Results are reported in mg/L.

SAMPLE LOCATION	SAMPLE DATE	SW 846-8015M GRO/DRO		SW 846-8021B, 5030,8260b BTEX				
		GRO C <sub>6</sub> -C <sub>12</sub>	DRO >C <sub>12</sub> -C <sub>28</sub>	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o - XYLENE
NMOCD Regulatory Limit				0.01	0.75	0.75	0.62	
MW - 1	02/27/08			Not Sampled on Current Sample Schedule				
MW - 1	05/29/08			Not Sampled on Current Sample Schedule				
MW - 1	09/05/08			Not Sampled on Current Sample Schedule				
MW - 1	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 2	02/27/08			Not Sampled Due to PSH in Well				
MW - 2	05/29/08			Not Sampled Due to PSH in Well				
MW - 2	09/05/08			Not Sampled Due to PSH in Well				
MW - 2	12/01/08	64.5	133	5.89	5.22	1.53	4.75	
MW - 3	02/27/08			0.7620	<0.005	0.0050	0.1420	
MW - 3	05/29/08			0.3840	<0.005	<0.005	0.0663	
MW - 3	09/05/08			0.1810	<0.005	0.0064	0.0521	
MW - 3	12/01/08			0.1240	<0.005	<0.005	0.0265	
MW - 4	02/27/08			Not Sampled on Current Sample Schedule				
MW - 4	05/29/08			<0.001	<0.001	<0.001	<0.001	
MW - 4	09/05/08			Not Sampled on Current Sample Schedule				
MW - 4	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 6	02/27/08			Not Sampled on Current Sample Schedule				
MW - 6	05/29/08			Not Sampled on Current Sample Schedule				
MW - 6	09/05/08			Not Sampled on Current Sample Schedule				
MW - 6	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 7	02/27/08			Not Sampled on Current Sample Schedule				
MW - 7	05/29/08			Not Sampled on Current Sample Schedule				
MW - 7	09/05/08			Not Sampled on Current Sample Schedule				
MW - 7	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 8	02/27/08			Not Sampled on Current Sample Schedule				
MW - 8	05/29/08			Not Sampled on Current Sample Schedule				
MW - 8	09/05/08			Not Sampled on Current Sample Schedule				
MW - 8	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 9	02/27/08			Not Sampled on Current Sample Schedule				
MW - 9	05/29/08			Not Sampled on Current Sample Schedule				
MW - 9	09/05/08			Not Sampled on Current Sample Schedule				
MW - 9	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 10	02/27/08			Not Sampled on Current Sample Schedule				
MW - 10	05/29/08			Not Sampled on Current Sample Schedule				
MW - 10	09/05/08			Not Sampled on Current Sample Schedule				
MW - 10	12/01/08			<0.001	<0.001	<0.001	<0.001	
MW - 11	02/27/08			<0.001	<0.001	<0.001	<0.001	
MW - 11	05/29/08			<0.001	<0.001	<0.001	<0.001	
MW - 11	09/05/08			<0.001	<0.001	<0.001	<0.001	
MW - 11	12/01/08			<0.001	<0.001	<0.001	<0.001	

TABLE 2

## 2008 - CONCENTRATIONS OF BTEX AND TPH IN GROUNDWATER

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

Results are reported in mg/L.

SAMPLE LOCATION	SAMPLE DATE	SW 846-8015M GRO/DRO		SW 846-8021B, 5030,8260b BTEX				
		GRO C <sub>6</sub> -C <sub>12</sub>	DRO >C <sub>12</sub> -C <sub>28</sub>	BENZENE	TOLUENE	ETHYL- BENZENE	m, p - XYLENES	o - XYLENE
NMOCD Regulatory Limit				0.01	0.75	0.75	0.62	
RW - 1	02/27/08			Not Sampled Due to PSH in Well				
RW - 1	05/29/08			Not Sampled Due to PSH in Well				
RW - 1	09/05/08			Not Sampled Due to PSH in Well				
RW - 1	12/01/08	71.4	741	6.65	5.70	1.42	4.16	
RW - 2	02/27/08			Not Sampled Due to PSH in Well				
RW - 2	05/29/08			Not Sampled Due to PSH in Well				
RW - 2	09/05/08			Not Sampled Due to PSH in Well				
RW - 2	12/01/08	26.0	563	2.60	2.59	0.8850	2.21	
RW - 3	02/27/08			Not Sampled Due to PSH in Well				
RW - 3	05/29/08			Not Sampled Due to PSH in Well				
RW - 3	09/05/08			Not Sampled Due to PSH in Well				
RW - 3	12/02/08	40.9	249	3.74	2.72	1.08	3.01	
RW - 4	02/27/08			Not Sampled Due to PSH in Well				
RW - 4	05/29/08			Not Sampled Due to PSH in Well				
RW - 4	09/05/08			Not Sampled Due to PSH in Well				
RW - 4	12/02/08	35.8	290	5.91	2.76	1.05	3.11	
RW - 5	02/27/08			Not Sampled Due to PSH in Well				
RW - 5	05/29/08			Not Sampled Due to PSH in Well				
RW - 5	09/05/08			Not Sampled Due to PSH in Well				
RW - 5	12/01/08	34.6	93.3	6.56	1.72	1.11	1.85	
RW - 6	02/27/08			Not Sampled Due to PSH in Well				
RW - 6	05/29/08			Not Sampled Due to PSH in Well				
RW - 6	09/05/08			Not Sampled Due to PSH in Well				
RW - 6	12/02/08	65.6	179	7.93	4.72	1.77	4.82	
RW - 7	02/27/08			Not Sampled Due to PSH in Well				
RW - 7	05/29/08			Not Sampled Due to PSH in Well				
RW - 7	09/05/08			Not Sampled Due to PSH in Well				
RW - 7	12/02/08			Not Sampled Due to Insufficient Water in Well				

\* Complete Historical Tables are presented on the attached CD.

## POLYNUCLEAR AROMATIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER - 2008

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOC REFERENCE NUMBER AP-007

All water concentrations are reported in mg/L

SAMPLE LOCATION	SAMPLE DATE	EPA SW846-8270C, 3510										
		Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Indeno[1,2,3-cd]pyrene
Maximum Contaminant Levels from NM WQCC Drinking water standards Sections 1-101.UU and 3-103.A.		—	—	—	0.0001 mg/L	0.0007 mg/L	0.0002 mg/L	0.0002 mg/L	0.0002 mg/L	0.0003 mg/L	—	0.0004 mg/L
		—	—	—	0.03 mg/L	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—
		—	—	—	—	—	—	—	—	—	—	—
MW-1	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-2	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-3	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-4	12/01/08	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water	Insufficient Water
MW-6	12/01/08	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185	<0.000185
MW-7	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-8	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-9	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-10	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183
MW-11	12/01/08	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183	<0.000183

# POLYNUCLEAR AROMATIC HYDROCARBON CONCENTRATIONS IN GROUNDWATER - 2008

PLAINS MARKETING, L.P.  
DARR ANGELL #2  
LEA COUNTY, NEW MEXICO  
NMOCD REFERENCE NUMBER AP-007

		EPA SW846-8270C, 3510																	
SAMPLE LOCATION	SAMPLE DATE	Acenaphthene	Acenaphthylene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Chrysene	Dibenz[a,h]anthracene	Fluoranthene	Indeno[1,2,3-cd]pyrene	Naphthalene	Phenanthrene	Pyrene	1-Methylnaphthalene	2-Methylnaphthalene	Dibenzofuran	
Maximum Contaminant Levels from NM WQCC Drinking water standards Sections 1-101.UU and 3-103.A.		—	—	—	0.0001 mg/L	0.0007 mg/L	0.0002 mg/L	0.0002 mg/L	0.0002 mg/L	0.0003 mg/L	—	—	0.0004 mg/L	0.03 mg/L	—	—	0.03 mg/L	—	
		<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	<0.00459	0.274	<0.00459	1.01	0.346	<0.00459	2.42	3.20	0.208
		<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	<0.00184	0.0507	<0.00184	0.224	0.0569	<0.00184	0.410	0.526	0.0350	
		<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	0.0447	<0.000922	0.203	0.0523	<0.000922	0.362	0.480	0.0309	
		<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	0.173	<0.00183	0.637	0.216	<0.00183	1.58	2.14	0.122	
		<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	0.0938	<0.000922	0.283	0.117	<0.000922	0.835	0.910	0.0654	
RW-5	12/01/08	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	<0.000922	0.188	<0.00183	0.693	0.244	<0.00183	1.77	2.44	0.138	
RW-6	12/02/08	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	<0.00183	



## **APPENDICES**

**APPENDIX A:**  
**Release Notification and Corrective Action**  
**(Form C-141)**

## Release Notification and Corrective Action

☒ Initial Report    ☐ Final Report

# Le mini Frost

915/6843467

## Pipeline

494 50

LOCATION OF RELEASE							
Zone	Lat	Section	Township	Range	Feet from the North-South Line	Feet from the East-West Line	County
		14	15-S	37-E			Lea

Type of Release: <u>Grudgeoil</u> Name of Releasee: <u>Pipeline Leak</u> Was Information Noted Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	Volume of Release: <u>600001</u> Date and Time of Occurrence: <u>unknown</u> If YES, Is Wholly? <u>Linda - HOLDSCO</u> Date and Time: <u>7/29/99 4pm</u> If YES, Volume Impacting the Environment:
Is Wholly? <u>Lennan Frost Jim Henry</u> Was Information Noted? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date and Time: <u>7/31/99 2:30pm</u> If YES, Volume Impacting the Environment:

3. ~~Photocopy~~ and ~~transmit~~ Describe Fully (Attach Additional Sheets If Necessary)

Provide a List of Problems and Remedial Action Taken. (Attach Additional Sheets if Necessary)

External Corrosion - pipe will be replaced

Number of Pages and Columns Used (Attach Additional Sheets if Necessary)

will evaluate once the pipe has been replaced -  
probable treat on site

Only with the information given above is true and complete to the best of my knowledge and understanding that pursuant to NNOCED rules and regulations all operations required under the Clean Water Act and the Clean Air Act are being conducted in accordance with the laws which they mandate public health or the environment. The occurrence of (1) report to NNOCED started as "Real Report" does not relieve the operator of liability should these operations have failed to adequately monitor and maintain the water quality, or ground water, surface water, human health or the environment. In addition, NNOCED compliance of a C-141 report does not relieve the operator of compliance with any other federal, state, or local laws and/or regulations.

# OIL CONSERVATION DESIGN

Approved by  
District Supervisor

Approved Date:

**EXPERIMENT 104**

### Conditions of Agreement

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