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TRIDENT ENVIRONMENTAL

August 1, 2012

Mr. Glenn von Gonten
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

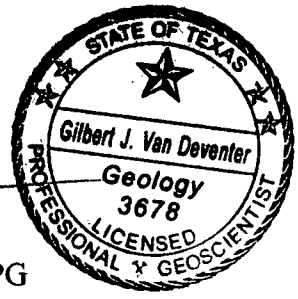
RE: **2012 ANNUAL GROUNDWATER MONITORING REPORT**
PRIDE ENERGY COMPANY
SOUTH FOUR LAKES TANK BATTERY (1RP-0204)
T12S, R34E, SECTION 2, UNIT LETTER G
LEA COUNTY, NEW MEXICO

Mr. von Gonten:

As agent for Pride Energy Company, Trident Environmental submits the attached *2012 Annual Groundwater Monitoring Report* for the South Four Lakes Tank Battery Site (1RP-204) located approximately 10 miles west of Tatum in Lea County, New Mexico. This *2012 Annual Groundwater Monitoring Report* documents the annual sampling event performed by Trident on June 19-20, 2012, and site remediation activities conducted between May 6, 2008 and July 12, 2012. This report also contains historical groundwater elevation and analytical data for the onsite monitoring wells that was obtained from the OCD Online database. The monitoring and sampling program was conducted in accordance with the monitoring plan specified by Mr. William C. Olson of the New Mexico Oil Conservation Division (NMOCD) in his letter dated July 14, 1997.

Thank you for your attention concerning this annual summary of groundwater monitoring activities. If you have any questions, please contact me at (432) 638-8740 or Matt Pride at (918) 524-9200.

Sincerely,



Gilbert J. Van Deventer, REM, PG
Trident Environmental – Project Manager

cc: Matt Pride (Pride Energy Co.)
Geoffrey Leking (NMOCD – District 1)

Subject: South Four Lakes Tank Battery (1RP-204) - 2012 Annual Groundwater Monitoring Report
From: Gil Van Deventer <gil@trident-environmental.com>
Date: 08/01/12 4:39 PM
To: Glenn Von Gonten <glenn.vongonten@state.nm.us>
CC: Matt Pride <mattp@pride-energy.com>, Geoffrey Leking <GeoffreyR.Leking@state.nm.us>

Hello Glenn:

As agent for Pride Energy Company, Trident Environmental is submitting the attached *2012 Annual Groundwater Monitoring Report* for the *South Four Lakes Tank Battery Site (1RP-204)* located approximately 10 miles west of Tatum in Lea County, New Mexico. The report documents the annual sampling event performed by Trident on June 19-20, 2012, and site remediation activities conducted between May 6, 2008 and July 19, 2012. The monitoring program is being conducted in accordance with the monitoring plan specified by Mr. William C. Olson of the NMOCD in his letter dated July 14, 1997.

A complete hard copy and one on compact disk is also being sent via USPS Priority Mail. A copy will also be sent to the NMOCD District 1 Office in Hobbs, NM.

If you have any questions, please feel free to contact me, or Matt Pride with Pride Energy Co. at 918-524-9200.

Thanks - Gil

Gilbert J. Van Deventer, PG, REM
Trident Environmental
P. O. Box 12177 - Odessa TX 79768
Work/Mobile: 432-638-8740
Fax: 413-403-9968

Attachments:

2012 _AGWMR_SFLTB.pdf	1.6 MB
2012 _AGWMR_SFLTB_xmit.pdf	19.6 KB

1R-204

August 1, 2012

2012 ANNUAL GROUNDWATER MONITORING REPORT

SOUTH FOUR LAKES TANK BATTERY SITE (1RP-204)

T12S, R34E, SECTION 2, UNIT LETTER G
LEA COUNTY, NEW MEXICO

Prepared for:

Pride Energy Company

P. O. Box 701950
Tulsa, Oklahoma 74170

Prepared by:

TRIDENT ENVIRONMENTAL

P. O. Box 12177
Odessa, Texas 79768

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1.0 Executive Summary

Trident Environmental (Trident) was retained by Pride Energy Company (Pride) to perform the annual groundwater monitoring at the South Four Lakes Tank Battery which is located approximately 10 miles west of Tatum, New Mexico. The legal description of the site is described as being in township 12 south, range 34 east, section 2, unit letter G, in Lea County, New Mexico. This 2012 Annual Groundwater Monitoring Report documents the annual sampling event performed by Trident at the South Four Lakes Tank Battery on June 19-20, 2012. This report also contains historical groundwater elevation and analytical data for all monitoring wells on site. The monitoring and sampling program was conducted in accordance with the monitoring plan specified by Mr. William C. Olson of the New Mexico Oil Conservation Division (NMOCD) in his letter dated July 14, 1997 (Appendix A).

Based on the sampling and monitoring data to date, the following conclusions relevant to groundwater conditions at the South Four Lakes Tank Battery are evident:

- Benzene concentrations in monitoring wells MW-1, MW-5, MW-7, MW-9, MW-10, MW-14, MW-15, and MW-16 were below the New Mexico Water Quality Control Commission (WQCC) standard of 0.010 mg/L.
- The benzene levels in monitoring wells MW-13 (0.403 mg/L), RW-1d (0.916 mg/L), and RW-2s (1.43 mg/L) exceeded the WQCC standard. Toluene, ethylbenzene, and xylene concentrations in all sampled wells were below the WQCC standards with the exception of the 0.75 mg/L standard for xylenes in MW-15 (0.887 mg/L) and RW-2s (3.15 mg/L).
- Light non-aqueous phased liquids (LNAPL) are present in the groundwater and have the characteristics of a light crude oil or natural gas liquid (condensate). The LNAPL thicknesses have been reduced significantly over the last 4 years due to operation of the windmill recovery system and passive recovery activities in affected wells. LNAPL is localized between RW-2s and MW-6. As of July 12, 2012, measurable LNAPL was only present in: MW-6 (0.02 ft) and MW-12 (0.10 ft).
- The windmill-driven LNAPL recovery system at RW-2s has been performing well since it was put back into operation on July 20, 2008. The system operates in total fluids mode so it is not known how much LNAPL has been removed; however, approximately 531,332 gallons (12,651 barrels) of hydrocarbon-impacted groundwater has been removed, since July 2008.
- Approximately 73.6 gal of LNAPL has been removed from MW-1, MW-6, MW-7, MW-9, MW12, MW-13, RW-1s, and RW-2s since May 2008 by use of passive bailers, oil absorbent socks, hand bailing, and windmill recovery.
- Chloride concentrations in MW-5, MW-7, MW-9, MW-10, MW-13, MW-14, MW-15, MW-16, RW-1d, and RW-2s exceed the WQCC standard of 250 mg/L.
- TDS concentrations in MW-5, MW-7, MW-9, MW-10, MW-13, MW-14, MW-15, MW-16, and RW-1d exceed the WQCC standard of 1,000 mg/L.
- Although iron and manganese concentrations exceed WQCC standards in some monitoring wells, increased levels of these constituents indicate intrinsic bioremediation processes are active.

- Source control has been implemented with the removal of contaminated soils beneath the closed EXXON production pit (December 1995) and the ongoing LNAPL and groundwater recovery operations. Given these source control measures, contaminant loading to groundwater has diminished through time, and the groundwater plume has stabilized and shown indications of decreased concentrations and areal extent over time.

- There are no indications that the hydrocarbon plume in the groundwater has migrated beyond the boundaries of the facility and there are no potential receptors (water wells) within a half-mile of the site. Given local and regional groundwater use, the groundwater plume in its current extent poses no risk to human health or the environment.

Recommendations for the South Four Lakes Tank Battery are as follows:

- Continue the sampling and monitoring program on an annual basis in accordance with the July 14, 1997 NMOCD approval letter. Continued annual sampling is necessary to monitor plume stability and to evaluate the effectiveness of natural attenuation in limiting the downgradient migration of the plume. The next sampling event is scheduled during the second quarter of 2013.

- Continue total fluids (LNAPL and groundwater) removal from RW-2s using the windmill pump system with monthly inspections to ensure that the system is operational and maintained.

- Conduct LNAPL recovery, if present, in RW-1s, MW-1, MW-6, MW-7, MW-9, MW-12, and MW-13 using passive bailers or absorbent socks with monthly inspections. Obtain groundwater samples from these wells if the LNAPL thickness is less than 0.01 feet.

- The above recommended LNAPL recovery effort will improve the effectiveness of biological attenuation of the dissolved hydrocarbon plume as observed with the continued uptake of electron acceptors, production of biological reaction by-products, and the reduction in BTEX concentrations and areal extent of the dissolved hydrocarbon plume.

2.0 Chronology of Events

November 13, 1987	EXXON Company U. S. A. (Exxon) reported a crude oil spill to the NMOCD which resulted in a loss of 600 barrels from a ruptured line at the South Four Lakes Tank Battery. No record of corrective actions appear to be on file however, Exxon stated that the tank battery would be redesigned and that old buried piping would be replaced with new above-ground piping.
November 1990	Phillips Petroleum Company (Phillips) acquired the South Four Lakes Unit from Exxon. As part of Phillips' due diligence effort during the acquisition, a Phase I and II environmental assessment was completed on the lease and associated facilities by Law Environmental, Inc. This assessment included the installation of four monitoring wells (MW-1 through MW-4).
September 1994	As part of a second environmental due diligence effort for the sale of the Unit, monitoring wells MW-1 through MW-4 were sampled again by SECOR International Incorporated (SECOR). Upon detection of LNAPL in MW-I, Phillips initiated a source identification effort which included evaluation of production storage tank integrity, excavation of an adjacent Amoco crude oil pipeline, a comparative analysis (fingerprinting) of crude oil produced from the unit with the LNAPL discovered within MW-1, and a focused soil and groundwater assessment in the area of the closed EXXON production pit.
December 13-16, 1994	SECOR supervised the installation of nine monitoring wells (MW-5 through MW-13).
January 17-18, 1995	SECOR performed groundwater sampling of all wells at the site with the exception of MW-1, MW-6, RW-11, and MW-12 in which LNAPL was observed.
March 13, 1995	SECOR submitted a *Soil and Groundwater Assessment* report in which they concluded that two historic hydrocarbon release mechanisms existed at the tank battery. The first and primary mechanism was a subsurface release to soil and ground-water from the closed production pit located north of the tank battery. The second mechanism was a relatively shallow subsurface release to soil from historic surface spills of crude oil and produced water.
May 15, 1995	NMOCD requested submission of a soil and groundwater remediation work plan and additional delineation of the dissolved-phase hydrocarbons in groundwater at the site.
July 27, 1995	Phillips submitted a *Remedial Action Plan for the South Four Lakes Unit* to the NMOCD. The plan proposed soil and groundwater remediation and delineation of dissolved-phase hydrocarbons at the site.
August 18, 1995	The NMOCD gave Phillips conditional approval for the Remedial Action Plan.

October 9-11, 1995	SECOR conducted the installation and sampling of three monitoring wells (MW-14 through MW-16) to delineate the downgradient extent of the dissolved hydrocarbons in groundwater at the site.
November 27, 1995	Ritter Environmental & Geotechnical Services (REGS) initiated closure of the former production pit under contract with Phillips. REGS excavated the former pit to a depth of approximately 23 ft below ground surface (bgs). The excavated soils were removed for treatment by solidification in three treatment cells. The solidified material (~1,835 yd^3) was allowed two to three weeks time to cure prior to covering the excavated production pit and treatment cells. Wells MW-8 and RW-11 had to be removed as they were in the footprint of the excavated area.
January 4-5, 1996	SECOR supervised the installation of recovery wells RW-1s, RW-1d, RW-2s, and RW-2d for subsequent use to recover LNAPL.
January 15-16, 1996	BASCOR Environmental, Inc. (BEI) supervised the installation of the windmill-driven pump system for LNAPL recovery and conducted a well performance test for recovery wells RW-2s and RW-2d.
January 31, 1996	Phillips submitted the *Final Closure Report - Unlined Surface Impoundment Closure* report prepared by REGS (December 1995) to the NMOCD.
January 31, 1996	Phillips submitted the *Supplemental Environmental Investigation – Downgradient Assessment* report prepared by SECOR (November 28, 1995) to the NMOCD.
January 31, 1996	Phillips submitted the *Recovery Well Installation Report* prepared by SECOR (January 29, 1996) to the NMOCD.
January 31, 1996	Phillips submitted the *Free Phase Hydrocarbon Recovery System Installation Report* prepared by BEI (January 30, 1996) to the NMOCD.
March 22, 1996	NMOCD approved Phillips' actions to date and added conditions for a long-term groundwater monitoring plan.
May 6, 1997	Phillips submitted the *Quantification of Natural Attenuation of Petroleum Hydrocarbons in Groundwater* report prepared by SECOR (April1997) to the NMOCD with a request that MW-2, MW-3, MW-4, and metals analysis for all monitoring wells be eliminated from future monitoring events. In addition, Phillips requested that groundwater monitoring for the on site wells be reduced to an annual frequency.
July 14, 1997	NMOCD conditionally approved Phillips' May 6, 1997 request.
December 3-5, 1997	CH2M Hill conducted the 1997 groundwater sampling event at the South Four Lakes Unit.

October 1998	Phillips sold South Four Lakes Unit to Pride Energy Company.
December 1, 1998	After the sale of the South Four Lakes Unit to Pride, Phillips sent a disclosure letter that included reports of previous investigations at the site. In the letter Phillips stated they would finalize the 1998 annual monitoring report for submission to the NMOCD.
February 15, 2000	NMOCD requested Phillips to submit required annual reports by March 17, 2000.
March 15, 2000	Phillips submitted the 1997 annual monitoring report and requested NMOCD to acknowledge the submission as its final action for the site.
May 26, 2000	NMOCD denied Phillips request for final action. Although Pride contractually accepted responsibility for site remediation, the NMOCD stated that contractual arrangement between Phillips and Pride does not relieve Phillips of liability or responsibility for remediation.
March 13, 2008	Trident Environmental conducted the 2008 groundwater monitoring event at the South Four Lakes tank battery site on behalf of Pride. Trident also acquired site documentation from various reports available from the OCD Online database to incorporate into the forthcoming annual monitoring report.
May 6, 2008	Trident supervised the inspection and trouble-shooting of the windmill-driven LNAPL recovery system at RW-2 which included removal of worn components. Passive bailers were installed in MW-6 and RW-1s to augment LNAPL recovery efforts.
May 28, 2008	Trident supervised the repair of the windmill-driven LNAPL recovery system at RW-2 which included repair and replacement of downhole components.
June 30, 2008	The discharge line was installed to direct LNAPL recovery from the windmill at RW-2s to the South Four Lakes tank battery.
July 24, 2008	The pump rod on the windmill at RW-2s was repaired and the system put back into operating status for total fluids recovery. Also, hydrophobic bailers were placed in monitoring wells MW-1, MW-7, MW-12 and MW-13, for passive recovery of LNAPL.
August 12, 2009	Hydrophobic bailer was installed in monitoring well MW-6. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
September 17, 2009	Oil absorbent sock was placed in monitoring well MW-9. The hydrophobic bailer in MW-7 was replaced with a hydrophobic sock, due to reduced LNAPL.
October 8, 2009	The hydrophobic bailer in MW-13 was replaced with an oil absorbent sock, due to reduced LNAPL.

November 20, 2009	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
December 23, 2009	Lewis Windmill on site to re-install new sump in RW-2s; windmill set in product-only mode for winter operation. Emptied hydrophobic bailers/socks, hand bailed, and gauged wells with LNAPL.
January 15, 2009	Adjusted sump; windmill set in product-only mode for winter operation. Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
February 27, 2009	Lowered sump in windmill to pump total fluids. The hydrophobic bailer in MW-1 was replaced with an oil absorbent sock, due to reduced LNAPL. Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
March 26, 2009	Windmill performing well in total fluids mode (product pumped off - only pumping water). Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
April 28, 2009	Re-attached loose bracket on windmill which was loose from pump on arrival (probably caused by high winds). Totalizer indicates windmill pumped at 1.7 gpm (average) over past month which is much higher than normal. Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
May 18-19, 2009	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Conducted annual groundwater monitoring event. Added monitoring wells MW-1, MW-7, MW-9, and MW-13 to sampled well list due to lack of LNAPL.
June 17, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
July 16, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
August 26, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
September 15, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
October 15 & 19, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL. Piñon Well Service on site to repair windmill (replaced leather cups, new coupling, and stabilizer tower) and put back in service.

October 21, 2009	Emptied and replaced hydrophobic bailers and socks. Replaced passive bailer in RW-1s with oil absorbent sock due to reduced LNAPL thickness.
November 12, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
December 10, 2009	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL. Turned windmill off to avoid winter freeze up problems.
January 13, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
February 25, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL. Re-activated windmill
March 23, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
April 1, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL. Windmill not operational (tophead plunge rod threads stripped)
April 28, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL. Repaired windmill (replaced tophead plunger rod) and installed new totalizer meter.
May 25, 2010	Gauged on site monitoring wells and began annual groundwater sampling activities.
May 25-26, 2010	Completed annual groundwater sampling activities. Emptied and replaced hydrophobic bailers and socks.
June 16, 2010	Emptied and replaced hydrophobic bailers and socks. Gauged wells with LNAPL.
July 14, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Replaced passive bailer in MW-12 with oil absorbent sock due to reduced LNAPL thickness.
August 24, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
September 22, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
October 6, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
November 30, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
December 13, 2010	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
January 19, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.

February 24, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Windmill out of service (stuffing box rod broken at threads).
March 17, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Windmill operational after replacing stuffing box rod.
April 26, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
May 17, 2011	Gauged on site monitoring wells and began annual groundwater sampling activities.
May 18, 2011	Completed annual groundwater sampling activities. Emptied and replaced hydrophobic bailers and socks.
June 29, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
July 14, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
August 23, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
September 28, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Installed new totalizer meter.
October 25, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
November 22, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
December 13, 2011	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
January 24, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
February 29, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
March 15, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
April 23, 2012	Ray Hardy (Piñon Water Well Service) repaired windmill to operational status by replacing threaded rod and adding gearbox oil.
April 25, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
May 25, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL.
June 19, 2012	Gauged on site monitoring wells and began annual groundwater sampling activities.
June 20, 2012	Completed annual groundwater sampling activities. Emptied and replaced hydrophobic bailers and socks.
July 12, 2012	Emptied hydrophobic bailers and socks. Gauged wells with LNAPL. Installed new totalizer meter.

3.0 Site Description and Background Information

Pride Energy Company (Pride) owns and operates the South Four Lakes Unit located in Lea County, New Mexico, just north of U.S. Highway 380, approximately 10 miles northwest of the town of Tatum (Figure 1). The Unit is an oil and gas lease on State land containing several active producing wells, one saltwater disposal well, and associated production tank battery. The tank battery is situated on approximately 5 acres and is surrounded by relatively flat grazing lands. Regionally, topography gently slopes to the east-southeast and is sparsely vegetated. The nearest water well (L-3005) is located approximately 0.35 miles north and is currently out of service but used periodically as a water supply for oil well drilling. An active windmill (L-0656) used for livestock watering is located approximately 0.4 miles east-northeast of the site. Figure 2 presents the facility layout, as well as the location of all site monitoring wells.

Pride acquired the Unit from Phillips Petroleum Company (Phillips) in October 1998. Phillips acquired the Unit from EXXON Company, U.S.A. in November 1990. EXXON (formerly Humble Oil Co.) had operated the unit since the 1950's. As part of Phillips' due diligence effort during the acquisition, Phase I and Phase II environmental assessments were completed on the lease and associated facilities. Eight soil borings were drilled for the purposes of soil screening and sampling. Four monitoring wells (MW-1 through MW-4) were installed in four of the eight soil borings. The four monitoring wells were sampled for benzene, toluene, ethylbenzene, and total xylenes (BTEX) in mid-October 1990. Low levels of dissolved toluene, ethylbenzene, and xylene were detected in the groundwater sample collected from MW-1, located adjacent to the northwest comer of an abandoned EXXON production pit. No other monitoring well contained detectable levels of BTEX or light non-aqueous phase liquids (LNAPL). Upon acquiring the lease from EXXON, Phillips dismantled the old EXXON tank battery and constructed a new tank battery in its place. As part of a second environmental due diligence effort for the sale of the Unit, the four monitoring wells were sampled again in September 1994. During this sampling event, approximately 2.5 feet of LNAPL was present in MW-1. No other monitoring well contained detectable levels of dissolved BTEX or measurable LNAPL. Upon detection of the LNAPL in MW-1, Phillips initiated a source identification effort that included four tasks:

1. A production storage tank integrity evaluation
2. Excavation of an adjacent Amoco crude oil pipeline
3. A comparative analysis (fingerprinting) of crude oil produced from the Unit with the LNAPL discovered in MW-1
4. A focused soil and groundwater assessment in the area of the abandoned EXXON production pit

Internal inspection of the two crude storage tanks indicated that the tanks had not leaked. Furthermore, excavation of the Amoco crude oil pipeline indicated that the Amoco pipeline had not leaked. The comparative analysis of the crude oil samples produced from the Unit with the LNAPL encountered at MW-1 indicated that the oils were essentially the same. One minor but expected difference between the produced crude oils and the LNAPL from MW-1 is that the MW-1 oil has experienced minor evaporation, water washing, and/or biodegradation as suggested by the loss of light-end petroleum hydrocarbons (C4-C8).

Based on the results of second due diligence effort, it was determined that LNAPLs in soils beneath the abandoned EXXON production pit were the source of the dissolved BTEX in groundwater and the LNAPL at MW-1.

SECOR performed soil and groundwater assessment activities in December 1994 which included the installation of nine monitoring wells (MW-5 through MW-13) as documented in the report titled "*Soil And Groundwater Assessment*", dated March 13, 1995. In October 1995, SECOR conducted the installation and sampling of three additional monitoring wells (MW-14 through MW-16) to delineate the downgradient extent of the dissolved hydrocarbons in groundwater at the site.

Soils beneath the abandoned EXXON production pit were excavated and solidified onsite by Ritter Environmental on behalf of Phillips in December 1995. Wells MW-8 and RW-11 had to be removed as they were in the footprint of the excavated area.

In January 1996, SECOR supervised the installation of two 4-inch diameter recovery well clusters, RW-1 and RW-2, in areas with thickest accumulations of LNAPL.

Construction of a total fluids removal system consisting of dual pumps installed in recovery well cluster RW-2s (shallow) and RW-2d (deep) was completed by Bascor Environmental in January 1996. A conventional 8-foot diameter windmill placed on a 27-foot high tower provided the energy necessary to operate the dual pump system. According to the *1997 Natural Attenuation of Petroleum Hydrocarbons Monitoring Report* (December 1997), the windmill "recovery system recovered 2,700 gallons [~64 barrels] of natural gas condensate and 190,000 to 200,000 gallons [~4600 barrels] of water" during 1997. In the 1997 report, Phillips demonstrated that biological attenuation of petroleum hydrocarbons is actively occurring, that the dissolved hydrocarbon plume has only migrated a few hundred feet beyond the LNAPL release, and the extent of the plume appears to be stable.

Figure 2 depicts the locations of the on site monitoring wells and recovery wells over a 2005 aerial photograph of the facility.

Pride resumed monitoring activities and authorized Trident Environmental to conduct the annual groundwater monitoring and sampling event on March 13, 2008. Between May 6, 2008 and July 24, 2008 the windmill fluids recovery system at RW-2s was repaired and put back into service, and passive bailers were placed in monitoring wells with LNAPL present. Passive bailers were eventually replaced with oil absorbent socks due to significantly reduced thicknesses of LNAPL. Operation and maintenance of the groundwater recovery system has continued on a monthly basis with annual groundwater sampling events as updated herein.

4.0 Procedures

During the annual sampling event conducted by Trident on June 19-20, 2012, all on-site monitoring wells were gauged for depth to groundwater using a clean, decontaminated electronic water/oil interface probe. Monitoring wells MW-1, MW-5, MW-7, MW-9, MW-10, MW-13, MW-14, MW-15, MW-16, RW-1d, and RW-2s were sampled. A minimum of three volumes was purged from the wells by hand-bailing using a new, clean, disposable bailer prior to collecting groundwater samples. Groundwater parameters, including pH, conductivity, temperature, and dissolved oxygen (DO) were measured at the completion of purging using a Milwaukee Model SM600 DO meter, and a Hanna Model 98130 pH, conductivity, and temperature meter. At the end of purging, ferrous iron (Fe^{+2}) was also measured in the field using a Hach DR890 spectrophotometer (Hach Method 8146).

The first set of water samples were transferred into air-tight, septum-sealed, 40-ml glass VOA sample vials with zero head space for BTEX analysis using EPA Method 8021B. The next set of water samples were transferred into unpreserved plastic containers for analysis of sulfate (SO_4), total iron (Fe), and total manganese (Mn) to assess the efficacy of intrinsic bioremedial activity currently taking place. Water samples were also collected for analysis of chloride, nitrate (NO_3), and total dissolved solids (TDS). Chain-of-custody (COC) forms documenting sample identification numbers, collection times, and delivery times to the laboratories were completed for each set of samples. The water samples were placed in an ice-filled cooler immediately after collection and delivered to Permian Basin Environmental Laboratories in Midland TX, on June 21, 2012, for analysis using EPA standard methods.

5.0 Groundwater Elevations, Hydraulic Gradient and Flow Direction

Based on the most recent gauging data collected by Trident on June 19, 2012, the groundwater conditions at the South Four Lakes Tank Battery are characterized below.

- The depth to the water table varies from approximately 23 to 27 feet below ground surface across the site.
- The hydraulic gradient is approximately 0.002 feet/foot.
- Direction of groundwater flow is to the southeast (~24° south of due east).
- The direction of groundwater flow and hydraulic gradient are consistent with previous gauging events and the prevailing regional gradient.
- Water table elevations have declined approximately 1.7-feet across the site at a consistent rate over the last four years and are at their lowest levels since monitoring began in 1995.

A groundwater elevation map depicting the water table elevation and direction of groundwater flow using the gauging data obtained on June 19, 2012, is presented in Figure 3. Historical groundwater elevations and depth to water measurements are summarized on Table 1, and depicted graphically in Figure 4.

6.0 Groundwater Quality Conditions

6.1 Distribution of Dissolved-phase Hydrocarbons in Groundwater

A historical listing of BTEX concentrations obtained from the on site monitoring wells is summarized in Table 2. Hydrocarbon concentration maps depicting the BTEX concentrations for the June 19-20, 2012 sampling event is presented in Figure 5. The laboratory reports and COC documentation are included in Appendix B.

Based on the analytical results obtained from the June 19-20, 2012 sampling event, the distribution of dissolved-phase hydrocarbons at the South Four Lakes Tank Battery is described below.

- Benzene concentrations in monitoring wells MW-1, MW-5, MW-7, MW-9, MW-10, MW-14, MW-15, and MW-16 were below the New Mexico Water Quality Control Commission (WQCC) standard of 0.010 mg/L.
- The benzene levels in monitoring wells MW-13 (0.403 mg/L), RW-1d (0.916 mg/L), and RW-2s (1.43 mg/L) exceeded the WQCC standard.
- Toluene, ethylbenzene, and xylene concentrations in all sampled wells were below the WQCC standards with the exception of the 0.75 mg/L standard for xylenes in MW-15 (0.887 mg/L) and RW-2s (3.15 mg/L).
- The dissolved-phase hydrocarbons in groundwater are localized within the boundaries of the facility. The dissolved hydrocarbon plume in the groundwater has remained stable and shows no indications of further downgradient migration.

6.2 Distribution of Chloride and TDS in Groundwater

Historical chloride and TDS concentrations in groundwater are also listed in Table 2. Constituents with concentrations above the WQCC standards are highlighted in boldface type. Figure 6 is a map depicting the chloride and TDS concentration for the June 19-20, 2012 sampling event. The laboratory reports and COC documentation are included in Appendix B.

- Chloride concentrations in MW-5 (389 mg/L), MW-7 (332 mg/L), MW-9 (412 mg/L), MW-10 (312 mg/L), MW-13 (2,420 mg/L), MW-14 (290 mg/L), MW-15 (1,040 mg/L), MW-16 (459 mg/L), RW-1d (1,700 mg/L), and RW-2s (348 mg/L) exceed the WQCC standard of 250 mg/L. The chloride concentrations in monitoring well MW-1 (177 mg/L) was below the WQCC standard.
- TDS concentrations in MW-5 (1,220 mg/L), MW-7 (1,520 mg/L), MW-9 (1,220 mg/L), MW-10 (1,240 mg/L), MW-13 (4,450 mg/L), MW-14 (1,370 mg/L), MW-15 (1,950 mg/L), MW-16 (1,750 mg/L), and RW-1d (2,430 mg/L) exceed the WQCC standard of 1,000 mg/L. TDS concentrations in monitoring well MW-1 (570 mg/L) and RW-2s (710 mg/L) were below the WQCC standard.

7.0 Monitoring Natural Attenuation

The following biological parameters are being monitored to assess the efficacy of the biodegradation of the dissolved hydrocarbon (BTEX) plume:

- Electron Acceptors: dissolved oxygen (DO), nitrate (NO_3), sulfate (SO_4), and
- Biodegradation by-products: ferrous iron (Fe^{+2}), total iron (Fe), and total manganese (Mn).

Decreased levels of electron acceptors indicate uptake of these constituents in which biological processes are actively degrading dissolved hydrocarbons in groundwater. Thus, oxygen is consumed during aerobic respiration, nitrate is transformed to nitrite through denitrification, and sulfate decreases from the sulfate reduction process.

Increased levels of biodegradation byproducts (ferrous iron, total iron, and total manganese) are also indicators of naturally occurring biodegradation of the dissolved hydrocarbons. The uptake of hydronium ions associated with specific biodegradation processes mentioned above and/or the dissolution of soil minerals (iron and manganese) results from reaction with acids generated in hydrocarbon degradation. Insoluble forms of iron (Fe^{+3}) and manganese (Mn^{+4}) are then used as an electron acceptors producing highly soluble ferrous iron (Fe^{+2}) and manganese (Mn^{+2}). The historical summary of these parameters are listed in Table 3. The electron acceptor and biodegradation by-product data collected on June 19-20, 2012, are presented graphically in Figure 7.

One approach to analyzing the efficacy of biodegradation of dissolved hydrocarbons in groundwater is to compare the concentrations of various biological parameters based on their upgradient and downgradient location, to evaluate if any trends are evident. These trends are depicted graphically in Figure 8 in which the concentrations of benzene, electron acceptors, and biodegradation byproducts are plotted versus the distance from the source of hydrocarbons along the axis of the plume and extending from upgradient monitoring well MW-10 to downgradient monitoring well MW-16. With this analysis the following relationships in the electron acceptor and biodegradation by-product data are observed at the South Four Lakes Tank Battery site:

- Generally, DO values are lower downgradient and within the plume indicating that oxygen is being utilized as an electron acceptor (aerobic respiration).
- Nitrate and sulfate concentrations also exhibit decreasing tendencies in the downgradient direction (within the plume) as they are being utilized as electron acceptors indicating denitrification and sulfate reduction processes are occurring.
- Dissolved iron concentrations increase within the BTEX plume and downgradient indicating the insoluble ferric iron (Fe^{+3}) is being used as an electron acceptor producing highly soluble ferrous iron (Fe^{+2}).
- Manganese concentrations are higher within the plume indicating that manganese in solute form is a metabolic byproduct resulting from anaerobic biodegradation processes.
- Downgradient wells MW-14 and MW-16, which are outside the dissolved hydrocarbon plume, are perhaps the most obvious locations displaying the above relationships when compared to upgradient monitoring wells RW-2s, RW-1d, MW-13, and MW-15 within the dissolved hydrocarbon plume.

In another approach, using stoichiometric derivations, the mass of benzene degraded per unit mass of electron acceptor utilized and metabolic byproduct produced was calculated to determine the biodegradation capacity of these constituents relative to the highest and average benzene concentration observed on site. This comparison is summarized in Table 4.

The calculated biodegradation capacity of electron acceptors and metabolic byproducts (32.8 mg/L) exceeds the highest benzene concentration (1.43 mg/L) currently observed on site by a factor of 23 to 1. The biodegradation capacity of electron acceptors and metabolic byproducts further exceeds the average benzene concentration (0.35 mg/L) currently observed within the plume by a ratio of 95 to 1. This indicates that the necessary nutrients and by-products are present for the continued biodegradation of dissolved hydrocarbons.

The geochemical data for the site provides clear evidence of uptake of electron acceptors and production of biological reaction by-products, such that dissolved petroleum hydrocarbon biodegradation is occurring. Based on the analysis of electron acceptors and biodegradation by-products, it is concluded that biological processes continue to stabilize the hydrocarbon plume by actively reducing the BTEX constituents in both the downgradient dissolved plume and in the areas where LNAPL is present.

8.0 Free Product Recovery and LNAPL Thickness

Construction of a total fluids removal system consisting of dual pumps installed in recovery well cluster RW-2s (shallow) and RW-2d (deep) was completed by Bascor Environmental in January 1996. A conventional 8-foot diameter windmill placed on a 27-foot high tower provides the energy necessary to operate the dual pump system. According to the *1997 Natural Attenuation of Petroleum Hydrocarbons Monitoring Report* (December 1997), the windmill "recovery system recovered 2,700 gallons [~64 barrels] of natural gas condensate and 190,000 to 200,000 gallons [~4,600 barrels] of water" during 1997. A diagram of the windmill recovery system scanned from the *Free Phase Hydrocarbon Recovery System Installation Report* (January 30, 1996) prepared by BEI is shown in Figure 9. The system is also pictured on the cover of this report.

During the June 19-20, 2012 sampling event, monitoring well MW-6 (0.02 ft) and MW-12 (0.13 ft) had the only measurable LNAPL thickness on site as listed in Table 1 and displayed in Figure 5. The steady declining trend in LNAPL thickness across the site, which is attributable to the product recovery efforts to date, is displayed in Figure 10. It should be recognized that measured thicknesses of LNAPL in wells exaggerates true thicknesses in the formation.

On May 6, 2008, and May 28, 2008, Trident supervised the inspection and trouble-shooting of the windmill-driven LNAPL recovery system at RW-2 which included removal of worn components. In late June 2008, the discharge line was installed to direct total fluids (LNAPL and recovered groundwater) from the windmill at RW-2s to the South Four Lakes tank battery. On July 24, 2008, the pump rod and wellhead seal on the windmill at RW-2s was repaired and the system put back into operating status with period repairs made thereafter. A totalizing meter records the cumulative volume of total fluids recovered by the windmill. With a 5 to 10 mile per hour wind the windmill pumps approximately 0.5 gallons per minute. According to the totalizer readings, the windmill has pumped approximately 531,332 gallons (12,651 barrels) of total fluids from RW-2s since July 24, 2008, at an average rate of 0.25 gal/min over the period of record. A higher volume of total fluids have been recovered compared to what has been recorded due to periods when the totalizer meter was not operational or intermittently clogged. In some cases due to totalizer malfunction total fluids were estimated at 0.25 gal/min over the period of record between maintenance visits. A new digital EDD totalizer meter was installed on July 12, 2012.

Passive bailers with hydrophobic filters were installed in MW-12 and RW-1s on May 6, 2008, to augment LNAPL recovery efforts. An oil-absorbent sock was installed in MW-9 due to minimal presence of LNAPL. On July 24, 2008, additional custom-made passive bailers were placed in monitoring wells MW-1, MW-6, MW-7, and MW-13. Due to subsequent declines in LNAPL thickness, the passive bailers in MW-1, MW-7, MW-13 and RW-1s, have since been replaced with oil-absorbent socks. Continued LNAPL recovery from MW-1, MW-7, MW-9, MW-13, and RW-1s was successful in reducing LNAPL thickness to 0.00 ft such that they could be included in the groundwater sampling program. As of July 12, 2012, measurable LNAPL was only present in MW-6 (0.02 ft) and MW-12 (0.10). Because of the minimized LNAPL thicknesses across the site, recoverable LNAPL has declined considerably as depicted in Figure 11.

A minimum of 73.6 gallons of LNAPL has been recovered since May 6, 2008 using a combination of the windmill pump system, passive bailers, oil absorbent socks, and hand bailing. The LNAPL from RW-2s is not separated from the total fluids; therefore LNAPL recovery in RW-2s cannot be measured and total LNAPL recovery volumes are underestimated. LNAPL thickness and product recovery volumes measurements are listed in Table 5 and Table 6, respectively. Operation and maintenance of the windmill recovery system, passive bailers, and oil absorbent socks continues on a monthly basis.

9.0 Conclusions

Based on the sampling and monitoring data to date, the following conclusions relevant to groundwater conditions at the South Four Lakes Tank Battery are evident:

- Benzene concentrations in monitoring wells MW-1, MW-5, MW-7, MW-9, MW-10, MW-14, MW-15, and MW-16 were below the New Mexico Water Quality Control Commission (WQCC) standard of 0.010 mg/L. The benzene levels in monitoring wells MW-13 (0.403 mg/L), RW-1d (0.916 mg/L), and RW-2s (1.43 mg/L) exceeded the WQCC standard.
- Toluene, ethylbenzene, and xylene concentrations in all sampled wells were below the WQCC standards with the exception of the 0.75 mg/L standard for xylenes in MW-15 (0.887 mg/L) and RW-2s (3.15 mg/L).
- Light non-aqueous phased liquids (LNAPL) are present in the groundwater and have the characteristics of a light crude oil or natural gas liquid (condensate). The LNAPL thicknesses have been reduced significantly over the last 4 years due to operation of the windmill recovery system and passive recovery activities in affected wells. LNAPL is localized between RW-2s and MW-6. As of July 12, 2012, measurable LNAPL was only present in: MW-6 (0.02 ft) and MW-12 (0.10 ft).
- The windmill-driven LNAPL recovery system at RW-2s has been performing well since it was put back into operation on July 20, 2008. The system operates in total fluids mode so it is not known how much LNAPL has been removed; however, approximately 531,332 gallons (12,651 barrels) of hydrocarbon-impacted groundwater has been removed, since July 2008.
- Approximately 73.6 gal of LNAPL has been removed from MW-1, MW-6, MW-7, MW-9, MW12, MW-13, RW-1s, and RW-2s since May 2008 by use of passive bailers, oil absorbent socks, hand bailing, and windmill recovery.
- Chloride concentrations in MW-5, MW-7, MW-9, MW-10, MW-13, MW-14, MW-15, MW-16, RW-1d, and RW-2s exceed the WQCC standard of 250 mg/L.
- TDS concentrations in MW-5, MW-7, MW-9, MW-10, MW-13, MW-14, MW-15, MW-16, and RW-1d exceed the WQCC standard of 1,000 mg/L.
- Although iron and manganese concentrations exceed WQCC standards in some monitoring wells, increased levels of these constituents indicate intrinsic bioremediation processes are active.
- Source control has been implemented with the removal of contaminated soils beneath the closed EXXON production pit (December 1995) and the ongoing LNAPL and groundwater recovery operations. Given these source control measures, contaminant loading to groundwater has diminished through time, and the groundwater plume has stabilized and shown indications of decreased concentrations and areal extent over time.
- There are no indications that the hydrocarbon plume in the groundwater has migrated beyond the boundaries of the facility and there are no potential receptors (water wells) within a half-mile of the site. Given local and regional groundwater use, the groundwater plume in its current extent poses no risk to human health or the environment.
- Continued annual sampling is necessary to monitor plume stability and to evaluate the effectiveness of natural attenuation in limiting the downgradient migration of the plume.

10.0 Recommendations

The following corrective actions are recommended for South Four Lakes Tank Battery.

- Continue the sampling and monitoring program on an annual basis in accordance with the July 14, 1997 NMOCD approval letter. Continued annual sampling is necessary to monitor plume stability and to evaluate the effectiveness of natural attenuation in limiting the downgradient migration of the plume. The next sampling event is scheduled during the second quarter of 2013.

- Continue total fluids (LNAPL and groundwater) removal from RW-2s using the windmill pump system with monthly inspections to ensure that the system is operational and maintained.

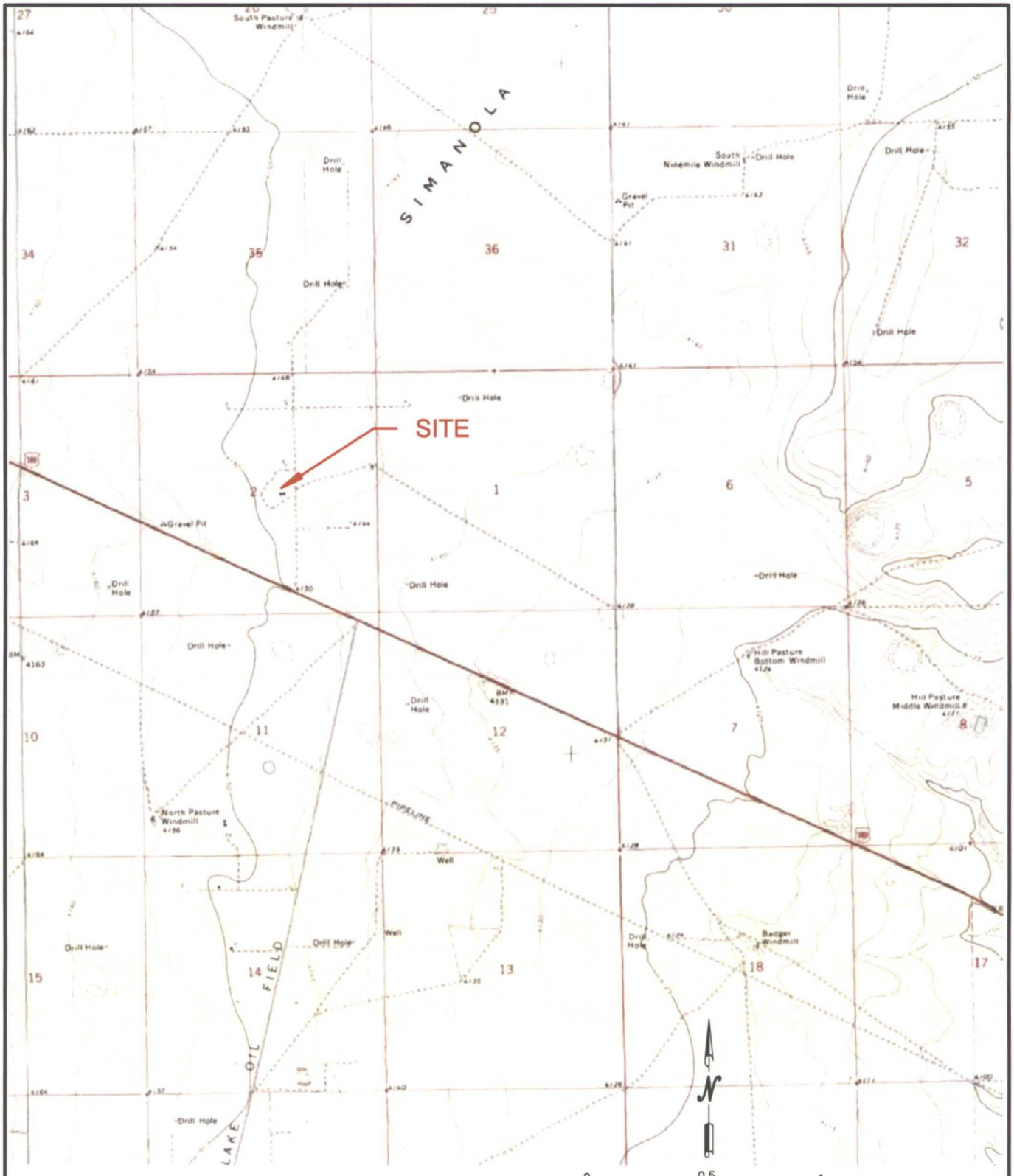
- Continue LNAPL recovery, if present, in RW-1s, MW-1, MW-6, MW-7, MW-9, MW-12, and MW-13, using passive bailers or absorbent socks with monthly inspections. Obtain groundwater samples from these wells if the LNAPL thickness is less than 0.01 feet.

- The above recommended LNAPL recovery effort will improve the effectiveness of biological attenuation of the dissolved hydrocarbon plume as observed with the continued uptake of electron acceptors, production of biological reaction by-products, and the reduction in BTEX concentrations and areal extent of the dissolved hydrocarbon plume.

11.0 Limitations

Trident has prepared this Annual Monitoring Report to the best of its ability. No other warranty, expressed or implied, is made or intended. Trident has examined and relied upon documents obtained from the OCD Online database (http://ocdimage.emnrd.state.nm.us/imaging/AEOrderFileView.aspx?appNo=pENV00001RP204) as referenced in the report and may have relied on oral statements made by certain individuals. Trident 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 are true and accurate. Trident has prepared this report, in a professional manner, using the degree of skill and care expected of environmental consultants. Trident 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.

FIGURES



USGS Simanola Valley, NM 7.5" Quadrangle (1970)

TRIDENT ENVIRONMENTAL

PRIDE ENERGY COMPANY
SOUTH FOUR LAKES TANK BATTERY
T12S - R34E - Section 2
Lea County, New Mexico

FIGURE 1
SITE LOCATION MAP

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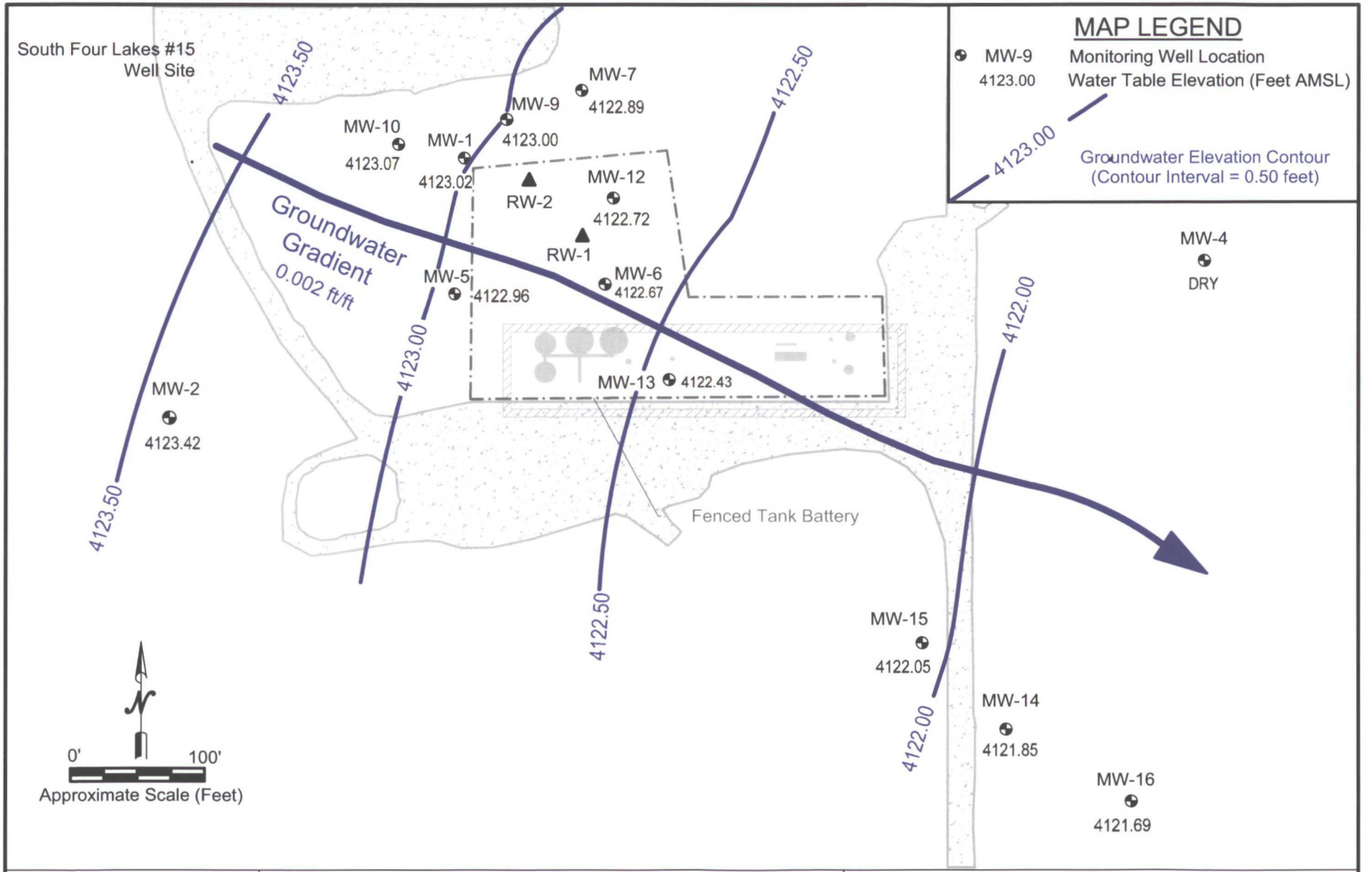
South Four Lakes Tank Battery
T12S - R34E - Section 2
Pride Energy Company

FIGURE 2
2005 AERIAL PHOTO AND MONITORING WELL LOCATION MAP



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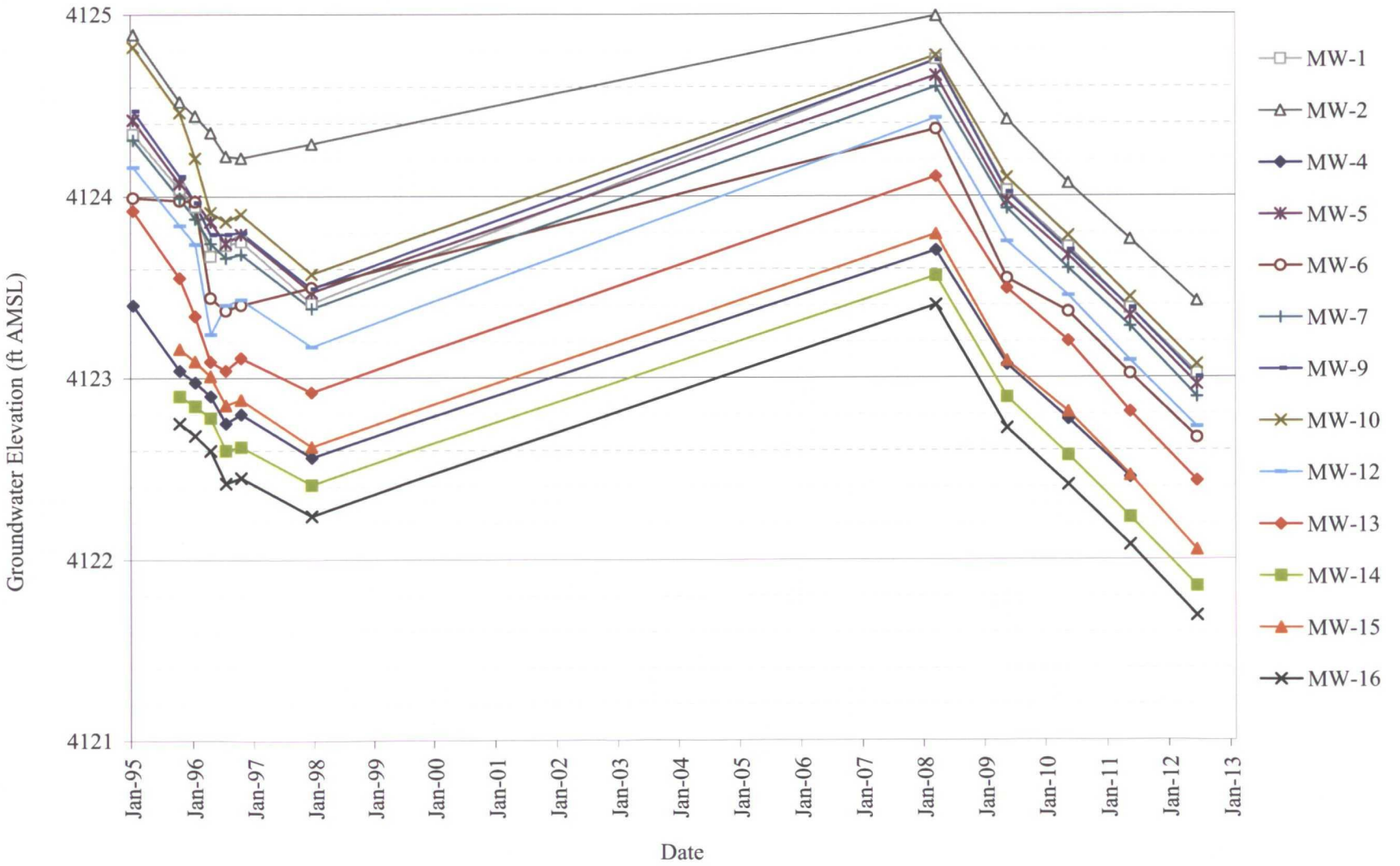
South Four Lakes Tank Battery (1R0204)

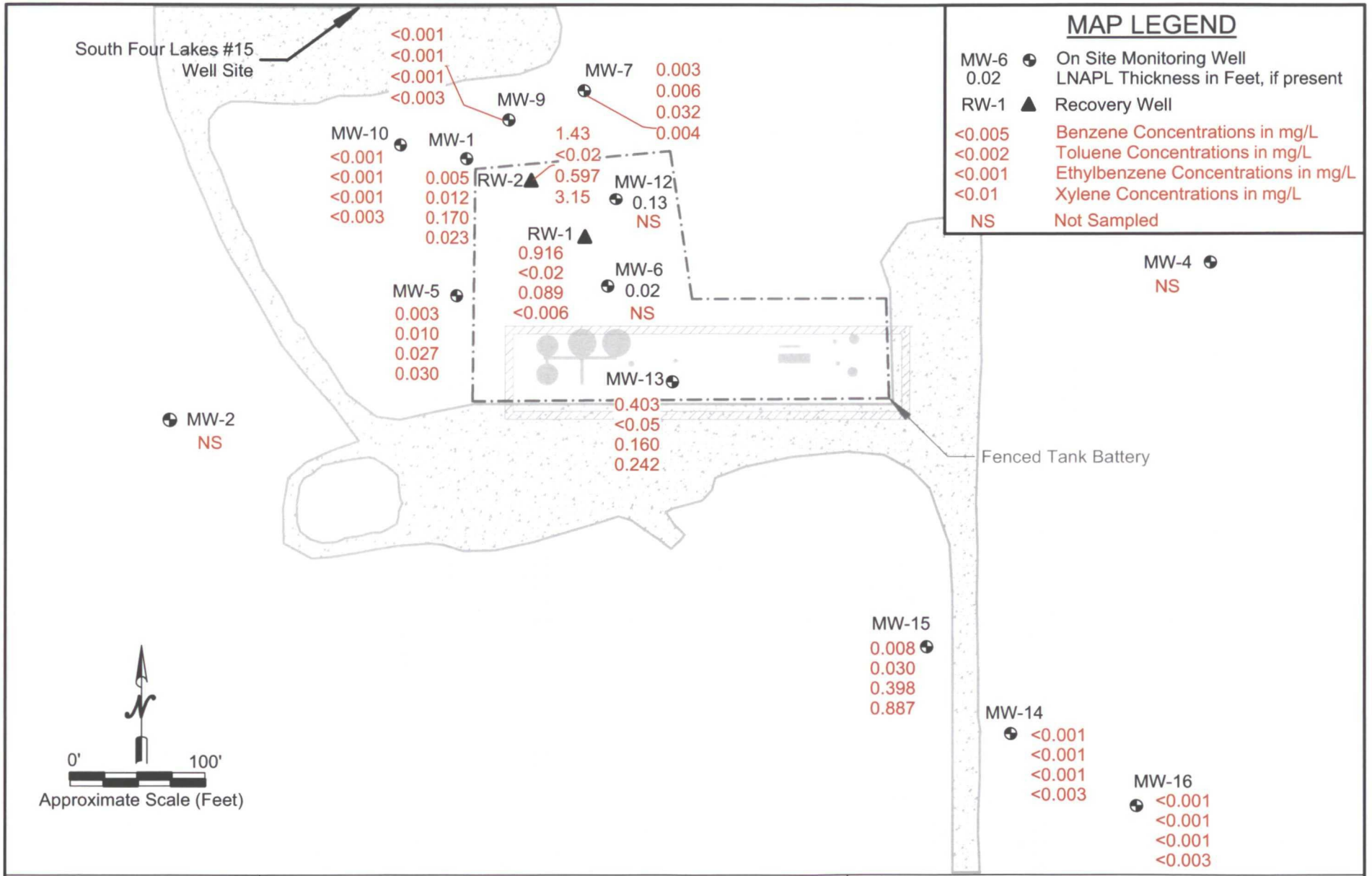
T12S - R34E - Section 2 (Lea County, NM)

Pride Energy Company

FIGURE 3
WATER TABLE ELEVATION MAP
June 19, 2012

FIGURE 4
Groundwater Elevation Versus Time





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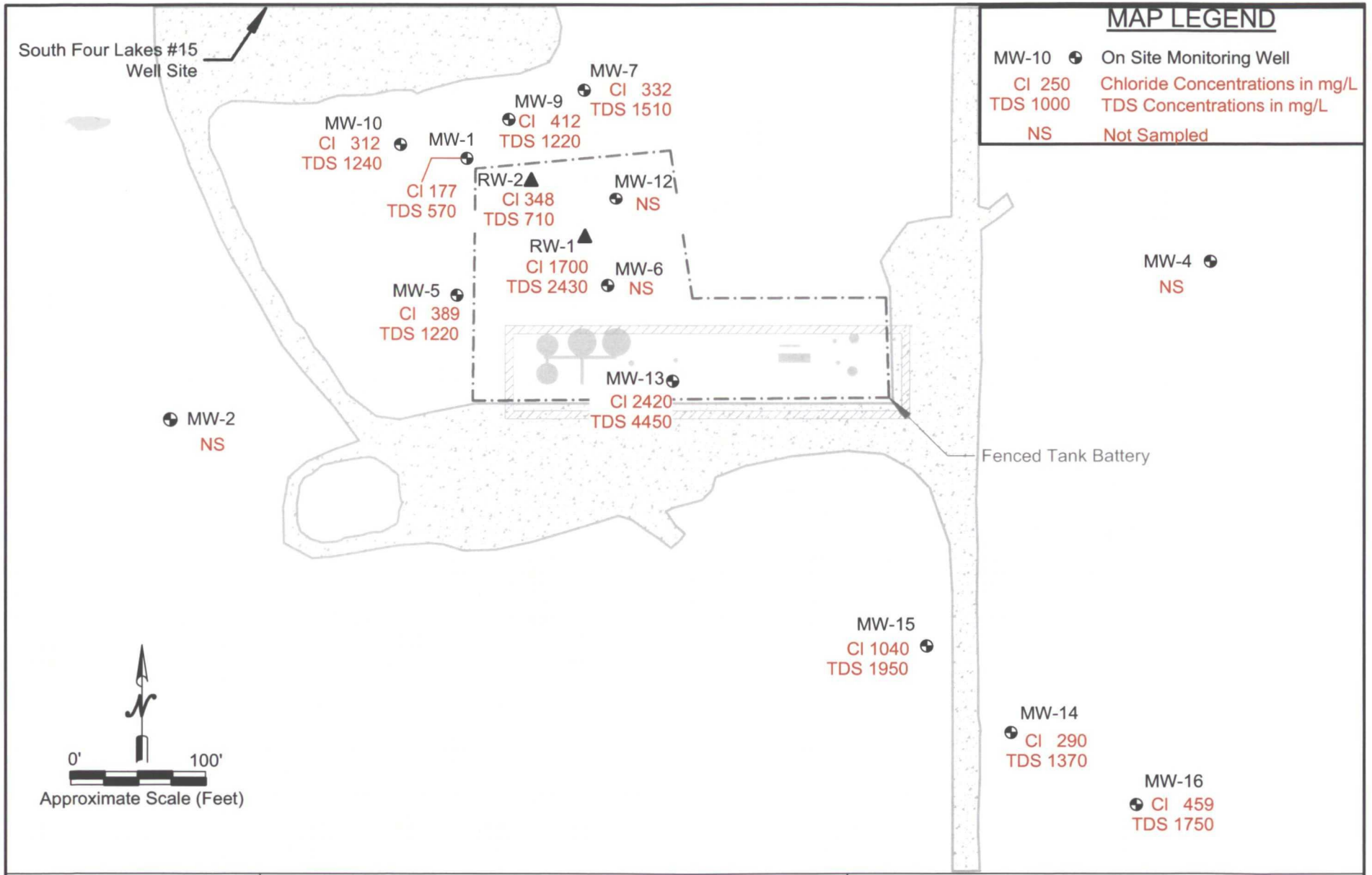
South Four Lakes Tank Battery (1R0204)

T12S - R34E - Section 2 (Lea County, NM)

Pride Energy Company

FIGURE 5
BTEX CONCENTRATION
AND LNAPL THICKNESS MAP
June 19-20, 2012



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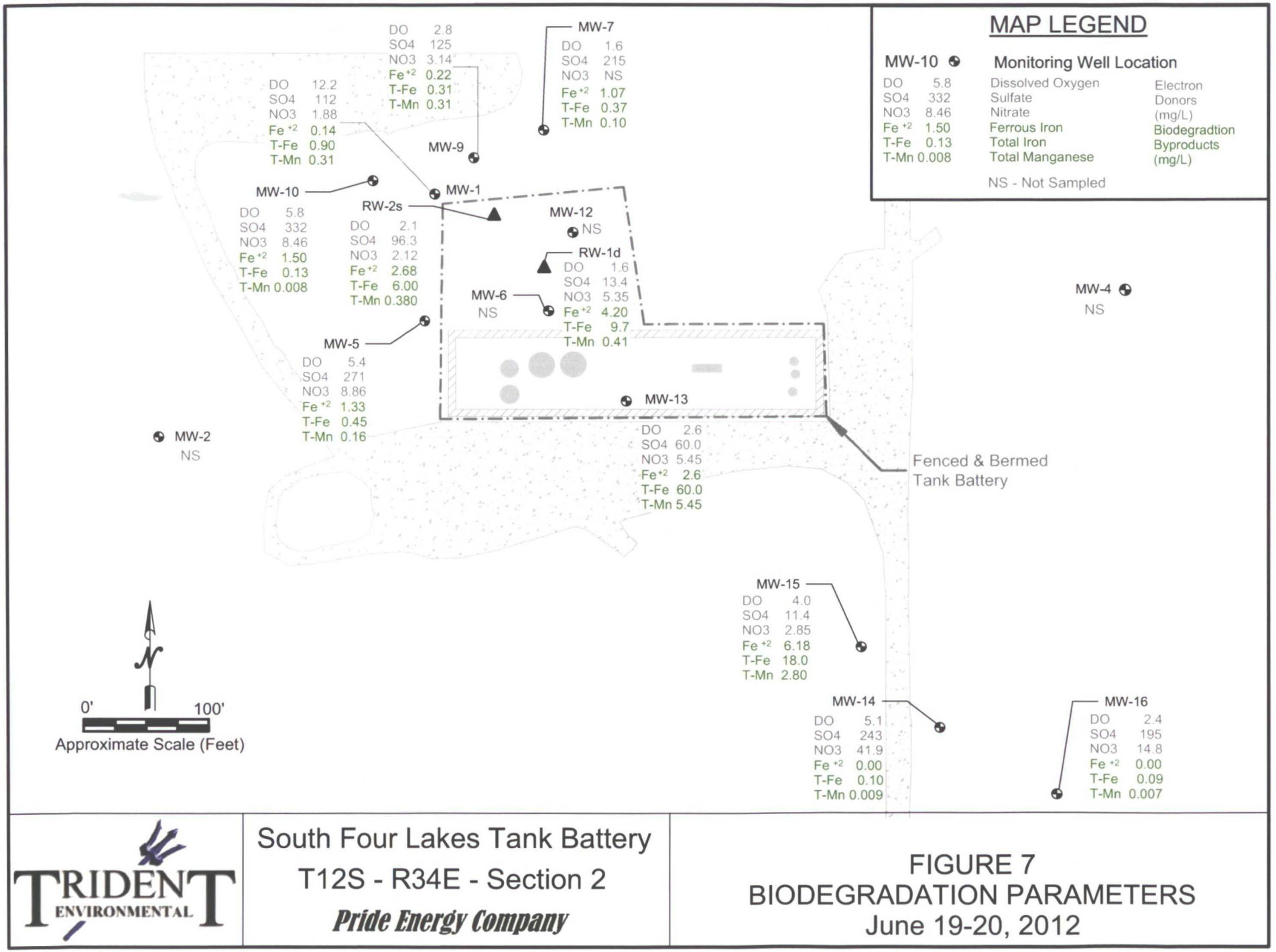
South Four Lakes Tank Battery (1R0204)

T12S - R34E - Section 2 (Lea County, NM)

Pride Energy Company

FIGURE 6
CHLORIDE AND TDS
CONCENTRATION MAP
June 19-20, 2012

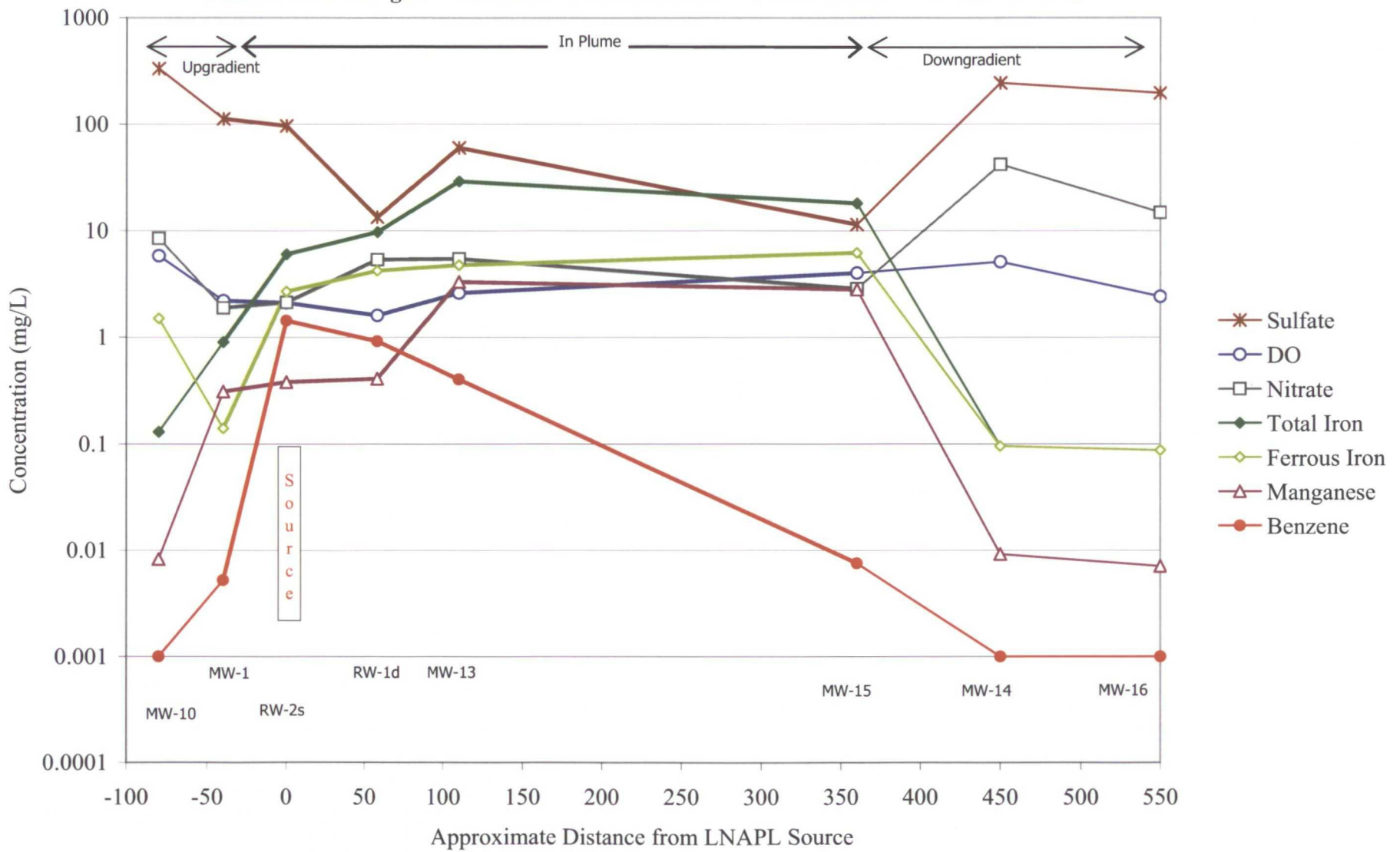


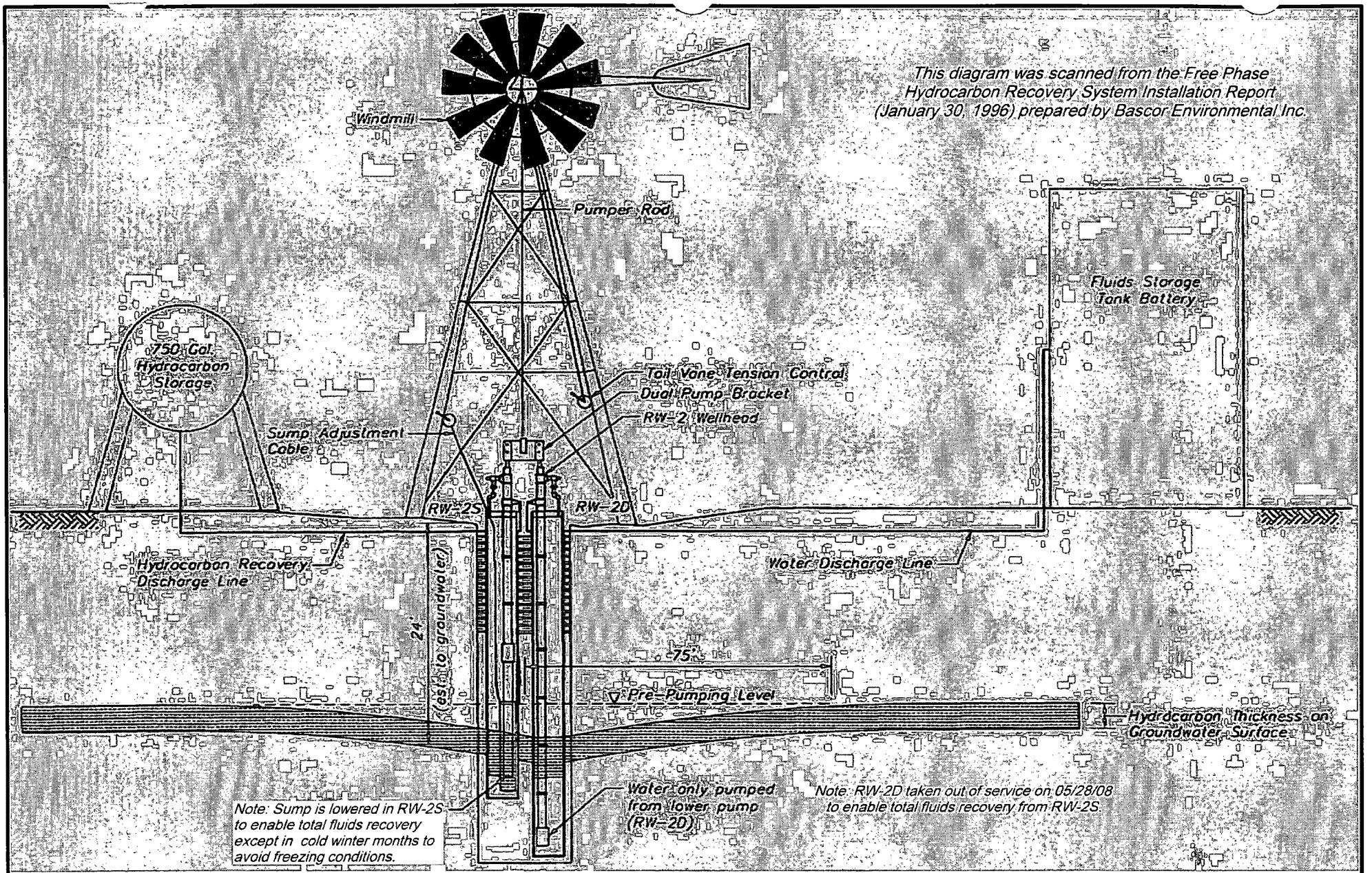
TRIDENT ENVIRONMENTAL

South Four Lakes Tank Battery
T12S - R34E - Section 2
Pride Energy Company

FIGURE 7
BIODEGRADATION PARAMETERS
June 19-20, 2012

FIGURE 8
Benzene and Biological Parameters Concentrations Versus Distance from Source Area





TRIDENT ENVIRONMENTAL

South Four Lakes Tank Battery (1R0204)

T12S - R34E - Section 2 (Lea County, NM)

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FIGURE 9
WINDMILL RECOVERY SYSTEM DIAGRAM

Figure 10
LNAPL Thickness Vs Time Graph

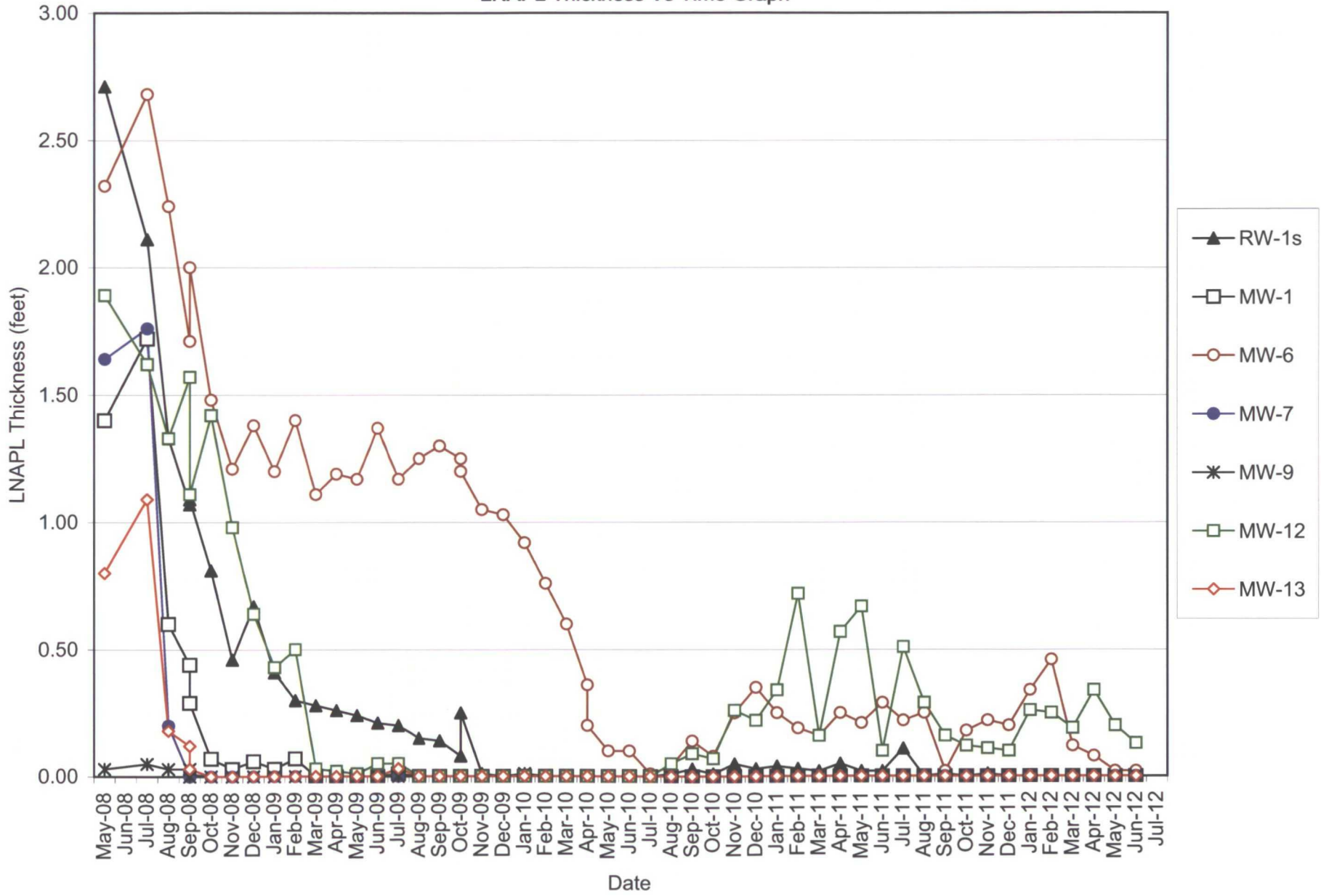
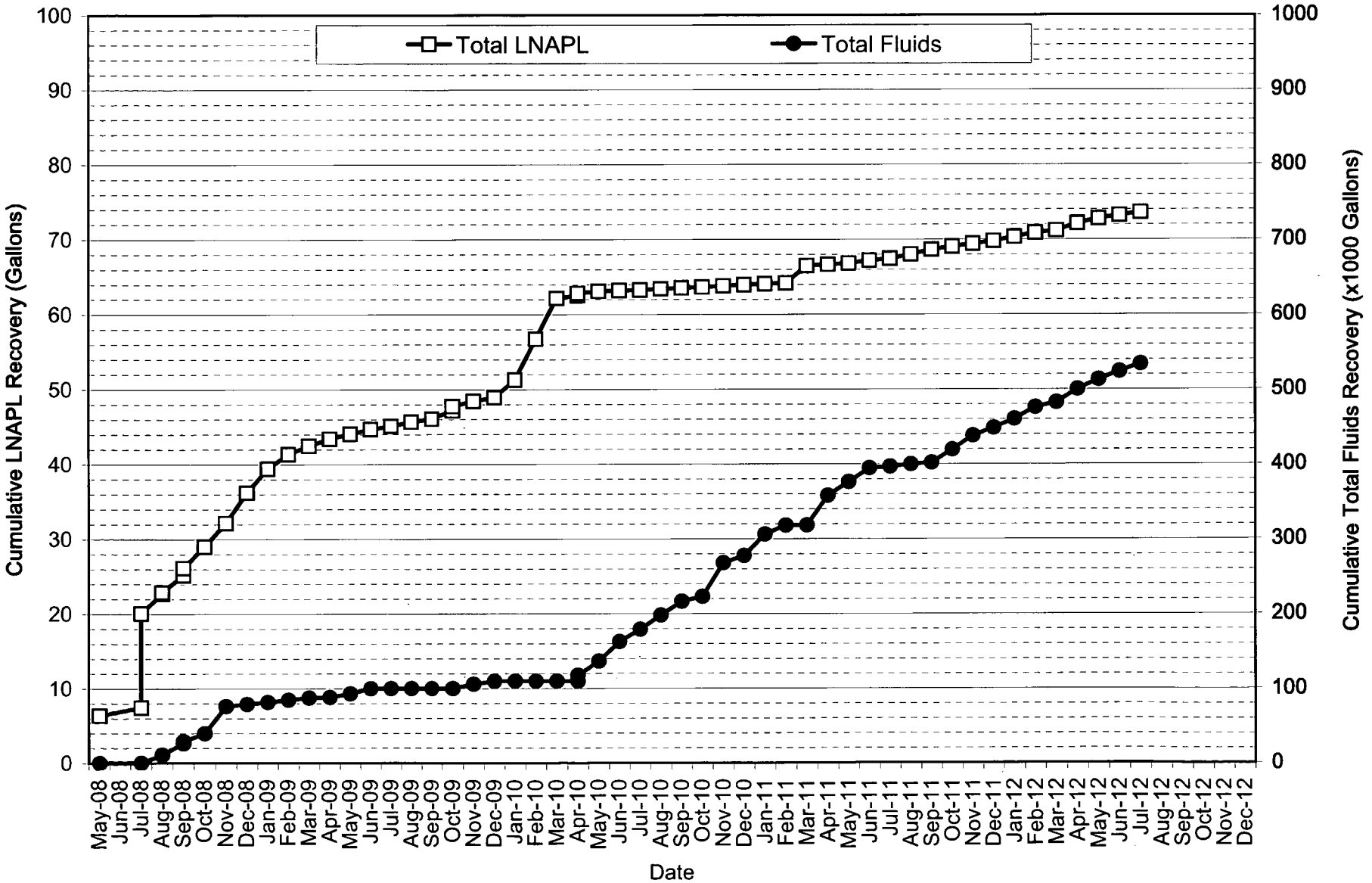


Figure 11
Cumulative LNAPL and Total Fluids Recovery Vs Time Graph



TABLES

Table 1
Summary of Groundwater Elevations

Monitoring Well	Sample Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet BTOC)	LNAPL Thickness (feet)	Corrected Groundwater Elevation (feet AMSL)
MW-1	01/17/95	4149.13	26.37	1.96	4124.34
	10/10/95	4149.13	NM	NM	4124.04
	01/04/96	4149.13	27.40	2.74	4123.94
	04/16/96	4149.13	28.02	3.17	4123.67
	07/09/96	4149.13	27.96	3.17	4123.73
	10/15/96	4149.13	27.97	3.21	4123.75
	12/03/97	4149.13	27.98	2.80	4123.41
	03/13/08	4149.13	25.51	1.40	4124.75
	05/18/09	4149.13	25.10	0.00	4124.03
	05/26/10	4149.13	25.41	0.00	4123.72
	05/17/11	4149.13	25.75	0.00	4123.38
	06/19/12	4149.13	26.11	0.00	4123.02
MW-2	01/04/95	4151.50	26.64	0.00	4124.86
	01/18/95	4151.50	26.61	0.00	4124.89
	10/10/95	4151.50	26.98	0.00	4124.52
	01/04/96	4151.50	NM	NM	4124.44
	04/16/96	4151.50	27.15	0.00	4124.35
	07/09/96	4151.50	27.28	0.00	4124.22
	10/15/96	4151.50	27.29	0.00	4124.21
	12/03/97	4151.50	NM	NM	4124.29
	03/13/08	4151.50	26.51	0.00	4124.99
	05/18/09	4151.50	27.08	0.00	4124.42
	05/26/10	4151.50	27.43	0.00	4124.07
	05/17/11	4151.50	27.74	0.00	4123.76
	06/19/12	4151.50	28.08	0.00	4123.42
MW-4	01/18/95	4148.58	25.18	0.00	4123.40
	10/10/95	4148.58	25.54	0.00	4123.04
	01/04/96	4148.58	NM	NM	4122.98
	04/16/96	4148.58	25.68	0.00	4122.90
	07/09/96	4148.58	25.83	0.00	4122.75
	10/15/96	4148.58	25.78	0.00	4122.80
	12/03/97	4148.58	26.02	0.00	4122.56
	03/13/08	4148.58	24.88	0.00	4123.70
	05/18/09	4148.58	25.51	0.00	4123.07
	05/26/10	4148.58	25.81	0.00	4122.77
	05/17/11	4148.58	26.13	0.00	4122.45
	06/19/12	4148.58	Dry	0.00	Dry
MW-5	01/18/95	4150.40	25.98	0.00	4124.42
	10/10/95	4150.40	26.33	0.00	4124.07
	01/04/96	4150.40	NM	NM	4123.97
	04/16/96	4150.40	26.54	0.00	4123.86
	07/09/96	4150.40	26.66	0.00	4123.74
	10/15/96	4150.40	26.61	0.00	4123.79
	12/03/97	4150.40	26.93	0.00	4123.47
	03/13/08	4150.40	25.74	0.00	4124.66
	05/18/09	4150.40	26.43	0.00	4123.97
	05/26/10	4150.40	26.73	0.00	4123.67
	05/17/11	4150.40	27.06	0.00	4123.34
	06/19/12	4150.40	27.44	0.00	4122.96

Table 1
Summary of Groundwater Elevations

Monitoring Well	Sample Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet BTOC)	LNAPL Thickness (feet)	Corrected Groundwater Elevation (feet AMSL)
MW-6	01/04/95	4149.90	28.88	3.68	4123.99
	10/10/95	4149.90	NM	NM	4123.98
	01/04/96	4149.90	29.53	4.46	4123.97
	04/16/96	4149.90	30.04	4.43	4123.44
	07/09/96	4149.90	30.04	4.52	4123.37
	10/15/96	4149.90	30.18	4.56	4123.40
	12/03/97	4149.90	NM	NM	4123.50
	03/13/08	4149.90	27.35	2.25	4124.37
	05/18/09	4149.90	27.30	1.17	4123.54
	05/26/10	4149.90	26.62	0.10	4123.36
	05/17/11	4149.90	27.05	0.21	4123.02
	06/19/12	4149.90	27.25	0.02	4122.67
MW-7	01/18/95	4149.16	24.85	0.00	4124.31
	10/10/95	4149.16	25.17	0.00	4123.99
	01/04/96	4149.16	NM	NM	4123.88
	04/16/96	4149.16	25.42	0.00	4123.74
	07/09/96	4149.16	25.50	0.00	4123.66
	10/15/96	4149.16	25.48	0.00	4123.68
	12/03/97	4149.16	25.78	0.00	4123.38
	03/13/08	4149.16	25.87	1.62	4124.60
	05/18/09	4149.16	25.23	0.00	4123.93
	05/26/10	4149.16	25.56	0.00	4123.60
	05/17/11	4149.16	25.88	0.00	4123.28
	06/19/12	4149.16	26.27	0.00	4122.89
MW-8	01/18/95	4148.81	24.66	0.00	4124.15
	10/10/95	4148.81	24.66	0.00	4124.15
	Well removed to allow excavation and solidification of pit.				
MW-9	01/18/95	4149.63	25.16	0.00	4124.47
	10/10/95	4149.63	25.52	0.00	4124.11
	01/04/96	4149.63	NM	NM	4123.96
	04/16/96	4149.63	25.84	0.00	4123.79
	07/09/96	4149.63	25.84	0.00	4123.79
	10/15/96	4149.63	25.83	0.00	4123.80
	12/03/97	4149.63	26.14	0.00	4123.49
	03/13/08	4149.63	24.91	0.03	4124.74
	05/18/09	4149.63	25.61	0.00	4124.02
	05/26/10	4149.63	25.93	0.00	4123.70
	05/17/11	4149.63	26.25	0.00	4123.38
	06/19/12	4149.63	26.63	0.00	4123.00
MW-10	01/18/95	4149.98	25.16	0.00	4124.82
	10/10/95	4149.98	25.52	0.00	4124.46
	01/04/96	4149.98	NM	NM	4124.21
	04/16/96	4149.98	26.07	0.00	4123.91
	07/09/96	4149.98	26.12	0.00	4123.86
	10/15/96	4149.98	26.08	0.00	4123.90
	12/03/97	4149.98	26.41	0.00	4123.57
	03/13/08	4149.98	25.21	0.00	4124.77
	05/18/09	4149.98	25.88	0.00	4124.10
	05/26/10	4149.98	26.20	0.00	4123.78
	05/17/11	4149.98	26.54	0.00	4123.44
	06/19/12	4149.98	26.91	0.00	4123.07

Table 1
Summary of Groundwater Elevations

Monitoring Well	Sample Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet BTOC)	LNAPL Thickness (feet)	Corrected Groundwater Elevation (feet AMSL)
RW-11	01/04/95	4149.86	28.40	3.22	4124.06
	01/17/95	4149.86	28.76	3.69	4124.08
	Well removed to allow excavation and solidification of pit.				
MW-12	01/04/95	4149.15	25.30	0.35	4124.13
	01/17/95	4149.15	25.58	0.73	4124.16
	10/10/95	4149.15	NM	NM	4123.84
	01/04/96	4149.15	28.70	4.07	4123.74
	04/16/96	4149.15	29.98	5.04	4123.24
	07/09/96	4149.15	29.08	4.12	4123.40
	10/15/96	4149.15	28.94	3.99	4123.43
	12/03/97	4149.15	29.06	3.82	4123.17
	03/13/08	4149.15	26.20	1.83	4124.43
	05/18/09	4149.15	25.41	0.01	4123.75
	05/26/10	4149.15	25.70	0.00	4123.45
	05/17/11	4149.15	26.60	0.67	4123.09
	06/19/12	4149.15	26.53	0.13	4122.72
MW-13	01/18/95	4150.31	26.39	0.00	4123.92
	10/10/95	4150.31	26.76	0.00	4123.55
	01/04/96	4150.31	NM	NM	4123.34
	04/16/96	4150.31	27.22	0.00	4123.09
	07/09/96	4150.31	27.27	0.00	4123.04
	10/15/96	4150.31	27.20	0.00	4123.11
	12/03/97	4150.31	27.39	0.00	4122.92
	03/13/08	4150.31	26.81	0.75	4124.11
	05/18/09	4150.31	26.82	0.00	4123.49
	05/26/10	4150.31	27.11	0.00	4123.20
	05/17/11	4150.31	27.50	0.00	4122.81
	06/19/12	4150.31	27.88	0.00	4122.43
MW-14	10/11/95	4151.83	28.93	0.00	4122.90
	01/04/96	4151.83	NM	NM	4122.85
	04/16/96	4151.83	29.05	0.00	4122.78
	07/09/96	4151.83	29.23	0.00	4122.60
	10/15/96	4151.83	29.21	0.00	4122.62
	12/03/97	4151.83	29.42	0.00	4122.41
	03/13/08	4151.83	28.27	0.00	4123.56
	05/18/09	4151.83	28.94	0.00	4122.89
	05/26/10	4151.83	29.26	0.00	4122.57
	05/17/11	4151.83	29.60	0.00	4122.23
	06/19/12	4151.83	29.98	0.00	4121.85
MW-15	10/11/95	4150.63	27.47	0.00	4123.16
	01/04/96	4150.63	NM	NM	4123.09
	04/16/96	4150.63	27.62	0.00	4123.01
	07/09/96	4150.63	27.78	0.00	4122.85
	10/15/96	4150.63	27.75	0.00	4122.88
	12/03/97	4150.63	28.01	0.00	4122.62
	03/13/08	4150.63	26.84	0.00	4123.79
	05/18/09	4150.63	27.54	0.00	4123.09
	05/26/10	4150.63	27.82	0.00	4122.81
	05/17/11	4150.63	28.17	0.00	4122.46
	06/19/12	4150.63	28.58	0.00	4122.05

Table 1
Summary of Groundwater Elevations

Monitoring Well	Sample Date	Top of Casing Elevation (feet)	Depth to Groundwater (feet BTOC)	LNAPL Thickness (feet)	Corrected Groundwater Elevation (feet AMSL)
MW-16	10/11/95	4151.34	28.59	0.00	4122.75
	01/04/96	4151.34	NM	NM	4122.68
	04/16/96	4151.34	28.74	0.00	4122.60
	07/09/96	4151.34	28.92	0.00	4122.42
	10/15/96	4151.34	28.89	0.00	4122.45
	12/03/97	4151.34	29.10	0.00	4122.24
	03/13/08	4151.34	27.94	0.00	4123.40
	05/18/09	4151.34	28.62	0.00	4122.72
	05/26/10	4151.34	28.93	0.00	4122.41
	05/17/11	4151.34	29.26	0.00	4122.08
	06/19/12	4151.34	29.65	0.00	4121.69
RW-1s	01/04/96	NM	DNA	0.15	DNA
	04/16/96	NM	DNA	3.58	DNA
	07/09/96	NM	DNA	4.72	DNA
	10/15/96	NM	DNA	4.67	DNA
	12/03/97	NM	DNA	4.26	DNA
	03/13/08	NM	DNA	2.71	DNA
	05/18/09	NM	DNA	0.24	DNA
	05/26/10	NM	24.99	0.00	DNA
	05/17/11	NM	25.37	0.02	DNA
	06/19/12	NM	25.71	0.00	DNA
RW-2s	01/04/96	NM	DNA	3.50	DNA
	03/13/08	NM	NM	1.77	DNA
	05/18/09	NM	24.97	0.24	DNA
	05/26/10	NM	25.15	0.00	DNA
	05/17/11	NM	NM	NM	DNA
	06/19/12	NM	NM	NM	DNA

NM = Not Measured; DNA - Data Not Available
AMSL - Above Mean Sea Level; BTOC - Below Top of Casing, LNAPL - Light Non-Aqueous Phased Liquids
Gauging data, laboratory results, and elevations for MW-1 through MW-16 obtained from previously published reports submitted by Phillips Petrleum Co.

Table 2
Summary of Regulated Constituent Concentrations

Monitoring Well	Sample Date	LNAPL Thickness (feet)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
MW-1	Oct-90	0.00	<0.010	0.039	0.100	0.390	NA	NA
	01/04/96	2.74	**0.260**	0.730	0.450	**2.72**	120	680
	04/16/96	3.17	**0.051**	0.270	0.340	**2.19**	150	750
	07/09/96	3.17	NA	NA	NA	NA	160	800
	10/15/96	3.21	NA	NA	NA	NA	170	**1,300**
	12/03/97	2.80	NA	NA	NA	NA	100	650
	05/19/09	0.00	**0.01**	0.009	0.156	0.209	168	792
	05/26/10	0.00	0.002	0.004	0.036	0.045	144	594
	05/17/11	0.00	<0.005	<0.01	0.153	0.105	**316**	**1,000**
	06/19/12	0.00	0.005	0.012	0.170	0.023	177	570
MW-2	Oct-90	0.00	<0.001	<0.001	<0.001	<0.001	NA	NA
	01/04/95	0.00	NS	NS	NS	NS	NS	NS
	01/18/95	0.00	<0.001	<0.001	<0.001	<0.001	109	760
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	80	680
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	80	700
	07/09/96	0.00	<0.001	<0.001	<0.001	<0.001	84	680
	10/15/96	0.00	<0.001	<0.001	<0.001	<0.001	79	680
	12/03/97	NM	NMOCD approved request to discontinue annual sampling.					
	03/13/08	0.00	<0.001	<0.002	<0.001	<0.003	116	**1,020**
MW-4	Oct-90	0.00	<0.001	<0.001	<0.001	<0.001	NA	NA
	01/18/95	0.00	<0.001	<0.001	<0.001	<0.001	**790**	**1,880**
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	**460**	**1,300**
	04/16/96	0.00	<0.001	<0.001	<0.001	0.001	**450**	**1,300**
	07/09/96	0.00	<0.001	<0.001	<0.001	<0.001	**460**	**1,200**
	10/15/96	0.00	<0.001	<0.001	<0.001	<0.001	**460**	**1,200**
	12/03/97	0.00	NMOCD approved request to discontinue annual sampling.					
	03/13/08	0.00	<0.001	<0.002	<0.001	<0.003	243	868
MW-5	01/18/95	0.00	<0.001	<0.001	<0.001	<0.001	49	497
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	41	500
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	40	490
	07/09/96	0.00	<0.001	<0.001	<0.001	<0.001	38	470
	10/15/96	0.00	<0.001	<0.001	<0.001	<0.001	36	500
	12/03/97	0.00	<0.001	<0.001	<0.001	<0.001	37	450
	03/13/08	0.00	0.003	0.021	0.081	0.466	173	724
	05/18/09	0.00	0.002	0.007	0.025	0.065	**364**	**1,100**
	05/25/10	0.00	**0.448**	<0.04	0.121	**0.776**	**372**	**1,180**
	05/17/11	0.00	<0.005	<0.01	<0.005	<0.01	**547**	**1,170**
	06/19/12	0.00	0.003	0.010	0.027	0.030	**389**	**1,220**

Table 2
Summary of Regulated Constituent Concentrations

Monitoring Well	Sample Date	LNAPL Thickness (feet)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
MW-6	01/04/95	3.68	NS	NS	NS	NS	NS	NS
	10/10/95	NM	NS	NS	NS	NS	NS	NS
	01/04/96	4.08	**9.10**	**11.0**	**0.93**	**5.30**	**1,400**	**3,700**
	04/16/96	4.43	**13.0**	**19.0**	**5.00**	**24.5**	**1,200**	**2,600**
	07/09/96	4.52	NA	NA	NA	NA	**1,100**	**2,500**
	10/15/96	4.56	NA	NA	NA	NA	**890**	**2,500**
	12/03/97	NM	NA	NA	NA	NA	**720**	**1,700**
	03/13/08	2.25	NS	NS	NS	NS	NS	NS
	05/18/09	1.17	NS	NS	NS	NS	NS	NS
	05/25/10	0.10	NS	NS	NS	NS	NS	NS
	05/17/11	0.21	NS	NS	NS	NS	NS	NS
	06/19/12	0.02	NS	NS	NS	NS	NS	NS
MW-7	01/18/95	0.00	**0.013**	<0.001	0.026	<0.001	**255**	**1,190**
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	01/04/96	NM	0.006	<0.001	0.013	<0.001	210	900
	04/16/96	0.00	0.004	<0.001	0.011	<0.001	180	920
	07/09/96	0.00	0.003	<0.001	0.010	<0.001	110	730
	10/15/96	0.00	0.005	<0.001	0.015	<0.001	120	720
	12/03/97	0.00	0.002	<0.001	<0.001	<0.001	69	620
	03/13/08	1.62	NS	NS	NS	NS	NS	NS
	05/19/09	0.00	0.005	0.015	0.065	0.137	**332**	**1,330**
	05/25/10	0.00	**0.022**	0.112	0.050	0.083	**362**	**1,240**
	05/17/11	0.00	<0.005	<0.01	0.008	<0.01	189	952
	06/19/12	0.00	0.003	0.006	0.032	0.004	**332**	**1,510**
MW-8	01/18/95	0.00	**0.740**	<0.001	0.100	0.330	**563**	**1,460**
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	Nov-95	Well removed to allow excavation and solidification of pit.						
MW-9	01/18/95	0.00	<0.001	<0.001	<0.001	<0.001	58	636
	10/10/95	0.00	<0.001	<0.001	<0.001	<0.001	NA	NA
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	54	620
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	58	630
	07/09/96	DNA	<0.001	<0.001	<0.001	<0.001	57	640
	10/15/96	DNA	<0.001	<0.001	<0.001	<0.001	58	620
	12/03/97	0.00	<0.001	<0.001	<0.001	<0.001	54	630
	03/13/08	0.03	NS	NS	NS	NS	NS	NS
	05/19/09	0.00	<0.001	0.005	0.015	0.089	76	628
	05/25/10	0.00	<0.001	<0.002	0.005	0.014	149	630
	05/17/11	0.00	<0.005	<0.01	0.002	0.008	134	666
	06/19/12	0.00	<0.001	<0.001	<0.001	<0.003	**412**	**1,220**

Table 2
Summary of Regulated Constituent Concentrations

Monitoring Well	Sample Date	LNAPL Thickness (feet)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
MW-10	01/18/95	0.00	<0.001	<0.001	<0.001	<0.001	**359**	**1,190**
	10/10/95	0.00	NS	NS	NS	NS	NS	NS
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	**290**	**1,100**
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	**260**	970
	07/09/96	DNA	<0.001	<0.001	<0.001	<0.001	**260**	**1,000**
	10/15/96	DNA	<0.001	<0.001	<0.001	<0.001	**260**	**1,000**
	12/03/97	0.00	<0.001	<0.001	<0.001	<0.001	140	720
	03/13/08	0.00	<0.001	<0.002	<0.001	<0.003	**377**	**1,362**
	05/18/09	0.00	<0.001	<0.001	<0.001	<0.003	**320**	**1,100**
	05/25/10	0.00	<0.001	<0.002	<0.001	<0.002	**287**	870
	05/17/11	0.00	<0.005	<0.01	<0.005	<0.01	**471**	**1,510**
	06/19/12	0.00	<0.001	<0.001	<0.001	<0.003	**312**	**1,240**
RW-11	01/04/95	3.22	NS	NS	NS	NS	NS	NS
	01/17/95	3.69	NS	NS	NS	NS	NS	NS
	Nov-95	Well removed to allow excavation and solidification of pit.						
MW-12	01/04/95	0.35	NS	NS	NS	NS	NS	NS
	01/17/95	0.73	NS	NS	NS	NS	NS	NS
	10/10/95	NM	NS	NS	NS	NS	NS	NS
	01/04/96	4.07	**7.20**	**6.10**	**1.50**	**7.40**	**1,700**	**3,600**
	04/16/96	5.04	**11.0**	**11.00**	**1.10**	**6.50**	**2,100**	**4,300**
	07/09/96	4.12	NA	NA	NA	NA	**1,900**	**4,200**
	10/15/96	3.99	NA	NA	NA	NA	**2,000**	**4,300**
	12/03/97	3.82	NA	NA	NA	NA	**810**	**1,400**
	03/13/08	1.83	NS	NS	NS	NS	NS	NS
	05/18/09	0.01	NS	NS	NS	NS	NS	NS
	05/26/10	0.00	**1.10**	<0.04	0.257	0.349	**394**	**1,120**
	05/17/11	0.67	NS	NS	NS	NS	NS	NS
	06/19/12	0.13	NS	NS	NS	NS	NS	NS
MW-13	01/18/95	0.00	**2.2**	<0.001	0.36	**1.60**	**647**	**1,640**
	01/04/96	NM	**2.4**	0.022	0.330	**1.59**	**560**	**1,500**
	04/16/96	0.00	**2.4**	0.014	0.370	**1.70**	**540**	**1,500**
	07/09/96	0.00	**2.2**	0.034	0.430	**1.82**	**560**	**1,500**
	10/15/96	0.00	**2.1**	0.097	0.350	**1.71**	**530**	**1,400**
	12/03/97	0.00	**0.92**	0.140	0.160	0.570	**560**	**1,500**
	05/19/09	0.00	**1.00**	0.015	0.414	**1.60**	**1,600**	**3,860**
	05/26/10	0.00	**0.247**	<0.01	0.125	0.400	**1,329**	**2,720**
	05/18/11	0.00	**0.133**	0.003	0.086	0.223	**1,710**	**3,120**
	06/19/12	0.00	**0.403**	<0.05	0.160	0.242	**2,420**	**4,450**

Table 2
Summary of Regulated Constituent Concentrations

Monitoring Well	Sample Date	LNAPL Thickness (feet)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)	TDS (mg/L)
MW-14	10/11/95	0.00	<0.005	<0.005	<0.005	<0.005	NA	NA
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	87	900
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	100	920
	07/09/96	0.00	<0.001	<0.001	<0.001	<0.001	110	**1,000**
	10/15/96	0.00	<0.001	<0.001	<0.001	<0.001	120	930
	12/03/97	0.00	<0.001	<0.001	<0.001	<0.001	130	900
	03/13/08	0.00	<0.001	<0.002	<0.001	<0.003	**361**	**1,170**
	05/18/09	0.00	<0.001	<0.001	<0.001	<0.003	**304**	**1,250**
	05/25/10	0.00	0.002	0.002	0.001	0.003	**319**	**1,280**
	05/17/11	0.00	0.002	<0.002	<0.001	0.002	**299**	**1,420**
	06/19/12	0.00	<0.001	<0.001	<0.001	<0.003	**290**	**1,370**
MW-15	10/11/95	0.00	**0.087**	**1.10**	**0.770**	**2.07**	NA	NA
	01/04/96	NM	**0.096**	**0.870**	**0.880**	**2.40**	**430**	**1,200**
	04/16/96	0.00	**0.052**	0.550	0.690	**1.92**	**410**	**1,200**
	07/09/96	0.00	**0.035**	0.610	**0.850**	**2.15**	**510**	**1,400**
	10/15/96	0.00	<0.001	0.420	0.610	**1.63**	**580**	**1,400**
	12/03/97	0.00	**0.091**	**1.10**	**0.860**	**2.26**	**490**	**1,400**
	03/13/08	0.00	**0.020**	0.036	0.301	**0.752**	**1,360**	**3,140**
	05/18/09	0.00	**0.019**	0.033	0.364	0.747	**960**	**2,250**
	05/25/10	0.00	0.008	0.044	0.406	**0.993**	**1,064**	**2,090**
	05/17/11	0.00	0.005	0.019	0.322	**0.757**	**1,010**	**1,840**
	06/19/12	0.00	0.008	0.030	0.398	**0.887**	**1,040**	**1,950**
MW-16	10/11/95	0.00	<0.005	<0.005	<0.005	<0.005	NA	NA
	01/04/96	NM	<0.001	<0.001	<0.001	<0.001	66	900
	04/16/96	0.00	<0.001	<0.001	<0.001	<0.001	68	910
	07/09/96	0.00	<0.001	<0.001	<0.001	<0.001	93	910
	10/15/96	0.00	<0.001	<0.001	<0.001	<0.001	73	870
	12/03/97	0.00	<0.001	<0.001	<0.001	<0.001	66	850
	03/13/08	0.00	<0.001	<0.002	0.002	0.006	**293**	**1,400**
	05/18/09	0.00	<0.001	<0.001	<0.001	<0.003	**336**	**1,270**
	05/25/10	0.00	<0.001	<0.002	<0.001	0.003	**404**	**1,290**
	05/17/11	0.00	<0.005	<0.01	<0.005	<0.01	**410**	**1,350**
	06/19/12	0.00	<0.001	<0.001	<0.001	<0.003	**459**	**1,750**
RW-1s	05/26/10	0.00	<0.001	<0.002	<0.001	<0.002	**1,436**	**2,760**
RW-1d	05/18/11	0.00	**3.09**	0.003	0.084	0.006	**2,010**	**3,240**
	06/19/12	0.00	**0.92**	<0.02	0.089	<0.06	**1,700**	**2,430**
RW-2s	05/18/09	0.00	0.814	0.107	0.345	2.56	**720**	**1,800**
	05/26/10	NM	**1.03**	<1.00	**1.32**	**5.74**	**718**	**1,470**
	05/18/11	NM	**1.22**	0.270	0.526	**3.05**	**452**	**2,510**
	06/19/12	NM	**1.43**	<0.02	0.597	**3.15**	**348**	710
WQCC Standards			0.01	0.62	0.62	0.75	250	1,000

DNA = Data Not Available, NA = Not Analyzed, NM = Not Measured, NS = Not Sampled
Total Dissolved Soilds (TDS), chloride, sulfate, and BTEX concentrations listed in milligrams per liter (mg/L)
Values in boldface type indicate concentrations exceed New Mexico Water Quality Commission (WQCC) standards.

Table 3

Summary of Monitoring Natural Attenuation Parameters

Monitoring Well	Sample Date	Well Position	Electron Acceptors			Biodegradation Byproducts		
			Dissolved Oxygen (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Ferrous Iron (mg/L)	Total Iron (mg/L)	Total Manganese (mg/L)
MW-1	01/04/96	In Plume	1.50	120	1.00	NA	0.14	0.40
	04/16/96	In Plume	2.50	160	1.60	NA	0.08	0.32
	07/09/96	In Plume	1.19	160	1.60	NA	0.07	0.36
	10/15/96	In Plume	<0.10	130	1.00	NA	0.06	0.35
	12/03/97	In Plume	NA	120	0.67	NA	0.10	0.49
	05/19/09	In Plume	0.3	110	<0.1	0.79	1.34	0.43
	05/26/10	Upgradient	1.5	97.7	0.9	0.16	4.04	0.68
	05/17/11	Upgradient	1.0	66.2	1.0	1.97	3.74	0.694
	06/20/12	Upgradient	2.2	112	1.88	0.14	0.90	0.31
MW-2	01/18/95	Crossgradient	NA	145	NA	NA	2.0	0.38
	01/04/96	Crossgradient	1.60	120	16.0	NA	<0.001	0.29
	04/16/96	Crossgradient	3.44	120	17.0	NA	0.04	0.32
	07/09/96	Crossgradient	3.44	120	17.0	NA	0.03	0.32
	10/15/96	Crossgradient	1.83	130	16.0	NA	<0.001	0.28
	03/13/08	Crossgradient	3.6	151	0.87	0.07	<0.20	0.60
	05/18/09	Crossgradient	2.1	205	24.4	0.75	0.17	0.04
MW-4	01/18/95	Crossgradient	NA	121	NA	NA	2.20	0.09
	01/04/96	Crossgradient	2.65	78	<0.05	NA	0.52	0.07
	04/16/96	Crossgradient	2.00	60	<0.05	NA	1.00	0.12
	07/09/96	Crossgradient	1.90	43	0.06	NA	1.60	0.16
	10/15/96	Crossgradient	NA	36	0.06	NA	0.97	0.17
	03/13/08	Crossgradient	2.80	49.7	0.43	0.97	2.98	0.31
	05/18/09	Crossgradient	0.50	110	<0.10	1.69	9.94	0.23
MW-5	01/18/95	Crossgradient	NA	109	NA	NA	13.2	0.05
	01/04/96	Crossgradient	5.27	110	1.30	NA	<0.025	<0.01
	04/16/96	Crossgradient	5.38	110	1.20	NA	<0.025	<0.01
	07/09/96	Crossgradient	NA	100	0.91	NA	<0.025	<0.01
	10/15/96	Crossgradient	6.51	110	1.10	NA	<0.025	<0.01
	12/03/97	Crossgradient	NA	88	0.96	NA	0.028	<0.01
	03/13/08	Crossgradient	4.8	75.2	1.11	0.29	4.73	0.27
	05/18/09	Crossgradient	3.8	92.4	<0.1	1.41	2.43	0.075
	05/25/10	Crossgradient/In Plume	5.3	211	1.3	1.73	8.35	0.220
	05/17/11	Crossgradient	4.7	215	3.2	3.21	12.7	0.197
	06/20/12	Crossgradient	5.4	271	8.86	1.33	0.45	0.16
MW-6	01/04/96	In Plume	1.98	46	NA	NA	3.20	1.10
	04/16/96	In Plume	<0.10	56	0.73	NA	2.20	1.00
	07/09/96	In Plume	1.67	40	0.48	NA	1.90	0.85
	10/15/96	In Plume	<0.10	43	0.29	NA	1.40	0.72
	12/03/97	In Plume	NA	21	<0.05	NA	<0.025	0.79

Table 3

Summary of Monitoring Natural Attenuation Parameters

Monitoring Well	Sample Date	Well Position	Electron Acceptors			Biodegradation Byproducts		
			Dissolved Oxygen (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Ferrous Iron (mg/L)	Total Iron (mg/L)	Total Manganese (mg/L)
MW-7	01/18/95	In Plume	NA	222	NA	NA	15.6	0.18
	01/04/96	Upgradient	2.06	170	<0.05	NA	0.67	0.10
	04/16/96	Upgradient	2.82	170	<0.05	NA	0.77	0.11
	07/09/96	Upgradient	3.37	170	<0.05	NA	0.46	0.08
	10/15/96	Upgradient	0.76	180	<0.05	NA	0.40	0.07
	12/03/97	Upgradient	2.08	140	<0.05	NA	0.34	0.08
	03/13/08	In Plume	NS	NS	NS	NS	NS	NS
	05/19/09	Upgradient	0.3	283	<0.1	0.53	0.91	0.17
	05/25/10	In Plume	2.7	185	<0.1	2.50	14.0	0.53
	05/17/11	Upgradient	1.2	86.6	0.9	1.37	3.26	0.137
	06/20/12	Upgradient	1.6	215		1.07	0.37	0.10
MW-9	01/18/95	Upgradient	NA	192	NA	NA	17.6	0.02
	01/04/96	Upgradient	5.98	180	0.59	NA	<0.025	<0.01
	04/16/96	Upgradient	7.03	190	0.56	NA	0.04	<0.01
	07/09/96	Upgradient	6.30	180	0.65	NA	<0.025	<0.01
	10/15/96	Upgradient	6.30	190	0.70	NA	<0.025	<0.01
	12/03/97	Upgradient	NA	200	0.61	NA	<0.025	<0.01
	03/13/08	In Plume	NS	NS	NS	NS	NS	NS
	05/19/09	Upgradient	0.7	150	<0.1	0.39	0.72	0.23
	05/25/10	Upgradient	2.3	165	<0.1	0.81	0.80	0.60
	05/17/11	Upgradient	3.0	184	0.3	0.01	0.53	0.366
	06/20/12	Upgradient	2.8	125	3.14	0.22	0.31	0.31
MW-10	01/18/95	Upgradient	NA	176	NA	NA	19.9	0.09
	01/04/96	Upgradient	4.80	160	4.80	NA	<0.025	<0.01
	04/16/96	Upgradient	4.57	160	4.10	NA	<0.025	<0.01
	07/09/96	Upgradient	4.58	170	3.70	NA	<0.025	<0.01
	10/15/96	Upgradient	4.10	180	3.90	NA	<0.025	0.02
	12/03/97	Upgradient	3.83	150	2.00	NA	<0.025	<0.01
	03/13/08	Upgradient	6.5	154	2.80	0.01	0.58	0.07
	05/18/09	Upgradient	7.8	197	2.10	1.49	7.81	0.11
	05/25/10	Upgradient	7.2	138	0.7	0.15	0.70	<0.1
	05/17/11	Upgradient	4.7	200	4.0	2.49	22.4	0.278
	06/20/12	Upgradient	5.8	332	8.46	1.50	0.13	0.008
MW-12	01/04/96	In Plume	0.81	0.86	<0.05	NA	2.80	0.85
	04/16/96	In Plume	1.32	<0.025	<0.05	NA	5.60	1.60
	07/09/96	In Plume	1.35	<0.025	<0.05	NA	5.20	1.30
	10/15/96	In Plume	<0.10	0.37	<0.05	NA	0.04	1.30
	12/03/97	In Plume	NA	4.30	<0.05	NA	0.27	0.62
	05/25/10	In Plume	1.4	64.1	1.90	2.02	6.64	0.85

Table 3

Summary of Monitoring Natural Attenuation Parameters

Monitoring Well	Sample Date	Well Position	Electron Acceptors			Biodegradation Byproducts		
			Dissolved Oxygen (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Ferrous Iron (mg/L)	Total Iron (mg/L)	Total Manganese (mg/L)
MW-13	01/18/95	Downgradient / In Plume	NA	20.20	NA	NA	38.2	0.64
	01/04/96	Downgradient / In Plume	1.66	4.50	0.07	NA	4.30	1.90
	04/16/96	Downgradient / In Plume	1.19	2.30	<0.05	NA	4.00	1.90
	07/09/96	Downgradient / In Plume	1.49	2.70	<0.05	NA	4.00	1.90
	10/15/96	Downgradient / In Plume	0.85	2.80	<0.05	NA	4.40	2.10
	12/03/97	Downgradient / In Plume	2.22	11.0	<0.05	NA	4.30	2.20
	03/13/08	Downgradient / In Plume	NS	NS	NS	NS	NS	NS
	05/19/09	Downgradient / In Plume	2.4	<10	0.42	12.5	29.9	4.62
	05/26/10	Downgradient / In Plume	1.7	<25	<0.1	8.8	26.6	30.5
	05/17/11	Downgradient / In Plume	1.5	59.9	0.4	6.36	28.0	2.44
	06/20/12	Downgradient / In Plume	2.6	60.0	5.45	4.74	29.0	3.30
MW-14	01/04/96	Downgradient	5.7	230	0.38	NA	0.03	0.01
	04/16/96	Downgradient	NA	230	0.47	NA	0.05	0.01
	07/09/96	Downgradient	3.68	220	0.37	NA	0.03	0.01
	10/15/96	Downgradient	2.96	250	0.60	NA	<0.025	<0.01
	12/03/97	Downgradient	NA	170	0.79	NA	<0.025	<0.01
	03/13/08	Downgradient	4.7	154	8.41	0.01	0.45	<0.05
	05/18/09	Downgradient	5.3	225	14.8	2.16	1.19	0.023
	05/25/10	Downgradient	4.4	28.2	5.5	2.99	<0.3	<0.1
	05/17/11	Downgradient	4.9	259	16.2	0.39	1.43	0.038
	06/19/12	Downgradient	5.1	243	41.9	0.00	0.10	0.009
MW-15	01/04/96	Downgradient / In Plume	1.30	27	<0.05	NA	1.70	0.66
	04/16/96	Downgradient / In Plume	2.17	42	<0.05	NA	1.60	0.66
	07/09/96	Downgradient / In Plume	2.08	55	<0.05	NA	1.80	0.75
	10/15/96	Downgradient / In Plume	1.05	46	<0.05	NA	2.40	0.98
	12/03/97	Downgradient / In Plume	1.19	4.8	<0.05	NA	3.30	0.87
	03/13/08	Downgradient / In Plume	2.6	<10	<0.20	1.03	15.0	2.12
	05/18/09	Downgradient / In Plume	1.1	<10	<0.1	3.86	17.5	1.68
	05/25/10	Downgradient / In Plume	2.0	36.8	<0.1	3.50	16.5	2.38
	05/17/11	Downgradient / In Plume	1.5	37.4	0.5	2.96	16.2	1.99
	06/19/12	Downgradient / In Plume	4.0	11.4	2.85	6.18	18.0	2.80
MW-16	01/04/96	Downgradient	4.90	280	1.00	NA	<0.025	<0.01
	04/16/96	Downgradient	4.75	260	0.92	NA	0.03	<0.01
	07/09/96	Downgradient	3.03	230	0.86	NA	0.04	<0.01
	10/15/96	Downgradient	3.56	260	0.81	NA	<0.025	<0.01
	12/03/97	Downgradient	2.83	190	0.66	NA	<0.025	<0.01
	03/13/08	Downgradient	3.2	140	3.69	0.01	<0.20	<0.05
	05/18/09	Downgradient	1.7	168	2.61	1.96	4.71	0.042
	05/25/10	Downgradient	1.7	172	3.2	3.06	<0.3	<0.1
	05/17/11	Downgradient	2.6	201	5.2	0.00	1.91	<0.033
	06/19/12	Downgradient	2.4	195	14.8	0.00	0.09	0.007

Table 3

Summary of Monitoring Natural Attenuation Parameters

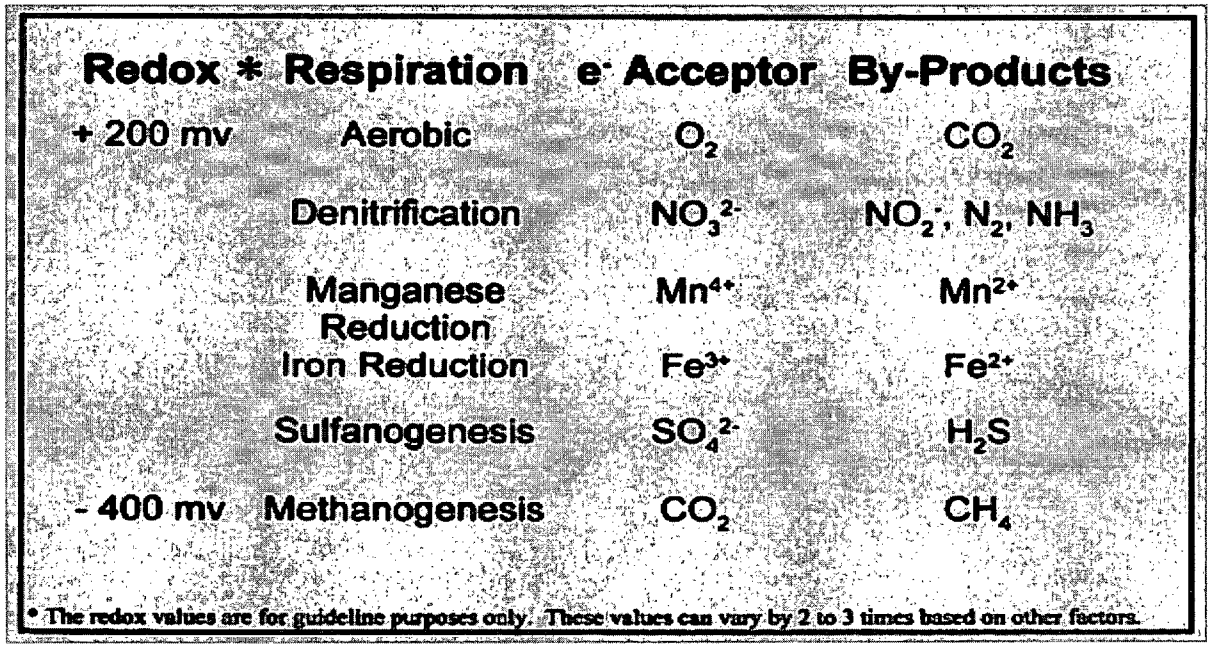
Monitoring Well	Sample Date	Well Position	Electron Acceptors			Biodegradation Byproducts		
			Dissolved Oxygen (mg/L)	Sulfate (mg/L)	Nitrate (mg/L)	Ferrous Iron (mg/L)	Total Iron (mg/L)	Total Manganese (mg/L)
RW-1s	05/26/10	In Plume	1.2	<25	<0.1	3.04	26.0	0.66
RW-1d	05/17/11	In Plume	0.8	38.0	6.55	7.36	14.5	0.486
	06/20/12	In Plume	1.6	13.4	5.35	4.20	9.7	0.41
RW-2s	06/20/12	In Plume	2.1	96.3	2.12	2.68	6.00	0.380
		WQCC Standards:		600	10	---	1.0	0.2

NA - Not Analyzed.
Hanna Model 98130 instrument used in field to obtain pH, conductivity, and temperature measurements.
Milwaukee Model SM300 used in field for dissolved oxygen readings
Hach Model DR 890 Spectrophotometer used for field measurement of ferrous iron (Method 8146).

Table 4
Expressed Assimilative Capacity

Electron Acceptor/ Byproduct	Terminal Electron Accepting Process (in order of preferred utilization)	Trend in Analyte Concentration During Biodegradation	Mass of benzene Degraded per unit mass of Electron Acceptor Utilized/Produced	Average Concentrations of Electron Acceptors/ Byproducts (mg/L)	Biodegradation Capacity of Electron Acceptors/Byproducts (mg/L)
O_2/CO_2	Aerobic Respiration	Decreases	0.325	3.23	1.05
SO_4/H_2S	Sulfanogenesis	Decreases	0.22	133	28.9
$NO_3/NO_2,N_2,NH_3$	Denitrification	Decreases	0.21	10.4	2.17
Fe^{3+}/Fe^{+2}	Iron Reduction	Increases	0.046	8.0	0.37
Mn^{4+}/Mn^{2+}	Manganese Reduction	Increases	0.14	2.45	0.34
				Total Biodegradation Capacity	32.8
				Highest benzene concentration currently observed within plume	1.43
				Average benzene concentration currently observed within plume	0.35

Degradation capacity based on values provided by "*Technical Protocol for Implementing Intrinsic Remediation With Long-Term Monitoring of Natural Attenuation of Fuel-Contamination Dissolved in Groundwater* " (Weidemeier et. al. 1995)
The stoichiometry presented above does not take into account microbial cell mass production (Conservative assumption).



As displayed in Table 4 above, the calculated biodegradation capacity of electron acceptors and metabolic byproducts (32.8 mg/L) exceeds the *highest* benzene concentration (1.43 mg/L) currently observed on site by a factor of 23 to 1. The biodegradation capacity of electron acceptors and metabolic byproducts further exceeds the *average* benzene concentration (0.35 mg/L) currently observed within the plume by a ratio of 95 to 1. This indicates that the necessary nutrients and by-products are present for the continued biodegradation of dissolved hydrocarbons.

Table 5

Light Non-Aqueous Phase Liquids Thickness

Date	LNAPL Thickness (feet)							
	RW-1s	RW-2s	MW-1	MW-6	MW-7	MW-9	MW-12	MW-13
05/07/08	2.71	1.77	1.40	2.32	1.64	0.03	1.89	0.80
07/23/08	2.11	NM	1.72	2.68	1.76	0.05	1.62	1.09
07/24/08	1.35	NM	0.27	0.39	0.45	0.00	0.54	0.03
08/12/08	1.33	NM	0.60	2.24	0.20	0.03	1.33	0.18
08/13/08	1.32	NM	0.54	1.65	0.17	0.00	1.37	0.18
09/09/08	1.07	NM	0.44	1.71	0.00	0.03	1.57	0.12
09/17/08	1.09	NM	0.29	2.00	0.01	0.00	1.11	0.03
10/08/08	0.81	NM	0.07	1.48	0.00	0.00	1.42	0.00
11/20/08	0.46	0.00	0.03	1.21	0.00	0.00	0.98	0.00
12/23/08	0.67	1.47	0.06	1.38	0.00	0.00	0.64	0.00
12/23/08	0.35	1.47	0.06	0.14	0.00	0.00	0.64	0.00
01/15/09	0.41	NM	0.03	1.20	0.00	0.00	0.43	0.00
02/27/09	0.30	NM	0.07	1.40	0.00	0.00	0.50	0.00
03/26/09	0.28	NM	0.00	1.11	0.00	0.00	0.03	0.00
04/28/09	0.26	NM	0.00	1.19	0.00	0.00	0.02	0.00
05/18/09	0.24	NM	0.00	1.17	0.00	0.00	0.01	0.00
06/17/09	0.21	NM	0.00	1.37	0.00	0.00	0.05	0.00
07/16/09	0.20	NM	0.01	1.17	0.00	0.00	0.05	0.03
08/26/09	0.15	NM	0.00	1.25	0.00	0.00	0.00	0.00
09/15/09	0.14	NM	0.00	1.30	0.00	0.00	0.00	0.00
10/15/09	0.08	1.44	0.00	1.25	0.00	0.00	0.00	0.00
10/21/09	0.25	NM	0.00	1.20	0.00	0.00	0.00	0.00
11/12/09	0.01	NM	0.00	1.05	0.00	0.00	0.00	0.00
12/10/09	0.00	NM	0.00	1.03	0.00	0.00	0.00	0.00
01/13/10	0.00	NM	0.00	0.92	0.00	0.01	0.00	0.00
02/25/10	0.00	NM	0.00	0.76	0.00	0.00	0.00	0.00
03/23/10	0.00	NM	0.00	0.60	0.00	0.00	0.00	0.00
04/01/10	0.00	NM	0.00	0.36	0.00	0.00	0.00	0.00
04/28/10	0.00	NM	0.00	0.20	0.00	0.00	0.00	0.00
05/25/10	0.00	NM	0.00	0.10	0.00	0.00	0.00	0.00
06/16/10	0.00	NM	0.00	0.10	0.00	0.00	0.00	0.00
07/14/10	0.00	NM	0.00	0.01	0.00	0.00	0.00	0.00
08/24/10	0.01	NM	0.00	0.04	0.00	0.00	0.05	0.00
09/22/10	0.03	NM	0.00	0.14	0.00	0.00	0.09	0.00
10/06/10	0.01	NM	0.00	0.08	0.00	0.00	0.07	0.00
11/30/10	0.05	NM	0.00	0.25	0.00	0.00	0.26	0.00
12/13/10	0.03	NM	0.00	0.35	0.00	0.00	0.22	0.00
01/19/11	0.04	NM	0.00	0.25	0.00	0.00	0.34	0.00
02/24/11	0.03	NM	0.00	0.19	0.00	0.00	0.72	0.00
03/17/11	0.02	NM	0.00	0.16	0.00	0.00	0.16	0.00
04/26/11	0.05	NM	0.00	0.25	0.00	0.00	0.57	0.00
05/17/11	0.02	NM	0.00	0.21	0.00	0.00	0.67	0.00
06/29/11	0.02	NM	0.00	0.29	0.00	0.00	0.10	0.00
07/14/11	0.11	NM	0.00	0.22	0.00	0.00	0.51	0.00
08/23/11	0.00	NM	0.00	0.25	0.00	0.00	0.29	0.00
09/28/11	0.01	NM	0.00	0.02	0.00	0.00	0.16	0.00
10/25/11	0.00	NM	0.00	0.18	0.00	0.00	0.12	0.00
11/22/11	0.01	NM	0.00	0.22	0.00	0.00	0.11	0.00
12/13/11	0.00	NM	0.00	0.20	0.00	0.00	0.10	0.00
01/24/12	0.00	NM	0.00	0.34	0.00	0.00	0.26	0.00
02/29/12	0.00	NM	0.00	0.46	0.00	0.00	0.25	0.00
03/15/12	0.00	NM	0.00	0.12	0.00	0.00	0.19	0.00
04/25/12	0.00	NM	0.00	0.08	0.00	0.00	0.34	0.00
05/25/12	0.00	NM	0.00	0.02	0.00	0.00	0.20	0.00
06/19/12	0.00	NM	0.00	0.02	0.00	0.00	0.13	0.00
07/12/12	0.00	NM	0.00	0.02	0.00	0.00	0.10	0.00

Thickness measurements in recovery well RW-2s cannot be made while windmill is in operation and is assumed ~0.00 ft.

Table 6
Total Fluids and Light Non-Aqueous Phase Liquids Recovery Volumes

Date	Total Fluids and LNAPL Recovered (gallons)							
	RW-1s	RW-2s	MW-1	MW-6	MW-7	MW-9	MW-12	MW-13
05/07/08	1.34	5	0	0	0	0	0.03	0
07/23/08	1.00	0	0	0	0	0	0	0.10
07/24/08	3.00	5	1	1	1	0.10	1	0.50
08/12/08	0.80	*10,421*	0.50	0.50	0.50	0	0.30	0.03
08/13/08	0.10	*432*	0.01	0.01	0.02	0.01	0.00	0.03
09/09/08	0.90	*15,331*	0.40	0.30	0.15	0.00	0.50	0.05
09/17/08	0.05	*2,649*	0.14	0.38	0.01	0.02	0.34	0.05
10/08/08	1.04	*10,853*	0.15	0.90	0.05	0.00	0.64	0.05
11/20/08	0.95	*36,452*	0.27	0.85	0.01	0.01	1.04	0.02
12/23/08	0.78	*2,852*	0.08	1.10	0.00	0.00	0.42	0.00
01/15/09	0.30	*2,852*	0.02	0.47	0.00	0.00	0.40	0.00
02/27/09	0.48	*2,851*	0.10	0.46	0.00	0.00	0.41	0.00
03/26/09	0.23	*2,836*	0.06	0.44	0.00	0.00	0.39	0.00
04/28/09	0.23	*829*	0.06	0.39	0.00	0.00	0.25	0.00
05/18/09	0.23	*4,687*	0.00	0.38	0.00	0.00	0.05	0.00
06/17/09	0.17	*6,859*	0.00	0.36	0.00	0.00	0.05	0.00
07/16/09	0.12	0.0	0.00	0.25	0.00	0.00	0.05	0.00
08/26/09	0.20	0.0	0.01	0.34	0.00	0.00	0.04	0.00
09/15/09	0.12	0.0	0.00	0.24	0.00	0.00	0.02	0.00
10/15/09	0.12	0.0	0.01	0.50	0.00	0.00	0.01	0.00
10/21/09	0.20	0.5	0.00	0.38	0.00	0.00	0.00	0.00
11/12/09	0.21	*5,904*	0.02	0.44	0.00	0.00	0.02	0.00
12/10/09	0.01	*3,874*	0.01	0.44	0.00	0.00	0.01	0.00
01/13/10	0.01	2.0	0.01	0.31	0.00	0.00	0.01	0.00
02/25/10	0.03	5.0	0.01	0.37	0.00	0.00	0.04	0.00
03/23/10	0.06	5.0	0.01	0.33	0.00	0.00	0.03	0.00
04/01/10	0.03	0.0	0.00	0.29	0.00	0.00	0.04	0.00
04/28/10	0.02	*9,720*	0.00	0.27	0.00	0.00	0.02	0.00
05/25/10	0.01	*34,850*	0.00	0.25	0.00	0.00	0.01	0.00
06/16/10	0.01	*18,060*	0.00	0.06	0.00	0.00	0.01	0.00
07/14/10	0.01	*16,450*	0.00	0.07	0.00	0.00	0.02	0.00
08/24/10	0.03	*18,980*	0.00	0.10	0.00	0.00	0.02	0.00
09/22/10	0.04	*18,330*	0.00	0.04	0.00	0.00	0.03	0.00
10/06/10	0.03	*6,600*	0.00	0.04	0.00	0.00	0.02	0.00
11/30/10	0.05	*44,928*	0.01	0.04	0.00	0.00	0.05	0.00
12/13/10	0.04	*9,690*	0.00	0.06	0.00	0.00	0.06	0.00
01/19/11	0.02	*28,482*	0.01	0.05	0.00	0.00	0.05	0.00
02/24/11	0.04	*11,900*	0.00	0.06	0.00	0.00	0.01	0.00
03/17/11	0.04	*130*	0.00	0.06	0.00	0.00	0.21	0.00
04/26/11	0.03	*39,670*	0.00	0.06	0.00	0.00	0.07	0.00
05/17/11	0.02	*18,310*	0.00	0.06	0.00	0.00	0.07	0.00
06/29/11	0.06	*18,530*	0.00	0.08	0.00	0.00	0.25	0.00
07/14/11	0.11	*2,060*	0.00	0.07	0.00	0.00	0.06	0.00
08/23/11	0.13	*3,040*	0.00	0.07	0.00	0.00	0.36	0.00
09/28/11	0.05	*2,058*	0.00	0.24	0.00	0.00	0.35	0.00
10/25/11	0.07	*17,486*	0.00	0.03	0.00	0.00	0.29	0.00
11/22/11	0.03	*18,779*	0.00	0.06	0.00	0.00	0.28	0.00
12/13/11	0.07	*10,388*	0.00	0.07	0.00	0.00	0.23	0.00
01/24/12	0.10	*11,988*	0.00	0.08	0.00	0.00	0.38	0.00
02/29/12	0.07	*12,960*	0.00	0.08	0.00	0.00	0.38	0.00
03/15/12	0.02	*5,400*	0.00	0.13	0.00	0.00	0.16	0.00
04/25/12	0.17	*14,760*	0.00	0.40	0.00	0.00	0.38	0.00
05/25/12	0.07	*10,800*	0.00	0.21	0.00	0.00	0.37	0.00
06/19/12	0.04	*9,000*	0.00	0.13	0.00	0.00	0.27	0.00
07/12/12	0.06	*8,280*	0.00	0.10	0.00	0.00	0.23	0.00
Well Totals	14.1	*531,332*	2.90	14.4	1.74	0.14	10.72	0.84
Total Gallons of LNAPL Recovered in all Wells Since May 6, 2008:								**73.6**
Total Gallons of Fluids Recovered in RW-2s Since July 24, 2008:								***531,332***

** Volumes in blue text reflect gallons of total fluids (mostly water with some LNAPL) recovered from RW-2s. LNAPL is not separated from total fluids, therefore LNAPL recovery in RW-2s cannot be measured.*

Total fluids volume estimated at average of 0.25 gpm during certain periods when totalizer meter malfunctioned.

APPENDIX A

NMOCD Correspondence

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

July 14, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P-410-431-193

Mr. Sam E. Christy
Phillips Petroleum Company
4001 Penbrook
Odessa, Texas 79762

RE: GROUND WATER REMEDIATION AND MONITORING
SOUTH FOUR LAKES UNIT

Dear Mr. Christy:

The New Mexico Oil Conservation Division has reviewed Phillips Petroleum Company's (Phillips) May 6, 1997 "SOUTH FOUR LAKES UNIT QUANTIFICATION OF NATURAL ATTENUATION & FUTURE GROUNDWATER MONITORING PROGRAM". This document contains the results of Phillips's recent ground water remediation and monitoring activities. The document also contains recommendations to plug and abandon 3 site monitoring wells and modify the long term ground water monitoring plan.

Phillips's proposals as contained in the above referenced document are approved with the following conditions:

1. In addition to the proposed sampling parameters, Phillips will continue to sample and analyze ground water from all monitor wells for concentrations of iron and manganese using EPA approved methods and quality assurance/quality control (QA/QC).

2. Annual remediation and monitoring reports will be submitted to the OCD by July 1 of each year. The annual reports will contain:

   a. A description of the monitoring and remediation activities which occurred during the year including conclusions and recommendations.

   b. Summary tables listing past and present laboratory analytic results of all water quality sampling for each monitoring point and plots of concentration vs. time for contaminants of concern from each monitoring point. Copies of the most recent years laboratory data sheets and associated QA/QC data will also be submitted.

c. A water table elevation map using the water table elevation of the ground water in all monitor wells.

d. Plots of water table elevation vs. time for each ground water monitoring point.

e. A product thickness map based on the thickness of free phase product on ground water in all refinery monitor wells.

f. The volume of product and water recovered in the remediation system during each year and the total recovered to date.

3. All wastes generated will be disposed of at an OCD approved facility or in an OCD approved manner.

4. Phillips will notify the OCD at least one week in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples.

5. All documents will be submitted to the OCD Santa Fe Office with copies provided to the OCD Hobbs District Office.

Please be advised that OCD approval does not relieve Phillips of liability should the remediation and monitoring program fail to adequately monitor or remediate contamination related to Phillips's operations. In addition, OCD approval does not relieve Phillips of responsibility for compliance with any other federal, state, or local laws and/or regulations.

If you have any questions, please call me at (505) 827-7154.

Sincerely,

William C. Olson
Hydrogeologist
Environmental Bureau

xc: Chris Williams, OCD Hobbs District Supervisor
Wayne Price, OCD Hobbs Office
David Deardorff, New Mexico State Land Office

APPENDIX B

Laboratory Analytical Reports

And

Chain of Custody Documentation

PERMIAN BASIN
ENIRONMENTAL LAB, LP
10014 SCR 1213
Midland, TX 79706

PBELAB

Analytical Report

Prepared for:

Gilbert Vandeventer

Trident Environmental

P.O. Box 12177

Odessa, TX 79768

Project: Pride Energy Company

Project Number: South Four Lakes Tank Battery

Location: T12S-R34#, Section 2, Unit Letter G

Lab Order Number: 2F21001

Report Date: 07/05/12

Trident Environmental
P.O. Box 12177
Odessa TX, 79768

Project: Pride Energy Company
Project Number: South Four Lakes Tank Battery
Project Manager: Gilbert Vandeventer

Fax: (432) 413-9968

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	2F21001-01	Water	06/20/12 11:00	06-21-2012 09:50
MW-5	2F21001-02	Water	06/20/12 11:30	06-21-2012 09:50
MW-7	2F21001-03	Water	06/20/12 10:00	06-21-2012 09:50
MW-9	2F21001-04	Water	06/20/12 09:00	06-21-2012 09:50
MW-10	2F21001-05	Water	06/20/12 08:00	06-21-2012 09:50
MW-13	2F21001-06	Water	06/20/12 13:00	06-21-2012 09:50
MW-14	2F21001-07	Water	06/19/12 18:00	06-21-2012 09:50
MW-15	2F21001-08	Water	06/19/12 19:00	06-21-2012 09:50
MW-16	2F21001-09	Water	06/19/12 17:00	06-21-2012 09:50
RW-1D	2F21001-10	Water	06/20/12 13:30	06-21-2012 09:50
RW-2S	2F21001-11	Water	06/20/12 14:00	06-21-2012 09:50

Trident Environmental	Project: Pride Energy Company	Fax: (432) 413-9968
P.O. Box 12177	Project Number: South Four Lakes Tank Battery	
Odessa TX, 79768	Project Manager: Gilbert Vandeventer	

Organics by GC

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (2F21001-01) Water									
Benzene	**0.00525**	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**0.0124**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.170**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.0230**	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*92.0 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*83.7 %*	*80-120*		"	"	"	"	
MW-5 (2F21001-02) Water									
Benzene	**0.00268**	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**0.00981**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.0266**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.0298**	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*113 %*	*80-120*		"	"	"	"	
ɔgate: 1,4-Difluorobenzene		*86.8 %*	*80-120*		"	"	"	"	
MW-7 (2F21001-03) Water									
Benzene	**0.00290**	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**0.00608**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.0315**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00399**	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*102 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*87.5 %*	*80-120*		"	"	"	"	
MW-9 (2F21001-04) Water									
Benzene	ND	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99.7 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*95.2 %*	*80-120*		"	"	"	"	

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Organics by GC

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-10 (2F21001-05) Water									
Benzene	ND	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.7 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*94.8 %*	*80-120*		"	"	"	"	
MW-13 (2F21001-06) Water									
Benzene	**0.403**	0.0500	mg/L	50	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	ND	0.0500	"	"	"	"	"	"	
Ethylbenzene	**0.160**	0.0500	"	"	"	"	"	"	
Xylene (p/m)	**0.242**	0.100	"	"	"	"	"	"	
Xylene (o)	ND	0.0500	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*95.7 %*	*80-120*		"	"	"	"	
gate: 1,4-Difluorobenzene		*93.3 %*	*80-120*		"	"	"	"	
MW-14 (2F21001-07) Water									
Benzene	ND	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.0 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*94.5 %*	*80-120*		"	"	"	"	
MW-15 (2F21001-08) Water									
Benzene	**0.00756**	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**0.0296**	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.398**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.794**	0.00200	"	"	"	"	"	"	
Xylene (o)	**0.0926**	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.3 %*	*80-120*		"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*85.8 %*	*80-120*		"	"	"	"	

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Odessa TX, 79768

Project: Pride Energy Company
Project Number: South Four Lakes Tank Battery
Project Manager: Gilbert Vandeventer

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Organics by GC

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-16 (2F21001-09) Water									
Benzene	ND	0.00100	mg/L	1	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00200	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*94.7 %*		*80-120*	"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*93.7 %*		*80-120*	"	"	"	"	
RW-1D (2F21001-10) Water									
Benzene	**0.916**	0.0200	mg/L	20	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**ND**	0.0200	"	"	"	"	"	"	
Ethylbenzene	**0.0889**	0.0200	"	"	"	"	"	"	
Xylene (p/m)	**ND**	0.0400	"	"	"	"	"	"	
Xylene (o)	ND	0.0200	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*96.8 %*		*80-120*	"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*92.7 %*		*80-120*	"	"	"	"	
RW-2S (2F21001-11) Water									
Benzene	**1.43**	0.0200	mg/L	20	EF22504	06/21/12	06/22/12	EPA 8021B	
Toluene	**ND**	0.0200	"	"	"	"	"	"	
Ethylbenzene	**0.597**	0.0200	"	"	"	"	"	"	
Xylene (p/m)	**2.45**	0.0400	"	"	"	"	"	"	
Xylene (o)	**0.697**	0.0200	"	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*		*80-120*	"	"	"	"	
Surrogate: 1,4-Difluorobenzene		*94.2 %*		*80-120*	"	"	"	"	

Trident Environmental	Project: Pride Energy Company	Fax: (432) 413-9968
P.O. Box 12177	Project Number: South Four Lakes Tank Battery	
Odessa TX, 79768	Project Manager: Gilbert Vandeventer	

General Chemistry Parameters by EPA / Standard Methods

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (2F21001-01) Water									
Chloride	**177**	5.00	mg/L	10	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**1.88**	0.500	"	"	"	"	"	"	
Total Dissolved Solids	**570**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**112**	10.0	"	10	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-5 (2F21001-02) Water									
Chloride	**389**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**8.86**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**1220**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**271**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-7 (2F21001-03) Water									
Chloride	**332**	25.0	mg/L	50	EF22502	06/21/12	06/25/12	EPA 300.0	
Total Dissolved Solids	**1510**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**215**	50.0	"	50	EF22502	06/21/12	06/25/12	EPA 300.0	
-9 (2F21001-04) Water									
Chloride	**412**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**3.14**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**1220**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**125**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-10 (2F21001-05) Water									
Chloride	**312**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**8.46**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**1240**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**332**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-13 (2F21001-06) Water									
Chloride	**2420**	25.0	mg/L	50	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**5.45**	2.50	"	"	"	"	"	"	
Total Dissolved Solids	**4450**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**60.0**	50.0	"	50	EF22502	06/21/12	06/25/12	EPA 300.0	

10014 SCR 1213 Midland, TX 79706 432-661-4184

Trident Environmental
P.O. Box 12177
Odessa TX, 79768

Project: Pride Energy Company
Project Number: South Four Lakes Tank Battery
Project Manager: Gilbert Vandeventer

Fax: (432) 413-9968

General Chemistry Parameters by EPA / Standard Methods

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-14 (2F21001-07) Water									
Chloride	**290**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**41.9**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**1370**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**243**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-15 (2F21001-08) Water									
Chloride	**1040**	12.5	mg/L	25	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**2.85**	1.25	"	"	"	"	"	"	
Total Dissolved Solids	**1950**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**11.4**	10.0	"	10	EF22502	06/21/12	06/25/12	EPA 300.0	
MW-16 (2F21001-09) Water									
Chloride	**459**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**14.8**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**1750**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
te	**195**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	
RW-1D (2F21001-10) Water									
Chloride	**1700**	25.0	mg/L	50	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**5.35**	2.50	"	"	"	"	"	"	
Total Dissolved Solids	**2430**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**13.4**	10.0	"	10	EF22502	06/21/12	06/25/12	EPA 300.0	
RW-2S (2F21001-11) Water									
Chloride	**348**	10.0	mg/L	20	EF22502	06/21/12	06/25/12	EPA 300.0	
Nitrate as N	**2.12**	1.00	"	"	"	"	"	"	
Total Dissolved Solids	**710**	10.0	"	1	EF22601	06/22/12	06/25/12	EPA 160.1	
Sulfate	**96.3**	20.0	"	20	EF22502	06/21/12	06/25/12	EPA 300.0	

Trident Environmental	Project: Pride Energy Company	Fax: (432) 413-9968
P.O. Box 12177	Project Number: South Four Lakes Tank Battery	
Odessa TX, 79768	Project Manager: Gilbert Vandeventer	

Total Metals by EPA / Standard Methods

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 (2F21001-01) Water									
Iron	**0.900**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**0.310**	0.0100	"	"	"	"	"	"	
MW-5 (2F21001-02) Water									
Iron	**0.450**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**0.160**	0.0100	"	"	"	"	"	"	
MW-7 (2F21001-03) Water									
Iron	**J [0.370]**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	J
Manganese	**0.0990**	0.0100	"	"	"	"	"	"	
MW-9 (2F21001-04) Water									
Iron	**J [0.310]**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	J
Manganese	**0.310**	0.0100	"	"	"	"	"	"	
10 (2F21001-05) Water									
	J [0.130]	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	J
Manganese	**J [0.00830]**	0.0100	"	"	"	"	"	"	J
MW-13 (2F21001-06) Water									
Iron	**29.0**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**3.30**	0.0100	"	"	"	"	"	"	
MW-14 (2F21001-07) Water									
Iron	**J [0.0950]**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	J
Manganese	**J [0.00920]**	0.0100	"	"	"	"	"	"	J
MW-15 (2F21001-08) Water									
Iron	**18.0**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**2.80**	0.0100	"	"	"	"	"	"	

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Total Metals by EPA / Standard Methods

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-16 (2F21001-09) Water									
Iron	**0.0870**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	J
Manganese	**J [0.00710]**	0.0100	"	"	"	"	"	"	J
RW-1D (2F21001-10) Water									
Iron	**9.70**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**0.410**	0.0100	"	"	"	"	"	"	
RW-2S (2F21001-11) Water									
Iron	**6.00**	0.400	mg/L	1	EG20101	06/26/12	06/28/12	EPA 6010B	
Manganese	**0.380**	0.0100	"	"	"	"	"	"	

Organics by GC - Quality Control

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EF22504 - EPA 5030 Water GC										
Blank (EF22504-BLK1)				Prepared: 06/21/12 Analyzed: 06/22/12						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00200	"							
Xylene (o)	ND	0.00100	"							
Surrogate: 4-Bromofluorobenzene	*56.7*		*ug/l*	*60.0*		*94.5*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*56.5*		*"*	*60.0*		*94.2*	*80-120*			
LCS (EF22504-BS1)				Prepared: 06/21/12 Analyzed: 06/22/12						
Benzene	0.106	0.00100	mg/L	0.200		53.0	80-120			
Toluene	0.106	0.00100	"	0.200		53.0	80-120			
Ethylbenzene	0.111	0.00100	"	0.200		55.5	80-120			
Xylene (p/m)	0.223	0.00200	"	0.400		55.8	80-120			
Xylene (o)	0.104	0.00100	"	0.200		52.0	80-120			
Surrogate: 4-Bromofluorobenzene	*61.0*		*ug/l*	*60.0*		*102*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*60.1*		*"*	*60.0*		*100*	*80-120*			
Dup (EF22504-BSD1)				Prepared: 06/21/12 Analyzed: 06/22/12						
Benzene	0.114	0.00100	mg/L	0.200		57.0	80-120	7.27	20	
Toluene	0.114	0.00100	"	0.200		57.0	80-120	7.27	20	
Ethylbenzene	0.118	0.00100	"	0.200		59.0	80-120	6.11	20	
Xylene (p/m)	0.239	0.00200	"	0.400		59.8	80-120	6.92	20	
Xylene (o)	0.112	0.00100	"	0.200		56.0	80-120	7.41	20	
Surrogate: 4-Bromofluorobenzene	*60.4*		*ug/l*	*60.0*		*101*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*59.7*		*"*	*60.0*		*99.5*	*80-120*			
Matrix Spike (EF22504-MS1)	**Source: 2F21001-04**			Prepared: 06/21/12 Analyzed: 06/22/12						
Benzene	61.5		ug/l	100	ND	61.5	80-120			M8
Toluene	65.8		"	100	ND	65.8	80-120			M8
Ethylbenzene	73.6		"	100	ND	73.6	80-120			M8
Xylene (p/m)	145		"	200	ND	72.5	80-120			M8
Xylene (o)	65.1		"	100	ND	65.1	80-120			M8
Surrogate: 4-Bromofluorobenzene	*66.1*		*"*	*60.0*		*110*	*80-120*			
Surrogate: 1,4-Difluorobenzene	*57.7*		*"*	*60.0*		*96.2*	*80-120*			

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General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EF22502 - General Preparation (WetChem)										
Blank (EF22502-BLK1)				Prepared: 06/21/12 Analyzed: 06/25/12						
Chloride	ND	0.500	mg/L							
Sulfate	ND	1.00	"							
Nitrate as N	ND	0.0500	"							
LCS (EF22502-BS1)				Prepared: 06/21/12 Analyzed: 06/25/12						
Sulfate	7.13		mg/L	10.0		71.3	80-120			
Nitrate as N	0.614		"	2.00		30.7	80-120			
Chloride	6.71		"	10.0		67.1	80-120			
LCS Dup (EF22502-BSD1)				Prepared: 06/21/12 Analyzed: 06/25/12						
Sulfate	7.15		mg/L	10.0		71.5	80-120	0.280	20	
Nitrate as N	0.610		"	2.00		30.5	80-120	0.654	20	
Chloride	6.73		"	10.0		67.3	80-120	0.298	20	
Duplicate (EF22502-DUP1)	**Source: 2F21001-01**			Prepared: 06/21/12 Analyzed: 06/25/12						
Sulfate	111	10.0	mg/L		112			0.897	20	
Nitrate as N	1.87	0.500	"		1.88			0.533	20	
Chloride	176	5.00	"		177			0.567	20	
Matrix Spike (EF22502-MS1)	**Source: 2F21001-01**			Prepared: 06/21/12 Analyzed: 06/25/12						
Sulfate	226	10.0	mg/L	100	112	114	80-120			
Nitrate as N	24.2	0.500	"	20.0	1.88	112	80-120			
Chloride	288	5.00	"	100	177	111	80-120			
Matrix Spike (EF22502-MS2)	**Source: 2F21001-11**			Prepared: 06/21/12 Analyzed: 06/25/12						
Chloride	453	10.0	mg/L	100	348	105	80-120			
Nitrate as N	21.6	1.00	"	20.0	2.12	97.4	80-120			
Sulfate	200	20.0	"	100	96.3	104	80-120			

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General Chemistry Parameters by EPA / Standard Methods - Quality Control

Permian Basin Environmental Lab

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EF22601 - General Preparation (WetChem)										
Blank (EF22601-BLK1)				Prepared: 06/22/12 Analyzed: 06/25/12						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EF22601-DUP1)		**Source: 2F21001-01**		Prepared: 06/22/12 Analyzed: 06/25/12						
Total Dissolved Solids	510	10.0	mg/L		570			11.1	20	
Duplicate (EF22601-DUP2)		**Source: 2F21001-11**		Prepared: 06/22/12 Analyzed: 06/25/12						
Total Dissolved Solids	850	10.0	mg/L		710			17.9	20	

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Notes and Definitions

M8	The MS and/or MSD were below the acceptance limits. See Blank Spike (LCS).
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By:  Date: 7/5/2012

Brent Barron, Laboratory Director/Technical Director

10014 SCR 1213 Midland, TX 79706 432-661-4184

Items for Project Manager Review

bNumber	Analysis	Analyte	Exception
2502-BSD1	Chloride-300.0	Chloride	Exceeds lower control limit
EF22504-BSD1	8021B BTEX	Toluene	Exceeds lower control limit
EF22504-BSD1	8021B BTEX	Ethylbenzene	Exceeds lower control limit
EF22504-BSD1	8021B BTEX	Benzene	Exceeds lower control limit
EF22504-BS1	8021B BTEX	Xylene (p/m)	Exceeds lower control limit
EF22504-BS1	8021B BTEX	Xylene (o)	Exceeds lower control limit
EF22504-BS1	8021B BTEX	Toluene	Exceeds lower control limit
EF22504-BS1	8021B BTEX	Ethylbenzene	Exceeds lower control limit
EF22504-BS1	8021B BTEX	Benzene	Exceeds lower control limit
			This is a modified report
EF22502-BSD1	Nitrate 300.0	Nitrate as N	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Benzene	Exceeds lower control limit
EF22502-BS1	Sulfate-300.0	Sulfate	Exceeds lower control limit
EF22502-BS1	Nitrate 300.0	Nitrate as N	Exceeds lower control limit
EF22502-BS1	Chloride-300.0	Chloride	Exceeds lower control limit
	Mn Total ICP 6010B	(Water)	J-Flags used
	Fe Total ICP 6010B	(Water)	J-Flags used
	8021B BTEX	(Water)	RPD calculations based on %Recovery
	Mn Total ICP 6010B	(Water)	Result calculations based on MDL
	Fe Total ICP 6010B	(Water)	Result calculations based on MDL
EF22502-BSD1	Sulfate-300.0	Sulfate	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Xylene (p/m)	M8
2F21001-10	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-09	8021B BTEX		Missing a,a,a-Trifluorotoluene
1001-08	8021B BTEX		Missing a,a,a-Trifluorotoluene
001-07	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-06	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-05	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-04	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-03	8021B BTEX		Missing a,a,a-Trifluorotoluene
EF22504-BSD1	8021B BTEX	Xylene (o)	Exceeds lower control limit
2F21001-01	8021B BTEX		Missing a,a,a-Trifluorotoluene
EF22504-BSD1	8021B BTEX	Xylene (p/m)	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Xylene (o)	M8
EF22504-MS1	8021B BTEX	Toluene	M8
EF22504-MS1	8021B BTEX	Ethylbenzene	M8
EF22504-MS1	8021B BTEX	Benzene	M8
EF22504-MS1	8021B BTEX	Xylene (p/m)	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Xylene (o)	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Toluene	Exceeds lower control limit
EF22504-MS1	8021B BTEX	Ethylbenzene	Exceeds lower control limit
2F21001-11	8021B BTEX		Missing a,a,a-Trifluorotoluene
2F21001-02	8021B BTEX		Missing a,a,a-Trifluorotoluene

APPENDIX C

Well Sample Data Form

And

Operation & Maintenance Log

WELL SAMPLING DATA FORM

CLIENT: Pride Energy Company
SITE NAME: South Four Lakes Tank Battery
SITE LOCATION: T12S - R34E - Sec 2, Lea County, NM
SAMPLER: Gil Van Deventer

TRIDENT ENVIRONMENTAL

PURGING METHOD: ☑ Hand Bailed ☑ Pump, Type: Whale 12-volt/3-stage submersible (RW1d, MW15, & MW16 only)
SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: ____
DISPOSAL METHOD OF PURGE WATER: ☐ On-site Drum ☐ Drums ☑ SWD Disposal Facility
DECONTAMINATION METHODS: Nitile gloves, Alconox, and Distilled Water Rinse.

Date	Time	Monitoring Well No.	Depth to Water (ft btoc)	Total Depth (ft)	Water Column Height (ft)	Volume Purged (gal)	No. of Well Volumes Purged	Purge Method (Hand Bail or Pump)	Field Measurements					Comments
									Temp. °F	Cond. (mS/cm)	pH	DO (mg/L)	Fe^{+2} (mg/L)	
06/20/12	11:00	MW-1	26.11	31.0	4.9	3	3.7	Hand Bail	71.2	1.17	7.55	2.2	0.14	Clear to light gray
06/20/12	11:30	MW-5	27.44	30.9	3.5	3	5.2	Hand Bail	69.9	2.28	7.58	5.4	1.33	Light reddish-tan to grayish
06/20/12	10:00	MW-7	26.27	34.0	7.7	4	3.1	Hand Bail	70.6	1.70	7.06	1.6	1.07	Grayish
06/20/12	9:00	MW-9	26.63	30.0	3.4	3	5.3	Hand Bail	67.3	1.79	7.08	2.8	0.22	Clear to light gray
06/20/12	8:00	MW-10	26.91	32.2	5.3	3	3.4	Hand Bail	65.5	1.86	6.65	5.8	1.50	Clear
06/20/12	13:00	MW-13	27.88	34.0	6.1	4	3.9	Hand Bail	75.0	5.60	6.85	2.6	4.74	Light gray
06/19/12	18:00	MW-14	29.98	37.3	7.3	2	1.6	Hand Bail	75.8	2.06	6.89	5.1	0.00	Cloudy white; bailed dry
06/19/12	19:00	MW-15	28.58	36.8	8.2	5	3.6	Pump	73.7	3.32	6.84	4.0	6.18	Cloudy, light gray
06/19/12	17:00	MW-16	29.65	36.4	6.8	5	4.4	Pump	71.0	2.15	7.07	2.4	0.00	Clear to very light brown
06/20/12	13:30	RW-1d	25.75	39.5	13.8	40	4.4	Pump	71.0	4.87	7.07	1.60	4.20	Light gray
06/20/12	14:00	RW-2s	NM	39.5	14.0	50	5.4	Windmill	72.5	1.81	6.59	2.10	2.68	Light gray with sheen

COMMENTS: Hanna Model 98130 meter used to obtain pH, conductivity, and temperature readings. Milwaukee Model SM600 used for DO readings.
Hach Model DR-890 used to measure ferrous iron (Fe^{+2}) using Hach Method 8146.
Hand delivered samples to Permian Basin Laboratories for BTEX, sulfate, iron, manganese, chloride, nitrate, and TDS analysis.

Operation & Maintenance Log of Activities for LNAPL and Groundwater Recovery System

Date	Description of Activities Performed
05/07/08	Rod broken on RW-2d side. Lewis Pump service on site to inspect and remove worn components. Installed passive bailers in RW-1s and MW-6 for passive recovery of LNAPL.
05/23/08	Lewis Windmill on site to replace worn components. Ready to be operational after Shane (pumper) installs discharge line.
06/30/08	Discharge line was installed to direct LNAPL recovery from the windmill at RW-2s to the tank battery.
07/23-24/08	Put windmill back into operating status for total fluids recovery by reconnecting loose pump rod and installing clamp around wellhead. Also, hydrophobic bailers were placed in monitoring wells MW-1, MW-7, MW-12, and MW-13 for passive recovery of LNAPL.
08/12-13/08	Installed hydrophobic bailer in monitoring well MW-6. Emptied hydrophobic bailers in other wells. Installed locks for MWs 1,7,9,10,14, &15.
09/09/08	Emptied hydrophobic bailers and gauged wells with LNAPL.
09/17/08	Installed hydrophobic sock in monitoring wells MW-7 & MW-9. Emptied hydrophobic bailers and gauged wells with LNAPL.
10/08/08	Replaced hydrophobic bailer with hydrophobic sock in MW-13. Emptied hydrophobic bailers, hand bailed, and gauged wells with LNAPL.
11/20/08	Emptied hydrophobic bailers/socks, hand bailed, and gauged wells with LNAPL.
12/23/08	Lewis Windmill on site to re-install new sump in RW-2s; windmill operational. Emptied hydrophobic bailers, hand bailed, and gauged wells with LNAPL.
01/15/09	Lowered sump ~1 ft in RW-2s; pumped ~2 gal LNAPL; then raised sump until (water) flow stopped. Emptied passive bailers/socks; gauged MWs with LNAPL.
02/27/09	Totalizer meter stuck but windmill is pumping fluid. Lowered sump to pump total fluids. Totalizer needs replacement. Emptied passive bailers/socks; gauged MWs with LNAPL. Replaced passive bailer in MW-1 with sock.
03/26/09	Windmill performing well in total fluids mode (product pumped off - only pumping water). Raised sump ~ 0.5 ft but still in total fluids mode. Totalizer working without replacement. Emptied passive bailers/socks (1.12 gal LNAPL); gauged MWs with LNAPL. Replaced passive bailer (loose patch) in MW-6 with another bailer. Installed new socks in MW-1, MW-7, MW-9, and MW-13.
04/28/09	Re-attached loose bracket on windmill which was loose from pump on arrival (probably caused by high winds). Totalizer indicates windmill pumped at 1.7 gpm (avg) over past month which is much higher than normal. Emptied passive bailers/socks (0.93 gal LNAPL); gauged MWs with LNAPL. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
05/18/09	Windmill pumping at ~ 0.33 gpm upon arrival. Totalizer indicates windmill pumped ~ 0.16 gpm over past month. Emptied passive bailers/socks (0.66 gal LNAPL); gauged MWs with LNAPL. Wells showing steady decline in LNAPL thicknesses due to recovery system in operation.
06/17/09	Windmill pumped 6859 gallons of total fluids at an average rate of 0.16 gpm since last month. Emptied passive bailers/socks (0.58 gal LNAPL); gauged MWs with LNAPL. Removed oil absorbent socks from MW-1, MW-7, MW-9, and MW-13, since LNAPL has not been present in these wells for several months or
07/16/09	Windmill does not appear to be pumping (meter same as last reading). Emptied passive bailers/socks (0.58 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent socks in MW-1 and MW-13 due to return of small amounts of LNAPL.
08/26/09	Emptied passive bailers/socks (0.42 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent socks in MW-1, MW-7, MW-12, and MW-13 due to return of small amounts of LNAPL. Windmill not pumping (meter same as last reading).
09/15/09	Emptied passive bailers/socks (0.38 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent sock in MW-12. Windmill not pumping (meter same as last reading). Ray Hardy (Pinon Well Service) on site to diagnose windmill pump and ordered new parts.
10/15/09	Emptied passive bailers/socks (0.61 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent socks in MW-1 & MW-9. Passive bailer in RW-1s cracked (will replace with sock later). Windmill not pumping (meter same as last reading). Ray Hardy (Piñon Well Service) on site to repair windmill pump and install new parts (leather cups and 1 1/4" x 1 1/2" coupling. Needs a stablizer rig in tower for proper balance before windmill can be put back in service.
10/19/09	Ray Hardy (Piñon Well Service) on site to install a stablizer rig in tower for proper balance. Windmill back in service.
10/21/09	Inspected windmill system which is running fine (adjusted sump); recovered LNAPL (0.58 gal) and gauged RW-1s and MW-6; installed new oil absorbent sock in RW-1s.

Operation & Maintenance Log of Activities for LNAPL and Groundwater Recovery System

Date	Description of Activities Performed
11/12/09	Inspected windmill system which is running fine (adjusted sump); emptied passive bailers/socks (0.69 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent socks in MW-1, MW-12, & RW-1s.
12/10/09	Meter reading at windmill hasn't changed (meter needs cleaning or replacement); applied brake to windmill to avoid winter freezing problems; emptied passive bailers/socks (0.48 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent socks in MW-1, MW-7, MW-12, MW-13, & RW-1s.
01/13/10	Windmill at RW-2s still not in service to avoid winter freezing problems; recovered 2.0 gal of LNAPL at RW-2s by running windmill for ~20 min; emptied passive bailers/socks (0.35 gal LNAPL); gauged MWs with LNAPL. Installed new oil absorbent sock in MW-9 and reinstalled socks in MW-1, MW-7, MW-12, & MW-13.
02/25/10	Re-activated windmill; recovered 5.0 gal of LNAPL at RW-2s by running windmill for ~20 min; emptied passive bailer/socks (0.45 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, & MW-12.
03/23/10	Windmill running but totalizer meter is stuck; recovered 5.0 gal of LNAPL at RW-2s by running windmill for ~20 min; emptied passive bailer/socks (0.43 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, and MW-6.
04/01/10	Windmill not operational (tophead plunge rod threads stripped); emptied passive bailer/socks (0.36 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW1s & MW-6.
04/28/10	Returned windmill to operational service (installed new tophead plunger rod and totalizer meter); emptied passive bailer/socks (0.31 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-12, & MW-13. Installed new totalizer meter.
05/25/10	Windmill system operating normally; emptied passive bailer/socks (0.26 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, MW-9, & MW-12.
06/16/10	Windmill system operating normally; emptied passive bailer/socks (0.09 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1 & MW-12.
07/14/10	Windmill system operating normally; emptied passive bailer/socks (0.10 gal LNAPL); gauged MWs for LNAPL. Replaced passive bailer in MW-6 with an oil absorbant sock; installed new oil absorbent socks in RW-1s, MW-1, & MW-12.
08/24/10	Windmill system operating normally; emptied passive bailer/socks (0.14 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, MW-9, & MW-13.
09/22/10	Windmill system operating normally; emptied passive bailer/socks (0.12 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-6, & MW-12.
10/06/10	Windmill system operating normally (lowered sump ~6-in to increase recovery); emptied passive bailer/socks (0.09 gal LNAPL); gauged MWs; installed new oil absorbent socks in RW-1s, MWs 1,6, & 12.
11/30/10	Windmill system operating normally; emptied passive bailer/socks (0.15 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, & MW-12.
12/13/10	Windmill system operating normally; emptied passive bailer/socks (0.15 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-6, & MW-12.
01/19/11	Windmill system operating normally; emptied passive bailer/socks (0.13 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-6, & MW-12. Installed new totalizer meter.
02/24/11	Windmill system out of service (pump rod broken at upper threads); emptied passive bailer/socks (0.11 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, MW-9, MW-12, MW-13. Will order/replace pump rod for next site visit.
03/17/11	Windmill system repaired (replaced threaded *SS* stuffing box rod with new unit); adjusted sump & pumped 2 gal LNAPL from windmill until only water recovered; emptied passive bailer/socks (0.10 gal LNAPL); handbailed MW-12 (0.21 gal); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-6, & MW-12.

Operation & Maintenance Log of Activities for LNAPL and Groundwater Recovery System

Date	Description of Activities Performed
04/26/11	Windmill system operating normally; emptied passive bailer/socks (0.17 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-12, & MW-13.
05/17/11	Windmill system operating normally; emptied passive bailer/socks (0.15 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-7, MW-12, & MW-13.
06/29/11	Windmill system operating normally; hand bailed and emptied passive bailer/socks (0.39 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-9, MW-12, & MW-13.
07/14/11	Windmill system operating normally; emptied passive bailer/socks (0.24 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, & MW-13. Replaced oil absorbant sock in MW-12 with passive bailer.
08/23/11	Windmill system operating normally; emptied passive bailer/socks (0.57 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s (3), MW-1, MW-7, MW-9, & MW-13. Replaced oil absorbant sock in MW-6 with passive bailer.
09/28/11	Windmill system operating normally; emptied passive bailer/socks (0.64 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s (3), MW-1, MW-7, MW-9, & MW-13. Installed new totalizer meter.
10/25/11	Windmill system operating normally; emptied passive bailer/socks (0.39 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s (3), MW-1, MW-6, MW-7, MW-9, & MW-13. Replaced passive bailer in MW-6 with sock.
11/22/11	Windmill system operating normally; emptied passive bailer/socks (0.37 gal LNAPL); gauged MWs for LNAPL. Installed new oil absorbent socks in RW-1s (3), MW-1, MW-6, MW-7, MW-9, & MW-13. Wrapped oil absorbant pad around RW-1s wellhead.
12/13/11	Windmill system operating normally; emptied passive bailer/socks (0.37 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, MW-9, & MW-13. Replaced oil absorbant pad around RW-1s wellhead.
01/24/12	Windmill system operating normally; emptied passive bailer/socks (0.56 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-6, MW-7, MW-9, & MW-13. Replaced oil absorbant pad around RW-1s wellhead.
02/29/12	Windmill system operating normally; emptied passive bailer/socks (0.53 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Replaced oil absorbant sock in MW-6 with passive bailer. Replaced oil absorbant pad around RW-1s wellhead.
03/15/12	Windmill system operating normally; hand bailed and emptied passive bailer/socks (0.32 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Reinstalled passive bailers in MW-6 and MW-12. Replaced oil absorbant pad around RW-1s wellhead.
03/29/12	Windmill system not operating. Threaded rod at top of pump below gearbox is broken. Making arrangements to have windmill contractor repair it.
04/23/12	Ray Hardy (Pinon Water Well Service) repaired windmill to operational status by replacing threaded rod and adding gearbox oil.
04/25/12	Windmill system pumping total fluids but meter not working and needs replacing; pumped 3 gal LNAPL from windmill after lowering sump to optimal elevation; emptied passive bailer/socks (0.94 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Reinstalled passive bailers in MW-6 and MW-12. Replaced oil absorbant pad around RW-1s wellhead.
05/25/12	Windmill system pumping total fluids but meter not working and needs replacing; emptied passive bailer/socks (0.65 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Reinstalled passive bailers in MW-6 and MW-12. Replaced oil absorbant pad around RW-1s wellhead.
06/19/12	Windmill system pumping total fluids but meter not working and needs replacing; emptied passive bailer/socks (0.44 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Reinstalled passive bailers in MW-6 and MW-12.
07/12/12	Windmill system pumping total fluids but meter not working; installed new electronic EDD meter; emptied passive bailer/socks (0.39 gal LNAPL); gauged MWs for LNAPL. Installed oil absorbent socks in RW-1s, MW-1, MW-7, MW-9, & MW-13. Reinstalled passive bailers in MW-6 and MW-12.