

November 30, 2011

Ms. Anastasia Duarte  
Tesoro Refining and Marketing Company  
3450 South 344<sup>th</sup> Way, Suite 201  
Auburn, WA 98001-5931

1010430.010102/14.4

RE: **Summary Report and Request for  
Clean-up Complete with Institutional Controls – Final  
Former Tesoro Northstore #11, 317 Muldoon Road, Anchorage, Alaska  
ADEC Facility ID #1502; ADEC File No. 2100.26.085**

Dear Ms. Duarte:

The purpose of this report is to provide documentation for Tesoro Alaska Company (Tesoro) to request the Alaska Department of Environmental Conservation (ADEC) grant a Clean-up Complete with Institutional Controls (CCIC) determination for Former Tesoro Northstore #11. The documentation for requesting the CCIC is presented herein under the following sections:

- Background Information
- Summary of Site Assessments and Release Investigations
- Summary of In Situ Soil and Ground Water Remediation
- Summary of Ground Water Monitoring Data
- Justification for CCIC

A location map, site figures, and supporting documentation are attached to this report.

## **BACKGROUND INFORMATION**

### ***Site Description***

Former Tesoro Northstore #11 is located on Lot 2, Nevilla Park Subdivision at the address of 317 Muldoon Road, Anchorage, Alaska (**Figure 1**). Most of the adjacent properties are developed with commercial businesses and all are served by municipal water and sewer supply systems. There are residential properties to the east of the site. The adjacent photo shows the former Tesoro site as it currently exists.



A site plan showing current site improvements with respect to property lines and public right-of-ways is provided on **Figure 2**.

### ***Fuel System Description***

This site was operated as a retail fuel station by Tesoro from 1974 to 1996. The former fueling system at the Former Tesoro Northstore #11 consisted of one 6,000-gallon capacity diesel underground storage tank (UST), two 12,000-gallon USTs (one gasoline and one diesel), and three dispenser fueling islands with a canopy and associated fuel product piping. The USTs were located to the east of the former sales kiosk, while the dispenser islands were located to the west of the kiosk.

The retail fuel station was closed in December 1996. In April 1997, the three original USTs were excavated and removed. The sales kiosk, fuel dispenser islands, canopy, and associated fuel lines were also removed. Approximately 1,600 tons of contaminated soil was removed during the excavation and hauled to Alaska Soil Recycling for treatment and disposal.

### ***Hydrogeological Conditions***

The subsurface geology observed at the site was a fairly complex sequence of mostly quite-gravelly soils. The soils from immediately below ground surface (bgs) to between 10 to 19 feet bgs were relatively clean (silt free) gravelly sands or medium gravels with abundant cobbles throughout. A sandy/gravelly silt, or silty-fine sand, was interbedded in the sandy gravel/gravelly sand layers at 2 to 6 feet bgs. The thickness of this shallow silt/silty fine sand layer ranged from approximately 1 foot to 4 feet.

The deeper soils at the site were still very gravelly, but had more silt than the shallower gravelly layers. Interbedded silt layers and gravelly silt layers were present in the deeper soils. These silt and gravelly silt layers were found predominantly within 5 feet of the top of the ground water.

A relatively clean, medium sand was present below the silts and silty gravels. Soils had tighter, siltier zones in the soils near the ground water. Tighter silty layers with thin interbedded, more porous (sandy/gravelly) layers were also observed in soil from approximately 5 feet above the top of the ground water to near the ground water.

## **SUMMARY OF SITE ASSESSMENTS AND RELEASE INVESTIGATIONS**

A summary of the site assessments (SAs), release investigations (RIs), and remediation system improvements that have occurred at the Former Tesoro Northstore #11 is provided below in chronological order. A list of supporting documents for these reports is provided as an attachment to this report (**Appendix A**).

***UST Closure Site Assessment Report***, prepared by Gilfilian Engineering and Environmental Testing (GE<sup>2</sup>T), dated August 1997. The SA activities were completed in April 1997 and

included removing three USTs, dispenser islands, and associated piping. The excavations were left open to allow further corrective action onsite in response to the magnitude and extent of contamination found onsite. However, public concern about the risk of the open excavations resulted in backfilling the excavations before the full extent of the contamination could be identified, which also prevented further corrective action. Beneath the fill port of the North UST and south of the East UST, gasoline range organics (GRO) and diesel range organics (DRO) were detected above the ADEC soil cleanup levels (SCLs) at 19 feet bgs. A soil vapor extraction (SVE) system was installed prior to backfilling the entire site for future use (**Figure 3**).

**Phase I Release Investigation**, prepared by GE<sup>2</sup>T, dated November 1997. The RI activities included drilling six soil borings on the property and installing monitoring wells in three of the borings (Monitoring Wells MW-1, MW-2, and MW-3). Two borings (TB-1 and TB-3) had soil test results that exceeded SCLs at 16 feet bgs. Analytical results for the ground water samples collected exceeded the ADEC ground water cleanup levels (GCLs) in Monitoring Well MW-3.

**Phase II Release Investigation**, prepared by GE<sup>2</sup>T, dated October 1998. The RI activities included drilling four soil borings off the property and one boring on the property. All of the borings were completed as monitoring wells (MW-4, MW-5, MW-6, MW-7, and MW-8). One boring (SB-8) had soil test results that exceeded SCLs at 16 and 21.5 feet bgs. Analytical results for the ground water samples collected from the new wells exceeded the GCLs for benzene in Monitoring Wells MW-6, MW-7, and MW-8. The GCLs for toluene and ethylbenzene were also exceeded in MW-8.

**Well Search**, prepared by GE<sup>2</sup>T, dated October 1998. A Well Search was completed in fall 1998 to identify probable drinking water wells located within a ¼-mile radius of the site. Sixteen potentially active domestic drinking water wells were identified, as well 16 potentially inactive well sites. No recommendations or qualifications regarding the use of the water wells were made at that time.

**Phase III Release Investigation**, prepared by GE<sup>2</sup>T, dated August 1999. The RI activities included drilling three soil borings (two off-site and one on the property) and installing monitoring wells in each soil boring (Monitoring Wells MW-9, MW-10, and MW-11). Benzene was found to be above the SCL in the soil sample collected from SB-11 at 18 feet bgs. Ground water results for benzene, GRO, and DRO were above the GCLs in Monitoring Well MW-11.

**September 2000 Release Investigation and Monitoring Event**, prepared by GE<sup>2</sup>T, dated December 2000. The RI activities included drilling two soil borings off-site of the property and installing monitoring wells in each soil boring (Monitoring Wells MW-12 and MW-13). No soil results were above the SCLs. Ground water results were below the GCLs in the newly installed monitoring wells.

**Ground Water Vapor Stripping and Circulation Well Feasibility Study**, prepared GE<sup>2</sup>T, dated April 2001. The purpose of the study was to determine the feasibility of using a vapor stripping and circulation (VSC) system as a remediation method to remove volatile organic contaminants

from the ground water at the site. In September 2000, one VSC well was installed 1 foot from the pre-existing SVE-1 well (absorption well). In November 2000, a trench was excavated to accommodate the air distribution line from the compressor to the airlift wellhead and a man-way to house the VSC wellhead. The compressor was hard wired to the electrical meter in January 2001. Upon system startup in January 2001, it was determined the capacity of the absorption well was sufficient to handle the amount of ground water produced by the VSC system. Photoionization detector (PID) readings were relatively low and were not believed to reflect the full potential for the VSC system to increase SVE emissions. Slug testing demonstrated that both wells recovered relatively quickly and the hydraulic conductivity should be sufficient for sustained operation of the VSC system. GE<sup>2</sup>T recommended continued operation of the VSC system on a full-time basis.

***February 2002 Release Investigation and March 2002 Ground Water Monitoring Event***, prepared by MWH (MWH acquired GE<sup>2</sup>T in 2002), dated July 2002. The RI activities included drilling five soil borings on the property and installing monitoring wells in four of the soil borings (Monitoring Wells MW-14, MW-15, MW-16, and MW-17). The borings were placed near the center of the site just outside of the former UST fuel system excavation. Benzene, toluene, ethylbenzene, and GRO were detected above the SCLs in SB-14 at 19 feet bgs. Benzene, ethylbenzene, GRO, and DRO were detected above the SCLs in SB-15 at 18.5 feet bgs. Benzene and GRO were detected above the SCLs in SB-17 at 19.5 feet bgs. Benzene was detected above the SCL in test boring TH-4 at 19 feet bgs. Benzene, toluene, ethylbenzene, and GRO were detected in the ground water above the GCLs in Monitoring Well MW-14. Benzene, GRO, and DRO were detected above the GCLs in new Monitoring Wells MW-15, MW-16, and MW-17.

***June 2002 Monitoring Event and SVE Radius of Influence Report***, prepared by MWH, dated October 2002. For the SVE radius of influence (ROI) test, the SVE wells were isolated and the vacuum was measured at the SVE blower, the SVE wellhead, and two adjacent SVE or ground water monitoring wells. The vacuum at the SVE blower was adjusted during the test to collect ROI data at different vacuums and flow rates. The average ROI for the four SVE wells was approximately 30 feet. MWH recommended continued evaluation of potential improvements, including air sparge and enhancement of the SVE system. Ground water analytical results exceeded the GCLs in Monitoring Wells MW-7, MW-8, MW-14, MW-15, MW-16, and MW-17.

***December 2002 Monitoring Event and Soil Vapor Extraction Pilot Test Report***, prepared by MWH, dated February 2003. A blower was used to withdraw vapors from the manifold of SVE-2, SVE-3, SVE-4, and SVE-5. The effect of the applied vacuum was detected instantaneously at the neighboring monitoring wells (MW-14, MW-15, and MW-17), and maintained during a 30-minute period. The vacuum was measured at each wellhead and all were above the established criteria. After the initial test, the blower was relocated and allowed to extract vapors directly from the Monitoring Well MW-14 wellhead for a 30-minute test period. The applied vacuums measured at neighboring monitoring wells (MW-15 and MW-17) were above the established criteria. The PID readings during both of these tests indicated the presence of low contaminant concentrations. It was noted that recovery of the volatile contaminants might have been

hampered by high ground water levels, which could submerge the smear zone and hinder the effectiveness of the SVE system. The estimated ROI is at least twice as large as the ROI achieved in the May 2002 pilot testing. The vacuum rates measured at the wellheads adjacent to the SVE test wells demonstrated a sufficient ROI to provide treatment in areas of known contamination.

***September 2003 Monitoring Event and Remediation System Improvement Report***, prepared by MWH, dated March 2004. The SVE blower was increased from a 1 horsepower to a 5 horsepower blower. This larger blower produced a sufficient ROI to capture the vapors generated by the expanded ground water treatment system. Two additional VSC wells (VSC-2 and VSC-3) were installed in an area of known contamination established from the 2002 soil borings, which incorporated monitoring wells MW-14 and MW-15 into the system as circulation points. Benzene was above the SCL in the soil boring for VSC-2 at 25 feet bgs. Benzene, ethylbenzene, GRO, and DRO were above the SCLs in the soil boring for VSC-3 at a 21 feet bgs, while only benzene was above the SCL at 26 feet bgs. Initial testing indicated the wells were capable of water circulation at a rate of 10 gallons per minute.

***October 2006 Confirmation Soil Borings and Monitoring Event Report***, prepared by MWH, dated March 2007. The RI activities included drilling 12 soil borings on the property in the vicinity of the former USTs and areas of previous investigations across the site (**Figure 4**). Benzene was above the SCL in SB-4, SB-6, SB-8, and SB-9. Toluene, ethylbenzene, and GRO were also above the SCLs in SB-9. Ethylbenzene, GRO, and DRO were above the SCL in SB-1, and GRO was above the SCL in SB-12.

***October 2007 Monitoring Event and Remediation System Upgrade Report***, prepared by MWH, dated May 2008. Three ground water circulation wells (CW-1, CW-2, and CW-3) were installed to improve the capacity and extend the ROI of the water circulation system to areas previously identified as requiring additional treatment. Existing VSC wells were used to provide water to the new injection wells via horizontal piping connections.

***August 2011 Exploratory Soil Test Holes Report***, prepared by MWH, dated October 2011. Three exploratory test holes were excavated with a backhoe in the vicinity of MW-15 and VSC-3 down to a depth of 10 feet. No contaminants were found above the SCLs.

## **SUMMARY OF IN SITU SOIL AND GROUND WATER REMEDIATION**

In-situ remediation at this site has been ongoing since September 1997. The SVE system consists of five SVE wells that operated throughout the site. PID measurements of the SVE exhaust gas were not indicative of efficient or effective hydrocarbon recovery, so the SVE treatment system was shut off in spring 2010.

In April 2001, one VSC well was installed by the former South UST. In September 2003, two additional VSC wells were installed by the former North UST. These were expanded in October 2007 by installing three circulation wells, each working in conjunction with a VSC well for

improved capacity and to extend the ROI. After spring 2009, only one VSC blower was high functioning and was switched manually between the three VSC wells until turned off in fall 2011. The layout of on-site remediation systems is provided on Figure 3.

Various applications of in-situ chemical oxidation (ISCO) were completed at the Former Tesoro Northstore #11 site over a period of 4 years. These applications occurred in the following sequence:

- In 2008, approximately 200 gallons of 10 percent (%) hydrogen peroxide was injected into each of Circulation Wells CW-1, CW-2, and CW-3.
- On December 8, 2009, 60 gallons of 3.5% potassium permanganate was injected into Circulation Well CW-3.
- On December 15, 2009, 15 gallons of 3.5% potassium permanganate solution was injected into Circulation Well CW-1.
- On May 13, 2010, approximately 250 gallons of 3.5% potassium permanganate solution was injected into each of Circulation Wells CW-1, CW-2, and CW-3.
- On July 26, 2010, approximately 150 gallons of 3.5% potassium permanganate solution was injected into each of Circulation Wells CW-1, CW-2, and CW-3 and Monitoring Wells MW-14 and MW-15.
- On March 16, 2011, 400 gallons of 3.5% potassium permanganate was applied to the surface soil in the vault of Monitoring Well MW-15. The surface application was performed to determine the percolation rate and evaluate the impact of the chemical oxidant to the underlying ground water table. Based on visual observation of the water samples collected from MW-15, it was noted that there was no change in the color of the ground water which indicated the chemical oxidant did not percolate the entire depth of the vadose zone.

It was determined, based on the results of soils from the exploratory test holes and ground water monitoring events, that continued operation of the remediation systems would provide little added benefit toward site cleanup. Informal discussions were subsequently held with ADEC and Tesoro that resulted in a recommendation that MWH initiate the preparation of a CCIC for the closure of this site. In anticipation of developing the CCIC, the in-situ remediation system was shut down on October 4, 2011.

## **SUMMARY OF GROUND WATER MONITORING DATA**

This section presents the results of 40 ground water monitoring events that have been completed at this site by GE<sup>2</sup>T and MWH. The monitoring events were conducted over a 14-year period starting in June 1997 and ending September 2011. A historical summary of the ground water monitoring analytical results collected over this period of time is attached to this report in **Appendix B**.

Ground water contaminant levels have shown decreasing trends since monitoring began over 14 years ago in 1997. A more detailed analysis is provided in the justification below.

### **JUSTIFICATION FOR CCIC**

For nearly a decade, Former Tesoro Northstore #11 has been under the influence of active in-situ remediation. The treatment processes have included removal of soil vapors via SVE treatment, circulation of ground water to treat dissolved petroleum contaminants, and ISCO treatment of the underlying ground water table with the injection of chemical oxidants consisting of potassium permanganate. Over time, these treatment processes have substantially reduced the level of contamination on the property of Former Tesoro Northstore #11.

The findings of the test borings completed in 2006 indicated residual contamination existed in the vicinity of VSC-3 and MW-15. It appeared that there are pockets of GRO and DRO remaining in the smear zone of the shallow ground water table. Given the fact the borings were completed 5 years ago, it is assumed that the residual contaminants would have continued to decrease over time. Based on the most recent sampling results from the monitoring wells, the smear zone contaminants appear to be stable – with little to no desorption into the ground water and no indication of migration to downgradient monitoring wells. It is anticipated the remaining contaminants in the smear zone will gradually degrade via natural attenuation processes.

In consideration of the above findings, it is MWH's professional opinion that the risk to the environment and human health from the remaining contamination located at this site is minimal and justifies closure of the cleanup work. In addition, we find the following site conditions worthy of justification for issuance of a CCIC for Former Tesoro Northstore #11:

- Petroleum hydrocarbon contamination associated with ground water at the site has been effectively reduced to low levels in the treatment area. Ground water contamination has not been detected in the off-site, downgradient monitoring wells. Contamination in on-site Monitoring Wells MW-3, MW-7, MW-8, and MW-14 has been reduced to levels below the GCLs. Contamination in on-site Monitoring Well MW-15 has also been significantly reduced below the GCL for DRO. Even when contamination was present, there was no off-site migration of contaminants.
- Soil sampling during drilling the confirmation soil borings completed in 2006 (see Figure 4) and soil test holes completed in 2011 (see **Figure 5**) indicate most residual soil contamination in the vadose zone has been removed and treated. Monitoring of on-site, downgradient wells has had no detections above the GCLs. Due to these conditions, MWH believes the risk of off-site migration of petroleum contamination at this site is negligible.
- There are no known drinking water wells located immediately downgradient of the Former Tesoro Northstore #11 site. All previously identified downgradient wells (south and east of the site) within ¼-mile of the site currently have city water services, with the exception of one possible private well that is located approximately 900 feet south of the site. This possible private well lies just slightly west of the prevailing direction of the ground water

flow from the site. The proposed 2012 Corrective Action Work Plan will include sampling Monitoring Wells MW-4, MW-5, and MW-6, which are located off site and downgradient between Former Tesoro Northstore #11 and the possible private drinking water well.

The above site conditions are very favorable for closure of clean-up work at the site. In light of this, MWH requests ADEC grant a CCIC for this site subject to the recording of a deed notice on the subject property. The deed notice will reference the following institutional controls to ensure protection of human health and the environment:

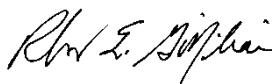
- The landowner will be required to notify ADEC within 14 days upon change of land ownership, or if any change in land use activity occurs.
- Construction and/or use of a drinking water well on this property will be prohibited.
- Excavation below 15 feet in the Areas of Concern, as depicted on the attached figure, will require a SA to be performed by a qualified environmental firm in accordance with applicable ADEC regulations.

A copy of the proposed deed notice is provided as an attachment to this report.

MWH believes the above justification supports the issuance of a CCIC letter. As proposed in the 2012 Corrective Action Work Plan, MWH will complete a final ground water monitoring event. Subject to the finding of no significant change in ground water quality and no offsite contamination (above ADEC's GCLs), and receipt of the CCIC, the monitoring wells and VSC and SVE treatment systems will be decommissioned according to the February 2009 ADEC guidance document entitled: *Monitoring Well Guidance*.

Please feel free to contact me if you have any questions and need additional information on this documentation supporting the issuance of a CCIC for the Former Tesoro Northstore #11 site.

Sincerely,  
MWH Americas, Inc.



Robert E. Gilfilian, P.E.  
Principal Engineer

Attachments: Figure 1 – Location and Vicinity Map  
Figure 2 – Site Plan with Ground Water Gradient  
Figure 3 – Remediation System Layout  
Figure 4 – Locations of 2006 Confirmation Soil Borings and Analytical Results  
Figure 5 – 2011 Test Hole Locations and Soil Analytical Results  
Appendix A – Bibliography of Supporting Documents  
Appendix B – Tables of Historical Ground Water Monitoring Data  
Deed Notice



## **ATTACHMENTS**

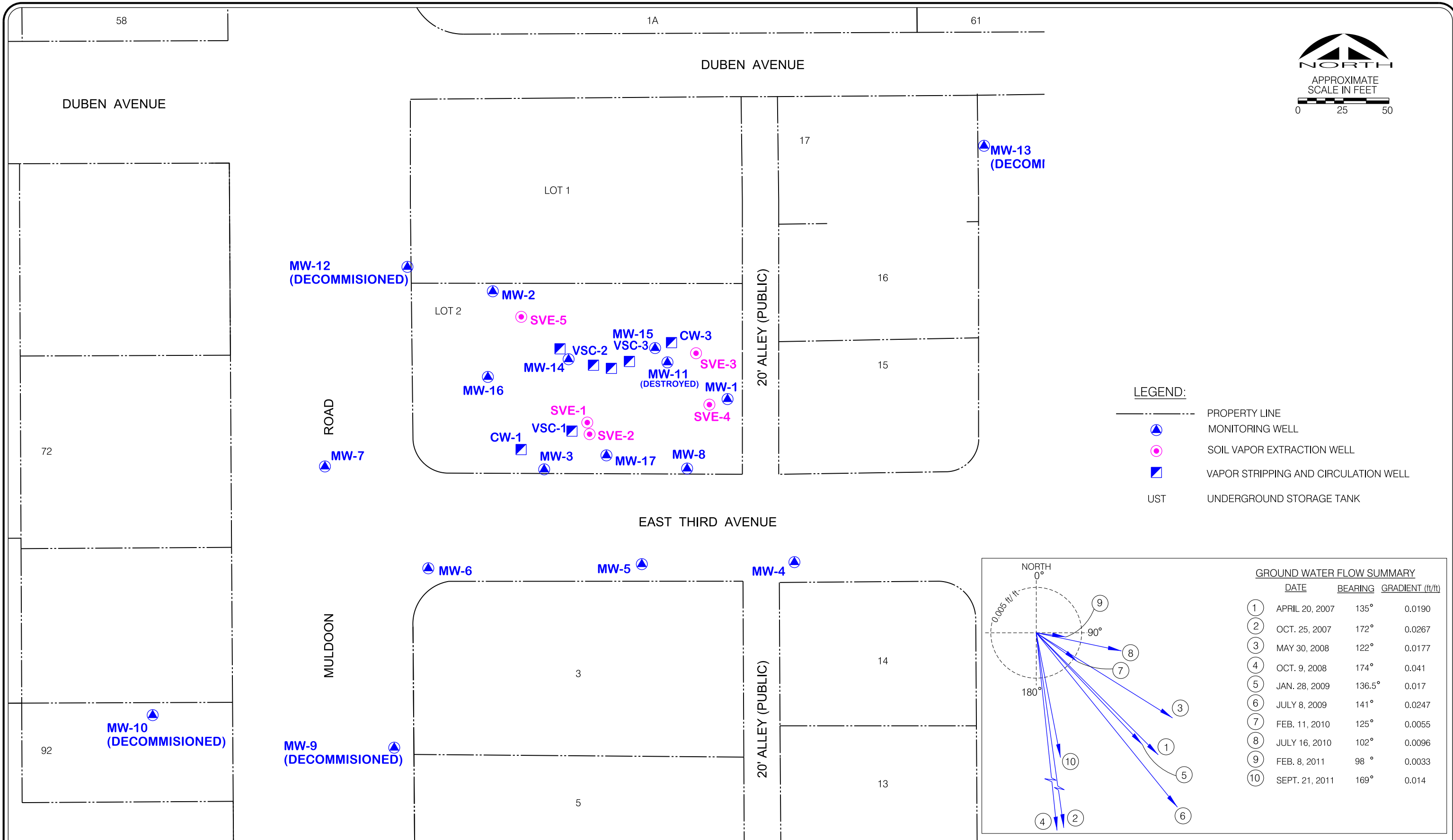
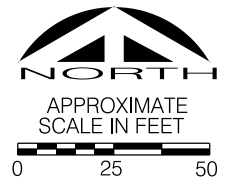


FIGURE 1

TESORO COMPANY – FORMER TESORO NORTHSTORE #11  
2011 CCIC REPORT

**LOCATION AND VICINITY MAP**

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**FIGURE 2**  
 TESORO COMPANY - FORMER TESORO NORTHSTORE #11  
 2011 CCIC REPORT  
**SITE PLAN WITH GROUND WATER GRADIENT**



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MULDOON ROAD

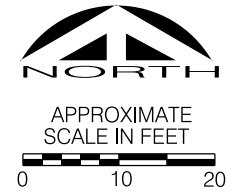
LOT 1

10<sup>th</sup> & M SEAFOODS  
301 MULDOON ROAD  
ANCHORAGE, AK 99504

JERSEY BARRIERS

SVE BLOWER UNIT

VSC AIR COMPRESSOR BOX



16

SVE-5

CW-2

MW-15

CW-3

MANIFOLD SUMP

MW-14

VSC-2

VSC-3

SVE-3

20' ALLEY (PUBLIC)

LOT 2

48" MANHOLE WITH  
36" LID AND 4" AIR  
LIFT WELL

15

SVE-1

VSC-1

SVE-2

CW-1

EAST THIRD AVENUE

LEGEND:


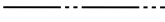




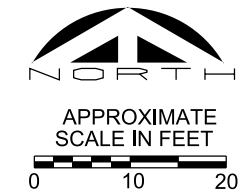
-  VSC DISCHARGE LINE WITH DIRECTION OF FLOW
-  PROPERTY LINE
-  SOIL VAPOR EXTRACTION LINE
-  AIR SUPPLY LINE
-  SOIL VAPOR EXTRACTION WELL
-  VAPOR STRIPPING AND CIRCULATION WELL

FIGURE 3

TESORO COMPANY - FORMER TESORO NORTHSTORE #11  
2011 CCIC REPORT

**REMEDIATION SYSTEM LAYOUT**





SB-11			
Depth	15'	18'	
Benzene	U(0.0119)	U(0.0133)	
GRO	U(2.98)	40.1	
DRO	U(22.1)	U(22.2)	

SB-10			
Depth	10'	23'	
Benzene	U(0.0118)	U(0.0134)	
GRO	U(2.95)	U(3.36)	
DRO	U(25)	U(22.3)	

SB-9			
Depth	14'	22'	
Benzene	0.0282	0.33	
GRO	U(3.39)	389	
DRO	U(25)	U(25)	

SB-4			
Depth	15'	19'	
Benzene	0.0324	0.0233	
GRO	U(3.21)	U(2.98)	
DRO	U(25)	U(25)	

SB-1			
Depth	9'	19'	
Benzene	U(0.0141)	U(0.221)	
GRO	U(3.54)	416	
DRO	U(25)	1520	

SB-8			
Depth	7'	16'	
Benzene	U(0.0126)	0.0263	
GRO	U(3.16)	U(3.1)	
DRO	U(25)	U(25)	

SB-12			
Depth	15'	23'	
Benzene	U(0.0137)	U(0.21)	
GRO	U(3.43)	335	
DRO	U(25)	93.4	

SB-7			
Depth	10'	19'	
Benzene	U(0.0143)	U(0.011)	
GRO	U(3.58)	U(2.74)	
DRO	U(25)	U(25)	

SB-5			
Depth	15'	25'	
Benzene	U(0.013)	0.0144	
GRO	U(3.26)	U(3.09)	
DRO	U(25)	U(21.6)	

SB-6			
Depth	4'	19'	23'
Benzene	U(0.0124)	0.0233	U(0.0218)
GRO	U(3.11)	47.7	51.3
DRO	U(25)	U(25)	U(25)

SB-3			
Depth	15'	19'	
Benzene	U(0.0131)	0.0129	
GRO	U(3.27)	U(3)	
DRO	U(25)	U(22.4)	

SB-2			
Depth	10'	18'	
Benzene	U(0.0127)	U(0.0136)	
GRO	U(3.17)	U(3.4)	
DRO	U(22.6)	U(25)	

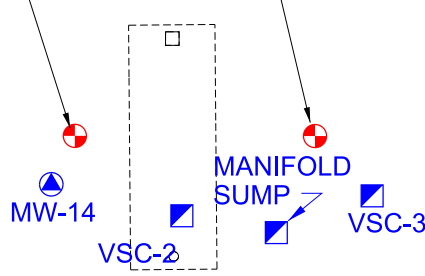
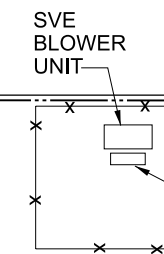
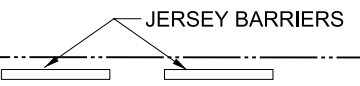
MULDOON ROAD

20' ALLEY (PUBLIC)

LOT 1

LOT 2

10 & M SEAFOODS  
301 MULDOON ROAD  
ANCHORAGE, AK 99504



**LEGEND:**

- PROPERTY LINE
- CONFIRMATION SOIL BORING
- SOIL VAPOR EXTRACTION WELL
- VAPOR STRIPPING AND CIRCULATION WELL
- MONITORING WELL

**NOTES:**

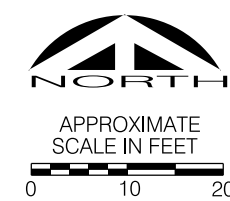
1. RESULTS ARE FOR SAMPLES COLLECTED ON OCTOBER 3 AND 4, 2006.
2. RESULTS ARE IN MILLIGRAMS PER KILOGRAM.
3. BOLD/ RED TEXT INDICATES CONTAMINANT CONCENTRATION ABOVE THE CLEANUP LEVEL FOR THIS SITE.

**FIGURE 4**

TESORO COMPANY - FORMER TESORO NORTHSTORE #11  
2011 CCIC REPORT  
**LOCATIONS OF 2006 CONFIRMATION  
SOIL BORINGS AND ANALYTICAL RESULTS**

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MULDOON ROAD

LOT 1

10<sup>th</sup> & M SEAFOODS  
301 MULDOON ROAD  
ANCHORAGE, AK 99504

JERSEY BARRIERS

<b>TP3</b>	10' bgs
Benzene	U (0.00778)
GRO	U (1.29)
DRO	U (22.0)
<b>TP3 (Duplicate)</b>	10' bgs
Benzene	U (0.00833)
GRO	U (1.39)
DRO	U (22.5)

<b>TP1</b>	10' bgs
Benzene	U (0.00769)
GRO	U (1.28)
DRO	U (21.6)

<b>TP2</b>	10' bgs
Benzene	U (0.00845)
GRO	U (1.41)
DRO	U (23.2)

SVE BLOWER UNIT

VSC AIR COMPRESSOR BOX

16

15

20' ALLEY (PUBLIC)

LOT 2

48" MANHOLE WITH  
36" LID AND 4" AIR  
LIFT WELL

MANIFOLD  
SUMP

CW-1

CW-2

CW-3

MW-14

MW-15

VSC-2

VSC-3

VSC-1

VSC-2

SVE-1

SVE-2

SVE-5

SVE-3

SVE-4

EAST THIRD AVENUE

LEGEND:

- VSC DISCHARGE LINE WITH DIRECTION OF FLOW
- PROPERTY LINE
- SOIL VAPOR EXTRACTION LINE
- AIR SUPPLY LINE
- SOIL VAPOR EXTRACTION WELL
- VSC WELL
- TEST PIT
- bgs BELOW GROUND SURFACE
- VSC VAPOR STRIPPING AND CIRCULATION

NOTES:  
1. RESULTS SHOWN ARE FOR SOIL SAMPLED ON AUGUST 25, 2011  
2. RESULTS ARE IN MILLIGRAMS PER KILOGRAM



**FIGURE 5**  
TESORO COMPANY - FORMER TESORO NORTHSTORE #11  
2011 CCIC REPORT  
**2011 TEST HOLE LOCATIONS AND SOIL ANALYTICAL RESULTS**

## APPENDIX A

### Bibliography of Supporting Documents

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**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-1**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
06-Jun-97	U	U	U	U	U	U	77.17
05-Nov-97	U	U	U	U	U	NT	79.25
08-Jun-98	U	U	U	U	U	0.26	79.72
03-Sep-98	U	U	U	U	U	NT	80.31
08-Dec-98	U	U	U	U	U	0.21	79.72
26-Mar-99	U	U	U	U	U	U	79.09
29-Jun-99	U	U	U	U	U	U	77.64
07-Oct-99	U	U	U	U	U	U	79.67
27-Dec-99	U	U	U	U	U	U	79.72
24-Mar-00	<b>0.031</b>	U	U	U	U	0.11	79.34
30-Jun-00	U	U	U	U	U	U	80.32
27-Sep-00	U	U	U	U	U	U	80.57
27-Dec-00	NT	NT	NT	NT	NT	NT	NM
23-Mar-01	NT	NT	NT	NT	NT	NT	NM
28-Jun-01	U	U	U	U	U	U	NM
05-Oct-01	NT	NT	NT	NT	NT	NT	NM
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	NT	NT	NT	NT	NT	NT	NM
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B  
Tables of Historical Monitoring Data**

**Monitoring Well MW-2**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
06-Jun-97	U	U	U	U	U	U	78.18
05-Nov-97	U	U	U	U	U	NT	80.20
08-Jun-98	U	U	U	U	U	0.32	80.92
03-Sep-98	U	U	U	U	U	NT	80.97
08-Dec-98	U	U	U	U	U	U	81.34
26-Mar-99	U	U	U	0.0011	U	U	80.03
29-Jun-99	U	U	U	U	U	U	79.59
07-Oct-99	U	U	U	U	U	U	81.67
27-Dec-99	U	U	U	U	U	U	81.38
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	U	U	U	U	U	U	81.67
27-Sep-00	NT	NT	NT	NT	NT	NT	NM
27-Dec-00	U	U	U	U	U	U	81.89
23-Mar-01	U	U	U	U	U	U	80.75
28-Jun-01	U	U	U	U	U	U	82.02
05-Oct-01	U	U	U	U	U	U	83.23
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	U	U	U	U	U	U	81.07
24-Jun-02	U	U	U	U	U	U	82.69
12-Sep-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	83.07
11-Dec-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	84.04
03-Apr-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	1.26	83.88
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
03-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	81.22
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B  
Tables of Historical Monitoring Data**

**Monitoring Well MW-3**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
06-Jun-97	0.1	0.19	0.31	0.91	6.3	4.4	77.16
05-Nov-97	0.042	0.22	0.46	1.1	3.9	NT	79.24
08-Jun-98	0.0016	0.0024	0.011	0.021	0.9	1.3	79.90
03-Sep-98	0.0067	0.002	0.028	0.12	0.92	NT	80.31
08-Dec-98	0.0094	0.0022	0.06	0.082	0.9	0.53	79.59
26-Mar-99	0.0081	0.0016	0.041	0.049	0.5	0.36	79.28
29-Jun-99	0.018	0.0062	0.046	0.072	1.2	0.44	77.50
07-Oct-99	0.019	0.016	0.11	0.22	2.0	0.48	79.52
27-Dec-99	0.01	0.0015	0.061	0.084	0.7	0.27	79.40
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	0.0045	U	0.033	0.034	0.62	0.32	80.06
27-Sep-00	0.0024	U	0.02	0.024	0.32	0.11	80.73
27-Dec-00	0.012	0.0016	0.065	0.036	0.88	0.36	79.86
23-Mar-01	U	U	U	U	0.110	U	79.86
28-Jun-01	0.002	0.005	U	0.007	0.625	0.581	79.97
05-Oct-01	U	U	U	U	U	U	80.22
28-Dec-01	0.002	U	0.0046	U	0.192	U	79.32
21-Mar-02	U	U	U	U	U	U	79.00
24-Jun-02	0.000613	U	U	0.00723	0.276	U	79.91
12-Sep-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	80.59
11-Dec-02	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.5)	80.64
03-Apr-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	0.314	80.30
10-Sep-03	U (0.0005)	U (0.0005)	U (0.0005)	U (0.001)	U (0.08)	U (0.32)	79.54
22-Jan-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.37)	78.82
03-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	80.14
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.458	80.38
14-Apr-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	80.27
04-Oct-05	NT	NT	NT	NT	NT	NT	80.61
10-Apr-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	79.76
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	80.13
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.4)	80.28
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.442)	81.05
28-Jan-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.41)	80.32
08-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.427)	79.99
11-Feb-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	78.85
16-Jul-10	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.10)	U (0.424)	79.24
08-Feb-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	78.94
21-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	79.20
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B  
Tables of Historical Monitoring Data**

**Monitoring Well MW-4**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
08-Jun-98	U	U	U	U	U	U	79.69
03-Sep-98	U	0.0023	U	0.0015	U	NT	80.30
08-Dec-98	U	U	U	U	U	U	79.75
26-Mar-99	U	U	U	0.0014	U	U	78.90
29-Jun-99	U	U	U	U	U	U	77.64
07-Oct-99	U	U	U	U	U	U	79.66
27-Dec-99	U	U	U	U	U	U	79.71
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	U	U	U	U	U	U	80.34
27-Sep-00	NT	NT	NT	NT	NT	NT	NM
27-Dec-00	U	U	U	U	U	U	79.86
23-Mar-01	U	U	U	U	U	U	79.70
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	U	U	U	U	U	U	80.04
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	79.88
12-Sep-02	NT	NT	NT	NT	NT	NT	80.14
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.326)	79.99
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
03-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	79.74
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-5**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
08-Jun-98	U	U	U	U	U	0.63	79.71
03-Sep-98	U	U	U	U	U	NT	80.31
08-Dec-98	U	U	U	U	U	U	79.71
26-Mar-99	U	U	U	0.0011	U	U	78.92
29-Jun-99	U	U	U	U	U	U	77.64
07-Oct-99	U	U	U	U	U	U	79.67
27-Dec-99	U	U	U	U	U	U	79.73
24-Mar-00	U	U	U	U	U	U	79.31
30-Jun-00	U	U	U	U	U	U	80.34
27-Sep-00	U	U	U	U	U	U	80.54
27-Dec-00	U	U	U	U	U	U	79.86
23-Mar-01	U	U	U	U	U	U	79.48
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	U	U	U	U	U	U	79.98
28-Dec-01	U	U	U	U	U	U	79.53
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	79.91
12-Sep-02	NT	NT	NT	NT	NT	NT	80.12
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.319)	80.00
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
03-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	79.76
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B  
Tables of Historical Monitoring Data**

**Monitoring Well MW-6**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
08-Jun-98	0.043	0.21	0.18	0.87	5	1.4	79.71
03-Sep-98	0.018	0.057	0.098	0.25	1.6	NT	80.30
08-Dec-98	0.0019	U	0.0053	0.0045	U	U	79.70
26-Mar-99	U	U	U	0.0011	U	U	79.11
29-Jun-99	U	U	0.0019	U	U	U	77.64
07-Oct-99	0.0045	U	0.018	0.0074	0.3	0.35	79.65
27-Dec-99	0.0023	U	0.0037	U	U	0.13	79.69
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	0.0027	0.0015	0.0054	0.0094	0.17	0.15	80.32
27-Sep-00	NT	NT	NT	NT	NT	NT	NM
27-Dec-00	U	U	0.0071	0.015	0.14	0.17	79.83
23-Mar-01	U	U	U	U	U	U	79.47
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	0.002	U	U	0.096	0.65	U	80.01
28-Dec-01	0.0015	U	0.00655	U	0.0906	U	79.46
21-Mar-02	U	U	U	U	U	U	79.17
24-Jun-02	U	U	U	U	U	U	79.88
12-Sep-02	NT	NT	NT	NT	NT	NT	80.14
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
03-Apr-03	U (0.0005)	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.3)	79.99
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
03-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	79.72
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-7**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
08-Jun-98	0.018	U	U	U	U	U	79.70
03-Sep-98	0.17	U	0.0081	U	0.49	NT	80.27
08-Dec-98	0.2	U	0.044	U	U	0.23	79.70
26-Mar-99	0.029	U	0.027	U	0.18	0.18	79.07
29-Jun-99	0.072	0.0063	0.081	0.031	0.57	U	77.61
07-Oct-99	0.064	U	0.081	0.0027	0.48	0.24	79.60
27-Dec-99	NT	NT	NT	NT	NT	NT	NM
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	0.076	0.017	0.25	U	3.0	0.31	80.24
27-Sep-00	NT	NT	NT	NT	NT	NT	NM
27-Dec-00	0.012	U	0.17	U	0.66	0.24	79.80
23-Mar-01	0.006	0.001	0.098	U	1.2	0.46	NM
28-Jun-01	0.000275	U	0.0523	U	0.406	0.519	79.53
05-Oct-01	0.002	U	0.049	U	0.27	0.578	80.01
28-Dec-01	0.00123	U	0.00922	U	U	U	79.44
21-Mar-02	0.00247	U	0.0130	U	0.134	0.551	79.12
24-Jun-02	0.0209	0.00386	0.0223	0.00788	0.153	0.550	79.86
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	0.0294	U (0.002)	0.105	U (0.002)	0.47	1.18	79.94
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>



**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-8**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
08-Jun-98	0.37	3.3	1.1	4.5	27	2.6	79.71
03-Sep-98	0.2	1.1	0.53	3.2	16	NT	80.30
08-Dec-98	0.021	0.032	0.063	0.19	1.4	0.21	79.69
26-Mar-99	0.0064	0.0044	0.022	0.041	0.38	U	79.13
29-Jun-99	0.012	0.011	0.029	0.068	0.74	0.3	77.63
07-Oct-99	U	U	U	U	U	2.1	79.67
27-Dec-99	0.017	0.0073	0.06	0.081	1.2	0.66	79.70
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	0.0025	U	0.0063	0.0082	0.32	1.2	80.30
27-Sep-00	0.0044	0.0051	0.012	0.023	0.31	0.24	80.58
27-Dec-00	0.083	0.042	0.2	0.31	1.9	0.74	79.85
23-Mar-01	0.038	0.010	0.100	0.200	2.5	0.98	79.53
28-Jun-01	U	U	U	U	U	1.19	79.59
05-Oct-01	U	U	U	U	U	0.526	80.00
28-Dec-01	0.00399	U	0.0166	0.03292	0.215	U	79.51
21-Mar-02	U	U	U	U	U	U	79.19
24-Jun-02	0.00682	U	0.150	0.0535	0.452	0.852	79.92
12-Sep-02	0.061	U (0.02)	0.204	0.2868	2.82	1.14	79.92
11-Dec-02	0.0358	0.00346	0.0272	0.0531	1.15	U (0.515)	80.25
03-Apr-03	0.0392	0.00826	0.148	0.0981	1.63	0.525	80.01
10-Sep-03	U (0.0005)	U (0.0005)	0.000603	U (0.001)	U (0.08)	U (0.32)	79.26
22-Jan-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.37)	78.54
03-May-04	0.000628	0.00409	0.00104	0.146	0.4	U (0.5)	79.78
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	0.00342	0.101	U (0.4)	80.34
14-Apr-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	80.22
04-Oct-05	NT	NT	NT	NT	NT	NT	80.63
10-Apr-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	79.72
24-Oct-06	NT	NT	NT	NT	NT	NT	80.67
20-Apr-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.417)	80.45
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.407)	80.53
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.435)	81.11
28-Jan-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.515	80.45
08-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.427)	79.86
11-Feb-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.431)	78.85
16-Jul-10	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.10)	U (0.407)	79.23
08-Feb-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	78.94
21-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	79.28
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-9**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
16-Jul-99	U	U	U	U	U	U	78.27
07-Oct-99	U	U	U	U	U	U	79.70
27-Dec-99	NT	NT	NT	NT	NT	NT	NM
24-Mar-00	U	U	U	U	U	U	79.39
30-Jun-00	U	U	U	U	U	U	80.37
27-Sep-00	U	U	U	U	U	U	80.54
27-Dec-00	U	U	U	U	U	U	79.83
23-Mar-01	U	U	U	U	U	U	79.49
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	U	U	U	U	U	U	80.00
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	79.88
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-10**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
16-Jul-99	U	U	U	U	U	U	78.26
07-Oct-99	U	U	U	U	U	U	78.65
27-Dec-99	U	U	U	U	U	U	79.71
24-Mar-00	NT	NT	NT	NT	NT	NT	NM
30-Jun-00	U	U	U	U	U	U	80.33
27-Sep-00	U	U	U	U	U	U	81.65
27-Dec-00	U	U	U	U	U	U	79.77
23-Mar-01	U	U	U	U	U	U	79.45
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	U	U	U	U	U	U	80.00
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	79.90
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Monitoring Well MW-11**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
16-Jul-99	0.075	U	0.47	1	5.9	33	78.30
07-Oct-99	0.0058	0.0038	0.041	0.083	1.7	32	79.71
27-Dec-99	0.0023	0.0042	0.053	0.11	2.3	42	79.76
24-Mar-00	0.023	0.0051	0.2	0.34	2.7	15	79.36
30-Jun-00	0.0022	U	0.044	0.038	0.82	1.1	80.40
27-Sep-00	NT	NT	NT	NT	NT	NT	NM
27-Dec-00	Well Destroyed						
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B  
Tables of Historical Monitoring Data**

**Monitoring Well MW-12**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
27-Sep-00	U	U	U	U	U	0.15	82.01
27-Dec-00	U	U	U	U	U	U	81.71
23-Mar-01	U	U	U	U	U	U	81.82
28-Jun-01	NT	NT	NT	NT	NT	NT	NM
05-Oct-01	U	U	U	U	U	U	82.53
28-Dec-01	NT	NT	NT	NT	NT	NT	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	82.22
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-13**

<b>Date</b>	<b>Benzene (mg/L)</b>	<b>Toluene (mg/L)</b>	<b>Ethylbenzene (mg/L)</b>	<b>Xylenes (mg/L)</b>	<b>GRO (mg/L)</b>	<b>DRO (mg/L)</b>	<b>GW Elev (feet)</b>
20-Nov-00	U	U	U	U	U	U	84.76
27-Dec-00	U	U	U	U	U	U	80.06
23-Mar-01	NT	NT	NT	NT	NT	NT	NT
28-Jun-01	U	U	U	U	U	U	79.83
05-Oct-01	U	U	U	U	U	U	NA
28-Dec-01	NT	NT	NT	NT	NT	NT	NT
21-Mar-02	NT	NT	NT	NT	NT	NT	NT
24-Jun-02	U	U	U	U	U	U	NT
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-14**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
21-Mar-02	0.415	1.360	0.944	3.311	13.7	1.190	NT
24-Jun-02	1.180	5.090	1.720	6.230	23.7	1.82	80.00
12-Sep-02	1.04	6.27	2.25	7.95	41.3	1.86	80.34
11-Dec-02	0.982	7.57	2.69	10.54	63.6	1.45	80.54
03-Apr-03	1.03	9.17	2.88	9.97	57.8	1.96	80.40
10-Sep-03	0.758	5.36	2.28	9.39	59.4	1.24	79.59
22-Jan-04	0.0171	0.0161	0.0894	0.305	1.68	0.768	79.13
04-May-04	0.0155	0.0146	0.0516	0.237	0.998	U (0.5)	80.38
07-Oct-04	0.00245	0.00112	0.014	0.0373	0.156	U (0.385)	80.92
14-Apr-05	0.0163	U (0.0005)	U (0.0005)	0.0488	0.247	U (0.417)	80.58
04-Oct-05	0.0153	U (0.0005)	U (0.0005)	U (0.0015)	0.0531	0.475	NM
10-Apr-06	U (0.0005)	U (0.0005)	0.00245	U (0.0015)	U (0.05)	U (0.417)	80.09
24-Oct-06	0.0146	0.00776	0.255	0.325	2.21	0.648	81.07
20-Apr-07	0.00256	U (0.0005)	0.0282	0.0155	0.16	U (0.435)	81.04
25-Oct-07	0.0196	U (0.005)	0.288	0.06	1.45	U (0.439)	81.22
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.413)	81.30
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.45)	84.05
28-Jan-09	U (0.0005)	U (0.0005)	0.00948	U (0.0015)	U (0.05)	U (0.485)	81.27
08-Jul-09	U (0.0005)	U (0.001)	0.00763	0.00948	0.0642	U (0.431)	81.12
11-Feb-10	0.00329	0.00109	0.0312	0.00863	0.301	U (0.431)	79.22
16-Jul-10	0.00406	U (0.001)	0.0446	0.0157	0.281	U (0.435)	79.65
08-Feb-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	79.27
21-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	79.85
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Monitoring Well MW-15**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
21-Mar-02	0.0155	0.162	0.229	0.851	2.9	8.92	NM
24-Jun-02	0.00114	U	0.00984	0.290	0.210	10.4	80.52
12-Sep-02	U (0.0005)	U (0.002)	0.0107	0.02802	0.187	21.6	80.55
11-Dec-02	U (0.0005)	U (0.002)	0.00311	0.00643	U (0.09)	8.38	80.68
03-Apr-03	0.00296	U (0.002)	0.0391	0.029	0.329	3.38	80.30
10-Sep-03	0.00555	0.00969	0.0436	0.0705	1.13	6.53	79.41
22-Jan-04	U (0.0005)	U (0.0005)	0.00078	0.0051	U (0.05)	U (0.37)	78.62
04-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	79.87
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.604	80.42
14-Apr-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.579	80.28
04-Oct-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.554	NM
10-Apr-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	79.75
24-Oct-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.413)	82.31
20-Apr-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	80.74
25-Oct-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.427)	81.20
28-May-08	U (0.0005)	U (0.0005)	0.00064	0.00412	0.0849	5.08	80.09
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.462	83.21
28-Jan-09	U (0.0005)	U (0.0005)	0.00062	0.0089	0.212	128	80.50
20-Feb-09	NT	NT	NT	NT	NT	36.7	NM
08-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	25.0	80.69
11-Feb-10	U (0.0005)	U (0.0005)	U (0.0005)	0.00246	0.103	17.7	78.85
16-Jul-10	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.10)	U (0.427)	78.90
08-Feb-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.425	78.66
21-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	80.21
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-16**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
21-Mar-02	<b>0.0187</b>	0.234	<b>0.886</b>	0.272	<b>2.58</b>	<b>1.6</b>	NM
24-Jun-02	<b>0.0162</b>	0.003	0.052	0.121	<b>2.82</b>	<b>2.01</b>	81.40
12-Sep-02	<b>0.0206</b>	0.007	0.00785	0.03006	0.743	1.04	81.99
11-Dec-02	0.000966	U (0.002)	U (0.002)	U (0.002)	U (0.09)	U (0.495)	82.18
03-Apr-03	0.00235	U (0.002)	0.00384	0.00518	0.244	0.488	81.82
10-Sep-03	0.00188	U (0.0005)	0.0101	0.00574	0.39	0.863	80.43
22-Jan-04	0.000881	0.000549	0.00203	0.0122	0.0505	0.465	79.58
04-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.5)	81.19
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	82.53
14-Apr-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.416	81.95
04-Oct-05	NT	NT	NT	NT	NT	NT	82.50
10-Apr-06	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	82.22
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.442)	82.89
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.403)	82.57
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.424)	83.19
28-Jan-09	U (0.0005)	U (0.0005)	0.00207	0.0103	0.348	0.483	82.21
08-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.413)	82.69
11-Feb-10	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.427)	79.51
16-Jul-10	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.10)	U (0.424)	80.32
08-Feb-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.391)	79.53
21-Sep-11	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.397)	80.43
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Monitoring Well MW-17**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
21-Mar-02	<b>0.066</b>	0.881	0.564	1.940	<b>14.000</b>	<b>2.860</b>	NM
24-Jun-02	<b>0.017</b>	0.026	0.092	0.195	<b>2.810</b>	1.04	79.93
12-Sep-02	<b>0.0151</b>	0.00651	0.0169	0.05924	0.707	U (0.5)	80.20
11-Dec-02	0.00176	U (0.002)	0.00812	0.01753	0.286	U (0.5)	80.31
03-Apr-03	0.00238	U (0.002)	0.00575	0.01979	0.325	0.764	80.06
10-Sep-03	<b>0.0467</b>	0.00614	0.247	0.319	<b>6.24</b>	1.21	79.26
22-Jan-04	<b>0.088</b>	0.113	0.509	1.07	<b>11.6</b>	<b>2.76</b>	78.54
04-May-04	0.000846	0.00715	0.0262	0.165	1.34	U (0.5)	79.85
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.4)	80.42
14-Apr-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.385)	80.26
04-Oct-05	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.573	80.76
10-Apr-06	0.000529	0.000664	0.00537	0.0273	0.444	U (0.397)	79.92
24-Oct-06	U (0.0005)	U (0.0005)	0.0018	0.00258	0.0594	0.457	80.74
20-Apr-07	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.427)	80.53
25-Oct-07	0.00106	U (0.0005)	0.00696	0.00635	0.162	U (0.435)	79.73
28-May-08	0.00058	0.0005	0.00776	0.013	0.217	U (0.41)	80.11
09-Oct-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.427)	80.74
28-Jan-09	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.443	79.97
08-Jul-09	U (0.0005)	U (0.001)	U (0.001)	U (0.003)	U (0.05)	U (0.427)	79.82
11-Feb-10	dry	dry	dry	dry	dry	dry	dry
16-Jul-10	0.00172	U (0.001)	0.0183	0.0122	0.28	U (0.417)	79.26
08-Feb-11	<b>0.00568</b>	0.00707	0.0699	0.0292	1.03	0.888	78.97
21-Sep-11	dry	dry	dry	dry	dry	dry	dry
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well MW-VSC**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
23-Mar-01	0.011	0.011	0.05	0.093	1.5	0.68	NM
28-Jun-01	U	U	U	U	U	U	NM
05-Oct-01	U	U	U	U	U	U	NM
28-Dec-01	U	U	0.003	U	U	U	NM
21-Mar-02	NT	NT	NT	NT	NT	NT	NM
24-Jun-02	U	U	U	U	U	U	NM
12-Sep-02	NT	NT	NT	NT	NT	NT	NM
11-Dec-02	NT	NT	NT	NT	NT	NT	NM
04-Apr-03	NT	NT	NT	NT	NT	NT	NM
10-Sep-03	NT	NT	NT	NT	NT	NT	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.857	82.39
07-Oct-04	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.394)	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
28-May-08	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>

**Monitoring Well VSC-2**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
10-Sep-03	0.00586	0.00143	0.00324	0.0391	0.511	U (0.32)	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	<b>NA</b>



**Appendix B**  
**Tables of Historical Monitoring Data**

**Monitoring Well VSC-3**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
10-Sep-03	<b>0.131</b>	0.0513	0.152	0.612	<b>2.96</b>	<b>1.63</b>	NM
22-Jan-04	NT	NT	NT	NT	NT	NT	NM
04-May-04	NT	NT	NT	NT	NT	NT	NM
07-Oct-04	NT	NT	NT	NT	NT	NT	NM
14-Apr-05	NT	NT	NT	NT	NT	NT	NM
04-Oct-05	NT	NT	NT	NT	NT	NT	NM
10-Apr-06	NT	NT	NT	NT	NT	NT	NM
24-Oct-06	NT	NT	NT	NT	NT	NT	NM
20-Apr-07	NT	NT	NT	NT	NT	NT	NM
25-Oct-07	NT	NT	NT	NT	NT	NT	NM
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	NA

**Monitoring Well CW-2**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	U (0.407)	83.03
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	NA

**Monitoring Well CW-3**

Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	GRO (mg/L)	DRO (mg/L)	GW Elev (feet)
28-May-08	U (0.0005)	U (0.0005)	U (0.0005)	U (0.0015)	U (0.05)	0.405	80.26
09-Oct-08	NT	NT	NT	NT	NT	NT	NM
28-Jan-09	NT	NT	NT	NT	NT	NT	NM
08-Jul-09	NT	NT	NT	NT	NT	NT	NM
11-Feb-10	NT	NT	NT	NT	NT	NT	NM
16-Jul-10	NT	NT	NT	NT	NT	NT	NM
08-Feb-11	NT	NT	NT	NT	NT	NT	NM
21-Sep-11	NT	NT	NT	NT	NT	NT	NM
<b>GCLs</b>	<b>0.005</b>	<b>1</b>	<b>0.7</b>	<b>10</b>	<b>2.2</b>	<b>1.5</b>	NA

Key:  
DRO - diesel range organics  
GCL - ground water cleanup levels  
GRO - gasoline range organics  
GW - ground water  
mg/L - milligrams per liter  
NA - not applicable  
NM - not measured  
NS - not sampled  
U - Undetected above practical quantitation limits.

**Bold**, shade indicates concentration exceeds the GCL.

**DEED NOTICE  
NOTICE OF ENVIRONMENTAL CLEANUP  
AND RESIDUAL SOIL CONTAMINATION**

Pursuant to 18 Alaska Administrative Code (AAC) 75.375, Tesoro Refining and Marketing Company, as the owner of the subject property, hereby provides notice that the subject property located at 317 Muldoon Road, Anchorage, Alaska, and more particularly described as Lot 2, Nevilla Park Subdivision, Municipality of Anchorage, Alaska, has been subject to a release and subsequent cleanup of petroleum fuel, regulated under 18 AAC 78, Article 2, as amended October 2006. This release and site cleanup are documented in the Alaska Department of Environmental Conservation (ADEC) contaminated sites database under Underground Storage Tank (UST) Facility I.D. #1502 (former Tesoro Northstore #11) and South-central Regional Office File # 2100.26.085.

ADEC reviewed and approved, subject to this institutional control, the cleanup as protective of human health, safety, welfare, and the environment. No further cleanup is necessary at this site unless new information becomes available that indicates to ADEC that the site may pose an unacceptable risk to human health, safety, welfare, or the environment. ADEC determined, in accordance with 18 AAC 75.325(f)(1), that site cleanup has been performed to the maximum extent practicable even though elevated residual contaminated soil exists on-site in three Areas of Concern (depicted in the Attachment – Site Plan with “Areas of Concern”). Further cleanup was determined to be not feasible because the remaining amount of contaminated soil is distributed around the property and further cleanup was not practical.

In the event that the remaining contaminated soil located more than 15 feet below ground surface within the property becomes accessible by an action, such as the excavation of a utility trench, or other information becomes available indicating that the site may pose an unacceptable risk to human health, safety, welfare, or the environment, the land owner is required under 18 AAC 75.300 to notify ADEC and evaluate the environmental status of the contamination in accordance with applicable laws and regulations; further site characterizations and cleanup may be necessary under 18 AAC 75.325-.396. Also, any transport or disposal of contaminated soil at or from the site requires approval from ADEC in accordance with 18 AAC 75.325(i).

Any excavation of soil or ground water located more than 15 feet below ground surface within the property must be assessed for contamination by a qualified third party. Prior to conducting any intrusive or excavation activities on the property, ADEC must be notified and the conditions of this control reviewed by the appropriate staff within the Contaminated Site Program. If contamination is encountered in the excavation, then appropriate removal and treatment of the extracted soil/ground water will be required in accordance with current regulations.

Municipal utility service connections for drinking water and sewer are available at this property. Installation of a drinking water well is prohibited on this property.

The landowner will be required to notify the department within 14 days upon change of land ownership, or if any change in land use activity occurs.

Please return original copy of this notice to the address below:

Signature: \_\_\_\_\_  
(landowner)

Printed Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_  
\_\_\_\_\_

(seal) Subscribed and sworn to before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_.

Notary Public in and for the State of \_\_\_\_\_

My commission expires: \_\_\_\_\_

Note: Please refer to 11 AAC 05.010 (a)(14) for the required fee. The information requested on this form should be typed or legibly printed in English. Any attachments or exhibits must not exceed 8.5 by 14 inches. This form is intended to comply with the recording requirements of Alaska Statute 40.17.030 and 11 AAC 06.040.

Attachment – Site Plan with “Areas of Concern”

FILE: \\sanc1s01\server\Cadd\Proj\Tesoro\Nms\0112011 CCIC Report\FINAL\deed notice.dgn  
 TIME: 29-NOV-2011 16:31  
 JOB NO. 1010490.010102

SB-11			
Depth	15'	18'	
Benzene	U(0.0119)	U(0.0133)	
GRO	U(2.98)	40.1	
DRO	U(22.1)	U(22.2)	

SB-10			
Depth	10'	23'	
Benzene	U(0.0118)	U(0.0134)	
GRO	U(2.95)	U(3.36)	
DRO	U(25)	U(22.3)	

SB-9			
Depth	14'	22'	
Benzene	0.0282	0.33	
GRO	U(3.39)	389	
DRO	U(25)	U(25)	

SB-4			
Depth	15'	19'	
Benzene	0.0324	0.0233	
GRO	U(3.21)	U(2.98)	
DRO	U(25)	U(25)	

SB-1			
Depth	9'	19'	
Benzene	U(0.0141)	U(0.221)	
GRO	U(3.54)	416	
DRO	U(25)	1520	

SB-8			
Depth	7'	16'	
Benzene	U(0.0126)	0.0263	
GRO	U(3.16)	U(3.1)	
DRO	U(25)	U(25)	

SB-12			
Depth	15'	23'	
Benzene	U(0.0137)	U(0.21)	
GRO	U(3.43)	335	
DRO	U(25)	93.4	

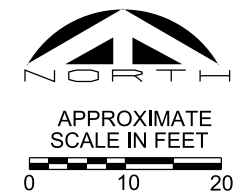
SB-7			
Depth	10'	19'	
Benzene	U(0.0143)	U(0.011)	
GRO	U(3.58)	U(2.74)	
DRO	U(25)	U(25)	

SB-5			
Depth	15'	25'	
Benzene	U(0.013)	0.0144	
GRO	U(3.26)	U(3.09)	
DRO	U(25)	U(21.6)	

SB-6			
Depth	4'	19'	23'
Benzene	U(0.0124)	0.0233	U(0.0218)
GRO	U(3.11)	47.7	51.3
DRO	U(25)	U(25)	U(25)

SB-3			
Depth	15'	19'	
Benzene	U(0.0131)	0.0129	
GRO	U(3.27)	U(3)	
DRO	U(25)	U(22.4)	

SB-2			
Depth	10'	18'	
Benzene	U(0.0127)	U(0.0136)	
GRO	U(3.17)	U(3.4)	
DRO	U(22.6)	U(25)	



MULDOON ROAD

20' ALLEY (PUBLIC)

10 & M SEAFOODS  
301 MULDOON ROAD  
ANCHORAGE, AK 99504

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LEGEND:

- PROPERTY LINE
- ⊕ CONFIRMATION SOIL BORING
- ⊙ SOIL VAPOR EXTRACTION WELL
- ⊠ VAPOR STRIPPING AND CIRCULATION WELL
- ▲ MONITORING WELL

NOTES:

1. RESULTS ARE FOR SAMPLES COLLECTED ON OCTOBER 3 AND 4, 2006.
2. RESULTS ARE IN MILLIGRAMS PER KILOGRAM.
3. BOLD/ RED TEXT INDICATES CONTAMINANT CONCENTRATION ABOVE THE CLEANUP LEVEL FOR THIS SITE.

FIGURE 1  
 TESORO COMPANY - FORMER TESORO NORTHSTORE #11  
 DEED NOTICE  
**LOCATIONS OF 2006 CONFIRMATION  
 SOIL BORINGS AND ANALYTICAL RESULTS**

