



**CONESTOGA-ROVERS  
& ASSOCIATES**

Release # 524 012  
Minit Lube #1102  
Lynnwood  
UST # 6802

July 24, 2007

Mr. John Bails  
Washington State Department of Ecology  
Northwest Regional Office  
3190 160th Avenue SE  
Bellevue, Washington 98008-5452


Re: **Groundwater Monitoring Report – Second Quarter 2007**  
Former Jiffy Lube No. 2068  
6808 196<sup>th</sup> Street SW  
Lynnwood, Washington  
SAP Code 171152  
Incident No. 97605410  
Ecology ID No. 27496218


Dear Mr. Bails:

Conestoga-Rovers & Associates, Inc. (CRA) prepared this report on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell).

If you have questions regarding this report, please contact Justin Foslien at (425) 212-5111.

Sincerely,  
**Conestoga-Rovers & Associates, Inc.**

  
Justin Foslien, LG  
Project Manager

  
Christopher Martin, LHG  
Hydrogeologist



**Christopher Martin**

Enclosure: Groundwater Monitoring Report – Second Quarter 2007

cc: Ms. Carol Campagna, Shell Oil Products US, 20945 S. Wilmington Ave., Carson,  
CA 90810  
Mr. Rick Megenity, Strickland Corporation, P.O. Box 1004, Everett, WA 98206

**RECEIVED**

JUL 27 2007

DEPT. OF ECOLOGY



## GROUNDWATER MONITORING REPORT – SECOND QUARTER 2007

<b>Site Address</b>	<u>6808 196<sup>th</sup> Street SW, Lynnwood</u>
<b>Site Use</b>	<u>Former Jiffy Lube</u>
<b>Shell Project Manager</b>	<u>Carol Campagna</u>
<b>Consultant and Contact Person</b>	<u>CRA, Justin Foslien</u>
<b>Lead Agency and Contact</b>	<u>WDOE, John Bails</u>
<b>Ecology ID No.</b>	<u>27496218</u>
<b>Shell SAP Code</b>	<u>171152</u>
<b>Shell Incident No.</b>	<u>97605410</u>
<b>Date of Most Recent Agency Correspondence</b>	<u>May 31, 2007</u>

### Current Quarter's Activities

1. Blaine Tech Services, Inc. (Blaine) gauged and sampled wells according to the established monitoring program for this site.
2. CRA prepared a vicinity map (Figure 1) and a groundwater elevation contour and chemical concentration map (Figure 2). CRA also prepared two tables (Tables 1 and 2) summarizing groundwater monitoring data and analytical results. The Blaine field notes and the analytical data are included in Attachments A and B, respectively.

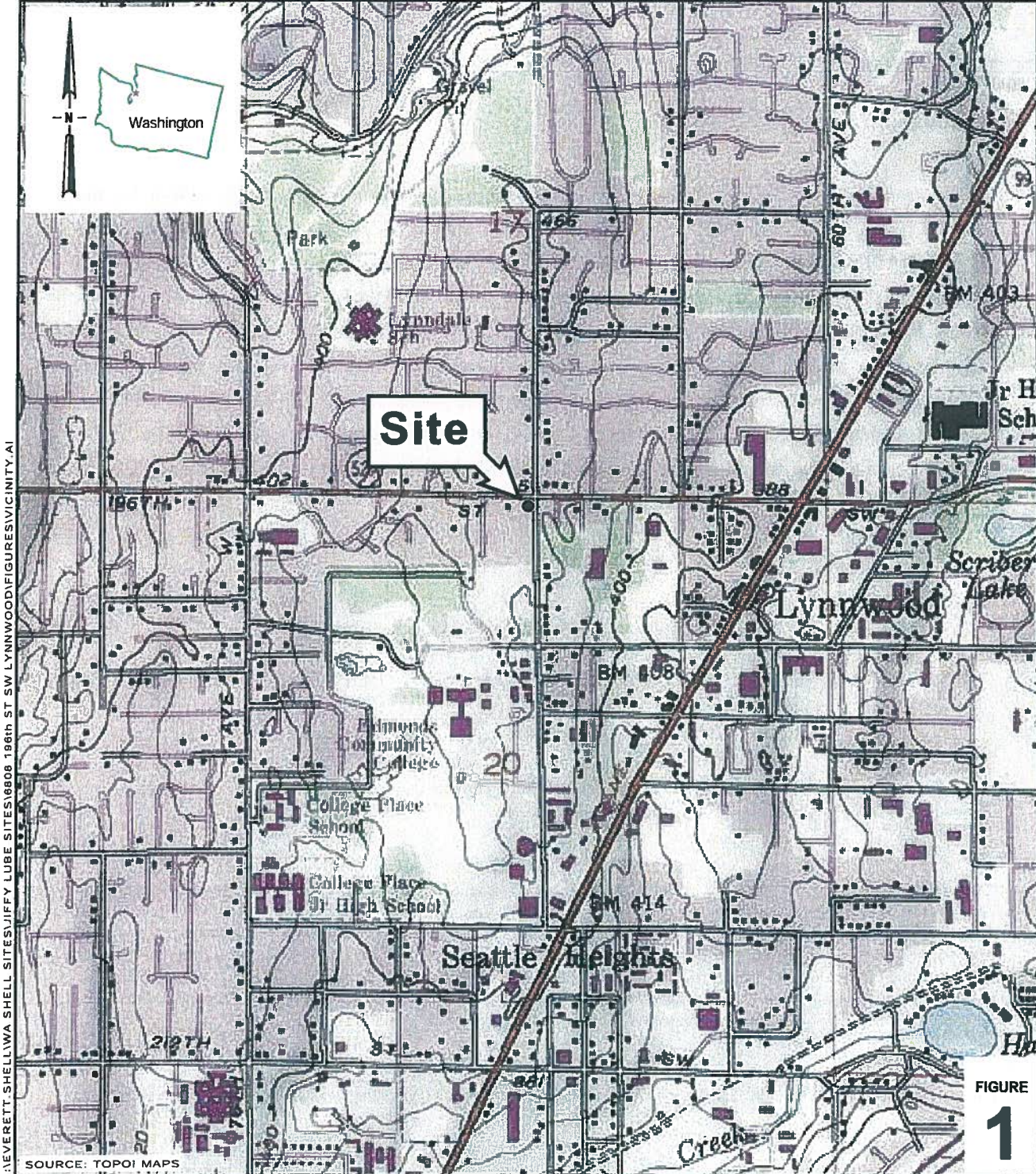
### Current Quarter's Findings

<b>Groundwater Flow Direction</b>	<u>Southwest</u>
<b>Hydraulic Gradient</b>	<u>0.02 feet/foot</u>
<b>Depth to Water</b>	<u>8.50 to 10.71 feet below top of well casing</u>

### Proposed Activities for Next Quarter

1. Blaine will gauge and sample wells during the first month of the third quarter, according to the established monitoring program for this site.
2. CRA will complete an additional subsurface investigation to define the extent of impacted soil and groundwater at the site.





**Jiffy Lube No. 2069**  
 6808 196th Street Southwest  
 Lynnwood, Washington



**Vicinity Map**

Basemap modified from drawing provided by Geotek Engineers and Duncan Co., Inc. Surveying

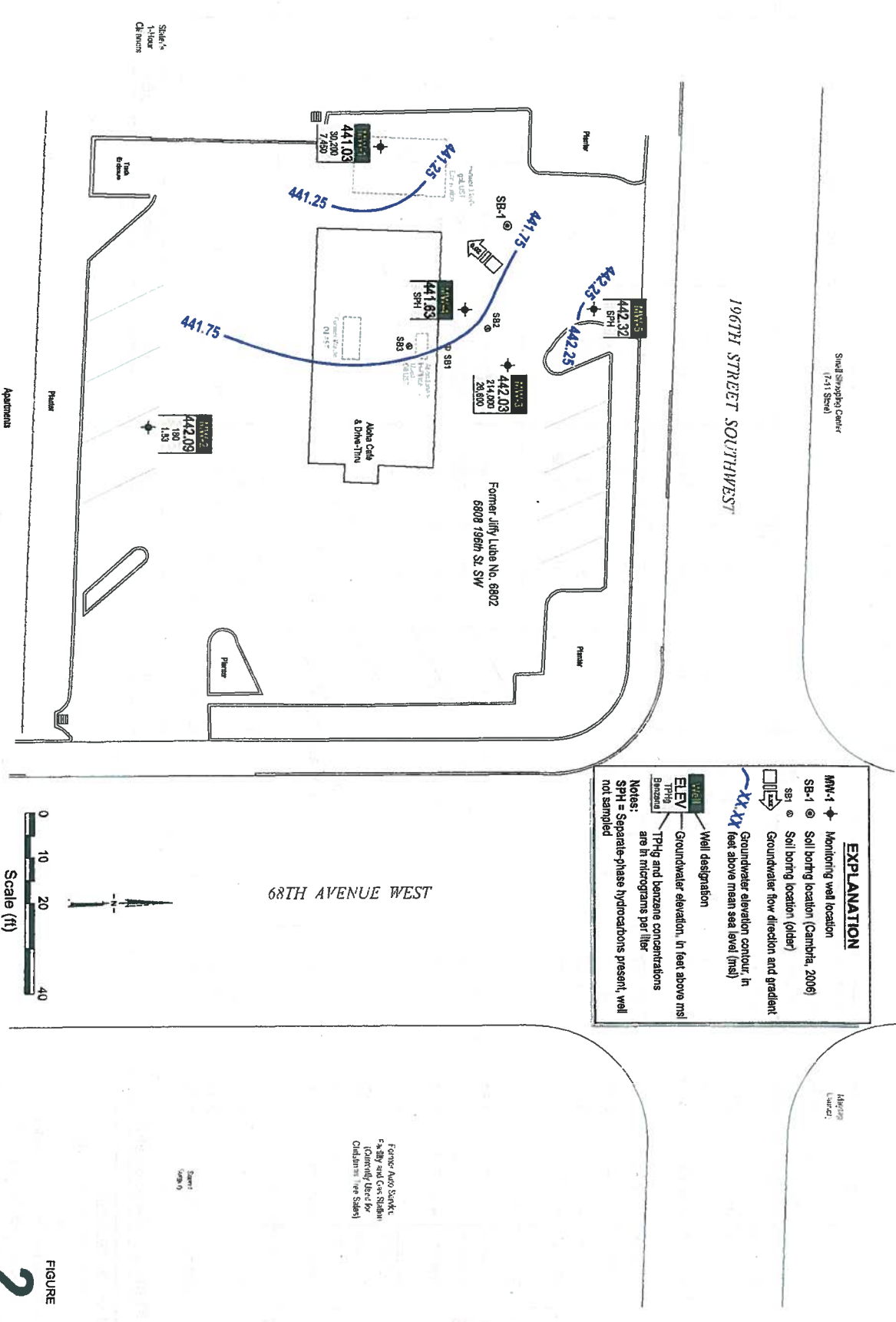


TABLE 1  
SUMMARY OF GROUNDWATER MONITORING DATA  
BETX, MTBE, AND PETROLEUM HYDROCARBONS

6808 196TH SW  
LYNNWOOD, WASHINGTON

Well Number	Date	TOC (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	SPH Thickness (feet)	B (µg/L)	E (µg/L)	T (µg/L)	X (µg/L)	Gasoline-range Hydrocarbons (µg/L)	Diesel Range Hydrocarbons (µg/L)	Heavy Oil Range Hydrocarbons (µg/L)	MTBE (µg/L)
MW-1	12/28/06	451.74	9.75	441.99	---	---	---	---	---	---	---	---	---
MW-1	12/29/06	451.74	9.57	442.17	---	9,190	1,090	2,140	4,100	42,100	<255	<510	---
MW-1	02/15/07	451.74	10.10	441.64	---	9,230	938	1,840	3,710	41,200	<269	<538	<5.00
<b>MW-1</b>	<b>04/06/07</b>	<b>451.74</b>	<b>10.71</b>	<b>441.03</b>	---	<b>7,450</b>	<b>718</b>	<b>732</b>	<b>2,310</b>	<b>30,200</b>	<b>&lt;258</b>	<b>&lt;515</b>	---
MW-2	12/28/06	450.59	7.26	443.33	---	---	---	---	---	---	---	---	---
MW-2	12/29/06	450.59	7.35	443.24	---	21.7	55.1	6.75	9.91	2,640	<253	<505	---
MW-2	02/15/07	450.59	8.03	442.56	---	2.06	4.36	<0.500	<1.00	249	<278	<556	<5.00
<b>MW-2</b>	<b>04/06/07</b>	<b>450.59</b>	<b>8.50</b>	<b>442.09</b>	---	<b>1.83</b>	<b>2.61</b>	<b>0.518</b>	<b>&lt;1.00</b>	<b>180</b>	<b>&lt;258</b>	<b>&lt;515</b>	---
MW-3	12/28/06	451.69	8.45	443.24	---	---	---	---	---	---	---	---	---
MW-3	12/29/06	451.69	8.51	443.18	---	28,500	2,950	29,200	15,900	171,000	608	<510	---
MW-3	02/15/07	451.69	9.09	442.60	---	29,200	3,140	37,400	18,600	263,000 a, b	2,580 c	<2,750	<500
<b>MW-3</b>	<b>04/06/07</b>	<b>451.69</b>	<b>9.66</b>	<b>442.03</b>	---	<b>26,600</b>	<b>2,850</b>	<b>37,500</b>	<b>16,800</b>	<b>214,000</b>	<b>867 c</b>	<b>&lt;495</b>	---
MW-4	12/28/06	452.01	9.41	442.60	---	---	---	---	---	---	---	---	---
MW-4	12/29/06	452.01	9.36	442.65	---	32,400	3,200	39,700	18,800	207,000	1,810	<510	---
MW-4	02/15/07	452.01	9.96	442.05	---	31,500 a, b	2,990 a, b	40,500 a, b	18,100 a, b	253,000 a, b	72,100 c	<50,000	<500
<b>MW-4</b>	<b>04/06/07</b>	<b>452.01</b>	<b>10.41</b>	<b>441.63 d</b>	<b>0.04</b>	<b>NOT SAMPLED</b>	<b>NOT SAMPLED - SPH PRESENT</b>	<b>NOT SAMPLED</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
MW-5	12/28/06	451.38	8.11	443.27	---	---	---	---	---	---	---	---	---
MW-5	12/29/06	451.38	8.17	443.21	---	7,220	2,280	24,400	13,200	122,000	603	<515	---
MW-5	02/15/07	451.38	8.49	442.89	---	12,800 a, b	6,000 a, b	43,600 a, b	40,700 a, b	771,000 a, b	49,200 c	<5,000	<500
<b>MW-5</b>	<b>04/06/07</b>	<b>451.38</b>	<b>9.08</b>	<b>442.32 d</b>	<b>0.03</b>	<b>NOT SAMPLED</b>	<b>NOT SAMPLED - SPH PRESENT</b>	<b>NOT SAMPLED</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>	<b>---</b>
<b>MTCA Method A Cleanup Level</b>													<b>20</b>
											<b>500</b>	<b>500</b>	<b>20</b>

**Abbreviations and Notes:**

- Well locations are shown in Figure 2.
- TOC = Top of Casing.
- SPH = Separate Phase Hydrocarbons
- Depth to water from top of well casing.
- B = benzene, E = ethylbenzene, T = toluene, X = total xylenes. Analyzed using EPA Method 8021B.
- Gasoline-range hydrocarbons analyzed using NWTPH-Gx.
- Diesel and heavy-oil range hydrocarbons analyzed using NWTPH-Dx with acid/silica gel clean-up
- MTBE = Methyl Tertiary butyl ether. By Method 8260B.

**TABLE 1**  
**SUMMARY OF GROUNDWATER MONITORING DATA**  
**BETX, MTBE, AND PETROLEUM HYDROCARBONS**  
 6808 196TH SW  
 LYNNWOOD, WASHINGTON

Well Number	Date	TOC (µg/L)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	SPH Thickness (feet)	B (µg/L)	E (µg/L)	T (µg/L)	X (µg/L)	Gasoline-range Hydrocarbons (µg/L)	Diesel Range Hydrocarbons (µg/L)	Heavy Oil Range Hydrocarbons (µg/L)	MTBE (µg/L)
µg/L = micrograms per liter MTCA = Model Toxics Control Act a = Due to multiple re-shots required for re-analysis, the aliquot of sample analyzed on the instrument was taken from a VOA vial containing headspace. b = Sample container contained headspace. c = Results in the diesel organics range are primarily due to overlap from a gasoline-range product. d = Groundwater elevation formula adjusted for the presence of SPH: (TOC - DTW)+ (SPHT*0.80)													

**TABLE 2**  
**SUMMARY OF GROUNDWATER MONITORING DATA**  
**OXYGENATES**  
 6808 196TH SW  
 LYNNWOOD, WASHINGTON

Well Number	Date	TAME (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)
MW-1	02/15/07	<1.00	54.6	<1.00	<1.00
MW-2	02/15/07	<1.00	<50.0	<1.00	<1.00
MW-3	02/15/07	<100	<5,000	<100	<100
MW-4	02/15/07	<100	<5,000	<100	<100
MW-5	02/15/07	<100	<5,000	<100	<100

**Abbreviations and Notes:**

Well locations are shown in Figure 2.

TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B

TBA = Tertiary-butanol analyzed by EPA Method 8260B

DIPE = Di-isopropyl ether analyzed by EPA Method 8260B

ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B

µg/L = micrograms per liter



**Attachment A**

**Blaine Tech Services, Inc.  
Field Forms**





## WELL GAUGING DATA

Project # 070406. DK3 Date 4/6/07 Client Skull

Site 4808 196<sup>th</sup> St. S.W. Lynnwood, WA

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	1208	2					10.71	29.85	TOC	
MW-2	1158	2					8.50	17.40		
MW-3	1218	2					9.66	17.35		
MW-4		2		10.37	1.04		10.41	-		
MW-5		2		9.05	1.03		9.08	-		

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>070406-DK3</u>	Site: <u>97605410</u>
Sampler: <u>D. Kosurka</u>	Date: <u>4/6/07</u>
Well I.D.: <u>MW-1</u>	Well Diameter: <u>(2)</u> 3 4 6 8
Total Well Depth (TD): <u>24.85</u>	Depth to Water (DTW): <u>10.71</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>(PVC)</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible

Water  Peristaltic  Extraction Pump  Other

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

$$\frac{\text{Case Volume (Gals.)} \times \text{Specified Volumes}}{\text{Calculated Volume}} = \text{Gals.}$$

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or $\mu$ S)	Turbidity (NTUs)	Gals. Removed	Observations
<u>1209</u>	<u>58.1</u>	<u>6.6</u>	<u>498</u>	<u>5</u>		

Did well dewater? Yes  No  Gallons actually evacuated:   —  

Sampling Date: 4/6/07 Sampling Time: 1210 Depth to Water:   —  

Sample I.D.: MW-1 Laboratory: STL SPL Other YA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>070406-DH3</u>	Site: <u>97605410</u>
Sampler: <u>D. Kosurka</u>	Date: <u>4/16/07</u>
Well I.D.: <u>MW-2</u>	Well Diameter: <u>2</u> 3 4 6 8
Total Well Depth (TD): <u>17.40</u>	Depth to Water (DTW): <u>8.50</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible

Water: Peristaltic  Extraction Pump  Other: \_\_\_\_\_

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

$\text{--- (Gals.)} \times \text{---} = \text{--- Gals.}$ Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>3</sup> * 0.163</td> </tr> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>3</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>3</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
1159	57.4	6.4	341	12		

Did well dewater? Yes  No  Gallons actually evacuated:   

Sampling Date: 4/16/07 Sampling Time: 1200 Depth to Water:   

Sample I.D.: MW-2 Laboratory: STL SPL Other: YA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

EB I.D. (if applicable): @ \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

D.O. (if req'd): Pre-purge: _____ mg/L	Post-purge: _____ mg/L
O.R.P. (if req'd): Pre-purge: _____ mV	Post-purge: _____ mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>070406-DH3</u>	Site: <u>97605410</u>
Sampler: <u>D. Kosurka</u>	Date: <u>4/16/07</u>
Well I.D.: <u>MW-3</u>	Well Diameter: <u>(2)</u> 3 4 6 8
Total Well Depth (TD): <u>17.35</u>	Depth to Water (DTW): <u>9.66</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>(PVC)</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible

Water: Peristaltic  Extraction Pump  Other

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing

Other: \_\_\_\_\_

\_\_\_\_\_ (Gals.) X \_\_\_\_\_ = \_\_\_\_\_ Gals.

I Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or $\mu$ S)	Turbidity (NTUs)	Gals. Removed	Observations
1219	57.9	7.0	459	43		

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 4/16/07 Sampling Time: 1220 Depth to Water: \_\_\_\_\_

Sample I.D.: MW-3 Laboratory: STL SPL Other YA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## SHELL WELL MONITORING DATA SHEET

BTS #: <u>070406-DK3</u>	Site: <u>97605410</u>
Sampler: <u>D. Kosurka</u>	Date: <u>4/16/07</u>
Well I.D.: <u>MW-4</u>	Well Diameter: <u>(2)</u> 3 4 6 8
Total Well Depth (TD):	Depth to Water (DTW): <u>10.41</u>
Depth to Free Product: <u>10.37</u>	Thickness of Free Product (feet): <u>.04</u>
Referenced to: <u>(PVC)</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible

Water: Peristaltic  Extraction Pump  Other: \_\_\_\_\_

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

$\frac{\text{--- (Gals.)} \times \text{---}}{\text{Specified Volumes}} = \text{--- Gals.}$ Case Volume = Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
		<u>SPH</u>	<u>Detected</u>			
		<u>No</u>	<u>Sample Taken</u>			

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 4/16/07 Sampling Time: \_\_\_\_\_ Depth to Water: \_\_\_\_\_

Sample I.D.: MW-4 Laboratory: STL SPL Other YA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV



## SHELL WELL MONITORING DATA SHEET

BTS #: <u>070406-DK3</u>	Site: <u>97605410</u>
Sampler: <u>D. Kosurka</u>	Date: <u>4/16/07</u>
Well I.D.: <u>MW-5</u>	Well Diameter: <u>(2)</u> 3 4 6 8
Total Well Depth (TD):	Depth to Water (DTW): <u>9.08</u>
Depth to Free Product: <u>9.05</u>	Thickness of Free Product (feet): <u>.03</u>
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: Bailer  Disposable Bailer  Positive Air Displacement  Electric Submersible  Water Peristaltic  Extraction Pump  Other \_\_\_\_\_

Sampling Method: Bailer  Disposable Bailer  Extraction Port  Dedicated Tubing  Other: \_\_\_\_\_

\_\_\_\_\_ (Gals.) X \_\_\_\_\_ = \_\_\_\_\_ Gals.  
 I Case Volume                      Specified Volumes                      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or µS)	Turbidity (NTUs)	Gals. Removed	Observations
		#	6ph	Detected		
		No	Sample Taken			

Did well dewater? Yes  No  Gallons actually evacuated: \_\_\_\_\_

Sampling Date: 4/16/07 Sampling Time: \_\_\_\_\_ Depth to Water: \_\_\_\_\_

Sample I.D.: MW-5 Laboratory: STL SPL Other TA

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Oxy's 1,2-DCA EDB Other: \_\_\_\_\_

D.O. (if req'd): Pre-purge: \_\_\_\_\_ mg/L Post-purge: \_\_\_\_\_ mg/L

O.R.P. (if req'd): Pre-purge: \_\_\_\_\_ mV Post-purge: \_\_\_\_\_ mV

**Attachment B**  
**Laboratory Analysis Report**

April 17, 2007

Justin Foslien  
Conestoga-Rovers & Associates - Everett  
8620 Holly Drive, Suite 210  
Everett, WA 98208

RE: Shell - 6808 196th Street SW, Lynnwood

Enclosed are the results of analyses for samples received by the laboratory on 04/09/07 15:00.  
The following list is a summary of the Work Orders contained in this report, generated on 04/17/07  
15:12.

If you have any questions concerning this report, please feel free to contact me.

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<u>Work Order</u>	<u>Project</u>	<u>ProjectNumber</u>
BQD0131	Shell - 6808 196th Street SW,	070406.DU3

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<b>Conestoga-Rovers &amp; Associates - Everett</b> 8620 Holly Drive, Suite 210 Everett, WA 98208	Project Name: <b>Shell - 6808 196th Street SW, Lynnwood</b> Project Number: 070406.DU3 Project Manager: Justin Foslien	Report Created: 04/17/07 15:12
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**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1	BQD0131-01	Water	04/06/07 12:10	04/09/07 15:00
MW-2	BQD0131-02	Water	04/06/07 12:00	04/09/07 15:00
MW-3	BQD0131-03	Water	04/06/07 12:20	04/09/07 15:00

TestAmerica - Seattle, WA

*Kate Haney*

Kate Haney, Project Manager

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**Conestoga-Rovers & Associates - Everett**  
 8620 Holly Drive, Suite 210  
 Everett, WA 98208

Project Name: **Shell - 6808 196th Street SW, Lynnwood**  
 Project Number: 070406.DU3  
 Project Manager: Justin Foslien

Report Created:  
 04/17/07 15:12

**Volatile Petroleum Products by NWTPH-Gx**  
 TestAmerica - Seattle, WA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>BQD0131-01 (MW-1)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:10</b>					
Gasoline Range Hydrocarbons	NWTPH-Gx	30200	—	5000	ug/l	100x	7D16025	04/16/07 10:45	04/17/07 04:55	
Surrogate(s): 4-BFB (FID)		84.3%		58 - 144 %	1x					
<b>BQD0131-02 (MW-2)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:00</b>					
Gasoline Range Hydrocarbons	NWTPH-Gx	180	—	50.0	ug/l	1x	7D16025	04/16/07 10:45	04/16/07 15:39	
Surrogate(s): 4-BFB (FID)		90.8%		58 - 144 %	"					
<b>BQD0131-03 (MW-3)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:20</b>					
Gasoline Range Hydrocarbons	NWTPH-Gx	214000	—	50000	ug/l	1000x	7D16025	04/16/07 10:45	04/17/07 05:26	
Surrogate(s): 4-BFB (FID)		82.8%		58 - 144 %	1x					

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<b>Conestoga-Rovers &amp; Associates - Everett</b> 8620 Holly Drive, Suite 210 Everett, WA 98208	Project Name: <b>Shell - 6808 196th Street SW, Lynnwood</b> Project Number: 070406.DU3 Project Manager: Justin Foslien	Report Created: 04/17/07 15:12
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**Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up**  
 TestAmerica - Seattle, WA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>BQD0131-01RE1 (MW-1)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:10</b>					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	258	ug/l	1x	7D10010	04/10/07 08:42	04/12/07 20:31	
Lube Oil Range Hydrocarbons	"	ND	----	515	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				84.9%	53 - 125 %	"				"
<i>Oclacosane</i>				98.1%	68 - 125 %	"				"
<b>BQD0131-02RE1 (MW-2)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:00</b>					
Diesel Range Hydrocarbons	NWTPH-Dx	ND	----	258	ug/l	1x	7D10010	04/10/07 08:42	04/12/07 22:17	
Lube Oil Range Hydrocarbons	"	ND	----	515	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				84.5%	53 - 125 %	"				"
<i>Oclacosane</i>				96.9%	68 - 125 %	"				"
<b>BQD0131-03RE1 (MW-3)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:20</b>					
Diesel Range Hydrocarbons	NWTPH-Dx	867	----	248	ug/l	1x	7D10010	04/10/07 08:42	04/12/07 22:43	Q5
Lube Oil Range Hydrocarbons	"	ND	----	495	"	"	"	"	"	
<i>Surrogate(s): 2-FBP</i>				89.5%	53 - 125 %	"				"
<i>Oclacosane</i>				96.8%	68 - 125 %	"				"

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**Conestoga-Rovers & Associates - Everett**  
 8620 Holly Drive, Suite 210  
 Everett, WA 98208

Project Name: **Shell - 6808 196th Street SW, Lynnwood**  
 Project Number: 070406.DU3  
 Project Manager: Justin Foslien

Report Created:  
 04/17/07 15:12

**BTEX by EPA Method 8021B**  
 TestAmerica - Seattle, WA

Analyte	Method	Result	MDL*	MRL	Units	Dil	Batch	Prepared	Analyzed	Notes
<b>BQD0131-01 (MW-1)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:10</b>					
Benzene	EPA 8021B	7450	---	50.0	ug/l	100x	7D16025	04/16/07 10:45	04/17/07 04:55	
Toluene	"	732	---	50.0	"	"	"	"	"	
Ethylbenzene	"	718	---	50.0	"	"	"	"	"	
Xylenes (total)	"	2310	---	100	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>			97.2%			68 - 140 %	1x			"
<b>BQD0131-02 (MW-2)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:00</b>					
Benzene	EPA 8021B	1.83	---	0.500	ug/l	1x	7D16025	04/16/07 10:45	04/16/07 15:39	
Toluene	"	0.518	---	0.500	"	"	"	"	"	
Ethylbenzene	"	2.61	---	0.500	"	"	"	"	"	
Xylenes (total)	"	ND	---	1.00	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>			104%			68 - 140 %	"			"
<b>BQD0131-03 (MW-3)</b>		<b>Water</b>			<b>Sampled: 04/06/07 12:20</b>					
Benzene	EPA 8021B	26600	---	500	ug/l	1000x	7D16025	04/16/07 10:45	04/17/07 05:26	
Toluene	"	37500	---	500	"	"	"	"	"	
Ethylbenzene	"	2850	---	500	"	"	"	"	"	
Xylenes (total)	"	16800	---	1000	"	"	"	"	"	
<i>Surrogate(s): 4-BFB (PID)</i>			96.8%			68 - 140 %	1x			"

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<b>Conestoga-Rovers &amp; Associates - Everett</b> 8620 Holly Drive, Suite 210 Everett, WA 98208	Project Name:	<b>Shell - 6808 196th Street SW, Lynnwood</b>	Report Created:
	Project Number:	070406.DU3	04/17/07 15:12
	Project Manager:	Justin Foslien	

**Volatile Petroleum Products by NWTPH-Gx - Laboratory Quality Control Results**  
 TestAmerica - Seattle, WA

QC Batch: 7D16025      Water Preparation Method: EPA 5030B (P/T)

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes		
<b>Blank (7D16025-BLK1)</b>													Extracted: 04/16/07 10:45			
Gasoline Range Hydrocarbons	NWTPH-Gx	ND	---	50.0	ug/l	1x	--	--	--	--	--	--	04/16/07 13:00			
Surrogate(s): 4-BFB (FID)		Recovery: 84.0%		Limits: 58-144%		"						04/16/07 13:00				
<b>LCS (7D16025-BS1)</b>													Extracted: 04/16/07 10:45			
Gasoline Range Hydrocarbons	NWTPH-Gx	910	---	50.0	ug/l	1x	--	1000	91.0%	(80-120)	--	--	04/16/07 13:32			
Surrogate(s): 4-BFB (FID)		Recovery: 93.3%		Limits: 58-144%		"						04/16/07 13:32				
<b>Duplicate (7D16025-DUP1)</b>													QC Source: BQD0232-01		Extracted: 04/16/07 10:45	
Gasoline Range Hydrocarbons	NWTPH-Gx	ND	---	50.0	ug/l	1x	ND	--	--	--	NR (25)		04/16/07 15:07			
Surrogate(s): 4-BFB (FID)		Recovery: 84.2%		Limits: 58-144%		"						04/16/07 15:07				
<b>Duplicate (7D16025-DUP2)</b>													QC Source: BQD0131-02		Extracted: 04/16/07 10:45	
Gasoline Range Hydrocarbons	NWTPH-Gx	180	---	50.0	ug/l	1x	180	--	--	--	0.00% (25)		04/16/07 16:12			
Surrogate(s): 4-BFB (FID)		Recovery: 90.3%		Limits: 58-144%		"						04/16/07 16:12				
<b>Matrix Spike (7D16025-MS1)</b>													QC Source: BQD0232-01		Extracted: 04/16/07 10:45	
Gasoline Range Hydrocarbons	NWTPH-Gx	1030	---	50.0	ug/l	1x	ND	1000	103%	(75-131)	--	--	04/16/07 17:15			
Surrogate(s): 4-BFB (FID)		Recovery: 94.5%		Limits: 58-144%		"						04/16/07 17:15				

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*Kate Haney*

Kate Haney, Project Manager

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**Conestoga-Rovers & Associates - Everett**

8620 Holly Drive, Suite 210  
 Everett, WA 98208

Project Name: **Shell - 6808 196th Street SW, Lynnwood**

Project Number: 070406.DU3

Project Manager: Justin Foslien

Report Created:

04/17/07 15:12

**Semivolatile Petroleum Products by NWTPH-Dx with Acid/Silica Gel Clean-up - Laboratory Quality Control Results**

TestAmerica - Seattle, WA

QC Batch: 7D10010

Water Preparation Method: EPA 3520C

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
<b>Blank (7D10010-BLK2)</b>													Extracted: 04/10/07 08:42	
Diesel Range Hydrocarbons	NWTPH-Dx	ND	---	250	ug/l	1x	--	--	--	--	--	--	04/12/07 16:35	
Lube Oil Range Hydrocarbons	"	ND	---	500	"	"	--	--	--	--	--	--	"	
Surrogate(s): 2-FBP		Recovery: 73.6%		Limits: 53-125%		"						04/12/07 16:35		
Octacosane		89.6%		68-125%		"						"		
<b>LCS (7D10010-BS2)</b>													Extracted: 04/10/07 08:42	
Diesel Range Hydrocarbons	NWTPH-Dx	1950	---	250	ug/l	1x	--	2000	97.5%	(61-132)	--	--	04/12/07 17:01	
Surrogate(s): 2-FBP		Recovery: 93.6%		Limits: 53-125%		"						04/12/07 17:01		
Octacosane		95.6%		68-125%		"						"		
<b>LCS Dup (7D10010-BSD2)</b>													Extracted: 04/10/07 08:42	
Diesel Range Hydrocarbons	NWTPH-Dx	1790	---	250	ug/l	1x	--	2000	89.5%	(61-132)	8.56%	(35)	04/12/07 17:28	
Surrogate(s): 2-FBP		Recovery: 85.6%		Limits: 53-125%		"						04/12/07 17:28		
Octacosane		88.8%		68-125%		"						"		

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<b>Conestoga-Rovers &amp; Associates - Everett</b> 8620 Holly Drive, Suite 210 Everett, WA 98208	Project Name: <b>Shell - 6808 196th Street SW, Lynnwood</b> Project Number: 070406.DU3 Project Manager: Justin Foslien	Report Created: 04/17/07 15:12
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**BTEX by EPA Method 8021B - Laboratory Quality Control Results**  
 TestAmerica - Seattle, WA

QC Batch: 7D16025      Water Preparation Method: EPA 5030B (P/T)

Analyte	Method	Result	MDL*	MRL	Units	Dil	Source Result	Spike Amt	% REC	(Limits)	% RPD	(Limits)	Analyzed	Notes
---------	--------	--------	------	-----	-------	-----	---------------	-----------	-------	----------	-------	----------	----------	-------

**Blank (7D16025-BLK1)** Extracted: 04/16/07 10:45

Benzene	EPA 8021B	ND	---	0.500	ug/l	1x	--	--	--	--	--	--	04/16/07 13:00	
Toluene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Ethylbenzene	"	ND	---	0.500	"	"	--	--	--	--	--	--	"	
Xylenes (total)	"	ND	---	1.00	"	"	--	--	--	--	--	--	"	

Surrogate(s): 4-BFB (PID)      Recovery: 102%      Limits: 68-140%      "      04/16/07 13:00

**LCS (7D16025-BS2)** Extracted: 04/16/07 10:45

Benzene	EPA 8021B	27.9	---	0.500	ug/l	1x	--	30.0	93.0%	(80-120)	--	--	04/16/07 14:04	
Toluene	"	27.7	---	0.500	"	"	--	"	92.3%	"	--	--	"	
Ethylbenzene	"	28.0	---	0.500	"	"	--	"	93.3%	"	--	--	"	
Xylenes (total)	"	84.1	---	1.00	"	"	--	90.0	93.4%	"	--	--	"	

Surrogate(s): 4-BFB (PID)      Recovery: 102%      Limits: 68-140%      "      04/16/07 14:04

**Duplicate (7D16025-DUP1)** QC Source: BQD0232-01      Extracted: 04/16/07 10:45

Benzene	EPA 8021B	ND	---	0.500	ug/l	1x	ND	--	--	--	NR (25)	--	04/16/07 15:07	
Toluene	"	ND	---	0.500	"	"	ND	--	--	--	NR	"	"	
Ethylbenzene	"	ND	---	0.500	"	"	ND	--	--	--	NR	"	"	
Xylenes (total)	"	ND	---	1.00	"	"	ND	--	--	--	NR	"	"	

Surrogate(s): 4-BFB (PID)      Recovery: 103%      Limits: 68-140%      "      04/16/07 15:07

**Duplicate (7D16025-DUP2)** QC Source: BQD0131-02      Extracted: 04/16/07 10:45

Benzene	EPA 8021B	1.81	---	0.500	ug/l	1x	1.83	--	--	--	1.10% (25)	--	04/16/07 16:12	
Toluene	"	0.513	---	0.500	"	"	0.518	--	--	--	0.970%	"	"	
Ethylbenzene	"	2.60	---	0.500	"	"	2.61	--	--	--	0.384%	"	"	
Xylenes (total)	"	ND	---	1.00	"	"	ND	--	--	--	5.48%	"	"	R4

Surrogate(s): 4-BFB (PID)      Recovery: 103%      Limits: 68-140%      "      04/16/07 16:12

**Matrix Spike (7D16025-MS2)** QC Source: BQD0131-02      Extracted: 04/16/07 10:45

Benzene	EPA 8021B	31.2	---	0.500	ug/l	1x	1.83	30.0	97.9%	(46-130)	--	--	04/16/07 17:47	
Toluene	"	29.5	---	0.500	"	"	0.518	"	96.6%	(60-124)	--	--	"	
Ethylbenzene	"	33.0	---	0.500	"	"	2.61	"	101%	(56-141)	--	--	"	
Xylenes (total)	"	91.0	---	1.00	"	"	0.713	90.0	100%	(66-132)	--	--	"	

Surrogate(s): 4-BFB (PID)      Recovery: 104%      Limits: 68-140%      "      04/16/07 17:47

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*Kate Haney*

Kate Haney, Project Manager

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**Conestoga-Rovers & Associates - Everett**

8620 Holly Drive, Suite 210  
Everett, WA 98208

Project Name: **Shell - 6808 196th Street SW, Lynnwood**

Project Number: 070406.DU3

Project Manager: Justin Foslien

Report Created:

04/17/07 15:12

## Notes and Definitions

### Report Specific Notes:

- Q5 - Results in the diesel organics range are primarily due to overlap from a gasoline range product.
- R4 - Due to the low levels of analyte in the sample, the duplicate RPD calculation does not provide useful information.

### Laboratory Reporting Conventions:

- DET - Analyte DETECTED at or above the Reporting Limit. Qualitative Analyses only.
- ND - Analyte NOT DETECTED at or above the reporting limit (MDL or MRL, as appropriate).
- NR/NA - Not Reported / Not Available
- dry - Sample results reported on a Dry Weight Basis. Results and Reporting Limits have been corrected for Percent Dry Weight.
- wet - Sample results and reporting limits reported on a Wet Weight Basis (as received). Results with neither 'wet' nor 'dry' are reported on a Wet Weight Basis.
- RPD - RELATIVE PERCENT DIFFERENCE (RPDs calculated using Results, not Percent Recoveries).
- MRL - METHOD REPORTING LIMIT. Reporting Level at, or above, the lowest level standard of the Calibration Table.
- MDL\* - METHOD DETECTION LIMIT. Reporting Level at, or above, the statistically derived limit based on 40CFR, Part 136, Appendix B. \*MDLs are listed on the report only if the data has been evaluated below the MRL. Results between the MDL and MRL are reported as Estimated Results.
- Dil - Dilutions are calculated based on deviations from the standard dilution performed for an analysis, and may not represent the dilution found on the analytical raw data.
- Reporting Limits - Reporting limits (MDLs and MRLs) are adjusted based on variations in sample preparation amounts, analytical dilutions and percent solids, where applicable.
- Electronic Signature - Electronic Signature added in accordance with TestAmerica's *Electronic Reporting and Electronic Signatures Policy*. Application of electronic signature indicates that the report has been reviewed and approved for release by the laboratory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

TestAmerica - Seattle, WA



Kate Haney, Project Manager

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