



February 21<sup>st</sup>, 2017

**Via Email**

Mr. William Fees  
Site Management Supervisor  
Eastern Regional Office-Toxics Cleanup Program  
WA Department of Ecology  
4601 N. Monroe Street  
Spokane, WA 99205-1295

Re: **Riverbank Sampling Results**  
Tesoro Logistics (Former Chevron) Pasco Bulk Fuel Terminal  
2900 Sacajawea Park Road, Pasco, Washington 99301  
Ecology Facility Site ID: 55763995; Cleanup Site ID: 4867

Dear Mr. Fees:

Enclosed please find a soil sample data summary table (Table 1), site figures (Figures 1 and 2), and copies of laboratory data reports for the riverbank soil sampling completed on September 18<sup>th</sup>, 2016 and December 8<sup>th</sup>, 2016 at the Tesoro Logistics (Former Chevron) Pasco Bulk Fuel Terminal on Sacajawea Road in Pasco, Washington.

Nine soil samples were collected approximately one foot above the estimated daily/seasonal low water table level. The samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons reported as gasoline (TPHg), as diesel (TPHd), and as motor oil (TPHmo), and percent solids/moisture.

No VOCs or TPHg were detected at or above their respective reporting limits. TPHd and/or TPHmo were detected in three samples (RB-6, RB-8, and RB-9) at concentrations up to 640 milligrams per kilogram (mg/kg). The Washington Department of Ecology Method A cleanup level for TPHmo of 500 mg/kg was exceeded in one sample (RB-6).

**CEECON Testing, Inc.**  
434 North Canal Street, Suite Six  
South San Francisco, CA 94080  
*CEECON@msn.com*



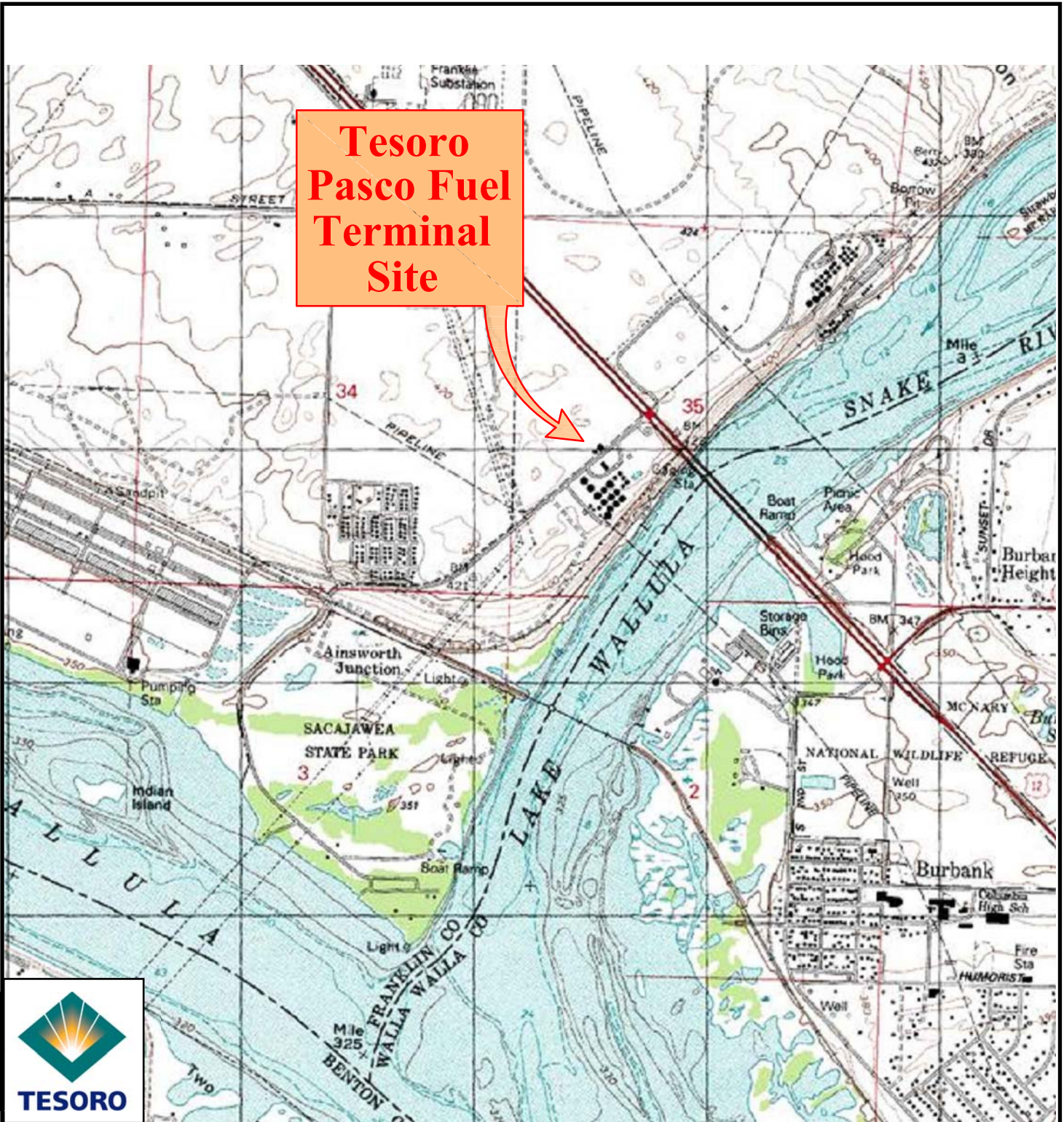
These data are transmitted on behalf of Tesoro Logistics Operations LLC (Tesoro). Please feel free to call me at (650) 827-7474 if you have any questions. I will be in touch shortly to discuss the status of this site further.

Sincerely,  
CEECON Testing, Inc.

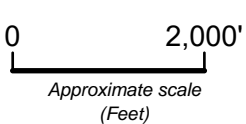
A handwritten signature in blue ink, appearing to read "Michael Hodges". The signature is fluid and cursive, with a large initial "M" and "H".

Michael Hodges  
President

cc: Anastasia Duarte RS, Tesoro Logistics GP, LLC  
Kirt Rhoads, Tesoro Logistics

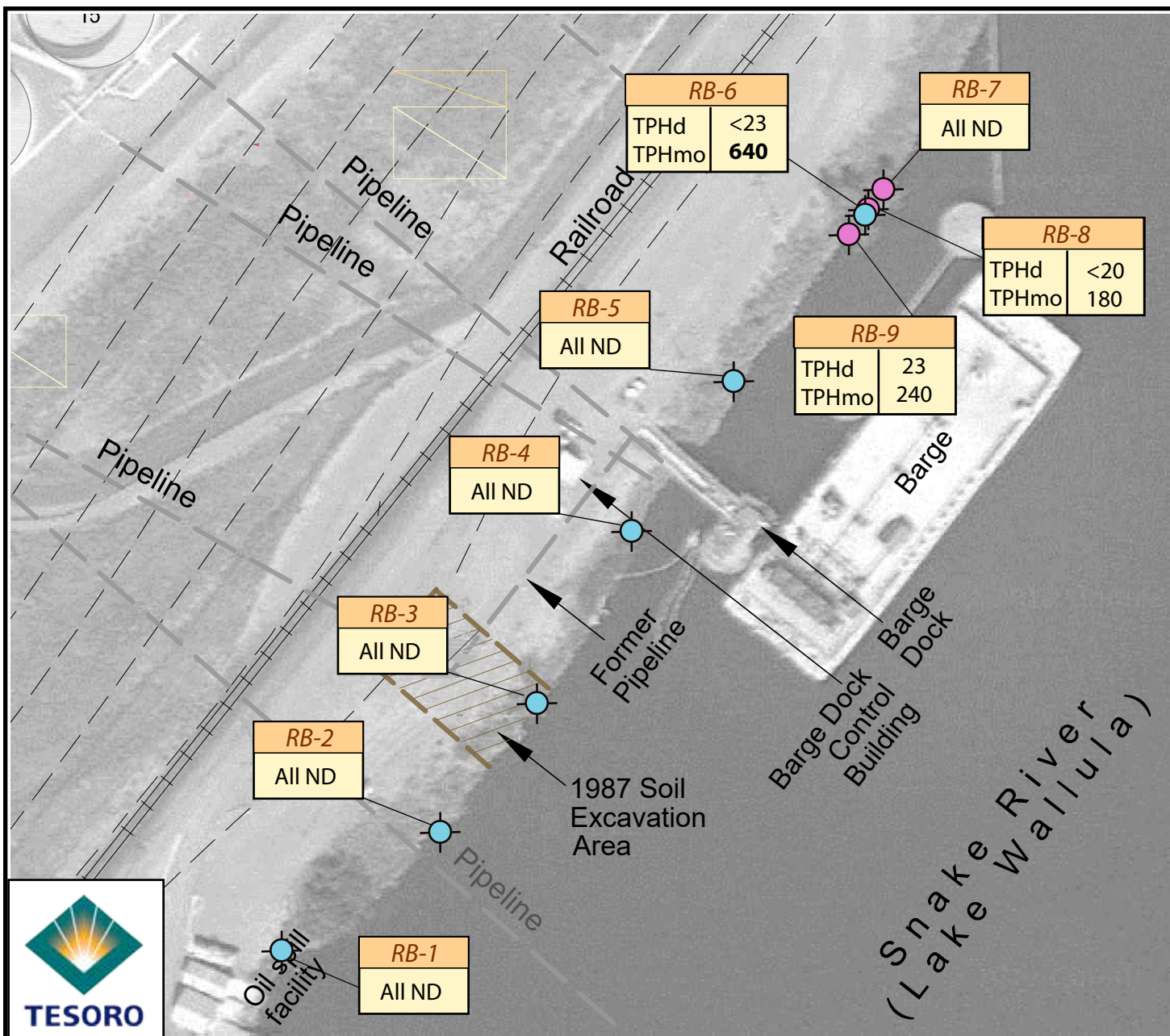


Map Source:  
 U.S.G.S. Pasco, Washington  
 1:24,000-scale series (topographic)  
 1992 edition



**SITE VICINITY MAP**  
 Tesoro Pasco Fuel Terminal Site  
 Pasco, Washington

**FIGURE 1**  
**FEB 2017**



EXPLANATION

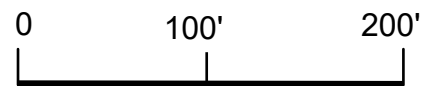
- Riverbank Soil Sample (collected on September 18, 2016)
- Riverbank Soil Sample (collected on December 8, 2016)

ALL ND Indicates no chemicals detected at or above reporting limits

<20 Indicates petroleum hydrocarbons not detected at or above reporting limit shown

**BOLD** Indicates chemical concentration exceeds Washington Department of Ecology Method A Cleanup Level

Imagery: earthexplorer.usgs.gov  
 Site information: URS, 2011  
 GeoEngineers, 1987



**RIVERBANK SOIL SAMPLING LOCATIONS**  
 Tesoro Pasco Fuel Terminal Site  
 Pasco, Washington

**FIGURE 2**

**FEB 2017**

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.  
TestAmerica Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

TestAmerica Job ID: 580-62576-1  
Client Project/Site: Tesoro Pasco

For:  
Tesoro Logistics Operations LLC  
3450 South 344th Way, Suite 201  
Auburn, Washington 98001-9540

Attn: Jeff Baker



Authorized for release by:  
9/27/2016 11:57:36 AM

Christabel Escarez, Project Manager I  
(253)922-2310  
[christabel.escarez@testamericainc.com](mailto:christabel.escarez@testamericainc.com)



### LINKS

Review your project  
results through  
**TotalAccess**

Have a Question?



Visit us at:  
[www.testamericainc.com](http://www.testamericainc.com)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Job ID: 580-62576-1

### Laboratory: TestAmerica Seattle

#### Narrative

#### Job Narrative 580-62576-1

#### Receipt

The samples were received on 9/19/2016 3:50 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 9.5° C.

#### Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: RB - 1 (580-62576-1), RB - 2 (580-62576-2), RB - 3 (580-62576-3), RB - 4 (580-62576-4), RB - 5 (580-62576-5) and RB - 6 (580-62576-6). The samples were 9.5° C on receipt.

The following samples were received without labels on the containers. The containers (brass sleeves) were in individual zip-lock bags that had the sample IDs only written on them.

RB - 1 (580-62576-1), RB - 2 (580-62576-2), RB - 3 (580-62576-3), RB - 4 (580-62576-4), RB - 5 (580-62576-5) and RB - 6 (580-62576-6)

#### GC/MS VOA

Method(s) 8260C: Surrogate recovery for the following samples was outside control limits: RB - 1 (580-62576-1), RB - 2 (580-62576-2), RB - 3 (580-62576-3), RB - 4 (580-62576-4), RB - 5 (580-62576-5) and RB - 6 (580-62576-6). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method(s) 8260C: The continuing calibration verification (CCV) associated with batch 580-228180 recovered outside acceptance criteria, low biased, for Naphthalene, Ethylene Dibromide, and 2-Methyl-2-Propanol. A reporting limit (RL) standard was analyzed, and the target analyte was detected. Since the associated samples were non-detect for this analyte, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method(s) NWTPH-Dx: The continuing calibration verification (CCV) associated with batch 580-228057 recovered above the upper control limit for Motor Oil (>C24-C36). The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: RB - 1 (580-62576-1), RB - 2 (580-62576-2), RB - 3 (580-62576-3), RB - 4 (580-62576-4), RB - 5 (580-62576-5), (CCV 580-228057/25) and (580-62576-A-1-F DU).

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: RB - 6 (580-62576-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Definitions/Glossary

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Qualifiers

### GC/MS VOA

Qualifier	Qualifier Description
X	Surrogate is outside control limits

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)



# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 1**

**Lab Sample ID: 580-62576-1**

**Date Collected: 09/18/16 09:16**

**Matrix: Solid**

**Date Received: 09/19/16 15:50**

**Percent Solids: 79.3**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		2200		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Methyl tert-butyl ether	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Diisopropyl ether	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Ethyl t-butyl ether	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Tert-amyl methyl ether	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Benzene	ND		24		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
1,2-Dichloroethane	ND		24		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Toluene	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
1,2-Dibromoethane	ND		24		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Ethylbenzene	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Naphthalene	ND		59		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1
Xylenes, Total	ND		300		ug/Kg	☼	09/19/16 18:24	09/23/16 15:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	147		52 - 152	09/19/16 18:24	09/23/16 15:50	1
Toluene-d8 (Surr)	99		79 - 119	09/19/16 18:24	09/23/16 15:50	1
1,2-Dichloroethane-d4 (Surr)	100		81 - 121	09/19/16 18:24	09/23/16 15:50	1
4-Bromofluorobenzene (Surr)	98		79 - 120	09/19/16 18:24	09/23/16 15:50	1
Dibromofluoromethane (Surr)	98		78 - 118	09/19/16 18:24	09/23/16 15:50	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		5.9		mg/Kg	☼	09/19/16 18:24	09/21/16 02:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		50 - 150	09/19/16 18:24	09/21/16 02:51	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		28		mg/Kg	☼	09/20/16 12:33	09/23/16 21:52	1
Motor Oil (>C24-C36)	ND		56		mg/Kg	☼	09/20/16 12:33	09/23/16 21:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	84		50 - 150	09/20/16 12:33	09/23/16 21:52	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	79.3		0.1		%			09/20/16 16:10	1
Percent Moisture	20.7		0.1		%			09/20/16 16:10	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 2**  
**Date Collected: 09/18/16 09:27**  
**Date Received: 09/19/16 15:50**

**Lab Sample ID: 580-62576-2**  
**Matrix: Solid**  
**Percent Solids: 96.2**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1600		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Methyl tert-butyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Diisopropyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Ethyl t-butyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Tert-amyl methyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Benzene	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
1,2-Dichloroethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Toluene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
1,2-Dibromoethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Ethylbenzene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Naphthalene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1
Xylenes, Total	ND		210		ug/Kg	☼	09/19/16 18:24	09/23/16 16:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	155	X	52 - 152	09/19/16 18:24	09/23/16 16:17	1
Toluene-d8 (Surr)	99		79 - 119	09/19/16 18:24	09/23/16 16:17	1
1,2-Dichloroethane-d4 (Surr)	100		81 - 121	09/19/16 18:24	09/23/16 16:17	1
4-Bromofluorobenzene (Surr)	97		79 - 120	09/19/16 18:24	09/23/16 16:17	1
Dibromofluoromethane (Surr)	100		78 - 118	09/19/16 18:24	09/23/16 16:17	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.2		mg/Kg	☼	09/19/16 18:24	09/21/16 03:22	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	106		50 - 150	09/19/16 18:24	09/21/16 03:22	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		23		mg/Kg	☼	09/20/16 12:33	09/23/16 22:33	1
Motor Oil (>C24-C36)	ND		45		mg/Kg	☼	09/20/16 12:33	09/23/16 22:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	98		50 - 150	09/20/16 12:33	09/23/16 22:33	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96.2		0.1		%			09/20/16 16:10	1
Percent Moisture	3.8		0.1		%			09/20/16 16:10	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 3**

**Lab Sample ID: 580-62576-3**

**Date Collected: 09/18/16 09:39**

**Matrix: Solid**

**Date Received: 09/19/16 15:50**

**Percent Solids: 98.9**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1500		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Methyl tert-butyl ether	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Diisopropyl ether	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Ethyl t-butyl ether	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Tert-amyl methyl ether	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Benzene	ND		16		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
1,2-Dichloroethane	ND		16		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Toluene	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
1,2-Dibromoethane	ND		16		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Ethylbenzene	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Naphthalene	ND		41		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1
Xylenes, Total	ND		200		ug/Kg	☼	09/19/16 18:24	09/23/16 16:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	158	X	52 - 152	09/19/16 18:24	09/23/16 16:44	1
Toluene-d8 (Surr)	98		79 - 119	09/19/16 18:24	09/23/16 16:44	1
1,2-Dichloroethane-d4 (Surr)	100		81 - 121	09/19/16 18:24	09/23/16 16:44	1
4-Bromofluorobenzene (Surr)	96		79 - 120	09/19/16 18:24	09/23/16 16:44	1
Dibromofluoromethane (Surr)	99		78 - 118	09/19/16 18:24	09/23/16 16:44	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.1		mg/Kg	☼	09/19/16 18:24	09/21/16 03:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		50 - 150	09/19/16 18:24	09/21/16 03:53	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg	☼	09/20/16 12:33	09/23/16 22:53	1
Motor Oil (>C24-C36)	ND		49		mg/Kg	☼	09/20/16 12:33	09/23/16 22:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	91		50 - 150	09/20/16 12:33	09/23/16 22:53	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	98.9		0.1		%			09/20/16 16:10	1
Percent Moisture	1.1		0.1		%			09/20/16 16:10	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 4**

**Lab Sample ID: 580-62576-4**

**Date Collected: 09/18/16 09:52**

**Matrix: Solid**

**Date Received: 09/19/16 15:50**

**Percent Solids: 95.5**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1600		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Methyl tert-butyl ether	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Diisopropyl ether	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Ethyl t-butyl ether	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Tert-amyl methyl ether	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Benzene	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
1,2-Dichloroethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Toluene	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
1,2-Dibromoethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Ethylbenzene	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Naphthalene	ND		43		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1
Xylenes, Total	ND		220		ug/Kg	☼	09/19/16 18:24	09/23/16 17:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	154	X	52 - 152	09/19/16 18:24	09/23/16 17:11	1
Toluene-d8 (Surr)	99		79 - 119	09/19/16 18:24	09/23/16 17:11	1
1,2-Dichloroethane-d4 (Surr)	100		81 - 121	09/19/16 18:24	09/23/16 17:11	1
4-Bromofluorobenzene (Surr)	97		79 - 120	09/19/16 18:24	09/23/16 17:11	1
Dibromofluoromethane (Surr)	98		78 - 118	09/19/16 18:24	09/23/16 17:11	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.3		mg/Kg	☼	09/19/16 18:24	09/21/16 04:25	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		50 - 150	09/19/16 18:24	09/21/16 04:25	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		24		mg/Kg	☼	09/20/16 12:33	09/23/16 23:34	1
Motor Oil (>C24-C36)	ND		47		mg/Kg	☼	09/20/16 12:33	09/23/16 23:34	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	92		50 - 150	09/20/16 12:33	09/23/16 23:34	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	95.5		0.1		%			09/20/16 16:10	1
Percent Moisture	4.5		0.1		%			09/20/16 16:10	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 5**

**Lab Sample ID: 580-62576-5**

**Date Collected: 09/18/16 10:04**

**Matrix: Solid**

**Date Received: 09/19/16 15:50**

**Percent Solids: 92.3**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1700		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Methyl tert-butyl ether	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Diisopropyl ether	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Ethyl t-butyl ether	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Tert-amyl methyl ether	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Benzene	ND		19		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
1,2-Dichloroethane	ND		19		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Toluene	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
1,2-Dibromoethane	ND		19		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Ethylbenzene	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Naphthalene	ND		47		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1
Xylenes, Total	ND		230		ug/Kg	☼	09/19/16 18:24	09/23/16 17:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	153	X	52 - 152	09/19/16 18:24	09/23/16 17:38	1
Toluene-d8 (Surr)	99		79 - 119	09/19/16 18:24	09/23/16 17:38	1
1,2-Dichloroethane-d4 (Surr)	98		81 - 121	09/19/16 18:24	09/23/16 17:38	1
4-Bromofluorobenzene (Surr)	96		79 - 120	09/19/16 18:24	09/23/16 17:38	1
Dibromofluoromethane (Surr)	100		78 - 118	09/19/16 18:24	09/23/16 17:38	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.7		mg/Kg	☼	09/19/16 18:24	09/21/16 04:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	108		50 - 150	09/19/16 18:24	09/21/16 04:56	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		22		mg/Kg	☼	09/20/16 12:33	09/23/16 23:55	1
Motor Oil (>C24-C36)	ND		45		mg/Kg	☼	09/20/16 12:33	09/23/16 23:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	76		50 - 150	09/20/16 12:33	09/23/16 23:55	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	92.3		0.1		%			09/20/16 16:10	1
Percent Moisture	7.7		0.1		%			09/20/16 16:10	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

**Client Sample ID: RB - 6**

**Lab Sample ID: 580-62576-6**

**Date Collected: 09/18/16 10:17**

**Matrix: Solid**

**Date Received: 09/19/16 15:50**

**Percent Solids: 96.9**

**Method: 8260C - Volatile Organic Compounds by GC/MS**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1600		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Methyl tert-butyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Diisopropyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Ethyl t-butyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Tert-amyl methyl ether	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Benzene	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
1,2-Dichloroethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Toluene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
1,2-Dibromoethane	ND		17		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Ethylbenzene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Naphthalene	ND		42		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1
Xylenes, Total	ND		210		ug/Kg	☼	09/19/16 18:24	09/23/16 18:05	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	154	X	52 - 152	09/19/16 18:24	09/23/16 18:05	1
Toluene-d8 (Surr)	99		79 - 119	09/19/16 18:24	09/23/16 18:05	1
1,2-Dichloroethane-d4 (Surr)	101		81 - 121	09/19/16 18:24	09/23/16 18:05	1
4-Bromofluorobenzene (Surr)	96		79 - 120	09/19/16 18:24	09/23/16 18:05	1
Dibromofluoromethane (Surr)	99		78 - 118	09/19/16 18:24	09/23/16 18:05	1

**Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.2		mg/Kg	☼	09/19/16 18:24	09/21/16 05:27	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	110		50 - 150	09/19/16 18:24	09/21/16 05:27	1

**Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup**

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		23		mg/Kg	☼	09/20/16 12:33	09/24/16 00:15	1
Motor Oil (>C24-C36)	640		47		mg/Kg	☼	09/20/16 12:33	09/24/16 00:15	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	88		50 - 150	09/20/16 12:33	09/24/16 00:15	1

**General Chemistry**

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	96.9		0.1		%			09/20/16 16:10	1
Percent Moisture	3.1		0.1		%			09/20/16 16:10	1

TestAmerica Seattle

# QC Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 580-228169/7-A**

**Matrix: Solid**

**Analysis Batch: 228180**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 228169**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1500		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Methyl tert-butyl ether	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Diisopropyl ether	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Ethyl t-butyl ether	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Tert-amyl methyl ether	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Benzene	ND		16		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
1,2-Dichloroethane	ND		16		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Toluene	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
1,2-Dibromoethane	ND		16		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Ethylbenzene	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Naphthalene	ND		40		ug/Kg		09/23/16 10:27	09/23/16 14:02	1
Xylenes, Total	ND		200		ug/Kg		09/23/16 10:27	09/23/16 14:02	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		52 - 152	09/23/16 10:27	09/23/16 14:02	1
Toluene-d8 (Surr)	99		79 - 119	09/23/16 10:27	09/23/16 14:02	1
1,2-Dichloroethane-d4 (Surr)	99		81 - 121	09/23/16 10:27	09/23/16 14:02	1
4-Bromofluorobenzene (Surr)	96		79 - 120	09/23/16 10:27	09/23/16 14:02	1
Dibromofluoromethane (Surr)	97		78 - 118	09/23/16 10:27	09/23/16 14:02	1

**Lab Sample ID: LCS 580-228169/8-A**

**Matrix: Solid**

**Analysis Batch: 228180**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 228169**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
t-Butyl alcohol	8000	7170		ug/Kg		90	48 - 144
Methyl tert-butyl ether	801	783		ug/Kg		98	58 - 134
Diisopropyl ether	1000	1070		ug/Kg		107	69 - 120
Ethyl t-butyl ether	1000	1010		ug/Kg		101	75 - 122
Tert-amyl methyl ether	1000	1040		ug/Kg		103	65 - 118
Benzene	803	779		ug/Kg		97	70 - 118
1,2-Dichloroethane	801	804		ug/Kg		100	71 - 121
Toluene	801	813		ug/Kg		101	67 - 119
1,2-Dibromoethane	801	721		ug/Kg		90	69 - 119
Ethylbenzene	803	754		ug/Kg		94	66 - 119
m-Xylene & p-Xylene	802	752		ug/Kg		94	69 - 126
o-Xylene	801	739		ug/Kg		92	66 - 127
Naphthalene	801	713		ug/Kg		89	45 - 141
Xylenes, Total	1600	1490		ug/Kg		93	70 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	100		52 - 152
Toluene-d8 (Surr)	99		79 - 119
1,2-Dichloroethane-d4 (Surr)	99		81 - 121
4-Bromofluorobenzene (Surr)	97		79 - 120
Dibromofluoromethane (Surr)	101		78 - 118

TestAmerica Seattle

# QC Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-228169/9-A**  
**Matrix: Solid**  
**Analysis Batch: 228180**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 228169**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
t-Butyl alcohol	8000	8360		ug/Kg		105	48 - 144	15	40
Methyl tert-butyl ether	801	790		ug/Kg		99	58 - 134	1	20
Diisopropyl ether	1000	1080		ug/Kg		107	69 - 120	0	15
Ethyl t-butyl ether	1000	1020		ug/Kg		102	75 - 122	1	17
Tert-amyl methyl ether	1000	1060		ug/Kg		106	65 - 118	3	22
Benzene	803	808		ug/Kg		101	70 - 118	4	19
1,2-Dichloroethane	801	824		ug/Kg		103	71 - 121	2	18
Toluene	801	810		ug/Kg		101	67 - 119	0	19
1,2-Dibromoethane	801	773		ug/Kg		96	69 - 119	7	15
Ethylbenzene	803	777		ug/Kg		97	66 - 119	3	23
m-Xylene & p-Xylene	802	766		ug/Kg		96	69 - 126	2	23
o-Xylene	801	768		ug/Kg		96	66 - 127	4	22
Naphthalene	801	784		ug/Kg		98	45 - 141	10	34
Xylenes, Total	1600	1530		ug/Kg		96	70 - 121	3	17

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	99		52 - 152
Toluene-d8 (Surr)	99		79 - 119
1,2-Dichloroethane-d4 (Surr)	99		81 - 121
4-Bromofluorobenzene (Surr)	96		79 - 120
Dibromofluoromethane (Surr)	101		78 - 118

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-227926/1-A**  
**Matrix: Solid**  
**Analysis Batch: 227940**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 227926**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		09/20/16 16:02	09/20/16 22:11	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	104		50 - 150	09/20/16 16:02	09/20/16 22:11	1

**Lab Sample ID: LCS 580-227926/2-A**  
**Matrix: Solid**  
**Analysis Batch: 227940**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 227926**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline	40.1	38.1		mg/Kg		95	68 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	116		50 - 150

TestAmerica Seattle



# QC Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: LCSD 580-227926/3-A**

**Matrix: Solid**

**Analysis Batch: 227940**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 227926**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline	40.1	38.9		mg/Kg		97	68 - 120	2	25
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>						<b>Limits</b>
4-Bromofluorobenzene (Surr)		99							50 - 150

## Method: NWTPH-Dx - Semi-Volatile Petroleum Products by NWTPH with Silica Gel Cleanup

**Lab Sample ID: MB 580-227889/1-B**

**Matrix: Solid**

**Analysis Batch: 228307**

**Client Sample ID: Method Blank**

**Prep Type: Total/NA**

**Prep Batch: 227889**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		09/20/16 12:33	09/23/16 20:50	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		09/20/16 12:33	09/23/16 20:50	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
o-Terphenyl	86		50 - 150				09/20/16 12:33	09/23/16 20:50	1

**Lab Sample ID: LCS 580-227889/2-B**

**Matrix: Solid**

**Analysis Batch: 228307**

**Client Sample ID: Lab Control Sample**

**Prep Type: Total/NA**

**Prep Batch: 227889**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
#2 Diesel (C10-C24)	503	513		mg/Kg		102	64 - 127
Motor Oil (>C24-C36)	503	570		mg/Kg		113	70 - 125
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>				<b>Limits</b>
o-Terphenyl		90					50 - 150

**Lab Sample ID: LCSD 580-227889/3-B**

**Matrix: Solid**

**Analysis Batch: 228307**

**Client Sample ID: Lab Control Sample Dup**

**Prep Type: Total/NA**

**Prep Batch: 227889**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
#2 Diesel (C10-C24)	503	514		mg/Kg		102	64 - 127	0	16
Motor Oil (>C24-C36)	503	561		mg/Kg		112	70 - 125	2	17
<b>Surrogate</b>		<b>%Recovery</b>	<b>Qualifier</b>				<b>Limits</b>		
o-Terphenyl		91					50 - 150		

**Lab Sample ID: 580-62576-1 DU**

**Matrix: Solid**

**Analysis Batch: 228307**

**Client Sample ID: RB - 1**

**Prep Type: Total/NA**

**Prep Batch: 227889**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
#2 Diesel (C10-C24)	ND		ND		mg/Kg	☼	NC	35
Motor Oil (>C24-C36)	ND		ND		mg/Kg	☼	NC	35

TestAmerica Seattle

# QC Sample Results

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

<i>Surrogate</i>	<i>%Recovery</i>	<i>DU DU Qualifier</i>	<i>Limits</i>
<i>o-Terphenyl</i>	91		50 - 150

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# Lab Chronicle

Client: Tesoro Logistics Operations LLC  
 Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Client Sample ID: RB - 1

Date Collected: 09/18/16 09:16

Date Received: 09/19/16 15:50

## Lab Sample ID: 580-62576-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

## Client Sample ID: RB - 1

Date Collected: 09/18/16 09:16

Date Received: 09/19/16 15:50

## Lab Sample ID: 580-62576-1

Matrix: Solid

Percent Solids: 79.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 15:50	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 02:51	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/23/16 21:52	KZ1	TAL SEA

## Client Sample ID: RB - 2

Date Collected: 09/18/16 09:27

Date Received: 09/19/16 15:50

## Lab Sample ID: 580-62576-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

## Client Sample ID: RB - 2

Date Collected: 09/18/16 09:27

Date Received: 09/19/16 15:50

## Lab Sample ID: 580-62576-2

Matrix: Solid

Percent Solids: 96.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 16:17	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 03:22	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/23/16 22:33	KZ1	TAL SEA

## Client Sample ID: RB - 3

Date Collected: 09/18/16 09:39

Date Received: 09/19/16 15:50

## Lab Sample ID: 580-62576-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

# Lab Chronicle

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Client Sample ID: RB - 3

Lab Sample ID: 580-62576-3

Date Collected: 09/18/16 09:39

Matrix: Solid

Date Received: 09/19/16 15:50

Percent Solids: 98.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 16:44	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 03:53	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/23/16 22:53	KZ1	TAL SEA

## Client Sample ID: RB - 4

Lab Sample ID: 580-62576-4

Date Collected: 09/18/16 09:52

Matrix: Solid

Date Received: 09/19/16 15:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

## Client Sample ID: RB - 4

Lab Sample ID: 580-62576-4

Date Collected: 09/18/16 09:52

Matrix: Solid

Date Received: 09/19/16 15:50

Percent Solids: 95.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 17:11	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 04:25	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/23/16 23:34	KZ1	TAL SEA

## Client Sample ID: RB - 5

Lab Sample ID: 580-62576-5

Date Collected: 09/18/16 10:04

Matrix: Solid

Date Received: 09/19/16 15:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

## Client Sample ID: RB - 5

Lab Sample ID: 580-62576-5

Date Collected: 09/18/16 10:04

Matrix: Solid

Date Received: 09/19/16 15:50

Percent Solids: 92.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 17:38	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA

TestAmerica Seattle

# Lab Chronicle

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Client Sample ID: RB - 5

Lab Sample ID: 580-62576-5

Date Collected: 09/18/16 10:04

Matrix: Solid

Date Received: 09/19/16 15:50

Percent Solids: 92.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 04:56	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/23/16 23:55	KZ1	TAL SEA

## Client Sample ID: RB - 6

Lab Sample ID: 580-62576-6

Date Collected: 09/18/16 10:17

Matrix: Solid

Date Received: 09/19/16 15:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	227932	09/20/16 16:10	CJZ	TAL SEA

## Client Sample ID: RB - 6

Lab Sample ID: 580-62576-6

Date Collected: 09/18/16 10:17

Matrix: Solid

Date Received: 09/19/16 15:50

Percent Solids: 96.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			228169	09/19/16 18:24	JSM	TAL SEA
Total/NA	Analysis	8260C		1	228180	09/23/16 18:05	W1T	TAL SEA
Total/NA	Prep	5035			227926	09/19/16 18:24	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	227940	09/21/16 05:27	JW1L	TAL SEA
Total/NA	Prep	3546			227889	09/20/16 12:33	CJZ	TAL SEA
Total/NA	Cleanup	3630C			228023	09/21/16 15:17	CJZ	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	228307	09/24/16 00:15	KZ1	TAL SEA

**Laboratory References:**

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Certification Summary

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

## Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C553	02-17-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C	5035	Solid	t-Butyl alcohol
8260C	5035	Solid	Xylenes, Total
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

# Sample Summary

Client: Tesoro Logistics Operations LLC  
Project/Site: Tesoro Pasco

TestAmerica Job ID: 580-62576-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-62576-1	RB - 1	Solid	09/18/16 09:16	09/19/16 15:50
580-62576-2	RB - 2	Solid	09/18/16 09:27	09/19/16 15:50
580-62576-3	RB - 3	Solid	09/18/16 09:39	09/19/16 15:50
580-62576-4	RB - 4	Solid	09/18/16 09:52	09/19/16 15:50
580-62576-5	RB - 5	Solid	09/18/16 10:04	09/19/16 15:50
580-62576-6	RB - 6	Solid	09/18/16 10:17	09/19/16 15:50

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## Login Sample Receipt Checklist

Client: Tesoro Logistics Operations LLC

Job Number: 580-62576-1

**Login Number: 62576**

**List Source: TestAmerica Seattle**

**List Number: 1**

**Creator: Blankinship, Tom X**

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	False	Refer to Job Narrative for details.
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	False	Only bulk volume received, volatiles requested.
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

# TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

## ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

TestAmerica Job ID: 580-64798-1

Client Project/Site: Pasco Tank Farm Facility

For:

Tesoro Logistics Operations LLC  
3450 South 344th Way, Suite 201  
Auburn, Washington 98001-9540

Attn: Jeff Baker



Authorized for release by:

12/22/2016 4:09:11 PM

Robert Greer, Project Manager II  
(253)922-2310

[robert.greer@testamericainc.com](mailto:robert.greer@testamericainc.com)

Designee for

Sheri Cruz, Project Manager I  
(253)922-2310

[sheri.cruz@testamericainc.com](mailto:sheri.cruz@testamericainc.com)

### LINKS

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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Case Narrative

Client: Tesoro Logistics Operations LLC  
Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Job ID: 580-64798-1**

**Laboratory: TestAmerica Seattle**

## Narrative

### Job Narrative 580-64798-1

#### Comments

No additional comments.

#### Receipt

The samples were received on 12/8/2016 4:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was -0.5° C.

#### Receipt Exceptions

The containers lacked labels upon receipt. The ID alone is written on the respective bags that contain the samples.

#### GC/MS VOA

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### GC Semi VOA

Method(s) NWTPH-Dx: The following sample contained a hydrocarbon pattern in the diesel range; however, the elution pattern was later than the typical diesel fuel pattern used by the laboratory for quantitative purposes: RB-9 (580-64798-3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### General Chemistry

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

#### Organic Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Definitions/Glossary

Client: Tesoro Logistics Operations LLC  
Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Client Sample ID: RB-7**

**Lab Sample ID: 580-64798-1**

**Date Collected: 12/08/16 11:35**

**Matrix: Solid**

**Date Received: 12/08/16 16:40**

**Percent Solids: 94.5**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1600		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Methyl tert-butyl ether	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Diisopropyl ether	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Ethyl t-butyl ether	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Tert-amyl methyl ether	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Benzene	ND		17		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
1,2-Dichloroethane	ND		17		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Toluene	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
1,2-Dibromoethane	ND		17		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Ethylbenzene	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Naphthalene	ND		43		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1
Xylenes, Total	ND		210		ug/Kg	☼	12/08/16 17:00	12/15/16 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		52 - 152	12/08/16 17:00	12/15/16 16:45	1
Toluene-d8 (Surr)	100		79 - 119	12/08/16 17:00	12/15/16 16:45	1
1,2-Dichloroethane-d4 (Surr)	102		81 - 121	12/08/16 17:00	12/15/16 16:45	1
4-Bromofluorobenzene (Surr)	99		79 - 120	12/08/16 17:00	12/15/16 16:45	1
Dibromofluoromethane (Surr)	97		78 - 118	12/08/16 17:00	12/15/16 16:45	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.4		mg/Kg	☼	12/08/16 17:00	12/16/16 00:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150	12/08/16 17:00	12/16/16 00:33	1
Trifluorotoluene (Surr)	115		50 - 150	12/08/16 17:00	12/16/16 00:33	1

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		24		mg/Kg	☼	12/20/16 12:17	12/20/16 21:08	1
Motor Oil (>C24-C36)	ND		48		mg/Kg	☼	12/20/16 12:17	12/20/16 21:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	101		50 - 150	12/20/16 12:17	12/20/16 21:08	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	94.5		0.1		%	-		12/20/16 10:24	1
Percent Moisture	5.5		0.1		%	-		12/20/16 10:24	1

TestAmerica Seattle

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Client Sample ID: RB-8**  
**Date Collected: 12/08/16 11:40**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-2**  
**Matrix: Solid**  
**Percent Solids: 95.4**

### Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1700		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Methyl tert-butyl ether	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Diisopropyl ether	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Ethyl t-butyl ether	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Tert-amyl methyl ether	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Benzene	ND		18		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
1,2-Dichloroethane	ND		18		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Toluene	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
1,2-Dibromoethane	ND		18		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Ethylbenzene	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Naphthalene	ND		46		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1
Xylenes, Total	ND		230		ug/Kg	☼	12/08/16 17:00	12/15/16 17:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		52 - 152	12/08/16 17:00	12/15/16 17:12	1
Toluene-d8 (Surr)	101		79 - 119	12/08/16 17:00	12/15/16 17:12	1
1,2-Dichloroethane-d4 (Surr)	102		81 - 121	12/08/16 17:00	12/15/16 17:12	1
4-Bromofluorobenzene (Surr)	99		79 - 120	12/08/16 17:00	12/15/16 17:12	1
Dibromofluoromethane (Surr)	99		78 - 118	12/08/16 17:00	12/15/16 17:12	1

### Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.1		mg/Kg	☼	12/08/16 17:00	12/17/16 01:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		50 - 150	12/08/16 17:00	12/17/16 01:37	1
Trifluorotoluene (Surr)	113		50 - 150	12/08/16 17:00	12/17/16 01:37	1

### Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		20		mg/Kg	☼	12/20/16 12:17	12/20/16 21:30	1
<b>Motor Oil (&gt;C24-C36)</b>	<b>180</b>		39		mg/Kg	☼	12/20/16 12:17	12/20/16 21:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	95		50 - 150	12/20/16 12:17	12/20/16 21:30	1

### General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Percent Solids</b>	<b>95.4</b>		0.1		%	-		12/20/16 10:24	1
<b>Percent Moisture</b>	<b>4.6</b>		0.1		%	-		12/20/16 10:24	1

# Client Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Client Sample ID: RB-9**  
**Date Collected: 12/08/16 11:45**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-3**  
**Matrix: Solid**  
**Percent Solids: 88.7**

## Method: 8260C - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		2000		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Methyl tert-butyl ether	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Diisopropyl ether	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Ethyl t-butyl ether	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Tert-amyl methyl ether	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Benzene	ND		21		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
1,2-Dichloroethane	ND		21		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Toluene	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
1,2-Dibromoethane	ND		21		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Ethylbenzene	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Naphthalene	ND		52		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1
Xylenes, Total	ND		260		ug/Kg	☼	12/08/16 17:00	12/15/16 17:39	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		52 - 152	12/08/16 17:00	12/15/16 17:39	1
Toluene-d8 (Surr)	101		79 - 119	12/08/16 17:00	12/15/16 17:39	1
1,2-Dichloroethane-d4 (Surr)	102		81 - 121	12/08/16 17:00	12/15/16 17:39	1
4-Bromofluorobenzene (Surr)	101		79 - 120	12/08/16 17:00	12/15/16 17:39	1
Dibromofluoromethane (Surr)	99		78 - 118	12/08/16 17:00	12/15/16 17:39	1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.9		mg/Kg	☼	12/08/16 17:00	12/17/16 02:08	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		50 - 150	12/08/16 17:00	12/17/16 02:08	1
Trifluorotoluene (Surr)	119		50 - 150	12/08/16 17:00	12/17/16 02:08	1

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	23		23		mg/Kg	☼	12/20/16 12:17	12/20/16 21:52	1
Motor Oil (>C24-C36)	240		45		mg/Kg	☼	12/20/16 12:17	12/20/16 21:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
o-Terphenyl	96		50 - 150	12/20/16 12:17	12/20/16 21:52	1

## General Chemistry

Analyte	Result	Qualifier	RL	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Solids	88.7		0.1		%	-		12/20/16 10:24	1
Percent Moisture	11.3		0.1		%	-		12/20/16 10:24	1



# QC Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

## Method: 8260C - Volatile Organic Compounds by GC/MS

**Lab Sample ID: MB 580-234624/1-A**  
**Matrix: Solid**  
**Analysis Batch: 234565**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 234624**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
t-Butyl alcohol	ND		1500		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Methyl tert-butyl ether	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Diisopropyl ether	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Ethyl t-butyl ether	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Tert-amyl methyl ether	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Benzene	ND		16		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
1,2-Dichloroethane	ND		16		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Toluene	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
1,2-Dibromoethane	ND		16		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Ethylbenzene	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Naphthalene	ND		40		ug/Kg		12/15/16 14:31	12/15/16 15:25	1
Xylenes, Total	ND		200		ug/Kg		12/15/16 14:31	12/15/16 15:25	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		52 - 152	12/15/16 14:31	12/15/16 15:25	1
Toluene-d8 (Surr)	100		79 - 119	12/15/16 14:31	12/15/16 15:25	1
1,2-Dichloroethane-d4 (Surr)	101		81 - 121	12/15/16 14:31	12/15/16 15:25	1
4-Bromofluorobenzene (Surr)	99		79 - 120	12/15/16 14:31	12/15/16 15:25	1
Dibromofluoromethane (Surr)	98		78 - 118	12/15/16 14:31	12/15/16 15:25	1

**Lab Sample ID: LCS 580-234624/2-A**  
**Matrix: Solid**  
**Analysis Batch: 234565**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 234624**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
t-Butyl alcohol	8000	7070		ug/Kg		88	48 - 144
Methyl tert-butyl ether	801	765		ug/Kg		95	58 - 134
Diisopropyl ether	1000	967		ug/Kg		97	69 - 120
Ethyl t-butyl ether	1000	951		ug/Kg		95	75 - 122
Tert-amyl methyl ether	1000	920		ug/Kg		92	65 - 118
Benzene	803	754		ug/Kg		94	70 - 118
1,2-Dichloroethane	801	784		ug/Kg		98	71 - 121
Toluene	801	782		ug/Kg		98	67 - 119
1,2-Dibromoethane	801	761		ug/Kg		95	69 - 119
Ethylbenzene	803	793		ug/Kg		99	66 - 119
m-Xylene & p-Xylene	802	799		ug/Kg		100	69 - 126
o-Xylene	801	764		ug/Kg		95	66 - 127
Naphthalene	801	729		ug/Kg		91	45 - 141
Xylenes, Total	1600	1560		ug/Kg		98	70 - 121

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	102		52 - 152
Toluene-d8 (Surr)	100		79 - 119
1,2-Dichloroethane-d4 (Surr)	101		81 - 121
4-Bromofluorobenzene (Surr)	101		79 - 120
Dibromofluoromethane (Surr)	101		78 - 118

TestAmerica Seattle

# QC Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

## Method: 8260C - Volatile Organic Compounds by GC/MS (Continued)

**Lab Sample ID: LCSD 580-234624/3-A**  
**Matrix: Solid**  
**Analysis Batch: 234565**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 234624**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
t-Butyl alcohol	8000	7580		ug/Kg		95	48 - 144	7	40
Methyl tert-butyl ether	801	778		ug/Kg		97	58 - 134	2	20
Diisopropyl ether	1000	992		ug/Kg		99	69 - 120	3	15
Ethyl t-butyl ether	1000	965		ug/Kg		96	75 - 122	1	17
Tert-amyl methyl ether	1000	946		ug/Kg		94	65 - 118	3	22
Benzene	803	759		ug/Kg		94	70 - 118	1	19
1,2-Dichloroethane	801	788		ug/Kg		98	71 - 121	0	18
Toluene	801	800		ug/Kg		100	67 - 119	2	19
1,2-Dibromoethane	801	789		ug/Kg		98	69 - 119	4	15
Ethylbenzene	803	806		ug/Kg		100	66 - 119	2	23
m-Xylene & p-Xylene	802	811		ug/Kg		101	69 - 126	2	23
o-Xylene	801	776		ug/Kg		97	66 - 127	2	22
Naphthalene	801	786		ug/Kg		98	45 - 141	8	34
Xylenes, Total	1600	1590		ug/Kg		99	70 - 121	2	17

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	101		52 - 152
Toluene-d8 (Surr)	98		79 - 119
1,2-Dichloroethane-d4 (Surr)	98		81 - 121
4-Bromofluorobenzene (Surr)	100		79 - 120
Dibromofluoromethane (Surr)	101		78 - 118

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-234701/1-A**  
**Matrix: Solid**  
**Analysis Batch: 234712**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 234701**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gasoline	ND		4.0		mg/Kg		12/16/16 12:46	12/16/16 12:41	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		50 - 150	12/16/16 12:46	12/16/16 12:41	1
Trifluorotoluene (Surr)	105		50 - 150	12/16/16 12:46	12/16/16 12:41	1

**Lab Sample ID: LCS 580-234701/2-A**  
**Matrix: Solid**  
**Analysis Batch: 234712**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 234701**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Gasoline	40.0	36.2		mg/Kg		91	68 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	106		50 - 150
Trifluorotoluene (Surr)	102		50 - 150

TestAmerica Seattle

# QC Sample Results

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

## Method: NWTPH-Gx - Northwest - Volatile Petroleum Products (GC) (Continued)

**Lab Sample ID: LCSD 580-234701/3-A**  
**Matrix: Solid**  
**Analysis Batch: 234712**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 234701**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Gasoline	40.0	37.1		mg/Kg		93	68 - 120	2	25
<b>Surrogate</b>									
	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
4-Bromofluorobenzene (Surr)	105		50 - 150						
Trifluorotoluene (Surr)	103		50 - 150						

## Method: NWTPH-Dx - Northwest - Semi-Volatile Petroleum Products (GC)

**Lab Sample ID: MB 580-234947/1-A**  
**Matrix: Solid**  
**Analysis Batch: 234906**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 234947**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
#2 Diesel (C10-C24)	ND		25		mg/Kg		12/20/16 12:17	12/20/16 17:05	1
Motor Oil (>C24-C36)	ND		50		mg/Kg		12/20/16 12:17	12/20/16 17:05	1
<b>Surrogate</b>									
	<b>%Recovery</b>	<b>MB Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
o-Terphenyl	98		50 - 150				12/20/16 12:17	12/20/16 17:05	1

**Lab Sample ID: LCS 580-234947/2-A**  
**Matrix: Solid**  
**Analysis Batch: 234906**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 234947**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	503	486		mg/Kg		97	70 - 125		
Motor Oil (>C24-C36)	503	501		mg/Kg		100	64 - 127		
<b>Surrogate</b>									
	<b>%Recovery</b>	<b>LCS Qualifier</b>	<b>Limits</b>						
o-Terphenyl	92		50 - 150						

**Lab Sample ID: LCSD 580-234947/3-A**  
**Matrix: Solid**  
**Analysis Batch: 234906**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 234947**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
#2 Diesel (C10-C24)	503	475		mg/Kg		94	70 - 125	2	16
Motor Oil (>C24-C36)	503	490		mg/Kg		97	64 - 127	2	17
<b>Surrogate</b>									
	<b>%Recovery</b>	<b>LCSD Qualifier</b>	<b>Limits</b>						
o-Terphenyl	77		50 - 150						

# Lab Chronicle

Client: Tesoro Logistics Operations LLC  
 Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Client Sample ID: RB-7**  
**Date Collected: 12/08/16 11:35**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-1**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	234927	12/20/16 10:24	MMM	TAL SEA

**Client Sample ID: RB-7**  
**Date Collected: 12/08/16 11:35**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-1**  
**Matrix: Solid**  
**Percent Solids: 94.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			234624	12/08/16 17:00	JSM	TAL SEA
Total/NA	Analysis	8260C		1	234565	12/15/16 16:45	TL1	TAL SEA
Total/NA	Prep	5035			234701	12/08/16 17:00	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	234712	12/16/16 00:33	W1T	TAL SEA
Total/NA	Prep	3546			234947	12/20/16 12:17	MMM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	234906	12/20/16 21:08	KZ1	TAL SEA

**Client Sample ID: RB-8**  
**Date Collected: 12/08/16 11:40**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-2**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	234927	12/20/16 10:24	MMM	TAL SEA

**Client Sample ID: RB-8**  
**Date Collected: 12/08/16 11:40**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-2**  
**Matrix: Solid**  
**Percent Solids: 95.4**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	5035			234624	12/08/16 17:00	JSM	TAL SEA
Total/NA	Analysis	8260C		1	234565	12/15/16 17:12	TL1	TAL SEA
Total/NA	Prep	5035			234701	12/08/16 17:00	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	234712	12/17/16 01:37	W1T	TAL SEA
Total/NA	Prep	3546			234947	12/20/16 12:17	MMM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	234906	12/20/16 21:30	KZ1	TAL SEA

**Client Sample ID: RB-9**  
**Date Collected: 12/08/16 11:45**  
**Date Received: 12/08/16 16:40**

**Lab Sample ID: 580-64798-3**  
**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	234927	12/20/16 10:24	MMM	TAL SEA

# Lab Chronicle

Client: Tesoro Logistics Operations LLC  
Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

**Client Sample ID: RB-9**

**Lab Sample ID: 580-64798-3**

**Date Collected: 12/08/16 11:45**

**Matrix: Solid**

**Date Received: 12/08/16 16:40**

**Percent Solids: 88.7**

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Prepared or Analyzed</u>	<u>Analyst</u>	<u>Lab</u>
Total/NA	Prep	5035			234624	12/08/16 17:00	JSM	TAL SEA
Total/NA	Analysis	8260C		1	234565	12/15/16 17:39	TL1	TAL SEA
Total/NA	Prep	5035			234701	12/08/16 17:00	J1J	TAL SEA
Total/NA	Analysis	NWTPH-Gx		1	234712	12/17/16 02:08	W1T	TAL SEA
Total/NA	Prep	3546			234947	12/20/16 12:17	MMM	TAL SEA
Total/NA	Analysis	NWTPH-Dx		1	234906	12/20/16 21:52	KZ1	TAL SEA

**Laboratory References:**

TAL SEA = TestAmerica Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

# Certification Summary

Client: Tesoro Logistics Operations LLC  
Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

## Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each certification below.

Authority	Program	EPA Region	Certification ID	Expiration Date
Washington	State Program	10	C553	02-17-17

The following analytes are included in this report, but certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8260C	5035	Solid	t-Butyl alcohol
8260C	5035	Solid	Xylenes, Total
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids



# Sample Summary

Client: Tesoro Logistics Operations LLC  
Project/Site: Pasco Tank Farm Facility

TestAmerica Job ID: 580-64798-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-64798-1	RB-7	Solid	12/08/16 11:35	12/08/16 16:40
580-64798-2	RB-8	Solid	12/08/16 11:40	12/08/16 16:40
580-64798-3	RB-9	Solid	12/08/16 11:45	12/08/16 16:40

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## Login Sample Receipt Checklist

Client: Tesoro Logistics Operations LLC

Job Number: 580-64798-1

**Login Number: 64798**

**List Source: TestAmerica Seattle**

**List Number: 1**

**Creator: Blankinship, Tom X**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	False	Refer to Job Narrative for details.
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



**TABLE 1**  
**SUMMARY OF RIVERBANK SAMPLING RESULTS**  
**Tesoro Logistics Pasco Terminal**  
**Pasco, Washington**

Sample Location	Date Sampled	Soil Sample Analysis Results (mg/kg)				Percent Solids	Percent Moisture
		VOCs	TPHg	TPHd	TPHmo		
RB-1	9/18/16	All ND	<5.9	<28	<56	79.3	20.7
RB-2	9/18/16	All ND	<4.2	<23	<45	96.2	3.8
RB-3	9/18/16	All ND	<4.1	<25	<49	98.9	1.1
RB-4	9/18/16	All ND	<4.3	<24	<47	96.5	4.5
RB-5	9/18/16	All ND	<4.7	<22	<45	92.3	7.7
RB-6	9/18/16	All ND	<4.2	<23	<b>640</b>	96.9	3.1
RB-7	12/8/16	All ND	<4.4	<24	<48	94.5	5.5
RB-8	12/8/16	All ND	<4.1	<20	180	96.4	4.6
RB-9	12/8/16	All ND	<4.9	23	240	88.7	11.3
Ecology Criteria <sup>(1)</sup>		<i>Variable</i>	<i>1,000</i>	<i>500</i>	<i>500</i>	NA	NA

**Notes:**

mg/kg = Milligrams per kilogram.

VOCs = Volatile Organic Compounds analyzed using Method 8260C.

ND/<X = Chemical not detected at or above laboratory reporting limit (RL). See lab report for specific VOC RLs.

TPHg = Total Petroleum Hydrocarbons as Gasoline analyzed using NWTPH-Gx-Northwest.

TPHd = Total Petroleum Hydrocarbons as Diesel analyzed using NWTPH-Dx-Northwest.

TPHmo = Total Petroleum Hydrocarbons as Motor Oil analyzed using NWTPHDx-Northwest.

NA = Not applicable.

(1) Washington Department of Ecology Method A cleanup levels as listed in Table 720-1 of the Model Toxics Control Act, revised 10/12/07.

Concentration in **bold** exceed Ecology Method A Cleanup Level.